



Universidad de Oviedo

Código Fuente del Trabajo Fin de Máster realizado por

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**Upgrade of the UNICOS Time Stamp Push Protocol
(TSPP) broker to include ultra-fast events**

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11. DOCUMENTS OF THE PROJECT 1129

1. Introduction

1.1. Project identification

- Title: Upgrade of the UNICOS Time Stamp Push Protocol (TSPP) broker to include ultra-fast events
- Author: Manuel Vázquez Muñiz
- Advisor: Víctor Manuel González Suárez
- Co-advisor: Jerónimo Ortolá Vidal
- Date: June 2017
- Organization: CERN

1.2. Project overview

The current project objective is to solve the issue of the fast interlocks (or ultra-fast events) by improving the Time Stamp Push Protocol (TSPP) used to communicate the control and supervision layers. This protocol is used in the framework UNICOS, and this framework should also be modified as to support this new feature.

With this new feature, the organization will be able to fulfil the requirements of the internal clients who need this capability as to have a proper use of their equipment.

1.3. Document overview

This document contains the code of the templates and the plugin that have been created or modified during the execution of this project.

2. DeviceTypes

2.1. AnaDODeviceType.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<!-- edited with XMLSpy v2008 sp1 (http://www.altova.com) by amerezhi (CERN) -->
<UNICOSMetaModel xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="..\unicos\UNICOSMetaModel.xsd">
```

```
  <Information>
    <Package>${devicePackageName}</Package>
    <Name>AnaDO</Name>
    <ObjectTypeFamily>FieldObjectFamily</ObjectTypeFamily>
    <Description>Unicos TCT type for the ANADO Object Device</Description>
    <Version>${LastChangedRevision: 170121} $</Version>
  </Information>
```

```
  <AttributeFamily>
    <AttributeFamilyName>DeviceIdentification</AttributeFamilyName>
    <UserExpandable>false</UserExpandable>
    <Attribute>
      <AttributeName>Name</AttributeName>
      <Description>Name of the device. It must be unique.
```

Max length:

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: [:"'@`#\$%^&*?!;=+~(){}<>|]-., double underscore, and page break</Description>

```
    <PrimitiveType>STRING</PrimitiveType>
```

```
    <isSpecificationAttribute>
```

```
      <isValueRequired>>true</isValueRequired>
```

```
      <Usage>Name displayed at the SCADA level if "Expert Name" is not specified.
```

This name will appear in the datapoints created in the SCADA layer.</Usage>

```
      <DependentAttributes>Device Links.
```

The name of the device(s) specified in Device Links *must* correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to "Name".</DependentAttributes>

```
    <Constraints>Max length:
```

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: [:"'@`#\$%^&*?!;=+~(){}<>|]-., double underscore, and page break

Name must be unique.</Constraints>

```
    </isSpecificationAttribute>
```

```
  </Attribute>
```

```

<Attribute>
  <AttributeName>ExpertName</AttributeName>
  <Description>Name of the device displayed at the SCADA level. It must be unique.
Forbidden characters: *[: "'@#$$%^&*?!;=+~(){}&lt;&gt;|]</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Expert Name</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>It does not affect to the datapoints names in the SCADA layer.</Usage>
    <DependentAttributes>Device Links.
The name of the device(s) specified in Device Links *must* correspond to "Expert Name" if it is
defined.
If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to
"Name".</DependentAttributes>
    <Constraints>In principle there is no limit to the number of characters used, however a long
name may result in display issues at the SCADA level.
Forbidden characters: *[: "'@#$$%^&*?!;=+~(){}&lt;&gt;|]
Expert Name must be unique.</Constraints>
  </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>DeviceDocumentation</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>DeviceDescription</AttributeName>
    <Description>Description of the device. </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Description</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>Used in the SCADA layer in the device faceplate</Usage>
      <DependentAttributes/>
      <Constraints>In principle there is no limit to the number of characters used, however a long
description may result in display issues at the SCADA level.
Forbidden characters: ;</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>Remarks</AttributeName>
    <Description>Field used to add relevant information about the device. </Description>
    <PrimitiveType>STRING</PrimitiveType>

```

```

    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>This information is not used in the generation process, it remains only at the
specification level for documentation purposes.</Usage>
      <DependentAttributes/>
      <Constraints>Forbidden characters: ;</Constraints>
    </isSpecificationAttribute>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceParameters</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>ParReg</AttributeName>
    <Meaning>Parameter Register</Meaning>
    <Description>Parametrisation register: This register contains all the boolean parameters of
the object</Description>
    <PrimitiveType>WORD</PrimitiveType>
    <Attribute>
      <AttributeName>PFsPosOn</AttributeName>
      <Meaning>Parameter Fail-Safe position ON/Open</Meaning>
      <Description>Fail Safe position of the actuator</Description>
      <PrimitiveType>BIT1</PrimitiveType>
      <BitPosition>0</BitPosition>
      <isSpecificationAttribute>
        <NameRepresentation>Fail-Safe</NameRepresentation>
        <TypeRepresentation>STRING</TypeRepresentation>
        <isValueRequired>>true</isValueRequired>
        <PermittedValue>Off/Close</PermittedValue>
        <PermittedValue>On/Open</PermittedValue>
        <Usage>This is the position of the device in case of interlock.</Usage>
        <DependentAttributes/>
        <Constraints/>
      </isSpecificationAttribute>
    </Attribute>
    <Attribute>
      <AttributeName>PHFOn</AttributeName>
      <Meaning>Parameter Hardware Feedback On</Meaning>
      <Description>Enables the activation of the Feedback ON of the object via a hardware
sensor</Description>
      <PrimitiveType>BIT1</PrimitiveType>
      <BitPosition>1</BitPosition>
    </Attribute>
  </Attribute>

```



```

<Attribute>
  <AttributeName>PHFPos</AttributeName>
  <Meaning>Parameter Hardware Feedback Position</Meaning>
  <Description>Activates Hardware Feedback Analog</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>3</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>PHLD</AttributeName>
  <Meaning>Parameter Hardware Local Drive</Meaning>
  <Description>Enables the local drive feedback. When this input is TRUE the feedback is
received via the HFLD.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>4</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>PHLDCmd</AttributeName>
  <Meaning>Parameter Hardware Local Drive Command</Meaning>
  <Description>Enables the local drive command. When this input is TRUE the command is
received via the HFLD.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>5</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>PEnrstart</AttributeName>
  <Meaning>Parameter Enable Restart</Meaning>
  <Description>Strategy to adopt to restart the device after a Full Stop
Interlock.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>8</BitPosition>
  <isSpecificationAttribute>
    <NameRepresentation>Manual Restart after Full Stop</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>true</isValueRequired>
    <PermittedValue>FALSE</PermittedValue>
    <PermittedValue>TRUE only if Full Stop disappeared</PermittedValue>
    <PermittedValue>TRUE even if Full Stop still active</PermittedValue>
    <Usage>FALSE: Device restarts after acknowledge.
TRUE only if Full Stop disappeared: Ack+Allow Restart needed (possible only if FS disappeared)
TRUE even if Full Stop still active: Ack+Allow Restart needed (possible at any moment)</Usage>
    <DependentAttributes/>
    <Constraints>All devices of the application should have the same "Manual Restart after
Full Stop"</Constraints>

```

```

    </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PRstartFS</AttributeName>
  <Meaning>Parameter Restart after Full Stop</Meaning>
  <Description>Parameter Restart after Full Stop</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>9</BitPosition>
</Attribute>
</Attribute>
<Attribute>
  <AttributeName>PWDt</AttributeName>
  <Meaning>Position Warning Delay time</Meaning>
  <Description>Delay applied to the Position Alarm when there is a discordance between
OutputOrder and Feedback position.
Must be positive.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Warning Time Delay (s)</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>positive number of parameter</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PWDb</AttributeName>
  <Meaning>Position Warning Dead-band</Meaning>
  <Description>Deadband value to compute the position warning of the device (Discordance).
Must be positive.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Warning Deadband Value (Unit)</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>positive number of parameter</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>

```

```

    <AttributeName>PMInSpd</AttributeName>
    <Meaning>Parameter Manual Increase Speed</Meaning>
    <Description>Increase speed of the actuator when user requests a new value from SCADA.
Must be positive.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Manual Increase Speed (Unit/s)</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage/>
        <DependentAttributes/>
        <Constraints>Must be positive</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>PMDeSpd</AttributeName>
    <Meaning>Parameter Manual Decrease Speed</Meaning>
    <Description>Decrease speed of the actuator when user requests a new value from SCADA.
Must be positive.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Manual Decrease Speed (Unit/s)</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage/>
        <DependentAttributes/>
        <Constraints>Must be positive</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>PMStpInV</AttributeName>
    <Meaning>Parameter Manual Step Increase Value</Meaning>
    <Description>Step amplitude in Unit value when user requests an "increase value" from
SCADA.
Must be positive and &lt; (Range Max-Range Min).</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Manual Increase Step (Unit)</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage/>
        <DependentAttributes/>
        <Constraints>Must be positive and &lt; (Range Max-Range Min)</Constraints>
    </isSpecificationAttribute>
</Attribute>

```

```

<Attribute>
  <AttributeName>PMStpDeV</AttributeName>
  <Meaning>Parameter Manual Step Decrease</Meaning>
  <Description>Step amplitude in Unit value when user requests a "decrease value" from SCADA.
Must be positive and &lt; (Range Max-Range Min)</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Manual Decrease Step (Unit)</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints>Must be positive and &lt; (Range Max-Range Min)</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PMinRan</AttributeName>
  <Meaning>Parameter Minimum Range</Meaning>
  <Description>Minimum engineering value of the device.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <DefaultValue>0.0</DefaultValue>
</Attribute>
<Attribute>
  <AttributeName>PMaxRan</AttributeName>
  <Meaning>Parameter Maximum Range</Meaning>
  <Description>Maximum engineering value of the device.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <DefaultValue>100.0</DefaultValue>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceInterlocks</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>StartI</AttributeName>
    <Meaning>Start Interlock</Meaning>
    <Description>Start Interlock Request: When active, the ON request is blocked.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>TStopI</AttributeName>
    <Meaning>Temporary Stop Interlock</Meaning>

```

```

    <Description>Temporary Stop Interlock Request: When active, the object goes automatically
to its fail safe position and returns to the previous position after acknowledgement.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>FuStopI</AttributeName>
    <Meaning>Full Stop Interlock</Meaning>
    <Description>Full Stop Interlock Request: Devices goes to Fail-Safe position and remains until
acknowledged.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>Al</AttributeName>
    <Meaning>Alarm</Meaning>
    <Description>Alarm input. This is not an interlock; it has no functional impact on the object. It
will just display A on the widget with lower priority than other interlocks.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>FEDeviceAutoRequests</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>AuOnR</AttributeName>
        <Meaning>Auto On Request</Meaning>
        <Description>Auto On Request (by logic): The control logic requests ON/Open on the
object.</Description>
        <PrimitiveType>BOOLEAN</PrimitiveType>
    </Attribute>
    <Attribute>
        <AttributeName>AuOffR</AttributeName>
        <Meaning>Auto Off Request</Meaning>
        <Description>Auto Off Request (by logic): The control logic requests Off/Close on the
object.</Description>
        <PrimitiveType>BOOLEAN</PrimitiveType>
    </Attribute>
    <Attribute>
        <AttributeName>AuPosR</AttributeName>
        <Meaning>Auto Position Request.</Meaning>
        <Description>Auto Position Request: The control logic requests a specific position on the
object.</Description>
        <PrimitiveType>FLOAT32</PrimitiveType>
    </Attribute>

```

```

<Attribute>
  <AttributeName>AuAuMoR</AttributeName>
  <Meaning>Auto Auto Mode Request</Meaning>
  <Description>Auto Auto Mode Request. The control logic requests Auto Mode on the
object</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AulhMMo</AttributeName>
  <Meaning>Auto Inhibit Manual Mode</Meaning>
  <Description>Auto Inhibit Manual Mode (by logic): The control logic blocks the manual mode
operation</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AulhFoMo</AttributeName>
  <Meaning>Auto Inhibit Forced Mode</Meaning>
  <Description>Auto Inhibit Forced Mode (by logic): The control logic blocks the forced mode
operation.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>IhAuMRW</AttributeName>
  <Meaning>Inhibit Auto Manual Request Warning</Meaning>
  <Description>Inhibit Auto Manual Request Warning: The control logic requests to inhibit the
warning from discrepancy between manual request and auto request.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuAlAck</AttributeName>
  <Meaning>Auto Alarm Acknowledgement</Meaning>
  <Description>Auto Alarm Acknowledgement: The control logic requests and Acknowledgment
of the Alarm Start and Stop Interlocks</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuInSpd</AttributeName>
  <Meaning>Auto Increase Speed</Meaning>
  <Description>Auto Increase Setpoint Speed: The control logic sets a variation speed for
Setpoint increase.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>

```

```

    <AttributeName>AuDeSpd</AttributeName>
    <Meaning>Auto Decrease Speed</Meaning>
    <Description>Auto Decrease Setpoint Speed: The control logic sets a variation speed for
Setpoint decrease.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuRstart</AttributeName>
    <Meaning>Auto Enable Restart Request</Meaning>
    <Description>Perform an auto "Allow Restart" from the PLC logic</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>FEDeviceManualRequests</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>ManReg01</AttributeName>
        <Meaning>Manual Register 1</Meaning>
        <Description>Manual Register 1</Description>
        <isCommunicated>>true</isCommunicated>
        <PrimitiveType>WORD</PrimitiveType>
    </Attribute>
        <AttributeName>MAuMoR</AttributeName>
        <Meaning>Manual Auto Mode Request</Meaning>
        <Description>Manual Auto Mode Request: The operator requests the Auto
Mode.</Description>
        <PrimitiveType>BIT1</PrimitiveType>
        <BitPosition>0</BitPosition>
    </Attribute>
    <Attribute>
        <AttributeName>MMMoR</AttributeName>
        <Meaning>Manual Manual Mode Request</Meaning>
        <Description>Manual Manual Mode Request: The operator requests the Manual
Mode.</Description>
        <PrimitiveType>BIT1</PrimitiveType>
        <BitPosition>1</BitPosition>
    </Attribute>
    <Attribute>
        <AttributeName>MFoMoR</AttributeName>
        <Meaning>Manual Forced Mode Request</Meaning>
        <Description>Manual Forced Mode Request: The operator requests the Forced
Mode.</Description>

```

```

    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>2</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MSoftLDR</AttributeName>
    <Meaning>Manual Software Local Mode</Meaning>
    <Description>The operator requests the Software Local Mode</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>3</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MOnR</AttributeName>
    <Meaning>Manual On Request</Meaning>
    <Description>Manual On Request: The operator requests the On/Open
position</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>4</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MOffR</AttributeName>
    <Meaning>Manual Off Request</Meaning>
    <Description>Manual Off Request: The operator requests the Off/Close
position</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>5</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MNewPosR</AttributeName>
    <Meaning>Manual New Position Request</Meaning>
    <Description>Manual New Position Request: The operator requests a new position to the
object</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>6</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MStpInR</AttributeName>
    <Meaning>Manual Step Increase Request</Meaning>
    <Description>The Operator requests to increase the position by one basic
step</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>7</BitPosition>
</Attribute>
<Attribute>

```



```

    <AttributeName>MStpDeR</AttributeName>
    <Meaning>Manual Step Decrease Request</Meaning>
    <Description>The Operator requests to decrease the position by one basic
step</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>8</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MEnRstartR</AttributeName>
    <Meaning>Manual Enable Restart Request</Meaning>
    <Description>Manual Enable Restart Request: The Operator requests a Manual Restart after
Full Stop</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>9</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MAIAckR</AttributeName>
    <Meaning>Manual Alarm Acknowledgement Request</Meaning>
    <Description>Manual Alarm Acknowledgement Request: The operator requests Interlocks or
Alarms acknowledgement</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>15</BitPosition>
</Attribute>
</Attribute>
<Attribute>
    <AttributeName>MPosR</AttributeName>
    <Meaning>Manual Position Request</Meaning>
    <Description>Manual Position Request: Value of the position requested by
operator</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>PLiOn</AttributeName>
    <Meaning>Parameter Limit On</Meaning>
    <Description>Limit above which the actuator status is "On".
Must be between Range Min and Range Max.</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Parameter Limit On/Open</NameRepresentation>
        <isValueRequired>>false</isValueRequired>

```

```

    <Usage>Used to compute the "On" status of the device corresponding to the widget being
    completely filled in SCADA.</Usage>
    <DependentAttributes/>
    <Constraints>Must be between Range Min and Range Max</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>PLiOff</AttributeName>
    <Meaning>Parameter Limit Off</Meaning>
    <Description>Limit below which the actuator status is "Off".
    Must be between Range Min and Range Max.</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Parameter Limit Off/Closed</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>Used to compute the "Off" status of the device corresponding to the widget being
        empty in SCADA.</Usage>
        <DependentAttributes/>
        <Constraints>Must be between Range Min and Range Max</Constraints>
        </isSpecificationAttribute>
    </Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>FEDeviceEnvironmentInputs</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>HFPos</AttributeName>
        <Meaning>Hardware Feedback Position</Meaning>
        <Description>Analog Feedback of the actuator.
        Must be an AI/AIR/AS.</Description>
        <PrimitiveType>FLOAT32</PrimitiveType>
        <isSpecificationAttribute>
            <NameRepresentation>Feedback Analog</NameRepresentation>
            <TypeRepresentation>STRING</TypeRepresentation>
            <isValueRequired>>false</isValueRequired>
            <Usage/>
            <DependentAttributes/>
            <Constraints>Must be an AI/AIR/AS</Constraints>
            </isSpecificationAttribute>
        </Attribute>
    <Attribute>
        <AttributeName>HFOn</AttributeName>

```

```

    <Meaning>Hardware Feedback On</Meaning>
    <Description>Feedback On of the actuator.
Must be a DI.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Feedback On</NameRepresentation>
        <TypeRepresentation>STRING</TypeRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>Used to compute the "On" status of the device</Usage>
        <DependentAttributes/>
        <Constraints>Must be a DI</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>HLD</AttributeName>
    <Meaning>Hardware Local Drive</Meaning>
    <Description>Activation of the Hardware Local Drive.
Must be a DI.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Local Drive</NameRepresentation>
        <TypeRepresentation>STRING</TypeRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>Signal to put the actuator in Hardware Local Mode</Usage>
        <DependentAttributes/>
        <Constraints>Must be a DI</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>HAOut</AttributeName>
    <Meaning>Hardware Analog Output</Meaning>
    <Description>Hardware Local Analog request to the actuator when it is in hardware local
mode.
Must be an AI/AIR/AS.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Hardware Analog Output</NameRepresentation>
        <TypeRepresentation>STRING</TypeRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>Signal able to drive the device in case of hardware local mode.</Usage>
        <DependentAttributes/>
        <Constraints>Must be an AI/AIR/AS</Constraints>

```

```

    </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>HOnR</AttributeName>
  <Meaning>Hardware On Request</Meaning>
  <Description>Local On Request to the actuator when it is in Hardware Local Mode.
Must be a DI.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Local On</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Signal to send a Local On Request to the device</Usage>
    <DependentAttributes/>
    <Constraints>Must be a DI</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>HOFFR</AttributeName>
  <Meaning>Hardware Off Request</Meaning>
  <Description>Local Off Request to the actuator when it is in Hardware Local Mode.
Must be a DI.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Local Off</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Signal to send a Local Off Request to the device</Usage>
    <DependentAttributes/>
    <Constraints>Must be a DI</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>IOError</AttributeName>
  <Meaning>Input/Output Error</Meaning>
  <Description>IOError state in any of the dependant objects or the PLC channel assigned to the
object</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>IOSimu</AttributeName>
  <Meaning>Input/Output Simulated</Meaning>

```

```

    <Description>Any of the dependant objects is in Forced or Manual Mode</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>AIB</AttributeName>
    <Meaning>Alarm Blocked</Meaning>
    <Description>Alarm Blocked: Any of the device dependant alarm objects has been blocked by
the operator</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceOutputs</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>OutOV</AttributeName>
    <Meaning>Output Order Value</Meaning>
    <Description>Analog Output connected to the process.
Must be an AO or AS.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Analog Process Output</NameRepresentation>
      <TypeRepresentation>STRING</TypeRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints>Must be an AO or AS</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>OutOnOV</AttributeName>
    <Meaning>Output On Order Value</Meaning>
    <Description>Output connected to the process.
Must be a DO.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Digital Process Output</NameRepresentation>
      <TypeRepresentation>STRING</TypeRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints>Must be a DO</Constraints>

```

```

    </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>StsReg01</AttributeName>
  <Meaning>Status Register 1</Meaning>
  <Description>Status Register 1</Description>
  <isEventAttribute>true</isEventAttribute>
  <isCommunicated>true</isCommunicated>
  <PrimitiveType>WORD</PrimitiveType>
  <Attribute>
    <AttributeName>OnSt</AttributeName>
    <Meaning>On Status</Meaning>
    <Description>On/Open Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>0</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>AuMoSt</AttributeName>
    <Meaning>Auto Mode Status</Meaning>
    <Description>Current status of the Auto Mode</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>2</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>MMoSt</AttributeName>
    <Meaning>Manual Mode Status</Meaning>
    <Description>Current status of the Manual Mode</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>3</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>FoMoSt</AttributeName>
    <Meaning>Forced Mode Status</Meaning>
    <Description>Current status of the Forced Mode.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>4</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>LDSt</AttributeName>
    <Meaning>Local Drive Status</Meaning>
    <Description>Current status of the Local Mode. The object is driven locally.</Description>
    <PrimitiveType>BIT1</PrimitiveType>

```

```

    <BitPosition>5</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>IOErrorW</AttributeName>
    <Meaning>Input/Output Error Warning</Meaning>
    <Description>Current status of the IOError</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>6</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>IOSimuW</AttributeName>
    <Meaning>Input/Output Simulated Warning</Meaning>
    <Description>Current status of the IOSimu</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>7</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AuMRW</AttributeName>
    <Meaning>Auto Manual Request Warning Status.</Meaning>
    <Description>Auto and manual requests discrepancy when Manual/Forced mode
active.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>8</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>PosW</AttributeName>
    <Meaning>Position Warning</Meaning>
    <Description>There is discrepancy between the order status and the position status
according to Time Delay and Dead-band.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>9</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>StartISt</AttributeName>
    <Meaning>Start Interlock Status</Meaning>
    <Description>Current status of the Start Interlock</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>10</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>TStopISt</AttributeName>
    <Meaning>Temporary Stop Interlock Status</Meaning>
    <Description>Current status of the Temporary Stop Interlock</Description>

```

```

    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>11</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AlUnAck</AttributeName>
    <Meaning>Alarm UnAcknowledged</Meaning>
    <Description>Alarm UnAcknowledged: The alarm or at least one of the alarms associated to
the object is not acknowledged</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>12</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AulhFoMoSt</AttributeName>
    <Meaning>Auto Inhibit Forced Mode Status</Meaning>
    <Description>Auto Inhibit Forced Mode status: Current status of the Auto Inhibit forced
mode.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>13</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AlSt</AttributeName>
    <Meaning>Alarm Status</Meaning>
    <Description>Alarm Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>14</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AulhMMoSt</AttributeName>
    <Meaning>Auto Inhibit Manual Mode Status</Meaning>
    <Description>Auto Inhibit Manual Mode Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>15</BitPosition>
</Attribute>
</Attribute>
<Attribute>
    <AttributeName>StsReg02</AttributeName>
    <Meaning>Status Register 2</Meaning>
    <Description>Status Register 2</Description>
    <isEventAttribute>true</isEventAttribute>
    <isCommunicated>true</isCommunicated>
    <PrimitiveType>WORD</PrimitiveType>
    <Attribute>
        <AttributeName>OutOnOVSt</AttributeName>

```



```

    <Meaning>Output On Order Value Status</Meaning>
    <Description>Output On Order Value Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>0</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AuOnRSt</AttributeName>
    <Meaning>Auto On Request Status</Meaning>
    <Description>Auto On/Open Request Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>1</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MOnRSt</AttributeName>
    <Meaning>Manual On Request Status</Meaning>
    <Description>Manual On/Open Request Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>2</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AuOffRSt</AttributeName>
    <Meaning>Auto Off Request Status</Meaning>
    <Description>Auto Off/Close request status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>3</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MOffRSt</AttributeName>
    <Meaning>Manual Off Request Status</Meaning>
    <Description>Manual Off/Close request status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>4</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>HOnRSt</AttributeName>
    <Meaning>Hardware On Request Status</Meaning>
    <Description>Hardware On/Open request</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>5</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>HOffRSt</AttributeName>

```

```

    <Meaning>Hardware Off Request Status</Meaning>
    <Description>Hardware Off/Close request status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>6</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AnalogOnSt</AttributeName>
    <Meaning>Analog On Status</Meaning>
    <Description>Analog value &gt; PLiOn</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>8</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AnalogOffSt</AttributeName>
    <Meaning>Analog Off Status</Meaning>
    <Description>Analog value &lt; PLiOff</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>9</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>FuStopISt</AttributeName>
    <Meaning>Full Stop Interlock Status</Meaning>
    <Description>Full Stop Interlock Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>10</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>EnRstartSt</AttributeName>
    <Meaning>Enable Restart Status</Meaning>
    <Description>Manual Restart after full stop status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>11</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>SoftLDSt</AttributeName>
    <Meaning>Software Local Mode Status</Meaning>
    <Description>Current status of the Software Local Mode.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>12</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AIBW</AttributeName>

```

```

    <Meaning>Alarm Blocked Warning</Meaning>
    <Description>When true, the alarm or any of the device dependant alarm objects have been
blocked by the operator</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>13</BitPosition>
  </Attribute>
</Attribute>
<Attribute>
  <AttributeName>OutOnOVSt</AttributeName>
  <Meaning> Output On Order Value Status</Meaning>
  <Description>Output On Order Value Status. Inverted value of OutOV if the Parameter FailSafe
Position ON is active. Otherwise the value is the same as OutOV</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>PosSt</AttributeName>
  <Meaning>Position status</Meaning>
  <Description>Position Status</Description>
  <isCommunicated>>true</isCommunicated>
  <isArchived>>true</isArchived>
  <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuPosRSt</AttributeName>
  <Meaning>Auto Position Request Status</Meaning>
  <Description>Status of the position of the object in auto mode.</Description>
  <isCommunicated>>true</isCommunicated>
  <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>MPosRSt</AttributeName>
  <Meaning>Manual Position Request Status</Meaning>
  <Description>Manual Position request status</Description>
  <isCommunicated>>true</isCommunicated>
  <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>PosRSt</AttributeName>
  <Meaning>Position Request Status</Meaning>
  <Description>Position request status</Description>
  <isCommunicated>>true</isCommunicated>
  <isArchived>>true</isArchived>
  <PrimitiveType>FLOAT32</PrimitiveType>

```

```

</Attribute>
<Attribute>
  <AttributeName>OnSt</AttributeName>
  <Meaning>On Status</Meaning>
  <Description>On/Open Status</Description>
  <isArchived>>true</isArchived>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuMoSt</AttributeName>
  <Meaning>Auto Mode Status</Meaning>
  <Description>Current status of the Auto Mode</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>MMoSt</AttributeName>
  <Meaning>Manual Mode Status</Meaning>
  <Description>Current status of the Manual Mode request</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>FoMoSt</AttributeName>
  <Meaning>Forced Mode Status</Meaning>
  <Description>Current status of the Forced Mode.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>LDSt</AttributeName>
  <Meaning>Local Drive Status</Meaning>
  <Description>Current status of the Local mode.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>SoftLDSt</AttributeName>
  <Meaning>Software Local Drive Status</Meaning>
  <Description>Current status of the Sotware Local mode request</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>IOErrorW</AttributeName>
  <Meaning>Input/Output Error Warning</Meaning>
  <Description>Current status of the IOError</Description>

```

```

    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>IOSimuW</AttributeName>
    <Meaning>Inpout/Output Simulated Warning</Meaning>
    <Description>Current status of the IOSimu</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuMRW</AttributeName>
    <Meaning>Auto Manual Request Warning</Meaning>
    <Description>Auto and manual requests discrepancy when Manual/Forced mode
active</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>PosW</AttributeName>
    <Meaning>Position Warning</Meaning>
    <Description>Position Warning Status</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>StartISt</AttributeName>
    <Meaning>Start Interlock Status</Meaning>
    <Description>Current status of StartI</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>TStopISt</AttributeName>
    <Meaning>Temporary Stop Interlock Status</Meaning>
    <Description>Current status of TStopI</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>FuStopISt</AttributeName>
    <Meaning>Full Stop Interlock Status</Meaning>
    <Description>Full Stop Interlock Status</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AlUnAck</AttributeName>
    <Meaning>Alarm UnAcknowledged</Meaning>

```

```

    <Description>Alarm UnAcknowledged: The alarm or at least one of the alarms associated to
the object is not acknowledged</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AlBW</AttributeName>
    <Meaning>Alarm Blocked Warning</Meaning>
    <Description>When true, the alarm or any of the device dependant alarm objects have been
blocked by the operator</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>EnRStartSt</AttributeName>
    <Meaning>Enable Restart Status</Meaning>
    <Description>Manual Restart after full stop status possible</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>RdyStartSt</AttributeName>
    <Meaning>Ready To Start Status</Meaning>
    <Description>The object is ready to start, there is no blocking process to start.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AlSt</AttributeName>
    <Meaning>Alarm Status</Meaning>
    <Description>Alarm Status</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>MOnRSt</AttributeName>
    <Meaning>Manual On Request Status</Meaning>
    <Description>Manual On Request Status</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>MOffRSt</AttributeName>
    <Meaning>Manual Off Request Status</Meaning>
    <Description>Manual Off Request Status</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuOnRSt</AttributeName>

```

```

    <Meaning>Auto On Request Status</Meaning>
    <Description>Auto On Request Status</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuOffRSt</AttributeName>
    <Meaning>Auto Off Request Status</Meaning>
    <Description>Auto Off Request Status</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>HOnRSt</AttributeName>
    <Meaning>Hardware On Request Status</Meaning>
    <Description>Hardware On Request Status</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>HOffRSt</AttributeName>
    <Meaning>Hardware Off Request Status</Meaning>
    <Description>Hardware Off Request Status</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>SCADADeviceGraphics</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>PosStUnit</AttributeName>
        <Description>Unit of the device to be displayed in SCADA</Description>
        <PrimitiveType>STRING</PrimitiveType>
        <isSpecificationAttribute>
            <NameRepresentation>Unit</NameRepresentation>
            <isValueRequired>>false</isValueRequired>
            <Usage/>
            <DependentAttributes/>
            <Constraints>In principle there is no limit to the number of characters used, however a long
name may result in display issues at the SCADA level.
Forbidden characters: *[: ""@ #$^&amp;*?!.,;+=~(){}&lt;&gt;|]</Constraints>
        </isSpecificationAttribute>
    </Attribute>
    <Attribute>
        <AttributeName>PosStFormat</AttributeName>

```

```

    <Description>Format of the value to be displayed in SCADA. Supported formats:
    ### (fixed number of decimal places, in this case 2),
    EXP or xEXP (exponential, 3 or x digits after '.'),
    xD or xd (fixed digit format, x=number of digits, e.g.: 3D=0.01, 12.0, 123)</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Format</NameRepresentation>
        <isValueRequired>>true</isValueRequired>
        <Usage>Example: use format ### to display value to 2 decimal places. To the left of the
        decimal point, the SCADA layer will display as many digits as required by the object value, therefore a
        single # is enough.</Usage>
        <DependentAttributes/>
        <Constraints/>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>WidgetType</AttributeName>
    <Description>Define the widget type to display in the SCADA device tree overview only.
    The widget displayed in the process panel will be selected when the user creates the
    panel.</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Widget Type</NameRepresentation>
        <isValueRequired>>true</isValueRequired>
        <isCaseSensitive>>true</isCaseSensitive>
        <PermittedValue>AnaDOSquare</PermittedValue>
        <PermittedValue>AnaDOElecHeaterHorizontal</PermittedValue>
        <PermittedValue>AnaDOElecHeaterVertical</PermittedValue>
        <PermittedValue>AnaDOFan</PermittedValue>
        <PermittedValue>AnaDOHeaterHorizontal</PermittedValue>
        <PermittedValue>AnaDOPumpHorizontalLeft</PermittedValue>
        <PermittedValue>AnaDOPumpHorizontalRight</PermittedValue>
        <PermittedValue>AnaDOPumpVerticalDown</PermittedValue>
        <PermittedValue>AnaDOPumpVerticalUp</PermittedValue>
        <PermittedValue>AnaDOValveHorizontal</PermittedValue>
        <Usage/>
        <DependentAttributes/>
        <Constraints/>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Synoptic</AttributeName>

```


<Description>Define link between the device and an existing synoptic where it appears. The synoptic specified here can be accessed from the device right-click menu item "Synoptic".</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>Specify the path of the .pnl file under the "\\panel" directory of the PVSS project.</Usage>

<DependentAttributes/>

<Constraints/>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>DiagnosticPanel</AttributeName>

<Description>Define link between the device and an existing diagnostic panel for the device. The panel specified here can be accessed from the device right-click menu item "Diagnostic" as well as from the "Diagnostic" button on the object faceplate.</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Diagnostic</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>Specify the path of the .pnl file under the "\\panel" directory of the PVSS project</Usage>

<DependentAttributes/>

<Constraints/>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>WWWLink</AttributeName>

<Description>Define link between the device and an existing web page (or pdf file, or other file which can be opened with IE). The link can be accessed from the device right-click menu item "Info" as well as from the "Info" button on the object faceplate.</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>WWW Link</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage/>

<DependentAttributes/>

<Constraints/>

</isSpecificationAttribute>

</Attribute>

</AttributeFamily>

<AttributeFamily>

<AttributeFamilyName>SCADADeviceFunctionals</AttributeFamilyName>

```

<UserExpandable>false</UserExpandable>
<Attribute>
  <AttributeName>MaskEvent</AttributeName>
  <Description>If TRUE: the events of the device will be masked in SCADA and not displayed or archived in the Event List.
An 'event' is defined as a bit change in StsReg01 or StsReg02</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Mask Event</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>AccessControlDomain</AttributeName>
  <Description>Define Access Control on the device to an existing SCADA Domain
Forbidden characters: *[: "'@ # $ % ^ & * ? ! ; = + ~ ( ) { } &lt; &gt; | ]</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Access Control Domain</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>This domain is used to grant access to this specific device. The domain specified for this object will allow access to the object only to registered users on that domain</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[: "'@ # $ % ^ & * ? ! ; = + ~ ( ) { } &lt; &gt; | ]</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>SCADADeviceClassificationTags</AttributeName>
  <Description>It defines the Domain, Nature and DeviceLinks for the SCADA visualization</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <Attribute>
    <AttributeName>Domain</AttributeName>
    <Description>Domain of the device. If empty, the domain will be the name of the application
Forbidden characters: *[: "'@ # $ % ^ & * ? ! ; = + ~ ( ) { } &lt; &gt; | ]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>Domain is used to filter the devices in the alarm list or in the device tree overview</Usage>
  </Attribute>

```

```

    <DependentAttributes/>
    <Constraints>Forbidden characters: *[:
"@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Nature</AttributeName>
    <Description>Nature of the device. If empty, the nature will be the type of the device
Forbidden characters: *[: "@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>Nature is used to filter the devices in the alarm list or in the device tree
overview</Usage>
        <DependentAttributes/>
        <Constraints>Forbidden characters: *[:
"@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>

```

Note: it is not necessary to link to master, parents or children because these links are automatically created.

```

Forbidden characters: *[: "@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Device Links</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>Linked devices will be shown in the device right-click menu</Usage>
        <DependentAttributes>Expert Name or Name.

```

*The name of the device(s) specified here **must** correspond to "Expert Name" if it is defined. If "Expert Name" is not defined, the name of the device(s) specified here corresponds to "Name".*

```

    <Constraints>Forbidden characters: *[:
"@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
</Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>SCADADataArchiving</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>

```

```

<Attribute>
  <AttributeName>ArchiveMode</AttributeName>
  <Description>Archive mode of the object engineering values. Archive if:
Old/New Comparison: value changes
Time: value changes after Time Filter
Deadband: value < or >; deadband
AND: at least one of the conditions is fulfilled
OR: both conditions are fulfilled</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Archive Mode</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <PermittedValue>No</PermittedValue>
    <PermittedValue>Deadband</PermittedValue>
    <PermittedValue>Time</PermittedValue>
    <PermittedValue>Deadband AND Time</PermittedValue>
    <PermittedValue>Deadband OR Time</PermittedValue>
    <PermittedValue>Old/New Comparison</PermittedValue>
    <PermittedValue>Old/New Comparison AND Time</PermittedValue>
    <PermittedValue>Old/New Comparison OR Time</PermittedValue>
    <Usage>This archive mode is used to archive data in the PVSS database</Usage>
    <DependentAttributes>If "Time" is selected, "Time Filter (s)" must be filled
If "Deadband" is selected: "Deadband Type" and "Deadband Value" must be
filled.</DependentAttributes>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>TimeFilter</AttributeName>
  <Description>Time filter for the SCADA archiving of the engineering values of the object. Must
be positive.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Time Filter (s)</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes>Valid if "Time" has been selected as Archive
Mode</DependentAttributes>
    <Constraints>Must be positive</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DeadbandType</AttributeName>

```

```

    <Description>Deadband type (Relative or Absolute) of the deadband for the SCADA archiving
of the engineering values of the object</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Deadband Type</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <PermittedValue>Relative</PermittedValue>
        <PermittedValue>Absolute</PermittedValue>
        <Usage>The value is archived if the difference between the latest archived value and the
actual value exceeds, either:
- if 'Absolute': the "Deadband Value"
- if 'Relative': the "Deadband Value" as a percent of the latest archived value</Usage>
        <DependentAttributes>Valid if "Deadband" has been selected as Archive
Mode</DependentAttributes>
        <Constraints/>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>DeadbandValue</AttributeName>
    <Description>Deadband value for the SCADA archiving of the engineering values of the object
Must be positive and larger than the deadband specified for the driver data smoothing (Driver
deadband)</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Deadband Value</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage/>
        <DependentAttributes>Valid if "Deadband" has been selected as Archive
Mode</DependentAttributes>
        <Constraints>Must be positive and larger than the deadband specified for the driver data
smoothing (Driver deadband)</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>BooleanArch</AttributeName>
    <Description>Name of the Boolean archive
Forbidden characters: *[: ""@ # $ % ^ & amp; * ? ! , ; = + ~ ( ) { } & lt; & gt; | ]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Boolean Archive</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>The boolean values of the device will be archived in the specified PVSS database.
The archive must be created in PVSS before importing the object.</Usage>

```

```

        <DependentAttributes/>
        <Constraints>Forbidden characters: *[:
"@`#$$%^&?*?!.,;=+~(){}&lt;&gt;|]</Constraints>
        </isSpecificationAttribute>
    </Attribute>
<Attribute>
    <AttributeName>AnalogArch</AttributeName>
    <Description>Name of the analog archive
Forbidden characters: *[: "@`#$$%^&?*?!.,;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Analog Archive</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>The analog values of the device will be archived in the specified PVSS database. The
archive must be created in PVSS before importing the object.</Usage>
        <DependentAttributes/>
        <Constraints>Forbidden characters: *[:
"@`#$$%^&?*?!.,;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>EventArch</AttributeName>
    <Description>Name of the event archive
Forbidden characters: *[: "@`#$$%^&?*?!.,;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Event Archive</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>The events generated by the device will be archived in the specified PVSS database.
The archive must be created in PVSS before importing the object.</Usage>
        <DependentAttributes/>
        <Constraints>Forbidden characters: *[:
"@`#$$%^&?*?!.,;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>SCADADriverDataSmoothing</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
<Attribute>
    <AttributeName>DeadbandType</AttributeName>
    <Description>Deadband type (None, Relative, Absolute or Old/New) for the SCADA driver data
smoothing (Driver deadband)</Description>

```

```

<PrimitiveType>STRING</PrimitiveType>
<isSpecificationAttribute>
  <NameRepresentation>Deadband Type</NameRepresentation>
  <isValueRequired>>true</isValueRequired>
  <PermittedValue>No</PermittedValue>
  <PermittedValue>Relative</PermittedValue>
  <PermittedValue>Absolute</PermittedValue>
  <PermittedValue>Old/New</PermittedValue>
  <Usage>Used for the online display in SCADA</Usage>
  <DependentAttributes/>
  <Constraints/>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DeadbandValue</AttributeName>
  <Description>Deadband value for the SCADA driver data smoothing
Must be positive and smaller than the deadband specified for the archiving</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Deadband Value</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Used for the online display in SCADA</Usage>
    <DependentAttributes/>
    <Constraints>Must be positive and smaller than the deadband specified for the
archiving</Constraints>
  </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>LogicDeviceDefinitions</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>MasterDevice</AttributeName>
    <Description>Master of the device (relative to the hierarchy of dependent
objects).</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Master</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>The master will give automatic requests to the device. The master object will
appear in the list of "Device Links" in the device right-click menu.</Usage>
      <DependentAttributes/>
      <Constraints>Must be a single PCO for field objects, controller, or PCO.

```

Must be PCO or field objects for alarms (several masters are allowed in the case of multiple alarms, separated by commas or spaces).

```
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>ExternalMaster</AttributeName>
  <Description>Master of the device if located in another PLC for WinCCOA.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>External Master</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>The external master will give automatic requests to the device from another PLC. To
be specified only if master is empty.</Usage>
    <DependentAttributes/>
    <Constraints>Must be a single PCO for field objects, controller, or PCO. </Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>CustomLogicParameters</AttributeName>
  <Description>User defined meaning, used by the logic generators.</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <Attribute>
    <AttributeName>Parameter1</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
      <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
      <Constraints>Forbidden characters: '$' </Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>Parameter2</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
```


<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter3</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: '\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter4</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: '\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter5</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: '\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter6</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: '\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter7</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: '\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter8</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: '\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter9</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: '\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter10</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: '\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

</Attribute>

<Attribute>

<AttributeName>CustomLogicSections</AttributeName>

<Description>If specified, these sections will override the default logic sections (UNICOS provided).</Description>

<PrimitiveType>STRUCT</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

```

    <Usage/>
    <DependentAttributes/>
    <Constraints/>
</isSpecificationAttribute>
<Attribute>
    <AttributeName>DL</AttributeName>
    <Description>Define user template for the Dependent Logic</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>DL User Template</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>Specify path of the python script located under the "UserSpecific"
directory</Usage>
        <DependentAttributes>CustomLogicParameters.ParameterX (where X=1-
10)</DependentAttributes>
        <Constraints/>
    </isSpecificationAttribute>
</Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>DeviceTechnical</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>TargetDeviceInformation</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>Target</AttributeName>
        <Description>Identifies a target type (e.g. SIEMENS, SCHNEIDER...)</Description>
        <PrimitiveType>STRUCT</PrimitiveType>
        <DefaultValue>Siemens</DefaultValue>
    <Attribute>
        <AttributeName>RepresentationName</AttributeName>
        <Description>It's the name used ...</Description>
        <PrimitiveType>STRING</PrimitiveType>
        <DefaultValue>ANADO</DefaultValue>
    </Attribute>
    <Attribute>
        <AttributeName>Optimized</AttributeName>
        <Description>Is this object an optimized Object?</Description>
        <PrimitiveType>BOOLEAN</PrimitiveType>
        <DefaultValue>>false</DefaultValue>

```

```
</Attribute>
<Attribute>
  <AttributeName>LimitSize</AttributeName>
  <Description>Maximun number of instances allowed</Description>
  <PrimitiveType>INT32</PrimitiveType>
  <DefaultValue>250</DefaultValue>
</Attribute>
<Attribute>
  <AttributeName>FastInterlock</AttributeName>
  <Description>Is this object a fast interlock object?</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <DefaultValue>>false</DefaultValue>
</Attribute>
</Attribute>
</AttributeFamily>
</UNICOSMetaModel>
```

2.2. AnalogAlarmDeviceType.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<!-- edited with XMLSpy v2008 sp1 (http://www.altova.com) by amerezhi (CERN) -->
<UNICOSMetaModel xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="..\unicos\UNICOSMetaModel.xsd">
  <Information>
    <Package>${devicePackageName}</Package>
    <Name>AnalogAlarm</Name>
    <ObjectTypeFamily>ControlObjectFamily</ObjectTypeFamily>
    <Description>Analog Alarm Device</Description>
    <Version>${LastChangedRevision: 170110} </Version>
  </Information>
  <AttributeFamily>
    <AttributeFamilyName>DeviceIdentification</AttributeFamilyName>
    <UserExpandable>>false</UserExpandable>
    <Attribute>
      <AttributeName>Name</AttributeName>
      <Description>Name of the device. It must be unique.
```

Max length:

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: [:"'@`#\$%^&*?!;=+~(){}<>|]-., double underscore, and page break</Description>

```
<PrimitiveType>STRING</PrimitiveType>
```

```
<isSpecificationAttribute>
```

```
<isValueRequired>>true</isValueRequired>
```

```
<Usage>Name displayed at the SCADA level if "Expert Name" is not specified.
```

This name will appear in the datapoints created in the SCADA layer.</Usage>

```
<DependentAttributes>Device Links.
```

The name of the device(s) specified in Device Links *must* correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to "Name".</DependentAttributes>

```
<Constraints>Max length:
```

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: [:"'@`#\$%^&*?!;=+~(){}<>|]-., double underscore, and page break
Name must be unique.</Constraints>

```
</isSpecificationAttribute>
```

```
</Attribute>
```

```
<Attribute>
```

```
<AttributeName>ExpertName</AttributeName>
```

```

    <Description>Name of the device displayed at the SCADA level. It must be unique.
Forbidden characters: *[: "'@ # $ % ^ & amp; * ? ! , ; = + ~ ( ) { } & lt; & gt; | ]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Expert Name</NameRepresentation>
        <TypeRepresentation>STRING</TypeRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>It does not affect to the datapoints names in the SCADA layer.</Usage>
        <DependentAttributes>Device Links.
The name of the device(s) specified in Device Links *must* correspond to "Expert Name" if it is
defined.
If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to
"Name".</DependentAttributes>
        <Constraints>In principle there is no limit to the number of characters used, however a long
name may result in display issues at the SCADA level.
Forbidden characters: *[: "'@ # $ % ^ & amp; * ? ! , ; = + ~ ( ) { } & lt; & gt; | ]
Expert Name must be unique.</Constraints>
    </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>DeviceDocumentation</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>DeviceDescription</AttributeName>
        <Description>Description of the device. </Description>
        <PrimitiveType>STRING</PrimitiveType>
        <isSpecificationAttribute>
            <NameRepresentation>Description</NameRepresentation>
            <isValueRequired>>false</isValueRequired>
            <Usage>Used in the SCADA layer in the device faceplate</Usage>
            <DependentAttributes/>
            <Constraints>In principle there is no limit to the number of characters used, however a long
description may result in display issues at the SCADA level.
Forbidden characters: ;</Constraints>
        </isSpecificationAttribute>
    </Attribute>
    <Attribute>
        <AttributeName>Remarks</AttributeName>
        <Description>Field used to add relevant information about the device. </Description>
        <PrimitiveType>STRING</PrimitiveType>
        <isSpecificationAttribute>
            <isValueRequired>>false</isValueRequired>

```

```

    <Usage>This information is not used in the generation process, it remains only at the
specification level for documentation purposes.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: ;</Constraints>
    </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>FEDeviceParameters</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>ParReg</AttributeName>
        <Meaning>Parameter Register</Meaning>
        <Description>Parametrisation register: This register contains all the boolean parameters of
the object</Description>
        <PrimitiveType>WORD</PrimitiveType>
    <Attribute>
        <AttributeName>IhMHH</AttributeName>
        <Meaning>Parameter Inhibit Manual High High threshold</Meaning>
        <Description>If "true", the SCADA cannot change the Threshold because it is set by the
control logic</Description>
        <PrimitiveType>BOOLEAN</PrimitiveType>
        <BitPosition>0</BitPosition>
    </Attribute>
    <Attribute>
        <AttributeName>IhMH</AttributeName>
        <Meaning>Parameter Inhibit Manual High threshold</Meaning>
        <Description>If "true", the SCADA cannot change the Threshold because it is set by the
control logic</Description>
        <PrimitiveType>BOOLEAN</PrimitiveType>
        <BitPosition>1</BitPosition>
    </Attribute>
    <Attribute>
        <AttributeName>IhML</AttributeName>
        <Meaning>Parameter Inhibit Manual Low threshold</Meaning>
        <Description>If "true", the SCADA cannot change the Threshold because it is set by the
control logic</Description>
        <PrimitiveType>BOOLEAN</PrimitiveType>
        <BitPosition>2</BitPosition>
    </Attribute>
    <Attribute>
        <AttributeName>IhMLL</AttributeName>
        <Meaning>Parameter Inhibit Manual Low Low threshold</Meaning>

```



```

    <Description>If "true", the SCADA cannot change the Threshold because it is set by the
control logic</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <BitPosition>3</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>PAuAckAl</AttributeName>
    <Meaning>Parameter Auto Acknowledge Alarm</Meaning>
    <Description>If TRUE, the alarm Acknowledge will be done automatically, it's not needed
any action from the operator.
If FALSE, the alarm Acknowledge must be done by the operator.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>4</BitPosition>
</Attribute>
</Attribute>
<Attribute>
    <AttributeName>PAIDt</AttributeName>
    <Meaning>Parameter Alarm Time Delay in seconds</Meaning>
    <Description>Time delay applied to the condition that sets an Alarm.
Can be a number (&gt;= 0), an object (AS,APAR), or empty (set to 0 by default).
If = 0, then no delay.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Alarm Delay (s)</NameRepresentation>
        <TypeRepresentation>STRING</TypeRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>Active alarm of a duration lower than this delay are ignored.
Filter on spikes in Alarm condition.</Usage>
        <DependentAttributes/>
        <Constraints>Can be a number (&gt;= 0), an object (AS,APAR), or empty (set to 0 by
default).
If = 0, then no delay.</Constraints>
    </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>FEDeviceAutoRequests</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
<Attribute>
    <AttributeName>AuEHH</AttributeName>
    <Meaning>Auto Enable High High level </Meaning>
    <Description>Auto Enable High High level </Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>

```

```

</Attribute>
<Attribute>
  <AttributeName>AuEH</AttributeName>
  <Meaning>Auto Enable High level</Meaning>
  <Description>Auto Enable High level</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuEL</AttributeName>
  <Meaning>Auto Enable Low level</Meaning>
  <Description>Auto Enable Low level</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuELL</AttributeName>
  <Meaning>Auto Enable Low Low level</Meaning>
  <Description>Auto Enable Low Low level</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuAlAck</AttributeName>
  <Meaning>Auto Alarm Acknowledgement</Meaning>
  <Description>Auto Alarm Acknowledgement: The control logic requests and Acknowledgment
of the Alarm Start and Stop Interlocks</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AulhMB</AttributeName>
  <Meaning>Auto Inhibit Manual Blocked </Meaning>
  <Description>Auto Inhibit Manual Blocked </Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceManualRequests</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>ManReg01</AttributeName>
    <Meaning>Manual Register 1</Meaning>
    <Description>Manual Register 1</Description>
    <isCommunicated>true</isCommunicated>
    <PrimitiveType>WORD</PrimitiveType>
  </Attribute>
</AttributeFamily>

```

```

<Attribute>
  <AttributeName>ArmRcp</AttributeName>
  <Meaning>Armed Recipe</Meaning>
  <Description>A Recipe is Armed : New values are available at the input</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>2</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>ActRcp</AttributeName>
  <Meaning>Activate Recipe</Meaning>
  <Description>Activate Recipe : All new signals at the inputs are activated.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>3</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MNewHHR</AttributeName>
  <Meaning>Manual New HH threshold Request</Meaning>
  <Description>Manual New high high threshold Request</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>8</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MNewHR</AttributeName>
  <Meaning>Manual New H threshold Request</Meaning>
  <Description>Manual New high threshold Request</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>9</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MAIBSetRst</AttributeName>
  <Meaning>Manual Alarm Block Set/Reset</Meaning>
  <Description>Manual Alarm Block Set/Reset: Operator request to set/reset the alarm
block.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>10</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MNewLR</AttributeName>
  <Meaning>Manual New L threshold Request</Meaning>
  <Description>Manual New low threshold Request</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>12</BitPosition>

```

```

</Attribute>
<Attribute>
  <AttributeName>MNewLLR</AttributeName>
  <Meaning>Manual New LL threshold Request</Meaning>
  <Description>Manual New low low threshold Request</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>13</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MAIAckR</AttributeName>
  <Meaning>Manual Alarm Acknowledgement Request</Meaning>
  <Description>Manual Alarm Acknowledgement Request: The operator requests Interlocks or
Alarms acknowledgement</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>15</BitPosition>
</Attribute>
</Attribute>
<Attribute>
  <AttributeName>HH</AttributeName>
  <Meaning>High High</Meaning>
  <Description>Threshold level above which the signal produces an Alarm.
Can be a number, an object (AS,APAR,AIR), keyword "logic", simplified PLC logic (e.g. OBJECT + 2), or
empty (no alarm).
All defined thresholds must be ordered (HH>H>L>LL).</Description>
  <isCommunicated>>true</isCommunicated>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>HH Alarm</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>5 types of encoding
- A number: operator can change it
- An object (AS,APAR,AIR)
- A keyword "logic": process logic will assign a value to this signal.
- Simplified PLC logic, e.g. OBJECT + 2
- An empty field: no alarm</Usage>
    <DependentAttributes/>
    <Constraints>Can be a number, an object (AS,APAR,AIR), keyword "logic", simplified PLC
logic (e.g. OBJECT + 2), or empty (no alarm).
All defined thresholds must be ordered (HH>H>L>LL)</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>

```

```

    <AttributeName>H</AttributeName>
    <Meaning>High</Meaning>
    <Description>Threshold level above which the signal produces a Warning.
Can be a number, an object (AS,APAR,AIR), keyword "logic", simplified PLC logic (e.g. OBJECT + 2), or
empty (no alarm).
All defined thresholds must be ordered (HH>H>L>LL).</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>H Warning</NameRepresentation>
        <TypeRepresentation>STRING</TypeRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>5 types of encoding
- A number: operator can change it
- An object (AS,APAR,AIR)
- A keyword "logic": process logic will assign a value to this signal.
- Simplified PLC logic, e.g. OBJECT + 2
- An empty field: no alarm</Usage>
    <DependentAttributes/>
    <Constraints>Can be a number, an object (AS,APAR,AIR), keyword "logic", simplified PLC
logic (e.g. OBJECT + 2), or empty (no alarm).
All defined thresholds must be ordered (HH>H>L>LL)</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>L</AttributeName>
    <Meaning>Low</Meaning>
    <Description>Threshold level below which the signal produces a Warning.
Can be a number, an object (AS,APAR,AIR), keyword "logic", simplified PLC logic (e.g. OBJECT + 2), or
empty (no alarm).
All defined thresholds must be ordered (HH>H>L>LL).</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>L Warning</NameRepresentation>
        <TypeRepresentation>STRING</TypeRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>5 types of encoding
- A number: operator can change it
- An object (AS,APAR,AIR)
- A keyword "logic": process logic will assign a value to this signal.
- Simplified PLC logic, e.g. OBJECT + 2
- An empty field: no alarm</Usage>

```

```

    <DependentAttributes/>
    <Constraints>Can be a number, an object (AS,APAR,AIR), keyword "logic", simplified PLC
logic (e.g. OBJECT + 2), or empty (no alarm).
All defined thresholds must be ordered (HH>H>L>LL)</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>LL</AttributeName>
  <Meaning>Low Low</Meaning>
  <Description>Threshold level below which the signal produces an Alarm.
Can be a number, an object (AS,APAR,AIR), keyword "logic", simplified PLC logic (e.g. OBJECT + 2), or
empty (no alarm).
All defined thresholds must be ordered (HH>H>L>LL).</Description>
  <isCommunicated>>true</isCommunicated>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>LL Alarm</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>5 types of encoding
- A number: operator can change it
- An object (AS,APAR,AIR)
- A keyword "logic": process logic will assign a value to this signal.
- Simplified PLC logic, e.g. OBJECT + 2
- An empty field: no alarm</Usage>
  <DependentAttributes/>
  <Constraints>Can be a number, an object (AS,APAR,AIR), keyword "logic", simplified PLC
logic (e.g. OBJECT + 2), or empty (no alarm).
All defined thresholds must be ordered (HH>H>L>LL)</Constraints>
  </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceAlarm</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>Type</AttributeName>
    <Description>Definition of the Alarm action in the Process:
AL: Alarm; no interlock
FS: Full Stop
TS: Temporary Stop (until alarm disappears)
SI: Start Interlock; block ON mode request
Multiple: Several PCO/Field objects depend on Alarm - see Multiple Types.</Description>

```

```

<PrimitiveType>STRING</PrimitiveType>
<isSpecificationAttribute>
  <isValueRequired>>false</isValueRequired>
  <PermittedValue>AL</PermittedValue>
  <PermittedValue>FS</PermittedValue>
  <PermittedValue>TS</PermittedValue>
  <PermittedValue>SI</PermittedValue>
  <PermittedValue>Multiple</PermittedValue>
  <Usage>There are 4 valid alarm types:
AL: Alarm; will have no effect on PCO/Field
FS: Full Stop; will Stop PCO/Field
TS: Temporary Stop; will Stop PCO/Field until it disappears.
SI: Start Interlock; will block ON mode request applied to the PCO/Field.</Usage>
  <DependentAttributes>All PCO/Field object specified in this Instance
If "Multiple", then must fill out Multiple Types field</DependentAttributes>
  <Constraints/>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>MultipleTypes</AttributeName>
  <Description>Declaration of all types of alarm in the case of a multiple dependent objects.
Valid only when FEDeviceAlarm::Type is "Multiple", syntax "AType,AType".
"AType" must be one of the following valid alarm types: AL,FS,TS,SI.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Multiple Types</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Provide to the SCADA information on the Alarm types when several PCO/field
objects are dependent of this Alarm</Usage>
    <DependentAttributes>FEDeviceAlarm::Type</DependentAttributes>
    <Constraints>Valid only when FEDeviceAlarm::Type is "Multiple", syntax "AType,AType"
"AType" must be one of the following valid alarm types: AL,FS,TS,SI</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>AutoAcknowledge</AttributeName>
  <Description>The SCADA automatically performs the alarm acknowledge</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Auto Acknowledge</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>When TRUE, the SCADA automatically acknowledges the alarm at its occurrence.

```

The operator doesn't have to act on this alarm.</Usage>

<DependentAttributes/>

<Constraints>TRUE/FALSE</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>EnableCondition</AttributeName>

<Description>Enable Condition used to enable all defined alarm thresholds (AuEXX).

If blank or "logic", then condition is defined inside the logic.

If not blank, either a single object or simplified PLC logic (e.g. RUN.X AND NOT AIOBJECT.IOErrorW) is allowed.</Description>

<PrimitiveType>BOOLEAN</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Enable Condition</NameRepresentation>

<TypeRepresentation>STRING</TypeRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>Enable Condition used to enable all defined alarm thresholds (AuEXX).</Usage>

<DependentAttributes/>

<Constraints>If blank or "logic", then condition is defined inside the logic.

If not blank, either a single object or simplified PLC logic (e.g. RUN.X AND NOT AIOBJECT.IOErrorW) is allowed.</Constraints>

</isSpecificationAttribute>

</Attribute>

</AttributeFamily>

<AttributeFamily>

<AttributeFamilyName>FEDeviceEnvironmentInputs</AttributeFamilyName>

<UserExpandable>>true</UserExpandable>

<Attribute>

<AttributeName>I</AttributeName>

<Meaning>Interlock</Meaning>

<Description>Logic for the Alarm input signal.

If blank or "logic", then input is defined inside the logic.

If not blank, either a single object (AI,AIR,AS,MFC) or simplified PLC logic (e.g. "ABS(AI1-AI2)") is allowed.</Description>

<PrimitiveType>FLOAT32</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Input</NameRepresentation>

<TypeRepresentation>STRING</TypeRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>Logic for the Alarm input signal.</Usage>

<DependentAttributes/>

<Constraints>If blank or "logic", then input is defined inside the logic.

If not blank, either a single object (AI,AIR,AS,MFC) or simplified PLC logic (e.g. "ABS(AI1-AI2)") is allowed.</Constraints>

```
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>IOError</AttributeName>
  <Meaning>Input/Output Error</Meaning>
  <Description>IOError state in any of the dependant objects or the PLC channel assigned to the
object</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>IOSimu</AttributeName>
  <Meaning>Input/Output Simulated</Meaning>
  <Description>Any of the dependant objects is in Forced or Manual Mode</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceOutputs</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>StsReg01</AttributeName>
    <Meaning>Status Register 1</Meaning>
    <Description>Status Register 1</Description>
    <isEventAttribute>true</isEventAttribute>
    <isCommunicated>true</isCommunicated>
    <PrimitiveType>WORD</PrimitiveType>
  <Attribute>
    <AttributeName>ISt</AttributeName>
    <Meaning>Interlock Status</Meaning>
    <Description>Interlock Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>0</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>WSt</AttributeName>
    <Meaning>Warning Status</Meaning>
    <Description>Warning Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>1</BitPosition>
  </Attribute>
</Attribute>
```

```

    <AttributeName>ConfigW</AttributeName>
    <Meaning>Config Warning</Meaning>
    <Description>Levels values LL,L,H,HH are not in a crescendo order OR all four Enable Levels
Status are OFF</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>5</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>ArmRcpSt</AttributeName>
    <Meaning>Armed Recipe Status</Meaning>
    <Description>A Recipe is Armed : New values are available at the input</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>3</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>IOErrorW</AttributeName>
    <Meaning>Input/Output Error Warning</Meaning>
    <Description>Current status of the IOError</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>6</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>IOSimuW</AttributeName>
    <Meaning>Input/Output Simulated Warning</Meaning>
    <Description>Current status of the IOSimu</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>7</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>PosHHW</AttributeName>
    <Meaning>Position High High Warning</Meaning>
    <Description>HH state detected while Current state is not HH (after delay)</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>8</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>PosHW</AttributeName>
    <Meaning>Position High Warning</Meaning>
    <Description>H state detected while Current state is not H (after delay).</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>9</BitPosition>
</Attribute>

```

```

<Attribute>
  <AttributeName>PosLW</AttributeName>
  <Meaning>Position Low Warning</Meaning>
  <Description>L state detected while Current state is not L (after delay)</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>10</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>PosLLW</AttributeName>
  <Meaning>Position Low Low Warning</Meaning>
  <Description>LL state detected while Current state is not LL (after delay)</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>11</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>AlUnAck</AttributeName>
  <Meaning>Alarm UnAcknowledged</Meaning>
  <Description>Alarm UnAcknowledged: The alarm or at least one of the alarms associated to
the object is not acknowledged</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>12</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MAIBRSt</AttributeName>
  <Meaning>Manual Alarm Blocked Request Status</Meaning>
  <Description>Alarm Blocked Request Status.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>14</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>AulhMB</AttributeName>
  <Meaning>Auto Inhibit Manual Blocked Status</Meaning>
  <Description>Auto Inhibit Manual Blocked Status</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>15</BitPosition>
</Attribute>
</Attribute>
<Attribute>
  <AttributeName>StsReg02</AttributeName>
  <Meaning>Status Register 2 </Meaning>
  <Description>Status Register 2</Description>
  <isEventAttribute>true</isEventAttribute>

```

```

<isCommunicated>true</isCommunicated>
<PrimitiveType>WORD</PrimitiveType>
<Attribute>
  <AttributeName>EHHSt</AttributeName>
  <Meaning>Enable High High threshold Status</Meaning>
  <Description>Enable High High threshold : The HH threshold is taken into
account</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>0</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>EHSt</AttributeName>
  <Meaning>Enable High threshold Status</Meaning>
  <Description>Enable High threshold : The H threshold is taken into account</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>1</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>ELSt</AttributeName>
  <Meaning>Enable Low threshold Status</Meaning>
  <Description>Enable Low threshold : The L threshold is taken into account</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>2</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>ELLSt</AttributeName>
  <Meaning>Enable Low Low threshold Status</Meaning>
  <Description>Enable Low Low threshold : The LL threshold is taken into
account</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>3</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>HHASt</AttributeName>
  <Meaning>High High Alarm threshold Status</Meaning>
  <Description>High High Alarm threshold Status</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>4</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>HWSt</AttributeName>
  <Meaning>High Warning threshold Status </Meaning>
  <Description>High Warning threshold Status </Description>

```

```

    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>5</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>LWSt</AttributeName>
    <Meaning>Low Warning threshold Status</Meaning>
    <Description>Low warning threshold Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>6</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>LLASt</AttributeName>
    <Meaning>Low Low Alarm threshold Status</Meaning>
    <Description>Low Low Alarm threshold Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>7</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>IhMHHSt</AttributeName>
    <Meaning>Inhibit Manual High High threshold Status</Meaning>
    <Description>Inhibit Manual HH Threshold Status : The SCADA cannot send requests to this
threshold</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>8</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>IhMHSt</AttributeName>
    <Meaning>Inhibit Manual High threshold Status</Meaning>
    <Description>Inhibit Manual H Threshold Status : The SCADA cannot send requests to this
threshold.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>9</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>IhMLSt</AttributeName>
    <Meaning>Inhibit Manual Low threshold Status</Meaning>
    <Description>Inhibit Manual L Threshold Status : The SCADA cannot send requests to this
threshold.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>10</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>IhMLLSt</AttributeName>

```

```

    <Meaning>Inhibit Manual Low Low threshold Status</Meaning>
    <Description>Inhibit Manual LL Threshold Status : The SCADA cannot send requests to this
threshold.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>11</BitPosition>
  </Attribute>
</Attribute>
<Attribute>
  <AttributeName>IOErrorW</AttributeName>
  <Meaning>Input/Output Error Warning</Meaning>
  <Description>Current status of the IOError</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>IOSimuW</AttributeName>
  <Meaning>Input/Output Simulated Warning</Meaning>
  <Description>Current status of the IOSimu</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>PosSt</AttributeName>
  <Meaning>Position status</Meaning>
  <Description>Position Status</Description>
  <isCommunicated>>true</isCommunicated>
  <isArchived>>true</isArchived>
  <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>ISt</AttributeName>
  <Meaning>Interlock Status</Meaning>
  <Description>Interlock Status (HH or LL)</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>WSt</AttributeName>
  <Meaning>Warning Status</Meaning>
  <Description>Warning Status (H or L)</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>HHASt</AttributeName>
  <Meaning>High High Alarm Status</Meaning>

```

```

    <Description>High High Alarm Status (it produces also an ISt)</Description>
    <isArchived>true</isArchived>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>HWSt</AttributeName>
    <Meaning>High Waring Status</Meaning>
    <Description>High Waring Status (it produces also a WSt)</Description>
    <isArchived>true</isArchived>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>LWSt</AttributeName>
    <Meaning>Low Warning Status</Meaning>
    <Description>Low Warning Status (it produces also a WSt)</Description>
    <isArchived>true</isArchived>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>LLAISt</AttributeName>
    <Meaning>Low Low Alarm Status</Meaning>
    <Description>Low Low Alarm Status (it produces also an ISt)</Description>
    <isArchived>true</isArchived>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>HHSt</AttributeName>
    <Meaning>High High threshold Status</Meaning>
    <Description>Alarm High High threshold Status</Description>
    <isCommunicated>true</isCommunicated>
    <isArchived>true</isArchived>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>HSt</AttributeName>
    <Meaning>High threshold Status</Meaning>
    <Description>Alarm High threshold Status</Description>
    <isCommunicated>true</isCommunicated>
    <isArchived>true</isArchived>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>

```

```

    <AttributeName>LSt</AttributeName>
    <Meaning>Low threshold Status</Meaning>
    <Description>Alarm Low threshold Status</Description>
    <isCommunicated>>true</isCommunicated>
    <isArchived>>true</isArchived>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>LLSt</AttributeName>
    <Meaning>Low Low threshold Status</Meaning>
    <Description>Alarm Low Low threshold Status</Description>
    <isCommunicated>>true</isCommunicated>
    <isArchived>>true</isArchived>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>MAIBRSt</AttributeName>
    <Meaning>Manual Alarm Blocked Request Status</Meaning>
    <Description>Alarm Blocked Request Status.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AlUnAck</AttributeName>
    <Meaning>Alarm UnAcknowledged</Meaning>
    <Description>Alarm UnAcknowledged: The alarm or at least one of the alarms associated to
the object is not acknowledged</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>SCADADeviceGraphics</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>WidgetType</AttributeName>
        <Description>Define the widget type to display in the SCADA device tree overview only.
The widget displayed in the process panel will be selected when the user creates the
panel.</Description>
        <PrimitiveType>STRING</PrimitiveType>
        <isSpecificationAttribute>
            <NameRepresentation>Widget Type</NameRepresentation>
            <isValueRequired>>true</isValueRequired>
            <isCaseSensitive>>true</isCaseSensitive>
            <PermittedValue>AnalogAlarm</PermittedValue>

```



```

    <PermittedValue>AnalogAlarm_Analog</PermittedValue>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Synoptic</AttributeName>
  <Description>Define link between the device and an existing synoptic where it appears. The
synoptic specified here can be accessed from the device right-click menu item
"Synoptic".</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Specify the path of the .pnl file under the "\panel" directory of the PVSS
project.</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DiagnosticPanel</AttributeName>
  <Description>Define link between the device and an existing diagnostic panel for the device.
The panel specified here can be accessed from the device right-click menu item "Diagnostic" as well
as from the "Diagnostic" button on the object faceplate.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Diagnostic</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Specify the path of the .pnl file under the "\panel" directory of the PVSS project
</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>WWWLink</AttributeName>
  <Description>Define link between the device and an existing web page (or pdf file, or other file
which can be opened with IE). The link can be accessed from the device right-click menu item "Info"
as well as from the "Info" button on the object faceplate.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>WWW Link</NameRepresentation>
    <isValueRequired>>false</isValueRequired>

```

```

    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADeviceFunctionals</AttributeFamilyName>
  <UserExpandable>>false</UserExpandable>
  <Attribute>
    <AttributeName>MaskEvent</AttributeName>
    <Description>If TRUE: the events of the device will be masked in SCADA and not displayed or archived in the Event List.
An 'event' is defined as a bit change in StsReg01 or StsReg02</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Mask Event</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>AccessControlDomain</AttributeName>
    <Description>Define Access Control on the device to an existing SCADA Domain
Forbidden characters: *[: ""@`#%^&*?!;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Access Control Domain</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>This domain is used to grant access to this specific device. The domain specified for this object will allow access to the object only to registered users on that domain</Usage>
      <DependentAttributes/>
      <Constraints>Forbidden characters: *[: ""@`#%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>SCADADeviceClassificationTags</AttributeName>
    <Description>It defines the Domain, Nature and DeviceLinks for the SCADA visualization</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
  </Attribute>

```

```

    <AttributeName>Domain</AttributeName>
    <Description>Domain of the device. If empty, the domain will be the name of the application
Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>Domain is used to filter the devices in the alarm list or in the device tree
overview</Usage>
        <DependentAttributes/>
        <Constraints>Forbidden characters: *[:
""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
</Attribute>

```

```

<Attribute>
    <AttributeName>Nature</AttributeName>
    <Description>Nature of the device. If empty, the nature will be the type of the device
Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>Nature is used to filter the devices in the alarm list or in the device tree
overview</Usage>
        <DependentAttributes/>
        <Constraints>Forbidden characters: *[:
""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
</Attribute>

```

```

    <AttributeName>DeviceLinks</AttributeName>
    <Description>Define links to other devices (separate device names with commas).
Note: it is not necessary to link to master, parents or children because these links are automatically
created.

```

```

Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Device Links</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>Linked devices will be shown in the device right-click menu</Usage>
        <DependentAttributes>Expert Name or Name.

```

The name of the device(s) specified here *must* correspond to "Expert Name" if it is defined. If "Expert Name" is not defined, the name of the device(s) specified here corresponds to "Name".</DependentAttributes>

```

        <Constraints>Forbidden characters: *[:
"@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
</Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>SCADADataArchiving</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>BooleanArch</AttributeName>
        <Description>Name of the Boolean archive
Forbidden characters: *[: "@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
        <PrimitiveType>STRING</PrimitiveType>
        <isSpecificationAttribute>
            <NameRepresentation>Boolean Archive</NameRepresentation>
            <isValueRequired>>false</isValueRequired>
            <Usage>The boolean values of the device will be archived in the specified PVSS database.
The archive must be created in PVSS before importing the object.</Usage>
            <DependentAttributes/>
            <Constraints>Forbidden characters: *[:
"@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
        </isSpecificationAttribute>
    </Attribute>
</Attribute>
    <AttributeName>AnalogArch</AttributeName>
    <Description>Name of the analog archive
Forbidden characters: *[: "@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Analog Archive</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>The analog values of the device will be archived in the specified PVSS database. The
archive must be created in PVSS before importing the object.</Usage>
        <DependentAttributes/>
        <Constraints>Forbidden characters: *[:
"@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
</Attribute>
</Attribute>
    <AttributeName>EventArch</AttributeName>
    <Description>Name of the event archive
Forbidden characters: *[: "@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>

```

```

<PrimitiveType>STRING</PrimitiveType>
<isSpecificationAttribute>
  <NameRepresentation>Event Archive</NameRepresentation>
  <isValueRequired>>false</isValueRequired>
  <Usage>The events generated by the device will be archived in the specified PVSS database.
The archive must be created in PVSS before importing the object.</Usage>
  <DependentAttributes/>
  <Constraints>Forbidden characters: *[:
"@`#$$%^&amp;*?!.,;+=~(){}&lt;&gt;|]</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterlockArchiving</AttributeName>
  <Description>Archiving parameters for the boolean interlock signal</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Interlock Archiving</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
  <Attribute>
    <AttributeName>ArchiveMode</AttributeName>
    <Description>Define the archive action when there is a change on the interlock state.
Archive if:
Old/New Comparison: value changes</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Archive Mode</NameRepresentation>
      <isValueRequired>>true</isValueRequired>
      <PermittedValue>No</PermittedValue>
      <PermittedValue>Old/New Comparison</PermittedValue>
      <Usage>This archive mode is used to archive alarm output state in the PVSS
database</Usage>
      <DependentAttributes/>
      <Constraints>No, or Old/New Comparison</Constraints>
    </isSpecificationAttribute>
  </Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADeviceAlarms</AttributeFamilyName>

```

```

<UserExpandable>true</UserExpandable>
<Attribute>
  <AttributeName>AlarmConfig</AttributeName>
  <Description>Configuration of Alarm under SCADA</Description>
  <PrimitiveType>INT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Alarm Config</NameRepresentation>
    <isValueRequired>true</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
  <Attribute>
    <AttributeName>SMSCategory</AttributeName>
    <Description>This Alarm message will follow rules defined in the corresponding SMS User
    Group(s) (comma-separated list).

```

To disable SMS on L/H WARNING, add keyword: NO_SMS_ON_WARNING

To disable SMS on LL/HH ALERT, add keyword: NO_SMS_ON_ALERT</Description>

```

  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>SMS Category</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Use keyword NO_SMS_ON_WARNING and NO_SMS_ON_ALERT to avoid
    messages on warning or alert.</Usage>
    <DependentAttributes/>
    <Constraints>The name must correspond to the SMS user group
    (unProcessAlarm,...)</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Masked</AttributeName>
  <Description>Alarm signal is ignored by the SCADA</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>When TRUE, the Alarm signal is not recorded into the ALARM database</Usage>
    <DependentAttributes/>
    <Constraints>TRUE/FALSE</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>

```

```

<AttributeName>Level</AttributeName>
<Description>Classification of the importance of the Alarm</Description>
<PrimitiveType>STRING</PrimitiveType>
<isSpecificationAttribute>
  <isValueRequired>>false</isValueRequired>
  <PermittedValue>Information</PermittedValue>
  <PermittedValue>Warning</PermittedValue>
  <PermittedValue>Alarm</PermittedValue>
  <PermittedValue>Safety Alarm</PermittedValue>
  <Usage>Level 0: Information

```

Level 1: Warning

Level 2: Alarm

Level 3: Safety Alarm</Usage>

```

  <DependentAttributes/>
  <Constraints/>
</isSpecificationAttribute>
</Attribute>

```

</Attribute>

<Attribute>

```

<AttributeName>Message</AttributeName>
<Description>Message to display when alarm is set in SCADA</Description>
<PrimitiveType>STRING</PrimitiveType>
<isSpecificationAttribute>
  <isValueRequired>>false</isValueRequired>
  <Usage>The message specified here will be displayed in the Alarm List</Usage>
  <DependentAttributes/>

```

<Constraints>In principle there is no limit to the number of characters used, however a long name may result in display issues at the SCADA level.

Forbidden characters: *[:"@`#\$%^&*?!.,;+=~(){}<>|]</Constraints>

```

</isSpecificationAttribute>

```

</Attribute>

</AttributeFamily>

<AttributeFamily>

```

  <AttributeFamilyName>LogicDeviceDefinitions</AttributeFamilyName>

```

```

  <UserExpandable>>true</UserExpandable>

```

<Attribute>

```

  <AttributeName>MasterDevice</AttributeName>

```

<Description>Master of the device (relative to the hierarchy of dependent objects).</Description>

```

  <PrimitiveType>STRING</PrimitiveType>

```

```

  <isSpecificationAttribute>

```

```

    <NameRepresentation>Master</NameRepresentation>

```

```

    <isValueRequired>>false</isValueRequired>

```

```

    <Usage>The master will give automatic requests to the device. The master object will
    appear in the list of "Device Links" in the device right-click menu.</Usage>
    <DependentAttributes/>
    <Constraints>Must be a single PCO for field objects, controller, or PCO.
    Must be PCO or field objects for alarms (several masters are allowed in the case of multiple alarms,
    separated by commas or spaces).</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>CustomLogicParameters</AttributeName>
    <Description>User defined meaning, used by the logic generators.</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
    <Attribute>
        <AttributeName>Parameter1</AttributeName>
        <Description>Parameter to be used in the logic templates
        Forbidden characters: '$' </Description>
        <PrimitiveType>STRING</PrimitiveType>
        <isSpecificationAttribute>
            <isValueRequired>>false</isValueRequired>
            <Usage>This parameter can be used in user logic templates to define specific logic for the
            device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
            <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
            Template"? file</DependentAttributes>
            <Constraints>Forbidden characters: '$' </Constraints>
        </isSpecificationAttribute>
    </Attribute>
    <Attribute>
        <AttributeName>Parameter2</AttributeName>
        <Description>Parameter to be used in the logic templates
        Forbidden characters: '$' </Description>
        <PrimitiveType>STRING</PrimitiveType>
        <isSpecificationAttribute>
            <isValueRequired>>false</isValueRequired>
            <Usage>This parameter can be used in user logic templates to define specific logic for the
            device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
            <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
            Template"? file</DependentAttributes>
            <Constraints>Forbidden characters: '$' </Constraints>
        </isSpecificationAttribute>
    </Attribute>
    <Attribute>
        <AttributeName>Parameter3</AttributeName>
        <Description>Parameter to be used in the logic templates

```


Forbidden characters: "\$' </Description>
 <PrimitiveType>STRING</PrimitiveType>
 <isSpecificationAttribute>
 <isValueRequired>>false</isValueRequired>
 <Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
 <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User Template"? file</DependentAttributes>
 <Constraints>Forbidden characters: "\$' </Constraints>
 </isSpecificationAttribute>
 </Attribute>

<Attribute>
 <AttributeName>Parameter4</AttributeName>
 <Description>Parameter to be used in the logic templates

Forbidden characters: "\$' </Description>
 <PrimitiveType>STRING</PrimitiveType>
 <isSpecificationAttribute>
 <isValueRequired>>false</isValueRequired>
 <Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
 <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User Template"? file</DependentAttributes>
 <Constraints>Forbidden characters: "\$' </Constraints>
 </isSpecificationAttribute>
 </Attribute>

<Attribute>
 <AttributeName>Parameter5</AttributeName>
 <Description>Parameter to be used in the logic templates

Forbidden characters: "\$' </Description>
 <PrimitiveType>STRING</PrimitiveType>
 <isSpecificationAttribute>
 <isValueRequired>>false</isValueRequired>
 <Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
 <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User Template"? file</DependentAttributes>
 <Constraints>Forbidden characters: "\$' </Constraints>
 </isSpecificationAttribute>
 </Attribute>

<Attribute>
 <AttributeName>Parameter6</AttributeName>
 <Description>Parameter to be used in the logic templates

Forbidden characters: "\$' </Description>

```

<PrimitiveType>STRING</PrimitiveType>
<isSpecificationAttribute>
  <isValueRequired>>false</isValueRequired>
  <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
  <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
  <Constraints>Forbidden characters: '$' </Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Parameter7</AttributeName>
  <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Parameter8</AttributeName>
  <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Parameter9</AttributeName>
  <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
  <PrimitiveType>STRING</PrimitiveType>

```

```

    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
      <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
      <Constraints>Forbidden characters: '$' </Constraints>
    </isSpecificationAttribute>
  </Attribute>
<Attribute>
  <AttributeName>Parameter10</AttributeName>
  <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
  </isSpecificationAttribute>
</Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>TargetDeviceInformation</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>Target</AttributeName>
    <Description>Identifies a target type (e.g. SIEMENS, SCHNEIDER...)</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
    <DefaultValue>Siemens</DefaultValue>
  <Attribute>
    <AttributeName>RepresentationName</AttributeName>
    <Description>It's the name used ...</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <DefaultValue>AA</DefaultValue>
  </Attribute>
  <Attribute>
    <AttributeName>Optimized</AttributeName>
    <Description>Is this object an optimized Object?</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>

```

```
    <DefaultValue>true</DefaultValue>
  </Attribute>
  <Attribute>
    <AttributeName>LimitSize</AttributeName>
    <Description>Maximun number of instances allowed</Description>
    <PrimitiveType>INT32</PrimitiveType>
    <DefaultValue>400</DefaultValue>
  </Attribute>
  <Attribute>
    <AttributeName>FastInterlock</AttributeName>
    <Description>Is this object a fast interlock object?</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <DefaultValue>>false</DefaultValue>
  </Attribute>
</Attribute>
</AttributeFamily>
</UNICOSMetaModel>
```

2.3. AnalogDeviceType.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<!-- edited with XMLSpy v2008 sp1 (http://www.altova.com) by amerezhi (CERN) -->
<UNICOSMetaModel xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="..\unicos\UNICOSMetaModel.xsd">
  <Information>
    <Package>${devicePackageName}</Package>
    <Name>Analog</Name>
    <ObjectTypeFamily>FieldObjectFamily</ObjectTypeFamily>
    <Description>Analog Device</Description>
    <Version>${LastChangedRevision: 170121} $</Version>
  </Information>
  <AttributeFamily>
    <AttributeFamilyName>DeviceIdentification</AttributeFamilyName>
    <UserExpandable>>false</UserExpandable>
    <Attribute>
      <AttributeName>Name</AttributeName>
      <Description>Name of the device. It must be unique.
```

Max length:

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: [:"'@`#\$%^&*?!;=+~(){}<>|]-., double underscore, and page break</Description>

```
  <PrimitiveType>STRING</PrimitiveType>
```

```
  <isSpecificationAttribute>
```

```
    <isValueRequired>>true</isValueRequired>
```

```
    <Usage>Name displayed at the SCADA level if "Expert Name" is not specified.
```

This name will appear in the datapoints created in the SCADA layer.</Usage>

```
    <DependentAttributes>Device Links.
```

The name of the device(s) specified in Device Links *must* correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to "Name".</DependentAttributes>

```
    <Constraints>Max length:
```

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: [:"'@`#\$%^&*?!;=+~(){}<>|]-., double underscore, and page break
Name must be unique.</Constraints>

```
  </isSpecificationAttribute>
```

```
</Attribute>
```

```
<Attribute>
```

```
  <AttributeName>ExpertName</AttributeName>
```

```

    <Description>Name of the device displayed at the SCADA level. It must be unique.
Forbidden characters: *[: "'@ # $ % ^ & amp; * ? ! , ; = + ~ ( ) { } & lt; & gt; | ]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Expert Name</NameRepresentation>
        <TypeRepresentation>STRING</TypeRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>It does not affect to the datapoints names in the SCADA layer.</Usage>
        <DependentAttributes>Device Links.
The name of the device(s) specified in Device Links *must* correspond to "Expert Name" if it is
defined.
If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to
"Name".</DependentAttributes>
        <Constraints>In principle there is no limit to the number of characters used, however a long
name may result in display issues at the SCADA level.
Forbidden characters: *[: "'@ # $ % ^ & amp; * ? ! , ; = + ~ ( ) { } & lt; & gt; | ]
Expert Name must be unique.</Constraints>
    </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>DeviceDocumentation</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>DeviceDescription</AttributeName>
        <Description>Description of the device. </Description>
        <PrimitiveType>STRING</PrimitiveType>
        <isSpecificationAttribute>
            <NameRepresentation>Description</NameRepresentation>
            <isValueRequired>>false</isValueRequired>
            <Usage>Used in the SCADA layer in the device faceplate</Usage>
            <DependentAttributes/>
            <Constraints>In principle there is no limit to the number of characters used, however a long
description may result in display issues at the SCADA level.
Forbidden characters: ;</Constraints>
        </isSpecificationAttribute>
    </Attribute>
    <Attribute>
        <AttributeName>Remarks</AttributeName>
        <Description>Field used to add relevant information about the device. </Description>
        <PrimitiveType>STRING</PrimitiveType>
        <isSpecificationAttribute>
            <isValueRequired>>false</isValueRequired>

```

```

    <Usage>This information is not used in the generation process, it remains only at the
specification level for documentation purposes.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: ;</Constraints>
  </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceParameters</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>ParReg</AttributeName>
    <Meaning>Parameter Register</Meaning>
    <Description>Parametrisation register: This register contains all the boolean parameters of
the object</Description>
    <PrimitiveType>WORD</PrimitiveType>
  <Attribute>
    <AttributeName>PFsPosOn</AttributeName>
    <Meaning>Parameter Fail-Safe position ON/Open</Meaning>
    <Description>Fail Safe position of the actuator. N.B. If "On/Open Inverted Output" then
actuator is OPEN with output=0 (or loss of power).</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>0</BitPosition>
  <isSpecificationAttribute>
    <NameRepresentation>Fail-Safe</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>true</isValueRequired>
    <PermittedValue>Off/Close</PermittedValue>
    <PermittedValue>On/Open Normal Output</PermittedValue>
    <PermittedValue>On/Open Inverted Output</PermittedValue>
    <Usage>This is the position of the device in case of interlock.</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PHFOn</AttributeName>
  <Meaning>Parameter Hardware Feedback On</Meaning>
  <Description>Enables the activation of the Feedback ON of the object via a hardware
sensor</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>1</BitPosition>
</Attribute>

```

```

<Attribute>
  <AttributeName>PHFOff</AttributeName>
  <Meaning>Parameter Hardware Feedback Off</Meaning>
  <Description>Enables the activation of the Feedback OFF of the object via a hardware
sensor.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>2</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>PHFPos</AttributeName>
  <Meaning>Parameter Hardware Feedback Position</Meaning>
  <Description>Activates Hardware Feedback Analog</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>3</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>PHLD</AttributeName>
  <Meaning>Parameter Hardware Local Drive</Meaning>
  <Description>Enables the local drive feedback. When this input is TRUE the feedback is
received via the HFLD.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>4</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>PHLDCmd</AttributeName>
  <Meaning>Parameter Hardware Local Drive Command</Meaning>
  <Description>Enables the local drive command. When this input is TRUE the command is
received via the HFLD.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>5</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>PFsNOut</AttributeName>
  <Meaning>Parameter Fail-safe Normal Output</Meaning>
  <Description>Ouput is not inverted when fail-safe is true</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>6</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>PEnrstart</AttributeName>
  <Meaning>Parameter Enable Restart</Meaning>
  <Description>Strategy to adopt to restart the device after a Full Stop
Interlock.</Description>

```



```

<PrimitiveType>BIT1</PrimitiveType>
<BitPosition>8</BitPosition>
<isSpecificationAttribute>
  <NameRepresentation>Manual Restart after Full Stop</NameRepresentation>
  <TypeRepresentation>STRING</TypeRepresentation>
  <isValueRequired>>true</isValueRequired>
  <PermittedValue>FALSE</PermittedValue>
  <PermittedValue>TRUE only if Full Stop disappeared</PermittedValue>
  <PermittedValue>TRUE even if Full Stop still active</PermittedValue>
  <Usage>FALSE: Device restarts after acknowledge.
  TRUE only if Full Stop disappeared: Ack+Allow Restart needed (possible only if FS disappeared)
  TRUE even if Full Stop still active: Ack+Allow Restart needed (possible at any moment)</Usage>
  <DependentAttributes/>
  <Constraints>All devices of the application should have the same "Manual Restart after
Full Stop"</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PRstartFS</AttributeName>
  <Meaning>Parameter Restart after Full Stop</Meaning>
  <Description>Parameter Restart after Full Stop</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>9</BitPosition>
</Attribute>
</Attribute>
<Attribute>
  <AttributeName>PWDt</AttributeName>
  <Meaning>Position Warning Delay time</Meaning>
  <Description>Delay applied to the Position Alarm when there is a discordance between
OutputOrder and Feedback position.
Must be positive.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Warning Time Delay (s)</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>can be a positive number or a parameter</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PWDb</AttributeName>

```

```

    <Meaning>Position Warning Dead-band</Meaning>
    <Description>Deadband value to compute the position warning of the device (Discordance).
Must be positive.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Warning Deadband Value (Unit)</NameRepresentation>
      <TypeRepresentation>STRING</TypeRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>can be a positive number or a parameter</Usage>
      <DependentAttributes/>
      <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>PMInSpd</AttributeName>
    <Meaning>Parameter Manual Increase Speed</Meaning>
    <Description>Increase speed of the actuator when user requests a new value from SCADA.
Must be positive.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Manual Increase Speed (Unit/s)</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints>Must be positive</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>PMDeSpd</AttributeName>
    <Meaning>Parameter Manual Decrease Speed</Meaning>
    <Description>Decrease speed of the actuator when user requests a new value from SCADA.
Must be positive.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Manual Decrease Speed (Unit/s)</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints>Must be positive</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>

```

```

    <AttributeName>PMStpInV</AttributeName>
    <Meaning>Parameter Manual Step Increase Value</Meaning>
    <Description>Step amplitude in Unit value when user requests an "increase value" from
SCADA.
Must be positive and &lt; (Range Max-Range Min).</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Manual Increase Step (Unit)</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage/>
        <DependentAttributes/>
        <Constraints>Must be positive and &lt; (Range Max-Range Min)</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>PMStpDeV</AttributeName>
    <Meaning>Parameter Manual Step Decrease</Meaning>
    <Description>Step amplitude in Unit value when user requests a "decrease value" from SCADA.
Must be positive and &lt; (Range Max-Range Min)</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Manual Decrease Step (Unit)</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage/>
        <DependentAttributes/>
        <Constraints>Must be positive and &lt; (Range Max-Range Min)</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>PMinRan</AttributeName>
    <Meaning>Parameter Minimum Range</Meaning>
    <Description>Minimum engineering value of the device.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <DefaultValue>0.0</DefaultValue>
</Attribute>
<Attribute>
    <AttributeName>PMaxRan</AttributeName>
    <Meaning>Parameter Maximum Range</Meaning>
    <Description>Maximum engineering value of the device.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <DefaultValue>100.0</DefaultValue>
</Attribute>

```

```

</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceInterlocks</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>StartI</AttributeName>
    <Meaning>Start Interlock</Meaning>
    <Description>Start Interlock Request: When active, the ON request is blocked.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>TStopI</AttributeName>
    <Meaning>Temporary Stop Interlock</Meaning>
    <Description>Temporary Stop Interlock Request: When active, the object goes automatically
to its fail safe position and returns to the previous position after acknowledgement.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>FuStopI</AttributeName>
    <Meaning>Full Stop Interlock</Meaning>
    <Description>Full Stop Interlock Request: Devices goes to Fail-Safe position and remains until
acknowledged.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>Al</AttributeName>
    <Meaning>Alarm</Meaning>
    <Description>Alarm input. This is not an interlock; it has no functional impact on the object. It
will just display A on the widget with lower priority than other interlocks.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceAutoRequests</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>AuOnR</AttributeName>
    <Meaning>Auto On Request</Meaning>
    <Description>Auto On Request (by logic): The control logic requests ON/Open on the
object.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>

```

```

    <AttributeName>AuOffR</AttributeName>
    <Meaning>Auto Off Request</Meaning>
    <Description>Auto Off Request (by logic): The control logic requests Off/Close on the
object.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuPosR</AttributeName>
    <Meaning>Auto Position Request.</Meaning>
    <Description>Auto Position Request: The control logic requests a specific position on the
object.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuAuMoR</AttributeName>
    <Meaning>Auto Auto Mode Request</Meaning>
    <Description>Auto Auto Mode Request. The control logic requests Auto Mode on the
object.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AulhMMo</AttributeName>
    <Meaning>Auto Inhibit Manual Mode</Meaning>
    <Description>Auto Inhibit Manual Mode (by logic): The control logic blocks the manual mode
operation.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AulhFoMo</AttributeName>
    <Meaning>Auto Inhibit Forced Mode</Meaning>
    <Description>Auto Inhibit Forced Mode (by logic): The control logic blocks the forced mode
operation.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>IhAuMRW</AttributeName>
    <Meaning>Inhibit Auto Manual Request Warning</Meaning>
    <Description>Inhibit Auto Manual Request Warning: The control logic requests to inhibit the
warning from discrepancy between manual request and auto request.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuAlAck</AttributeName>

```

```

    <Meaning>Auto Alarm Acknowledgement</Meaning>
    <Description>Auto Alarm Acknowledgement: The control logic requests and Acknowledgment
of the Alarm Start and Stop Interlocks</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuInSpd</AttributeName>
    <Meaning>Auto Increase Speed</Meaning>
    <Description>Auto Increase Setpoint Speed: The control logic sets a variation speed for
Setpoint increase.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuDeSpd</AttributeName>
    <Meaning>Auto Decrease Speed</Meaning>
    <Description>Auto Decrease Setpoint Speed: The control logic sets a variation speed for
Setpoint decrease.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuRStart</AttributeName>
    <Meaning>Auto Enable Restart Request</Meaning>
    <Description>Perform an auto "Allow Restart" from the PLC logic</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>FEDeviceManualRequests</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
<Attribute>
    <AttributeName>ManReg01</AttributeName>
    <Meaning>Manual Register 1</Meaning>
    <Description>Manual Register 1</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>WORD</PrimitiveType>
<Attribute>
    <AttributeName>MAuMoR</AttributeName>
    <Meaning>Manual Auto Mode Request</Meaning>
    <Description>Manual Auto Mode Request: The operator requests the Auto
Mode.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>0</BitPosition>
</Attribute>

```

```

<Attribute>
  <AttributeName>MMMoR</AttributeName>
  <Meaning>Manual Manual Mode Request</Meaning>
  <Description>Manual Manual Mode Request: The operator requests the Manual
Mode</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>1</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MFoMoR</AttributeName>
  <Meaning>Manual Forced Mode Request</Meaning>
  <Description>Manual Forced Mode Request: The operator requests the Forced
Mode.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>2</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MSoftLDR</AttributeName>
  <Meaning>Manual Software Local Mode</Meaning>
  <Description>The operator requests the Software Local Mode</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>3</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MOnR</AttributeName>
  <Meaning>Manual On Request</Meaning>
  <Description>Manual On Request: The operator requests the On/Open
position</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>4</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MOffR</AttributeName>
  <Meaning>Manual Off Request</Meaning>
  <Description>Manual Off Request: The operator requests the Off/Close
position</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>5</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MNewPosR</AttributeName>
  <Meaning>Manual New Position Request</Meaning>

```

```

    <Description>Manual New Position Request: The operator requests a new position to the
object</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>6</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MStpInR</AttributeName>
    <Meaning>Manual Step Increase Request</Meaning>
    <Description>The Operator requests to increase the position by one basic
step</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>7</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MStpDeR</AttributeName>
    <Meaning>Manual Step Decrease Request</Meaning>
    <Description>The Operator requests to decrease the position by one basic
step</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>8</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MEnRstartR</AttributeName>
    <Meaning>Manual Enable Restart Request</Meaning>
    <Description>Manual Enable Restart Request: The Operator requests a Manual Restart after
Full Stop</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>9</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MAIAckR</AttributeName>
    <Meaning>Manual Alarm Acknowledgement Request</Meaning>
    <Description>Manual Alarm Acknowledgement Request: The operator requests Interlocks or
Alarms acknowledgement</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>15</BitPosition>
</Attribute>
</Attribute>
<Attribute>
    <AttributeName>MPosR</AttributeName>
    <Meaning>Manual Position Request</Meaning>
    <Description>Manual Position Request: Value of the position requested by
operator</Description>

```



```

    <isCommunicated>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>PLiOn</AttributeName>
    <Meaning>Parameter Limit On</Meaning>
    <Description>Limit above which the actuator status is "On".
Must be between Range Min and Range Max.</Description>
    <isCommunicated>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Parameter Limit On/Open</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>Used to compute the "On" status of the device corresponding to the widget being
completely filled in SCADA.</Usage>
      <DependentAttributes/>
      <Constraints>Must be between Range Min and Range Max</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>PLiOff</AttributeName>
    <Meaning>Parameter Limit Off</Meaning>
    <Description>Limit below which the actuator status is "Off".
Must be between Range Min and Range Max.</Description>
    <isCommunicated>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Parameter Limit Off/Closed</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>Used to compute the "Off" status of the device corresponding to the widget being
empty in SCADA.</Usage>
      <DependentAttributes/>
      <Constraints>Must be between Range Min and Range Max</Constraints>
    </isSpecificationAttribute>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceEnvironmentInputs</AttributeFamilyName>
  <UserExpandable>true</UserExpandable>
  <Attribute>
    <AttributeName>HFPos</AttributeName>
    <Meaning>Hardware Feedback Position</Meaning>
    <Description>Analog Feedback of the actuator.

```

```

Must be an AI/AIR/AS.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Feedback Analog</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints>Must be an AI/AIR/AS</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>HFOn</AttributeName>
  <Meaning>Hardware Feedback On</Meaning>
  <Description>Feedback On of the actuator.

```

```

Must be a DI.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Feedback On</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Used to compute the "On" status of the device</Usage>
    <DependentAttributes/>
    <Constraints>Must be a DI</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>HFOff</AttributeName>
  <Meaning>Hardware Feedback Off</Meaning>
  <Description>Feedback Off of the actuator.

```

```

Must be a DI.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Feedback Off</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Used to compute the "Off" status of the device</Usage>
    <DependentAttributes/>
    <Constraints>Must be a DI</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>

```

```

    <AttributeName>HAOut</AttributeName>
    <Meaning>Hardware Analog Output</Meaning>
    <Description>Hardware Local Analog request to the actuator when it is in hardware local
mode.
Must be an AI/AIR/AS.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Hardware Analog Output</NameRepresentation>
        <TypeRepresentation>STRING</TypeRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>Signal able to drive the device in case of hardware local mode.</Usage>
        <DependentAttributes/>
        <Constraints>Must be an AI/AIR/AS</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>HLD</AttributeName>
    <Meaning>Hardware Local Drive</Meaning>
    <Description>Activation of the Hardware Local Drive.
Must be a DI.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Local Drive</NameRepresentation>
        <TypeRepresentation>STRING</TypeRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>Signal to put the actuator in Hardware Local Mode</Usage>
        <DependentAttributes/>
        <Constraints>Must be a DI</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>IOError</AttributeName>
    <Meaning>Input/Output Error</Meaning>
    <Description>IOError state in any of the dependant objects or the PLC channel assigned to the
object</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>IOSimu</AttributeName>
    <Meaning>Input/Output Simulated</Meaning>
    <Description>Any of the dependant objects is in Forced or Manual Mode</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>

```

```

<Attribute>
  <AttributeName>ALB</AttributeName>
  <Meaning>Alarm Blocked</Meaning>
  <Description>Alarm Blocked: Any of the device dependant alarm objects has been blocked by
the operator</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceOutputs</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>OutOV</AttributeName>
    <Meaning>Output Order Value</Meaning>
    <Description>Analog Output connected to the process.
Must be an AO or AS.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Process Output</NameRepresentation>
      <TypeRepresentation>STRING</TypeRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints>Must be an AO or AS</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>StsReg01</AttributeName>
    <Meaning>Status Register 1</Meaning>
    <Description>Status Register 1</Description>
    <isEventAttribute>true</isEventAttribute>
    <isCommunicated>true</isCommunicated>
    <PrimitiveType>WORD</PrimitiveType>
  <Attribute>
    <AttributeName>OnSt</AttributeName>
    <Meaning>On Status</Meaning>
    <Description>On/Open Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>0</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>OffSt</AttributeName>

```

```

    <Meaning>Off Status</Meaning>
    <Description>Off/Closed Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>1</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AuMoSt</AttributeName>
    <Meaning>Auto Mode Status</Meaning>
    <Description>Current status of the Auto Mode</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>2</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MMoSt</AttributeName>
    <Meaning>Manual Mode Status</Meaning>
    <Description>Current status of the Manual Mode</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>3</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>FoMoSt</AttributeName>
    <Meaning>Forced Mode Status</Meaning>
    <Description>Current status of the Forced Mode.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>4</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>LDSt</AttributeName>
    <Meaning>Local Drive Status</Meaning>
    <Description>Current status of the Local Mode. The object is driven locally.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>5</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>IOErrorW</AttributeName>
    <Meaning>Input/Output Error Warning</Meaning>
    <Description>Current status of the IOError</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>6</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>IOSimuW</AttributeName>

```

```

    <Meaning>Input/Output Simulated Warning</Meaning>
    <Description>Current status of the IOSimu</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>7</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AuMRW</AttributeName>
    <Meaning>Auto Manual Request Warning Status.</Meaning>
    <Description>Auto and manual requests discrepancy when Manual/Forced mode
active.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>8</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>PosW</AttributeName>
    <Meaning>Position Warning</Meaning>
    <Description>There is discrepancy between the order status and the position status
according to Time Delay and Dead-band.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>9</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>StartISt</AttributeName>
    <Meaning>Start Interlock Status</Meaning>
    <Description>Current status of the Start Interlock</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>10</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>TStopISt</AttributeName>
    <Meaning>Temporary Stop Interlock Status</Meaning>
    <Description>Current status of the Temporary Stop Interlock</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>11</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AlUnAck</AttributeName>
    <Meaning>Alarm UnAcknowledged</Meaning>
    <Description>Alarm UnAcknowledged: The alarm or at least one of the alarms associated to
the object is not acknowledged</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>12</BitPosition>
</Attribute>

```

```

<Attribute>
  <AttributeName>AulhFoMoSt</AttributeName>
  <Meaning>Auto Inhibit Forced Mode Status</Meaning>
  <Description>Auto Inhibit Forced Mode status: Current status of the Auto Inhibit forced
mode.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>13</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>AlSt</AttributeName>
  <Meaning>Alarm Status</Meaning>
  <Description>Alarm Status</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>14</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>AulhMMoSt</AttributeName>
  <Meaning>Auto Inhibit Manual Mode Status</Meaning>
  <Description>Auto Inhibit Manual Mode Status</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>15</BitPosition>
</Attribute>
</Attribute>
<Attribute>
  <AttributeName>StsReg02</AttributeName>
  <Meaning>Status Register 2</Meaning>
  <Description>Status Register 2</Description>
  <isEventAttribute>true</isEventAttribute>
  <isCommunicated>true</isCommunicated>
  <PrimitiveType>WORD</PrimitiveType>
<Attribute>
  <AttributeName>FuStopISt</AttributeName>
  <Meaning>Full Stop Interlock Status</Meaning>
  <Description>Full Stop Interlock Status</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>10</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>EnRstartSt</AttributeName>
  <Meaning>Enable Restart Status</Meaning>
  <Description>Manual Restart after full stop status</Description>
  <PrimitiveType>BIT1</PrimitiveType>

```

```

    <BitPosition>11</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>SoftLDSt</AttributeName>
  <Meaning>Software Local Mode Status</Meaning>
  <Description>Current status of the Software Local Mode.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>12</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>AlBW</AttributeName>
  <Meaning>Alarm Blocked Warning</Meaning>
  <Description>When true, the alarm or any of the device dependant alarm objects have been
blocked by the operator</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>13</BitPosition>
</Attribute>
</Attribute>
<Attribute>
  <AttributeName>PosSt</AttributeName>
  <Meaning>Position status</Meaning>
  <Description>Position Status</Description>
  <isCommunicated>>true</isCommunicated>
  <isArchived>>true</isArchived>
  <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuPosRSt</AttributeName>
  <Meaning>Auto Position Request Status</Meaning>
  <Description>Status of the position of the object in auto mode.</Description>
  <isCommunicated>>true</isCommunicated>
  <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>MPosRSt</AttributeName>
  <Meaning>Manual Position Request Status</Meaning>
  <Description>Manual Position request status</Description>
  <isCommunicated>>true</isCommunicated>
  <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>PosRSt</AttributeName>

```



```

    <Meaning>Position Request Status</Meaning>
    <Description>Position request status</Description>
    <isCommunicated>>true</isCommunicated>
    <isArchived>>true</isArchived>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>OnSt</AttributeName>
    <Meaning>On Status</Meaning>
    <Description>On/Open Status</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>OffSt</AttributeName>
    <Meaning>Off Status</Meaning>
    <Description>Off/Closed Status</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuMoSt</AttributeName>
    <Meaning>Auto Mode Status</Meaning>
    <Description>Current status of the Auto Mode</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>MMoSt</AttributeName>
    <Meaning>Manual Mode Status</Meaning>
    <Description>Current status of the Manual Mode request</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>FoMoSt</AttributeName>
    <Meaning>Forced Mode Status</Meaning>
    <Description>Current status of the Forced Mode.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>LDSt</AttributeName>
    <Meaning>Local Drive Status</Meaning>
    <Description>Current status of the Local mode.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>

```

```

<Attribute>
  <AttributeName>SoftLDSt</AttributeName>
  <Meaning>Software Local Drive Status</Meaning>
  <Description>Current status of the Software Local mode request</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>IOErrorW</AttributeName>
  <Meaning>Input/Output Error Warning</Meaning>
  <Description>Current status of the IOError</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>IOSimuW</AttributeName>
  <Meaning>Input/Output Simulated Warning</Meaning>
  <Description>Current status of the IOSimu</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuMRW</AttributeName>
  <Meaning>Auto Manual Request Warning</Meaning>
  <Description>Auto and manual requests discrepancy when Manual/Forced mode
active</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>PosW</AttributeName>
  <Meaning>Position Warning</Meaning>
  <Description>Position Warning Status</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>StartISt</AttributeName>
  <Meaning>Start Interlock Status</Meaning>
  <Description>Current status of StartI</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>TStopISt</AttributeName>
  <Meaning>Temporary Stop Interlock Status</Meaning>
  <Description>Current status of TStopI</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>

```

```

</Attribute>
<Attribute>
  <AttributeName>FuStopISt</AttributeName>
  <Meaning>Full Stop Interlock Status</Meaning>
  <Description>Full Stop Interlock Status</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AlUnAck</AttributeName>
  <Meaning>Alarm UnAcknowledged</Meaning>
  <Description>Alarm UnAcknowledged: The alarm or at least one of the alarms associated to
the object is not acknowledged</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AlBW</AttributeName>
  <Meaning>Alarm Blocked Warning</Meaning>
  <Description>When true, the alarm or any of the device dependant alarm objects have been
blocked by the operator</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>EnRStartSt</AttributeName>
  <Meaning>Enable Restart Status</Meaning>
  <Description>Manual Restart after full stop status possible</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>RdyStartSt</AttributeName>
  <Meaning>Ready To Start Status</Meaning>
  <Description>The object is ready to start, there is no blocking process to start.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AlSt</AttributeName>
  <Meaning>Alarm Status</Meaning>
  <Description>Alarm Status</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADeviceGraphics</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>

```

```

<Attribute>
  <AttributeName>PosStUnit</AttributeName>
  <Description>Unit of the device to be displayed in SCADA</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Unit</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints>In principle there is no limit to the number of characters used, however a long
name may result in display issues at the SCADA level.
Forbidden characters: *[: "'@ # $ ^ & * ? ! , ; = + ~ ( ) { } &lt; &gt; | ]</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PosStFormat</AttributeName>
  <Description>Format of the value to be displayed in SCADA. Supported formats:
### (fixed number of decimal places, in this case 2),
EXP or xEXP (exponential, 3 or x digits after '.'),
xD or xd (fixed digit format, x=number of digits, e.g.: 3D=0.01, 12.0, 123)</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Format</NameRepresentation>
    <isValueRequired>>true</isValueRequired>
    <Usage>Example: use format ### to display value to 2 decimal places. To the left of the
decimal point, the SCADA layer will display as many digits as required by the object value, therefore a
single # is enough.</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>WidgetType</AttributeName>
  <Description>Define the widget type to display in the SCADA device tree overview only.
The widget displayed in the process panel will be selected when the user creates the
panel.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Widget Type</NameRepresentation>
    <isValueRequired>>true</isValueRequired>
    <isCaseSensitive>>true</isCaseSensitive>
    <PermittedValue>AnalogSquare</PermittedValue>
    <PermittedValue>AnalogValveHorizontal</PermittedValue>

```

```

    <PermittedValue>AnalogValveVertical</PermittedValue>
    <PermittedValue>AnalogHeaterHorizontal</PermittedValue>
    <PermittedValue>AnalogHeaterVertical</PermittedValue>
    <PermittedValue>AnalogDamperHorizontal</PermittedValue>
    <PermittedValue>AnalogDamperVertical</PermittedValue>
    <PermittedValue>AnalogDoubleDamperHorizontal</PermittedValue>
    <PermittedValue>AnalogElecHeaterHorizontal</PermittedValue>
    <PermittedValue>AnalogElecHeaterVertical</PermittedValue>
    <PermittedValue>AnalogFan</PermittedValue>
    <PermittedValue>AnalogPumpHorizontalRight</PermittedValue>
    <PermittedValue>AnalogPumpVerticalUp</PermittedValue>
    <PermittedValue>Analog3WayValveHorizontalDownOnLeft</PermittedValue>
    <PermittedValue>Analog3WayValveHorizontalDownOnRight</PermittedValue>
    <PermittedValue>Analog3WayValveHorizontalUpOnLeft</PermittedValue>
    <PermittedValue>Analog3WayValveHorizontalUpOnRight</PermittedValue>
    <PermittedValue>Analog3WayValveVerticalLeftOnDown</PermittedValue>
    <PermittedValue>Analog3WayValveVerticalLeftOnUp</PermittedValue>
    <PermittedValue>Analog3WayValveVerticalRightOnDown</PermittedValue>
    <PermittedValue>Analog3WayValveVerticalRightOnUp</PermittedValue>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Synoptic</AttributeName>
  <Description>Define link between the device and an existing synoptic where it appears. The
synoptic specified here can be accessed from the device right-click menu item
"Synoptic".</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Specify the path of the .pnl file under the "\panel" directory of the PVSS
project.</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DiagnosticPanel</AttributeName>
  <Description>Define link between the device and an existing diagnostic panel for the device.
The panel specified here can be accessed from the device right-click menu item "Diagnostic" as well
as from the "Diagnostic" button on the object faceplate.</Description>

```

```

    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Diagnostic</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>Specify the path of the .pnl file under the "\panel" directory of the PVSS project
</Usage>
      <DependentAttributes/>
      <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>WWWLink</AttributeName>
    <Description>Define link between the device and an existing web page (or pdf file, or other file
which can be opened with IE). The link can be accessed from the device right-click menu item "Info"
as well as from the "Info" button on the object faceplate.</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>WWW Link</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADeviceFunctionals</AttributeFamilyName>
  <UserExpandable>>false</UserExpandable>
  <Attribute>
    <AttributeName>MaskEvent</AttributeName>
    <Description>If TRUE: the events of the device will be masked in SCADA and not displayed or
archived in the Event List.
An 'event' is defined as a bit change in StsReg01 or StsReg02</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Mask Event</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>

```

```

    <AttributeName>AccessControlDomain</AttributeName>
    <Description>Define Access Control on the device to an existing SCADA Domain
Forbidden characters: *[: ""@ #\$%^&*?!;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Access Control Domain</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>This domain is used to grant access to this specific device. The domain specified for
this object will allow access to the object only to registered users on that domain</Usage>
        <DependentAttributes/>
        <Constraints>Forbidden characters: *[: ""@ #\$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>SCADADeviceClassificationTags</AttributeName>
    <Description>It defines the Domain, Nature and DeviceLinks for the SCADA
visualization</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
    <Attribute>
        <AttributeName>Domain</AttributeName>
        <Description>Domain of the device. If empty, the domain will be the name of the application
Forbidden characters: *[: ""@ #\$%^&*?!;=+~(){}&lt;&gt;|]</Description>
        <PrimitiveType>STRING</PrimitiveType>
        <isSpecificationAttribute>
            <isValueRequired>>false</isValueRequired>
            <Usage>Domain is used to filter the devices in the alarm list or in the device tree
overview</Usage>
            <DependentAttributes/>
            <Constraints>Forbidden characters: *[:
""@ #\$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
        </isSpecificationAttribute>
    </Attribute>
    <Attribute>
        <AttributeName>Nature</AttributeName>
        <Description>Nature of the device. If empty, the nature will be the type of the device
Forbidden characters: *[: ""@ #\$%^&*?!;=+~(){}&lt;&gt;|]</Description>
        <PrimitiveType>STRING</PrimitiveType>
        <isSpecificationAttribute>
            <isValueRequired>>false</isValueRequired>
            <Usage>Nature is used to filter the devices in the alarm list or in the device tree
overview</Usage>
            <DependentAttributes/>

```

```

    <Constraints>Forbidden characters: *[:
"@#%&*?!;=+~(){}&lt;&gt;|]</Constraints>
</isSpecificationAttribute>
</Attribute>

```

```

<Attribute>

```

```

    <AttributeName>DeviceLinks</AttributeName>

```

```

    <Description>Define links to other devices (separate device names with commas).

```

Note: it is not necessary to link to master, parents or children because these links are automatically created.

```

Forbidden characters: *[: "@#%&*?!;=+~(){}&lt;&gt;|]</Description>

```

```

    <PrimitiveType>STRING</PrimitiveType>

```

```

    <isSpecificationAttribute>

```

```

        <NameRepresentation>Device Links</NameRepresentation>

```

```

        <isValueRequired>>false</isValueRequired>

```

```

        <Usage>Linked devices will be shown in the device right-click menu</Usage>

```

```

        <DependentAttributes>Expert Name or Name.

```

The name of the device(s) specified here *must* correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified here corresponds to "Name".</DependentAttributes>

```

    <Constraints>Forbidden characters: *[:
"@#%&*?!;=+~(){}&lt;&gt;|]</Constraints>
</isSpecificationAttribute>
</Attribute>

```

```

</Attribute>

```

```

</AttributeFamily>

```

```

<AttributeFamily>

```

```

    <AttributeFamilyName>SCADADataArchiving</AttributeFamilyName>

```

```

    <UserExpandable>>true</UserExpandable>

```

```

    <Attribute>

```

```

        <AttributeName>ArchiveMode</AttributeName>

```

```

        <Description>Archive mode of the object engineering values. Archive if:

```

Old/New Comparison: value changes

Time: value changes after Time Filter

Deadband: value < or > deadband

AND: at least one of the conditions is fulfilled

OR: both conditions are fulfilled</Description>

```

        <PrimitiveType>STRING</PrimitiveType>

```

```

        <isSpecificationAttribute>

```

```

            <NameRepresentation>Archive Mode</NameRepresentation>

```

```

            <isValueRequired>>false</isValueRequired>

```

```

            <PermittedValue>No</PermittedValue>

```

```

            <PermittedValue>Deadband</PermittedValue>

```

```

            <PermittedValue>Time</PermittedValue>

```



```

    <PermittedValue>Deadband AND Time</PermittedValue>
    <PermittedValue>Deadband OR Time</PermittedValue>
    <PermittedValue>Old/New Comparison</PermittedValue>
    <PermittedValue>Old/New Comparison AND Time</PermittedValue>
    <PermittedValue>Old/New Comparison OR Time</PermittedValue>
    <Usage>This archive mode is used to archive data in the PVSS database</Usage>
    <DependentAttributes>If "Time" is selected, "Time Filter (s)" must be filled
    If "Deadband" is selected: "Deadband Type" and "Deadband Value" must be
    filled.</DependentAttributes>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>TimeFilter</AttributeName>
  <Description>Time filter for the SCADA archiving of the engineering values of the object. Must
  be positive.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Time Filter (s)</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes>Valid if "Time" has been selected as Archive
    Mode</DependentAttributes>
    <Constraints>Must be positive</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DeadbandType</AttributeName>
  <Description>Deadband type (Relative or Absolute) of the deadband for the SCADA archiving
  of the engineering values of the object</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Deadband Type</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <PermittedValue>Relative</PermittedValue>
    <PermittedValue>Absolute</PermittedValue>
    <Usage>The value is archived if the difference between the latest archived value and the
    actual value exceeds, either:
    - if 'Absolute': the "Deadband Value"
    - if 'Relative': the "Deadband Value" as a percent of the latest archived value</Usage>
    <DependentAttributes>Valid if "Deadband" has been selected as Archive
    Mode</DependentAttributes>
    <Constraints/>

```

```

    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>DeadbandValue</AttributeName>
    <Description>Deadband value for the SCADA archiving of the engineering values of the object
    Must be positive and larger than the deadband specified for the driver data smoothing (Driver
    deadband)</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Deadband Value</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage/>
      <DependentAttributes>Valid if "Deadband" has been selected as Archive
      Mode</DependentAttributes>
      <Constraints>Must be positive and larger than the deadband specified for the driver data
      smoothing (Driver deadband)</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>BooleanArch</AttributeName>
    <Description>Name of the Boolean archive
    Forbidden characters: *[: ""@`#$$%^&amp;*?!;,=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Boolean Archive</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>The boolean values of the device will be archived in the specified PVSS database.
      The archive must be created in PVSS before importing the object.</Usage>
      <DependentAttributes/>
      <Constraints>Forbidden characters: *[:
      ""@`#$$%^&amp;*?!;,=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>AnalogArch</AttributeName>
    <Description>Name of the analog archive
    Forbidden characters: *[: ""@`#$$%^&amp;*?!;,=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Analog Archive</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>The analog values of the device will be archived in the specified PVSS database. The
      archive must be created in PVSS before importing the object.</Usage>

```

```

        <DependentAttributes/>
        <Constraints>Forbidden characters: *[:
"@`#$$%^&?*?!.,;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>EventArch</AttributeName>
    <Description>Name of the event archive
Forbidden characters: *[: "@`#$$%^&?*?!.,;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Event Archive</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>The events generated by the device will be archived in the specified PVSS database.
The archive must be created in PVSS before importing the object.</Usage>
        <DependentAttributes/>
        <Constraints>Forbidden characters: *[:
"@`#$$%^&?*?!.,;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>SCADADriverDataSmoothing</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>DeadbandType</AttributeName>
        <Description>Deadband type (None, Relative, Absolute or Old/New) for the SCADA driver data
smoothing (Driver deadband)</Description>
        <PrimitiveType>STRING</PrimitiveType>
        <isSpecificationAttribute>
            <NameRepresentation>Deadband Type</NameRepresentation>
            <isValueRequired>>true</isValueRequired>
            <PermittedValue>No</PermittedValue>
            <PermittedValue>Relative</PermittedValue>
            <PermittedValue>Absolute</PermittedValue>
            <PermittedValue>Old/New</PermittedValue>
            <Usage>Used for the online display in SCADA</Usage>
            <DependentAttributes/>
            <Constraints/>
        </isSpecificationAttribute>
    </Attribute>
    <Attribute>
        <AttributeName>DeadbandValue</AttributeName>

```

```

    <Description>Deadband value for the SCADA driver data smoothing
    Must be positive and smaller than the deadband specified for the archiving</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Deadband Value</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>Used for the online display in SCADA</Usage>
        <DependentAttributes/>
        <Constraints>Must be positive and smaller than the deadband specified for the
    archiving</Constraints>
    </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>LogicDeviceDefinitions</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>MasterDevice</AttributeName>
        <Description>Master of the device (relative to the hierarchy of dependent
    objects).</Description>
        <PrimitiveType>STRING</PrimitiveType>
        <isSpecificationAttribute>
            <NameRepresentation>Master</NameRepresentation>
            <isValueRequired>>false</isValueRequired>
            <Usage>The master will give automatic requests to the device. The master object will
    appear in the list of "Device Links" in the device right-click menu.</Usage>
            <DependentAttributes/>
            <Constraints>Must be a single PCO for field objects, controller, or PCO.
    Must be PCO or field objects for alarms (several masters are allowed in the case of multiple alarms,
    separated by commas or spaces).</Constraints>
        </isSpecificationAttribute>
    </Attribute>
    <Attribute>
        <AttributeName>ExternalMaster</AttributeName>
        <Description>Master of the device if located in another PLC for WinCCOA.</Description>
        <PrimitiveType>STRING</PrimitiveType>
        <isSpecificationAttribute>
            <NameRepresentation>External Master</NameRepresentation>
            <isValueRequired>>false</isValueRequired>
            <Usage>The external master will give automatic requests to the device from another PLC. To
    be specified only if master is empty.</Usage>
            <DependentAttributes/>
            <Constraints>Must be a single PCO for field objects, controller, or PCO. </Constraints>

```

```

    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>CustomLogicParameters</AttributeName>
    <Description>User defined meaning, used by the logic generators.</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
    <Attribute>
      <AttributeName>Parameter1</AttributeName>
      <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
      <PrimitiveType>STRING</PrimitiveType>
      <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
        <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
        <Constraints>Forbidden characters: '$' </Constraints>
      </isSpecificationAttribute>
    </Attribute>
    <Attribute>
      <AttributeName>Parameter2</AttributeName>
      <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
      <PrimitiveType>STRING</PrimitiveType>
      <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
        <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
        <Constraints>Forbidden characters: '$' </Constraints>
      </isSpecificationAttribute>
    </Attribute>
    <Attribute>
      <AttributeName>Parameter3</AttributeName>
      <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
      <PrimitiveType>STRING</PrimitiveType>
      <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>

```

```

    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter4</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
        <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
        <Constraints>Forbidden characters: '$' </Constraints>
        </isSpecificationAttribute>
    </Attribute>
<Attribute>
    <AttributeName>Parameter5</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
        <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
        <Constraints>Forbidden characters: '$' </Constraints>
        </isSpecificationAttribute>
    </Attribute>
<Attribute>
    <AttributeName>Parameter6</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>

```

```

    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter7</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
        <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
        <Constraints>Forbidden characters: '$' </Constraints>
        </isSpecificationAttribute>
    </Attribute>
<Attribute>
    <AttributeName>Parameter8</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
        <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
        <Constraints>Forbidden characters: '$' </Constraints>
        </isSpecificationAttribute>
    </Attribute>
<Attribute>
    <AttributeName>Parameter9</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>

```

```

    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Parameter10</AttributeName>
  <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
  </isSpecificationAttribute>
</Attribute>
</Attribute>
<Attribute>
  <AttributeName>CustomLogicSections</AttributeName>
  <Description>If specified, these sections will override the default logic sections (UNICOS
provided).</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
<Attribute>
  <AttributeName>DL</AttributeName>
  <Description>Define user template for the Dependent Logic</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>DL User Template</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Specify path of the python script located under the "UserSpecific"
directory</Usage>
    <DependentAttributes>CustomLogicParameters.ParameterX (where X=1-
10)</DependentAttributes>
    <Constraints/>

```



```

        </isSpecificationAttribute>
    </Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>DeviceTechnical</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>PROCOSConfiguration</AttributeName>
        <Description>PROCOS parameters allowing simulation</Description>
        <PrimitiveType>STRUCT</PrimitiveType>
    <Attribute>
        <AttributeName>Config</AttributeName>
        <Description>Device mode configuration for simulation (Simulated, Forced or
Empty)</Description>
        <PrimitiveType>STRING</PrimitiveType>
    </Attribute>
    <Attribute>
        <AttributeName>ForcedValue</AttributeName>
        <Description>Forced value defined (e.g.: analog: 4.5, digital: 0 or 1)</Description>
        <PrimitiveType>STRING</PrimitiveType>
    </Attribute>
    <Attribute>
        <AttributeName>Hierarchy</AttributeName>
        <Description>Hierarchy definition following the Simulation model</Description>
        <PrimitiveType>STRING</PrimitiveType>
    </Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>TargetDeviceInformation</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>Target</AttributeName>
        <Description>Identifies a target type (e.g. SIEMENS, SCHNEIDER...)</Description>
        <PrimitiveType>STRUCT</PrimitiveType>
        <DefaultValue>Siemens</DefaultValue>
    <Attribute>
        <AttributeName>RepresentationName</AttributeName>
        <Description>It's the name used ...</Description>
        <PrimitiveType>STRING</PrimitiveType>
        <DefaultValue>ANALOG</DefaultValue>
    </Attribute>
</AttributeFamily>

```

```
</Attribute>
<Attribute>
  <AttributeName>Optimized</AttributeName>
  <Description>Is this object an optimized Object?</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <DefaultValue>>false</DefaultValue>
</Attribute>
<Attribute>
  <AttributeName>LimitSize</AttributeName>
  <Description>Maximun number of instances allowed</Description>
  <PrimitiveType>INT32</PrimitiveType>
  <DefaultValue>200</DefaultValue>
</Attribute>
<Attribute>
  <AttributeName>FastInterlock</AttributeName>
  <Description>Is this object a fast interlock object?</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <DefaultValue>>false</DefaultValue>
</Attribute>
</Attribute>
</AttributeFamily>
</UNICOSMetaModel>
```

2.4. AnalogDigitalDeviceType.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<!-- edited with XMLSpy v2008 sp1 (http://www.altova.com) by amerezhi (CERN) -->
<UNICOSMetaModel xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="..\unicos\UNICOSMetaModel.xsd">
  <Information>
    <Package>${devicePackageName}</Package>
    <Name>AnalogDigital</Name>
    <ObjectTypeFamily>FieldObjectFamily</ObjectTypeFamily>
    <Description>Analog Digital Device</Description>
    <Version>${LastChangedRevision: 170121} $</Version>
  </Information>
  <AttributeFamily>
    <AttributeFamilyName>DeviceIdentification</AttributeFamilyName>
    <UserExpandable>>false</UserExpandable>
    <Attribute>
      <AttributeName>Name</AttributeName>
      <Description>Name of the device. It must be unique.
```

Max length:

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: [:"'@`#\$%^&*?!;=+~(){}<>|]-., double underscore, and page break</Description>

```
<PrimitiveType>STRING</PrimitiveType>
```

```
<isSpecificationAttribute>
```

```
<isValueRequired>>true</isValueRequired>
```

```
<Usage>Name displayed at the SCADA level if "Expert Name" is not specified.
```

This name will appear in the datapoints created in the SCADA layer.</Usage>

```
<DependentAttributes>Device Links.
```

The name of the device(s) specified in Device Links *must* correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to "Name".</DependentAttributes>

```
<Constraints>Max length:
```

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: [:"'@`#\$%^&*?!;=+~(){}<>|]-., double underscore, and page break
Name must be unique.</Constraints>

```
</isSpecificationAttribute>
```

```
</Attribute>
```

```
<Attribute>
```

```
<AttributeName>ExpertName</AttributeName>
```

```

    <Description>Name of the device displayed at the SCADA level. It must be unique.
Forbidden characters: *[: "'@ # $ % ^ & amp; * ? ! , ; = + ~ ( ) { } & lt; & gt; | ]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Expert Name</NameRepresentation>
        <TypeRepresentation>STRING</TypeRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>It does not affect to the datapoints names in the SCADA layer.</Usage>
        <DependentAttributes>Device Links.
The name of the device(s) specified in Device Links *must* correspond to "Expert Name" if it is
defined.
If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to
"Name".</DependentAttributes>
        <Constraints>In principle there is no limit to the number of characters used, however a long
name may result in display issues at the SCADA level.
Forbidden characters: *[: "'@ # $ % ^ & amp; * ? ! , ; = + ~ ( ) { } & lt; & gt; | ]
Expert Name must be unique.</Constraints>
    </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>DeviceDocumentation</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>DeviceDescription</AttributeName>
        <Description>Description of the device. </Description>
        <PrimitiveType>STRING</PrimitiveType>
        <isSpecificationAttribute>
            <NameRepresentation>Description</NameRepresentation>
            <isValueRequired>>false</isValueRequired>
            <Usage>Used in the SCADA layer in the device faceplate</Usage>
            <DependentAttributes/>
            <Constraints>In principle there is no limit to the number of characters used, however a long
description may result in display issues at the SCADA level.
Forbidden characters: ;</Constraints>
        </isSpecificationAttribute>
    </Attribute>
    <Attribute>
        <AttributeName>Remarks</AttributeName>
        <Description>Field used to add relevant information about the device. </Description>
        <PrimitiveType>STRING</PrimitiveType>
        <isSpecificationAttribute>
            <isValueRequired>>false</isValueRequired>

```

```

    <Usage>This information is not used in the generation process, it remains only at the
specification level for documentation purposes.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: ;</Constraints>
    </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>FEDeviceParameters</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>ParReg</AttributeName>
        <Description>Parametrisation register: This register contains all the boolean parameters of
the object</Description>
        <PrimitiveType>WORD</PrimitiveType>
    <Attribute>
        <AttributeName>PFsPosOn</AttributeName>
        <Meaning>Parameter Fail-Safe position ON/Open</Meaning>
        <Description>Fail Safe position of the actuator</Description>
        <PrimitiveType>BIT1</PrimitiveType>
        <BitPosition>0</BitPosition>
        <isSpecificationAttribute>
            <NameRepresentation>Fail-Safe</NameRepresentation>
            <TypeRepresentation>STRING</TypeRepresentation>
            <isValueRequired>>true</isValueRequired>
            <PermittedValue>Off/Close</PermittedValue>
            <PermittedValue>On/Open</PermittedValue>
            <Usage>This is the position of the device in case of interlock.</Usage>
            <DependentAttributes/>
            <Constraints/>
        </isSpecificationAttribute>
    </Attribute>
    <Attribute>
        <AttributeName>PHFOn</AttributeName>
        <Meaning>Parameter Hardware Feedback On</Meaning>
        <Description>Enables the activation of the Feedback ON of the object via a hardware
sensor</Description>
        <PrimitiveType>BIT1</PrimitiveType>
        <BitPosition>1</BitPosition>
    </Attribute>
    <Attribute>
        <AttributeName>PHFOff</AttributeName>
        <Meaning>Parameter Hardware Feedback Off</Meaning>

```

```

    <Description>Enables the activation of the Feedback OFF of the object via a hardware
sensor.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>2</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>PHFPos</AttributeName>
    <Meaning>Parameter Hardware Feedback Position</Meaning>
    <Description>Activates Hardware Feedback Analog</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>3</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>PHLD</AttributeName>
    <Meaning>Parameter Hardware Local Drive</Meaning>
    <Description>Enables the local drive feedback. When this input is TRUE the feedback is
received via the HFLD.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>4</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>PHLDCmd</AttributeName>
    <Meaning>Parameter Hardware Local Drive Command</Meaning>
    <Description>Enables the local drive command. When this input is TRUE the command is
received via the HFLD.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>5</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>PPWMMode</AttributeName>
    <Meaning>Parameter PWM Mode</Meaning>
    <Description>Mode used to generate the Pulse Wave Modulation (PWM). </Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>6</BitPosition>
    <isSpecificationAttribute>
        <NameRepresentation>PWM Mode</NameRepresentation>
        <TypeRepresentation>STRING</TypeRepresentation>
        <isValueRequired>>true</isValueRequired>
        <PermittedValue>Classic</PermittedValue>
        <PermittedValue>Bipolar</PermittedValue>
        <Usage>Classic mode uses a single DO.
Bipolar mode uses 2 DO (1 DO to go up and 1 DO to go down).</Usage>

```

```

    <DependentAttributes>If Bipolar mode is selected, the field "Output Off" must be
specified</DependentAttributes>
    <Constraints/>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>POutMain</AttributeName>
    <Meaning>Parameter Outputs Maintained</Meaning>
    <Description>Maintain the output when Range Max is reached.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>7</BitPosition>
    <isSpecificationAttribute>
        <NameRepresentation>Outputs Maintained</NameRepresentation>
        <TypeRepresentation>BOOLEAN</TypeRepresentation>
        <isValueRequired>>true</isValueRequired>
        <Usage>TRUE: The process output will remain TRUE when the Range Max is reached.
FALSE: The process output will go FALSE when the Range Max is reached.</Usage>
    <DependentAttributes/>
    <Constraints/>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>PEnrStart</AttributeName>
    <Meaning>Parameter Enable Restart</Meaning>
    <Description>Strategy to adopt to restart the device after a Full Stop
Interlock.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>8</BitPosition>
    <isSpecificationAttribute>
        <NameRepresentation>Manual Restart after Full Stop</NameRepresentation>
        <TypeRepresentation>STRING</TypeRepresentation>
        <isValueRequired>>true</isValueRequired>
        <PermittedValue>FALSE</PermittedValue>
        <PermittedValue>TRUE only if Full Stop disappeared</PermittedValue>
        <PermittedValue>TRUE even if Full Stop still active</PermittedValue>
        <Usage>FALSE: Device restarts after acknowledge.
TRUE only if Full Stop disappeared: Ack+Allow Restart needed (possible only if FS disappeared)
TRUE even if Full Stop still active: Ack+Allow Restart needed (possible at any moment)</Usage>
    <DependentAttributes/>
    <Constraints>All devices of the application should have the same "Manual Restart after
Full Stop"</Constraints>
    </isSpecificationAttribute>
</Attribute>

```

```

<Attribute>
  <AttributeName>PRstartFS</AttributeName>
  <Meaning>Parameter Restart after Full Stop</Meaning>
  <Description>Parameter Restart after Full Stop</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>9</BitPosition>
</Attribute>
</Attribute>
<Attribute>
  <AttributeName>PMinRan</AttributeName>
  <Meaning>Parameter Minimum Range</Meaning>
  <Description>Minimum engineering value of the device.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Range Min</NameRepresentation>
    <isValueRequired>>true</isValueRequired>
    <Usage>A linear conversion is performed between the raw range and engineering
range.</Usage>
    <DependentAttributes/>
    <Constraints>The value specified here must be consistent with the format defined in the
field "Format".</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PMaxRan</AttributeName>
  <Meaning>Parameter Maximum Range</Meaning>
  <Description>Maximum engineering value of the device.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Range Max</NameRepresentation>
    <isValueRequired>>true</isValueRequired>
    <Usage>A linear conversion is performed between the raw range and engineering
range.</Usage>
    <DependentAttributes/>
    <Constraints>The value specified here must be consistent with the format defined in the
field "Format".</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PWDt</AttributeName>
  <Meaning>Position Warning Delay time</Meaning>
  <Description>Delay applied to the Position Alarm when there is a discordance between
OutputOrder and Feedback position.

```



```

Must be positive.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Warning Time Delay (s)</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>positive number of parameter</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PWDb</AttributeName>
  <Meaning>Position Warning Dead-band</Meaning>
  <Description>Deadband value to compute the position warning of the device (Discordance).
Must be positive.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Warning Deadband Value (Unit)</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>positive number of parameter</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PMInSpd</AttributeName>
  <Meaning>Parameter Manual Increase Speed</Meaning>
  <Description>Increase speed of the actuator when user requests a new value from SCADA.
Must be positive.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Manual Increase Speed (Unit/s)</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints>Must be positive</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PMDeSpd</AttributeName>

```

```

    <Meaning>Parameter Manual Decrease Speed</Meaning>
    <Description>Decrease speed of the actuator when user requests a new value from SCADA.
Must be positive.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Manual Decrease Speed (Unit/s)</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage/>
        <DependentAttributes/>
        <Constraints>Must be positive</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>PMStpInV</AttributeName>
    <Meaning>Parameter Manual Step Increase Value</Meaning>
    <Description>Step amplitude in Unit value when user requests an "increase value" from
SCADA.
Must be positive and &lt; (Range Max-Range Min).</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Manual Increase Step (Unit)</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage/>
        <DependentAttributes/>
        <Constraints>Must be positive and &lt; (Range Max-Range Min)</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>PMStpDeV</AttributeName>
    <Meaning>Parameter Manual Step Decrease</Meaning>
    <Description>Step amplitude in Unit value when user requests a "decrease value" from SCADA.
Must be positive and &lt; (Range Max-Range Min)</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Manual Decrease Step (Unit)</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage/>
        <DependentAttributes/>
        <Constraints>Must be positive and &lt; (Range Max-Range Min)</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>

```

```

<AttributeName>PPWM</AttributeName>
<Meaning>Parameter PWM</Meaning>
<Description>Parameter PWM</Description>
<PrimitiveType>FLOAT32</PrimitiveType>
<isSpecificationAttribute>
  <NameRepresentation>PWM Parameters</NameRepresentation>
  <isValueRequired>>false</isValueRequired>
  <Usage/>
  <DependentAttributes/>
  <Constraints/>
</isSpecificationAttribute>
<Attribute>
  <AttributeName>PTPeriod</AttributeName>
  <Meaning>Parameter Time Period</Meaning>
  <Description>Time Period to generate the Pulse Wave Modulation (PWM).
The time period must be larger than the PLC cycle time and larger than the pulse minimum
duration.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Time Period (s)</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes>PWM Parameters.Minimum Duration (s)</DependentAttributes>
    <Constraints>The time period must be larger than the PLC cycle time and larger than the
pulse minimum duration</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PInMax</AttributeName>
  <Meaning>Parameter Maximum deviation</Meaning>
  <Description>Maximum amplitude of the PWM output corresponding to a duty cycle of
100% (the 'DO On' remains at One).
Must be between Range Min and Range Max.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Max Deviation</NameRepresentation>
    <TypeRepresentation>FLOAT32</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints>Must be between Range Min and Range Max</Constraints>
  </isSpecificationAttribute>
</Attribute>

```

```

<Attribute>
  <AttributeName>PTMin</AttributeName>
  <Meaning>Parameter Time Minimum</Meaning>
  <Description>Minimum pulse duration of the PWM.
Must be larger than the PLC cycle time.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Minimum Duration (s)</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints>Must be larger than the PLC cycle time</Constraints>
  </isSpecificationAttribute>
</Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceInterlocks</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>StartI</AttributeName>
    <Meaning>Start Interlock</Meaning>
    <Description>Start Interlock Request: When active, the ON request is blocked.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>TStopI</AttributeName>
    <Meaning>Temporary Stop Interlock</Meaning>
    <Description>Temporary Stop Interlock Request: When active, the object goes automatically
to its fail safe position and returns to the previous position after acknowledgement.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>FuStopI</AttributeName>
    <Meaning>Full Stop Interlock</Meaning>
    <Description>Full Stop Interlock Request: Devices goes to Fail-Safe position and remains until
acknowledged.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>Al</AttributeName>
    <Meaning>Alarm</Meaning>

```

<Description>Alarm input. This is not an interlock; it has no functional impact on the object. It will just display A on the widget with lower priority than other interlocks.</Description>

<PrimitiveType>BOOLEAN</PrimitiveType>

</Attribute>

</AttributeFamily>

<AttributeFamily>

<AttributeFamilyName>FEDeviceAutoRequests</AttributeFamilyName>

<UserExpandable>>true</UserExpandable>

<Attribute>

<AttributeName>AuOnR</AttributeName>

<Meaning>Auto On Request</Meaning>

<Description>Auto On Request (by logic): The control logic requests ON/Open on the object.</Description>

<PrimitiveType>BOOLEAN</PrimitiveType>

</Attribute>

<Attribute>

<AttributeName>AuOffR</AttributeName>

<Meaning>Auto Off Request</Meaning>

<Description>Auto Off Request (by logic): The control logic requests Off/Close on the object.</Description>

<PrimitiveType>BOOLEAN</PrimitiveType>

</Attribute>

<Attribute>

<AttributeName>AuPosR</AttributeName>

<Meaning>Auto Position Request.</Meaning>

<Description>Auto Position Request: The control logic requests a specific position on the object.</Description>

<PrimitiveType>BOOLEAN</PrimitiveType>

</Attribute>

<Attribute>

<AttributeName>AuAuMoR</AttributeName>

<Meaning>Auto Auto Mode Request</Meaning>

<Description>Auto Auto Mode Request. The control logic requests Auto Mode on the object.</Description>

<PrimitiveType>BOOLEAN</PrimitiveType>

</Attribute>

<Attribute>

<AttributeName>AulhMMo</AttributeName>

<Meaning>Auto Inhibit Manual Mode</Meaning>

<Description>Auto Inhibit Manual Mode (by logic): The control logic blocks the manual mode operation</Description>

<PrimitiveType>BOOLEAN</PrimitiveType>

</Attribute>

```

<Attribute>
  <AttributeName>AulhFoMo</AttributeName>
  <Meaning>Auto Inhibit Forced Mode</Meaning>
  <Description>Auto Inhibit Forced Mode (by logic): The control logic blocks the forced mode
operation.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>lhAuMRW</AttributeName>
  <Meaning>Inhibit Auto Manual Request Warning</Meaning>
  <Description>Inhibit Auto Manual Request Warning: The control logic requests to inhibit the
warning from discrepancy between manual request and auto request.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuAlAck</AttributeName>
  <Meaning>Auto Alarm Acknowledgement</Meaning>
  <Description>Auto Alarm Acknowledgement: The control logic requests and Acknowledgment
of the Alarm Start and Stop Interlocks</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuInSpd</AttributeName>
  <Meaning>Auto Increase Speed</Meaning>
  <Description>Auto Increase Setpoint Speed: The control logic sets a variation speed for
Setpoint increase.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuDeSpd</AttributeName>
  <Meaning>Auto Decrease Speed</Meaning>
  <Description>Auto Decrease Setpoint Speed: The control logic sets a variation speed for
Setpoint decrease.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuRStart</AttributeName>
  <Meaning>Auto Enable Restart Request</Meaning>
  <Description>Perform an auto "Allow Restart" from the PLC logic</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>

```

```

<AttributeFamilyName>FEDeviceManualRequests</AttributeFamilyName>
<UserExpandable>>true</UserExpandable>
<Attribute>
  <AttributeName>ManReg01</AttributeName>
  <Meaning>Manual Register 1</Meaning>
  <Description>Manual Register 1</Description>
  <isCommunicated>>true</isCommunicated>
  <PrimitiveType>WORD</PrimitiveType>
  <Attribute>
    <AttributeName>MAuMoR</AttributeName>
    <Meaning>Manual Auto Mode Request</Meaning>
    <Description>Manual Auto Mode Request: The operator requests the Auto
Mode.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>0</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>MMMoR</AttributeName>
    <Meaning>Manual Manual Mode Request</Meaning>
    <Description>Manual Manual Mode Request: The operator requests the Manual
Mode.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>1</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>MFoMoR</AttributeName>
    <Meaning>Manual Forced Mode Request</Meaning>
    <Description>Manual Forced Mode Request: The operator requests the Forced
Mode.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>2</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>MSoftLDR</AttributeName>
    <Meaning>Manual Software Local Mode</Meaning>
    <Description>The operator requests the Software Local Mode</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>3</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>MOnR</AttributeName>
    <Meaning>Manual On Request</Meaning>

```

```

    <Description>Manual On Request: The operator requests the On/Open
position</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>4</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MOffR</AttributeName>
    <Meaning>Manual Off Request</Meaning>
    <Description>Manual Off Request: The operator requests the Off/Close
position</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>5</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MNewPosR</AttributeName>
    <Meaning>Manual New Position Request</Meaning>
    <Description>Manual New Position Request: The operator requests a new position to the
object</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>6</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MStpInR</AttributeName>
    <Meaning>Manual Step Increase Request</Meaning>
    <Description>The Operator requests to increase the position by one basic
step</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>7</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MStpDeR</AttributeName>
    <Meaning>Manual Step Decrease Request</Meaning>
    <Description>The Operator requests to decrease the position by one basic
step</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>8</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MEnRstartR</AttributeName>
    <Meaning>Manual Enable Restart Request</Meaning>
    <Description>Manual Enable Restart Request: The Operator requests a Manual Restart after
Full Stop</Description>
    <PrimitiveType>BIT1</PrimitiveType>

```



```

    <BitPosition>9</BitPosition>
  </Attribute>
</Attribute>
  <AttributeName>MAIAckR</AttributeName>
  <Meaning>Manual Alarm Acknowledgement Request</Meaning>
  <Description>Manual Alarm Acknowledgement Request: The operator requests Interlocks or Alarms acknowledgement</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>15</BitPosition>
</Attribute>
</Attribute>
<Attribute>
  <AttributeName>MPosR</AttributeName>
  <Meaning>Manual Position Request</Meaning>
  <Description>Manual Position Request: Value of the position requested by operator</Description>
  <isCommunicated>>true</isCommunicated>
  <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>PLiOn</AttributeName>
  <Meaning>Parameter Limit On</Meaning>
  <Description>Limit above which the actuator status is "On".
Must be between Range Min and Range Max.</Description>
  <isCommunicated>>true</isCommunicated>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Parameter Limit On/Open</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Used to compute the "On" status of the device corresponding to the widget being completely filled in SCADA.</Usage>
    <DependentAttributes/>
    <Constraints>Must be between Range Min and Range Max</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PLiOff</AttributeName>
  <Meaning>Parameter Limit Off</Meaning>
  <Description>Limit below which the actuator status is "Off".
Must be between Range Min and Range Max.</Description>
  <isCommunicated>>true</isCommunicated>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>

```

```

    <NameRepresentation>Parameter Limit Off/Closed</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Used to compute the "Off" status of the device corresponding to the widget being
empty in SCADA.</Usage>
    <DependentAttributes/>
    <Constraints>Must be between Range Min and Range Max</Constraints>
    </isSpecificationAttribute>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceEnvironmentInputs</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>HFPos</AttributeName>
    <Meaning>Hardware Feedback Position</Meaning>
    <Description>Analog Feedback of the actuator.
Must be an AI/AIR/AS.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Feedback Analog</NameRepresentation>
      <TypeRepresentation>STRING</TypeRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints>Must be an AI/AIR/AS</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>HFOn</AttributeName>
    <Meaning>Hardware Feedback On</Meaning>
    <Description>Feedback On of the actuator.
Must be a DI.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Feedback On</NameRepresentation>
      <TypeRepresentation>STRING</TypeRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>Used to compute the "On" status of the device</Usage>
      <DependentAttributes/>
      <Constraints>Must be a DI</Constraints>
    </isSpecificationAttribute>
  </Attribute>

```

```

<Attribute>
  <AttributeName>HFOff</AttributeName>
  <Meaning>Hardware Feedback Off</Meaning>
  <Description>Feedback Off of the actuator.
Must be a DI.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Feedback Off</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Used to compute the "Off" status of the device</Usage>
    <DependentAttributes/>
    <Constraints>Must be a DI</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>HAOut</AttributeName>
  <Meaning>Hardware Analog Output</Meaning>
  <Description>Hardware Local Analog request to the actuator when it is in hardware local
mode.
Must be an AI/AIR/AS.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Hardware Analog Output</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Signal able to drive the device in case of hardware local mode.</Usage>
    <DependentAttributes/>
    <Constraints>Must be an AI/AIR/AS</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>HLD</AttributeName>
  <Meaning>Hardware Local Drive</Meaning>
  <Description>Activation of the Hardware Local Drive.
Must be a DI.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Local Drive</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Signal to put the actuator in Hardware Local Mode</Usage>

```

```

    <DependentAttributes/>
    <Constraints>Must be a DI</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>IOError</AttributeName>
  <Meaning>Input/Output Error</Meaning>
  <Description>IOError state in any of the dependant objects or the PLC channel assigned to the
object</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>IOSimu</AttributeName>
  <Meaning>Input/Output Simulated</Meaning>
  <Description>Any of the dependant objects is in Forced or Manual Mode</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AlB</AttributeName>
  <Meaning>Alarm Blocked</Meaning>
  <Description>Alarm Blocked: Any of the device dependant alarm objects has been blocked by
the operator</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceOutputs</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>DOutOnOV</AttributeName>
    <Meaning>Digital Output On Order Value</Meaning>
    <Description>Digital Output connected to the process for the Classic PWM.
Positive Output connected to the process for the Bipolar PWM.
Must be a DO.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Output On</NameRepresentation>
      <TypeRepresentation>STRING</TypeRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints>Must be a DO</Constraints>
    </isSpecificationAttribute>
  </Attribute>
</AttributeFamily>

```

```

</Attribute>
<Attribute>
  <AttributeName>DOutOffOV</AttributeName>
  <Meaning>Digital Output Off Order Value</Meaning>
  <Description>Negative Output connected to the process for the Bipolar PWM.
Must be a DO.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Output Off</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes>Bipolar PWM must be selected as PWM
Mode</DependentAttributes>
    <Constraints>Must be a DO</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>StsReg01</AttributeName>
  <Meaning>Status Register 1</Meaning>
  <Description>Status Register 1</Description>
  <isEventAttribute>true</isEventAttribute>
  <isCommunicated>true</isCommunicated>
  <PrimitiveType>WORD</PrimitiveType>
  <Attribute>
    <AttributeName>OnSt</AttributeName>
    <Meaning>On Status</Meaning>
    <Description>On/Open Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>0</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>OffSt</AttributeName>
    <Meaning>Off Status</Meaning>
    <Description>Off/Closed Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>1</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>AuMoSt</AttributeName>
    <Meaning>Auto Mode Status</Meaning>
    <Description>Current status of the Auto Mode</Description>

```

```

    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>2</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MMoSt</AttributeName>
    <Meaning>Manual Mode Status</Meaning>
    <Description>Current status of the Manual Mode</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>3</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>FoMoSt</AttributeName>
    <Meaning>Forced Mode Status</Meaning>
    <Description>Current status of the Forced Mode.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>4</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>LDSt</AttributeName>
    <Meaning>Local Drive Status</Meaning>
    <Description>Current status of the Local Mode. The object is driven locally.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>5</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>IOErrorW</AttributeName>
    <Meaning>Input/Output Error Warning</Meaning>
    <Description>Current status of the IOError</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>6</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>IOSimuW</AttributeName>
    <Meaning>Input/Output Simulated Warning</Meaning>
    <Description>Current status of the IOSimu</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>7</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AuMRW</AttributeName>
    <Meaning>Auto Manual Request Warning Status.</Meaning>

```

```

    <Description>Auto and manual requests discrepancy when Manual/Forced mode
active.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>8</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>PosW</AttributeName>
    <Meaning>Position Warning</Meaning>
    <Description>There is discrepancy between the order status and the position status
according to Time Delay and Dead-band.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>9</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>StartISt</AttributeName>
    <Meaning>Start Interlock Status</Meaning>
    <Description>Current status of the Start Interlock</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>10</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>TStopISt</AttributeName>
    <Meaning>Temporary Stop Interlock Status</Meaning>
    <Description>Current status of the Temporary Stop Interlock</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>11</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AlUnAck</AttributeName>
    <Meaning>Alarm UnAcknowledged</Meaning>
    <Description>Alarm UnAcknowledged: The alarm or at least one of the alarms associated to
the object is not acknowledged</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>12</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AulhFoMoSt</AttributeName>
    <Meaning>Auto Inhibit Forced Mode Status</Meaning>
    <Description>Auto Inhibit Forced Mode status: Current status of the Auto Inhibit forced
mode.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>13</BitPosition>
</Attribute>

```

```

<Attribute>
  <AttributeName>AlSt</AttributeName>
  <Meaning>Alarm Status</Meaning>
  <Description>Alarm Status</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>14</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>AulhMMoSt</AttributeName>
  <Meaning>Auto Inhibit Manual Mode Status</Meaning>
  <Description>Auto Inhibit Manual Mode Status</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>15</BitPosition>
</Attribute>
</Attribute>
<Attribute>
  <AttributeName>StsReg02</AttributeName>
  <Meaning>Status Register 2</Meaning>
  <Description>Status Register 2</Description>
  <isEventAttribute>true</isEventAttribute>
  <isCommunicated>true</isCommunicated>
  <PrimitiveType>WORD</PrimitiveType>
  <Attribute>
    <AttributeName>DOutOnOSt</AttributeName>
    <Meaning>Digital Output On Order Status</Meaning>
    <Description>Digital Output On Order Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>0</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>DoutOffOSt</AttributeName>
    <Meaning>Digital Output Off Order Status</Meaning>
    <Description>Digital Output Off Order Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>1</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>FuStopISt</AttributeName>
    <Meaning>Full Stop Interlock Status</Meaning>
    <Description>Full Stop Interlock Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>10</BitPosition>
  </Attribute>

```



```

</Attribute>
<Attribute>
  <AttributeName>EnRstartSt</AttributeName>
  <Meaning>Enable Restart Status</Meaning>
  <Description>Manual Restart after full stop status</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>11</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>SoftLDSt</AttributeName>
  <Meaning>Software Local Mode Status</Meaning>
  <Description>Current status of the Software Local Mode.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>12</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>AIBW</AttributeName>
  <Meaning>Alarm Blocked Warning</Meaning>
  <Description>When true, the alarm or any of the device dependant alarm objects have been
blocked by the operator</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>13</BitPosition>
</Attribute>
</Attribute>
<Attribute>
  <AttributeName>PosSt</AttributeName>
  <Meaning>Position status</Meaning>
  <Description>Position Status</Description>
  <isCommunicated>>true</isCommunicated>
  <isArchived>>true</isArchived>
  <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>PosRSt</AttributeName>
  <Meaning>Position Request Status</Meaning>
  <Description>Position request status</Description>
  <isCommunicated>>true</isCommunicated>
  <isArchived>>true</isArchived>
  <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>OnSt</AttributeName>

```

```

    <Meaning>On Status</Meaning>
    <Description>On/Open Status</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>OffSt</AttributeName>
    <Meaning>Off Status</Meaning>
    <Description>Off/Closed Status</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuPosRSt</AttributeName>
    <Meaning>Auto Position Request Status</Meaning>
    <Description>Status of the position of the object in auto mode.</Description>
    <isCommunicated>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>MPosRSt</AttributeName>
    <Meaning>Manual Position Request Status</Meaning>
    <Description>Manual Position request status</Description>
    <isCommunicated>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuMoSt</AttributeName>
    <Meaning>Auto Mode Status</Meaning>
    <Description>Current status of the Auto Mode</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>MMoSt</AttributeName>
    <Meaning>Manual Mode Status</Meaning>
    <Description>Current status of the Manual Mode request</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>FoMoSt</AttributeName>
    <Meaning>Forced Mode Status</Meaning>
    <Description>Current status of the Forced Mode.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>

```

```

<Attribute>
  <AttributeName>LDSt</AttributeName>
  <Meaning>Local Drive Status</Meaning>
  <Description>Current status of the Local mode.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>SoftLDSt</AttributeName>
  <Meaning>Software Local Drive Status</Meaning>
  <Description>Current status of the Software Local mode request</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>IOErrorW</AttributeName>
  <Meaning>Input/Output Error Warning</Meaning>
  <Description>Current status of the IOError</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>IOSimuW</AttributeName>
  <Meaning>Input/Output Simulated Warning</Meaning>
  <Description>Current status of the IOSimu</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuMRW</AttributeName>
  <Meaning>Auto Manual Request Warning</Meaning>
  <Description>Auto and manual requests discrepancy when Manual/Forced mode
active</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>PosW</AttributeName>
  <Meaning>Position Warning</Meaning>
  <Description>Position Warning Status</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>StartISt</AttributeName>
  <Meaning>Start Interlock Status</Meaning>
  <Description>Current status of StartI</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>

```

```

</Attribute>
<Attribute>
  <AttributeName>TStopISt</AttributeName>
  <Meaning>Temporary Stop Interlock Status</Meaning>
  <Description>Current status of TStopI</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>FuStopISt</AttributeName>
  <Meaning>Full Stop Interlock Status</Meaning>
  <Description>Full Stop Interlock Status</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AlUnAck</AttributeName>
  <Meaning>Alarm UnAcknowledged</Meaning>
  <Description>Alarm UnAcknowledged: The alarm or at least one of the alarms associated to
the object is not acknowledged</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AlBW</AttributeName>
  <Meaning>Alarm Blocked Warning</Meaning>
  <Description>When true, the alarm or any of the device dependant alarm objects have been
blocked by the operator</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>EnRStartSt</AttributeName>
  <Meaning>Enable Restart Status</Meaning>
  <Description>Manual Restart after full stop status possible</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>RdyStartSt</AttributeName>
  <Meaning>Ready To Start Status</Meaning>
  <Description>The object is ready to start, there is no blocking process to start.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AlSt</AttributeName>
  <Meaning>Alarm Status</Meaning>
  <Description>Alarm Status</Description>

```

```

    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADeviceGraphics</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>PosStUnit</AttributeName>
    <Description>Unit of the device to be displayed in SCADA</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Unit</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints>In principle there is no limit to the number of characters used, however a long
name may result in display issues at the SCADA level.
Forbidden characters: *[: "'@#\$^&*?!.,;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>PosStFormat</AttributeName>
    <Description>Format of the value to be displayed in SCADA. Supported formats:
### (fixed number of decimal places, in this case 2),
EXP or xEXP (exponential, 3 or x digits after '.'),
xD or xd (fixed digit format, x=number of digits, e.g.: 3D=0.01, 12.0, 123)</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Format</NameRepresentation>
      <isValueRequired>>true</isValueRequired>
      <Usage>Example: use format ### to display value to 2 decimal places. To the left of the
decimal point, the SCADA layer will display as many digits as required by the object value, therefore a
single # is enough.</Usage>
      <DependentAttributes/>
      <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>WidgetType</AttributeName>
    <Description>Define the widget type to display in the SCADA device tree overview only.
The widget displayed in the process panel will be selected when the user creates the
panel.</Description>
    <PrimitiveType>STRING</PrimitiveType>

```

```

<isSpecificationAttribute>
  <NameRepresentation>Widget Type</NameRepresentation>
  <isValueRequired>>true</isValueRequired>
  <isCaseSensitive>>true</isCaseSensitive>
  <PermittedValue>AnaDigSquare</PermittedValue>
  <PermittedValue>AnaDigValveHorizontal</PermittedValue>
  <PermittedValue>AnaDigValveVertical</PermittedValue>
  <PermittedValue>AnaDigHeaterHorizontal</PermittedValue>
  <PermittedValue>AnaDigHeaterVertical</PermittedValue>
  <Usage/>
  <DependentAttributes/>
  <Constraints/>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Synoptic</AttributeName>
  <Description>Define link between the device and an existing synoptic where it appears. The
synoptic specified here can be accessed from the device right-click menu item
"Synoptic".</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Specify the path of the .pnl file under the "\panel" directory of the PVSS
project.</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DiagnosticPanel</AttributeName>
  <Description>Define link between the device and an existing diagnostic panel for the device.
The panel specified here can be accessed from the device right-click menu item "Diagnostic" as well
as from the "Diagnostic" button on the object faceplate.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Diagnostic</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Specify the path of the .pnl file under the "\panel" directory of the PVSS project
</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>

```

```

<Attribute>
  <AttributeName>WWWLink</AttributeName>
  <Description>Define link between the device and an existing web page (or pdf file, or other file
which can be opened with IE). The link can be accessed from the device right-click menu item "Info"
as well as from the "Info" button on the object faceplate.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>WWW Link</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADeviceFunctionals</AttributeFamilyName>
  <UserExpandable>>false</UserExpandable>
  <Attribute>
    <AttributeName>MaskEvent</AttributeName>
    <Description>If TRUE: the events of the device will be masked in SCADA and not displayed or
archived in the Event List.
An 'event' is defined as a bit change in StsReg01 or StsReg02</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Mask Event</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>AccessControlDomain</AttributeName>
    <Description>Define Access Control on the device to an existing SCADA Domain
Forbidden characters: *[: "'@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Access Control Domain</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>This domain is used to grant access to this specific device. The domain specified for
this object will allow access to the object only to registered users on that domain</Usage>
      <DependentAttributes/>

```

```

        <Constraints>Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>SCADADeviceClassificationTags</AttributeName>
    <Description>It defines the Domain, Nature and DeviceLinks for the SCADA
visualization</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
    <Attribute>
        <AttributeName>Domain</AttributeName>
        <Description>Domain of the device. If empty, the domain will be the name of the application
Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
        <PrimitiveType>STRING</PrimitiveType>
        <isSpecificationAttribute>
            <isValueRequired>>false</isValueRequired>
            <Usage>Domain is used to filter the devices in the alarm list or in the device tree
overview</Usage>
            <DependentAttributes/>
            <Constraints>Forbidden characters: *[:
""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
        </isSpecificationAttribute>
    </Attribute>
    <Attribute>
        <AttributeName>Nature</AttributeName>
        <Description>Nature of the device. If empty, the nature will be the type of the device
Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
        <PrimitiveType>STRING</PrimitiveType>
        <isSpecificationAttribute>
            <isValueRequired>>false</isValueRequired>
            <Usage>Nature is used to filter the devices in the alarm list or in the device tree
overview</Usage>
            <DependentAttributes/>
            <Constraints>Forbidden characters: *[:
""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
        </isSpecificationAttribute>
    </Attribute>
    <Attribute>
        <AttributeName>DeviceLinks</AttributeName>
        <Description>Define links to other devices (separate device names with commas).
Note: it is not necessary to link to master, parents or children because these links are automatically
created.
Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
        <PrimitiveType>STRING</PrimitiveType>

```



```

<isSpecificationAttribute>
  <NameRepresentation>Device Links</NameRepresentation>
  <isValueRequired>>false</isValueRequired>
  <Usage>Linked devices will be shown in the device right-click menu</Usage>
  <DependentAttributes>Expert Name or Name.

```

The name of the device(s) specified here **must** correspond to "Expert Name" if it is defined. If "Expert Name" is not defined, the name of the device(s) specified here corresponds to "Name".</DependentAttributes>

```

  <Constraints>Forbidden characters: *[:
"@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
</isSpecificationAttribute>
</Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADeviceDataArchiving</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>ArchiveMode</AttributeName>
    <Description>Archive mode of the object engineering values. Archive if:

```

Old/New Comparison: value changes

Time: value changes after Time Filter

Deadband: value < or > deadband

AND: at least one of the conditions is fulfilled

OR: both conditions are fulfilled</Description>

```

  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>

```

```

  <NameRepresentation>Archive Mode</NameRepresentation>
  <isValueRequired>>false</isValueRequired>
  <PermittedValue>No</PermittedValue>
  <PermittedValue>Deadband</PermittedValue>
  <PermittedValue>Time</PermittedValue>
  <PermittedValue>Deadband AND Time</PermittedValue>
  <PermittedValue>Deadband OR Time</PermittedValue>
  <PermittedValue>Old/New Comparison</PermittedValue>
  <PermittedValue>Old/New Comparison AND Time</PermittedValue>
  <PermittedValue>Old/New Comparison OR Time</PermittedValue>
  <Usage>This archive mode is used to archive data in the PVSS database</Usage>
  <DependentAttributes>If "Time" is selected, "Time Filter (s)" must be filled

```

If "Deadband" is selected: "Deadband Type" and "Deadband Value" must be filled.</DependentAttributes>

```

  <Constraints/>
</isSpecificationAttribute>

```

```

</Attribute>
<Attribute>
  <AttributeName>TimeFilter</AttributeName>
  <Description>Time filter for the SCADA archiving of the engineering values of the object. Must
be positive.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Time Filter (s)</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes>Valid if "Time" has been selected as Archive
Mode</DependentAttributes>
    <Constraints>Must be positive</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DeadbandType</AttributeName>
  <Description>Deadband type (Relative or Absolute) of the deadband for the SCADA archiving
of the engineering values of the object</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Deadband Type</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <PermittedValue>Relative</PermittedValue>
    <PermittedValue>Absolute</PermittedValue>
    <Usage>The value is archived if the difference between the latest archived value and the
actual value exceeds, either:
- if 'Absolute': the "Deadband Value"
- if 'Relative': the "Deadband Value" as a percent of the latest archived value</Usage>
    <DependentAttributes>Valid if "Deadband" has been selected as Archive
Mode</DependentAttributes>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DeadbandValue</AttributeName>
  <Description>Deadband value for the SCADA archiving of the engineering values of the object
Must be positive and larger than the deadband specified for the driver data smoothing (Driver
deadband)</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Deadband Value</NameRepresentation>
    <isValueRequired>>false</isValueRequired>

```

```

    <Usage/>
    <DependentAttributes>Valid if "Deadband" has been selected as Archive
Mode</DependentAttributes>
    <Constraints>Must be positive and larger than the deadband specified for the driver data
smoothing (Driver deadband)</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>BooleanArch</AttributeName>
    <Description>Name of the Boolean archive
Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Boolean Archive</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>The boolean values of the device will be archived in the specified PVSS database.
The archive must be created in PVSS before importing the object.</Usage>
        <DependentAttributes/>
        <Constraints>Forbidden characters: *[:
""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>AnalogArch</AttributeName>
    <Description>Name of the analog archive
Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Analog Archive</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>The analog values of the device will be archived in the specified PVSS database. The
archive must be created in PVSS before importing the object.</Usage>
        <DependentAttributes/>
        <Constraints>Forbidden characters: *[:
""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>EventArch</AttributeName>
    <Description>Name of the event archive
Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>

```

```

    <NameRepresentation>Event Archive</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>The events generated by the device will be archived in the specified PVSS database.
The archive must be created in PVSS before importing the object.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[:
"@`#$$%^&*?!.,;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>SCADADriverDataSmoothing</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>DeadbandType</AttributeName>
        <Description>Deadband type (None, Relative, Absolute or Old/New) for the SCADA driver data
smoothing (Driver deadband)</Description>
        <PrimitiveType>STRING</PrimitiveType>
        <isSpecificationAttribute>
            <NameRepresentation>Deadband Type</NameRepresentation>
            <isValueRequired>>true</isValueRequired>
            <PermittedValue>No</PermittedValue>
            <PermittedValue>Relative</PermittedValue>
            <PermittedValue>Absolute</PermittedValue>
            <PermittedValue>Old/New</PermittedValue>
            <Usage>Used for the online display in SCADA</Usage>
            <DependentAttributes/>
            <Constraints/>
        </isSpecificationAttribute>
    </Attribute>
    <Attribute>
        <AttributeName>DeadbandValue</AttributeName>
        <Description>Deadband value for the SCADA driver data smoothing
Must be positive and smaller than the deadband specified for the archiving</Description>
        <PrimitiveType>FLOAT32</PrimitiveType>
        <isSpecificationAttribute>
            <NameRepresentation>Deadband Value</NameRepresentation>
            <isValueRequired>>false</isValueRequired>
            <Usage>Used for the online display in SCADA</Usage>
            <DependentAttributes/>
            <Constraints>Must be positive and smaller than the deadband specified for the
archiving</Constraints>
        </isSpecificationAttribute>

```

```

    </Attribute>
  </AttributeFamily>
  <AttributeFamily>
    <AttributeFamilyName>LogicDeviceDefinitions</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
      <AttributeName>MasterDevice</AttributeName>
      <Description>Master of the device (relative to the hierarchy of dependent
objects).</Description>
      <PrimitiveType>STRING</PrimitiveType>
      <isSpecificationAttribute>
        <NameRepresentation>Master</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>The master will give automatic requests to the device. The master object will
appear in the list of "Device Links" in the device right-click menu.</Usage>
        <DependentAttributes/>
        <Constraints>Must be a single PCO for field objects, controller, or PCO.
Must be PCO or field objects for alarms (several masters are allowed in the case of multiple alarms,
separated by commas or spaces).</Constraints>
      </isSpecificationAttribute>
    </Attribute>
    <Attribute>
      <AttributeName>ExternalMaster</AttributeName>
      <Description>Master of the device if located in another PLC for WinCCOA.</Description>
      <PrimitiveType>STRING</PrimitiveType>
      <isSpecificationAttribute>
        <NameRepresentation>External Master</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>The external master will give automatic requests to the device from another PLC. To
be specified only if master is empty.</Usage>
        <DependentAttributes/>
        <Constraints>Must be a single PCO for field objects, controller, or PCO. </Constraints>
      </isSpecificationAttribute>
    </Attribute>
    <Attribute>
      <AttributeName>CustomLogicParameters</AttributeName>
      <Description>User defined meaning, used by the logic generators.</Description>
      <PrimitiveType>STRUCT</PrimitiveType>
      <Attribute>
        <AttributeName>Parameter1</AttributeName>
        <Description>Parameter to be used in the logic templates
Forbidden characters: "$' </Description>
        <PrimitiveType>STRING</PrimitiveType>

```

```

    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
      <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
      <Constraints>Forbidden characters: '$' </Constraints>
    </isSpecificationAttribute>
  </Attribute>
<Attribute>
  <AttributeName>Parameter2</AttributeName>
  <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Parameter3</AttributeName>
  <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Parameter4</AttributeName>
  <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>

```

```

    <isValueRequired>>false</isValueRequired>
    <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter5</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
        <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
        <Constraints>Forbidden characters: '$' </Constraints>
        </isSpecificationAttribute>
    </Attribute>
<Attribute>
    <AttributeName>Parameter6</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
        <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
        <Constraints>Forbidden characters: '$' </Constraints>
        </isSpecificationAttribute>
    </Attribute>
<Attribute>
    <AttributeName>Parameter7</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>

```

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter8</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: '\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter9</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: '\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter10</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: '\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

</Attribute>

<Attribute>

<AttributeName>CustomLogicSections</AttributeName>

<Description>If specified, these sections will override the default logic sections (UNICOS provided).</Description>

<PrimitiveType>STRUCT</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage/>

<DependentAttributes/>

<Constraints/>

</isSpecificationAttribute>

<Attribute>

<AttributeName>DL</AttributeName>

<Description>Define user template for the Dependent Logic</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>DL User Template</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>Specify path of the python script located under the "UserSpecific" directory</Usage>

<DependentAttributes>CustomLogicParameters.ParameterX (where X=1-10)</DependentAttributes>

<Constraints/>

</isSpecificationAttribute>

</Attribute>

</Attribute>

</AttributeFamily>

<AttributeFamily>

<AttributeFamilyName>DeviceTechnicals</AttributeFamilyName>

<UserExpandable>>true</UserExpandable>

<Attribute>

<AttributeName>PROCOSConfiguration</AttributeName>

<Description>PROCOS parameters allowing simulation</Description>

<PrimitiveType>STRUCT</PrimitiveType>

<Attribute>

```

    <AttributeName>Config</AttributeName>
    <Description>Device mode configuration for simulation (Simulated, Forced or
Empty)</Description>
    <PrimitiveType>STRING</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>ForcedValue</AttributeName>
    <Description>Forced value defined (e.g.: analog: 4.5, digital: 0 or 1)</Description>
    <PrimitiveType>STRING</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>Hierarchy</AttributeName>
    <Description>Hierarchy definition following the Simulation model</Description>
    <PrimitiveType>STRING</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>TargetDeviceInformation</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>Target</AttributeName>
        <Description>Identifies a target type (e.g. SIEMENS, SCHNEIDER...)</Description>
        <PrimitiveType>STRUCT</PrimitiveType>
        <DefaultValue>Siemens</DefaultValue>
    <Attribute>
        <AttributeName>RepresentationName</AttributeName>
        <Description>It's the name used ...</Description>
        <PrimitiveType>STRING</PrimitiveType>
        <DefaultValue>ANADIG</DefaultValue>
    </Attribute>
    <Attribute>
        <AttributeName>Optimized</AttributeName>
        <Description>Is this object an optimized Object?</Description>
        <PrimitiveType>BOOLEAN</PrimitiveType>
        <DefaultValue>>false</DefaultValue>
    </Attribute>
    <Attribute>
        <AttributeName>LimitSize</AttributeName>
        <Description>Maximun number of instances allowed</Description>
        <PrimitiveType>INT32</PrimitiveType>
        <DefaultValue>210</DefaultValue>
    </Attribute>
</AttributeFamily>

```

```
</Attribute>
<Attribute>
  <AttributeName>FastInterlock</AttributeName>
  <Description>Is this object a fast interlock object?</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <DefaultValue>>false</DefaultValue>
</Attribute>
</Attribute>
</AttributeFamily>
</UNICOSMetaModel>
```

2.5. AnalogInputDeviceType.xml

```
<?xml version='1.0' encoding='UTF-8'?>
<UNICOSMetaModel xmlns:xsi='http://www.w3.org/2001/XMLSchema-instance'
xsi:noNamespaceSchemaLocation='..\unicos\UNICOSMetaModel.xsd'>
  <Information>
    <Package>${devicePackageName}</Package>
    <Name>AnalogInput</Name>
    <ObjectTypeFamily>IOObjectFamily</ObjectTypeFamily>
    <Description>Analog Input Device</Description>
    <Version>${LastChangedRevision: 170110} $</Version>
  </Information>
  <AttributeFamily>
    <AttributeFamilyName>DeviceIdentification</AttributeFamilyName>
    <UserExpandable>true</UserExpandable>
    <Attribute>
      <AttributeName>Name</AttributeName>
      <Description>Name of the device. It must be unique.
```

Max length:

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: [:"'@`#\$%^&*?!.,;+~(){}<>|]-., double underscore, and page break</Description>

```
  <PrimitiveType>STRING</PrimitiveType>
```

```
  <isSpecificationAttribute>
```

```
    <isValueRequired>true</isValueRequired>
```

```
    <Usage>Name displayed at the SCADA level if "Expert Name" is not specified.
```

This name will appear in the datapoints created in the SCADA layer.</Usage>

```
    <DependentAttributes>Device Links.
```

The name of the device(s) specified in Device Links *must* correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to "Name".</DependentAttributes>

```
    <Constraints>Max length:
```

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: [:"'@`#\$%^&*?!.,;+~(){}<>|]-., double underscore, and page break Name must be unique.</Constraints>

```
  </isSpecificationAttribute>
```

```
</Attribute>
```

```
<Attribute>
```

```
  <AttributeName>ExpertName</AttributeName>
```

```
  <Description>Name of the device displayed at the SCADA level. It must be unique.
```

Forbidden characters: *[: "'@#%&^&*?!;=+~(){}<>|]</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Expert Name</NameRepresentation>

<TypeRepresentation>STRING</TypeRepresentation>

<isValueRequired>false</isValueRequired>

<Usage>It does not affect to the datapoints names in the SCADA layer.</Usage>

<DependentAttributes>Device Links.</DependentAttributes>

The name of the device(s) specified in Device Links **must** correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to "Name".</DependentAttributes>

<Constraints>In principle there is no limit to the number of characters used, however a long name may result in display issues at the SCADA level.</Constraints>

Forbidden characters: *[: "'@#%&^&*?!;=+~(){}<>|] </Constraints>

Expert Name must be unique.</Constraints>

</isSpecificationAttribute>

</Attribute>

</AttributeFamily>

<AttributeFamily>

<AttributeFamilyName>DeviceDocumentation</AttributeFamilyName>

<UserExpandable>>true</UserExpandable>

<Attribute>

<AttributeName>DeviceDescription</AttributeName>

<Description>Description of the device. </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Description</NameRepresentation>

<isValueRequired>false</isValueRequired>

<Usage>Used in the SCADA layer in the device faceplate</Usage>

<DependentAttributes/>

<Constraints>In principle there is no limit to the number of characters used, however a long description may result in display issues at the SCADA level.</Constraints>

Forbidden characters: ;</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>ElectricalDiagram</AttributeName>

<Description>Reference to the electrical diagram in which the device is represented.</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Electrical Diagram</NameRepresentation>

```

    <isValueRequired>>false</isValueRequired>
    <Usage>Used in the SCADA layer: added to the device description in the device
faceplate.</Usage>
    <DependentAttributes/>
    <Constraints>In principle there is no limit to the number of characters used, however a long
name may result in display issues at the SCADA level.
Forbidden characters: *[: ""@ #\$%^&amp;*?!.,;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Remarks</AttributeName>
    <Description>Field used to add relevant information about the device. </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This information is not used in the generation process, it remains only at the
specification level for documentation purposes.</Usage>
        <DependentAttributes/>
        <Constraints>Forbidden characters: ;</Constraints>
        </isSpecificationAttribute>
    </Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>FEDeviceParameters</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>PMinRan</AttributeName>
        <Meaning>Parameter Minimum Range</Meaning>
        <Description>Minimum engineering value of the device.</Description>
        <PrimitiveType>FLOAT32</PrimitiveType>
        <isSpecificationAttribute>
            <NameRepresentation>Range Min</NameRepresentation>
            <isValueRequired>>true</isValueRequired>
            <Usage>A linear conversion is performed between the raw range and engineering
range.</Usage>
            <DependentAttributes/>
            <Constraints>The value specified here must be consistent with the format defined in the field
"Format".</Constraints>
            </isSpecificationAttribute>
        </Attribute>
    <Attribute>
        <AttributeName>PMaxRan</AttributeName>
        <Meaning>Parameter Maximum Range</Meaning>

```

```

<Description>Maximum engineering value of the device.</Description>
<PrimitiveType>FLOAT32</PrimitiveType>
<isSpecificationAttribute>
  <NameRepresentation>Range Max</NameRepresentation>
  <isValueRequired>>true</isValueRequired>
  <Usage>A linear conversion is performed between the raw range and engineering
range.</Usage>
  <DependentAttributes/>
  <Constraints>The value specified here must be consistent with the format defined in the field
"Format".</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PMinRaw</AttributeName>
  <Meaning>Parameter Minimum Raw</Meaning>
  <Description>Minimum raw value of the device.</Description>
  <PrimitiveType>SHORTINT16</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Raw Min</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>true</isValueRequired>
    <Usage>A linear conversion is performed between the raw range and engineering
range.</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PMaxRaw</AttributeName>
  <Meaning>Parameter Maximum Raw</Meaning>
  <Description>Minimum raw value of the device.</Description>
  <PrimitiveType>SHORTINT16</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Raw Max</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>true</isValueRequired>
    <Usage>A linear conversion is performed between the raw range and engineering
range.</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>

```

```

<AttributeName>PDb</AttributeName>
<Meaning>Parameter Deadband</Meaning>
<Description>Deadband applied to the Engineering value at the PLC level.</Description>
<PrimitiveType>FLOAT32</PrimitiveType>
<isSpecificationAttribute>
  <NameRepresentation>Deadband (%)</NameRepresentation>
  <TypeRepresentation>FLOAT32</TypeRepresentation>
  <isValueRequired>>true</isValueRequired>
  <Usage>The value entered here must be consistent with the resolution of the PLC channel.
</Usage>
  <DependentAttributes/>
  <Constraints>Variations of the Engineering value below the % of the Engineering range will be
discarded.</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>FofEn</AttributeName>
  <Meaning>Parameter First Order Filter</Meaning>
  <Description>First Order Filter applied to the Engineering value at the PLC level.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Filtering Time (s)</NameRepresentation>
    <TypeRepresentation>FLOAT32</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>A first order filter is applied to the engineering value.</Usage>
    <DependentAttributes/>
    <Constraints>the filter will absorb the noise of the signal</Constraints>
  </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceAutoRequests</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>AulhFoMo</AttributeName>
    <Meaning>Auto Inhibit Forced Mode</Meaning>
    <Description>Auto Inhibit Forced Mode (by logic): The control logic blocks the forced mode
operation.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceManualRequests</AttributeFamilyName>

```



```

<UserExpandable>true</UserExpandable>
<Attribute>
  <AttributeName>ManReg01</AttributeName>
  <Meaning>Manual Register 1</Meaning>
  <Description>Manual Register 1</Description>
  <isCommunicated>true</isCommunicated>
  <PrimitiveType>WORD</PrimitiveType>
  <Attribute>
    <AttributeName>MAuMoR</AttributeName>
    <Meaning>Manual Auto Mode Request</Meaning>
    <Description>Manual Auto Mode Request: The operator requests the Auto Mode.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>0</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>MFoMoR</AttributeName>
    <Meaning>Manual Forced Mode Request</Meaning>
    <Description>Manual Forced Mode Request: The operator requests the Forced
Mode.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>2</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>MNewPosR</AttributeName>
    <Meaning>Manual New Position Request</Meaning>
    <Description>Manual New Position Request: The operator requests a new position to the
object</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>6</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>MIOErBSetRst</AttributeName>
    <Meaning>Manual Input/Output Error Block Set/Reset</Meaning>
    <Description>Manual IO Error Block Set/Reset: This action allows to set/reset the
IOError.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>10</BitPosition>
  </Attribute>
</Attribute>
<Attribute>
  <AttributeName>MPosR</AttributeName>
  <Meaning>Manual Position Request</Meaning>

```

```

    <Description>Manual Position Request: Value of the position requested by
operator</Description>
    <isCommunicated>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceEnvironmentInputs</AttributeFamilyName>
  <UserExpandable>true</UserExpandable>
  <Attribute>
    <AttributeName>HFPos</AttributeName>
    <Meaning>Hardware Feedback Position</Meaning>
    <Description>Analog Feedback of the actuator.
Must be an AI/AIR/AS.</Description>
    <PrimitiveType>SHORTINT16</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>IOError</AttributeName>
    <Meaning>Input/Output Error</Meaning>
    <Description>IOError state in any of the dependant objects or the PLC channel assigned to the
object</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>IOSimu</AttributeName>
    <Meaning>Input/Output Simulated</Meaning>
    <Description>Any of the dependant objects is in Forced or Manual Mode</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceOutputs</AttributeFamilyName>
  <UserExpandable>true</UserExpandable>
  <Attribute>
    <AttributeName>StsReg01</AttributeName>
    <Meaning>Status Register 1</Meaning>
    <Description>Status Register 1</Description>
    <isEventAttribute>true</isEventAttribute>
    <isCommunicated>true</isCommunicated>
    <PrimitiveType>WORD</PrimitiveType>
  <Attribute>
    <AttributeName>AuMoSt</AttributeName>
    <Meaning>Auto Mode Status</Meaning>

```

```

    <Description>Current status of the Auto Mode</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>2</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>FoMoSt</AttributeName>
    <Meaning>Forced Mode Status</Meaning>
    <Description>Current status of the Forced Mode.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>4</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>IOErrorW</AttributeName>
    <Meaning>Input/Output Error Warning</Meaning>
    <Description>Current status of the IOError</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>6</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>IOSimuW</AttributeName>
    <Meaning>Input/Output Simulated Warning</Meaning>
    <Description>Current status of the IOSimu</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>7</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>FoDiProW</AttributeName>
    <Meaning>Forced Differs from Process Warning</Meaning>
    <Description>The Manual or Forced Position requested by the operator differs from the
    Process</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>8</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MIOErBRSt</AttributeName>
    <Meaning>Manual Input/Output Error Block Request Status</Meaning>
    <Description>Manual IOError Block Request Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>9</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AulhFoMoSt</AttributeName>

```

```

    <Meaning>Auto Inhibit Forced Mode Status</Meaning>
    <Description>Auto Inhibit Forced Mode status: Current status of the Auto Inhibit forced
mode.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>13</BitPosition>
  </Attribute>
</Attribute>
<Attribute>
  <AttributeName>PosSt</AttributeName>
  <Meaning>Position status</Meaning>
  <Description>Position Status</Description>
  <isCommunicated>>true</isCommunicated>
  <isArchived>>true</isArchived>
  <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>HFSt</AttributeName>
  <Meaning>Hardware Feedback Status</Meaning>
  <Description>Current engeneering value of the Hardware feedback position sensor</Description>
  <isCommunicated>>true</isCommunicated>
  <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuMoSt</AttributeName>
  <Meaning>Auto Mode Status</Meaning>
  <Description>Current status of the Auto Mode</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>FoMoSt</AttributeName>
  <Meaning>Forced Mode Status</Meaning>
  <Description>Current status of the Forced Mode.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>IOErrorW</AttributeName>
  <Meaning>Input/Output Error Warning</Meaning>
  <Description>Current status of the IOError</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>IOSimuW</AttributeName>

```

```

    <Meaning>Input/Output Simulated Warning</Meaning>
    <Description>Current status of the IOSimu</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
</Attribute>
  <AttributeName>FoDiProW</AttributeName>
  <Meaning>Forced Differs from Process Warning</Meaning>
  <Description>The Manual or Forced Position requested by the operator differs from the
Process</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceIOConfig</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>FEType</AttributeName>
    <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>FE Encoding Type</NameRepresentation>
      <TypeRepresentation>STRING</TypeRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
      <DependentAttributes>FEChannel.InterfaceParamX (where X=1-10)</DependentAttributes>
      <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
    </isSpecificationAttribute>
  </Attribute>
</Attribute>
  <AttributeName>FEChannel</AttributeName>
  <Description>Indicates how to map the acquisition of the information from the field I/O
interface.</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <Attribute>
    <AttributeName>InterfaceParam1</AttributeName>
    <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>

```

```

<PrimitiveType>STRING</PrimitiveType>
<isSpecificationAttribute>
  <isValueRequired>>false</isValueRequired>
  <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
  <DependentAttributes>FE Encoding Type</DependentAttributes>
  <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam2</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam3</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam4</AttributeName>

```

<Description>Parameter used to set up the periphery address of the device according to the various hardware module types used at the PLC level.

Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Usage>

<DependentAttributes>FE Encoding Type</DependentAttributes>

<Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>InterfaceParam5</AttributeName>

<Description>Parameter used to set up the periphery address of the device according to the various hardware module types used at the PLC level.

Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Usage>

<DependentAttributes>FE Encoding Type</DependentAttributes>

<Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>InterfaceParam6</AttributeName>

<Description>Parameter used to set up the periphery address of the device according to the various hardware module types used at the PLC level.

Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Usage>

<DependentAttributes>FE Encoding Type</DependentAttributes>

<Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Constraints>

```

</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam7</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam8</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam9</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>

```



```

    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>InterfaceParam10</AttributeName>
    <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
</isSpecificationAttribute>
</Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>SCADADeviceGraphics</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
    <AttributeName>PosStUnit</AttributeName>
    <Description>Unit of the device to be displayed in SCADA</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <NameRepresentation>Unit</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints>In principle there is no limit to the number of characters used, however a long
name may result in display issues at the SCADA level.
Forbidden characters: *[: ""@ # $ ^ & amp; * ? ! , ; = + ~ ( ) { } & lt; & gt; | ]</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>

```

```

    <AttributeName>PosStFormat</AttributeName>
    <Description>Format of the value to be displayed in SCADA. Supported formats:
    ### (fixed number of decimal places, in this case 2),
    EXP or xEXP (exponential, 3 or x digits after '.'),
    xD or xd (fixed digit format, x=number of digits, e.g.: 3D=0.01, 12.0, 123)</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <NameRepresentation>Format</NameRepresentation>
    <isValueRequired>>true</isValueRequired>
    <Usage>Example: use format ### to display value to 2 decimal places. To the left of the decimal
    point, the SCADA layer will display as many digits as required by the object value, therefore a single #
    is enough.</Usage>
    <DependentAttributes/>
    <Constraints/>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>WidgetType</AttributeName>
    <Description>Define the widget type to display in the SCADA device tree overview only.
    The widget displayed in the process panel will be selected when the user creates the
    panel.</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <NameRepresentation>Widget Type</NameRepresentation>
    <isValueRequired>>true</isValueRequired>
    <isCaseSensitive>>true</isCaseSensitive>
    <PermittedValue>AnalogInput_Small</PermittedValue>
    <PermittedValue>AnalogInput_SciOrPrecision</PermittedValue>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Synoptic</AttributeName>
    <Description>Define link between the device and an existing synoptic where it appears. The
    synoptic specified here can be accessed from the device right-click menu item
    "Synoptic".</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Specify the path of the .pnl file under the "\panel" directory of the PVSS
    project.</Usage>

```

```

    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DiagnosticPanel</AttributeName>
  <Description>Define link between the device and an existing diagnostic panel for the device. The
panel specified here can be accessed from the device right-click menu item "Diagnostic" as well as
from the "Diagnostic" button on the object faceplate.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Diagnostic</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Specify the path of the .pnl file under the "\panel" directory of the PVSS project
</Usage>
  <DependentAttributes/>
  <Constraints/>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>WWWLink</AttributeName>
  <Description>Define link between the device and an existing web page (or pdf file, or other file
which can be opened with IE). The link can be accessed from the device right-click menu item "Info"
as well as from the "Info" button on the object faceplate.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>WWW Link</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
  <Usage/>
  <DependentAttributes/>
  <Constraints/>
</isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADeviceFunctionals</AttributeFamilyName>
  <UserExpandable>>false</UserExpandable>
  <Attribute>
    <AttributeName>MaskEvent</AttributeName>
    <Description>If TRUE: the events of the device will be masked in SCADA and not displayed or
archived in the Event List.
An 'event' is defined as a bit change in StsReg01 or StsReg02</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>

```

```

<isSpecificationAttribute>
  <NameRepresentation>Mask Event</NameRepresentation>
  <isValueRequired>>false</isValueRequired>
  <Usage/>
  <DependentAttributes/>
  <Constraints/>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>AccessControlDomain</AttributeName>
  <Description>Define Access Control on the device to an existing SCADA Domain
Forbidden characters: *[: "'@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Access Control Domain</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>This domain is used to grant access to this specific device. The domain specified for this
object will allow access to the object only to registered users on that domain</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[: "'@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>SCADADeviceClassificationTags</AttributeName>
  <Description>It defines the Domain, Nature and DeviceLinks for the SCADA
visualization</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <Attribute>
    <AttributeName>Domain</AttributeName>
    <Description>Domain of the device. If empty, the domain will be the name of the application
Forbidden characters: *[: "'@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>Domain is used to filter the devices in the alarm list or in the device tree
overview</Usage>
      <DependentAttributes/>
      <Constraints>Forbidden characters: *[: "'@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>Nature</AttributeName>
    <Description>Nature of the device. If empty, the nature will be the type of the device

```

```

Forbidden characters: *[: "'@#%&*?!;=+~(){}&lt;&gt;|]/Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Nature is used to filter the devices in the alarm list or in the device tree
overview</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[: "'@#%&*?!;=+~(){}&lt;&gt;|]/Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DeviceLinks</AttributeName>
  <Description>Define links to other devices (separate device names with commas).

```

Note: it is not necessary to link to master, parents or children because these links are automatically created.

```

Forbidden characters: *[: "'@#%&*?!;=+~(){}&lt;&gt;|]/Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Device Links</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Linked devices will be shown in the device right-click menu</Usage>
    <DependentAttributes>Expert Name or Name.

```

The name of the device(s) specified here *must* correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified here corresponds to "Name".</DependentAttributes>

```

  <Constraints>Forbidden characters: *[: "'@#%&*?!;=+~(){}&lt;&gt;|]/Constraints>
  </isSpecificationAttribute>
</Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADataArchiving</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>ArchiveMode</AttributeName>
    <Description>Archive mode of the object engineering values. Archive if:

```

Old/New Comparison: value changes

Time: value changes after Time Filter

Deadband: value < or > deadband

AND: at least one of the conditions is fulfilled

OR: both conditions are fulfilled</Description>

```

  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>

```

```

<NameRepresentation>Archive Mode</NameRepresentation>
<isValueRequired>>true</isValueRequired>
<PermittedValue>No</PermittedValue>
<PermittedValue>Deadband</PermittedValue>
<PermittedValue>Time</PermittedValue>
<PermittedValue>Deadband AND Time</PermittedValue>
<PermittedValue>Deadband OR Time</PermittedValue>
<PermittedValue>Old/New Comparison</PermittedValue>
<PermittedValue>Old/New Comparison AND Time</PermittedValue>
<PermittedValue>Old/New Comparison OR Time</PermittedValue>
<Usage>This archive mode is used to archive data in the PVSS database</Usage>
<DependentAttributes>If "Time" is selected, "Time Filter (s)" must be filled
If "Deadband" is selected: "Deadband Type" and "Deadband Value" must be
filled.</DependentAttributes>
  <Constraints/>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>TimeFilter</AttributeName>
  <Description>Time filter for the SCADA archiving of the engineering values of the object. Must be
positive.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Time Filter (s)</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes>Valid if "Time" has been selected as Archive
Mode</DependentAttributes>
    <Constraints>Must be positive</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DeadbandType</AttributeName>
  <Description>Deadband type (Relative or Absolute) of the deadband for the SCADA archiving of
the engineering values of the object</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Deadband Type</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <PermittedValue>Relative</PermittedValue>
    <PermittedValue>Absolute</PermittedValue>
    <Usage>The value is archived if the difference between the latest archived value and the actual
value exceeds, either:

```

- if 'Absolute': the "Deadband Value"

- if 'Relative': the "Deadband Value" as a percent of the latest archived value</Usage>

```

    <DependentAttributes>Valid if "Deadband" has been selected as Archive
Mode</DependentAttributes>
    <Constraints/>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>DeadbandValue</AttributeName>
    <Description>Deadband value for the SCADA archiving of the engineering values of the object
Must be positive and larger than the deadband specified for the driver data smoothing (Driver
deadband)</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
    <NameRepresentation>Deadband Value</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes>Valid if "Deadband" has been selected as Archive
Mode</DependentAttributes>
    <Constraints>Must be positive and larger than the deadband specified for the driver data
smoothing (Driver deadband)</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>BooleanArch</AttributeName>
    <Description>Name of the Boolean archive
Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <NameRepresentation>Boolean Archive</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>The boolean values of the device will be archived in the specified PVSS database. The
archive must be created in PVSS before importing the object.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>AnalogArch</AttributeName>
    <Description>Name of the analog archive
Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>

```

```

    <NameRepresentation>Analog Archive</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>The analog values of the device will be archived in the specified PVSS database. The
archive must be created in PVSS before importing the object.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[: "'@ #\$%^&*?! ,;=+~(){}&lt;&gt; |]</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>EventArch</AttributeName>
    <Description>Name of the event archive
Forbidden characters: *[: "'@ #\$%^&*?! ,;=+~(){}&lt;&gt; |]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <NameRepresentation>Event Archive</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>The events generated by the device will be archived in the specified PVSS database. The
archive must be created in PVSS before importing the object.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[: "'@ #\$%^&*?! ,;=+~(){}&lt;&gt; |]</Constraints>
</isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>SCADADriverDataSmoothing</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>DeadbandType</AttributeName>
        <Description>Deadband type (None, Relative, Absolute or Old/New) for the SCADA driver data
smoothing (Driver deadband)</Description>
        <PrimitiveType>STRING</PrimitiveType>
        <isSpecificationAttribute>
        <NameRepresentation>Deadband Type</NameRepresentation>
        <isValueRequired>>true</isValueRequired>
        <PermittedValue>No</PermittedValue>
        <PermittedValue>Relative</PermittedValue>
        <PermittedValue>Absolute</PermittedValue>
        <PermittedValue>Old/New</PermittedValue>
        <Usage>Used for the online display in SCADA</Usage>
        <DependentAttributes/>
        <Constraints/>
        </isSpecificationAttribute>
    </Attribute>

```



```

<Attribute>
  <AttributeName>DeadbandValue</AttributeName>
  <Description>Deadband value for the SCADA driver data smoothing
Must be positive and smaller than the deadband specified for the archiving</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Deadband Value</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Used for the online display in SCADA</Usage>
    <DependentAttributes/>
    <Constraints>Must be positive and smaller than the deadband specified for the
archiving</Constraints>
  </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADeviceAlarms</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>AlarmConfig</AttributeName>
    <Description>Configuration of Alarm under SCADA</Description>
    <PrimitiveType>INT32</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Alarm Config</NameRepresentation>
      <isValueRequired>>true</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints/>
    </isSpecificationAttribute>
  <Attribute>
    <AttributeName>SMSCategory</AttributeName>
    <Description>This Alarm message will follow rules defined in the corresponding SMS User Group
(comma-separated list)</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>SMS Category</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>Defines a specific treatment for each SMS message</Usage>
      <DependentAttributes/>
      <Constraints>The name must correspond to the SMS user group
(unProcessAlarm,...)</Constraints>
    </isSpecificationAttribute>
  </Attribute>

```

```

<Attribute>
  <AttributeName>AutoAcknowledge</AttributeName>
  <Description>The SCADA automatically performs the alarm acknowledge</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Auto Acknowledge</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>When TRUE, the SCADA automatically acknowledges the alarm at its occurrence.
The operator doesn't have to act on this alarm.</Usage>
  <DependentAttributes/>
  <Constraints>TRUE/FALSE</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Masked</AttributeName>
  <Description>Alarm signal is ignored by the SCADA</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>When TRUE, the Alarm signal is not recorded into the ALARM database</Usage>
  <DependentAttributes/>
  <Constraints>TRUE/FALSE</Constraints>
</isSpecificationAttribute>
</Attribute>
</Attribute>
<Attribute>
  <AttributeName>Message</AttributeName>
  <Description>Message to display when alarm is set in SCADA</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>The message specified here will be displayed in the Alarm List</Usage>
  <DependentAttributes/>
  <Constraints>In principle there is no limit to the number of characters used, however a long
name may result in display issues at the SCADA level.
Forbidden characters: *[:'"@#$$%^&*?!.,;=+~(){}&lt;&gt;|]</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>AnalogThresholds</AttributeName>
  <Description>Analog alarm condition </Description>
  <PrimitiveType>STRUCT</PrimitiveType>

```

```

<isSpecificationAttribute>
  <NameRepresentation>Analog Thresholds</NameRepresentation>
  <isValueRequired>>true</isValueRequired>
  <Usage/>
  <DependentAttributes/>
  <Constraints/>
</isSpecificationAttribute>
<Attribute>
  <AttributeName>HHAlarm</AttributeName>
  <Description>High High (HH) Alarm Threshold
All defined thresholds must be ordered (HH>H>L>LL)</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>HH Alarm</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Used to define an HH Alarm on the sensor at SCADA level. This alarm is only used at
SCADA level for information and It has no impact on the process. If empty, no alarm is
created.</Usage>
    <DependentAttributes/>
    <Constraints>All defined thresholds must be ordered (HH>H>L>LL)</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>HWarning</AttributeName>
  <Description>High (H) Alarm Threshold
All defined thresholds must be ordered (HH>H>L>LL)</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>H Warning</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Used to define an H Alarm on the sensor at SCADA level. This alarm is only used at
SCADA level for information and It has no impact on the process. If empty, no alarm is
created.</Usage>
    <DependentAttributes/>
    <Constraints>All defined thresholds must be ordered (HH>H>L>LL)</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>LWarning</AttributeName>
  <Description>Low (L) Alarm Threshold
All defined thresholds must be ordered (HH>H>L>LL)</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>

```

```

    <NameRepresentation>L Warning</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Used to define an L Alarm on the sensor at SCADA level. This alarm is only used at
    SCADA level for information and It has no impact on the process. If empty, no alarm is
    created.</Usage>
    <DependentAttributes/>
    <Constraints>All defined thresholds must be ordered (HH>H>L>LL)</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>LLAlarm</AttributeName>
    <Description>Low Low (LL) Alarm Threshold
    All defined thresholds must be ordered (HH>H>L>LL)</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <NameRepresentation>LL Alarm</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Used to define an LL Alarm on the sensor at SCADA level. This alarm is only used at
    SCADA level for information and It has no impact on the process. If empty, no alarm is
    created.</Usage>
    <DependentAttributes/>
    <Constraints>All defined thresholds must be ordered (HH>H>L>LL)</Constraints>
</isSpecificationAttribute>
</Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>LogicDeviceDefinitions</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
    <AttributeName>CustomLogicParameters</AttributeName>
    <Description>User defined meaning, used by the logic generators.</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
    <Attribute>
    <AttributeName>Parameter1</AttributeName>
    <Description>Parameter to be used in the logic templates
    Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>This parameter can be used in user logic templates to define specific logic for the
    device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>

```

```

    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter2</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter3</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter4</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>

```

```

    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter5</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter6</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter7</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>

```

```

    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter8</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter9</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter10</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>

```

```

    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
    </isSpecificationAttribute>
  </Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>DeviceTechnical</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>PROCOSConfiguration</AttributeName>
    <Description>PROCOS parameters allowing simulation</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
  <Attribute>
    <AttributeName>Config</AttributeName>
    <Description>Device mode configuration for simulation (Simulated, Forced or
Empty)</Description>
    <PrimitiveType>STRING</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>ForcedValue</AttributeName>
    <Description>Forced value defined (e.g.: analog: 4.5, digital: 0 or 1)</Description>
    <PrimitiveType>STRING</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>Hierarchy</AttributeName>
    <Description>Hierarchy definition following the Simulation model</Description>
    <PrimitiveType>STRING</PrimitiveType>
  </Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>TargetDeviceInformation</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>Target</AttributeName>
    <Description>Identifies a target type (e.g. SIEMENS, SCHNEIDER...)</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
    <DefaultValue>Siemens</DefaultValue>
  <Attribute>
    <AttributeName>RepresentationName</AttributeName>
    <Description>It's the name used ...</Description>

```



```
<PrimitiveType>STRING</PrimitiveType>
<DefaultValue>AI</DefaultValue>
</Attribute>
<Attribute>
  <AttributeName>Optimized</AttributeName>
  <Description>Is this object an optimized Object?</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <DefaultValue>>true</DefaultValue>
</Attribute>
<Attribute>
  <AttributeName>LimitSize</AttributeName>
  <Description>Maximun number of instances allowed</Description>
  <PrimitiveType>INT32</PrimitiveType>
  <DefaultValue>1000</DefaultValue>
</Attribute>
<Attribute>
  <AttributeName>FastInterlock</AttributeName>
  <Description>Is this object a fast interlock object?</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <DefaultValue>>false</DefaultValue>
</Attribute>
</Attribute>
</AttributeFamily>
</UNICOSMetaModel>
```

2.6. AnalogInputRealDeviceType.xml

```
<?xml version='1.0' encoding='UTF-8'?>
<UNICOSMetaModel xmlns:xsi='http://www.w3.org/2001/XMLSchema-instance'
xsi:noNamespaceSchemaLocation='..\unicos\UNICOSMetaModel.xsd'>
  <Information>
    <Package>${devicePackageName}</Package>
    <Name>AnalogInputReal</Name>
    <ObjectTypeFamily>IOObjectFamily</ObjectTypeFamily>
    <Description>Analog Input Real Device</Description>
    <Version>${LastChangedRevision: 170110} $</Version>
  </Information>
  <AttributeFamily>
    <AttributeFamilyName>DeviceIdentification</AttributeFamilyName>
    <UserExpandable>true</UserExpandable>
    <Attribute>
      <AttributeName>Name</AttributeName>
      <Description>Name of the device. It must be unique.
```

Max length:

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: [:"'@`#\$%^&*?!.,;+~(){}<>|]-., double underscore, and page break</Description>

```
  <PrimitiveType>STRING</PrimitiveType>
```

```
  <isSpecificationAttribute>
```

```
    <isValueRequired>true</isValueRequired>
```

```
    <Usage>Name displayed at the SCADA level if "Expert Name" is not specified.
```

This name will appear in the datapoints created in the SCADA layer.</Usage>

```
    <DependentAttributes>Device Links.
```

The name of the device(s) specified in Device Links *must* correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to "Name".</DependentAttributes>

```
    <Constraints>Max length:
```

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: [:"'@`#\$%^&*?!.,;+~(){}<>|]-., double underscore, and page break Name must be unique.</Constraints>

```
  </isSpecificationAttribute>
```

```
</Attribute>
```

```
<Attribute>
```

```
  <AttributeName>ExpertName</AttributeName>
```

```
  <Description>Name of the device displayed at the SCADA level. It must be unique.
```

Forbidden characters: *[: "'@#%&^&*?!;=+~(){}<>|]</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Expert Name</NameRepresentation>

<TypeRepresentation>STRING</TypeRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>It does not affect to the datapoints names in the SCADA layer.</Usage>

<DependentAttributes>Device Links.

The name of the device(s) specified in Device Links **must** correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to "Name".</DependentAttributes>

<Constraints>In principle there is no limit to the number of characters used, however a long name may result in display issues at the SCADA level.

Forbidden characters: *[: "'@#%&^&*?!;=+~(){}<>|]

Expert Name must be unique.</Constraints>

</isSpecificationAttribute>

</Attribute>

</AttributeFamily>

<AttributeFamily>

<AttributeFamilyName>DeviceDocumentation</AttributeFamilyName>

<UserExpandable>>true</UserExpandable>

<Attribute>

<AttributeName>DeviceDescription</AttributeName>

<Description>Description of the device. </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Description</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>Used in the SCADA layer in the device faceplate</Usage>

<DependentAttributes/>

<Constraints>In principle there is no limit to the number of characters used, however a long description may result in display issues at the SCADA level.

Forbidden characters: ;</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>ElectricalDiagram</AttributeName>

<Description>Reference to the electrical diagram in which the device is represented.</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Electrical Diagram</NameRepresentation>

```

    <isValueRequired>>false</isValueRequired>
    <Usage>Used in the SCADA layer: added to the device description in the device
faceplate.</Usage>
    <DependentAttributes/>
    <Constraints>In principle there is no limit to the number of characters used, however a long
name may result in display issues at the SCADA level.
Forbidden characters: *[: ""@ #\$%^&amp;*?!.,;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Remarks</AttributeName>
    <Description>Field used to add relevant information about the device. </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This information is not used in the generation process, it remains only at the
specification level for documentation purposes.</Usage>
        <DependentAttributes/>
        <Constraints>Forbidden characters: ;</Constraints>
    </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>FEDeviceParameters</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>PMinRan</AttributeName>
        <Meaning>Parameter Minimum Range</Meaning>
        <Description>Minimum engineering value of the device.</Description>
        <PrimitiveType>FLOAT32</PrimitiveType>
        <isSpecificationAttribute>
            <NameRepresentation>Range Min</NameRepresentation>
            <isValueRequired>>true</isValueRequired>
            <Usage>A linear conversion is performed between the raw range and engineering
range.</Usage>
            <DependentAttributes/>
            <Constraints>The value specified here must be consistent with the format defined in the field
"Format".</Constraints>
        </isSpecificationAttribute>
    </Attribute>
    <Attribute>
        <AttributeName>PMaxRan</AttributeName>
        <Meaning>Parameter Maximum Range</Meaning>

```

```

<Description>Maximum engineering value of the device.</Description>
<PrimitiveType>FLOAT32</PrimitiveType>
<isSpecificationAttribute>
  <NameRepresentation>Range Max</NameRepresentation>
  <isValueRequired>>true</isValueRequired>
  <Usage>A linear conversion is performed between the raw range and engineering
range.</Usage>
  <DependentAttributes/>
  <Constraints>The value specified here must be consistent with the format defined in the field
"Format".</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PMinRaw</AttributeName>
  <Meaning>Parameter Minimum Raw</Meaning>
  <Description>Minimum raw value of the device.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Raw Min</NameRepresentation>
    <isValueRequired>>true</isValueRequired>
    <Usage>A linear conversion is performed between the raw range and engineering
range.</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PMaxRaw</AttributeName>
  <Meaning>Parameter Maximum Raw</Meaning>
  <Description>Minimum raw value of the device.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Raw Max</NameRepresentation>
    <isValueRequired>>true</isValueRequired>
    <Usage>A linear conversion is performed between the raw range and engineering
range.</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PDb</AttributeName>
  <Meaning>Parameter Deadband</Meaning>

```

```

<Description>Deadband applied to the Engineering value at the PLC level.</Description>
<PrimitiveType>FLOAT32</PrimitiveType>
<isSpecificationAttribute>
  <NameRepresentation>Deadband (%)</NameRepresentation>
  <TypeRepresentation>FLOAT32</TypeRepresentation>
  <isValueRequired>>true</isValueRequired>
  <Usage>The value entered here must be consistent with the resolution of the PLC channel.
</Usage>
  <DependentAttributes/>
  <Constraints>Variations of the Engineering value below the % of the Engineering range will be
discarded.</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>FofEn</AttributeName>
  <Meaning>Parameter First Order Filter</Meaning>
  <Description>First Order Filter applied to the Engineering value at the PLC level.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Filtering Time (s)</NameRepresentation>
    <TypeRepresentation>FLOAT32</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>A first order filter is applied to the engineering value.</Usage>
    <DependentAttributes/>
    <Constraints>the filter will absorb the noise of the signal</Constraints>
  </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceAutoRequests</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>AulhFoMo</AttributeName>
    <Meaning>Auto Inhibit Forced Mode</Meaning>
    <Description>Auto Inhibit Forced Mode (by logic): The control logic blocks the forced mode
operation.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceManualRequests</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>

```

```

<AttributeName>ManReg01</AttributeName>
<Meaning>Manual Register 1</Meaning>
<Description>Manual Register 1</Description>
<isCommunicated>>true</isCommunicated>
<PrimitiveType>WORD</PrimitiveType>
<Attribute>
  <AttributeName>MAuMoR</AttributeName>
  <Meaning>Manual Auto Mode Request</Meaning>
  <Description>Manual Auto Mode Request: The operator requests the Auto Mode.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>0</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MFoMoR</AttributeName>
  <Meaning>Manual Forced Mode Request</Meaning>
  <Description>Manual Forced Mode Request: The operator requests the Forced
Mode.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>2</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MNewPosR</AttributeName>
  <Meaning>Manual New Position Request</Meaning>
  <Description>Manual New Position Request: The operator requests a new position to the
object</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>6</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MIOErBSetRst</AttributeName>
  <Meaning>Manual Input/Output Error Block Set/Reset</Meaning>
  <Description>Manual IO Error Block Set/Reset: This action allows to set/reset the
IOError.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>10</BitPosition>
</Attribute>
</Attribute>
<Attribute>
  <AttributeName>MPosR</AttributeName>
  <Meaning>Manual Position Request</Meaning>
  <Description>Manual Position Request: Value of the position requested by
operator</Description>
  <isCommunicated>>true</isCommunicated>

```

```

    <PrimitiveType>FLOAT32</PrimitiveType>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceEnvironmentInputs</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>HFPos</AttributeName>
    <Meaning>Hardware Feedback Position</Meaning>
    <Description>Analog Feedback of the actuator.
Must be an AI/AIR/AS.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>IOError</AttributeName>
    <Meaning>Input/Output Error</Meaning>
    <Description>IOError state in any of the dependant objects or the PLC channel assigned to the
object</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>IOSimu</AttributeName>
    <Meaning>Input/Output Simulated</Meaning>
    <Description>Any of the dependant objects is in Forced or Manual Mode</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceOutputs</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>StsReg01</AttributeName>
    <Meaning>Status Register 1</Meaning>
    <Description>Status Register 1</Description>
    <isEventAttribute>>true</isEventAttribute>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>WORD</PrimitiveType>
  <Attribute>
    <AttributeName>AuMoSt</AttributeName>
    <Meaning>Auto Mode Status</Meaning>
    <Description>Current status of the Auto Mode</Description>
    <PrimitiveType>BIT1</PrimitiveType>

```



```

    <BitPosition>2</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>FoMoSt</AttributeName>
    <Meaning>Forced Mode Status</Meaning>
    <Description>Current status of the Forced Mode.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>4</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>IOErrorW</AttributeName>
    <Meaning>Input/Output Error Warning</Meaning>
    <Description>Current status of the IOError</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>6</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>IOSimuW</AttributeName>
    <Meaning>Input/Output Simulated Warning</Meaning>
    <Description>Current status of the IOSimu</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>7</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>FoDiProW</AttributeName>
    <Meaning>Forced Differs from Process Warning</Meaning>
    <Description>The Manual or Forced Position requested by the operator differs from the
Process</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>8</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MIOErBRSt</AttributeName>
    <Meaning>Manual Input/Output Error Block Request Status</Meaning>
    <Description>Manual IOError Block Request Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>9</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AulhFoMoSt</AttributeName>
    <Meaning>Auto Inhibit Forced Mode Status</Meaning>
    <Description>Auto Inhibit Forced Mode status: Current status of the Auto Inhibit forced
mode.</Description>

```

```

    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>13</BitPosition>
  </Attribute>
</Attribute>
<Attribute>
  <AttributeName>PosSt</AttributeName>
  <Meaning>Position status</Meaning>
  <Description>Position Status</Description>
  <isCommunicated>>true</isCommunicated>
  <isArchived>>true</isArchived>
  <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>HFSt</AttributeName>
  <Meaning>Hardware Feedback Status</Meaning>
  <Description>Current engeneering value of the Hardware feedback position sensor</Description>
  <isCommunicated>>true</isCommunicated>
  <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuMoSt</AttributeName>
  <Meaning>Auto Mode Status</Meaning>
  <Description>Current status of the Auto Mode</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>FoMoSt</AttributeName>
  <Meaning>Forced Mode Status</Meaning>
  <Description>Current status of the Forced Mode.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>IOErrorW</AttributeName>
  <Meaning>Input/Output Error Warning</Meaning>
  <Description>Current status of the IOError</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>IOSimuW</AttributeName>
  <Meaning>Inpout/Output Simulated Warning</Meaning>
  <Description>Current status of the IOSimu</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>

```

```

</Attribute>
<Attribute>
  <AttributeName>FoDiProW</AttributeName>
  <Meaning>Forced Differs from Process Warning</Meaning>
  <Description>The Manual or Forced Position requested by the operator differs from the
Process</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceIOConfig</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>FEType</AttributeName>
    <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>FE Encoding Type</NameRepresentation>
      <TypeRepresentation>STRING</TypeRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
      <DependentAttributes>FEChannel.InterfaceParamX (where X=1-10)</DependentAttributes>
      <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>FEChannel</AttributeName>
    <Description>Indicates how to map the acquisition of the information from the field I/O
interface.</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
    <Attribute>
      <AttributeName>InterfaceParam1</AttributeName>
      <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
      <PrimitiveType>STRING</PrimitiveType>
      <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>

```

```

    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>InterfaceParam2</AttributeName>
    <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>InterfaceParam3</AttributeName>
    <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>InterfaceParam4</AttributeName>
    <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.

```

Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation

`<PrimitiveType>STRING</PrimitiveType>`

`<isSpecificationAttribute>`

`<isValueRequired>>false</isValueRequired>`

<Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation

`<DependentAttributes>FE Encoding Type</DependentAttributes>`

<Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation

`</isSpecificationAttribute>`

`</Attribute>`

`<Attribute>`

`<AttributeName>InterfaceParam5</AttributeName>`

<Description>Parameter used to set up the periphery address of the device according to the various hardware module types used at the PLC level.

Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation

`<PrimitiveType>STRING</PrimitiveType>`

`<isSpecificationAttribute>`

`<isValueRequired>>false</isValueRequired>`

<Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation

`<DependentAttributes>FE Encoding Type</DependentAttributes>`

<Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation

`</isSpecificationAttribute>`

`</Attribute>`

`<Attribute>`

`<AttributeName>InterfaceParam6</AttributeName>`

<Description>Parameter used to set up the periphery address of the device according to the various hardware module types used at the PLC level.

Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation

`<PrimitiveType>STRING</PrimitiveType>`

`<isSpecificationAttribute>`

`<isValueRequired>>false</isValueRequired>`

<Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation

`<DependentAttributes>FE Encoding Type</DependentAttributes>`

<Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation

`</isSpecificationAttribute>`

`</Attribute>`

```

<Attribute>
  <AttributeName>InterfaceParam7</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam8</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam9</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>

```

<Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>InterfaceParam10</AttributeName>

<Description>Parameter used to set up the periphery address of the device according to the various hardware module types used at the PLC level.

Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Usage>

<DependentAttributes>FE Encoding Type</DependentAttributes>

<Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Constraints>

</isSpecificationAttribute>

</Attribute>

</Attribute>

</AttributeFamily>

<AttributeFamily>

<AttributeFamilyName>SCADADeviceGraphics</AttributeFamilyName>

<UserExpandable>>true</UserExpandable>

<Attribute>

<AttributeName>PosStUnit</AttributeName>

<Description>Unit of the device to be displayed in SCADA</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Unit</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage/>

<DependentAttributes/>

<Constraints>In principle there is no limit to the number of characters used, however a long name may result in display issues at the SCADA level.

Forbidden characters: *[: ""@ # \$ ^ & * ? ! , ; = + ~ () { } < > |]</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>PosStFormat</AttributeName>

<Description>Format of the value to be displayed in SCADA. Supported formats:

(fixed number of decimal places, in this case 2),

EXP or xEXP (exponential, 3 or x digits after '!'),
 xD or xd (fixed digit format, x=number of digits, e.g.: 3D=0.01, 12.0, 123)</Description>

```

    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Format</NameRepresentation>
      <isValueRequired>>true</isValueRequired>
      <Usage>Example: use format #.## to display value to 2 decimal places. To the left of the decimal
      point, the SCADA layer will display as many digits as required by the object value, therefore a single #
      is enough.</Usage>
      <DependentAttributes/>
      <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>WidgetType</AttributeName>
    <Description>Define the widget type to display in the SCADA device tree overview only.
    The widget displayed in the process panel will be selected when the user creates the
    panel.</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Widget Type</NameRepresentation>
      <isValueRequired>>true</isValueRequired>
      <isCaseSensitive>>true</isCaseSensitive>
      <PermittedValue>AnalogInput_Small</PermittedValue>
      <PermittedValue>AnalogInput_SciOrPrecision</PermittedValue>
      <Usage/>
      <DependentAttributes/>
      <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>Synoptic</AttributeName>
    <Description>Define link between the device and an existing synoptic where it appears. The
    synoptic specified here can be accessed from the device right-click menu item
    "Synoptic".</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>Specify the path of the .pnl file under the "\panel" directory of the PVSS
      project.</Usage>
      <DependentAttributes/>
      <Constraints/>
    </isSpecificationAttribute>
  </Attribute>

```



```

</Attribute>
<Attribute>
  <AttributeName>DiagnosticPanel</AttributeName>
  <Description>Define link between the device and an existing diagnostic panel for the device. The
panel specified here can be accessed from the device right-click menu item "Diagnostic" as well as
from the "Diagnostic" button on the object faceplate.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Diagnostic</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Specify the path of the .pnl file under the "\panel" directory of the PVSS project
</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>WWWLink</AttributeName>
  <Description>Define link between the device and an existing web page (or pdf file, or other file
which can be opened with IE). The link can be accessed from the device right-click menu item "Info"
as well as from the "Info" button on the object faceplate.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>WWW Link</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADeviceFunctionals</AttributeFamilyName>
  <UserExpandable>>false</UserExpandable>
  <Attribute>
    <AttributeName>MaskEvent</AttributeName>
    <Description>If TRUE: the events of the device will be masked in SCADA and not displayed or
archived in the Event List.
An 'event' is defined as a bit change in StsReg01 or StsReg02</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Mask Event</NameRepresentation>
      <isValueRequired>>false</isValueRequired>

```

```

<Usage/>
<DependentAttributes/>
<Constraints/>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>AccessControlDomain</AttributeName>
  <Description>Define Access Control on the device to an existing SCADA Domain
Forbidden characters: *[: "'@`#$%^&*?!;=+~(){}&lt;&gt;|]
</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Access Control Domain</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>This domain is used to grant access to this specific device. The domain specified for this
object will allow access to the object only to registered users on that domain</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[: "'@`#$%^&*?!;=+~(){}&lt;&gt;|]
</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>SCADADeviceClassificationTags</AttributeName>
  <Description>It defines the Domain, Nature and DeviceLinks for the SCADA
visualization</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <Attribute>
    <AttributeName>Domain</AttributeName>
    <Description>Domain of the device. If empty, the domain will be the name of the application
Forbidden characters: *[: "'@`#$%^&*?!;=+~(){}&lt;&gt;|]
</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>Domain is used to filter the devices in the alarm list or in the device tree
overview</Usage>
      <DependentAttributes/>
      <Constraints>Forbidden characters: *[: "'@`#$%^&*?!;=+~(){}&lt;&gt;|]
</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>Nature</AttributeName>
    <Description>Nature of the device. If empty, the nature will be the type of the device
Forbidden characters: *[: "'@`#$%^&*?!;=+~(){}&lt;&gt;|]
</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>

```

```

    <isValueRequired>>false</isValueRequired>
    <Usage>Nature is used to filter the devices in the alarm list or in the device tree
overview</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[: "'@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>DeviceLinks</AttributeName>
    <Description>Define links to other devices (separate device names with commas).
Note: it is not necessary to link to master, parents or children because these links are automatically
created.
Forbidden characters: *[: "'@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <NameRepresentation>Device Links</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Linked devices will be shown in the device right-click menu</Usage>
    <DependentAttributes>Expert Name or Name.
The name of the device(s) specified here *must* correspond to "Expert Name" if it is defined.
If "Expert Name" is not defined, the name of the device(s) specified here corresponds to
"Name".</DependentAttributes>
    <Constraints>Forbidden characters: *[: "'@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
</Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>SCADADeviceDataArchiving</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
    <AttributeName>ArchiveMode</AttributeName>
    <Description>Archive mode of the object engineering values. Archive if:
Old/New Comparison: value changes
Time: value changes after Time Filter
Deadband: value &lt; or &gt; deadband
AND: at least one of the conditions is fulfilled
OR: both conditions are fulfilled</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <NameRepresentation>Archive Mode</NameRepresentation>
    <isValueRequired>>true</isValueRequired>
    <PermittedValue>No</PermittedValue>

```

```

    <PermittedValue>Deadband</PermittedValue>
    <PermittedValue>Time</PermittedValue>
    <PermittedValue>Deadband AND Time</PermittedValue>
    <PermittedValue>Deadband OR Time</PermittedValue>
    <PermittedValue>Old/New Comparison</PermittedValue>
    <PermittedValue>Old/New Comparison AND Time</PermittedValue>
    <PermittedValue>Old/New Comparison OR Time</PermittedValue>
    <Usage>This archive mode is used to archive data in the PVSS database</Usage>
    <DependentAttributes>If "Time" is selected, "Time Filter (s)" must be filled
    If "Deadband" is selected: "Deadband Type" and "Deadband Value" must be
    filled.</DependentAttributes>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>TimeFilter</AttributeName>
  <Description>Time filter for the SCADA archiving of the engineering values of the object. Must be
  positive.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Time Filter (s)</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes>Valid if "Time" has been selected as Archive
    Mode</DependentAttributes>
    <Constraints>Must be positive</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DeadbandType</AttributeName>
  <Description>Deadband type (Relative or Absolute) of the deadband for the SCADA archiving of
  the engineering values of the object</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Deadband Type</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <PermittedValue>Relative</PermittedValue>
    <PermittedValue>Absolute</PermittedValue>
    <Usage>The value is archived if the difference between the latest archived value and the actual
    value exceeds, either:
    - if 'Absolute': the "Deadband Value"
    - if 'Relative': the "Deadband Value" as a percent of the latest archived value</Usage>

```

```

    <DependentAttributes>Valid if "Deadband" has been selected as Archive
Mode</DependentAttributes>
    <Constraints/>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>DeadbandValue</AttributeName>
    <Description>Deadband value for the SCADA archiving of the engineering values of the object
Must be positive and larger than the deadband specified for the driver data smoothing (Driver
deadband)</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
    <NameRepresentation>Deadband Value</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes>Valid if "Deadband" has been selected as Archive
Mode</DependentAttributes>
    <Constraints>Must be positive and larger than the deadband specified for the driver data
smoothing (Driver deadband)</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>BooleanArch</AttributeName>
    <Description>Name of the Boolean archive
Forbidden characters: *[: ""@ #$$%^&*?!.,;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <NameRepresentation>Boolean Archive</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>The boolean values of the device will be archived in the specified PVSS database. The
archive must be created in PVSS before importing the object.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[: ""@ #$$%^&*?!.,;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>AnalogArch</AttributeName>
    <Description>Name of the analog archive
Forbidden characters: *[: ""@ #$$%^&*?!.,;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <NameRepresentation>Analog Archive</NameRepresentation>
    <isValueRequired>>false</isValueRequired>

```

```

    <Usage>The analog values of the device will be archived in the specified PVSS database. The
archive must be created in PVSS before importing the object.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[: "'@`#$%^&*?!.,;=+~(){}&lt;&gt;|]</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>EventArch</AttributeName>
    <Description>Name of the event archive
Forbidden characters: *[: "'@`#$%^&*?!.,;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <NameRepresentation>Event Archive</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>The events generated by the device will be archived in the specified PVSS database. The
archive must be created in PVSS before importing the object.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[: "'@`#$%^&*?!.,;=+~(){}&lt;&gt;|]</Constraints>
</isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>SCADADriverDataSmoothing</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
    <AttributeName>DeadbandType</AttributeName>
    <Description>Deadband type (None, Relative, Absolute or Old/New) for the SCADA driver data
smoothing (Driver deadband)</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <NameRepresentation>Deadband Type</NameRepresentation>
    <isValueRequired>>true</isValueRequired>
    <PermittedValue>No</PermittedValue>
    <PermittedValue>Relative</PermittedValue>
    <PermittedValue>Absolute</PermittedValue>
    <PermittedValue>Old/New</PermittedValue>
    <Usage>Used for the online display in SCADA</Usage>
    <DependentAttributes/>
    <Constraints/>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>DeadbandValue</AttributeName>

```

```

    <Description>Deadband value for the SCADA driver data smoothing
    Must be positive and smaller than the deadband specified for the archiving</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Deadband Value</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>Used for the online display in SCADA</Usage>
        <DependentAttributes/>
        <Constraints>Must be positive and smaller than the deadband specified for the
    archiving</Constraints>
    </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>SCADADeviceAlarms</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>AlarmConfig</AttributeName>
        <Description>Configuration of Alarm under SCADA</Description>
        <PrimitiveType>INT32</PrimitiveType>
        <isSpecificationAttribute>
            <NameRepresentation>Alarm Config</NameRepresentation>
            <isValueRequired>>true</isValueRequired>
            <Usage/>
            <DependentAttributes/>
            <Constraints/>
        </isSpecificationAttribute>
    <Attribute>
        <AttributeName>SMSCategory</AttributeName>
        <Description>This Alarm message will follow rules defined in the corresponding SMS User Group
    (comma-separated list)</Description>
        <PrimitiveType>STRING</PrimitiveType>
        <isSpecificationAttribute>
            <NameRepresentation>SMS Category</NameRepresentation>
            <isValueRequired>>false</isValueRequired>
            <Usage>Defines a specific treatment for each SMS message</Usage>
            <DependentAttributes/>
            <Constraints>The name must correspond to the SMS user group
    (unProcessAlarm,...)</Constraints>
        </isSpecificationAttribute>
    </Attribute>
    <Attribute>
        <AttributeName>AutoAcknowledge</AttributeName>

```

```

    <Description>The SCADA automatically performs the alarm acknowledge</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Auto Acknowledge</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>When TRUE, the SCADA automatically acknowledges the alarm at its occurrence.
The operator doesn't have to act on this alarm.</Usage>
    <DependentAttributes/>
    <Constraints>TRUE/FALSE</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Masked</AttributeName>
  <Description>Alarm signal is ignored by the SCADA</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>When TRUE, the Alarm signal is not recorded into the ALARM database</Usage>
    <DependentAttributes/>
    <Constraints>TRUE/FALSE</Constraints>
  </isSpecificationAttribute>
</Attribute>
</Attribute>
<Attribute>
  <AttributeName>Message</AttributeName>
  <Description>Message to display when alarm is set in SCADA</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>The message specified here will be displayed in the Alarm List</Usage>
    <DependentAttributes/>
    <Constraints>In principle there is no limit to the number of characters used, however a long
name may result in display issues at the SCADA level.
Forbidden characters: *["'@`#$%^&?*?!.,;+=~(){}&lt;&gt;|]</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>AnalogThresholds</AttributeName>
  <Description>Analog alarm condition </Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Analog Thresholds</NameRepresentation>

```



```

<isValueRequired>>true</isValueRequired>
<Usage/>
<DependentAttributes/>
<Constraints/>
</isSpecificationAttribute>
<Attribute>
  <AttributeName>HHAlarm</AttributeName>
  <Description>High High (HH) Alarm Threshold
All defined thresholds must be ordered (HH&gt;H&gt;L&gt;LL)</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>HH Alarm</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Used to define an HH Alarm on the sensor at SCADA level. This alarm is only used at
SCADA level for information and It has no impact on the process. If empty, no alarm is
created.</Usage>
    <DependentAttributes/>
    <Constraints>All defined thresholds must be ordered (HH&gt;H&gt;L&gt;LL)</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>HWarning</AttributeName>
  <Description>High (H) Alarm Threshold
All defined thresholds must be ordered (HH&gt;H&gt;L&gt;LL)</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>H Warning</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Used to define an H Alarm on the sensor at SCADA level. This alarm is only used at
SCADA level for information and It has no impact on the process. If empty, no alarm is
created.</Usage>
    <DependentAttributes/>
    <Constraints>All defined thresholds must be ordered (HH&gt;H&gt;L&gt;LL)</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>LWarning</AttributeName>
  <Description>Low (L) Alarm Threshold
All defined thresholds must be ordered (HH&gt;H&gt;L&gt;LL)</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>L Warning</NameRepresentation>
    <isValueRequired>>false</isValueRequired>

```

<Usage>Used to define an L Alarm on the sensor at SCADA level. This alarm is only used at SCADA level for information and It has no impact on the process. If empty, no alarm is created.</Usage>

<DependentAttributes/>

<Constraints>All defined thresholds must be ordered (HH>H>L>LL)</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>LLAlarm</AttributeName>

<Description>Low Low (LL) Alarm Threshold

All defined thresholds must be ordered (HH>H>L>LL)</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>LL Alarm</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>Used to define an LL Alarm on the sensor at SCADA level. This alarm is only used at SCADA level for information and It has no impact on the process. If empty, no alarm is created.</Usage>

<DependentAttributes/>

<Constraints>All defined thresholds must be ordered (HH>H>L>LL)</Constraints>

</isSpecificationAttribute>

</Attribute>

</Attribute>

</AttributeFamily>

<AttributeFamily>

<AttributeFamilyName>LogicDeviceDefinitions</AttributeFamilyName>

<UserExpandable>>true</UserExpandable>

<Attribute>

<AttributeName>CustomLogicParameters</AttributeName>

<Description>User defined meaning, used by the logic generators.</Description>

<PrimitiveType>STRUCT</PrimitiveType>

<Attribute>

<AttributeName>Parameter1</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: "\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template", parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: "\$' </Constraints>

```

    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>Parameter2</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
      <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
      <Constraints>Forbidden characters: '$' </Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>Parameter3</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
      <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
      <Constraints>Forbidden characters: '$' </Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>Parameter4</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
      <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
      <Constraints>Forbidden characters: '$' </Constraints>
    </isSpecificationAttribute>

```

```

</Attribute>
<Attribute>
  <AttributeName>Parameter5</AttributeName>
  <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Parameter6</AttributeName>
  <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Parameter7</AttributeName>
  <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
  </isSpecificationAttribute>
</Attribute>

```

```

<Attribute>
  <AttributeName>Parameter8</AttributeName>
  <Description>Parameter to be used in the logic templates
Forbidden characters: "$' </Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: "$' </Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Parameter9</AttributeName>
  <Description>Parameter to be used in the logic templates
Forbidden characters: "$' </Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: "$' </Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Parameter10</AttributeName>
  <Description>Parameter to be used in the logic templates
Forbidden characters: "$' </Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: "$' </Constraints>
  </isSpecificationAttribute>
</Attribute>
</Attribute>

```

```

</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>DeviceTechnical</AttributeFamilyName>
  <UserExpandable>true</UserExpandable>
  <Attribute>
    <AttributeName>PROCOSConfiguration</AttributeName>
    <Description>PROCOS parameters allowing simulation</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
    <Attribute>
      <AttributeName>Config</AttributeName>
      <Description>Device mode configuration for simulation (Simulated, Forced or
Empty)</Description>
      <PrimitiveType>STRING</PrimitiveType>
    </Attribute>
    <Attribute>
      <AttributeName>ForcedValue</AttributeName>
      <Description>Forced value defined (e.g.: analog: 4.5, digital: 0 or 1)</Description>
      <PrimitiveType>STRING</PrimitiveType>
    </Attribute>
    <Attribute>
      <AttributeName>Hierarchy</AttributeName>
      <Description>Hierarchy definition following the Simulation model</Description>
      <PrimitiveType>STRING</PrimitiveType>
    </Attribute>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>TargetDeviceInformation</AttributeFamilyName>
  <UserExpandable>true</UserExpandable>
  <Attribute>
    <AttributeName>Target</AttributeName>
    <Description>Identifies a target type (e.g. SIEMENS, SCHNEIDER...)</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
    <DefaultValue>Siemens</DefaultValue>
    <Attribute>
      <AttributeName>RepresentationName</AttributeName>
      <Description>It's the name used ...</Description>
      <PrimitiveType>STRING</PrimitiveType>
      <DefaultValue>AIR</DefaultValue>
    </Attribute>
    <Attribute>
      <AttributeName>Optimized</AttributeName>

```

```
<Description>Is this object an optimized Object?</Description>
<PrimitiveType>BOOLEAN</PrimitiveType>
<DefaultValue>>true</DefaultValue>
</Attribute>
<Attribute>
  <AttributeName>LimitSize</AttributeName>
  <Description>Maximun number of instances allowed</Description>
  <PrimitiveType>INT32</PrimitiveType>
  <DefaultValue>1000</DefaultValue>
</Attribute>
<Attribute>
  <AttributeName>FastInterlock</AttributeName>
  <Description>Is this object a fast interlock object?</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <DefaultValue>>false</DefaultValue>
</Attribute>
</Attribute>
</AttributeFamily>
</UNICOSMetaModel>
```

2.7. AnalogOutputDeviceType.xml

```
<?xml version='1.0' encoding='UTF-8'?>
<UNICOSMetaModel xmlns:xsi='http://www.w3.org/2001/XMLSchema-instance'
xsi:noNamespaceSchemaLocation='..\unicos\UNICOSMetaModel.xsd'>
  <Information>
    <Package>${devicePackageName}</Package>
    <Name>AnalogOutput</Name>
    <ObjectTypeFamily>IOObjectFamily</ObjectTypeFamily>
    <Description>Analog Output Device</Description>
    <Version>${LastChangedRevision: 170110} $</Version>
  </Information>
  <AttributeFamily>
    <AttributeFamilyName>DeviceIdentification</AttributeFamilyName>
    <UserExpandable>true</UserExpandable>
    <Attribute>
      <AttributeName>Name</AttributeName>
      <Description>Name of the device. It must be unique.
```

Max length:

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: [:"'@`#\$%^&*?!.,;+~(){}<>|]-., double underscore, and page break</Description>

```
  <PrimitiveType>STRING</PrimitiveType>
```

```
  <isSpecificationAttribute>
```

```
    <isValueRequired>true</isValueRequired>
```

```
    <Usage>Name displayed at the SCADA level if "Expert Name" is not specified.
```

This name will appear in the datapoints created in the SCADA layer.</Usage>

```
    <DependentAttributes>Device Links.
```

The name of the device(s) specified in Device Links *must* correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to "Name".</DependentAttributes>

```
    <Constraints>Max length:
```

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: [:"'@`#\$%^&*?!.,;+~(){}<>|]-., double underscore, and page break Name must be unique.</Constraints>

```
  </isSpecificationAttribute>
```

```
</Attribute>
```

```
<Attribute>
```

```
  <AttributeName>ExpertName</AttributeName>
```

```
  <Description>Name of the device displayed at the SCADA level. It must be unique.
```


Forbidden characters: *[: ""@`#\$%^&*?!;,=+~(){}<>|] </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Expert Name</NameRepresentation>

<TypeRepresentation>STRING</TypeRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>It does not affect to the datapoints names in the SCADA layer.</Usage>

<DependentAttributes>Device Links.

The name of the device(s) specified in Device Links **must** correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to "Name".</DependentAttributes>

<Constraints>In principle there is no limit to the number of characters used, however a long name may result in display issues at the SCADA level.

Forbidden characters: *[: ""@`#\$%^&*?!;,=+~(){}<>|]

Expert Name must be unique.</Constraints>

</isSpecificationAttribute>

</Attribute>

</AttributeFamily>

<AttributeFamily>

<AttributeFamilyName>DeviceDocumentation</AttributeFamilyName>

<UserExpandable>>true</UserExpandable>

<Attribute>

<AttributeName>DeviceDescription</AttributeName>

<Description>Description of the device. </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Description</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>Used in the SCADA layer in the device faceplate</Usage>

<DependentAttributes/>

<Constraints>In principle there is no limit to the number of characters used, however a long description may result in display issues at the SCADA level.

Forbidden characters: ;</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>ElectricalDiagram</AttributeName>

<Description>Reference to the electrical diagram in which the device is represented.</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Electrical Diagram</NameRepresentation>

```

    <isValueRequired>>false</isValueRequired>
    <Usage>Used in the SCADA layer: added to the device description in the device
faceplate.</Usage>
    <DependentAttributes/>
    <Constraints>In principle there is no limit to the number of characters used, however a long
name may result in display issues at the SCADA level.
Forbidden characters: *[: ""@ #\$%^&amp;*?!.,;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Remarks</AttributeName>
    <Description>Field used to add relevant information about the device. </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>This information is not used in the generation process, it remains only at the
specification level for documentation purposes.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: ;</Constraints>
    </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>FEDeviceParameters</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
    <AttributeName>PMinRan</AttributeName>
    <Meaning>Parameter Minimum Range</Meaning>
    <Description>Minimum engineering value of the device.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
    <NameRepresentation>Range Min</NameRepresentation>
    <isValueRequired>>true</isValueRequired>
    <Usage>A linear conversion is performed between the raw range and engineering
range.</Usage>
    <DependentAttributes/>
    <Constraints>The value specified here must be consistent with the format defined in the field
"Format".</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>PMaxRan</AttributeName>
    <Meaning>Parameter Maximum Range</Meaning>

```

```

<Description>Maximum engineering value of the device.</Description>
<PrimitiveType>FLOAT32</PrimitiveType>
<isSpecificationAttribute>
  <NameRepresentation>Range Max</NameRepresentation>
  <isValueRequired>true</isValueRequired>
  <Usage>A linear conversion is performed between the raw range and engineering
range.</Usage>
  <DependentAttributes/>
  <Constraints>The value specified here must be consistent with the format defined in the field
"Format".</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PMinRaw</AttributeName>
  <Meaning>Parameter Minimum Raw</Meaning>
  <Description>Minimum raw value of the device.</Description>
  <PrimitiveType>SHORTINT16</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Raw Min</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>true</isValueRequired>
    <Usage>A linear conversion is performed between the raw range and engineering
range.</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PMaxRaw</AttributeName>
  <Meaning>Parameter Maximum Raw</Meaning>
  <Description>Minimum raw value of the device.</Description>
  <PrimitiveType>SHORTINT16</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Raw Max</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>true</isValueRequired>
    <Usage>A linear conversion is performed between the raw range and engineering
range.</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
</AttributeFamily>

```

```

<AttributeFamily>
  <AttributeFamilyName>FEDeviceAutoRequests</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>AuPosR</AttributeName>
    <Meaning>Auto Position Request.</Meaning>
    <Description>Auto Position Request: The control logic requests a specific position on the
object.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>AulhFoMo</AttributeName>
    <Meaning>Auto Inhibit Forced Mode</Meaning>
    <Description>Auto Inhibit Forced Mode (by logic): The control logic blocks the forced mode
operation.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceManualRequests</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>ManReg01</AttributeName>
    <Meaning>Manual Register 1</Meaning>
    <Description>Manual Register 1</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>WORD</PrimitiveType>
  <Attribute>
    <AttributeName>MAuMoR</AttributeName>
    <Meaning>Manual Auto Mode Request</Meaning>
    <Description>Manual Auto Mode Request: The operator requests the Auto Mode.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>0</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>MFoMoR</AttributeName>
    <Meaning>Manual Forced Mode Request</Meaning>
    <Description>Manual Forced Mode Request: The operator requests the Forced
Mode.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>2</BitPosition>
  </Attribute>
  <Attribute>

```

```

    <AttributeName>MNewPosR</AttributeName>
    <Meaning>Manual New Position Request</Meaning>
    <Description>Manual New Position Request: The operator requests a new position to the
object</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>6</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MIOErBSetRst</AttributeName>
    <Meaning>Manual Input/Output Error Block Set/Reset</Meaning>
    <Description>Manual IO Error Block Set/Reset: This action allows to set/reset the
IOError.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>10</BitPosition>
</Attribute>
</Attribute>
<Attribute>
    <AttributeName>MPosR</AttributeName>
    <Meaning>Manual Position Request</Meaning>
    <Description>Manual Position Request: Value of the position requested by
operator</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>FEDeviceEnvironmentInputs</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
<Attribute>
    <AttributeName>IOError</AttributeName>
    <Meaning>Input/Output Error</Meaning>
    <Description>IOError state in any of the dependant objects or the PLC channel assigned to the
object</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>IOSimu</AttributeName>
    <Meaning>Input/Output Simulated</Meaning>
    <Description>Any of the dependant objects is in Forced or Manual Mode</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>

```

```

<AttributeFamilyName>FEDeviceOutputs</AttributeFamilyName>
<UserExpandable>>true</UserExpandable>
<Attribute>
  <AttributeName>OutOV</AttributeName>
  <Meaning>Output Order Value</Meaning>
  <Description>Analog Output connected to the process.
Must be an AO or AS.</Description>
  <PrimitiveType>SHORTINT16</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>StsReg01</AttributeName>
  <Meaning>Status Register 1</Meaning>
  <Description>Status Register 1</Description>
  <isEventAttribute>>true</isEventAttribute>
  <isCommunicated>>true</isCommunicated>
  <PrimitiveType>WORD</PrimitiveType>
<Attribute>
  <AttributeName>AuMoSt</AttributeName>
  <Meaning>Auto Mode Status</Meaning>
  <Description>Current status of the Auto Mode</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>2</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>FoMoSt</AttributeName>
  <Meaning>Forced Mode Status</Meaning>
  <Description>Current status of the Forced Mode.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>4</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>IOErrorW</AttributeName>
  <Meaning>Input/Output Error Warning</Meaning>
  <Description>Current status of the IOError</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>6</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>IOSimuW</AttributeName>
  <Meaning>Input/Output Simulated Warning</Meaning>
  <Description>Current status of the IOSimu</Description>
  <PrimitiveType>BIT1</PrimitiveType>

```

```

    <BitPosition>7</BitPosition>
  </Attribute>
</Attribute>
  <AttributeName>FoDiAuW</AttributeName>
  <Meaning>Forced Differs Auto Warning</Meaning>
  <Description>The Manual or Forced Position requested by the operator differs from the Auto
Position</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>8</BitPosition>
</Attribute>
</Attribute>
  <AttributeName>MIOErBRSt</AttributeName>
  <Meaning>Manual Input/Output Error Block Request Status</Meaning>
  <Description>Manual IOError Block Request Status</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>9</BitPosition>
</Attribute>
</Attribute>
  <AttributeName>AulhFoMoSt</AttributeName>
  <Meaning>Auto Inhibit Forced Mode Status</Meaning>
  <Description>Auto Inhibit Forced Mode status: Current status of the Auto Inhibit forced
mode.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>13</BitPosition>
</Attribute>
</Attribute>
</Attribute>
  <AttributeName>PosSt</AttributeName>
  <Meaning>Position status</Meaning>
  <Description>Position Status</Description>
  <isCommunicated>true</isCommunicated>
  <isArchived>true</isArchived>
  <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
</Attribute>
  <AttributeName>AuPosRSt</AttributeName>
  <Meaning>Auto Position Request Status</Meaning>
  <Description>Status of the position of the object in auto mode.</Description>
  <isCommunicated>true</isCommunicated>
  <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
</Attribute>
  <AttributeName>AuMoSt</AttributeName>

```

```

    <Meaning>Auto Mode Status</Meaning>
    <Description>Current status of the Auto Mode</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>FoMoSt</AttributeName>
    <Meaning>Forced Mode Status</Meaning>
    <Description>Current status of the Forced Mode.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>IOErrorW</AttributeName>
    <Meaning>Input/Output Error Warning</Meaning>
    <Description>Current status of the IOError</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>IOSimuW</AttributeName>
    <Meaning>Input/Output Simulated Warning</Meaning>
    <Description>Current status of the IOSimu</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>FoDiAuW</AttributeName>
    <Meaning>Forced Differs Auto Warning</Meaning>
    <Description>The Manual or Forced Position requested by the operator differs from the Auto
    Position</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceIOConfig</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>FEType</AttributeName>
    <Description>Parameter used to set up the periphery address of the device according to the
    various hardware module types used at the PLC level.
    Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
    documentation</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>FE Encoding Type</NameRepresentation>
      <TypeRepresentation>STRING</TypeRepresentation>
    </isSpecificationAttribute>
  </Attribute>

```



```

    <isValueRequired>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FEChannel.InterfaceParamX (where X=1-10)</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>FEChannel</AttributeName>
    <Description>Indicates how to map the acquisition of the information from the field I/O
interface.</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
<Attribute>
    <AttributeName>InterfaceParam1</AttributeName>
    <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <isValueRequired>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>InterfaceParam2</AttributeName>
    <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <isValueRequired>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
</isSpecificationAttribute>

```

```

</Attribute>
<Attribute>
  <AttributeName>InterfaceParam3</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam4</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam5</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>

```

```

    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam6</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam7</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam8</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>

```

```

<isSpecificationAttribute>
  <isValueRequired>>false</isValueRequired>
  <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
  <DependentAttributes>FE Encoding Type</DependentAttributes>
  <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam9</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam10</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>

```

```

<AttributeFamilyName>SCADADeviceGraphics</AttributeFamilyName>
<UserExpandable>>true</UserExpandable>
<Attribute>
  <AttributeName>PosStUnit</AttributeName>
  <Description>Unit of the device to be displayed in SCADA</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Unit</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints>In principle there is no limit to the number of characters used, however a long
name may result in display issues at the SCADA level.
Forbidden characters: *[: "'@ # $ ^ & amp; * ? ! , ; = + ~ ( ) { } & lt; & gt; | ]</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PosStFormat</AttributeName>
  <Description>Format of the value to be displayed in SCADA. Supported formats:
### (fixed number of decimal places, in this case 2),
EXP or xEXP (exponential, 3 or x digits after '.'),
xD or xd (fixed digit format, x=number of digits, e.g.: 3D=0.01, 12.0, 123)</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Format</NameRepresentation>
    <isValueRequired>>true</isValueRequired>
    <Usage>Example: use format ### to display value to 2 decimal places. To the left of the decimal
point, the SCADA layer will display as many digits as required by the object value, therefore a single #
is enough.</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>WidgetType</AttributeName>
  <Description>Define the widget type to display in the SCADA device tree overview only.
The widget displayed in the process panel will be selected when the user creates the
panel.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Widget Type</NameRepresentation>
    <isValueRequired>>true</isValueRequired>
    <isCaseSensitive>>true</isCaseSensitive>

```

```

    <PermittedValue>AnalogOutput_Small</PermittedValue>
    <PermittedValue>AnalogOutput_SciOrPrecision</PermittedValue>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Synoptic</AttributeName>
  <Description>Define link between the device and an existing synoptic where it appears. The
synoptic specified here can be accessed from the device right-click menu item
"Synoptic".</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Specify the path of the .pnl file under the "\panel" directory of the PVSS
project.</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DiagnosticPanel</AttributeName>
  <Description>Define link between the device and an existing diagnostic panel for the device. The
panel specified here can be accessed from the device right-click menu item "Diagnostic" as well as
from the "Diagnostic" button on the object faceplate.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Diagnostic</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Specify the path of the .pnl file under the "\panel" directory of the PVSS project
</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>WWWLink</AttributeName>
  <Description>Define link between the device and an existing web page (or pdf file, or other file
which can be opened with IE). The link can be accessed from the device right-click menu item "Info"
as well as from the "Info" button on the object faceplate.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>WWW Link</NameRepresentation>

```

```

    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADeviceFunctionals</AttributeFamilyName>
  <UserExpandable>>false</UserExpandable>
  <Attribute>
    <AttributeName>MaskEvent</AttributeName>
    <Description>If TRUE: the events of the device will be masked in SCADA and not displayed or
archived in the Event List.
An 'event' is defined as a bit change in StsReg01 or StsReg02</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Mask Event</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <PermittedValue>True</PermittedValue>
      <PermittedValue>False</PermittedValue>
      <Usage/>
      <DependentAttributes/>
      <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>AccessControlDomain</AttributeName>
    <Description>Define Access Control on the device to an existing SCADA Domain
Forbidden characters: *[: "'@`#$$%^&?*?!;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Access Control Domain</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>This domain is used to grant access to this specific device. The domain specified for this
object will allow access to the object only to registered users on that domain</Usage>
      <DependentAttributes/>
      <Constraints>Forbidden characters: *[: "'@`#$$%^&?*?!;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>SCADADeviceClassificationTags</AttributeName>

```

```

<Description>It defines the Domain, Nature and DeviceLinks for the SCADA
visualization</Description>
<PrimitiveType>STRUCT</PrimitiveType>
<Attribute>
  <AttributeName>Domain</AttributeName>
  <Description>Domain of the device. If empty, the domain will be the name of the application
Forbidden characters: *[: "'@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Domain is used to filter the devices in the alarm list or in the device tree
overview</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[: "'@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Nature</AttributeName>
  <Description>Nature of the device. If empty, the nature will be the type of the device
Forbidden characters: *[: "'@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Nature is used to filter the devices in the alarm list or in the device tree
overview</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[: "'@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DeviceLinks</AttributeName>
  <Description>Define links to other devices (separate device names with commas).
Note: it is not necessary to link to master, parents or children because these links are automatically
created.
Forbidden characters: *[: "'@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Device Links</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Linked devices will be shown in the device right-click menu</Usage>
    <DependentAttributes>Expert Name or Name.
The name of the device(s) specified here *must* correspond to "Expert Name" if it is defined.

```


If "Expert Name" is not defined, the name of the device(s) specified here corresponds to "Name".</DependentAttributes>

```
<Constraints>Forbidden characters: *[:"@#%&^&#x26amp;*?!;=+~(){}&#x26lt;&gt;|]&#x26lt;&gt;|]</Constraints>
</isSpecificationAttribute>
</Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADeviceDataArchiving</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>ArchiveMode</AttributeName>
    <Description>Archive mode of the object engineering values. Archive if:
    Old/New Comparison: value changes
    Time: value changes after Time Filter
    Deadband: value &lt; or &gt; deadband
    AND: at least one of the conditions is fulfilled
    OR: both conditions are fulfilled</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Archive Mode</NameRepresentation>
      <isValueRequired>>true</isValueRequired>
      <PermittedValue>No</PermittedValue>
      <PermittedValue>Deadband</PermittedValue>
      <PermittedValue>Time</PermittedValue>
      <PermittedValue>Deadband AND Time</PermittedValue>
      <PermittedValue>Deadband OR Time</PermittedValue>
      <PermittedValue>Old/New Comparison</PermittedValue>
      <PermittedValue>Old/New Comparison AND Time</PermittedValue>
      <PermittedValue>Old/New Comparison OR Time</PermittedValue>
      <Usage>This archive mode is used to archive data in the PVSS database</Usage>
      <DependentAttributes>If "Time" is selected, "Time Filter (s)" must be filled
    If "Deadband" is selected: "Deadband Type" and "Deadband Value" must be
    filled.</DependentAttributes>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>TimeFilter</AttributeName>
  <Description>Time filter for the SCADA archiving of the engineering values of the object. Must be
  positive.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
```

```

    <NameRepresentation>Time Filter (s)</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes>Valid if "Time" has been selected as Archive
Mode</DependentAttributes>
    <Constraints>Must be positive</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>DeadbandType</AttributeName>
    <Description>Deadband type (Relative or Absolute) of the deadband for the SCADA archiving of
the engineering values of the object</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <NameRepresentation>Deadband Type</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <PermittedValue>Relative</PermittedValue>
    <PermittedValue>Absolute</PermittedValue>
    <Usage>The value is archived if the difference between the latest archived value and the actual
value exceeds, either:
- if 'Absolute': the "Deadband Value"
- if 'Relative': the "Deadband Value" as a percent of the latest archived value</Usage>
    <DependentAttributes>Valid if "Deadband" has been selected as Archive
Mode</DependentAttributes>
    <Constraints/>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>DeadbandValue</AttributeName>
    <Description>Deadband value for the SCADA archiving of the engineering values of the object
Must be positive and larger than the deadband specified for the driver data smoothing (Driver
deadband)</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
    <NameRepresentation>Deadband Value</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes>Valid if "Deadband" has been selected as Archive
Mode</DependentAttributes>
    <Constraints>Must be positive and larger than the deadband specified for the driver data
smoothing (Driver deadband)</Constraints>
    </isSpecificationAttribute>
</Attribute>

```

```

<Attribute>
  <AttributeName>BooleanArch</AttributeName>
  <Description>Name of the Boolean archive
Forbidden characters: *[: "'@#$$%^&*?!.,;=+~(){}&lt;&gt;|]</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Boolean Archive</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>The boolean values of the device will be archived in the specified PVSS database. The
archive must be created in PVSS before importing the object.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[: "'@#$$%^&*?!.,;=+~(){}&lt;&gt;|]</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>AnalogArch</AttributeName>
  <Description>Name of the analog archive
Forbidden characters: *[: "'@#$$%^&*?!.,;=+~(){}&lt;&gt;|]</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Analog Archive</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>The analog values of the device will be archived in the specified PVSS database. The
archive must be created in PVSS before importing the object.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[: "'@#$$%^&*?!.,;=+~(){}&lt;&gt;|]</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>EventArch</AttributeName>
  <Description>Name of the event archive
Forbidden characters: *[: "'@#$$%^&*?!.,;=+~(){}&lt;&gt;|]</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Event Archive</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>The events generated by the device will be archived in the specified PVSS database. The
archive must be created in PVSS before importing the object.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[: "'@#$$%^&*?!.,;=+~(){}&lt;&gt;|]</Constraints>
  </isSpecificationAttribute>
</Attribute>
</AttributeFamily>

```

```

<AttributeFamily>
  <AttributeFamilyName>SCADADriverDataSmoothing</AttributeFamilyName>
  <UserExpandable>true</UserExpandable>
  <Attribute>
    <AttributeName>DeadbandType</AttributeName>
    <Description>Deadband type (None, Relative, Absolute or Old/New) for the SCADA driver data
smoothing (Driver deadband)</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Deadband Type</NameRepresentation>
      <isValueRequired>true</isValueRequired>
      <PermittedValue>No</PermittedValue>
      <PermittedValue>Relative</PermittedValue>
      <PermittedValue>Absolute</PermittedValue>
      <PermittedValue>Old/New</PermittedValue>
      <Usage>Used for the online display in SCADA</Usage>
      <DependentAttributes/>
      <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>DeadbandValue</AttributeName>
    <Description>Deadband value for the SCADA driver data smoothing
Must be positive and smaller than the deadband specified for the archiving</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Deadband Value</NameRepresentation>
      <isValueRequired>false</isValueRequired>
      <Usage>Used for the online display in SCADA</Usage>
      <DependentAttributes/>
      <Constraints>Must be positive and smaller than the deadband specified for the
archiving</Constraints>
    </isSpecificationAttribute>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADeviceAlarms</AttributeFamilyName>
  <UserExpandable>true</UserExpandable>
  <Attribute>
    <AttributeName>AlarmConfig</AttributeName>
    <Description>Configuration of Alarm under SCADA</Description>
    <PrimitiveType>INT32</PrimitiveType>
    <isSpecificationAttribute>

```

```

<NameRepresentation>Alarm Config</NameRepresentation>
<isValueRequired>>true</isValueRequired>
<Usage/>
<DependentAttributes/>
<Constraints/>
</isSpecificationAttribute>
<Attribute>
  <AttributeName>SMSCategory</AttributeName>
  <Description>This Alarm message will follow rules defined in the corresponding SMS User Group
(commma-separated list)</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>SMS Category</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Defines a specific treatment for each SMS message</Usage>
    <DependentAttributes/>
    <Constraints>The name must correspond to the SMS user group
(unProcessAlarm,...)</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>AutoAcknowledge</AttributeName>
  <Description>The SCADA automatically performs the alarm acknowledge</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Auto Acknowledge</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>When TRUE, the SCADA automatically acknowledges the alarm at its occurrence.
The operator doesn't have to act on this alarm.</Usage>
  <DependentAttributes/>
  <Constraints>TRUE/FALSE</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Masked</AttributeName>
  <Description>Alarm signal is ignored by the SCADA</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>When TRUE, the Alarm signal is not recorded into the ALARM database</Usage>
  <DependentAttributes/>
  <Constraints>TRUE/FALSE</Constraints>
</isSpecificationAttribute>

```

```

</Attribute>
</Attribute>
<Attribute>
  <AttributeName>Message</AttributeName>
  <Description>Message to display when alarm is set in SCADA</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>The message specified here will be displayed in the Alarm List</Usage>
    <DependentAttributes/>
    <Constraints>In principle there is no limit to the number of characters used, however a long
name may result in display issues at the SCADA level.
Forbidden characters: *["'@`#$%^&?*!;,=+~(){}&lt;&gt;|]</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>AnalogThresholds</AttributeName>
  <Description>Analog alarm condition </Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Analog Thresholds</NameRepresentation>
    <isValueRequired>>true</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
<Attribute>
  <AttributeName>HHAlarm</AttributeName>
  <Description>High High (HH) Alarm Threshold
All defined thresholds must be ordered (HH&gt;H&gt;L&gt;LL)</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>HH Alarm</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Used to define an HH Alarm on the sensor at SCADA level. This alarm is only used at
SCADA level for information and It has no impact on the process. If empty, no alarm is
created.</Usage>
    <DependentAttributes/>
    <Constraints>All defined thresholds must be ordered (HH&gt;H&gt;L&gt;LL)</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>HWarning</AttributeName>

```

```

    <Description>High (H) Alarm Threshold
All defined thresholds must be ordered (HH&gt;H&gt;L&gt;LL)</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <NameRepresentation>H Warning</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Used to define an H Alarm on the sensor at SCADA level. This alarm is only used at
SCADA level for information and It has no impact on the process. If empty, no alarm is
created.</Usage>
    <DependentAttributes/>
    <Constraints>All defined thresholds must be ordered (HH&gt;H&gt;L&gt;LL)</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>LWarning</AttributeName>
    <Description>Low (L) Alarm Threshold
All defined thresholds must be ordered (HH&gt;H&gt;L&gt;LL)</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <NameRepresentation>L Warning</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Used to define an L Alarm on the sensor at SCADA level. This alarm is only used at
SCADA level for information and It has no impact on the process. If empty, no alarm is
created.</Usage>
    <DependentAttributes/>
    <Constraints>All defined thresholds must be ordered (HH&gt;H&gt;L&gt;LL)</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>LLAlarm</AttributeName>
    <Description>Low Low (LL) Alarm Threshold
All defined thresholds must be ordered (HH&gt;H&gt;L&gt;LL)</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <NameRepresentation>LL Alarm</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Used to define an LL Alarm on the sensor at SCADA level. This alarm is only used at
SCADA level for information and It has no impact on the process. If empty, no alarm is
created.</Usage>
    <DependentAttributes/>
    <Constraints>All defined thresholds must be ordered (HH&gt;H&gt;L&gt;LL)</Constraints>
</isSpecificationAttribute>
</Attribute>

```

```

</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>LogicDeviceDefinitions</AttributeFamilyName>
  <UserExpandable>true</UserExpandable>
  <Attribute>
    <AttributeName>CustomLogicParameters</AttributeName>
    <Description>User defined meaning, used by the logic generators.</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
    <Attribute>
      <AttributeName>Parameter1</AttributeName>
      <Description>Parameter to be used in the logic templates
Forbidden characters: "$' </Description>
      <PrimitiveType>STRING</PrimitiveType>
      <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
        <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
        <Constraints>Forbidden characters: "$' </Constraints>
      </isSpecificationAttribute>
    </Attribute>
  <Attribute>
    <AttributeName>Parameter2</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: "$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
      <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
      <Constraints>Forbidden characters: "$' </Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>Parameter3</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: "$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>

```



```

    <isValueRequired>>false</isValueRequired>
    <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter4</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter5</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter6</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>

```

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter7</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: '\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter8</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: '\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter9</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: '\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter10</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: '\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

</Attribute>

</AttributeFamily>

<AttributeFamily>

<AttributeFamilyName>DeviceTechnical</AttributeFamilyName>

<UserExpandable>>true</UserExpandable>

<Attribute>

<AttributeName>PROCOSConfiguration</AttributeName>

<Description>PROCOS parameters allowing simulation</Description>

<PrimitiveType>STRUCT</PrimitiveType>

<Attribute>

<AttributeName>Config</AttributeName>

<Description>Device mode configuration for simulation (Simulated, Forced or Empty)</Description>

<PrimitiveType>STRING</PrimitiveType>

</Attribute>

<Attribute>

<AttributeName>ForcedValue</AttributeName>

<Description>Forced value defined (e.g.: analog: 4.5, digital: 0 or 1)</Description>

<PrimitiveType>STRING</PrimitiveType>

</Attribute>

<Attribute>

<AttributeName>Hierarchy</AttributeName>

```

    <Description>Hierarchy definition following the Simulation model</Description>
    <PrimitiveType>STRING</PrimitiveType>
  </Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>TargetDeviceInformation</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>Target</AttributeName>
    <Description>Identifies a target type (e.g. SIEMENS, SCHNEIDER...)</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
    <DefaultValue>Siemens</DefaultValue>
  </Attribute>
  <Attribute>
    <AttributeName>RepresentationName</AttributeName>
    <Description>It's the name used ...</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <DefaultValue>AO</DefaultValue>
  </Attribute>
  <Attribute>
    <AttributeName>Optimized</AttributeName>
    <Description>Is this object an optimized Object?</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <DefaultValue>>true</DefaultValue>
  </Attribute>
  <Attribute>
    <AttributeName>LimitSize</AttributeName>
    <Description>Maximun number of instances allowed</Description>
    <PrimitiveType>INT32</PrimitiveType>
    <DefaultValue>1000</DefaultValue>
  </Attribute>
  <Attribute>
    <AttributeName>FastInterlock</AttributeName>
    <Description>Is this object a fast interlock object?</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <DefaultValue>>false</DefaultValue>
  </Attribute>
</Attribute>
</AttributeFamily>
</UNICOSMetaModel>

```

2.8. AnalogOutputRealDeviceType.xml

```
<?xml version='1.0' encoding='UTF-8'?>
<UNICOSMetaModel xmlns:xsi='http://www.w3.org/2001/XMLSchema-instance'
xsi:noNamespaceSchemaLocation='..\unicos\UNICOSMetaModel.xsd'>
  <Information>
    <Package>${devicePackageName}</Package>
    <Name>AnalogOutputReal</Name>
    <ObjectTypeFamily>IOObjectFamily</ObjectTypeFamily>
    <Description>Analog Output Real Device</Description>
    <Version>${LastChangedRevision: 170110} $</Version>
  </Information>
  <AttributeFamily>
    <AttributeFamilyName>DeviceIdentification</AttributeFamilyName>
    <UserExpandable>true</UserExpandable>
    <Attribute>
      <AttributeName>Name</AttributeName>
      <Description>Name of the device. It must be unique.
```

Max length:

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: [:"'@`#\$%^&*?!;=+~(){}<>|]-., double underscore, and page break</Description>

```
  <PrimitiveType>STRING</PrimitiveType>
```

```
  <isSpecificationAttribute>
```

```
    <isValueRequired>true</isValueRequired>
```

```
    <Usage>Name displayed at the SCADA level if "Expert Name" is not specified.
```

This name will appear in the datapoints created in the SCADA layer.</Usage>

```
    <DependentAttributes>Device Links.
```

The name of the device(s) specified in Device Links *must* correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to "Name".</DependentAttributes>

```
    <Constraints>Max length:
```

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: [:"'@`#\$%^&*?!;=+~(){}<>|]-., double underscore, and page break Name must be unique.</Constraints>

```
  </isSpecificationAttribute>
```

```
</Attribute>
```

```
<Attribute>
```

```
  <AttributeName>ExpertName</AttributeName>
```

```
  <Description>Name of the device displayed at the SCADA level. It must be unique.
```

Forbidden characters: *[: "'@#%&^&*?!;=+~(){}<>|]</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Expert Name</NameRepresentation>

<TypeRepresentation>STRING</TypeRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>It does not affect to the datapoints names in the SCADA layer.</Usage>

<DependentAttributes>Device Links.

The name of the device(s) specified in Device Links **must** correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to "Name".</DependentAttributes>

<Constraints>In principle there is no limit to the number of characters used, however a long name may result in display issues at the SCADA level.

Forbidden characters: *[: "'@#%&^&*?!;=+~(){}<>|] </Constraints>

Expert Name must be unique.</Constraints>

</isSpecificationAttribute>

</Attribute>

</AttributeFamily>

<AttributeFamily>

<AttributeFamilyName>DeviceDocumentation</AttributeFamilyName>

<UserExpandable>>true</UserExpandable>

<Attribute>

<AttributeName>DeviceDescription</AttributeName>

<Description>Description of the device. </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Description</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>Used in the SCADA layer in the device faceplate</Usage>

<DependentAttributes/>

<Constraints>In principle there is no limit to the number of characters used, however a long description may result in display issues at the SCADA level.

Forbidden characters: ;</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>ElectricalDiagram</AttributeName>

<Description>Reference to the electrical diagram in which the device is represented.</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Electrical Diagram</NameRepresentation>

```

    <isValueRequired>>false</isValueRequired>
    <Usage>Used in the SCADA layer: added to the device description in the device
faceplate.</Usage>
    <DependentAttributes/>
    <Constraints>In principle there is no limit to the number of characters used, however a long
name may result in display issues at the SCADA level.
Forbidden characters: *[: ""@ #\$%^&amp;*?!.,;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Remarks</AttributeName>
    <Description>Field used to add relevant information about the device. </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This information is not used in the generation process, it remains only at the
specification level for documentation purposes.</Usage>
        <DependentAttributes/>
        <Constraints>Forbidden characters: ;</Constraints>
    </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>FEDeviceParameters</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>PMinRan</AttributeName>
        <Meaning>Parameter Minimum Range</Meaning>
        <Description>Minimum engineering value of the device.</Description>
        <PrimitiveType>FLOAT32</PrimitiveType>
        <isSpecificationAttribute>
            <NameRepresentation>Range Min</NameRepresentation>
            <isValueRequired>>true</isValueRequired>
            <Usage>A linear conversion is performed between the raw range and engineering
range.</Usage>
            <DependentAttributes/>
            <Constraints>The value specified here must be consistent with the format defined in the field
"Format".</Constraints>
        </isSpecificationAttribute>
    </Attribute>
    <Attribute>
        <AttributeName>PMaxRan</AttributeName>
        <Meaning>Parameter Maximum Range</Meaning>

```

```

<Description>Maximum engineering value of the device.</Description>
<PrimitiveType>FLOAT32</PrimitiveType>
<isSpecificationAttribute>
  <NameRepresentation>Range Max</NameRepresentation>
  <isValueRequired>>true</isValueRequired>
  <Usage>A linear conversion is performed between the raw range and engineering
range.</Usage>
  <DependentAttributes/>
  <Constraints>The value specified here must be consistent with the format defined in the field
"Format".</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PMinRaw</AttributeName>
  <Meaning>Parameter Minimum Raw</Meaning>
  <Description>Minimum raw value of the device.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Raw Min</NameRepresentation>
    <isValueRequired>>true</isValueRequired>
    <Usage>A linear conversion is performed between the raw range and engineering
range.</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PMaxRaw</AttributeName>
  <Meaning>Parameter Maximum Raw</Meaning>
  <Description>Minimum raw value of the device.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Raw Max</NameRepresentation>
    <isValueRequired>>true</isValueRequired>
    <Usage>A linear conversion is performed between the raw range and engineering
range.</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceAutoRequests</AttributeFamilyName>

```



```

<UserExpandable>true</UserExpandable>
<Attribute>
  <AttributeName>AuPosR</AttributeName>
  <Meaning>Auto Position Request.</Meaning>
  <Description>Auto Position Request: The control logic requests a specific position on the
object.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AulhFoMo</AttributeName>
  <Meaning>Auto Inhibit Forced Mode</Meaning>
  <Description>Auto Inhibit Forced Mode (by logic): The control logic blocks the forced mode
operation.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceManualRequests</AttributeFamilyName>
  <UserExpandable>true</UserExpandable>
  <Attribute>
    <AttributeName>ManReg01</AttributeName>
    <Meaning>Manual Register 1</Meaning>
    <Description>Manual Register 1</Description>
    <isCommunicated>true</isCommunicated>
    <PrimitiveType>WORD</PrimitiveType>
  </Attribute>
  <AttributeName>MAuMoR</AttributeName>
  <Meaning>Manual Auto Mode Request</Meaning>
  <Description>Manual Auto Mode Request: The operator requests the Auto Mode.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>0</BitPosition>
</Attribute>
  <AttributeName>MFoMoR</AttributeName>
  <Meaning>Manual Forced Mode Request</Meaning>
  <Description>Manual Forced Mode Request: The operator requests the Forced
Mode.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>2</BitPosition>
</Attribute>
  <AttributeName>MNewPosR</AttributeName>
  <Meaning>Manual New Position Request</Meaning>

```

```

    <Description>Manual New Position Request: The operator requests a new position to the
object</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>6</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MIOErBSetRst</AttributeName>
    <Meaning>Manual Input/Output Error Block Set/Reset</Meaning>
    <Description>Manual IO Error Block Set/Reset: This action allows to set/reset the
IOError.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>10</BitPosition>
</Attribute>
</Attribute>
<Attribute>
    <AttributeName>MPosR</AttributeName>
    <Meaning>Manual Position Request</Meaning>
    <Description>Manual Position Request: Value of the position requested by
operator</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>FEDeviceEnvironmentInputs</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
<Attribute>
    <AttributeName>IOError</AttributeName>
    <Meaning>Input/Output Error</Meaning>
    <Description>IOError state in any of the dependant objects or the PLC channel assigned to the
object</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>IOSimu</AttributeName>
    <Meaning>Input/Output Simulated</Meaning>
    <Description>Any of the dependant objects is in Forced or Manual Mode</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>FEDeviceOutputs</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>

```

```

<Attribute>
  <AttributeName>OutOV</AttributeName>
  <Meaning>Output Order Value</Meaning>
  <Description>Analog Output connected to the process.
Must be an AO or AS.</Description>
  <PrimitiveType>SHORTINT16</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>StsReg01</AttributeName>
  <Meaning>Status Register 1</Meaning>
  <Description>Status Register 1</Description>
  <isEventAttribute>>true</isEventAttribute>
  <isCommunicated>>true</isCommunicated>
  <PrimitiveType>WORD</PrimitiveType>
<Attribute>
  <AttributeName>AuMoSt</AttributeName>
  <Meaning>Auto Mode Status</Meaning>
  <Description>Current status of the Auto Mode</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>2</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>FoMoSt</AttributeName>
  <Meaning>Forced Mode Status</Meaning>
  <Description>Current status of the Forced Mode.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>4</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>IOErrorW</AttributeName>
  <Meaning>Input/Output Error Warning</Meaning>
  <Description>Current status of the IOError</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>6</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>IOSimuW</AttributeName>
  <Meaning>Input/Output Simulated Warning</Meaning>
  <Description>Current status of the IOSimu</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>7</BitPosition>
</Attribute>

```

```

<Attribute>
  <AttributeName>AuMRW</AttributeName>
  <Meaning>Auto Manual Request Warning Status.</Meaning>
  <Description>Auto and manual requests discrepancy when Manual/Forced mode
active.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>8</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MIOErBRSt</AttributeName>
  <Meaning>Manual Input/Output Error Block Request Status</Meaning>
  <Description>Manual IOError Block Request Status</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>9</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>AuhFoMoSt</AttributeName>
  <Meaning>Auto Inhibit Forced Mode Status</Meaning>
  <Description>Auto Inhibit Forced Mode status: Current status of the Auto Inhibit forced
mode.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>13</BitPosition>
</Attribute>
</Attribute>
<Attribute>
  <AttributeName>PosSt</AttributeName>
  <Meaning>Position status</Meaning>
  <Description>Position Status</Description>
  <isCommunicated>>true</isCommunicated>
  <isArchived>>true</isArchived>
  <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuPosRSt</AttributeName>
  <Meaning>Auto Position Request Status</Meaning>
  <Description>Status of the position of the object in auto mode.</Description>
  <isCommunicated>>true</isCommunicated>
  <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuMoSt</AttributeName>
  <Meaning>Auto Mode Status</Meaning>
  <Description>Current status of the Auto Mode</Description>

```

```

    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
</Attribute>
  <AttributeName>FoMoSt</AttributeName>
  <Meaning>Forced Mode Status</Meaning>
  <Description>Current status of the Forced Mode.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
</Attribute>
  <AttributeName>IOErrorW</AttributeName>
  <Meaning>Input/Output Error Warning</Meaning>
  <Description>Current status of the IOError</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
</Attribute>
  <AttributeName>IOSimuW</AttributeName>
  <Meaning>Input/Output Simulated Warning</Meaning>
  <Description>Current status of the IOSimu</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
</Attribute>
  <AttributeName>FoDiAuW</AttributeName>
  <Meaning>Forced Differs Auto Warning</Meaning>
  <Description>The Manual or Forced Position requested by the operator differs from the Auto
Position</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceIOConfig</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>FEType</AttributeName>
    <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>FE Encoding Type</NameRepresentation>
      <TypeRepresentation>STRING</TypeRepresentation>
      <isValueRequired>>false</isValueRequired>

```

```

    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FEChannel.InterfaceParamX (where X=1-10)</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>FEChannel</AttributeName>
    <Description>Indicates how to map the acquisition of the information from the field I/O
interface.</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
<Attribute>
    <AttributeName>InterfaceParam1</AttributeName>
    <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>InterfaceParam2</AttributeName>
    <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
</isSpecificationAttribute>
</Attribute>

```

```

<Attribute>
  <AttributeName>InterfaceParam3</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam4</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam5</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>

```

<Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>InterfaceParam6</AttributeName>

<Description>Parameter used to set up the periphery address of the device according to the various hardware module types used at the PLC level.

Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Usage>

<DependentAttributes>FE Encoding Type</DependentAttributes>

<Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>InterfaceParam7</AttributeName>

<Description>Parameter used to set up the periphery address of the device according to the various hardware module types used at the PLC level.

Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Usage>

<DependentAttributes>FE Encoding Type</DependentAttributes>

<Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>InterfaceParam8</AttributeName>

<Description>Parameter used to set up the periphery address of the device according to the various hardware module types used at the PLC level.

Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>


```

    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>InterfaceParam9</AttributeName>
    <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>InterfaceParam10</AttributeName>
    <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
    </isSpecificationAttribute>
</Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>SCADADeviceGraphics</AttributeFamilyName>

```

```

<UserExpandable>true</UserExpandable>
<Attribute>
  <AttributeName>PosStUnit</AttributeName>
  <Description>Unit of the device to be displayed in SCADA</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Unit</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints>In principle there is no limit to the number of characters used, however a long
name may result in display issues at the SCADA level.
Forbidden characters: *[: "'@ # $ ^ & amp; * ? ! , ; = + ~ ( ) { } & lt; & gt; | ]</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PosStFormat</AttributeName>
  <Description>Format of the value to be displayed in SCADA. Supported formats:
### (fixed number of decimal places, in this case 2),
EXP or xEXP (exponential, 3 or x digits after '.'),
xD or xd (fixed digit format, x=number of digits, e.g.: 3D=0.01, 12.0, 123)</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Format</NameRepresentation>
    <isValueRequired>>true</isValueRequired>
    <Usage>Example: use format ### to display value to 2 decimal places. To the left of the decimal
point, the SCADA layer will display as many digits as required by the object value, therefore a single #
is enough.</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>WidgetType</AttributeName>
  <Description>Define the widget type to display in the SCADA device tree overview only.
The widget displayed in the process panel will be selected when the user creates the
panel.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Widget Type</NameRepresentation>
    <isValueRequired>>true</isValueRequired>
    <isCaseSensitive>>true</isCaseSensitive>
    <PermittedValue>AnalogOutput_Small</PermittedValue>

```

```

    <PermittedValue>AnalogOutput_SciOrPrecision</PermittedValue>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Synoptic</AttributeName>
  <Description>Define link between the device and an existing synoptic where it appears. The
synoptic specified here can be accessed from the device right-click menu item
"Synoptic".</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Specify the path of the .pnl file under the "\panel" directory of the PVSS
project.</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DiagnosticPanel</AttributeName>
  <Description>Define link between the device and an existing diagnostic panel for the device. The
panel specified here can be accessed from the device right-click menu item "Diagnostic" as well as
from the "Diagnostic" button on the object faceplate.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Diagnostic</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Specify the path of the .pnl file under the "\panel" directory of the PVSS project
</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>WWWLink</AttributeName>
  <Description>Define link between the device and an existing web page (or pdf file, or other file
which can be opened with IE). The link can be accessed from the device right-click menu item "Info"
as well as from the "Info" button on the object faceplate.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>WWW Link</NameRepresentation>
    <isValueRequired>>false</isValueRequired>

```

```

    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADeviceFunctionals</AttributeFamilyName>
  <UserExpandable>>false</UserExpandable>
  <Attribute>
    <AttributeName>MaskEvent</AttributeName>
    <Description>If TRUE: the events of the device will be masked in SCADA and not displayed or
archived in the Event List.
An 'event' is defined as a bit change in StsReg01 or StsReg02</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Mask Event</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>AccessControlDomain</AttributeName>
    <Description>Define Access Control on the device to an existing SCADA Domain
Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Access Control Domain</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>This domain is used to grant access to this specific device. The domain specified for this
object will allow access to the object only to registered users on that domain</Usage>
      <DependentAttributes/>
      <Constraints>Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>SCADADeviceClassificationTags</AttributeName>
    <Description>It defines the Domain, Nature and DeviceLinks for the SCADA
visualization</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
  </Attribute>

```

```

<AttributeName>Domain</AttributeName>
<Description>Domain of the device. If empty, the domain will be the name of the application
Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
<PrimitiveType>STRING</PrimitiveType>
<isSpecificationAttribute>
<isValueRequired>>false</isValueRequired>
<Usage>Domain is used to filter the devices in the alarm list or in the device tree
overview</Usage>
<DependentAttributes/>
<Constraints>Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
</isSpecificationAttribute>
</Attribute>

```

```

<Attribute>
<AttributeName>Nature</AttributeName>
<Description>Nature of the device. If empty, the nature will be the type of the device
Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
<PrimitiveType>STRING</PrimitiveType>
<isSpecificationAttribute>
<isValueRequired>>false</isValueRequired>
<Usage>Nature is used to filter the devices in the alarm list or in the device tree
overview</Usage>
<DependentAttributes/>
<Constraints>Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
</isSpecificationAttribute>
</Attribute>

```

```

<Attribute>
<AttributeName>DeviceLinks</AttributeName>
<Description>Define links to other devices (separate device names with commas).
Note: it is not necessary to link to master, parents or children because these links are automatically
created.
Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>

```

```

<PrimitiveType>STRING</PrimitiveType>
<isSpecificationAttribute>
<NameRepresentation>Device Links</NameRepresentation>
<isValueRequired>>false</isValueRequired>
<Usage>Linked devices will be shown in the device right-click menu</Usage>
<DependentAttributes>Expert Name or Name.
The name of the device(s) specified here must correspond to "Expert Name" if it is defined.
If "Expert Name" is not defined, the name of the device(s) specified here corresponds to
"Name".</DependentAttributes>

```

```

<Constraints>Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
</isSpecificationAttribute>
</Attribute>

```

```

</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADeviceDataArchiving</AttributeFamilyName>
  <UserExpandable>true</UserExpandable>
  <Attribute>
    <AttributeName>ArchiveMode</AttributeName>
    <Description>Archive mode of the object engineering values. Archive if:
    Old/New Comparison: value changes
    Time: value changes after Time Filter
    Deadband: value &lt; or &gt; deadband
    AND: at least one of the conditions is fulfilled
    OR: both conditions are fulfilled</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Archive Mode</NameRepresentation>
      <isValueRequired>true</isValueRequired>
      <PermittedValue>No</PermittedValue>
      <PermittedValue>Deadband</PermittedValue>
      <PermittedValue>Time</PermittedValue>
      <PermittedValue>Deadband AND Time</PermittedValue>
      <PermittedValue>Deadband OR Time</PermittedValue>
      <PermittedValue>Old/New Comparison</PermittedValue>
      <PermittedValue>Old/New Comparison AND Time</PermittedValue>
      <PermittedValue>Old/New Comparison OR Time</PermittedValue>
      <Usage>This archive mode is used to archive data in the PVSS database</Usage>
      <DependentAttributes>If "Time" is selected, "Time Filter (s)" must be filled
      If "Deadband" is selected: "Deadband Type" and "Deadband Value" must be
      filled.</DependentAttributes>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>TimeFilter</AttributeName>
  <Description>Time filter for the SCADA archiving of the engineering values of the object. Must be
  positive.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Time Filter (s)</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes>Valid if "Time" has been selected as Archive
    Mode</DependentAttributes>

```

```

    <Constraints>Must be positive</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DeadbandType</AttributeName>
  <Description>Deadband type (Relative or Absolute) of the deadband for the SCADA archiving of
the engineering values of the object</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Deadband Type</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <PermittedValue>Relative</PermittedValue>
    <PermittedValue>Absolute</PermittedValue>
    <Usage>The value is archived if the difference between the latest archived value and the actual
value exceeds, either:
- if 'Absolute': the "Deadband Value"
- if 'Relative': the "Deadband Value" as a percent of the latest archived value</Usage>
    <DependentAttributes>Valid if "Deadband" has been selected as Archive
Mode</DependentAttributes>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DeadbandValue</AttributeName>
  <Description>Deadband value for the SCADA archiving of the engineering values of the object
Must be positive and larger than the deadband specified for the driver data smoothing (Driver
deadband)</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Deadband Value</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes>Valid if "Deadband" has been selected as Archive
Mode</DependentAttributes>
    <Constraints>Must be positive and larger than the deadband specified for the driver data
smoothing (Driver deadband)</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>BooleanArch</AttributeName>
  <Description>Name of the Boolean archive
Forbidden characters: *[: ""@ # $ % ^ & amp; * ? ! , ; = + ~ ( ) { } & lt; & gt; | ]</Description>
  <PrimitiveType>STRING</PrimitiveType>

```

```

<isSpecificationAttribute>
  <NameRepresentation>Boolean Archive</NameRepresentation>
  <isValueRequired>>false</isValueRequired>
  <Usage>The boolean values of the device will be archived in the specified PVSS database. The
archive must be created in PVSS before importing the object.</Usage>
  <DependentAttributes/>
  <Constraints>Forbidden characters: *[: "'@`#$%^&*?!.,;=+~(){}&lt;&gt;|]</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>AnalogArch</AttributeName>
  <Description>Name of the analog archive
Forbidden characters: *[: "'@`#$%^&*?!.,;=+~(){}&lt;&gt;|]</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Analog Archive</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>The analog values of the device will be archived in the specified PVSS database. The
archive must be created in PVSS before importing the object.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[: "'@`#$%^&*?!.,;=+~(){}&lt;&gt;|]</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>EventArch</AttributeName>
  <Description>Name of the event archive
Forbidden characters: *[: "'@`#$%^&*?!.,;=+~(){}&lt;&gt;|]</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Event Archive</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>The events generated by the device will be archived in the specified PVSS database. The
archive must be created in PVSS before importing the object.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[: "'@`#$%^&*?!.,;=+~(){}&lt;&gt;|]</Constraints>
  </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADriverDataSmoothing</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>DeadbandType</AttributeName>

```



```

    <Description>Deadband type (None, Relative, Absolute or Old/New) for the SCADA driver data
    smoothing (Driver deadband)</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Deadband Type</NameRepresentation>
        <isValueRequired>>true</isValueRequired>
        <PermittedValue>No</PermittedValue>
        <PermittedValue>Relative</PermittedValue>
        <PermittedValue>Absolute</PermittedValue>
        <PermittedValue>Old/New</PermittedValue>
        <Usage>Used for the online display in SCADA</Usage>
        <DependentAttributes/>
        <Constraints/>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>DeadbandValue</AttributeName>
    <Description>Deadband value for the SCADA driver data smoothing
    Must be positive and smaller than the deadband specified for the archiving</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Deadband Value</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>Used for the online display in SCADA</Usage>
        <DependentAttributes/>
        <Constraints>Must be positive and smaller than the deadband specified for the
    archiving</Constraints>
    </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>SCADADeviceAlarms</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>AlarmConfig</AttributeName>
        <Description>Configuration of Alarm under SCADA</Description>
        <PrimitiveType>INT32</PrimitiveType>
        <isSpecificationAttribute>
            <NameRepresentation>Alarm Config</NameRepresentation>
            <isValueRequired>>true</isValueRequired>
            <Usage/>
            <DependentAttributes/>
            <Constraints/>

```

```

</isSpecificationAttribute>
<Attribute>
  <AttributeName>SMSCategory</AttributeName>
  <Description>This Alarm message will follow rules defined in the corresponding SMS User
Group</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>SMS Category</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Defines a specific treatment for each SMS message</Usage>
    <DependentAttributes/>
    <Constraints>The name must correspond to the SMS user group
(unProcessAlarm,...)</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>AutoAcknowledge</AttributeName>
  <Description>The SCADA automatically performs the alarm acknowledge</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Auto Acknowledge</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>When TRUE, the SCADA automatically acknowledges the alarm at its occurrence.
The operator doesn't have to act on this alarm.</Usage>
    <DependentAttributes/>
    <Constraints>TRUE/FALSE</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Masked</AttributeName>
  <Description>Alarm signal is ignored by the SCADA</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>When TRUE, the Alarm signal is not recorded into the ALARM database</Usage>
    <DependentAttributes/>
    <Constraints>TRUE/FALSE</Constraints>
  </isSpecificationAttribute>
</Attribute>
</Attribute>
<Attribute>
  <AttributeName>Message</AttributeName>
  <Description>Message to display when alarm is set in SCADA</Description>

```

```

<PrimitiveType>STRING</PrimitiveType>
<isSpecificationAttribute>
  <isValueRequired>>false</isValueRequired>
  <Usage>The message specified here will be displayed in the Alarm List</Usage>
  <DependentAttributes/>
  <Constraints>In principle there is no limit to the number of characters used, however a long
name may result in display issues at the SCADA level.
Forbidden characters: *["'@`#$%^&*?!.,;+~(){}&lt;&gt;|]</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>AnalogThresholds</AttributeName>
  <Description>Analog alarm condition </Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Analog Thresholds</NameRepresentation>
    <isValueRequired>>true</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
  <AttributeName>HHAlarm</AttributeName>
  <Description>High High (HH) Alarm Threshold
All defined thresholds must be ordered (HH&gt;H&gt;L&gt;LL)</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>HH Alarm</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Used to define an HH Alarm on the sensor at SCADA level. This alarm is only used at
SCADA level for information and It has no impact on the process. If empty, no alarm is
created.</Usage>
    <DependentAttributes/>
    <Constraints>All defined thresholds must be ordered (HH&gt;H&gt;L&gt;LL)</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>HWarning</AttributeName>
  <Description>High (H) Alarm Threshold
All defined thresholds must be ordered (HH&gt;H&gt;L&gt;LL)</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>H Warning</NameRepresentation>

```

```

    <isValueRequired>>false</isValueRequired>
    <Usage>Used to define an H Alarm on the sensor at SCADA level. This alarm is only used at
    SCADA level for information and It has no impact on the process. If empty, no alarm is
    created.</Usage>
    <DependentAttributes/>
    <Constraints>All defined thresholds must be ordered (HH>H>L>LL)</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>LWarning</AttributeName>
    <Description>Low (L) Alarm Threshold
    All defined thresholds must be ordered (HH>H>L>LL)</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <NameRepresentation>L Warning</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Used to define an L Alarm on the sensor at SCADA level. This alarm is only used at
    SCADA level for information and It has no impact on the process. If empty, no alarm is
    created.</Usage>
    <DependentAttributes/>
    <Constraints>All defined thresholds must be ordered (HH>H>L>LL)</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>LLAlarm</AttributeName>
    <Description>Low Low (LL) Alarm Threshold
    All defined thresholds must be ordered (HH>H>L>LL)</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <NameRepresentation>LL Alarm</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Used to define an LL Alarm on the sensor at SCADA level. This alarm is only used at
    SCADA level for information and It has no impact on the process. If empty, no alarm is
    created.</Usage>
    <DependentAttributes/>
    <Constraints>All defined thresholds must be ordered (HH>H>L>LL)</Constraints>
</isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>LogicDeviceDefinitions</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>

```

```
<Attribute>
  <AttributeName>CustomLogicParameters</AttributeName>
  <Description>User defined meaning, used by the logic generators.</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
```

```
<Attribute>
  <AttributeName>Parameter1</AttributeName>
  <Description>Parameter to be used in the logic templates
```

Forbidden characters: '\$' </Description>

```
<PrimitiveType>STRING</PrimitiveType>
<isSpecificationAttribute>
  <isValueRequired>>false</isValueRequired>
  <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
```

```
<DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
```

```
<Constraints>Forbidden characters: '$' </Constraints>
```

```
</isSpecificationAttribute>
```

```
</Attribute>
```

```
<Attribute>
  <AttributeName>Parameter2</AttributeName>
  <Description>Parameter to be used in the logic templates
```

Forbidden characters: '\$' </Description>

```
<PrimitiveType>STRING</PrimitiveType>
<isSpecificationAttribute>
  <isValueRequired>>false</isValueRequired>
  <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
```

```
<DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
```

```
<Constraints>Forbidden characters: '$' </Constraints>
```

```
</isSpecificationAttribute>
```

```
</Attribute>
```

```
<Attribute>
  <AttributeName>Parameter3</AttributeName>
  <Description>Parameter to be used in the logic templates
```

Forbidden characters: '\$' </Description>

```
<PrimitiveType>STRING</PrimitiveType>
<isSpecificationAttribute>
  <isValueRequired>>false</isValueRequired>
  <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
```

```
<DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
```

```

    <Constraints>Forbidden characters: '$' </Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Parameter4</AttributeName>
  <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
  <isValueRequired>>false</isValueRequired>
  <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
  <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
  <Constraints>Forbidden characters: '$' </Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Parameter5</AttributeName>
  <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
  <isValueRequired>>false</isValueRequired>
  <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
  <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
  <Constraints>Forbidden characters: '$' </Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Parameter6</AttributeName>
  <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
  <isValueRequired>>false</isValueRequired>
  <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
  <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
  <Constraints>Forbidden characters: '$' </Constraints>

```

```

    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>Parameter7</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
      <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
      <Constraints>Forbidden characters: '$' </Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>Parameter8</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
      <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
      <Constraints>Forbidden characters: '$' </Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>Parameter9</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
      <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
      <Constraints>Forbidden characters: '$' </Constraints>
    </isSpecificationAttribute>

```

```

</Attribute>
<Attribute>
  <AttributeName>Parameter10</AttributeName>
  <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"?.file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
  </isSpecificationAttribute>
</Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>DeviceTechnical</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>PROCOSConfiguration</AttributeName>
    <Description>PROCOS parameters allowing simulation</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
    <Attribute>
      <AttributeName>Config</AttributeName>
      <Description>Device mode configuration for simulation (Simulated, Forced or
Empty)</Description>
      <PrimitiveType>STRING</PrimitiveType>
    </Attribute>
    <Attribute>
      <AttributeName>ForcedValue</AttributeName>
      <Description>Forced value defined (e.g.: analog: 4.5, digital: 0 or 1)</Description>
      <PrimitiveType>STRING</PrimitiveType>
    </Attribute>
    <Attribute>
      <AttributeName>Hierarchy</AttributeName>
      <Description>Hierarchy definition following the Simulation model</Description>
      <PrimitiveType>STRING</PrimitiveType>
    </Attribute>
  </Attribute>
</AttributeFamily>
<AttributeFamily>

```



```

<AttributeFamilyName>TargetDeviceInformation</AttributeFamilyName>
<UserExpandable>true</UserExpandable>
<Attribute>
  <AttributeName>Target</AttributeName>
  <Description>Identifies a target type (e.g. SIEMENS, SCHNEIDER...)</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <DefaultValue>Siemens</DefaultValue>
  <Attribute>
    <AttributeName>RepresentationName</AttributeName>
    <Description>It's the name used ...</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <DefaultValue>AOR</DefaultValue>
  </Attribute>
  <Attribute>
    <AttributeName>Optimized</AttributeName>
    <Description>Is this object an optimized Object?</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <DefaultValue>true</DefaultValue>
  </Attribute>
  <Attribute>
    <AttributeName>LimitSize</AttributeName>
    <Description>Maximun number of instances allowed</Description>
    <PrimitiveType>INT32</PrimitiveType>
    <DefaultValue>1000</DefaultValue>
  </Attribute>
  <Attribute>
    <AttributeName>FastInterlock</AttributeName>
    <Description>Is this object a fast interlock object?</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <DefaultValue>false</DefaultValue>
  </Attribute>
</Attribute>
</AttributeFamily>
</UNICOSMetaModel>

```

2.9. AnalogParameterDeviceType.xml

```
<?xml version='1.0' encoding='UTF-8'?>
<UNICOSMetaModel xmlns:xsi='http://www.w3.org/2001/XMLSchema-instance'
xsi:noNamespaceSchemaLocation='..\unicos\UNICOSMetaModel.xsd'>
  <Information>
    <Package>${devicePackageName}</Package>
    <Name>AnalogParameter</Name>
    <ObjectTypeFamily>InterfaceObjectFamily</ObjectTypeFamily>
    <Description>Analog Parameter Device</Description>
    <Version>${LastChangedRevision: 170110} $</Version>
  </Information>
  <AttributeFamily>
    <AttributeFamilyName>DeviceIdentification</AttributeFamilyName>
    <UserExpandable>>false</UserExpandable>
    <Attribute>
      <AttributeName>Name</AttributeName>
      <Description>Name of the device. It must be unique.
```

Max length:

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: [:"'@`#\$%^&*?!.,;+~(){}<>|]-., double underscore, and page break</Description>

```
  <PrimitiveType>STRING</PrimitiveType>
```

```
  <isSpecificationAttribute>
```

```
    <isValueRequired>>true</isValueRequired>
```

```
    <Usage>Name displayed at the SCADA level if "Expert Name" is not specified.
```

This name will appear in the datapoints created in the SCADA layer.</Usage>

```
    <DependentAttributes>Device Links.
```

The name of the device(s) specified in Device Links *must* correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to "Name".</DependentAttributes>

```
    <Constraints>Max length:
```

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: [:"'@`#\$%^&*?!.,;+~(){}<>|]-., double underscore, and page break Name must be unique.</Constraints>

```
  </isSpecificationAttribute>
```

```
</Attribute>
```

```
<Attribute>
```

```
  <AttributeName>ExpertName</AttributeName>
```

```
  <Description>Name of the device displayed at the SCADA level. It must be unique.
```

Forbidden characters: *[: "'@`#\$%^&*?!;=+~(){}<>|] </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Expert Name</NameRepresentation>

<TypeRepresentation>STRING</TypeRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>It does not affect to the datapoints names in the SCADA layer.</Usage>

<DependentAttributes>Device Links.

The name of the device(s) specified in Device Links **must** correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to "Name".</DependentAttributes>

<Constraints>In principle there is no limit to the number of characters used, however a long name may result in display issues at the SCADA level.

Forbidden characters: *[: "'@`#\$%^&*?!;=+~(){}<>|]

Expert Name must be unique.</Constraints>

</isSpecificationAttribute>

</Attribute>

</AttributeFamily>

<AttributeFamily>

<AttributeFamilyName>DeviceDocumentation</AttributeFamilyName>

<UserExpandable>>true</UserExpandable>

<Attribute>

<AttributeName>DeviceDescription</AttributeName>

<Description>Description of the device. </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Description</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>Used in the SCADA layer in the device faceplate</Usage>

<DependentAttributes/>

<Constraints>In principle there is no limit to the number of characters used, however a long description may result in display issues at the SCADA level.

Forbidden characters: ;</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Remarks</AttributeName>

<Description>Field used to add relevant information about the device. </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

```

    <Usage>This information is not used in the generation process, it remains only at the
specification level for documentation purposes.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: ;</Constraints>
</isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>FEDeviceParameters</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>PMinRan</AttributeName>
        <Meaning>Parameter Minimum Range</Meaning>
        <Description>Minimum engineering value of the device.</Description>
        <PrimitiveType>FLOAT32</PrimitiveType>
        <isSpecificationAttribute>
            <NameRepresentation>Range Min</NameRepresentation>
            <isValueRequired>>true</isValueRequired>
            <Usage>A linear conversion is performed between the raw range and engineering
range.</Usage>
            <DependentAttributes/>
            <Constraints>The value specified here must be consistent with the format defined in the field
"Format".</Constraints>
        </isSpecificationAttribute>
    </Attribute>
    <Attribute>
        <AttributeName>PMaxRan</AttributeName>
        <Meaning>Parameter Maximum Range</Meaning>
        <Description>Maximum engineering value of the device.</Description>
        <PrimitiveType>FLOAT32</PrimitiveType>
        <isSpecificationAttribute>
            <NameRepresentation>Range Max</NameRepresentation>
            <isValueRequired>>true</isValueRequired>
            <Usage>A linear conversion is performed between the raw range and engineering
range.</Usage>
            <DependentAttributes/>
            <Constraints>The value specified here must be consistent with the format defined in the field
"Format".</Constraints>
        </isSpecificationAttribute>
    </Attribute>
    <Attribute>
        <AttributeName>DefaultValue</AttributeName>
        <Meaning>Default value</Meaning>

```

```

<Description>Default value for the parameter </Description>
<PrimitiveType>FLOAT32</PrimitiveType>
<isSpecificationAttribute>
  <NameRepresentation>Default Value</NameRepresentation>
  <TypeRepresentation>FLOAT32</TypeRepresentation>
  <isValueRequired>true</isValueRequired>
  <Usage>This is the default parameter value assigned into the PLC variable and in the SCADA
datapoint element. </Usage>
  <DependentAttributes/>
  <Constraints/>
</isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceManualRequests</AttributeFamilyName>
  <UserExpandable>true</UserExpandable>
  <Attribute>
    <AttributeName>ManReg01</AttributeName>
    <Meaning>Manual Register 1</Meaning>
    <Description>Manual Register 1</Description>
    <isCommunicated>true</isCommunicated>
    <PrimitiveType>WORD</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>ArmRcp</AttributeName>
    <Meaning>Armed Recipe</Meaning>
    <Description>A Recipe is Armed : New values are available at the input</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>2</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>ActRcp</AttributeName>
    <Meaning>Activate Recipe</Meaning>
    <Description>Activate Recipe : All new signals at the inputs are activated.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>3</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>MNewMR</AttributeName>
    <Meaning>Manual New Manual Request</Meaning>
    <Description>Manual New Manual Request : A New Manual Request is available</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>6</BitPosition>
  </Attribute>

```

```

    </Attribute>
  </Attribute>
  <Attribute>
    <AttributeName>MPosR</AttributeName>
    <Meaning>Manual Position Request</Meaning>
    <Description>Manual Position Request: Value of the position requested by
operator</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <DefaultValue>0</DefaultValue>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceOutputs</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>StsReg01</AttributeName>
    <Meaning>Status Register 1</Meaning>
    <Description>Status Register 1</Description>
    <isEventAttribute>>true</isEventAttribute>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>WORD</PrimitiveType>
  <Attribute>
    <AttributeName>ArmRcpSt</AttributeName>
    <Meaning>Armed Recipe Status</Meaning>
    <Description>A Recipe is Armed : New values are available at the input</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>3</BitPosition>
  </Attribute>
</Attribute>
<Attribute>
  <AttributeName>PosSt</AttributeName>
  <Meaning>Position status</Meaning>
  <Description>Position Status</Description>
  <isCommunicated>>true</isCommunicated>
  <isArchived>>true</isArchived>
  <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>MPosRSt</AttributeName>
  <Meaning>Manual Position Request Status</Meaning>
  <Description>Manual Position request status</Description>

```

```

    <isCommunicated>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADeviceGraphics</AttributeFamilyName>
  <UserExpandable>true</UserExpandable>
  <Attribute>
    <AttributeName>PosStUnit</AttributeName>
    <Description>Unit of the device to be displayed in SCADA</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Unit</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints>In principle there is no limit to the number of characters used, however a long
name may result in display issues at the SCADA level.
Forbidden characters: *[: "'@`#$^&amp;*?!.,;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>PosStFormat</AttributeName>
    <Description>Format of the value to be displayed in SCADA. Supported formats:
### (fixed number of decimal places, in this case 2),
EXP or xEXP (exponential, 3 or x digits after '!'),
xD or xd (fixed digit format, x=number of digits, e.g.: 3D=0.01, 12.0, 123)</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Format</NameRepresentation>
      <isValueRequired>>true</isValueRequired>
      <Usage>Example: use format ### to display value to 2 decimal places. To the left of the decimal
point, the SCADA layer will display as many digits as required by the object value, therefore a single #
is enough.</Usage>
      <DependentAttributes/>
      <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>WidgetType</AttributeName>
    <Description>Define the widget type to display in the SCADA device tree overview only.
The widget displayed in the process panel will be selected when the user creates the
panel.</Description>

```

```

<PrimitiveType>STRING</PrimitiveType>
<isSpecificationAttribute>
  <NameRepresentation>Widget Type</NameRepresentation>
  <isValueRequired>>true</isValueRequired>
  <isCaseSensitive>>true</isCaseSensitive>
  <PermittedValue>AnalogParameter</PermittedValue>
  <PermittedValue>AnalogParameterStat</PermittedValue>
  <PermittedValue>AnalogParameterWide</PermittedValue>
  <Usage/>
  <DependentAttributes/>
  <Constraints/>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Synoptic</AttributeName>
  <Description>Define link between the device and an existing synoptic where it appears. The
synoptic specified here can be accessed from the device right-click menu item
"Synoptic".</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Specify the path of the .pnl file under the "\panel" directory of the PVSS
project.</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DiagnosticPanel</AttributeName>
  <Description>Define link between the device and an existing diagnostic panel for the device. The
panel specified here can be accessed from the device right-click menu item "Diagnostic" as well as
from the "Diagnostic" button on the object faceplate.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Diagnostic</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Specify the path of the .pnl file under the "\panel" directory of the PVSS project
</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>

```



```

<AttributeName>WWWLink</AttributeName>
  <Description>Define link between the device and an existing web page (or pdf file, or other file
which can be opened with IE). The link can be accessed from the device right-click menu item "Info"
as well as from the "Info" button on the object faceplate.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>WWW Link</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADeviceFunctionals</AttributeFamilyName>
  <UserExpandable>>false</UserExpandable>
  <Attribute>
    <AttributeName>MaskEvent</AttributeName>
    <Description>If TRUE: the events of the device will be masked in SCADA and not displayed or
archived in the Event List.
An 'event' is defined as a bit change in StsReg01 or StsReg02</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Mask Event</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>AccessControlDomain</AttributeName>
    <Description>Define Access Control on the device to an existing SCADA Domain
Forbidden characters: *[: ""@ #$$%^&*?!;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Access Control Domain</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>This domain is used to grant access to this specific device. The domain specified for this
object will allow access to the object only to registered users on that domain</Usage>
      <DependentAttributes/>
      <Constraints>Forbidden characters: *[: ""@ #$$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
  </Attribute>

```

```

</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>SCADADeviceClassificationTags</AttributeName>
  <Description>It defines the Domain, Nature and DeviceLinks for the SCADA
visualization</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <Attribute>
    <AttributeName>Domain</AttributeName>
    <Description>Domain of the device. If empty, the domain will be the name of the application
Forbidden characters: *[: "'@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>Domain is used to filter the devices in the alarm list or in the device tree
overview</Usage>
      <DependentAttributes/>
      <Constraints>Forbidden characters: *[: "'@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>Nature</AttributeName>
    <Description>Nature of the device. If empty, the nature will be the type of the device
Forbidden characters: *[: "'@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>Nature is used to filter the devices in the alarm list or in the device tree
overview</Usage>
      <DependentAttributes/>
      <Constraints>Forbidden characters: *[: "'@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>DeviceLinks</AttributeName>
    <Description>Define links to other devices (separate device names with commas).
Note: it is not necessary to link to master, parents or children because these links are automatically
created.
Forbidden characters: *[: "'@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Device Links</NameRepresentation>
      <isValueRequired>>false</isValueRequired>

```

```

    <Usage>Linked devices will be shown in the device right-click menu</Usage>
    <DependentAttributes>Expert Name or Name.
The name of the device(s) specified here *must* correspond to "Expert Name" if it is defined.
If "Expert Name" is not defined, the name of the device(s) specified here corresponds to
"Name".</DependentAttributes>
    <Constraints>Forbidden characters: *[: "'@#\$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
</isSpecificationAttribute>
</Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>SCADADeviceDataArchiving</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>ArchiveMode</AttributeName>
        <Description>Archive mode of the object engineering values. Archive if:
Old/New Comparison: value changes
Time: value changes after Time Filter
Deadband: value &lt; or &gt; deadband
AND: at least one of the conditions is fulfilled
OR: both conditions are fulfilled</Description>
        <PrimitiveType>STRING</PrimitiveType>
        <isSpecificationAttribute>
            <NameRepresentation>Archive Mode</NameRepresentation>
            <isValueRequired>>true</isValueRequired>
            <PermittedValue>No</PermittedValue>
            <PermittedValue>Time</PermittedValue>
            <PermittedValue>Old/New Comparison</PermittedValue>
            <PermittedValue>Old/New Comparison AND Time</PermittedValue>
            <PermittedValue>Old/New Comparison OR Time</PermittedValue>
            <Usage>This archive mode is used to archive data in the PVSS database</Usage>
            <DependentAttributes>If "Time" is selected, "Time Filter (s)" must be
filled.</DependentAttributes>
            <Constraints/>
        </isSpecificationAttribute>
    </Attribute>
    <Attribute>
        <AttributeName>TimeFilter</AttributeName>
        <Description>Time filter for the SCADA archiving of the engineering values of the object. Must be
positive.</Description>
        <PrimitiveType>FLOAT32</PrimitiveType>
        <isSpecificationAttribute>
            <NameRepresentation>Time Filter (s)</NameRepresentation>

```

```

    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes>Valid if "Time" has been selected as Archive
Mode</DependentAttributes>
    <Constraints>Must be positive</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>BooleanArch</AttributeName>
    <Description>Name of the Boolean archive
Forbidden characters: *[: "'@`#$%^&*?!.,;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <NameRepresentation>Boolean Archive</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>The boolean values of the device will be archived in the specified PVSS database. The
archive must be created in PVSS before importing the object.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[: "'@`#$%^&*?!.,;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>AnalogArch</AttributeName>
    <Description>Name of the analog archive
Forbidden characters: *[: "'@`#$%^&*?!.,;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <NameRepresentation>Analog Archive</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>The analog values of the device will be archived in the specified PVSS database. The
archive must be created in PVSS before importing the object.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[: "'@`#$%^&*?!.,;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>EventArch</AttributeName>
    <Description>Name of the event archive
Forbidden characters: *[: "'@`#$%^&*?!.,;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <NameRepresentation>Event Archive</NameRepresentation>
    <isValueRequired>>false</isValueRequired>

```

<Usage>The events generated by the device will be archived in the specified PVSS database. The archive must be created in PVSS before importing the object.</Usage>

<DependentAttributes/>

*<Constraints>Forbidden characters: *[: "'@`#\$%^&*?!.,;+=~(){}<>|]</Constraints>*

</isSpecificationAttribute>

</Attribute>

</AttributeFamily>

<AttributeFamily>

<AttributeFamilyName>SCADADriverDataSmoothing</AttributeFamilyName>

<UserExpandable>>true</UserExpandable>

<Attribute>

<AttributeName>DeadbandType</AttributeName>

<Description>Deadband type (None, Relative, Absolute or Old/New) for the SCADA driver data smoothing (Driver deadband)</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Deadband Type</NameRepresentation>

<isValueRequired>>true</isValueRequired>

<PermittedValue>No</PermittedValue>

<PermittedValue>Relative</PermittedValue>

<PermittedValue>Absolute</PermittedValue>

<PermittedValue>Old/New</PermittedValue>

<Usage>Used for the online display in SCADA</Usage>

<DependentAttributes/>

<Constraints/>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>DeadbandValue</AttributeName>

*<Description>Deadband value for the SCADA driver data smoothing
Must be positive and smaller than the deadband specified for the archiving</Description>*

<PrimitiveType>FLOAT32</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Deadband Value</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>Used for the online display in SCADA</Usage>

<DependentAttributes/>

<Constraints>Must be positive and smaller than the deadband specified for the archiving</Constraints>

</isSpecificationAttribute>

</Attribute>

</AttributeFamily>

<AttributeFamily>

```

<AttributeFamilyName>SCADADeviceParameters</AttributeFamilyName>
<UserExpandable>>true</UserExpandable>
<Attribute>
  <AttributeName>RecipeType</AttributeName>
  <Description>Recipies familie name</Description>
  <PrimitiveType>STRING</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>RecipelnitName</AttributeName>
  <Description>Name of the collection of defaults values associated to the RecipeType
</Description>
  <PrimitiveType>STRING</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>TargetDeviceInformation</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>Target</AttributeName>
    <Description>Identifies a target type (e.g. SIEMENS, SCHNEIDER...)</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
    <DefaultValue>Siemens</DefaultValue>
  <Attribute>
    <AttributeName>RepresentationName</AttributeName>
    <Description>It's the name used ...</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <DefaultValue>APAR</DefaultValue>
  </Attribute>
  <Attribute>
    <AttributeName>Optimized</AttributeName>
    <Description>Is this object an optimized Object?</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <DefaultValue>>true</DefaultValue>
  </Attribute>
  <Attribute>
    <AttributeName>LimitSize</AttributeName>
    <Description>Maximun number of instances allowed</Description>
    <PrimitiveType>INT32</PrimitiveType>
    <DefaultValue>2000</DefaultValue>
  </Attribute>
  <Attribute>
    <AttributeName>FastInterlock</AttributeName>

```

```
<Description>Is this object a fast interlock object?</Description>  
<PrimitiveType>BOOLEAN</PrimitiveType>  
<DefaultValue>>false</DefaultValue>  
</Attribute>  
</Attribute>  
</AttributeFamily>  
</UNICOSMetaModel>
```

2.10. AnalogStatusDeviceType.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<UNICOSMetaModel xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="..\unicos\UNICOSMetaModel.xsd">
```

```
  <Information>
    <Package>${devicePackageName}</Package>
    <Name>AnalogStatus</Name>
    <ObjectTypeFamily>InterfaceObjectFamily</ObjectTypeFamily>
    <Description>Analog Status Device</Description>
    <Version>${LastChangedRevision: 170110} </Version>
```

```
  </Information>
```

```
  <AttributeFamily>
```

```
    <AttributeFamilyName>DeviceIdentification</AttributeFamilyName>
```

```
    <UserExpandable>>false</UserExpandable>
```

```
    <Attribute>
```

```
      <AttributeName>Name</AttributeName>
```

```
      <Description>Name of the device. It must be unique.
```

Max length:

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: [:"'@`#\$%^&*?!.,;+~(){}<>|]-., double underscore, and page break</Description>

```
    <PrimitiveType>STRING</PrimitiveType>
```

```
    <isSpecificationAttribute>
```

```
      <isValueRequired>>true</isValueRequired>
```

```
      <Usage>Name displayed at the SCADA level if "Expert Name" is not specified.
```

This name will appear in the datapoints created in the SCADA layer.</Usage>

```
      <DependentAttributes>Device Links.
```

The name of the device(s) specified in Device Links *must* correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to "Name".</DependentAttributes>

```
    <Constraints>Max length:
```

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: [:"'@`#\$%^&*?!.,;+~(){}<>|]-., double underscore, and page break
Name must be unique.</Constraints>

```
  </isSpecificationAttribute>
```

```
  </Attribute>
```

```
  <Attribute>
```

```
    <AttributeName>ExpertName</AttributeName>
```

```
    <Description>Name of the device displayed at the SCADA level. It must be unique.
```


Forbidden characters: *[: "'@`#\$%^&*?!;=+~(){}<>|] </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Expert Name</NameRepresentation>

<TypeRepresentation>STRING</TypeRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>It does not affect to the datapoints names in the SCADA layer.</Usage>

<DependentAttributes>Device Links.

The name of the device(s) specified in Device Links **must** correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to "Name".</DependentAttributes>

<Constraints>In principle there is no limit to the number of characters used, however a long name may result in display issues at the SCADA level.

Forbidden characters: *[: "'@`#\$%^&*?!;=+~(){}<>|]

Expert Name must be unique.</Constraints>

</isSpecificationAttribute>

</Attribute>

</AttributeFamily>

<AttributeFamily>

<AttributeFamilyName>DeviceDocumentation</AttributeFamilyName>

<UserExpandable>>true</UserExpandable>

<Attribute>

<AttributeName>DeviceDescription</AttributeName>

<Description>Description of the device. </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Description</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>Used in the SCADA layer in the device faceplate</Usage>

<DependentAttributes/>

<Constraints>In principle there is no limit to the number of characters used, however a long description may result in display issues at the SCADA level.

Forbidden characters: ;</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Remarks</AttributeName>

<Description>Field used to add relevant information about the device. </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

```

    <Usage>This information is not used in the generation process, it remains only at the
specification level for documentation purposes.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: ;</Constraints>
  </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceParameters</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>PMinRan</AttributeName>
    <Meaning>Parameter Minimum Range</Meaning>
    <Description>Minimum engineering value of the device.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Range Min</NameRepresentation>
      <isValueRequired>>true</isValueRequired>
      <Usage>A linear conversion is performed between the raw range and engineering
range.</Usage>
      <DependentAttributes/>
      <Constraints>The value specified here must be consistent with the format defined in the
field "Format".</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>PMaxRan</AttributeName>
    <Meaning>Parameter Maximum Range</Meaning>
    <Description>Maximum engineering value of the device.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Range Max</NameRepresentation>
      <isValueRequired>>true</isValueRequired>
      <Usage>A linear conversion is performed between the raw range and engineering
range.</Usage>
      <DependentAttributes/>
      <Constraints>The value specified here must be consistent with the format defined in the
field "Format".</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>FofEn</AttributeName>
    <Meaning>Parameter First Order Filter</Meaning>

```

```

<Description>First Order Filter applied to the Engineering value at the PLC level.</Description>
<PrimitiveType>FLOAT32</PrimitiveType>
<isSpecificationAttribute>
  <NameRepresentation>Filtering Time (s)</NameRepresentation>
  <isValueRequired>>false</isValueRequired>
  <Usage>A first order filter is applied to the engineering value.</Usage>
  <DependentAttributes/>
  <Constraints>the filter will absorb the noise of the signal</Constraints>
</isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceAutoRequests</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>AuPosR</AttributeName>
    <Meaning>Auto Position Request.</Meaning>
    <Description>Auto Position Request: The control logic requests a specific position on the
object.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceOutputs</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>PosSt</AttributeName>
    <Meaning>Position status</Meaning>
    <Description>Position Status</Description>
    <isCommunicated>>true</isCommunicated>
    <isArchived>>true</isArchived>
    <PrimitiveType>FLOAT32</PrimitiveType>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceIOConfig</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>FEType</AttributeName>
    <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>

```

```

<PrimitiveType>STRING</PrimitiveType>
<isSpecificationAttribute>
  <NameRepresentation>FE Encoding Type</NameRepresentation>
  <TypeRepresentation>STRING</TypeRepresentation>
  <isValueRequired>>false</isValueRequired>
  <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
  <DependentAttributes>FEChannel.InterfaceParamX (where X=1-10)</DependentAttributes>
  <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>FEChannel</AttributeName>
  <Description>Indicates how to map the acquisition of the information from the field I/O
interface.</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <Attribute>
    <AttributeName>InterfaceParam1</AttributeName>
    <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
      <DependentAttributes>FE Encoding Type</DependentAttributes>
      <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>InterfaceParam2</AttributeName>
    <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>

```

```

    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam3</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam4</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam5</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>

```

```

    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
      <DependentAttributes>FE Encoding Type</DependentAttributes>
      <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>InterfaceParam6</AttributeName>
    <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
      <DependentAttributes>FE Encoding Type</DependentAttributes>
      <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>InterfaceParam7</AttributeName>
    <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
      <DependentAttributes>FE Encoding Type</DependentAttributes>
      <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>InterfaceParam8</AttributeName>

```

<Description>Parameter used to set up the periphery address of the device according to the various hardware module types used at the PLC level.

Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Usage>

<DependentAttributes>FE Encoding Type</DependentAttributes>

<Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>InterfaceParam9</AttributeName>

<Description>Parameter used to set up the periphery address of the device according to the various hardware module types used at the PLC level.

Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Usage>

<DependentAttributes>FE Encoding Type</DependentAttributes>

<Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>InterfaceParam10</AttributeName>

<Description>Parameter used to set up the periphery address of the device according to the various hardware module types used at the PLC level.

Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Usage>

<DependentAttributes>FE Encoding Type</DependentAttributes>

<Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Constraints>

```

    </isSpecificationAttribute>
  </Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADeviceGraphics</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>PosStUnit</AttributeName>
    <Description>Unit of the device to be displayed in SCADA</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Unit</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints>In principle there is no limit to the number of characters used, however a long
name may result in display issues at the SCADA level.
Forbidden characters: *[: "'@`#$^&amp;*?!.,;=+~(){}&lt;&gt;|]&lt;/Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>PosStFormat</AttributeName>
    <Description>Format of the value to be displayed in SCADA. Supported formats:
### (fixed number of decimal places, in this case 2),
EXP or xEXP (exponential, 3 or x digits after '!'),
xD or xd (fixed digit format, x=number of digits, e.g.: 3D=0.01, 12.0, 123)</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Format</NameRepresentation>
      <isValueRequired>>true</isValueRequired>
      <Usage>Example: use format ### to display value to 2 decimal places. To the left of the
decimal point, the SCADA layer will display as many digits as required by the object value, therefore a
single # is enough.</Usage>
      <DependentAttributes/>
      <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>WidgetType</AttributeName>
    <Description>Define the widget type to display in the SCADA device tree overview only.
The widget displayed in the process panel will be selected when the user creates the
panel.</Description>

```



```

<PrimitiveType>STRING</PrimitiveType>
<isSpecificationAttribute>
  <NameRepresentation>Widget Type</NameRepresentation>
  <isValueRequired>>true</isValueRequired>
  <isCaseSensitive>>true</isCaseSensitive>
  <PermittedValue>AnalogStatus</PermittedValue>
  <PermittedValue>AnalogStatusWide</PermittedValue>
  <Usage/>
  <DependentAttributes/>
  <Constraints/>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Synoptic</AttributeName>
  <Description>Define link between the device and an existing synoptic where it appears. The
synoptic specified here can be accessed from the device right-click menu item
"Synoptic".</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Specify the path of the .pnl file under the "\panel" directory of the PVSS
project.</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DiagnosticPanel</AttributeName>
  <Description>Define link between the device and an existing diagnostic panel for the device.
The panel specified here can be accessed from the device right-click menu item "Diagnostic" as well
as from the "Diagnostic" button on the object faceplate.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Diagnostic</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Specify the path of the .pnl file under the "\panel" directory of the PVSS project
</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>WWWLink</AttributeName>

```

<Description>Define link between the device and an existing web page (or pdf file, or other file which can be opened with IE). The link can be accessed from the device right-click menu item "Info" as well as from the "Info" button on the object faceplate.</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>WWW Link</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage/>

<DependentAttributes/>

<Constraints/>

</isSpecificationAttribute>

</Attribute>

</AttributeFamily>

<AttributeFamily>

<AttributeFamilyName>SCADADeviceFunctionals</AttributeFamilyName>

<UserExpandable>>false</UserExpandable>

<Attribute>

<AttributeName>AccessControlDomain</AttributeName>

<Description>Define Access Control on the device to an existing SCADA Domain

Forbidden characters: *[: "'@ # \$ % ^ & * ? ! ; = + ~ () { } < > |]</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Access Control Domain</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>This domain is used to grant access to this specific device. The domain specified for this object will allow access to the object only to registered users on that domain</Usage>

<DependentAttributes/>

<Constraints>Forbidden characters: *[: "'@ # \$ % ^ & * ? ! ; = + ~ () { } < > |]</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>SCADADeviceClassificationTags</AttributeName>

<Description>It defines the Domain, Nature and DeviceLinks for the SCADA visualization</Description>

<PrimitiveType>STRUCT</PrimitiveType>

<Attribute>

<AttributeName>Domain</AttributeName>

<Description>Domain of the device. If empty, the domain will be the name of the application

Forbidden characters: *[: "'@ # \$ % ^ & * ? ! ; = + ~ () { } < > |]</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>Domain is used to filter the devices in the alarm list or in the device tree overview</Usage>

```
<DependentAttributes/>
<Constraints>Forbidden characters: *[:
"@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Nature</AttributeName>
  <Description>Nature of the device. If empty, the nature will be the type of the device
Forbidden characters: *[: "@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Nature is used to filter the devices in the alarm list or in the device tree
overview</Usage>
```

```
  <DependentAttributes/>
  <Constraints>Forbidden characters: *[:
"@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DeviceLinks</AttributeName>
  <Description>Define links to other devices (separate device names with commas).
```

Note: it is not necessary to link to master, parents or children because these links are automatically created.

```
Forbidden characters: *[: "@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Device Links</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Linked devices will be shown in the device right-click menu</Usage>
    <DependentAttributes>Expert Name or Name.
```

*The name of the device(s) specified here ***must*** correspond to "Expert Name" if it is defined. If "Expert Name" is not defined, the name of the device(s) specified here corresponds to "Name".</DependentAttributes>*

```
  <Constraints>Forbidden characters: *[:
"@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
  </isSpecificationAttribute>
</Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
```

```

<AttributeFamilyName>SCADADeviceDataArchiving</AttributeFamilyName>
<UserExpandable>>true</UserExpandable>
<Attribute>
  <AttributeName>ArchiveMode</AttributeName>
  <Description>Archive mode of the object engineering values. Archive if:
Old/New Comparison: value changes
Time: value changes after Time Filter
Deadband: value < or > deadband
AND: at least one of the conditions is fulfilled
OR: both conditions are fulfilled</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Archive Mode</NameRepresentation>
    <isValueRequired>>true</isValueRequired>
    <PermittedValue>No</PermittedValue>
    <PermittedValue>Time</PermittedValue>
    <PermittedValue>Deadband</PermittedValue>
    <PermittedValue>Deadband AND Time</PermittedValue>
    <PermittedValue>Deadband OR Time</PermittedValue>
    <PermittedValue>Old/New Comparison</PermittedValue>
    <PermittedValue>Old/New Comparison AND Time</PermittedValue>
    <PermittedValue>Old/New Comparison OR Time</PermittedValue>
    <Usage>This archive mode is used to archive data in the PVSS database</Usage>
    <DependentAttributes>If "Time" is selected, "Time Filter (s)" must be filled
If "Deadband" is selected: "Deadband Type" and "Deadband Value" must be
filled.</DependentAttributes>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>TimeFilter</AttributeName>
  <Description>Time filter for the SCADA archiving of the engineering values of the object. Must
be positive.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Time Filter (s)</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes>Valid if "Time" has been selected as Archive
Mode</DependentAttributes>
    <Constraints>Must be positive</Constraints>
  </isSpecificationAttribute>
</Attribute>

```

```

<Attribute>
  <AttributeName>DeadbandType</AttributeName>
  <Description>Deadband type (Relative or Absolute) of the deadband for the SCADA archiving
of the engineering values of the object</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Deadband Type</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <PermittedValue>Relative</PermittedValue>
    <PermittedValue>Absolute</PermittedValue>
    <Usage>The value is archived if the difference between the latest archived value and the
actual value exceeds, either:
- if 'Absolute': the "Deadband Value"
- if 'Relative': the "Deadband Value" as a percent of the latest archived value</Usage>
    <DependentAttributes>Valid if "Deadband" has been selected as Archive
Mode</DependentAttributes>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DeadbandValue</AttributeName>
  <Description>Deadband value for the SCADA archiving of the engineering values of the object
Must be positive and larger than the deadband specified for the driver data smoothing (Driver
deadband)</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Deadband Value</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes>Valid if "Deadband" has been selected as Archive
Mode</DependentAttributes>
    <Constraints>Must be positive and larger than the deadband specified for the driver data
smoothing (Driver deadband)</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>BooleanArch</AttributeName>
  <Description>Name of the Boolean archive
Forbidden characters: *[: "'@#%$%^&*?!;=+~(){}&lt;&gt;|]</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Boolean Archive</NameRepresentation>
    <isValueRequired>>false</isValueRequired>

```

```

    <Usage>The boolean values of the device will be archived in the specified PVSS database.
    The archive must be created in PVSS before importing the object.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[:
    "'@`#$%^&*?!.,;+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>AnalogArch</AttributeName>
    <Description>Name of the analog archive
    Forbidden characters: *[: "'@`#$%^&*?!.,;+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Analog Archive</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>The analog values of the device will be archived in the specified PVSS database. The
        archive must be created in PVSS before importing the object.</Usage>
        <DependentAttributes/>
        <Constraints>Forbidden characters: *[:
        "'@`#$%^&*?!.,;+~(){}&lt;&gt;|]</Constraints>
        </isSpecificationAttribute>
    </Attribute>
</Attribute>
    <AttributeName>EventArch</AttributeName>
    <Description>Name of the event archive
    Forbidden characters: *[: "'@`#$%^&*?!.,;+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Event Archive</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>The events generated by the device will be archived in the specified PVSS database.
        The archive must be created in PVSS before importing the object.</Usage>
        <DependentAttributes/>
        <Constraints>Forbidden characters: *[:
        "'@`#$%^&*?!.,;+~(){}&lt;&gt;|]</Constraints>
        </isSpecificationAttribute>
    </Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>SCADADriverDataSmoothing</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>DeadbandType</AttributeName>

```

```

    <Description>Deadband type (None, Relative, Absolute or Old/New) for the SCADA driver data
    smoothing (Driver deadband)</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Deadband Type</NameRepresentation>
      <isValueRequired>>true</isValueRequired>
      <PermittedValue>No</PermittedValue>
      <PermittedValue>Relative</PermittedValue>
      <PermittedValue>Absolute</PermittedValue>
      <PermittedValue>Old/New</PermittedValue>
      <Usage>Used for the online display in SCADA</Usage>
      <DependentAttributes/>
      <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>DeadbandValue</AttributeName>
    <Description>Deadband value for the SCADA driver data smoothing
    Must be positive and smaller than the deadband specified for the archiving</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Deadband Value</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>Used for the online display in SCADA</Usage>
      <DependentAttributes/>
      <Constraints>Must be positive and smaller than the deadband specified for the
    archiving</Constraints>
    </isSpecificationAttribute>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>TargetDeviceInformation</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>Target</AttributeName>
    <Description>Identifies a target type (e.g. SIEMENS, SCHNEIDER...)</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
    <DefaultValue>Siemens</DefaultValue>
    <Attribute>
      <AttributeName>RepresentationName</AttributeName>
      <Description>It's the name used ...</Description>
      <PrimitiveType>STRING</PrimitiveType>
      <DefaultValue>AS</DefaultValue>
    </Attribute>
  </Attribute>
</AttributeFamily>

```

```
</Attribute>
<Attribute>
  <AttributeName>Optimized</AttributeName>
  <Description>Is this object an optimized Object?</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <DefaultValue>>true</DefaultValue>
</Attribute>
<Attribute>
  <AttributeName>LimitSize</AttributeName>
  <Description>Maximun number of instances allowed</Description>
  <PrimitiveType>INT32</PrimitiveType>
  <DefaultValue>2000</DefaultValue>
</Attribute>
<Attribute>
  <AttributeName>FastInterlock</AttributeName>
  <Description>Is this object a fast interlock object?</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <DefaultValue>>false</DefaultValue>
</Attribute>
</Attribute>
</AttributeFamily>
</UNICOSMetaModel>
```


2.11. ControllerDeviceType.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<UNICOSMetaModel xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="..\unicos\UNICOSMetaModel.xsd">
```

```
  <Information>
    <Package>${devicePackageName}</Package>
    <Name>Controller</Name>
    <ObjectTypeFamily>ControlObjectFamily</ObjectTypeFamily>
    <Description>Controller Device</Description>
    <Version>${LastChangedRevision: 170121} $</Version>
  </Information>
  <AttributeFamily>
    <AttributeFamilyName>DeviceIdentification</AttributeFamilyName>
    <UserExpandable>>false</UserExpandable>
    <Attribute>
      <AttributeName>Name</AttributeName>
      <Description>Name of the device. It must be unique.
```

Max length:

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: [:"'@`#\$%^&*?!;=+~(){}<>|]-., double underscore, and page break</Description>

```
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>true</isValueRequired>
    <Usage>Name displayed at the SCADA level if "Expert Name" is not specified.
```

This name will appear in the datapoints created in the SCADA layer.</Usage>

```
  <DependentAttributes>Device Links.
```

The name of the device(s) specified in Device Links *must* correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to "Name".</DependentAttributes>

```
  <Constraints>Max length:
```

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: [:"'@`#\$%^&*?!;=+~(){}<>|]-., double underscore, and page break

Name must be unique.</Constraints>

```
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>ExpertName</AttributeName>
  <Description>Name of the device displayed at the SCADA level. It must be unique.
```

Forbidden characters: *[: "'@`#\$%^&*?!;=+~(){}<>|]</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Expert Name</NameRepresentation>

<TypeRepresentation>STRING</TypeRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>It does not affect to the datapoints names in the SCADA layer.</Usage>

<DependentAttributes>Device Links.

The name of the device(s) specified in Device Links **must** correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to "Name".</DependentAttributes>

<Constraints>In principle there is no limit to the number of characters used, however a long name may result in display issues at the SCADA level.

Forbidden characters: *[: "'@`#\$%^&*?!;=+~(){}<>|]

Expert Name must be unique.</Constraints>

</isSpecificationAttribute>

</Attribute>

</AttributeFamily>

<AttributeFamily>

<AttributeFamilyName>DeviceDocumentation</AttributeFamilyName>

<UserExpandable>>true</UserExpandable>

<Attribute>

<AttributeName>DeviceDescription</AttributeName>

<Description>Description of the device. </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Description</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>Used in the SCADA layer in the device faceplate</Usage>

<DependentAttributes/>

<Constraints>In principle there is no limit to the number of characters used, however a long description may result in display issues at the SCADA level.

Forbidden characters: ;</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Remarks</AttributeName>

<Description>Field used to add relevant information about the device. </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

```

    <Usage>This information is not used in the generation process, it remains only at the
specification level for documentation purposes.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: ;</Constraints>
  </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceParameters</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>PControl</AttributeName>
    <Description>Contains controller parameters</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Controller Parameters</NameRepresentation>
      <TypeRepresentation>STRING</TypeRepresentation>
      <isValueRequired>>true</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints/>
    </isSpecificationAttribute>
  <Attribute>
    <AttributeName>PMinRan</AttributeName>
    <Meaning>Parameter Minimum Range</Meaning>
    <Description>Range Min - Engineering Value of the Measured Value</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <DefaultValue>0.0</DefaultValue>
  </Attribute>
  <Attribute>
    <AttributeName>PMaxRan</AttributeName>
    <Meaning>Parameter Maximum Range</Meaning>
    <Description>Range Max - Engineering Value of the Measured Value</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <DefaultValue>100.0</DefaultValue>
  </Attribute>
  <Attribute>
    <AttributeName>POutMinRan</AttributeName>
    <Meaning>Parameter Output Minimum Range</Meaning>
    <Description>Output Range Min if different from controlled devices. If empty, take range of
the first controlled device.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>

```

```

    <NameRepresentation>Output Range Min</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Can be used if split range is performed with the controller</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>POutMaxRan</AttributeName>
  <Meaning>Parameter Output Maximum Range</Meaning>
  <Description>Output Range Max if different from controlled devices. If empty, take range of
the first controlled device.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Output Range Max</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Can be used if split range is performed with the controller</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>MVFilterTime</AttributeName>
  <Meaning>Measured Value Filter Time</Meaning>
  <Description>Time constant of the 1st order filter applied to the Measured Value.
Must be larger than the PLC cycle time.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>MV Filter Time (s)</NameRepresentation>
    <isValueRequired>>true</isValueRequired>
    <Usage>The time filter is applied on the measured value to reduce noise</Usage>
    <DependentAttributes/>
    <Constraints>Must be larger than the PLC cycle time</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PIDCycle</AttributeName>
  <Meaning>PID Cycle</Meaning>
  <Description>Cycle time to call the PID algorithm.
Must be larger than the PLC cycle time.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>

```

```

    <NameRepresentation>PID Cycle (s)</NameRepresentation>
    <isValueRequired>>true</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints>Must be larger than the PLC cycle time</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>ScaMethod</AttributeName>
  <Meaning>Scaling Method</Meaning>
  <Description>Scaling method applied to the PID</Description>
  <PrimitiveType>SHORTINT16</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Scaling Method</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>true</isValueRequired>
    <PermittedValue>Input Scaling</PermittedValue>
    <PermittedValue>Input/Output Scaling</PermittedValue>
    <PermittedValue>No Scaling</PermittedValue>
    <Usage>Input Scaling (1, default): the SP and the MV are scaled. Output 0-100%
    Input/Output Scaling (2): Same as Input Scaling but Output can be scaled to engineering values
    (Output Range Min/Max)
    No Scaling (3): use engineering values. Kc has physical meaning</Usage>
  </isSpecificationAttribute>
  <DependentAttributes/>
  <Constraints/>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>RA</AttributeName>
  <Meaning>Reverse Action</Meaning>
  <Description>Reverse Action on the controller</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>RA</NameRepresentation>
    <isValueRequired>>true</isValueRequired>
    <Usage>If TRUE, the Kc parameter will be negative, i.e. if MV > SP, Output will
    increase.
    If FALSE (=default), Kc will be positive, i.e. if MV > SP, Output will decrease.</Usage>
  <DependentAttributes/>
  <Constraints/>
</isSpecificationAttribute>
</Attribute>
</Attribute>

```

```

</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceAutoRequests</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>AulhFoMo</AttributeName>
    <Meaning>Auto Inhibit Forced Mode</Meaning>
    <Description>Auto Inhibit Forced Mode (by logic): The control logic blocks the forced mode
operation.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>AulhMMo</AttributeName>
    <Meaning>Auto Inhibit Manual Mode</Meaning>
    <Description>Auto Inhibit Manual Mode (by logic): The control logic blocks the manual mode
operation</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>AuActR</AttributeName>
    <Meaning>Auto Active Request</Meaning>
    <Description>Auto Active Request. Logic explicitly sets this input to distinguish between
multiple controllers</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>AuSPR</AttributeName>
    <Meaning>Auto Setpoint Request</Meaning>
    <Description>The control logic requests specific Setpoint value</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>AuESP</AttributeName>
    <Meaning>Auto Enable Setpoint</Meaning>
    <Description>The control logic enables of the auto set-Point</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>AuRegR</AttributeName>
    <Meaning>Auto Regulation Request</Meaning>
    <Description>The control logic requests the regulation working state</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>

```

```

<Attribute>
  <AttributeName>AuOutPR</AttributeName>
  <Meaning>Auto Output Position Request</Meaning>
  <Description>The control logic requests the output positioning working state</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuTrR</AttributeName>
  <Meaning>Auto Tracking Request</Meaning>
  <Description>The control logic requests to apply the tracking working state.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuPosR</AttributeName>
  <Meaning>Auto Position Request.</Meaning>
  <Description>Auto Position Request: The control logic requests a specific position on the
object.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AulhSR</AttributeName>
  <Meaning>Auto Inhibit Save/Restore</Meaning>
  <Description>The operator cannot save nor restore the controller saved parameters (Default
values)
</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuAuMoR</AttributeName>
  <Meaning>Auto Auto Mode Request</Meaning>
  <Description>Auto Auto Mode Request. The control logic requests Auto Mode on the
object</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuPRest</AttributeName>
  <Meaning>Auto Parameter Restore</Meaning>
  <Description>Auto Parameter Restore</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuSPSpd</AttributeName>
  <Meaning>Auto Setpoint Speed</Meaning>

```

```

<Description>The control logic Setpoint Speed</Description>
<PrimitiveType>STRING</PrimitiveType>
<isSpecificationAttribute>
  <NameRepresentation>Default Setpoint Speed</NameRepresentation>
  <TypeRepresentation>STRING</TypeRepresentation>
  <isValueRequired>>false</isValueRequired>
  <Usage/>
  <DependentAttributes/>
  <Constraints/>
</isSpecificationAttribute>
<Attribute>
  <AttributeName>InSpd</AttributeName>
  <Meaning>Increase Speed</Meaning>
  <Description>Increase speed of the set-point.
Must be positive.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Increase Speed</NameRepresentation>
    <TypeRepresentation>FLOAT32</TypeRepresentation>
    <isValueRequired>>true</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints>Must be positive</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DeSpd</AttributeName>
  <Meaning>Decrease Speed</Meaning>
  <Description>Decrease speed of the set-point.
Must be positive.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Decrease Speed</NameRepresentation>
    <TypeRepresentation>FLOAT32</TypeRepresentation>
    <isValueRequired>>true</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints>Must be positive</Constraints>
  </isSpecificationAttribute>
</Attribute>
</Attribute>
<Attribute>

```



```

<AttributeName>AuPPID</AttributeName>
<Meaning>Auto Parameters PID</Meaning>
<Description>Parameters of PID Controller</Description>
<PrimitiveType>STRUCT</PrimitiveType>
<Attribute>
  <AttributeName>Kc</AttributeName>
  <Meaning>Gain</Meaning>
  <Description>Gain. PID parameter value requested by the Control Logic</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <DefaultValue>1.0</DefaultValue>
</Attribute>
<Attribute>
  <AttributeName>Ti</AttributeName>
  <Meaning>Integration Time</Meaning>
  <Description>Integration Time. PID parameter value requested by the Control
Logic</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <DefaultValue>100.0</DefaultValue>
</Attribute>
<Attribute>
  <AttributeName>Td</AttributeName>
  <Meaning>Time Derivative</Meaning>
  <Description>Time Derivative. PID parameter value requested by the Control
Logic</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <DefaultValue>0.0</DefaultValue>
</Attribute>
<Attribute>
  <AttributeName>Tds</AttributeName>
  <Meaning>Filter Time Derivative</Meaning>
  <Description>Filter Time Derivative. PID parameter value requested by the Control
Logic</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <DefaultValue>0.0</DefaultValue>
</Attribute>
<Attribute>
  <AttributeName>SPH</AttributeName>
  <Meaning>Setpoint High</Meaning>
  <Description>Setpoint High Limit value requested by control logic</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <DefaultValue>100.0</DefaultValue>
</Attribute>
<Attribute>

```

```

    <AttributeName>SPL</AttributeName>
    <Meaning>Setpoint Low</Meaning>
    <Description>Setpoint Low Limit value requested by control logic</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <DefaultValue>0.0</DefaultValue>
</Attribute>
<Attribute>
    <AttributeName>OutH</AttributeName>
    <Meaning>Output High</Meaning>
    <Description>Output High Limit value requested by control logic</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <DefaultValue>100.0</DefaultValue>
</Attribute>
<Attribute>
    <AttributeName>OutL</AttributeName>
    <Meaning>Output Low</Meaning>
    <Description>Output Low Limit value requested by control logic</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <DefaultValue>0.0</DefaultValue>
</Attribute>
<Attribute>
    <AttributeName>EKc</AttributeName>
    <Meaning>Enable Kc</Meaning>
    <Description>Parameter Kc given by control logic enabled.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <DefaultValue>>false</DefaultValue>
</Attribute>
<Attribute>
    <AttributeName>ETi</AttributeName>
    <Meaning>Enable Ti</Meaning>
    <Description>Parameter Kc given by control logic enabled.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <DefaultValue>>false</DefaultValue>
</Attribute>
<Attribute>
    <AttributeName>ETd</AttributeName>
    <Meaning>Enable Td</Meaning>
    <Description>Parameter Kc given by control logic enabled.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <DefaultValue>>false</DefaultValue>
</Attribute>
<Attribute>

```

```

    <AttributeName>ETds</AttributeName>
    <Meaning>Enable Tds</Meaning>
    <Description>Parameter Kc given by control logic enabled.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <DefaultValue>>false</DefaultValue>
</Attribute>
<Attribute>
    <AttributeName>ESPH</AttributeName>
    <Meaning>Enable Setpoint High</Meaning>
    <Description>Setpoint High Limit value requested by control logic enabled.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <DefaultValue>>false</DefaultValue>
</Attribute>
<Attribute>
    <AttributeName>ESPL</AttributeName>
    <Meaning>Enable Setpoint Low</Meaning>
    <Description>Setpoint Low Limit value requested by control logic enabled.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <DefaultValue>>false</DefaultValue>
</Attribute>
<Attribute>
    <AttributeName>EOutH</AttributeName>
    <Meaning>Enable Output High</Meaning>
    <Description>Output High Limit value requested by control logic enabled.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <DefaultValue>>false</DefaultValue>
</Attribute>
<Attribute>
    <AttributeName>EOutL</AttributeName>
    <Meaning>Enable Output Low</Meaning>
    <Description>Output Low Limit value requested by control logic enabled.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <DefaultValue>>false</DefaultValue>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>FEDeviceManualRequests</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>ManReg01</AttributeName>
        <Meaning>Manual Register 1</Meaning>

```

```

<Description>Manual Register 1</Description>
<isCommunicated>>true</isCommunicated>
<PrimitiveType>WORD</PrimitiveType>
<Attribute>
  <AttributeName>MAuMoR</AttributeName>
  <Meaning>Manual Auto Mode Request</Meaning>
  <Description>Manual Auto Mode Request: The operator requests the Auto
Mode.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>0</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MMMoR</AttributeName>
  <Meaning>Manual Manual Mode Request</Meaning>
  <Description>Manual Manual Mode Request: The operator requests the Manual
Mode.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>1</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MFoMoR</AttributeName>
  <Meaning>Manual Forced Mode Request</Meaning>
  <Description>Manual Forced Mode Request: The operator requests the Forced
Mode.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>2</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>ActRcp</AttributeName>
  <Meaning>Activate Recipe</Meaning>
  <Description>Activate Recipe : All new signals at the inputs are activated.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>3</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>ArmRcp</AttributeName>
  <Meaning>Armed Recipe</Meaning>
  <Description>A Recipe is Armed : New values are available at the input
</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>4</BitPosition>
</Attribute>
<Attribute>

```

```

    <AttributeName>MPSave</AttributeName>
    <Meaning>Manual Parameters Save</Meaning>
    <Description>The operator requests to save all currents parameters as default
value</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>5</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MPRest</AttributeName>
    <Meaning>Manual Parameters Restore</Meaning>
    <Description>The operator requests to restore as currents the latest saved
parameters</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>6</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MNewSPR</AttributeName>
    <Meaning>Manual New Setpoint Request</Meaning>
    <Description>The operator requests to apply the Manual Setpoint Request
Value.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>7</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MNewSPHLiR</AttributeName>
    <Meaning>Manual New Setpoint High Limit Request</Meaning>
    <Description>The operator requests to apply a new Setpoint High limit.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>8</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MNewSPLLiR</AttributeName>
    <Meaning>Manual New Setpoint Low Limit Request</Meaning>
    <Description>The operator requests to apply a new Setpoint Low limit.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>9</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MNewOutHLiR</AttributeName>
    <Meaning>Manual New Output High Limit Request</Meaning>
    <Description>The operator requests to apply a new Output High limit.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>10</BitPosition>

```

```

</Attribute>
<Attribute>
  <AttributeName>MNewOutLLiR</AttributeName>
  <Meaning>Manual New Output Low Limit Request</Meaning>
  <Description>The operator requests to apply a new Output Low limit.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>11</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MNewKcR</AttributeName>
  <Meaning>Manual New Kc Request</Meaning>
  <Description>The operator requests to change the PID Kc factor </Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>12</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MNewTdR</AttributeName>
  <Meaning>Manual New Td Request</Meaning>
  <Description>The operator requests to change the PID Td factor </Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>13</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MNewTiR</AttributeName>
  <Meaning>Manual New Ti Request</Meaning>
  <Description>The operator requests to change the PID Ti factor </Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>14</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MNewTdsR</AttributeName>
  <Meaning>Manual New Tds Request</Meaning>
  <Description>The operator requests to change the PID Tds factor </Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>15</BitPosition>
</Attribute>
</Attribute>
<Attribute>
  <AttributeName>ManReg02</AttributeName>
  <Meaning>Manual Register 2</Meaning>
  <Description>2nd Manual Register </Description>
  <isCommunicated>true</isCommunicated>

```

```

<PrimitiveType>WORD</PrimitiveType>
<Attribute>
  <AttributeName>MRegR</AttributeName>
  <Meaning>Manual Regulation Request</Meaning>
  <Description>The operator requests to place the PID in Working state
regulated</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>0</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MOutPR</AttributeName>
  <Meaning>Manual Output Position Request</Meaning>
  <Description>The operator requests to place the PID in Output positioning working
state</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>1</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MSoftLDR</AttributeName>
  <Meaning>Manual Software Local Mode</Meaning>
  <Description>The operator requests the Software Local Mode</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>2</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MNewPosR</AttributeName>
  <Meaning>Manual New Position Request</Meaning>
  <Description>The operator requests to use the manual position value</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>3</BitPosition>
</Attribute>
</Attribute>
<Attribute>
  <AttributeName>MPosR</AttributeName>
  <Meaning>Manual Position Request</Meaning>
  <Description>Manual Position Request: Value of the position requested by
operator</Description>
  <isCommunicated>>true</isCommunicated>
  <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>MSP</AttributeName>
  <Meaning>Manual Setpoint</Meaning>

```

```

    <Description>Manual Setpoint: Setpoint value requested by operator</Description>
    <isCommunicated>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>MSPH</AttributeName>
    <Meaning>Manual Setpoint High</Meaning>
    <Description>Operator Manual Setpoint High Limit value</Description>
    <isCommunicated>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>MSPL</AttributeName>
    <Meaning>Manual Setpoint Low</Meaning>
    <Description>Operator Manual Setpoint Low Limit value</Description>
    <isCommunicated>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>MOutH</AttributeName>
    <Meaning>Manual Output High</Meaning>
    <Description>Operator Manual Output High Limit value</Description>
    <isCommunicated>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>MOutL</AttributeName>
    <Meaning>Manual Output Low</Meaning>
    <Description>Operator Manual Output Low Limit value</Description>
    <isCommunicated>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>MKc</AttributeName>
    <Meaning>Manual Gain</Meaning>
    <Description>Operator Manual Gain constant value</Description>
    <isCommunicated>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>MTi</AttributeName>
    <Meaning>Manual Integral time</Meaning>

```



```

    <Description>Operator Manual Integral time value</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>MTd</AttributeName>
    <Meaning>Manual derivative time</Meaning>
    <Description>Operator Manual derivative time value</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>MTds</AttributeName>
    <Meaning>Manual Derivative filter time</Meaning>
    <Description>Operator Manual Derivative filter time value</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>FEDeviceEnvironmentInputs</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>HMOV</AttributeName>
        <Meaning>Hardware Measured Value</Meaning>
        <Description>Process Value to be controlled.
Must be an AI/AIR/AS.</Description>
        <PrimitiveType>FLOAT32</PrimitiveType>
        <isSpecificationAttribute>
            <NameRepresentation>Measured Value</NameRepresentation>
            <TypeRepresentation>STRING</TypeRepresentation>
            <isValueRequired>>false</isValueRequired>
            <Usage>Enter the name of sensor to be regulated</Usage>
            <DependentAttributes/>
            <Constraints>Must be an AI/AIR/AS</Constraints>
        </isSpecificationAttribute>
    </Attribute>
    <Attribute>
        <AttributeName>HOutO</AttributeName>
        <Meaning>Hardware Output Order</Meaning>
        <Description>Hardware Output Order.Feedback position of controlled object.</Description>
        <PrimitiveType>FLOAT32</PrimitiveType>

```

```

</Attribute>
<Attribute>
  <AttributeName>IOError</AttributeName>
  <Meaning>Input/Output Error </Meaning>
  <Description>IOError state in any of the dependant objects or the PLC channel assigned to the
object</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>IOSimu</AttributeName>
  <Meaning>Input/Output Simulated</Meaning>
  <Description>Any of the dependant objects is in Forced or Manual Mode</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceOutputs</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>OutOV</AttributeName>
    <Meaning>Output Order Value</Meaning>
    <Description>List of devices to be controlled
Must be Analog/Anadig/AnaDO/MFC/Controller</Description>
    <isCommunicated>>true</isCommunicated>
    <isArchived>>true</isArchived>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Controlled Objects</NameRepresentation>
      <TypeRepresentation>STRING</TypeRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>Enter name of device to be controlled. If several, separate device names with
commas.</Usage>
      <DependentAttributes/>
      <Constraints>Must be Analog/Anadig/AnaDO/MFC/Controller</Constraints>
    </isSpecificationAttribute>
  </Attribute>
<Attribute>
  <AttributeName>StsReg01</AttributeName>
  <Meaning>Status Register 1</Meaning>
  <Description>Status Register 1</Description>
  <isEventAttribute>true</isEventAttribute>
  <isCommunicated>true</isCommunicated>
  <PrimitiveType>WORD</PrimitiveType>

```

```

<Attribute>
  <AttributeName>SoftLDSt</AttributeName>
  <Meaning>Software Local Mode Status</Meaning>
  <Description>Current status of the Software local mode</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>0</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>AuActSt</AttributeName>
  <Meaning>Auto Active Status</Meaning>
  <Description>Controller is active</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>1</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>AuMoSt</AttributeName>
  <Meaning>Auto Mode Status</Meaning>
  <Description>Current status of the Auto Mode</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>2</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MMoSt</AttributeName>
  <Meaning>Manual Mode Status</Meaning>
  <Description>Current status of the Manual Mode</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>3</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>FoMoSt</AttributeName>
  <Meaning>Forced Mode Status</Meaning>
  <Description>Current status of the Forced Mode.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>4</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>ArmRcpSt</AttributeName>
  <Meaning>Armed Recipe Status</Meaning>
  <Description>A Recipe is Armed : New values are available at the input</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>5</BitPosition>
</Attribute>

```

```

<Attribute>
  <AttributeName>IOErrorW</AttributeName>
  <Meaning>Input/Output Error Warning</Meaning>
  <Description>Current status of the IOError</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>6</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>IOSimuW</AttributeName>
  <Meaning>Input/Output Simulated Warning</Meaning>
  <Description>Current status of the IOSimu</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>7</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>AuRegRSt</AttributeName>
  <Meaning>Auto Regulation Request Status</Meaning>
  <Description>The control logic requests the Output positioning Working State</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>8</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>RegSt</AttributeName>
  <Meaning>Regulation Status</Meaning>
  <Description>The Controller is in Regulation working state.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>9</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>TrSt</AttributeName>
  <Meaning>Tracking State</Meaning>
  <Description>The Controller is in Tracking working state</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>10</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>OutPSt</AttributeName>
  <Meaning>Output Positioning State</Meaning>
  <Description>The Controller is in Output Positioning working state</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>11</BitPosition>
</Attribute>

```

```

<Attribute>
  <AttributeName>AulhSRSt</AttributeName>
  <Meaning>Auto Inhibit Save/Restore Status</Meaning>
  <Description>The operator cannot save nor restore the controller parameters (Default
values).
</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>12</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>AulhFoMoSt</AttributeName>
  <Meaning>Auto Inhibit Forced Mode Status</Meaning>
  <Description>Auto Inhibit Forced Mode status: Current status of the Auto Inhibit forced
mode.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>13</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>AuESPSt</AttributeName>
  <Meaning>Auto Enable Setpoint Status</Meaning>
  <Description>The control Logic requests the enabling of the auto Setpoint.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>14</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>AulhMMoSt</AttributeName>
  <Meaning>Auto Inhibit Manual Mode Status</Meaning>
  <Description>Auto Inhibit Manual Mode Status</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>15</BitPosition>
</Attribute>
</Attribute>
<Attribute>
  <AttributeName>StsReg02</AttributeName>
  <Meaning>Status Register 2</Meaning>
  <Description>Status Register 2</Description>
  <isEventAttribute>true</isEventAttribute>
  <isCommunicated>true</isCommunicated>
  <PrimitiveType>WORD</PrimitiveType>
<Attribute>
  <AttributeName>AuEKcSt</AttributeName>
  <Meaning>Auto Enable Kc Status</Meaning>
  <Description>PID parameter Kc requested by the Control Logic Enabled</Description>

```

```

    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>0</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AuETiSt</AttributeName>
    <Meaning>Auto Enable Ti Status</Meaning>
    <Description>PID parameter Ti requested by the Control Logic Enabled</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>1</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AuETdSt</AttributeName>
    <Meaning>Auto Enable Td Status</Meaning>
    <Description>PID parameter Td requested by the Control Logic Enabled</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>2</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AuETdsSt</AttributeName>
    <Meaning>Auto Enable Tds Status</Meaning>
    <Description>PID parameter Tds requested by the Control Logic Enabled</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>3</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>KcDiDef</AttributeName>
    <Meaning>Kc Different </Meaning>
    <Description>Current Kc Parameter different from saved parameter</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>4</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>TiDiDef</AttributeName>
    <Meaning>Ti Different</Meaning>
    <Description>Current Ti Parameter different from saved parameter</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>5</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>TdDiDef</AttributeName>
    <Meaning>Td Different</Meaning>
    <Description>Current Td Parameter different from saved parameter</Description>

```

```

    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>6</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>TdsDiDef</AttributeName>
    <Meaning>Tds Different</Meaning>
    <Description>Current Tds Parameter different from saved parameter</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>7</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>SPHDiDef</AttributeName>
    <Meaning>Setpoint High Different</Meaning>
    <Description>Current Setpoint High Limit Parameter different from saved
parameter</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>8</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>SPLDiDef</AttributeName>
    <Meaning>Setpoint Low Parameter Different </Meaning>
    <Description>Current Setpoint Low Limit Parameter different from saved
parameter</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>9</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>OutHDiDef</AttributeName>
    <Meaning>Output High Different</Meaning>
    <Description>Current Output High Limit Parameter different from saved
parameter</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>10</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>OutLDiDef</AttributeName>
    <Meaning>Output Low Different</Meaning>
    <Description>Current Output Low Limit Parameter different from saved
parameter</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>11</BitPosition>
</Attribute>
<Attribute>

```

```

    <AttributeName>AuESPHSt</AttributeName>
    <Meaning>Auto Enable Setpoint High Status</Meaning>
    <Description>Setpoint High Limit requested by control logic enabled</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>12</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AuESPLSt</AttributeName>
    <Meaning>Auto Enable Setpoint Low Status</Meaning>
    <Description>Setpoint Low Limit requested by control logic enabled</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>13</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AuEOutHSt</AttributeName>
    <Meaning>Auto Enable Output High Status</Meaning>
    <Description>Output High Limit requested by control logic enabled</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>14</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AuEOutLSt</AttributeName>
    <Meaning>Auto Enable Output Low Status</Meaning>
    <Description>Output Low Limit requested by control logic enabled</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>15</BitPosition>
</Attribute>
</Attribute>
<Attribute>
    <AttributeName>AuPosRSt</AttributeName>
    <Meaning>Auto Position Request Status</Meaning>
    <Description>Status of the position of the object in auto mode.</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>MPosRSt</AttributeName>
    <Meaning>Manual Position Request Status</Meaning>
    <Description>Manual Position request status</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>

```



```

<Attribute>
  <AttributeName>AuMoSt</AttributeName>
  <Meaning>Auto Mode Status</Meaning>
  <Description>Current status of the Auto Mode</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>MMoSt</AttributeName>
  <Meaning>Manual Mode Status</Meaning>
  <Description>Current status of the Manual Mode request</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>FoMoSt</AttributeName>
  <Meaning>Forced Mode Status</Meaning>
  <Description>Current status of the Forced Mode.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>SoftLDSt</AttributeName>
  <Meaning>Software Local Drive Status</Meaning>
  <Description>Current status of the Sotware Local mode request</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuRegSt</AttributeName>
  <Meaning>Auto Regulation Status</Meaning>
  <Description>Auto Regulation Request Status</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>RegSt</AttributeName>
  <Meaning>Regulation Status</Meaning>
  <Description>Regulation Status
</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>OutPSt</AttributeName>
  <Meaning>Output Positioning Status</Meaning>
  <Description>Output Positioning Status
</Description>

```

```

    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>TrSt</AttributeName>
    <Meaning>Tracking Status</Meaning>
    <Description>Tracking Status
</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>ActSP</AttributeName>
    <Meaning>Active Setpoint</Meaning>
    <Description>Active Setpoint Value</Description>
    <isCommunicated>true</isCommunicated>
    <isArchived>true</isArchived>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>MSPSt</AttributeName>
    <Meaning>Manual Setpoint Status</Meaning>
    <Description>Setpoint requested by operator</Description>
    <isCommunicated>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuSPSt</AttributeName>
    <Meaning>Auto Setpoint Status</Meaning>
    <Description>Setpoint proposed by the control logic</Description>
    <isCommunicated>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>IOErrorW</AttributeName>
    <Meaning>Input/Output Error Warning</Meaning>
    <Description>Current status of the IOError</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>IOSimuW</AttributeName>
    <Meaning>Input/Output Simulated Warning</Meaning>
    <Description>Current status of the IOSimu</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>

```

```

</Attribute>
<Attribute>
  <AttributeName>ActKc</AttributeName>
  <Meaning>Active Kc</Meaning>
  <Description>Active Gain. PID parameter</Description>
  <isCommunicated>>true</isCommunicated>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <DefaultValue>1.0</DefaultValue>
</Attribute>
<Attribute>
  <AttributeName>ActTi</AttributeName>
  <Meaning>Active Ti</Meaning>
  <Description>Active Integration Time. PID parameter value</Description>
  <isCommunicated>>true</isCommunicated>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <DefaultValue>100.0</DefaultValue>
</Attribute>
<Attribute>
  <AttributeName>ActTd</AttributeName>
  <Meaning>Active Td</Meaning>
  <Description>Active Time Derivative. PID parameter value</Description>
  <isCommunicated>>true</isCommunicated>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <DefaultValue>0.0</DefaultValue>
</Attribute>
<Attribute>
  <AttributeName>ActTds</AttributeName>
  <Meaning>Active Tds</Meaning>
  <Description>Active Filter Time Derivative. PID parameter</Description>
  <isCommunicated>>true</isCommunicated>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <DefaultValue>0.0</DefaultValue>
</Attribute>
<Attribute>
  <AttributeName>ActSPH</AttributeName>
  <Meaning>Active Setpoint High</Meaning>
  <Description>Active Setpoint High Limit value</Description>
  <isCommunicated>>true</isCommunicated>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <DefaultValue>100.0</DefaultValue>
</Attribute>
<Attribute>

```

```

    <AttributeName>ActSPL</AttributeName>
    <Meaning>Active Setpoint Low</Meaning>
    <Description>Active Setpoint Low Limit value</Description>
    <isCommunicated>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <DefaultValue>0.0</DefaultValue>
</Attribute>
<Attribute>
    <AttributeName>ActOutH</AttributeName>
    <Meaning>Active Output High</Meaning>
    <Description>Active Output High Limit value</Description>
    <isCommunicated>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <DefaultValue>100.0</DefaultValue>
</Attribute>
<Attribute>
    <AttributeName>ActOutL</AttributeName>
    <Meaning>Active Output Low</Meaning>
    <Description>Active Output Low Limit value</Description>
    <isCommunicated>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <DefaultValue>0.0</DefaultValue>
</Attribute>
<Attribute>
    <AttributeName>MV</AttributeName>
    <Meaning>Measured Value</Meaning>
    <Description>Measured value of the controller.</Description>
    <isCommunicated>true</isCommunicated>
    <isArchived>true</isArchived>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>FEDeviceVariables</AttributeFamilyName>
    <UserExpandable>true</UserExpandable>
    <Attribute>
        <AttributeName>DefPID</AttributeName>
        <Description>Saved Parameters of the controller</Description>
        <PrimitiveType>STRUCT</PrimitiveType>
        <isSpecificationAttribute>
            <NameRepresentation>Default PID Parameters</NameRepresentation>
            <TypeRepresentation>STRING</TypeRepresentation>
        </isSpecificationAttribute>
    </Attribute>
</AttributeFamily>

```

```

    <isValueRequired>true</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
</isSpecificationAttribute>
<Attribute>
    <AttributeName>DefSP</AttributeName>
    <Description>Default Set-Point of the Controller at the initialization of the PLC.
Must be between Range Min and Range Max of the Measured Value.
If blank, will be set to 0.0 by default.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Setpoint</NameRepresentation>
        <TypeRepresentation>STRING</TypeRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>can be a positive number or a parameter</Usage>
        <DependentAttributes/>
        <Constraints>Must be between Range Min and Range Max of the Measured Value.
If blank, will be set to 0.0 by default.</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>DefKc</AttributeName>
    <Description>Default Kc parameter (Gain) of the Controller at the initialization of the PLC.
Must be positive. If reverse action, put TRUE in the "Reverse Action" field.
If blank, will be set to 1.0 by default.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Kc</NameRepresentation>
        <TypeRepresentation>STRING</TypeRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>can be a positive number or a parameter</Usage>
        <DependentAttributes/>
        <Constraints>Must be positive. If reverse action, put TRUE in the "Reverse Action" field.
If blank, will be set to 1.0 by default.</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>DefTi</AttributeName>
    <Description>Default Ti parameter (Integration Time) of the Controller at the initialization of
the PLC.
Must be >= 0.

```

If = 0, then integral component is removed.

If blank, will be set to 100.0s by default.</Description>

```
<PrimitiveType>FLOAT32</PrimitiveType>
<isSpecificationAttribute>
  <NameRepresentation>Ti</NameRepresentation>
  <TypeRepresentation>STRING</TypeRepresentation>
  <isValueRequired>>false</isValueRequired>
  <Usage>can be a positive number or a parameter</Usage>
  <DependentAttributes/>
  <Constraints>Must be >= 0.
```

If = 0, then integral component is removed.

If blank, will be set to 100.0s by default.</Constraints>

```
</isSpecificationAttribute>
</Attribute>
<Attribute>
```

```
<AttributeName>DefTd</AttributeName>
```

<Description>Default Td parameter (Derivative Time) of the Controller at the initialization of the PLC.

Must be >= 0.

If = 0, then derivative component is removed.

If blank, will be set to 0.0s by default.</Description>

```
<PrimitiveType>FLOAT32</PrimitiveType>
<isSpecificationAttribute>
  <NameRepresentation>Td</NameRepresentation>
  <TypeRepresentation>STRING</TypeRepresentation>
  <isValueRequired>>false</isValueRequired>
  <Usage>can be a positive number or a parameter</Usage>
  <DependentAttributes/>
  <Constraints>Must be >= 0.
```

If = 0, then derivative component is removed.

If blank, will be set to 0.0s by default.</Constraints>

```
</isSpecificationAttribute>
</Attribute>
<Attribute>
```

```
<AttributeName>DefTds</AttributeName>
```

<Description>Default Tds parameter (time constant of the 1st order filter on the derivative term)

of the Controller at the initialization of the PLC.

Must be >= 0.

If = 0, then no filtering of the derivative term.

If blank, will be set to 0.0s by default.</Description>

```
<PrimitiveType>FLOAT32</PrimitiveType>
<isSpecificationAttribute>
```

```

    <NameRepresentation>Tds</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>can be a positive number or a parameter</Usage>
    <DependentAttributes/>
    <Constraints>Must be >= 0.
If = 0, then no filtering of the derivative term.
If blank, will be set to 0.0s by default.</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DefSPH</AttributeName>
  <Description>Default High Limit for the Controller Set-Point at the initialization of the PLC.
Must be between Range Min and Range Max of the Measured Value (MV).
If blank, will be set to Range Max of the MV.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>SP High Limit</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>can be a positive number or a parameter</Usage>
    <DependentAttributes/>
    <Constraints>Must be between Range Min and Range Max of the Measured Value (MV).
If blank, will be set to Range Max of the MV</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DefSPL</AttributeName>
  <Description>Default Low Limit for the Controller Set-Point at the initialization of the PLC.
Must be between Range Min and Range Max of the Measured Value (MV).
If blank, will be set to Range Min of the MV.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>SP Low Limit</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>can be a positive number or a parameter</Usage>
    <DependentAttributes/>
    <Constraints>Must be between Range Min and Range Max of the Measured Value (MV).
If blank, will be set to Range Min of the MV</Constraints>
  </isSpecificationAttribute>
</Attribute>

```

```

<Attribute>
  <AttributeName>DefOutH</AttributeName>
  <Description>Default High Limit for the Controller output at the initialization of the PLC.
  Must be between Output Range Min and Output Range Max of the controlled device.
  If blank, will be set to Output Range Max.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Out High Limit</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>can be a positive number or a parameter</Usage>
    <DependentAttributes/>
    <Constraints>Must be between Output Range Min and Output Range Max of the
  controlled device.
  If blank, will be set to Output Range Max.</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DefOutL</AttributeName>
  <Description>Default Low Limit for the Controller output at the initialization of the PLC.
  Must be between Output Range Min and Output Range Max of the controlled device.
  If blank, will be set to Output Range Min.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Out Low Limit</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>can be a positive number or a parameter</Usage>
    <DependentAttributes/>
    <Constraints>Must be between Output Range Min and Output Range Max of the
  controlled device.
  If blank, will be set to Output Range Min.</Constraints>
  </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADeviceGraphics</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>WidgetType</AttributeName>
    <Description>Define the widget type to display in the SCADA device tree overview only.

```


The widget displayed in the process panel will be selected when the user creates the panel.</Description>

```
<PrimitiveType>STRING</PrimitiveType>
<isSpecificationAttribute>
  <NameRepresentation>Widget Type</NameRepresentation>
  <isValueRequired>>true</isValueRequired>
  <isCaseSensitive>>true</isCaseSensitive>
  <PermittedValue>Controller</PermittedValue>
  <PermittedValue>ControllerSetPoint</PermittedValue>
  <PermittedValue>ControllerActiveX</PermittedValue>
  <Usage/>
  <DependentAttributes/>
  <Constraints/>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Synoptic</AttributeName>
  <Description>Define link between the device and an existing synoptic where it appears. The
synoptic specified here can be accessed from the device right-click menu item
"Synoptic".</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Specify the path of the .pnl file under the "\panel" directory of the PVSS
project.</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DiagnosticPanel</AttributeName>
  <Description>Define link between the device and an existing diagnostic panel for the device.
The panel specified here can be accessed from the device right-click menu item "Diagnostic" as well
as from the "Diagnostic" button on the object faceplate.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Diagnostic</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Specify the path of the .pnl file under the "\panel" directory of the PVSS project
</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
```

```

</Attribute>
<Attribute>
  <AttributeName>WWWLink</AttributeName>
  <Description>Define link between the device and an existing web page (or pdf file, or other file
which can be opened with IE). The link can be accessed from the device right-click menu item "Info"
as well as from the "Info" button on the object faceplate.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>WWW Link</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADeviceFunctionals</AttributeFamilyName>
  <UserExpandable>>false</UserExpandable>
  <Attribute>
    <AttributeName>MaskEvent</AttributeName>
    <Description>If TRUE: the events of the device will be masked in SCADA and not displayed or
archived in the Event List.
An 'event' is defined as a bit change in StsReg01 or StsReg02</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Mask Event</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>AccessControlDomain</AttributeName>
    <Description>Define Access Control on the device to an existing SCADA Domain
Forbidden characters: *[: "'@#%$%^&*?!;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Access Control Domain</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>This domain is used to grant access to this specific device. The domain specified for
this object will allow access to the object only to registered users on that domain</Usage>

```

```

    <DependentAttributes/>
    <Constraints>Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]/</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>SCADADeviceClassificationTags</AttributeName>
  <Description>It defines the Domain, Nature and DeviceLinks for the SCADA
visualization</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <Attribute>
    <AttributeName>Domain</AttributeName>
    <Description>Domain of the device. If empty, the domain will be the name of the application
Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]/</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>Domain is used to filter the devices in the alarm list or in the device tree
overview</Usage>
      <DependentAttributes/>
      <Constraints>Forbidden characters: *[:
""@`#$%^&*?!;=+~(){}&lt;&gt;|]/</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>Nature</AttributeName>
    <Description>Nature of the device. If empty, the nature will be the type of the device
Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]/</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>Nature is used to filter the devices in the alarm list or in the device tree
overview</Usage>
      <DependentAttributes/>
      <Constraints>Forbidden characters: *[:
""@`#$%^&*?!;=+~(){}&lt;&gt;|]/</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>DeviceLinks</AttributeName>
    <Description>Define links to other devices (separate device names with commas).
Note: it is not necessary to link to master, parents or children because these links are automatically
created.
Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]/</Description>

```

```

<PrimitiveType>STRING</PrimitiveType>
<isSpecificationAttribute>
  <NameRepresentation>Device Links</NameRepresentation>
  <isValueRequired>>false</isValueRequired>
  <Usage>Linked devices will be shown in the device right-click menu</Usage>
  <DependentAttributes>Expert Name or Name.

```

The name of the device(s) specified here *must* correspond to "Expert Name" if it is defined. If "Expert Name" is not defined, the name of the device(s) specified here corresponds to "Name".</DependentAttributes>

```

  <Constraints>Forbidden characters: *[:
"@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
</isSpecificationAttribute>
</Attribute>

```

```

</Attribute>
</AttributeFamily>
<AttributeFamily>

```

```

  <AttributeFamilyName>SCADADataArchiving</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
<Attribute>

```

```

  <AttributeName>BooleanArch</AttributeName>
  <Description>Name of the Boolean archive
Forbidden characters: *[: "@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>

```

```

  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Boolean Archive</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>The boolean values of the device will be archived in the specified PVSS database.
    The archive must be created in PVSS before importing the object.</Usage>
    <DependentAttributes/>

```

```

    <Constraints>Forbidden characters: *[:
"@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
  </isSpecificationAttribute>
</Attribute>

```

```

<Attribute>
  <AttributeName>AnalogArch</AttributeName>
  <Description>Name of the analog archive
Forbidden characters: *[: "@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>

```

```

  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Analog Archive</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>The analog values of the device will be archived in the specified PVSS database. The
    archive must be created in PVSS before importing the object.</Usage>

```

```

    <DependentAttributes/>
    <Constraints>Forbidden characters: *[:
"@#$$%^&*?!.,;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>EventArch</AttributeName>
    <Description>Name of the event archive
Forbidden characters: *[: "@#$$%^&*?!.,;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Event Archive</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>The events generated by the device will be archived in the specified PVSS database.
The archive must be created in PVSS before importing the object.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[:
"@#$$%^&*?!.,;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>MVArchiving</AttributeName>
    <Description>Optional : Specify specific archiving if different than connected AI for the
Measured-Value and for the Setpoint.</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>MV and SP Archiving</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage/>
    <DependentAttributes/>
    <Constraints/>
</isSpecificationAttribute>
<Attribute>
    <AttributeName>ArchiveMode</AttributeName>
    <Description>Archive mode of MV and SP. Archive if:
Old/New Comparison: value changes
Time: value changes after the specified Time Filter
Deadband: value &lt; or &gt; specified deadband
AND: at least one of the conditions is fulfilled
OR: both conditions are fulfilled</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Archive Mode</NameRepresentation>

```

```

    <isValueRequired>>false</isValueRequired>
    <PermittedValue>No</PermittedValue>
    <PermittedValue>Deadband</PermittedValue>
    <PermittedValue>Time</PermittedValue>
    <PermittedValue>Deadband AND Time</PermittedValue>
    <PermittedValue>Deadband OR Time</PermittedValue>
    <PermittedValue>Old/New Comparison</PermittedValue>
    <PermittedValue>Old/New Comparison AND Time</PermittedValue>
    <PermittedValue>Old/New Comparison OR Time</PermittedValue>
    <Usage>This archive mode is used to archive data in the PVSS database</Usage>
    <DependentAttributes>If "Time" is selected, "MV and SP Archiving.Time Filter (s)" must be
filled
If "Deadband" is selected: "MV and SP Archiving.Deadband Type" and "MV and SP
Archiving.Deadband Value" must be filled.</DependentAttributes>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>TimeFilter</AttributeName>
  <Description>Time filter for the SCADA archiving of Controller MV and SP.
Must be positive.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Time Filter (s)</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes>Valid if "Time" has been selected as "MV and SP Archiving.Archive
Mode"</DependentAttributes>
    <Constraints>Must be positive</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DeadbandType</AttributeName>
  <Description>Deadband type (Relative or Absolute) of the deadband for the SCADA
archiving of Controller MV and SP</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Deadband Type</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <PermittedValue>Relative</PermittedValue>
    <PermittedValue>Absolute</PermittedValue>
    <Usage/>

```

```

    <DependentAttributes>Valid if "Deadband" has been selected as "MV and SP
Archiving.Archive Mode"</DependentAttributes>
    <Constraints/>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>DeadbandValue</AttributeName>
    <Description>Deadband value for the SCADA archiving of Controller MV and SP.
Must be positive and larger than the deadband specified for the driver data smoothing (Driver
deadband).</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Deadband Value</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage/>
        <DependentAttributes>Valid if "Deadband" has been selected as "MV and SP
Archiving.Archive Mode"</DependentAttributes>
        <Constraints>Must be positive and larger than the deadband specified for the driver data
smoothing (Driver deadband)</Constraints>
    </isSpecificationAttribute>
</Attribute>
</Attribute>
<Attribute>
    <AttributeName>OutArchiving</AttributeName>
    <Description>Optional : Specify specific archiving if different than connected AO for PID
Outputs.</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Output Archiving</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage/>
        <DependentAttributes/>
        <Constraints/>
    </isSpecificationAttribute>
<Attribute>
    <AttributeName>ArchiveMode</AttributeName>
    <Description>Archive mode of Output. Archive if:
Old/New Comparison: value changes
Time: value changes after the specified Time Filter
Deadband: value &lt; or &gt; specified deadband
AND: at least one of the conditions is fulfilled
OR: both conditions are fulfilled</Description>
    <PrimitiveType>STRING</PrimitiveType>

```

```

<isSpecificationAttribute>
  <NameRepresentation>Archive Mode</NameRepresentation>
  <isValueRequired>>false</isValueRequired>
  <PermittedValue>No</PermittedValue>
  <PermittedValue>Deadband</PermittedValue>
  <PermittedValue>Time</PermittedValue>
  <PermittedValue>Deadband AND Time</PermittedValue>
  <PermittedValue>Deadband OR Time</PermittedValue>
  <PermittedValue>Old/New Comparison</PermittedValue>
  <PermittedValue>Old/New Comparison AND Time</PermittedValue>
  <PermittedValue>Old/New Comparison OR Time</PermittedValue>
  <Usage>This archive mode is used to archive data in the PVSS database</Usage>
  <DependentAttributes>If "Time" is selected, "Time Filter (s)" must be filled
  If "Deadband" is selected: "Deadband Type" and "Deadband Value" must be
  filled.</DependentAttributes>
  <Constraints/>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>TimeFilter</AttributeName>
  <Description>Time filter for the SCADA archiving of Controller Output.
  Must be positive.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Time Filter (s)</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes>Valid if "Time" has been selected as "Output Archiving.Archive
  Mode"</DependentAttributes>
    <Constraints>Must be positive</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DeadbandType</AttributeName>
  <Description>Deadband type (Relative or Absolute) of the deadband for the SCADA
  archiving of Controller Output</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Deadband Type</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <PermittedValue>Relative</PermittedValue>
    <PermittedValue>Absolute</PermittedValue>
    <Usage/>

```



```

        <DependentAttributes>Valid if "Deadband" has been selected as "Output
Archiving.Archive Mode"</DependentAttributes>
        <Constraints/>
        </isSpecificationAttribute>
    </Attribute>
    <Attribute>
        <AttributeName>DeadbandValue</AttributeName>
        <Description>Deadband value for the SCADA archiving of Controller Output.
Must be positive and larger than the deadband specified for the driver data smoothing (Driver
deadband).</Description>
        <PrimitiveType>FLOAT32</PrimitiveType>
        <isSpecificationAttribute>
            <NameRepresentation>Deadband Value</NameRepresentation>
            <isValueRequired>>false</isValueRequired>
            <Usage/>
            <DependentAttributes>Valid if "Deadband" has been selected as "Output
Archiving.Archive Mode"</DependentAttributes>
            <Constraints>Must be positive and larger than the deadband specified for the driver data
smoothing (Driver deadband)</Constraints>
            </isSpecificationAttribute>
        </Attribute>
    </Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>SCADADriverDataSmoothing</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>MVDeadband</AttributeName>
        <Description>Deadband parameters for Driver Smoothing on MV and SP</Description>
        <PrimitiveType>STRUCT</PrimitiveType>
        <isSpecificationAttribute>
            <NameRepresentation>MV and SP Smoothing</NameRepresentation>
            <isValueRequired>>false</isValueRequired>
            <Usage/>
            <DependentAttributes/>
            <Constraints/>
        </isSpecificationAttribute>
    <Attribute>
        <AttributeName>DeadbandType</AttributeName>
        <Description>Deadband type (None, Relative, Absolute or Old/New) for the SCADA driver
data smoothing of Controller MV and SP</Description>
        <PrimitiveType>STRING</PrimitiveType>
        <isSpecificationAttribute>

```

```

    <NameRepresentation>Deadband Type</NameRepresentation>
    <isValueRequired>>true</isValueRequired>
    <PermittedValue>No</PermittedValue>
    <PermittedValue>Relative</PermittedValue>
    <PermittedValue>Absolute</PermittedValue>
    <PermittedValue>Old/New</PermittedValue>
    <Usage>Used for the online display in SCADA</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DeadbandValue</AttributeName>
  <Description>Deadband value for the SCADA driver data smoothing (Driver deadband) of
Controller MV and SP.
Must be positive and smaller than the deadband specified in "MV and SP Archiving.Deadband
Value"</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Deadband Value</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Used for the online display in SCADA</Usage>
    <DependentAttributes/>
    <Constraints>Must be positive and smaller than the deadband specified in "MV and SP
Archiving.Deadband Value"</Constraints>
  </isSpecificationAttribute>
</Attribute>
</Attribute>
<Attribute>
  <AttributeName>OutDeadband</AttributeName>
  <Description>Deadband parameters for Driver Smoothing on Output</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Output Smoothing</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
<Attribute>
  <AttributeName>DeadbandType</AttributeName>
  <Description>Deadband type (None, Relative, Absolute or Old/New) for the SCADA driver
data smoothing (Driver deadband) of Controller Output</Description>

```

```

<PrimitiveType>STRING</PrimitiveType>
<isSpecificationAttribute>
  <NameRepresentation>Deadband Type</NameRepresentation>
  <isValueRequired>>true</isValueRequired>
  <PermittedValue>No</PermittedValue>
  <PermittedValue>Relative</PermittedValue>
  <PermittedValue>Absolute</PermittedValue>
  <PermittedValue>Old/New</PermittedValue>
  <Usage>Used for the online display in SCADA</Usage>
  <DependentAttributes/>
  <Constraints/>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DeadbandValue</AttributeName>
  <Description>Deadband value for the SCADA driver data smoothing (Driver deadband) of
Controller Output.
Must be positive and smaller than the deadband specified in "Output Archiving.Deadband
Value"</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Deadband Value</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Used for the online display in SCADA</Usage>
    <DependentAttributes/>
    <Constraints>Must be positive and smaller than the deadband specified in "Output
Archiving.Deadband Value"</Constraints>
  </isSpecificationAttribute>
</Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>LogicDeviceDefinitions</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
<Attribute>
  <AttributeName>MasterDevice</AttributeName>
  <Description>Master of the device (relative to the hierarchy of dependent
objects).</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Master</NameRepresentation>
    <isValueRequired>>false</isValueRequired>

```

```

    <Usage>The master will give automatic requests to the device. The master object will
appear in the list of "Device Links" in the device right-click menu.</Usage>
    <DependentAttributes/>
    <Constraints>Must be a single PCO for field objects, controller, or PCO.
Must be PCO or field objects for alarms (several masters are allowed in the case of multiple alarms,
separated by commas or spaces).</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>ExternalMaster</AttributeName>
    <Description>Master of the device if located in another PLC for WinCCOA.</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>External Master</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>The external master will give automatic requests to the device from another PLC. To
be specified only if master is empty.</Usage>
        <DependentAttributes/>
        <Constraints>Must be a single PCO for field objects, controller, or PCO. </Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>CustomLogicParameters</AttributeName>
    <Description>User defined meaning, used by the logic generators.</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
    <Attribute>
        <AttributeName>Parameter1</AttributeName>
        <Description>Parameter to be used in the logic templates
Forbidden characters: "$' </Description>
        <PrimitiveType>STRING</PrimitiveType>
        <isSpecificationAttribute>
            <isValueRequired>>false</isValueRequired>
            <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
            <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
            <Constraints>Forbidden characters: "$' </Constraints>
        </isSpecificationAttribute>
    </Attribute>
</Attribute>
    <AttributeName>Parameter2</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: "$' </Description>

```

```

<PrimitiveType>STRING</PrimitiveType>
<isSpecificationAttribute>
  <isValueRequired>>false</isValueRequired>
  <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
  <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
  <Constraints>Forbidden characters: '$' </Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Parameter3</AttributeName>
  <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Parameter4</AttributeName>
  <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Parameter5</AttributeName>
  <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
  <PrimitiveType>STRING</PrimitiveType>

```

```

    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
      <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
      <Constraints>Forbidden characters: '$' </Constraints>
    </isSpecificationAttribute>
  </Attribute>
<Attribute>
  <AttributeName>Parameter6</AttributeName>
  <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Parameter7</AttributeName>
  <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Parameter8</AttributeName>
  <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>

```

```

    <isValueRequired>>false</isValueRequired>
    <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter9</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
        <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
        <Constraints>Forbidden characters: '$' </Constraints>
        </isSpecificationAttribute>
    </Attribute>
<Attribute>
    <AttributeName>Parameter10</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
        <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
        <Constraints>Forbidden characters: '$' </Constraints>
        </isSpecificationAttribute>
    </Attribute>
</Attribute>
<Attribute>
    <AttributeName>CustomLogicSections</AttributeName>
    <Description>If specified, these sections will override the default logic sections (UNICOS
provided).</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
    <isSpecificationAttribute>

```

```

    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
</isSpecificationAttribute>
<Attribute>
    <AttributeName>DL</AttributeName>
    <Description>Define user template for the Dependent Logic</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>DL User Template</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>Specify path of the python script located under the "UserSpecific"
directory</Usage>
        <DependentAttributes>CustomLogicParameters.ParameterX (where X=1-
10)</DependentAttributes>
        <Constraints/>
    </isSpecificationAttribute>
</Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>TargetDeviceInformation</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>Target</AttributeName>
        <Description>Identifies a target type (e.g. SIEMENS, SCHNEIDER...)</Description>
        <PrimitiveType>STRUCT</PrimitiveType>
        <DefaultValue>Siemens</DefaultValue>
    <Attribute>
        <AttributeName>RepresentationName</AttributeName>
        <Description>It's the name used ...</Description>
        <PrimitiveType>STRING</PrimitiveType>
        <DefaultValue>PID</DefaultValue>
    </Attribute>
    <Attribute>
        <AttributeName>Optimized</AttributeName>
        <Description>Is this object an optimized Object?</Description>
        <PrimitiveType>BOOLEAN</PrimitiveType>
        <DefaultValue>>false</DefaultValue>
    </Attribute>
    <Attribute>
        <AttributeName>LimitSize</AttributeName>

```



```
<Description>Maximun number of instances allowed</Description>
<PrimitiveType>INT32</PrimitiveType>
<DefaultValue>250</DefaultValue>
</Attribute>
<Attribute>
  <AttributeName>FastInterlock</AttributeName>
  <Description>Is this object a fast interlock object?</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <DefaultValue>>false</DefaultValue>
</Attribute>
</Attribute>
</AttributeFamily>
</UNICOSMetaModel>
```

2.12. CpcModel.xml

```
<?xml version='1.0' encoding='UTF-8'?>
<UNICOSMetaModel xmlns:xsi='http://www.w3.org/2001/XMLSchema-instance'
xsi:noNamespaceSchemaLocation='UNICOSMetaModel.xsd'>
  <Information>
    <Package>${devicePackageName}</Package>
    <Name>UNICOS model</Name>
    <ObjectTypeFamily>IOObjectFamily</ObjectTypeFamily>
    <Description>The UNICOS Model is describing all the characteristics that are common to UNICOS
device types at a logical level, i.e. independly of the target platform or the field of application. All
UNICOS device types are derived from the UNICOS model, which is maintained by the UNICOS
Manager.</Description>
    <Version>1.5</Version>
  </Information>
  <AttributeFamily>
    <AttributeFamilyName>DeviceIdentification</AttributeFamilyName>
    <UserExpandable>>false</UserExpandable>
    <Attribute>
      <AttributeName>Name</AttributeName>
      <Description>Name of the device. It must be unique.
```

Max length:

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: [:"'@`#\$%^&*?!;=+~(){}<>|]-., double underscore, and page break</Description>

```
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>true</isValueRequired>
      <Usage>Name displayed at the SCADA level if "Expert Name" is not specified.
```

This name will appear in the datapoints created in the SCADA layer.</Usage>

```
    <DependentAttributes>Device Links.
```

The name of the device(s) specified in Device Links *must* correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to "Name".</DependentAttributes>

```
    <Constraints>Max length:
```

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: [:"'@`#\$%^&*?!;=+~(){}<>|]-., double underscore, and page break
Name must be unique.</Constraints>

```
    </isSpecificationAttribute>
  </Attribute>
</Attribute>
```

```

    <AttributeName>ExpertName</AttributeName>
    <Description>Name of the device displayed at the SCADA level. It must be unique.
Forbidden characters: *[: ""@ #\$%^&*?!.,;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Expert Name</NameRepresentation>
        <TypeRepresentation>STRING</TypeRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>It does not affect to the datapoints names in the SCADA layer.</Usage>
        <DependentAttributes>Device Links.
The name of the device(s) specified in Device Links *must* correspond to "Expert Name" if it is
defined.
If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to
"Name".</DependentAttributes>
        <Constraints>In principle there is no limit to the number of characters used,
however a long name may result in display issues at the SCADA level.
Forbidden characters: *[: ""@ #\$%^&*?!.,;=+~(){}&lt;&gt;|]
Expert Name must be unique.</Constraints>
    </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>DeviceDocumentation</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>DeviceDescription</AttributeName>
        <Description>Description of the device. </Description>
        <PrimitiveType>STRING</PrimitiveType>
        <isSpecificationAttribute>
            <NameRepresentation>Description</NameRepresentation>
            <isValueRequired>>false</isValueRequired>
            <Usage>Used in the SCADA layer in the device faceplate</Usage>
            <DependentAttributes/>
            <Constraints>In principle there is no limit to the number of characters used,
however a long description may result in display issues at the SCADA level.
Forbidden characters: ;</Constraints>
        </isSpecificationAttribute>
    </Attribute>
    <Attribute>
        <AttributeName>ElectricalDiagram</AttributeName>
        <Description>Reference to the electrical diagram in which the device is
represented.</Description>
        <PrimitiveType>STRING</PrimitiveType>

```

```

    <isSpecificationAttribute>
      <NameRepresentation>Electrical Diagram</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>Used in the SCADA layer: added to the device description in the device
faceplate.</Usage>
      <DependentAttributes/>
      <Constraints>In principle there is no limit to the number of characters used,
however a long name may result in display issues at the SCADA level.
Forbidden characters: *[: ""@ # $ % ^ & amp; * ? ! , ; = + ~ ( ) { } & lt; & gt; | ]</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>Remarks</AttributeName>
    <Description>Field used to add relevant information about the device. </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>This information is not used in the generation process, it remains only at the
specification level for documentation purposes.</Usage>
      <DependentAttributes/>
      <Constraints>Forbidden characters: ;</Constraints>
    </isSpecificationAttribute>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceParameters</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>ParReg</AttributeName>
    <Meaning>Parameter Register</Meaning>
    <Description>Parametrisation register: This register contains all the boolean parameters of
the object</Description>
    <PrimitiveType>SHORTINT16</PrimitiveType>
    <Attribute>
      <AttributeName>PFsPosOn</AttributeName>
      <Meaning>Parameter Fail-Safe position ON/Open</Meaning>
      <Description>Fail Safe position of the actuator</Description>
      <PrimitiveType>BIT1</PrimitiveType>
      <BitPosition>0</BitPosition>
      <isSpecificationAttribute>
        <NameRepresentation>Fail-Safe</NameRepresentation>
        <TypeRepresentation>STRING</TypeRepresentation>
        <isValueRequired>>true</isValueRequired>

```

```

    <Usage>This is the position of the device in case of interlock.</Usage>
    <DependentAttributes/>
    <Constraints/>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>PHFPos</AttributeName>
    <Meaning>Parameter Hardware Feedback Position</Meaning>
    <Description>Activates Hardware Feedback Analog</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>3</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>PHFOn</AttributeName>
    <Meaning>Parameter Hardware Feedback On</Meaning>
    <Description>Enables the activation of the Feedback ON of the object via a hardware
sensor</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>1</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>PHFOff</AttributeName>
    <Meaning>Parameter Hardware Feedback Off</Meaning>
    <Description>Enables the activation of the Feedback OFF of the object via a hardware
sensor.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>2</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>IhMHH</AttributeName>
    <Meaning>Parameter Inhibit Manual High High threshold</Meaning>
    <Description>If "true", the SCADA cannot change the Threshold because it is set by the
control logic</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <BitPosition>0</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>IhMH</AttributeName>
    <Meaning>Parameter Inhibit Manual High threshold</Meaning>
    <Description>If "true", the SCADA cannot change the Threshold because it is set by the
control logic</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <BitPosition>1</BitPosition>

```

```

</Attribute>
<Attribute>
  <AttributeName>IhML</AttributeName>
  <Meaning>Parameter Inhibit Manual Low threshold</Meaning>
  <Description>If "true", the SCADA cannot change the Threshold because it is set by the
control logic</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <BitPosition>2</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>IhMLL</AttributeName>
  <Meaning>Parameter Inhibit Manual Low Low threshold</Meaning>
  <Description>If "true", the SCADA cannot change the Threshold because it is set by the
control logic</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <BitPosition>3</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>PHLD</AttributeName>
  <Meaning>Parameter Hardware Local Drive</Meaning>
  <Description>Enables the local drive feedback. When this input is TRUE the feedback is
received via the HFLD.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>4</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>PAuAckAl</AttributeName>
  <Meaning>Parameter Auto Acknowledge Alarm</Meaning>
  <Description>If TRUE, the alarm Acknowledge will be done automatically, it's not needed
any action from the operator.
If FALSE, the alarm Acknowledge must be done by the operator.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>4</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>PFsNOut</AttributeName>
  <Meaning>Parameter Fail-safe Normal Output</Meaning>
  <Description>Ouput is not inverted when fail-safe is true</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>6</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>PPWMMMode</AttributeName>

```

```

<Meaning>Parameter PWM Mode</Meaning>
<Description>Mode used to generate the Pulse Wave Modulation (PWM). </Description>
<PrimitiveType>BIT1</PrimitiveType>
<BitPosition>6</BitPosition>
<isSpecificationAttribute>
  <NameRepresentation>PWM Mode</NameRepresentation>
  <TypeRepresentation>STRING</TypeRepresentation>
  <isValueRequired>>true</isValueRequired>
  <PermittedValue>Classic</PermittedValue>
  <PermittedValue>Bipolar</PermittedValue>
  <Usage>Classic mode uses a single DO.
Bipolar mode uses 2 DO (1 DO to go up and 1 DO to go down).</Usage>
  <DependentAttributes>If Bipolar mode is selected, the field "Output Off" must be
specified</DependentAttributes>
  <Constraints/>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>POutMain</AttributeName>
  <Meaning>Parameter Outputs Maintained</Meaning>
  <Description>Maintain the output when Range Max is reached.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>7</BitPosition>
  <isSpecificationAttribute>
    <NameRepresentation>Outputs Maintained</NameRepresentation>
    <TypeRepresentation>BOOLEAN</TypeRepresentation>
    <isValueRequired>>true</isValueRequired>
    <Usage>TRUE: The process output will remain TRUE when the Range Max is reached.
FALSE: The process output will go FALSE when the Range Max is reached.</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PPulse</AttributeName>
  <Meaning>Parameter Pulse</Meaning>
  <Description>Enables Pulsed output. When this parameter is TRUE the output of the Object
is driven by a pulse.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>3</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>PHLDCmd</AttributeName>

```

```

    <Meaning>Parameter Hardware Local Drive Command</Meaning>
    <Description>Enables the local drive command. When this input is TRUE the command is
received via the HFLD.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>5</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>PAnim</AttributeName>
    <Meaning>Parameter Animation</Meaning>
    <Description>Full/Empty Widget Animation type:
If Full/Empty, the object is always animated full/empty if active Feedback Off/On is not set.
Otherwise, if Full/Half/Empty, the object is only animated half full.
For more details, see OnOff object description</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>6</BitPosition>
    <isSpecificationAttribute>
        <NameRepresentation>Full/Empty Animation</NameRepresentation>
        <TypeRepresentation>STRING</TypeRepresentation>
        <isValueRequired>>true</isValueRequired>
        <PermittedValue>Full/Empty</PermittedValue>
        <PermittedValue>Full/Half/Empty</PermittedValue>
        <Usage>To always represent the widget as Full or Empty when only one Hardware
Feedback is declared.</Usage>
        <DependentAttributes/>
        <Constraints>Full/Empty Animation is applied, when only one Hardware Feedback is
declared (PHFOn or PHFOff).</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>POutOff</AttributeName>
    <Meaning>Parameter Output Off</Meaning>
    <Description>Inverted output Parameter. When true the Inverted output of the object is
enabled</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>7</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>PEnRstart</AttributeName>
    <Meaning>Parameter Enable Restart</Meaning>
    <Description>Strategy to adopt to restart the device after a Full Stop
Interlock.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>8</BitPosition>

```



```

<isSpecificationAttribute>
  <NameRepresentation>Manual Restart after Full Stop</NameRepresentation>
  <TypeRepresentation>STRING</TypeRepresentation>
  <isValueRequired>>true</isValueRequired>
  <PermittedValue>FALSE</PermittedValue>
  <PermittedValue>TRUE only if Full Stop disappeared</PermittedValue>
  <PermittedValue>TRUE even if Full Stop still active</PermittedValue>
  <Usage>FALSE: Device restarts after acknowledge.
  TRUE only if Full Stop disappeared: Ack+Allow Restart needed (possible only if FS disappeared)
  TRUE even if Full Stop still active: Ack+Allow Restart needed (possible at any moment)</Usage>
  <DependentAttributes/>
  <Constraints>All devices of the application should have the same "Manual Restart after
  Full Stop"</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PRstartFS</AttributeName>
  <Meaning>Parameter Restart after Full Stop</Meaning>
  <Description>Parameter Restart after Full Stop</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>9</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>PFeedbackOff</AttributeName>
  <Meaning>The MFC does not provide order feedback</Meaning>
  <Description>The hardware device does not provide feedback signals.
  If TRUE, all feedback signals from the hardware will be simulated.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>1</BitPosition>
  <isSpecificationAttribute>
    <NameRepresentation>Feedback Off</NameRepresentation>
    <TypeRepresentation>BOOLEAN</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <PermittedValue>TRUE</PermittedValue>
    <PermittedValue>FALSE</PermittedValue>
    <Usage/>
    <DependentAttributes/>
    <Constraints>TRUE/FALSE</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PIhMVoT</AttributeName>

```

*<Description>The operator cannot act on the control of the Flow totalizer.
If TRUE, the flow totalizer is only managed by the process.</Description>*

```

<PrimitiveType>BIT1</PrimitiveType>
<BitPosition>2</BitPosition>
<isSpecificationAttribute>
  <NameRepresentation>Inhibit Totalizer cmd</NameRepresentation>
  <TypeRepresentation>BOOLEAN</TypeRepresentation>
  <isValueRequired>>false</isValueRequired>
  <PermittedValue>TRUE</PermittedValue>
  <PermittedValue>FALSE</PermittedValue>
  <Usage/>
  <DependentAttributes/>
  <Constraints>TRUE/FALSE</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PPercent</AttributeName>
  <Meaning>Convert ratio to Unit/time</Meaning>
  <Description>Set this flag to TRUE if the hardware reads flow as a ratio (%) of max flow.  
If TRUE, all set point and flow values will be converted from % into physical units  
using the max flow defined in "CCn Max Flow (Unit/time)" attribute.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>6</BitPosition>
  <isSpecificationAttribute>
    <NameRepresentation>Convert ratio to Unit/time</NameRepresentation>
    <TypeRepresentation>BOOLEAN</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <PermittedValue>TRUE</PermittedValue>
    <PermittedValue>FALSE</PermittedValue>
    <Usage/>
    <DependentAttributes>CCn Max Flow (Unit/time)</DependentAttributes>
    <Constraints>TRUE/FALSE</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PNoiseF</AttributeName>
  <Meaning>Activate the Noise filter</Meaning>
  <Description>Remove noisy flow measurements for low flow set points.  
If TRUE noisy flow measurements (&lt; 0.1% of the Max flow) will be suppressed when the valve  
setpoint is Min or closed.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>7</BitPosition>

```

```

<isSpecificationAttribute>
  <NameRepresentation>Noise Filter</NameRepresentation>
  <TypeRepresentation>BOOLEAN</TypeRepresentation>
  <isValueRequired>>false</isValueRequired>
  <PermittedValue>TRUE</PermittedValue>
  <PermittedValue>FALSE</PermittedValue>
  <Usage/>
  <DependentAttributes>CCn Max Flow (Unit/time)</DependentAttributes>
  <Constraints>TRUE/FALSE</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PPosAIE</AttributeName>
  <Meaning>Parameter Position Alarm Enable</Meaning>
  <Description>If TRUE, set Position Alarm if a Local object has no hardware feedback from its
only active feedback signal</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>10</BitPosition>
  <isSpecificationAttribute>
    <NameRepresentation>Position Alarm</NameRepresentation>
    <TypeRepresentation>BOOLEAN</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <PermittedValue>TRUE</PermittedValue>
    <PermittedValue>FALSE</PermittedValue>
    <Usage>Position Alarm will display SCADA widget in red in this case and allow user to
quickly identify valves which are not in correct position</Usage>
    <DependentAttributes/>
    <Constraints>Position Alarm Animation is applied, when only one Hardware Feedback is
declared (PHFOn or PHFOff).</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PFsPosOn2</AttributeName>
  <Meaning>Parameter Fail-Safe Position for 2 DO</Meaning>
  <Description>Reset or activate the 2 DO when 2 DO are present after
interlock</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>10</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>PPulseCste</AttributeName>
  <Meaning>Parameter Pulse Constant</Meaning>
  <Description>Only relevant if object is pulsed (Pulse Duration (s) column is not blank):

```

- if blank/FALSE: output is pulsed until feedback is received

- if TRUE: output will always pulse for specified duration, regardless of the feedback</Description>

```

<PrimitiveType>BIT1</PrimitiveType>
<BitPosition>11</BitPosition>
<isSpecificationAttribute>
  <NameRepresentation>Constant Time Pulse</NameRepresentation>
  <TypeRepresentation>BOOLEAN</TypeRepresentation>
  <isValueRequired>>false</isValueRequired>
  <Usage/>
  <DependentAttributes>Pulse Duration (s)</DependentAttributes>
  <Constraints>Only taken into account if Pulse Duration (s) is not blank</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PHFInt</AttributeName>
  <Meaning>Parameter Hardware Feedback Internal</Meaning>
  <Description>Enables the activation of the Feedback ClockWise and CounterClockWise of
the object via a hardware sensor conected to the stepper module.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>1</BitPosition>
  <isSpecificationAttribute>
    <NameRepresentation>Switches Configuration</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>true</isValueRequired>
    <PermittedValue>2 End Switches + Ref. Switch</PermittedValue>
    <PermittedValue>2 End Switches with faked Ref. Switch</PermittedValue>
    <PermittedValue>2 Switches plugged into the 1STEP</PermittedValue>
    <PermittedValue>No End Switches.</PermittedValue>
    <Usage>This describes the switches configuration in the physical installation.</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PHFCW</AttributeName>
  <Meaning>Parameter Hardware Feedback ClockWise</Meaning>
  <Description>Enables the activation of the Feedback ClockWise of the object via a hardware
sensor</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>2</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>PHFCCW</AttributeName>

```

```

    <Meaning>Parameter Hardware Feedback CounterClockWise</Meaning>
    <Description>Enables the activation of the Feedback CounterClockWise of the object via a
hardware sensor</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>3</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>PHFRefS</AttributeName>
    <Meaning>Parameter Hardware Feedback Reference Switch</Meaning>
    <Description>Enables the activation of the Feedback of the Reference Switch of the object
via a hardware sensor</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>4</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>PHFPot</AttributeName>
    <Meaning>Parameter Hardware Feedback Potentiometer</Meaning>
    <Description>Enables the activation of the Feedback of the Potentiometer of the object via a
hardware sensor</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>5</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>PHFEnc</AttributeName>
    <Meaning>Parameter Hardware Feedback Encoder</Meaning>
    <Description>Enables the activation of the Feedback of the Encoder of the object via
hardware sensors</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>6</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>PHFAnFbSup</AttributeName>
    <Meaning>Parameter Hardware Analog Feedback as Support</Meaning>
    <Description>Enables the use of the Analog Feedback from the potentiometer as Support
for positioning, but still open loop.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>7</BitPosition>
    <isSpecificationAttribute>
        <NameRepresentation>Feedback</NameRepresentation>
        <TypeRepresentation>STRING</TypeRepresentation>
        <isValueRequired>>false</isValueRequired>
        <PermittedValue>Potentiometer</PermittedValue>
        <PermittedValue>Potentiometer (support)</PermittedValue>
    </isSpecificationAttribute>

```

```

    <PermittedValue>Encoder</PermittedValue>
    <Usage>Activate this option to use the Feedback from the potentiometer as support
instead of defining position.</Usage>
    <DependentAttributes/>
    <Constraints/>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>PNoMovRefS</AttributeName>
    <Meaning>Parameter No Move in Reference Search</Meaning>
    <Description>In systems with encoder Reference search can be done without
movement.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>10</BitPosition>
</Attribute>
</Attribute>
<Attribute>
    <AttributeName>PMinRan</AttributeName>
    <Meaning>Parameter Minimum Range</Meaning>
    <Description>Minimum engineering value of the device.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Range Min</NameRepresentation>
        <isValueRequired>>true</isValueRequired>
        <Usage>A linear conversion is performed between the raw range and engineering
range.</Usage>
        <DependentAttributes/>
        <Constraints>The value specified here must be consistent with the format defined in the
field "Format".</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>PMaxRan</AttributeName>
    <Meaning>Parameter Maximum Range</Meaning>
    <Description>Maximum engineering value of the device.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Range Max</NameRepresentation>
        <isValueRequired>>true</isValueRequired>
        <Usage>A linear conversion is performed between the raw range and engineering
range.</Usage>
        <DependentAttributes/>

```

<Constraints>The value specified here must be consistent with the format defined in the field "Format".</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>PMinRaw</AttributeName>

<Meaning>Parameter Minimum Raw</Meaning>

<Description>Minimum raw value of the device.</Description>

<PrimitiveType>SHORTINT16</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Raw Min</NameRepresentation>

<isValueRequired>>true</isValueRequired>

<Usage>A linear conversion is performed between the raw range and engineering range.</Usage>

<DependentAttributes/>

<Constraints/>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>PMaxRaw</AttributeName>

<Meaning>Parameter Maximum Raw</Meaning>

<Description>Minimum raw value of the device.</Description>

<PrimitiveType>SHORTINT16</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Raw Max</NameRepresentation>

<isValueRequired>>true</isValueRequired>

<Usage>A linear conversion is performed between the raw range and engineering range.</Usage>

<DependentAttributes/>

<Constraints/>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>PAIDt</AttributeName>

<Meaning>Parameter Alarm Time Delay in seconds</Meaning>

<Description>Time delay applied to the condition that sets an Alarm.

Can be a number (>= 0), an object (AS,APAR), or empty (set to 0 by default).

If = 0, then no delay.</Description>

<PrimitiveType>FLOAT32</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Alarm Delay (s)</NameRepresentation>

<TypeRepresentation>STRING</TypeRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>Active alarm of a duration lower than this delay are ignored.
 Filter on spikes in Alarm condition.</Usage>

<DependentAttributes/>

<Constraints>Can be a number (>= 0), an object (AS,APAR), or empty (set to 0 by default).
 If = 0, then no delay.</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>PWDt</AttributeName>

<Meaning>Position Warning Delay time</Meaning>

<Description>Delay applied to the Position Alarm when there is a discordance between OutputOrder and Feedback position.
 Must be positive.</Description>

<PrimitiveType>FLOAT32</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Warning Time Delay (s)</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage/>

<DependentAttributes/>

<Constraints>Must be positive</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>PWDb</AttributeName>

<Meaning>Position Warning Dead-band</Meaning>

<Description>Deadband value to compute the position warning of the device (Discordance).
 Must be positive.</Description>

<PrimitiveType>FLOAT32</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Warning Deadband Value (Unit)</NameRepresentation>

<TypeRepresentation>FLOAT32</TypeRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage/>

<DependentAttributes/>

<Constraints>Must be positive</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>PMInSpd</AttributeName>

<Meaning>Parameter Manual Increase Speed</Meaning>

<Description>Increase speed of the actuator when user requests a new value from SCADA.
 Must be positive.</Description>


```

<PrimitiveType>FLOAT32</PrimitiveType>
<isSpecificationAttribute>
  <NameRepresentation>Manual Increase Speed (Unit/s)</NameRepresentation>
  <isValueRequired>>false</isValueRequired>
  <Usage/>
  <DependentAttributes/>
  <Constraints>Must be positive</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PMDeSpd</AttributeName>
  <Meaning>Parameter Manual Decrease Speed</Meaning>
  <Description>Decrease speed of the actuator when user requests a new value from SCADA.
Must be positive.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Manual Decrease Speed (Unit/s)</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints>Must be positive</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PMStpInV</AttributeName>
  <Meaning>Parameter Manual Step Increase Value</Meaning>
  <Description>Step amplitude in Unit value when user requests an "increase value" from
SCADA.
Must be positive and &lt; (Range Max-Range Min).</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Manual Increase Step (Unit)</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints>Must be positive and &lt; (Range Max-Range Min)</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PMStpDeV</AttributeName>
  <Meaning>Parameter Manual Step Decrease</Meaning>
  <Description>Step amplitude in Unit value when user requests a "decrease value" from SCADA.

```

Must be positive and < (Range Max-Range Min)</i></Description>

<PrimitiveType>FLOAT32</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Manual Decrease Step (Unit)</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage/>

<DependentAttributes/>

<Constraints>Must be positive and < (Range Max-Range Min)</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>PPWM</AttributeName>

<Meaning>Parameter PWM</Meaning>

<Description>Parameter PWM</Description>

<PrimitiveType>FLOAT32</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>PWM Parameters</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage/>

<DependentAttributes/>

<Constraints/>

</isSpecificationAttribute>

<Attribute>

<AttributeName>PTPeriod</AttributeName>

<Meaning>Parameter Time Period</Meaning>

<Description>Time Period to generate the Pulse Wave Modulation (PWM).

The time period must be larger than the PLC cycle time and larger than the pulse minimum duration.</i></Description>

<PrimitiveType>TIME</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Time Period (s)</NameRepresentation>

<TypeRepresentation>FLOAT32</TypeRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage/>

<DependentAttributes>PWM Parameters.Minimum Duration (s)</DependentAttributes>

The time period must be larger than the PLC cycle time and larger than the pulse minimum duration.</i></Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>PInMax</AttributeName>

<Meaning>Parameter Maximum deviation</Meaning>

<Description>Maximum amplitude of the PWM output corresponding to a duty cycle of 100% (the 'DO On' remains at One).

Must be between Range Min and Range Max.</Description>

<PrimitiveType>FLOAT32</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Max Deviation</NameRepresentation>

<TypeRepresentation>FLOAT32</TypeRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage/>

<DependentAttributes/>

<Constraints>Must be between Range Min and Range Max</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>PTMin</AttributeName>

<Meaning>Parameter Time Minimum</Meaning>

<Description>Minimum pulse duration of the PWM.

Must be larger than the PLC cycle time.</Description>

<PrimitiveType>TIME</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Minimum Duration (s)</NameRepresentation>

<TypeRepresentation>FLOAT32</TypeRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage/>

<DependentAttributes/>

<Constraints>Must be larger than the PLC cycle time</Constraints>

</isSpecificationAttribute>

</Attribute>

</Attribute>

<Attribute>

<AttributeName>PDb</AttributeName>

<Meaning>Parameter Deadband</Meaning>

<Description>Deadband applied to the Engineering value at the PLC level.</Description>

<PrimitiveType>FLOAT32</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Deadband (%)</NameRepresentation>

<TypeRepresentation>FLOAT32</TypeRepresentation>

<isValueRequired>>true</isValueRequired>

<Usage>The value entered here must be consistent with the resolution of the PLC channel.

</Usage>

<DependentAttributes/>

<Constraints>Variations of the Engineering value below the % of the Engineering range will be discarded.</Constraints>

```

    </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>FofEn</AttributeName>
  <Description>First Order Filter applied to the Engineering value at the PLC level.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Filtering Time (s)</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>A first order filter is applied to the engineering value.</Usage>
    <DependentAttributes/>
    <Constraints>the filter will absorb the noise of the signal</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DefaultValue</AttributeName>
  <Meaning>Default value</Meaning>
  <Description>Default value for the parameter </Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Default Value</NameRepresentation>
    <TypeRepresentation>FLOAT32</TypeRepresentation>
    <isValueRequired>>true</isValueRequired>
    <Usage>This is the default parameter value assigned into the PLC variable and in the SCADA
datapoint element. </Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PControl</AttributeName>
  <Description>Contains controller parameters</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Controller Parameters</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>true</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>

```

```

    <AttributeName>PMinRan</AttributeName>
    <Meaning>Parameter Minimum Range</Meaning>
    <Description>Range Min - Engineering Value of the Measured Value</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <DefaultValue>0.0</DefaultValue>
</Attribute>
<Attribute>
    <AttributeName>PMaxRan</AttributeName>
    <Meaning>Parameter Maximum Range</Meaning>
    <Description>Range Max - Engineering Value of the Measured Value</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <DefaultValue>100.0</DefaultValue>
</Attribute>
<Attribute>
    <AttributeName>POutMinRan</AttributeName>
    <Meaning>Parameter Output Minimum Range</Meaning>
    <Description>Output Range Min if different from controlled devices. If empty, take range of
the first controlled device.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Output Range Min</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>Can be used if split range is performed with the controller</Usage>
        <DependentAttributes/>
        <Constraints/>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>POutMaxRan</AttributeName>
    <Meaning>Parameter Output Maximum Range</Meaning>
    <Description>Output Range Max if different from controlled devices. If empty, take range of
the first controlled device.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Output Range Max</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>Can be used if split range is performed with the controller</Usage>
        <DependentAttributes/>
        <Constraints/>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>MVfiltTime</AttributeName>

```

```

    <Meaning>Measured Value Filter Time</Meaning>
    <Description>Time constant of the 1st order filter applied to the Measured Value.
Must be larger than the PLC cycle time.</Description>
    <PrimitiveType>INT32</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>MV Filter Time (s)</NameRepresentation>
        <TypeRepresentation>INT32</TypeRepresentation>
        <isValueRequired>>true</isValueRequired>
        <Usage>The time filter is applied on the measured value to reduce noise</Usage>
        <DependentAttributes/>
        <Constraints>Must be larger than the PLC cycle time</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>PIDCycle</AttributeName>
    <Meaning>PID Cycle</Meaning>
    <Description>Cycle time to call the PID algorithm.
Must be larger than the PLC cycle time.</Description>
    <PrimitiveType>INT32</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>PID Cycle (s)</NameRepresentation>
        <TypeRepresentation>INT32</TypeRepresentation>
        <isValueRequired>>true</isValueRequired>
        <Usage/>
        <DependentAttributes/>
        <Constraints>Must be larger than the PLC cycle time</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>ScaMethod</AttributeName>
    <Meaning>Scaling Method</Meaning>
    <Description>Scaling method applied to the PID</Description>
    <PrimitiveType>SHORTINT16</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Scaling Method</NameRepresentation>
        <TypeRepresentation>STRING</TypeRepresentation>
        <isValueRequired>>true</isValueRequired>
        <PermittedValue>Percentage Scaling</PermittedValue>
        <PermittedValue>Full Scaling</PermittedValue>
        <PermittedValue>No Scaling</PermittedValue>
        <Usage>Input Scaling (1, default): the SP and the MV are scaled. Output 0-100%

```

Input/Output Scaling (2): Same as Input Scaling but Output can be scaled to engineering values (Output Range Min/Max)

No Scaling (3): use engineering values. Kc has physical meaning</Usage>

```
<DependentAttributes/>
<Constraints/>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>RA</AttributeName>
  <Meaning>Reverse Action</Meaning>
  <Description>Reverse Action on the controller</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>RA</NameRepresentation>
    <isValueRequired>true</isValueRequired>
    <Usage>If TRUE, the Kc parameter will be negative, i.e. if MV > SP, Output will
increase.
```

If FALSE (=default), Kc will be positive, i.e. if MV > SP, Output will decrease.</Usage>

```
<DependentAttributes/>
<Constraints/>
</isSpecificationAttribute>
</Attribute>
</Attribute>
<Attribute>
  <AttributeName>PPulseLe</AttributeName>
  <Meaning>Parameter Pulse Length</Meaning>
  <Description>Pulse duration (s).
```

- if != 0, OnOff output will be pulsed for X seconds.

- if blank or =0, output is not pulsed.

N.B. Pulse behaviour depends on "Constant Time Pulse" column.</Description>

```
<PrimitiveType>FLOAT32</PrimitiveType>
<isSpecificationAttribute>
  <NameRepresentation>Pulse Duration (s)</NameRepresentation>
  <isValueRequired>>false</isValueRequired>
  <Usage>Determines whether OnOff object is pulsed or not</Usage>
  <DependentAttributes>Constant Time Pulse</DependentAttributes>
  <Constraints/>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>POpMoTa</AttributeName>
  <Meaning>Parameter Option Mode Table </Meaning>
  <Description>Modes Option Allowance Table</Description>
```

```

<PrimitiveType>STRING</PrimitiveType>
<isSpecificationAttribute>
  <NameRepresentation>Option Mode Allowance Table</NameRepresentation>
  <TypeRepresentation>STRING</TypeRepresentation>
  <isValueRequired>>true</isValueRequired>
  <Usage/>
  <DependentAttributes/>
  <Constraints/>
</isSpecificationAttribute>
<Attribute>
  <AttributeName>AllowanceOptionMode1</AttributeName>
  <Meaning>Allowance Option Mode 1</Meaning>
  <Description>Allow the transition from one option mode to another when the PCO is
running.
String of 8 Booleans (0/1) to define if transition is allowed to other option modes.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Option Mode 1 Allowance</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>AllowanceOptionMode2</AttributeName>
  <Meaning>Allowance Option Mode 2</Meaning>
  <Description>Allow the transition from one option mode to another when the PCO is
running.
String of 8 Booleans (0/1) to define if transition is allowed to other option modes.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Option Mode 2 Allowance</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>AllowanceOptionMode3</AttributeName>
  <Meaning>Allowance Option Mode 3</Meaning>

```


<Description>Allow the transition from one option mode to another when the PCO is running.

String of 8 Booleans (0/1) to define if transition is allowed to other option modes.</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Option Mode 3 Allowance</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage/>

<DependentAttributes/>

<Constraints/>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>AllowanceOptionMode4</AttributeName>

<Meaning>Allowance Option Mode 4</Meaning>

<Description>Allow the transition from one option mode to another when the PCO is running.

String of 8 Booleans (0/1) to define if transition is allowed to other option modes.</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Option Mode 4 Allowance</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage/>

<DependentAttributes/>

<Constraints/>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>AllowanceOptionMode5</AttributeName>

<Meaning>Allowance Option Mode 5</Meaning>

<Description>Allow the transition from one option mode to another when the PCO is running.

String of 8 Booleans (0/1) to define if transition is allowed to other option modes.</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Option Mode 5 Allowance</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage/>

<DependentAttributes/>

<Constraints/>

</isSpecificationAttribute>

</Attribute>

<Attribute>

```

    <AttributeName>AllowanceOptionMode6</AttributeName>
    <Meaning>Allowance Option Mode 6</Meaning>
    <Description>Allow the transition from one option mode to another when the PCO is
running.
String of 8 Booleans (0/1) to define if transition is allowed to other option modes.</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Option Mode 6 Allowance</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage/>
        <DependentAttributes/>
        <Constraints/>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>AllowanceOptionMode7</AttributeName>
    <Meaning>Allowance Option Mode 7</Meaning>
    <Description>Allow the transition from one option mode to another when the PCO is
running.
String of 8 Booleans (0/1) to define if transition is allowed to other option modes.</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Option Mode 7 Allowance</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage/>
        <DependentAttributes/>
        <Constraints/>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>AllowanceOptionMode8</AttributeName>
    <Meaning>Allowance Option Mode 8</Meaning>
    <Description>Allow the transition from one option mode to another when the PCO is
running.
String of 8 Booleans (0/1) to define if transition is allowed to other option modes.</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Option Mode 8 Allowance</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage/>
        <DependentAttributes/>
        <Constraints/>
    </isSpecificationAttribute>

```

```

    </Attribute>
  </Attribute>
  <Attribute>
    <AttributeName>PFConversion</AttributeName>
    <Description>Scale factor to convert set point and flow values to different units, for display
and control purposes.
Use this factor when the device works in one physical unit (e.g. l/min) but the operator wants to view
in another unit (e.g. l/h) </Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Flow Conversion</NameRepresentation>
      <isValueRequired>>true</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints>Must be > 0</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>PToConversion</AttributeName>
    <Description>Scale factor to convert measured volume to different units.
Use this factor when the device works in one physical unit (e.g. l) but the operator wants to view in
another unit (e.g. m3).
Value 0 should not be applied.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Volume Conversion</NameRepresentation>
      <isValueRequired>>true</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints>Value 0 should not be applied.</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>MaxFICCO</AttributeName>
    <Description>Device maximum flow (when fully open) with the fluid corresponding to
calibration curve 0.
Unit/time defined by the operator.
Cannot be null/empty (there must be at least one fluid).</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>CCO Max Flow (Unit/time)</NameRepresentation>
      <isValueRequired>>true</isValueRequired>
      <Usage/>

```

```

    <DependentAttributes/>
    <Constraints>Cannot be null/empty (there must be at least one fluid)</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>MaxFICC1</AttributeName>
  <Description>Device maximum flow (when fully open) with the fluid corresponding to
calibration curve 0.
Unit/time defined by the operator.
Can be null/empty.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>CC1 Max Flow (Unit/time)</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints>Can be null/empty.</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>MaxFICC2</AttributeName>
  <Description>Device maximum flow (when fully open) with the fluid corresponding to
calibration curve 0.
Unit/time defined by the operator.
Can be null/empty.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>CC2 Max Flow (Unit/time)</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints>Can be null/empty.</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Deadband</AttributeName>
  <Description>Hardware deaband applied to input signals (% of Maxflow)</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Deadband (%)</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>

```

```

    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PRefPos</AttributeName>
  <Meaning>Reference Position</Meaning>
  <Description>Position of the Reference Switch in engineering units referenced to the Minimum
and Maximum Position.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Reference Position</NameRepresentation>
    <TypeRepresentation>FLOAT32</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Position of the device after finishing the reference search.</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PScal</AttributeName>
  <Meaning>Parameter Scale</Meaning>
  <Description>Number of Steps to move for one engineering unit.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Scale</NameRepresentation>
    <TypeRepresentation>FLOAT32</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>To calculate the number of steps that the motor will move, the distance is
multiplied by this number. </Usage>
    <DependentAttributes/>
    <Constraints>Must be positive</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>POffset</AttributeName>
  <Meaning>Parameter Offset</Meaning>
  <Description>Offset added in engineering units for the conversion between steps and
engineering units.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Offset</NameRepresentation>
    <TypeRepresentation>FLOAT32</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>

```

```

    <Usage/>
    <DependentAttributes/>
    <Constraints>Must be positive</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PMaxSpd</AttributeName>
  <Meaning>Parameter Maximum Speed</Meaning>
  <Description>Maximum speed allowed. It has to be between 1 and 254</Description>
  <PrimitiveType>SHORTINT16</PrimitiveType>
  <MaxValue>254</MaxValue>
  <isSpecificationAttribute>
    <NameRepresentation>Max Speed</NameRepresentation>
    <TypeRepresentation>SHORTINT16</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Specifies the maximum speed that the device can move safely.</Usage>
    <DependentAttributes/>
    <Constraints>Must be less than 254</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PDbT</AttributeName>
  <Meaning>Parameter Deadband Trigger</Meaning>
  <Description>Deadband value in engineering units to Trigger a new Positioning
job</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Deadband Trigger</NameRepresentation>
    <TypeRepresentation>FLOAT32</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Minimum difference between the Actual position and the Commanded position to
trigger a new positioning job.</Usage>
    <DependentAttributes/>
    <Constraints>Must be positive</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PEType</AttributeName>
  <Meaning>Encoder Type</Meaning>
  <Description>Type of encoder in use.</Description>
  <PrimitiveType>INT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Encoder Type</NameRepresentation>

```

```

    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <PermittedValue>Linac</PermittedValue>
    <PermittedValue>Moore</PermittedValue>
    <Usage>Here you can choose between different encoder types.</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceInterlocks</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>StartI</AttributeName>
    <Meaning>Start Interlock</Meaning>
    <Description>Start Interlock Request: When active, the ON request is blocked.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>TStopI</AttributeName>
    <Meaning>Temporary Stop Interlock</Meaning>
    <Description>Temporary Stop Interlock Request: When active, the object goes automatically
to its fail safe position and returns to the previous position after acknowledgement.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>FuStopI</AttributeName>
    <Meaning>Full Stop Interlock</Meaning>
    <Description>Full Stop Interlock Request: Devices goes to Fail-Safe position and remains until
acknowledged.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>AI</AttributeName>
    <Meaning>Alarm</Meaning>
    <Description>Alarm input. This is not an interlock; it has no functional impact on the object. It
will just display A on the widget with lower priority than other interlocks.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEConfigurationLogicRequest</AttributeFamilyName>

```

```

<UserExpandable>true</UserExpandable>
<Attribute>
  <AttributeName>FOff</AttributeName>
  <Meaning>Feedback Off</Meaning>
  <Description>Feedback Off, if it is TRUE the PCO is off (only for PCOs)</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>FOn</AttributeName>
  <Meaning>Feedback On</Meaning>
  <Description>Feedback On, if it is TRUE the PCO is on (only for PCOs)</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>HFOOn</AttributeName>
  <Meaning>Hardware Feedback On</Meaning>
  <Description>Feedback On, if it is TRUE the object is on</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>HFOff</AttributeName>
  <Meaning>Hardware Feedback Off</Meaning>
  <Description>Feedback Off, if it is TRUE the object is off</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>CStopFin</AttributeName>
  <Meaning>Controlled Stop finished</Meaning>
  <Description>Controlled stop finished. The controlled stop sequence is ended.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>IhAuMRW</AttributeName>
  <Meaning>Inhibit Auto Manual Request Warning</Meaning>
  <Description>Inhibit Auto Manual Request Warning. This input allows the PCO to know that
there are no parent master and avoid warning animation when set by the operator.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceAutoRequests</AttributeFamilyName>
  <UserExpandable>true</UserExpandable>

```



```

<Attribute>
  <AttributeName>AuOnR</AttributeName>
  <Meaning>Auto On Request</Meaning>
  <Description>Auto On Request (by logic): The control logic requests ON/Open on the
object.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuOffR</AttributeName>
  <Meaning>Auto Off Request</Meaning>
  <Description>Auto Off Request (by logic): The control logic requests Off/Close on the
object.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuPosR</AttributeName>
  <Meaning>Auto Position Request.</Meaning>
  <Description>Auto Position Request: The control logic requests a specific position on the
object.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuAuMoR</AttributeName>
  <Meaning>Auto Auto Mode Request</Meaning>
  <Description>Auto Auto Mode Request. The control logic requests Auto Mode on the
object</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AulhMMo</AttributeName>
  <Meaning>Auto Inhibit Manual Mode</Meaning>
  <Description>Auto Inhibit Manual Mode (by logic): The control logic blocks the manual mode
operation</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AulhFoMo</AttributeName>
  <Meaning>Auto Inhibit Forced Mode</Meaning>
  <Description>Auto Inhibit Forced Mode (by logic): The control logic blocks the forced mode
operation.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>

```

```

    <AttributeName>AuAlAck</AttributeName>
    <Meaning>Auto Alarm Acknowledgement</Meaning>
    <Description>Auto Alarm Acknowledgement: The control logic requests and Acknowledgment
of the Alarm Start and Stop Interlocks</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuEHH</AttributeName>
    <Meaning>Auto Enable High High level </Meaning>
    <Description>Auto Enable High High level </Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuEH</AttributeName>
    <Meaning>Auto Enable High level</Meaning>
    <Description>Auto Enable High level</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuEL</AttributeName>
    <Meaning>Auto Enable Low level</Meaning>
    <Description>Auto Enable Low level</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuELL</AttributeName>
    <Meaning>Auto Enable Low Low level</Meaning>
    <Description>Auto Enable Low Low level</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AulhMB</AttributeName>
    <Meaning>Auto Inhibit Manual Blocked </Meaning>
    <Description>Auto Inhibit Manual Blocked </Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>IhAuMRW</AttributeName>
    <Meaning>Inhibit Auto Manual Request Warning</Meaning>
    <Description>Inhibit Auto Manual Request Warning: The control logic requests to inhibit the
warning from discrepancy between manual request and auto request.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>

```

```

<Attribute>
  <AttributeName>AuInSpd</AttributeName>
  <Meaning>Auto Increase Speed</Meaning>
  <Description>Auto Increase Setpoint Speed: The control logic sets a variation speed for
Setpoint increase.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuDeSpd</AttributeName>
  <Meaning>Auto Decrease Speed</Meaning>
  <Description>Auto Decrease Setpoint Speed: The control logic sets a variation speed for
Setpoint decrease.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuActR</AttributeName>
  <Meaning>Auto Active Request</Meaning>
  <Description>Auto Active Request. Logic explicitly sets this input to distinguish between
multiple controllers</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuSPR</AttributeName>
  <Meaning>Auto Setpoint Request</Meaning>
  <Description>The control logic requests specific Setpoint value</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuESP</AttributeName>
  <Meaning>Auto Enable Setpoint</Meaning>
  <Description>The control logic enables of the auto set-Point</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuRegR</AttributeName>
  <Meaning>Auto Regulation Request</Meaning>
  <Description>The control logic requests the regulation working state</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuOutPR</AttributeName>
  <Meaning>Auto Output Position Request</Meaning>
  <Description>The control logic requests the output positioning working state</Description>

```

```

    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>AuTrR</AttributeName>
    <Meaning>Auto Tracking Request</Meaning>
    <Description>The control logic requests to apply the tracking working state.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>AulhSR</AttributeName>
    <Meaning>Auto Inhibit Save/Restore</Meaning>
    <Description>The operator cannot save nor restore the controller saved parameters (Default
values)
  </Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>AuPRest</AttributeName>
    <Meaning>Auto Parameter Restore</Meaning>
    <Description>Auto Parameter Restore</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>AuSPSpd</AttributeName>
    <Meaning>Auto Setpoint Speed</Meaning>
    <Description>The control logic Setpoint Speed</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Default Setpoint Speed</NameRepresentation>
      <TypeRepresentation>STRING</TypeRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints/>
    </isSpecificationAttribute>
  <Attribute>
    <AttributeName>InSpd</AttributeName>
    <Meaning>Increase Speed</Meaning>
    <Description>Increase speed of the set-point.
Must be positive.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>

```

```

    <NameRepresentation>Increase Speed</NameRepresentation>
    <TypeRepresentation>FLOAT32</TypeRepresentation>
    <isValueRequired>>true</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints>Must be positive</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DeSpd</AttributeName>
  <Meaning>Decrease Speed</Meaning>
  <Description>Decrease speed of the set-point.
Must be positive.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Decrease Speed</NameRepresentation>
    <TypeRepresentation>FLOAT32</TypeRepresentation>
    <isValueRequired>>true</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints>Must be positive</Constraints>
  </isSpecificationAttribute>
</Attribute>
</Attribute>
<Attribute>
  <AttributeName>AuPPID</AttributeName>
  <Meaning>Auto Parameters PID</Meaning>
  <Description>Parameters of PID Controller</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <Attribute>
    <AttributeName>Kc</AttributeName>
    <Meaning>Gain</Meaning>
    <Description>Gain. PID parameter value requested by the Control Logic</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <DefaultValue>1.0</DefaultValue>
  </Attribute>
  <Attribute>
    <AttributeName>Ti</AttributeName>
    <Meaning>Integration Time</Meaning>
    <Description>Integration Time. PID parameter value requested by the Control
Logic</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>

```

```

    <DefaultValue>100.0</DefaultValue>
  </Attribute>
  <Attribute>
    <AttributeName>Td</AttributeName>
    <Meaning>Time Derivative</Meaning>
    <Description>Time Derivative. PID parameter value requested by the Control
Logic</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <DefaultValue>0.0</DefaultValue>
  </Attribute>
  <Attribute>
    <AttributeName>Tds</AttributeName>
    <Meaning>Filter Time Derivative</Meaning>
    <Description>Filter Time Derivative. PID parameter value requested by the Control
Logic</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <DefaultValue>0.0</DefaultValue>
  </Attribute>
  <Attribute>
    <AttributeName>SPH</AttributeName>
    <Meaning>Setpoint High</Meaning>
    <Description>Setpoint High Limit value requested by control logic</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <DefaultValue>100.0</DefaultValue>
  </Attribute>
  <Attribute>
    <AttributeName>SPL</AttributeName>
    <Meaning>Setpoint Low</Meaning>
    <Description>Setpoint Low Limit value requested by control logic</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <DefaultValue>0.0</DefaultValue>
  </Attribute>
  <Attribute>
    <AttributeName>OutH</AttributeName>
    <Meaning>Output High</Meaning>
    <Description>Output High Limit value requested by control logic</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <DefaultValue>100.0</DefaultValue>
  </Attribute>
  <Attribute>
    <AttributeName>OutL</AttributeName>
    <Meaning>Output Low</Meaning>
    <Description>Output Low Limit value requested by control logic</Description>

```

```

    <PrimitiveType>FLOAT32</PrimitiveType>
    <DefaultValue>0.0</DefaultValue>
</Attribute>
<Attribute>
    <AttributeName>EKc</AttributeName>
    <Meaning>Enable Kc</Meaning>
    <Description>Parameter Kc given by control logic enabled.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <DefaultValue>>false</DefaultValue>
</Attribute>
<Attribute>
    <AttributeName>ETi</AttributeName>
    <Meaning>Enable Ti</Meaning>
    <Description>Parameter Kc given by control logic enabled.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <DefaultValue>>false</DefaultValue>
</Attribute>
<Attribute>
    <AttributeName>ETd</AttributeName>
    <Meaning>Enable Td</Meaning>
    <Description>Parameter Kc given by control logic enabled.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <DefaultValue>>false</DefaultValue>
</Attribute>
<Attribute>
    <AttributeName>ETds</AttributeName>
    <Meaning>Enable Tds</Meaning>
    <Description>Parameter Kc given by control logic enabled.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <DefaultValue>>false</DefaultValue>
</Attribute>
<Attribute>
    <AttributeName>ESPH</AttributeName>
    <Meaning>Enable Setpoint High</Meaning>
    <Description>Setpoint High Limit value requested by control logic enabled.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <DefaultValue>>false</DefaultValue>
</Attribute>
<Attribute>
    <AttributeName>ESPL</AttributeName>
    <Meaning>Enable Setpoint Low</Meaning>
    <Description>Setpoint Low Limit value requested by control logic enabled.</Description>

```

```

    <PrimitiveType>BOOLEAN</PrimitiveType>
    <DefaultValue>>false</DefaultValue>
</Attribute>
<Attribute>
    <AttributeName>EOutH</AttributeName>
    <Meaning>Enable Output High</Meaning>
    <Description>Output High Limit value requested by control logic enabled.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <DefaultValue>>false</DefaultValue>
</Attribute>
<Attribute>
    <AttributeName>EOutL</AttributeName>
    <Meaning>Enable Output Low</Meaning>
    <Description>Output Low Limit value requested by control logic enabled.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <DefaultValue>>false</DefaultValue>
</Attribute>
</Attribute>
<Attribute>
    <AttributeName>AuEAl</AttributeName>
    <Meaning>Auto Enable Alarm</Meaning>
    <Description>Process Enable the Alarm ( default value : true)</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <DefaultValue>1</DefaultValue>
</Attribute>
<Attribute>
    <AttributeName>AuDMoR</AttributeName>
    <Meaning>Auto Drive Mode Request</Meaning>
    <Description>The control logic requests a specific MFC Drive Mode.</Description>
    <PrimitiveType>SHORTINT16</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuToMoR</AttributeName>
    <Meaning>Auto Totalizer Mode Request</Meaning>
    <Description>The control logic requests a Totalizer command</Description>
    <PrimitiveType>SHORTINT16</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>ACCR</AttributeName>
    <Meaning>Auto Calibration Curve Request</Meaning>
    <Description>The control logic requests a specific MFC Calibration Curve Value.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>

```



```

</Attribute>
<Attribute>
  <AttributeName>AuToOf</AttributeName>
  <Meaning>Auto Totalizer Offset</Meaning>
  <Description>Totalizer offset add to the totalizer by the control logic.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuCStopR</AttributeName>
  <Meaning>Auto Controlled Stop Request</Meaning>
  <Description>Auto Controlled Stop Request</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuAuDepR</AttributeName>
  <Meaning>Auto Auto Dependant Request</Meaning>
  <Description>Auto Mode Request to all Dependant objects</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuOpMoR</AttributeName>
  <Meaning>Auto Option Mode Request</Meaning>
  <Description>Auto Option Mode Request</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuVoTMoR</AttributeName>
  <Meaning>Auto Volume Totalizer Mode Request</Meaning>
  <Description>The control logic requests a Volume Totalizer command.</Description>
  <PrimitiveType>SHORTINT16</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuCCR</AttributeName>
  <Meaning>Auto Calibration Curve Request</Meaning>
  <Description>The control logic requests a specific MFC Calibration Curve Value.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuVoTOf</AttributeName>
  <Meaning>Auto Volume Totalizer Offset</Meaning>
  <Description>Totalizer offset add to the Totalizer by the control logic.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>

```

```

</Attribute>
<Attribute>
  <AttributeName>AuSpdR</AttributeName>
  <Meaning>Auto Speed Request</Meaning>
  <Description>Auto Position Request: The control logic requests a specific speed for the
movements.</Description>
  <PrimitiveType>SHORTINT16</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuRefSR</AttributeName>
  <Meaning>Auto Reference Search Request</Meaning>
  <Description>Auto Reference Search. The control logic requests finding the reference
position.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuStopR</AttributeName>
  <Meaning>Auto Stop Request</Meaning>
  <Description>Auto Stop Request. The control logic requests stop the motor.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuNewConfigR</AttributeName>
  <Meaning>Auto New Config Request</Meaning>
  <Description>Auto New Config Request. The control logic requests a new configuration in the
range and offset of the motor.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuOffsetR</AttributeName>
  <Meaning>Auto Offset Request.</Meaning>
  <Description>Auto Offset Request: The control logic requests a new offset for the
object.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceManualRequests</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>ManReg01</AttributeName>
    <Meaning>Manual Register 1</Meaning>
    <Description>Manual Register 1</Description>

```

```

<isCommunicated>true</isCommunicated>
<PrimitiveType>SHORTINT16</PrimitiveType>
<Attribute>
  <AttributeName>MAuMoR</AttributeName>
  <Meaning>Manual Auto Mode Request</Meaning>
  <Description>Manual Auto Mode Request: The operator requests the Auto
Mode.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>0</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MMMoR</AttributeName>
  <Meaning>Manual Manual Mode Request</Meaning>
  <Description>Manual Manual Mode Request: The operator requests the Manual
Mode.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>1</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MFoMoR</AttributeName>
  <Meaning>Manual Forced Mode Request</Meaning>
  <Description>Manual Forced Mode Request: The operator requests the Forced
Mode.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>2</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MOnR</AttributeName>
  <Meaning>Manual On Request</Meaning>
  <Description>Manual On Request: The operator requests the On/Open
position.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>4</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MOffR</AttributeName>
  <Meaning>Manual Off Request</Meaning>
  <Description>Manual Off Request: The operator requests the Off/Close
position.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>5</BitPosition>
</Attribute>
<Attribute>

```

```

    <AttributeName>MNewPosR</AttributeName>
    <Meaning>Manual New Position Request</Meaning>
    <Description>Manual New Position Request: The operator requests a new position to the
object</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>6</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MAIAckR</AttributeName>
    <Meaning>Manual Alarm Acknowledgement Request</Meaning>
    <Description>Manual Alarm Acknowledgement Request: The operator requests Interlocks or
Alarms acknowledgement</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>15</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>ArmRcp</AttributeName>
    <Meaning>Armed Recipe</Meaning>
    <Description>A Recipe is Armed : New values are available at the input</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>2</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>ActRcp</AttributeName>
    <Meaning>Activate Recipe</Meaning>
    <Description>Activate Recipe : All new signals at the inputs are activated.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>3</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MEDHH</AttributeName>
    <Meaning>Manual Enable/Disable HH threshold</Meaning>
    <Description>Manual Enable/Disable high high threshold</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>4</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MEDH</AttributeName>
    <Meaning>Manual Enable/Disable H threshold</Meaning>
    <Description>Manual Enable/Disable high threshold</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>5</BitPosition>
</Attribute>

```

```

<Attribute>
  <AttributeName>MEDL</AttributeName>
  <Meaning>Manual Enable/Disable L threshold</Meaning>
  <Description>Manual Enable/Disable Low threshold</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>6</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MEDLL</AttributeName>
  <Meaning>Manual Enable/Disable LL threshold</Meaning>
  <Description>Manual Enable/Disable low low threshold</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>7</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MNewHHR</AttributeName>
  <Meaning>Manual New HH threshold Request</Meaning>
  <Description>Manual New high high threshold Request</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>8</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MNewHR</AttributeName>
  <Meaning>Manual New H threshold Request</Meaning>
  <Description>Manual New high threshold Request</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>9</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MNewLR</AttributeName>
  <Meaning>Manual New L threshold Request</Meaning>
  <Description>Manual New low threshold Request</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>12</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MNewLLR</AttributeName>
  <Meaning>Manual New LL threshold Request</Meaning>
  <Description>Manual New low low threshold Request</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>13</BitPosition>
</Attribute>

```

```

<Attribute>
  <AttributeName>MAIBSetRst</AttributeName>
  <Meaning>Manual Alarm Block Set/Reset</Meaning>
  <Description>Manual Alarm Block Set/Reset: Operator request to set/reset the alarm
block.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>10</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MStpInR</AttributeName>
  <Meaning>Manual Step Increase Request</Meaning>
  <Description>The Operator requests to increase the position by one basic
step</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>7</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MStpDeR</AttributeName>
  <Meaning>Manual Step Decrease Request</Meaning>
  <Description>The Operator requests to decrease the position by one basic
step</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>8</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MIOErBSetRst</AttributeName>
  <Meaning>Manual Input/Output Error Block Set/Reset</Meaning>
  <Description>Manual IO Error Block Set/Reset: This action allows to set/reset the
IOError.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>10</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MNewMR</AttributeName>
  <Meaning>Manual New Manual Request</Meaning>
  <Description>Manual New Manual Request : A New Manual Request is
available</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>6</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MPRest</AttributeName>
  <Meaning>Manual Parameters Restore</Meaning>

```

```

    <Description>The operator requests to restore as currents the latest saved
parameters</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>6</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MPSave</AttributeName>
    <Meaning>Manual Parameters Save</Meaning>
    <Description>The operator requests to save all currents parameters as default
value.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>5</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MNewSPR</AttributeName>
    <Meaning>Manual New Setpoint Request</Meaning>
    <Description>The operator requests to apply the Manual Setpoint Request
Value.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>7</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MNewSPHLiR</AttributeName>
    <Meaning>Manual New Setpoint High Limit Request</Meaning>
    <Description>The operator requests to apply a new Setpoint High limit.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>8</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MNewSPLLiR</AttributeName>
    <Meaning>Manual New Setpoint Low Limit Request</Meaning>
    <Description>The operator requests to apply a new Setpoint Low limit.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>9</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MNewOutHLiR</AttributeName>
    <Meaning>Manual New Output High Limit Request</Meaning>
    <Description>The operator requests to apply a new Output High limit.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>10</BitPosition>
</Attribute>
<Attribute>

```

```

    <AttributeName>MNewOutLLiR</AttributeName>
    <Meaning>Manual New Output Low Limit Request</Meaning>
    <Description>The operator requests to apply a new Output Low limit.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>11</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MNewKcR</AttributeName>
    <Meaning>Manual New Kc Request</Meaning>
    <Description>The operator requests to change the PID Kc factor </Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>12</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MNewTdR</AttributeName>
    <Meaning>Manual New Td Request</Meaning>
    <Description>The operator requests to change the PID Td factor </Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>13</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MNewTiR</AttributeName>
    <Meaning>Manual New Ti Request</Meaning>
    <Description>The operator requests to change the PID Ti factor </Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>14</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MNewTdsR</AttributeName>
    <Meaning>Manual New Tds Request</Meaning>
    <Description>The operator requests to change the PID Tds factor </Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>15</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MSpRT</AttributeName>
    <Meaning>Manual Setpoint Request T</Meaning>
    <Description>The operator requests to apply the Manual Setpoint Request
Value.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>6</BitPosition>
</Attribute>

```



```

<Attribute>
  <AttributeName>MDMoRT</AttributeName>
  <Meaning>Manual Drive Mode Request T</Meaning>
  <Description>The operator requests to apply the Manual Drive Mode Request
Value.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>7</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MToMRT</AttributeName>
  <Meaning>Manual Totalizer Mode Request T</Meaning>
  <Description>The operator requests to apply the Manual Totalizer Mode Request
Value.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>8</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MCCRT</AttributeName>
  <Meaning>Manual Calibration Curve Request T</Meaning>
  <Description>The operator requests to apply the Manual Calibration Curve Request
Value.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>9</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MCStopR</AttributeName>
  <Meaning>Manual Controlled Stop Request</Meaning>
  <Description>Manual Controlled Stop Request</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>6</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MTSasFSSetRst</AttributeName>
  <Meaning>Manual Temporary Stop as Full Stop Set/Reset</Meaning>
  <Description>Manual Temporary Stop as Full Stop Set/Reset.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>8</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MNewOpMoR</AttributeName>
  <Meaning>Manual New Option Mode Request</Meaning>
  <Description>Option Manual Pulse</Description>
  <PrimitiveType>BIT1</PrimitiveType>

```

```

    <BitPosition>12</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MAuDepR</AttributeName>
    <Meaning>Manual Auto Dependant Request</Meaning>
    <Description>Manual Auto Mode Request to all Dependent Object.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>13</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MAIAck</AttributeName>
    <Meaning>Manual Alarm Acknowledgement</Meaning>
    <Description>Manual Alarm Acknowledgement</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>15</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MSoftLDR</AttributeName>
    <Meaning>Manual Software Local Mode</Meaning>
    <Description>The operator requests the Software Local Mode</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>3</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MRestart</AttributeName>
    <Meaning>Manual Restart</Meaning>
    <Description>The Operator requests a Manual Restart after Full Stop</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>9</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MNewThresR</AttributeName>
    <Meaning>Manual New Threshold Request</Meaning>
    <Description>Manual New Threshold Request</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>1</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MEnRstartR</AttributeName>
    <Meaning>Manual Enable Restart Request</Meaning>
    <Description>Manual Enable Restart Request: The Operator requests a Manual Restart after
Full Stop</Description>

```

```

    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>9</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MNewDMoR</AttributeName>
    <Meaning>Manual New Drive Mode Request</Meaning>
    <Description>The operator requests to apply the Manual Drive Mode Request
Value.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>12</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MNewTMoR</AttributeName>
    <Meaning>Manual New Vol.Totalizer Mode Request</Meaning>
    <Description>The operator requests to apply the Manual Totalizer Mode Request
Value.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>13</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MNewCCR</AttributeName>
    <Meaning>Manual New Calibration Curve Request</Meaning>
    <Description>The operator requests to apply the Manual Calibration Curve Request
Value.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>14</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MNewConfigR</AttributeName>
    <Meaning>Manual New Config Request</Meaning>
    <Description>Manual New Config Request: The operator requests a new Configuration to
the range of work and offset.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>4</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MStopR</AttributeName>
    <Meaning>Manual Stop Request</Meaning>
    <Description>Manual Stop Request: The operator requests the motor to stop.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>5</BitPosition>
</Attribute>
<Attribute>

```

```

    <AttributeName>MNewSpdR</AttributeName>
    <Meaning>Manual New Speed Request</Meaning>
    <Description>Manual New Speed Request: The operator requests a new speed to the
object</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>7</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MRefSR</AttributeName>
    <Meaning>Manual Reference Search Request</Meaning>
    <Description>The operator Request a new Reference Search by the object.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>8</BitPosition>
</Attribute>
</Attribute>
<Attribute>
    <AttributeName>ManReg02</AttributeName>
    <Meaning>Manual Register 2</Meaning>
    <Description>2nd Manual Register </Description>
    <isCommunicated>true</isCommunicated>
    <PrimitiveType>SHORTINT16</PrimitiveType>
    <Attribute>
        <AttributeName>MRegR</AttributeName>
        <Meaning>Manual Regulation Request</Meaning>
        <Description>The operator requests to place the PID in Working state
regulated</Description>
        <PrimitiveType>BIT1</PrimitiveType>
        <BitPosition>0</BitPosition>
    </Attribute>
    <Attribute>
        <AttributeName>MOutPR</AttributeName>
        <Meaning>Manual Output Position Request</Meaning>
        <Description>The operator requests to place the PID in Output positioning working
state</Description>
        <PrimitiveType>BIT1</PrimitiveType>
        <BitPosition>1</BitPosition>
    </Attribute>
    <Attribute>
        <AttributeName>ArmRcp</AttributeName>
        <Meaning>Armed Recipe</Meaning>
        <Description>A Recipe is Armed : New values are available at the input</Description>
        <PrimitiveType>BIT1</PrimitiveType>
        <BitPosition>2</BitPosition>

```

```

</Attribute>
<Attribute>
  <AttributeName>MSoftLDR</AttributeName>
  <Meaning>Manual Software Local Mode</Meaning>
  <Description>The operator requests the Software Local Mode</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>2</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MNewPosR</AttributeName>
  <Meaning>Manual New Position Request</Meaning>
  <Description>The operator requests to use the manual position value</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>3</BitPosition>
</Attribute>
</Attribute>
<Attribute>
  <AttributeName>MPosR</AttributeName>
  <Meaning>Manual Position Request</Meaning>
  <Description>Manual Position Request: Value of the position requested by
operator</Description>
  <isCommunicated>>true</isCommunicated>
  <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>HH</AttributeName>
  <Meaning>High High</Meaning>
  <Description>Threshold level above which the signal produces an Alarm.
Can be a number, an object (AS,APAR,AIR), keyword "logic", simplified PLC logic (e.g. OBJECT + 2), or
empty (no alarm).
All defined thresholds must be ordered (HH>H>L>LL).</Description>
  <isCommunicated>>true</isCommunicated>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>HH Alarm</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>5 types of encoding
- A number: operator can change it
- An object (AS,APAR,AIR)
- A keyword "logic": process logic will assign a value to this signal.
- Simplified PLC logic, e.g. OBJECT + 2
- An empty field: no alarm</Usage>

```

```

    <DependentAttributes/>
    <Constraints>Can be a number, an object (AS,APAR,AIR), keyword "logic", simplified PLC
logic (e.g. OBJECT + 2), or empty (no alarm).
All defined thresholds must be ordered (HH>H>L>LL)</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>H</AttributeName>
  <Meaning>High</Meaning>
  <Description>Threshold level above which the signal produces a Warning.
Can be a number, an object (AS,APAR,AIR), keyword "logic", simplified PLC logic (e.g. OBJECT + 2), or
empty (no alarm).
All defined thresholds must be ordered (HH>H>L>LL).</Description>
  <isCommunicated>>true</isCommunicated>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>H Warning</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>5 types of encoding
- A number: operator can change it
- An object (AS,APAR,AIR)
- A keyword "logic": process logic will assign a value to this signal.
- Simplified PLC logic, e.g. OBJECT + 2
- An empty field: no alarm</Usage>
    <DependentAttributes/>
    <Constraints>Can be a number, an object (AS,APAR,AIR), keyword "logic", simplified PLC
logic (e.g. OBJECT + 2), or empty (no alarm).
All defined thresholds must be ordered (HH>H>L>LL)</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>L</AttributeName>
  <Meaning>Low</Meaning>
  <Description>Threshold level below which the signal produces a Warning.
Can be a number, an object (AS,APAR,AIR), keyword "logic", simplified PLC logic (e.g. OBJECT + 2), or
empty (no alarm).
All defined thresholds must be ordered (HH>H>L>LL).</Description>
  <isCommunicated>>true</isCommunicated>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>L Warning</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>

```

```

    <isValueRequired>>false</isValueRequired>
    <Usage>5 types of encoding
- A number: operator can change it
- An object (AS,APAR,AIR)
- A keyword "logic": process logic will assign a value to this signal.
- Simplified PLC logic, e.g. OBJECT + 2
- An empty field: no alarm</Usage>
    <DependentAttributes/>
    <Constraints>Can be a number, an object (AS,APAR,AIR), keyword "logic", simplified PLC
logic (e.g. OBJECT + 2), or empty (no alarm).
All defined thresholds must be ordered (HH&gt;H&gt;L&gt;LL)</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>LL</AttributeName>
    <Meaning>Low Low</Meaning>
    <Description>Threshold level below which the signal produces an Alarm.
Can be a number, an object (AS,APAR,AIR), keyword "logic", simplified PLC logic (e.g. OBJECT + 2), or
empty (no alarm).
All defined thresholds must be ordered (HH&gt;H&gt;L&gt;LL).</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>LL Alarm</NameRepresentation>
        <TypeRepresentation>STRING</TypeRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>5 types of encoding
- A number: operator can change it
- An object (AS,APAR,AIR)
- A keyword "logic": process logic will assign a value to this signal.
- Simplified PLC logic, e.g. OBJECT + 2
- An empty field: no alarm</Usage>
        <DependentAttributes/>
        <Constraints>Can be a number, an object (AS,APAR,AIR), keyword "logic", simplified PLC
logic (e.g. OBJECT + 2), or empty (no alarm).
All defined thresholds must be ordered (HH&gt;H&gt;L&gt;LL)</Constraints>
        </isSpecificationAttribute>
        </Attribute>
        <Attribute>
            <AttributeName>PLiOn</AttributeName>
            <Meaning>Parameter Limit On</Meaning>
            <Description>Limit above which the actuator status is "On".
Must be between Range Min and Range Max.</Description>

```

```

<isCommunicated>true</isCommunicated>
<PrimitiveType>FLOAT32</PrimitiveType>
<isSpecificationAttribute>
  <NameRepresentation>Parameter Limit On/Open</NameRepresentation>
  <isValueRequired>>false</isValueRequired>
  <Usage>Used to compute the "On" status of the device corresponding to the widget being
completely filled in SCADA.</Usage>
  <DependentAttributes/>
  <Constraints>Must be between Range Min and Range Max</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PLiOff</AttributeName>
  <Meaning>Parameter Limit Off</Meaning>
  <Description>Limit below which the actuator status is "Off".
Must be between Range Min and Range Max.</Description>
  <isCommunicated>true</isCommunicated>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Parameter Limit Off/Closed</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Used to compute the "Off" status of the device corresponding to the widget being
empty in SCADA.</Usage>
    <DependentAttributes/>
    <Constraints>Must be between Range Min and Range Max</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>MSP</AttributeName>
  <Meaning>Manual Setpoint</Meaning>
  <Description>Manual Setpoint: Setpoint value requested by operator</Description>
  <isCommunicated>true</isCommunicated>
  <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>MSPH</AttributeName>
  <Meaning>Manual Setpoint High</Meaning>
  <Description>Operator Manual Setpoint High Limit value</Description>
  <isCommunicated>true</isCommunicated>
  <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>MSPL</AttributeName>

```



```

    <Meaning>Manual Setpoint Low</Meaning>
    <Description>Operator Manual Setpoint Low Limit value</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>MOutH</AttributeName>
    <Meaning>Manual Output High</Meaning>
    <Description>Operator Manual Output High Limit value</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>MOutL</AttributeName>
    <Meaning>Manual Output Low</Meaning>
    <Description>Operator Manual Output Low Limit value</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>MKc</AttributeName>
    <Meaning>Manual Gain</Meaning>
    <Description>Operator Manual Gain constant value</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>MTi</AttributeName>
    <Meaning>Manual Integral time</Meaning>
    <Description>Operator Manual Integral time value</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>MTd</AttributeName>
    <Meaning>Manual derivative time</Meaning>
    <Description>Operator Manual derivative time value</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>MTds</AttributeName>

```

```

    <Meaning>Manual Derivative filter time</Meaning>
    <Description>Operator Manual Derivative filter time value</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>MDMoR</AttributeName>
    <Meaning>Manual Drive Mode Request</Meaning>
    <Description>The operator requests a MFC Drive Mode.</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>SHORTINT16</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>MVoTMoR</AttributeName>
    <Meaning>Manual Volume Totalizer Mode Request</Meaning>
    <Description>The operator requests a Volume Totalizer Mode</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>SHORTINT16</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>MToMoR</AttributeName>
    <Meaning>Manual Totalizer Mode Request</Meaning>
    <Description>The operator requests a Totalizer Mode</Description>
    <PrimitiveType>SHORTINT16</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>MCCR</AttributeName>
    <Meaning>Manual Calibration Curve Request</Meaning>
    <Description>The operator requests a Calibration Curve value</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>SHORTINT16</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>MSpR</AttributeName>
    <Meaning>Manual Setpoint Request</Meaning>
    <Description>The operator requests a MFC set-point.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>MOpMoR</AttributeName>
    <Meaning>Manual Option Mode Request</Meaning>
    <Description>Manual Option Mode Request</Description>

```

```

    <isCommunicated>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>MSpdR</AttributeName>
    <Meaning>Manual Speed Request</Meaning>
    <Description>Value for the speed of the movements requested by the operator</Description>
    <isCommunicated>true</isCommunicated>
    <PrimitiveType>SHORTINT16</PrimitiveType>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceAlarm</AttributeFamilyName>
  <UserExpandable>true</UserExpandable>
  <Attribute>
    <AttributeName>Type</AttributeName>
    <Description>Definition of the Alarm action in the Process:
AL: Alarm; no interlock
FS: Full Stop
TS: Temporary Stop (until alarm disappears)
SI: Start Interlock; block ON mode request
Multiple: Several PCO/Field objects depend on Alarm - see Multiple Types.</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <PermittedValue>AL</PermittedValue>
      <PermittedValue>FS</PermittedValue>
      <PermittedValue>TS</PermittedValue>
      <PermittedValue>SI</PermittedValue>
      <PermittedValue>Multiple</PermittedValue>
      <Usage>There are 4 valid alarm types:
AL: Alarm; will have no effect on PCO/Field
FS: Full Stop; will Stop PCO/Field
TS: Temporary Stop; will Stop PCO/Field until it disappears.
SI: Start Interlock; will block ON mode request applied to the PCO/Field.</Usage>
      <DependentAttributes>All PCO/Field object specified in this Instance
If "Multiple", then must fill out Multiple Types field</DependentAttributes>
    <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
</Attribute>
  <AttributeName>MultipleTypes</AttributeName>

```

<Description>Declaration of all types of alarm in the case of a multiple dependent objects. Valid only when FEDeviceAlarm::Type is "Multiple", syntax "AType,AType".

"AType" must be one of the following valid alarm types: AL,FS,TS,SI.</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Multiple Types</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>Provide to the SCADA information on the Alarm types when several PCO/field objects are dependent of this Alarm</Usage>

<DependentAttributes>FEDeviceAlarm::Type</DependentAttributes>

<Constraints>Valid only when FEDeviceAlarm::Type is "Multiple", syntax "AType,AType" "AType" must be one of the following valid alarm types: AL,FS,TS,SI</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>AutoAcknowledge</AttributeName>

<Description>The SCADA automatically performs the alarm acknowledge</Description>

<PrimitiveType>BOOLEAN</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Auto Acknowledge</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>When TRUE, the SCADA automatically acknowledges the alarm at its occurrence.

The operator doesn't have to act on this alarm.</Usage>

<DependentAttributes/>

<Constraints>TRUE/FALSE</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>EnableCondition</AttributeName>

<Description>Enable Condition used to enable all defined alarm thresholds (AuEXX).

If blank or "logic", then condition is defined inside the logic.

If not blank, either a single object or simplified PLC logic (e.g. RUN.X AND NOT AIOBJECT.IOErrorW) is allowed.</Description>

<PrimitiveType>BOOLEAN</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Enable Condition</NameRepresentation>

<TypeRepresentation>STRING</TypeRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>Enable Condition used to enable all defined alarm thresholds (AuEXX).</Usage>

<DependentAttributes/>

<Constraints>If blank or "logic", then condition is defined inside the logic.

If not blank, either a single object or simplified PLC logic (e.g. RUN.X AND NOT AIOBJECT.IOErrorW) is allowed.</Constraints>

```

    </isSpecificationAttribute>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceEnvironmentInputs</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>I</AttributeName>
    <Meaning>Interlock</Meaning>
    <Description>Logic for the Alarm input signal.
    If blank or "logic", then input is defined inside the logic.
    If not blank, either a single object or simplified PLC logic is allowed.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Input</NameRepresentation>
      <TypeRepresentation>STRING</TypeRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>Logic for the Alarm input signal.</Usage>
      <DependentAttributes/>
      <Constraints>If blank or "logic", then input is defined inside the logic.
      If not blank, either a single object or simplified PLC logic is allowed.</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>HFPos</AttributeName>
    <Meaning>Hardware Feedback Position</Meaning>
    <Description>Analog Feedback of the actuator.
    Must be an AI/AIR/AS.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Feedback Analog</NameRepresentation>
      <TypeRepresentation>STRING</TypeRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints>Must be an AI/AIR/AS</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>HMV</AttributeName>
    <Meaning>Hardware Measured Value</Meaning>
    <Description>Process Value to be controlled.

```

Must be an AI/AIR/AS.</Description>

```
<PrimitiveType>FLOAT32</PrimitiveType>
<isSpecificationAttribute>
  <NameRepresentation>Measured Value</NameRepresentation>
  <TypeRepresentation>STRING</TypeRepresentation>
  <isValueRequired>>false</isValueRequired>
  <Usage>Enter the name of sensor to be regulated</Usage>
  <DependentAttributes/>
  <Constraints>Must be an AI/AIR/AS</Constraints>
</isSpecificationAttribute>
```

</Attribute>

<Attribute>

```
<AttributeName>HOutO</AttributeName>
<Meaning>Hardware Output Order</Meaning>
<Description>Hardware Output Order.Feedback position of controlled object.</Description>
<PrimitiveType>FLOAT32</PrimitiveType>
```

</Attribute>

<Attribute>

```
<AttributeName>HFOn</AttributeName>
<Meaning>Hardware Feedback On</Meaning>
<Description>Feedback On of the actuator.
```

Must be a DI.</Description>

```
<PrimitiveType>BOOLEAN</PrimitiveType>
<isSpecificationAttribute>
  <NameRepresentation>Feedback On</NameRepresentation>
  <TypeRepresentation>STRING</TypeRepresentation>
  <isValueRequired>>false</isValueRequired>
  <Usage>Used to compute the "On" status of the device</Usage>
  <DependentAttributes/>
  <Constraints>Must be a DI</Constraints>
</isSpecificationAttribute>
```

</Attribute>

<Attribute>

```
<AttributeName>HFOff</AttributeName>
<Meaning>Hardware Feedback Off</Meaning>
<Description>Feedback Off of the actuator.
```

Must be a DI.</Description>

```
<PrimitiveType>BOOLEAN</PrimitiveType>
<isSpecificationAttribute>
  <NameRepresentation>Feedback Off</NameRepresentation>
  <TypeRepresentation>STRING</TypeRepresentation>
  <isValueRequired>>false</isValueRequired>
```

```

    <Usage>Used to compute the "Off" status of the device</Usage>
    <DependentAttributes/>
    <Constraints>Must be a DI</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>HAOut</AttributeName>
  <Meaning>Hardware Analog Output</Meaning>
  <Description>Hardware Local Analog request to the actuator when it is in hardware local
mode.
Must be an AI/AIR/AS.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Hardware Analog Output</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Signal able to drive the device in case of hardware local mode.</Usage>
    <DependentAttributes/>
    <Constraints>Must be an AI/AIR/AS</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>AuPosR</AttributeName>
  <Meaning>Auto Position Request</Meaning>
  <Description>Auto Position Request</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>HOnR</AttributeName>
  <Meaning>Hardware On Request</Meaning>
  <Description>Local On Request to the actuator when it is in Hardware Local Mode.
Must be a DI.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Local On</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Signal to send a Local On Request to the device</Usage>
    <DependentAttributes/>
    <Constraints>Must be a DI</Constraints>
  </isSpecificationAttribute>
</Attribute>

```

```

<Attribute>
  <AttributeName>HOFFR</AttributeName>
  <Meaning>Hardware Off Request</Meaning>
  <Description>Local Off Request to the actuator when it is in Hardware Local Mode.
Must be a DI.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Local Off</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Signal to send a Local Off Request to the device</Usage>
    <DependentAttributes/>
    <Constraints>Must be a DI</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>HLD</AttributeName>
  <Meaning>Hardware Local Drive</Meaning>
  <Description>Activation of the Hardware Local Drive.
Must be a DI.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Local Drive</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Signal to put the actuator in Hardware Local Mode</Usage>
    <DependentAttributes/>
    <Constraints>Must be a DI</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>IOError</AttributeName>
  <Meaning>Input/Output Error</Meaning>
  <Description>IOError state in any of the dependant objects or the PLC channel assigned to the
object</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>IOSimu</AttributeName>
  <Meaning>Input/Output Simulated</Meaning>
  <Description>Any of the dependant objects is in Forced or Manual Mode</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>

```



```

</Attribute>
<Attribute>
  <AttributeName>ALB</AttributeName>
  <Meaning>Alarm Blocked</Meaning>
  <Description>Alarm Blocked: Any of the device dependant alarm objects has been blocked by
the operator</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>HFDMo</AttributeName>
  <Meaning>Hardware Feedback Drive Mode</Meaning>
  <Description>Hardware feedback of the MFC Drive Mode.</Description>
  <PrimitiveType>SHORTINT16</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>HFCC</AttributeName>
  <Meaning>Hardware Feedback Calibration Curve</Meaning>
  <Description>Hardware Feedback of the selected MFC Calibration curve.</Description>
  <PrimitiveType>SHORTINT16</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>HFOutOV</AttributeName>
  <Meaning>Hardware Feedback Output Order Value</Meaning>
  <Description>Hardware Feedback of the MFC output order value (Setpoint).</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>HFCW</AttributeName>
  <Meaning>Hardware Feedback ClockWise</Meaning>
  <Description>Hardware Feedback limit in clockwise reached</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>ClockWise Limit</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Used to compute if the device has reached the limit in the ClockWise
direction</Usage>
    <DependentAttributes/>
    <Constraints>Must be a DI</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>HFCCW</AttributeName>

```

```

    <Meaning>Hardware Feedback CounterClockWise</Meaning>
    <Description>Hardware Feedback limit in CounterClockWise reached</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>CounterClockWise Limit</NameRepresentation>
      <TypeRepresentation>STRING</TypeRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>Used to compute if the device has reached the limit in the CounterClockWise
direction</Usage>
      <DependentAttributes/>
      <Constraints>Must be a DI</Constraints>
    </isSpecificationAttribute>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceOutputs</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>OutOV</AttributeName>
    <Meaning>Output Order Value</Meaning>
    <Description>If Analog/AnaDO object: Analog Output connected to the process. Must be an
AO or AS.
If Controller object: List of devices to be controlled. Must be
Analog/Anadig/AnaDO/MFC/Controller</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Process Output</NameRepresentation>
      <TypeRepresentation>STRING</TypeRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>If Analog/AnaDO object: Enter name of Analog Output connected to the process.
If Controller object: Enter name of device to be controlled. If several, separate device names with
commas.</Usage>
      <DependentAttributes/>
      <Constraints>If Analog/AnaDO object: Must be an AO or AS
If Controller object: Must be Analog/Anadig/AnaDO/MFC/Controller</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>OutOnOV</AttributeName>
    <Meaning>Output On Order Value</Meaning>
    <Description>Output connected to the process.
Must be a DO for OnOff/AnaDO.</Description>

```

```

<PrimitiveType>BOOLEAN</PrimitiveType>
<isSpecificationAttribute>
  <NameRepresentation>Process Output</NameRepresentation>
  <TypeRepresentation>STRING</TypeRepresentation>
  <isValueRequired>>false</isValueRequired>
  <Usage/>
  <DependentAttributes/>
  <Constraints>Must be a DO for OnOff/AnaDO.</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>OutOffOV</AttributeName>
  <Meaning>Output Off Order Value</Meaning>
  <Description>Output Off connected to the process.
Must be a DO.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Process Output Off</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Used when the actuator is driven by 2 DO.
Some actuators (rare) have 1 DO to open and 1 DO to close (bistable behavior). This DO closes the
device.</Usage>
    <DependentAttributes>Process Output must be filled</DependentAttributes>
    <Constraints>Must be a DO</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DOutOnOV</AttributeName>
  <Meaning>Digital Output On Order Value</Meaning>
  <Description>Digital Output connected to the process for the Classic PWM.
Positive Output connected to the process for the Bipolar PWM.
Must be a DO.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Output On</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints>Must be a DO</Constraints>
  </isSpecificationAttribute>

```

```

</Attribute>
<Attribute>
  <AttributeName>DOutOffOV</AttributeName>
  <Meaning>Digital Output Off Order Value</Meaning>
  <Description>Negative Output connected to the process for the Bipolar PWM.
Must be a DO.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Output Off</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes>Bipolar PWM must be selected as PWM
Mode</DependentAttributes>
    <Constraints>Must be a DO</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>StsReg01</AttributeName>
  <Meaning>Status Register 1</Meaning>
  <Description>Status Register 1</Description>
  <isEventAttribute>true</isEventAttribute>
  <isCommunicated>true</isCommunicated>
  <PrimitiveType>SHORTINT16</PrimitiveType>
  <Attribute>
    <AttributeName>SoftLDSt</AttributeName>
    <Meaning>Software Local Mode Status</Meaning>
    <Description>Current status of the Software local mode</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>0</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>OnSt</AttributeName>
    <Meaning>On Status</Meaning>
    <Description>On/Open Status</Description>
    <isArchived>true</isArchived>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>0</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>OffSt</AttributeName>
    <Meaning>Off Status</Meaning>

```

```

    <Description>Off/Closed Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>1</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AuMoSt</AttributeName>
    <Meaning>Auto Mode Status</Meaning>
    <Description>Current status of the Auto Mode</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>2</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MMoSt</AttributeName>
    <Meaning>Manual Mode Status</Meaning>
    <Description>Current status of the Manual Mode</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>3</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>FoMoSt</AttributeName>
    <Meaning>Forced Mode Status</Meaning>
    <Description>Current status of the Forced Mode.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>4</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>LDSt</AttributeName>
    <Meaning>Local Drive Status</Meaning>
    <Description>Current status of the Local Mode. The object is driven locally.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>5</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>IOErrorW</AttributeName>
    <Meaning>Input/Output Error Warning</Meaning>
    <Description>Current status of the IOError</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>6</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>IOSimuW</AttributeName>
    <Meaning>Input/Output Simulated Warning</Meaning>

```

```

    <Description>Current status of the IOSimu</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>7</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AuMRW</AttributeName>
    <Meaning>Auto Manual Request Warning Status.</Meaning>
    <Description>Auto and manual requests discrepancy when Manual/Forced mode
active.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>8</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>PosW</AttributeName>
    <Meaning>Position Warning</Meaning>
    <Description>There is discrepancy between the order status and the position status
according to Time Delay and Dead-band.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>9</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>StartISt</AttributeName>
    <Meaning>Start Interlock Status</Meaning>
    <Description>Current status of the Start Interlock</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>10</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>TStopISt</AttributeName>
    <Meaning>Temporary Stop Interlock Status</Meaning>
    <Description>Current status of the Temporary Stop Interlock</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>11</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AlUnAck</AttributeName>
    <Meaning>Alarm UnAcknowledged</Meaning>
    <Description>Alarm UnAcknowledged: The alarm or at least one of the alarms associated to
the object is not acknowledged</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>12</BitPosition>
</Attribute>
<Attribute>

```

```

    <AttributeName>AulhFoMoSt</AttributeName>
    <Meaning>Auto Inhibit Forced Mode Status</Meaning>
    <Description>Auto Inhibit Forced Mode status: Current status of the Auto Inhibit forced
mode.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>13</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AlSt</AttributeName>
    <Meaning>Alarm Status</Meaning>
    <Description>Alarm Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>14</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AulhMMoSt</AttributeName>
    <Meaning>Auto Inhibit Manual Mode Status</Meaning>
    <Description>Auto Inhibit Manual Mode Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>15</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>ISt</AttributeName>
    <Meaning>Interlock Status</Meaning>
    <Description>Interlock Status</Description>
    <isArchived>>true</isArchived>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>0</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>WSt</AttributeName>
    <Meaning>Warning Status</Meaning>
    <Description>Warning Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>1</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>ConfigW</AttributeName>
    <Meaning>Config Warning</Meaning>
    <Description>Config Warning</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>5</BitPosition>

```

```

</Attribute>
<Attribute>
  <AttributeName>ArmRcpSt</AttributeName>
  <Meaning>Armed Recipe Status</Meaning>
  <Description>A Recipe is Armed : New values are available at the input</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>3</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>ActHHSt</AttributeName>
  <Meaning>Acitve High High Status</Meaning>
  <Description>Acitve High High level at the occurence of the Interlock</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>4</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>ActLLSt</AttributeName>
  <Meaning>Active Low Low Status</Meaning>
  <Description>Acitve low low level at the occurence of the Interlock</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>5</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>PosHHW</AttributeName>
  <Meaning>Position High High Warning</Meaning>
  <Description>HH state detected while Current state is not HH (after delay)</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>8</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>PosHW</AttributeName>
  <Meaning>Position High Warning</Meaning>
  <Description>H state detected while Current state is not H (after delay).</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>9</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>PosLW</AttributeName>
  <Meaning>Position Low Warning</Meaning>
  <Description>L state detected while Current state is not L (after delay)</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>10</BitPosition>

```



```

</Attribute>
<Attribute>
  <AttributeName>PosLLW</AttributeName>
  <Meaning>Position Low Low Warning</Meaning>
  <Description>LL state detected while Current state is not LL (after delay)</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>11</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MAIBRSt</AttributeName>
  <Meaning>Manual Alarm Blocked Request Status</Meaning>
  <Description>Alarm Blocked Request Status.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>14</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>AulhMB</AttributeName>
  <Meaning>Auto Inhibit Manual Blocked Status</Meaning>
  <Description>Auto Inhibit Manual Blocked Status</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>15</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>FoDiProW</AttributeName>
  <Meaning>Forced Differs from Process Warning</Meaning>
  <Description>The Manual or Forced Position requested by the operator differs from the
Process</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>8</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MIOErBRSt</AttributeName>
  <Meaning>Manual Input/Output Error Block Request Status</Meaning>
  <Description>Manual IOError Block Request Status</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>9</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>FoDiAuW</AttributeName>
  <Meaning>Forced Differs Auto Warning</Meaning>
  <Description>The Manual or Forced Position requested by the operator differs from the Auto
Position</Description>
  <PrimitiveType>BIT1</PrimitiveType>

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    <BitPosition>8</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AuActSt</AttributeName>
    <Meaning>Auto Active Status</Meaning>
    <Description>Controller is active</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>1</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AuRegRSt</AttributeName>
    <Meaning>Auto Regulation Request Status</Meaning>
    <Description>The control logic requests the Output positioning Working State</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>8</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>RegSt</AttributeName>
    <Meaning>Regulation Status</Meaning>
    <Description>The Controller is in Regulation working state.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>9</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>TrSt</AttributeName>
    <Meaning>Tracking State</Meaning>
    <Description>The Controller is in Tracking working state</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>10</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>OutPSt</AttributeName>
    <Meaning>Output Positioning State</Meaning>
    <Description>The Controller is in Output Positioning working state</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>11</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AulhSRSt</AttributeName>
    <Meaning>Auto Inhibit Save/Restore Status</Meaning>
    <Description>The operator cannot save nor restore the controller parameters (Default
values).

```

```

</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>12</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>AuESPSt</AttributeName>
  <Meaning>Auto Enable Setpoint Status</Meaning>
  <Description>The control Logic requests the enabling of the auto Setpoint.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>14</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>AuEAISt</AttributeName>
  <Meaning>Auto Enable Alarm Status</Meaning>
  <Description>Auto Enable te Alarm </Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>8</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>PosSt</AttributeName>
  <Meaning>Position Status</Meaning>
  <Description>Digital Position Status</Description>
  <isArchived>>true</isArchived>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>0</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MPosRSt</AttributeName>
  <Meaning>Manual Position Requested Status</Meaning>
  <Description>Manual Position Requested Status</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>15</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>HFSt</AttributeName>
  <Meaning>Hardware Feedback Status</Meaning>
  <Description>Hardware feedback status</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>14</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>AuPosRSt</AttributeName>

```

```

    <Meaning>Auto Position Request Status</Meaning>
    <Description>Auto Position Request Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>14</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MOnRSt</AttributeName>
    <Meaning>Manual On Request Status</Meaning>
    <Description>Manual On Request Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>4</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MOffRSt</AttributeName>
    <Meaning>Manual Off Request Status</Meaning>
    <Description>Manual Off Request Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>5</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>PosAlSt</AttributeName>
    <Meaning>Position Alarm Status</Meaning>
    <Description>Position Alarm Status. When there is no feedback activated for Local object
with only one feedback</Description>
    <isArchived>true</isArchived>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>10</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>PHFOn</AttributeName>
    <Meaning>Hardware Feedback On</Meaning>
    <Description>Registration Hardware Feedback On</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>14</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>PHFOff</AttributeName>
    <Meaning>Hardware Feedback Off</Meaning>
    <Description>Registration Hardware Feedback Off</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>15</BitPosition>
</Attribute>

```

```

<Attribute>
  <AttributeName>AlBW</AttributeName>
  <Meaning>Alarm Blocked Warning</Meaning>
  <Description>When true, any of the device dependant alarm objects has been blocked by
the operator</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>5</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>PFsPosOn</AttributeName>
  <Meaning>Parameter Failsafe Position On</Meaning>
  <Description>Parameter Failsafe position is on</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>14</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>FuStopISt</AttributeName>
  <Meaning>Full Stop InterLock Status</Meaning>
  <Description>Full Stop InterLock Status</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>9</BitPosition>
</Attribute>
</Attribute>
<Attribute>
  <AttributeName>StsReg02</AttributeName>
  <Meaning>Status Register 2 </Meaning>
  <Description>Status Register 2</Description>
  <isEventAttribute>true</isEventAttribute>
  <isCommunicated>true</isCommunicated>
  <PrimitiveType>SHORTINT16</PrimitiveType>
<Attribute>
  <AttributeName>DOutOnOSt</AttributeName>
  <Meaning>Digital Output On Order Status</Meaning>
  <Description>Digital Output On Order Status</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>0</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>DoutOffOSt</AttributeName>
  <Meaning>Digital Output Off Order Status</Meaning>
  <Description>Digital Output Off Order Status</Description>
  <PrimitiveType>BIT1</PrimitiveType>

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```

    <BitPosition>1</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>EHHSt</AttributeName>
    <Meaning>Enable High High threshold Status</Meaning>
    <Description>Enable High High threshold : The HH threshold is taken into
account</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>0</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>EHSt</AttributeName>
    <Meaning>Enable High threshold Status</Meaning>
    <Description>Enable High threshold : The H threshold is taken into account</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>1</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>ELSt</AttributeName>
    <Meaning>Enable Low threshold Status</Meaning>
    <Description>Enable Low threshold : The L threshold is taken into account</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>2</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>ELLSt</AttributeName>
    <Meaning>Enable Low Low threshold Status</Meaning>
    <Description>Enable Low Low threshold : The LL threshold is taken into
account</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>3</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>HHASt</AttributeName>
    <Meaning>High High Alarm threshold Status</Meaning>
    <Description>High High Alarm threshold Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>4</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>HWSt</AttributeName>
    <Meaning>High Warning threshold Status </Meaning>
    <Description>High Warning threshold Status </Description>

```

```

    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>5</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>LWSt</AttributeName>
    <Meaning>Low Warning threshold Status</Meaning>
    <Description>Low warning threshold Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>6</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>LLASt</AttributeName>
    <Meaning>Low Low Alarm threshold Status</Meaning>
    <Description>Low Low Alarm threshold Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>7</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>IhMHHSt</AttributeName>
    <Meaning>Inhibit Manual High High threshold Status</Meaning>
    <Description>Inhibit Manual HH Threshold Status : The SCADA cannot send requests to this
threshold</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>8</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>IhMHSt</AttributeName>
    <Meaning>Inhibit Manual High threshold Status</Meaning>
    <Description>Inhibit Manual H Threshold Status : The SCADA cannot send requests to this
threshold.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>9</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>IhMLSt</AttributeName>
    <Meaning>Inhibit Manual Low threshold Status</Meaning>
    <Description>Inhibit Manual L Threshold Status : The SCADA cannot send requests to this
threshold.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>10</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>IhMLLSt</AttributeName>

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```

    <Meaning>Inhibit Manual Low Low threshold Status</Meaning>
    <Description>Inhibit Manual LL Threshold Status : The SCADA cannot send requests to this
threshold.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>11</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>FuStopISt</AttributeName>
    <Meaning>Full Stop Interlock Status</Meaning>
    <Description>Full Stop Interlock Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>10</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AIBW</AttributeName>
    <Meaning>Alarm Blocked Warning</Meaning>
    <Description>When true, the alarm or any of the device dependant alarm objects have been
blocked by the operator</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>13</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AuEKcSt</AttributeName>
    <Meaning>Auto Enable Kc Status</Meaning>
    <Description>PID parameter Kc requested by the Control Logic Enabled</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>0</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AuETiSt</AttributeName>
    <Meaning>Auto Enable Ti Status</Meaning>
    <Description>PID parameter Ti requested by the Control Logic Enabled</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>1</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AuETdSt</AttributeName>
    <Meaning>Auto Enable Td Status</Meaning>
    <Description>PID parameter Td requested by the Control Logic Enabled</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>2</BitPosition>
</Attribute>
<Attribute>

```



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    <AttributeName>AuETdsSt</AttributeName>
    <Meaning>Auto Enable Tds Status</Meaning>
    <Description>PID parameter Tds requested by the Control Logic Enabled</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>3</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>KcDiDef</AttributeName>
    <Meaning>Kc Different </Meaning>
    <Description>Current Kc Parameter different from saved parameter</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>4</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>TiDiDef</AttributeName>
    <Meaning>Ti Different</Meaning>
    <Description>Current Ti Parameter different from saved parameter</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>5</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>TdDiDef</AttributeName>
    <Meaning>Td Different</Meaning>
    <Description>Current Td Parameter different from saved parameter</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>6</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>TdsDiDef</AttributeName>
    <Meaning>Tds Different</Meaning>
    <Description>Current Tds Parameter different from saved parameter</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>7</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>SPHDiDef</AttributeName>
    <Meaning>Setpoint High Different</Meaning>
    <Description>Current Setpoint High Limit Parameter different from saved
parameter</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>8</BitPosition>
</Attribute>

```

```

<Attribute>
  <AttributeName>SPLDiDef</AttributeName>
  <Meaning>Setpoint Low Parameter Different </Meaning>
  <Description>Current Setpoint Low Limit Parameter different from saved
parameter</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>9</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>OutHDiDef</AttributeName>
  <Meaning>Output High Different</Meaning>
  <Description>Current Output High Limit Parameter different from saved
parameter</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>10</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>OutLDiDef</AttributeName>
  <Meaning>Output Low Different</Meaning>
  <Description>Current Output Low Limit Parameter different from saved
parameter</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>11</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>AuESPHSt</AttributeName>
  <Meaning>Auto Enable Setpoint High Status</Meaning>
  <Description>Setpoint High Limit requested by control logic enabled</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>12</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>AuESPLSt</AttributeName>
  <Meaning>Auto Enable Setpoint Low Status</Meaning>
  <Description>Setpoint Low Limit requested by control logic enabled</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>13</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>AuEOutHSt</AttributeName>
  <Meaning>Auto Enable Output High Status</Meaning>
  <Description>Output High Limit requested by control logic enabled</Description>
  <PrimitiveType>BIT1</PrimitiveType>

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```

    <BitPosition>14</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AuEOutLSt</AttributeName>
    <Meaning>Auto Enable Output Low Status</Meaning>
    <Description>Output Low Limit requested by control logic enabled</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>15</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>OutOnOVSt</AttributeName>
    <Meaning>Output On Order Value Status</Meaning>
    <Description>Output On Order Value Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>0</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AuOnRSt</AttributeName>
    <Meaning>Auto On Request Status</Meaning>
    <Description>Auto On/Open Request Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>1</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MOnRSt</AttributeName>
    <Meaning>Manual On Request Status</Meaning>
    <Description>Manual On/Open Request Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>2</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AuOffRSt</AttributeName>
    <Meaning>Auto Off Request Status</Meaning>
    <Description>Auto Off/Close request status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>3</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MOffRSt</AttributeName>
    <Meaning>Manual Off Request Status</Meaning>
    <Description>Manual Off/Close request status</Description>
    <PrimitiveType>BIT1</PrimitiveType>

```

```

    <BitPosition>4</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>HOnRSt</AttributeName>
    <Meaning>Hardware On Request Status</Meaning>
    <Description>Hardware On/Open request</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>5</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>HOffRSt</AttributeName>
    <Meaning>Hardware Off Request Status</Meaning>
    <Description>Hardware Off/Close request status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>6</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AnalogOnSt</AttributeName>
    <Meaning>Analog On Status</Meaning>
    <Description>Analog value > PLiOn</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>8</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AnalogOffSt</AttributeName>
    <Meaning>Analog Off Status</Meaning>
    <Description>Analog value < PLiOff</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>9</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>PHFOnSt</AttributeName>
    <Meaning>Parameter Hardware Feedback On Status</Meaning>
    <Description>Parameter Hardware On/Open sensor status. Status of Feedback On from a
hardware sensor</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>7</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>PHFOffSt</AttributeName>
    <Meaning>Parameter Hardware Feedback Off Status</Meaning>
    <Description>Parameter Hardware Off/Close sensor status. Status of Feedback Off from a
hardware sensor</Description>

```

```

    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>8</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>PPulseSt</AttributeName>
    <Meaning>Parameter Pulse Status</Meaning>
    <Description>Pulsed output functionality state. When this boolean is true means that the
Object is enabled for Pulsed output</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>9</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>EnRstartSt</AttributeName>
    <Meaning>Enable Restart Status</Meaning>
    <Description>Manual Restart after full stop status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>11</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>PAnimSt</AttributeName>
    <Meaning>Parameter Animation Status</Meaning>
    <Description>Full Empty animation enabled. When true, the object is animated according to
the Full-Empty animation in case of some of the feedback on or feedback or signals are not defined
</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>12</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>OutOffOVSt</AttributeName>
    <Meaning>Output Off Order Value Status</Meaning>
    <Description>Output Off Order Value Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>14</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>POutOffSt</AttributeName>
    <Meaning>Parameter Output Off Status</Meaning>
    <Description>Output Off Parameter. When true the output of the object for Off order is
enabled</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>15</BitPosition>
</Attribute>
<Attribute>

```

```

    <AttributeName>RunOSt</AttributeName>
    <Meaning>Run Order Status</Meaning>
    <Description>Run Order Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>0</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AuAuDepRSt</AttributeName>
    <Meaning>Auto Auto Dependant Request Status</Meaning>
    <Description>Auto Mode Request Requested by operator</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>3</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AuDepOSt</AttributeName>
    <Meaning>Auto Dependant Objects Status</Meaning>
    <Description>Auto Mode Request Order to all dependant Objects.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>4</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AuCStopRSt</AttributeName>
    <Meaning>Auto Controlled Stop Request Status</Meaning>
    <Description>Auto Controlled Stop Request Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>5</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MAIBRSt</AttributeName>
    <Meaning>Manual Alarm Block Request Status</Meaning>
    <Description>Manual Alarm Block Request Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>6</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MTSasFSRSt</AttributeName>
    <Meaning>Manual Temporary Stop as Full Stop Request Status</Meaning>
    <Description>Manual Temporary Stop as Full Stop Request Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>7</BitPosition>
</Attribute>
<Attribute>

```

```

    <AttributeName>CStopOSt</AttributeName>
    <Meaning>Controlled Stop Order Status</Meaning>
    <Description>Control Stop Order Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>8</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>PHLDSt</AttributeName>
    <Meaning>Parameter Hardware Local Drive Status</Meaning>
    <Description>Parameter Hardware Local Drive Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>11</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>NeedRestart</AttributeName>
    <Meaning>Need Restart</Meaning>
    <Description>Manual Restart after full stop status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>11</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>SoftLDSt</AttributeName>
    <Meaning>Software Local Mode Status</Meaning>
    <Description>Current status of the Software Local Mode.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>12</BitPosition>
</Attribute>
</Attribute>
<Attribute>
    <AttributeName>PosSt</AttributeName>
    <Meaning>Position status</Meaning>
    <Description>Position Status</Description>
    <isCommunicated>>true</isCommunicated>
    <isArchived>>true</isArchived>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>HFSt</AttributeName>
    <Meaning>Hardware Feedback Status</Meaning>
    <Description>Current engineering value of the Hardware feedback position
sensor</Description>
    <isCommunicated>>true</isCommunicated>

```

```

    <PrimitiveType>FLOAT32</PrimitiveType>
  </Attribute>
</Attribute>
  <AttributeName>AuPosRSt</AttributeName>
  <Meaning>Auto Position Request Status</Meaning>
  <Description>Status of the position of the object in auto mode.</Description>
  <isCommunicated>true</isCommunicated>
  <isArchived>true</isArchived>
  <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
</Attribute>
  <AttributeName>MPosRSt</AttributeName>
  <Meaning>Manual Position Request Status</Meaning>
  <Description>Manual Position request status</Description>
  <isCommunicated>true</isCommunicated>
  <isArchived>true</isArchived>
  <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
</Attribute>
  <AttributeName>PosRSt</AttributeName>
  <Meaning>Position Request Status</Meaning>
  <Description>Position request status</Description>
  <isCommunicated>true</isCommunicated>
  <isArchived>true</isArchived>
  <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
</Attribute>
  <AttributeName>MaxPosSt</AttributeName>
  <Meaning>Maximum Position Status</Meaning>
  <Description>The Maximum flow or Position Setpoint associated to the selected calibration
curve.</Description>
  <isCommunicated>true</isCommunicated>
  <isArchived>true</isArchived>
  <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
</Attribute>
  <AttributeName>OnSt</AttributeName>
  <Meaning>On Status</Meaning>
  <Description>On/Open Status</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
</Attribute>

```



```

    <AttributeName>OffSt</AttributeName>
    <Meaning>Off Status</Meaning>
    <Description>Off/Closed Status</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>HOnRSt</AttributeName>
    <Meaning>Hardware On Request Status</Meaning>
    <Description>Hardware On Request Status</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>HOffRSt</AttributeName>
    <Meaning>Hardware Off Request Status</Meaning>
    <Description>Hardware Off Request Status</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuOnRSt</AttributeName>
    <Meaning>Auto On Request Status</Meaning>
    <Description>Auto On Request Status</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuOffRSt</AttributeName>
    <Meaning>Auto Off Request Status</Meaning>
    <Description>Auto Off Request Status</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>MOnRSt</AttributeName>
    <Meaning>Manual On Request Status</Meaning>
    <Description>Manual On Request Status</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>MOffRSt</AttributeName>
    <Meaning>Manual Off Request Status</Meaning>
    <Description>Manual Off Request Status</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>

```

```

<AttributeName>AuVoTMRSt</AttributeName>
<Meaning>Auto Volume Totalizer Mode Request Status</Meaning>
<Description>Auto Volume Totalizer Mode Request.</Description>
<isCommunicated>>true</isCommunicated>
<isArchived>>true</isArchived>
<PrimitiveType>SHORTINT16</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuVoTOFSt</AttributeName>
  <Meaning>Volume offset add to the Totalizer</Meaning>
  <Description>Auto Volume Totalizer offset status</Description>
  <isCommunicated>>true</isCommunicated>
  <isArchived>>true</isArchived>
  <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>VoTSt</AttributeName>
  <Meaning>Volume calculated</Meaning>
  <Description>Volume Totalizer Status</Description>
  <isCommunicated>>true</isCommunicated>
  <isArchived>>true</isArchived>
  <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>ActVoTMO</AttributeName>
  <Meaning>Active Volume Totalizer Mode</Meaning>
  <Description>Current value of the Totalizer Mode.</Description>
  <isCommunicated>>true</isCommunicated>
  <isArchived>>true</isArchived>
  <PrimitiveType>SHORTINT16</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>MDMoRSt</AttributeName>
  <Meaning>Manual Drive Mode Request Status</Meaning>
  <Description>Manual Drive Mode Request Status</Description>
  <isCommunicated>>true</isCommunicated>
  <isArchived>>true</isArchived>
  <PrimitiveType>SHORTINT16</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>MCCRSt</AttributeName>
  <Meaning>Manual Calibration Curve Request Status</Meaning>

```

```

    <Description>Manual Calibration Curve Request Status</Description>
    <isCommunicated>true</isCommunicated>
    <isArchived>true</isArchived>
    <PrimitiveType>SHORTINT16</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>MVoTMRSt</AttributeName>
    <Meaning>Manual Volume Totalizer mode Reques Status</Meaning>
    <Description>Manual Volume Totalizer mode Reques Status</Description>
    <isCommunicated>true</isCommunicated>
    <isArchived>true</isArchived>
    <PrimitiveType>SHORTINT16</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>OutOnOVSt</AttributeName>
    <Meaning>Output On Order Value Status</Meaning>
    <Description>Output On Order Value Status. Inverted value of OutOV if the Parameter FailSafe
    Position ON is active. Otherwise the value is the same as OutOV</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>OutOffOVSt</AttributeName>
    <Meaning>Output Off Order Value Status</Meaning>
    <Description>Output Off Order Value Status.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>RunOSt</AttributeName>
    <Meaning>Run Order Status</Meaning>
    <Description>Run Order. Indicate that the Object start is requested and there is no
    interlock</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>CStopOSt</AttributeName>
    <Meaning>Controlled Stop Order Status</Meaning>
    <Description>Control Stop Order. Control Stop Requested</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>AuDepOSt</AttributeName>
    <Meaning>Auto Dependant Objects Status</Meaning>
    <Description>Auto Mode Request Order to all dependant Objects.</Description>

```

```

    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>OpMoSt</AttributeName>
    <Meaning>Option Mode Status</Meaning>
    <Description>Option Mode Status : Active Option Mode.</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuOpMoSt</AttributeName>
    <Meaning>Auto Option Mode Status</Meaning>
    <Description>Auto Option Mode Status : Option Mode requested by Control
Logic</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>FoMoSt</AttributeName>
    <Meaning>Forced Mode Status</Meaning>
    <Description>Current status of the Forced Mode.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuMoSt</AttributeName>
    <Meaning>Auto Mode Status</Meaning>
    <Description>Current status of the Auto Mode</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>MMoSt</AttributeName>
    <Meaning>Manual Mode Status</Meaning>
    <Description>Current status of the Manual Mode request</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>IOErrorW</AttributeName>
    <Meaning>Input/Output Error Warning</Meaning>
    <Description>Current status of the IOError</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>

```

```

    <AttributeName>IOSimuW</AttributeName>
    <Meaning>Input/Output Simulated Warning</Meaning>
    <Description>Current status of the IOSimu</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>ISt</AttributeName>
    <Meaning>Interlock Status</Meaning>
    <Description>Interlock Status</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>WSt</AttributeName>
    <Meaning>Warning Status</Meaning>
    <Description>Warning Status (H or L)</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AlBW</AttributeName>
    <Meaning>Alarm Blocked Warning</Meaning>
    <Description>When true, the alarm or any of the device dependant alarm objects have been
blocked by the operator</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>HHASt</AttributeName>
    <Meaning>High High Alarm Status</Meaning>
    <Description>High High Alarm Status (it produces also an ISt)</Description>
    <isArchived>true</isArchived>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>HWSt</AttributeName>
    <Meaning>High Waring Status</Meaning>
    <Description>High Waring Status (it produces also a WSt)</Description>
    <isArchived>true</isArchived>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>LWSt</AttributeName>
    <Meaning>Low Warning Status</Meaning>
    <Description>Low Warning Status (it produces also a WSt)</Description>

```

```

    <isArchived>true</isArchived>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>LLASt</AttributeName>
    <Meaning>Low Low Alarm Status</Meaning>
    <Description>Low Low Alarm Status (it produces also an ISt)</Description>
    <isArchived>true</isArchived>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>HHSt</AttributeName>
    <Meaning>High High threshold Status</Meaning>
    <Description>Alarm High High threshold Status</Description>
    <isCommunicated>true</isCommunicated>
    <isArchived>true</isArchived>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>HSt</AttributeName>
    <Meaning>High threshold Status</Meaning>
    <Description>Alarm High threshold Status</Description>
    <isCommunicated>true</isCommunicated>
    <isArchived>true</isArchived>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>LSt</AttributeName>
    <Meaning>Low threshold Status</Meaning>
    <Description>Alarm Low threshold Status</Description>
    <isCommunicated>true</isCommunicated>
    <isArchived>true</isArchived>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>LLSt</AttributeName>
    <Meaning>Low Low threshold Status</Meaning>
    <Description>Alarm Low Low threshold Status</Description>
    <isCommunicated>true</isCommunicated>
    <isArchived>true</isArchived>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>

```

```

<Attribute>
  <AttributeName>MAIBRSt</AttributeName>
  <Meaning>Manual Alarm Blocked Request Status</Meaning>
  <Description>Alarm Blocked Request Status.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AlUnAck</AttributeName>
  <Meaning>Alarm UnAcknowledged</Meaning>
  <Description>Alarm UnAcknowledged: The alarm or at least one of the alarms associated to
the object is not acknowledged</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>EnRStartSt</AttributeName>
  <Meaning>Enable Restart Status</Meaning>
  <Description>Manual Restart after full stop status possible</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>LDSt</AttributeName>
  <Meaning>Local Drive Status</Meaning>
  <Description>Current status of the Local mode.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>SoftLDSt</AttributeName>
  <Meaning>Software Local Drive Status</Meaning>
  <Description>Current status of the Software Local mode request</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuMRW</AttributeName>
  <Meaning>Auto Manual Request Warning</Meaning>
  <Description>Auto and manual requests discrepancy when Manual/Forced mode
active</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>PosW</AttributeName>
  <Meaning>Position Warning</Meaning>
  <Description>Position Warning Status</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>

```

```

</Attribute>
<Attribute>
  <AttributeName>StartISt</AttributeName>
  <Meaning>Start Interlock Status</Meaning>
  <Description>Current status of StartI</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>TStopISt</AttributeName>
  <Meaning>Temporary Stop Interlock Status</Meaning>
  <Description>Current status of TStopI</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>FuStopISt</AttributeName>
  <Meaning>Full Stop Interlock Status</Meaning>
  <Description>Full Stop Interlock Status</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AlSt</AttributeName>
  <Meaning>Alarm Status</Meaning>
  <Description>Alarm Status</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>FoDiProW</AttributeName>
  <Meaning>Forced Differs from Process Warning</Meaning>
  <Description>The Manual or Forced Position requested by the operator differs from the
Process</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>FoDiAuW</AttributeName>
  <Meaning>Forced Differs Auto Warning</Meaning>
  <Description>The Manual or Forced Position requested by the operator differs from the Auto
Position</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>MV</AttributeName>
  <Meaning>Measured Value</Meaning>
  <Description>Measured value of the controller.</Description>

```



```

    <isCommunicated>true</isCommunicated>
    <isArchived>true</isArchived>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuRegSt</AttributeName>
    <Meaning>Auto Regulation Status</Meaning>
    <Description>Auto Regulation Request Status</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>RegSt</AttributeName>
    <Meaning>Regulation Status</Meaning>
    <Description>Regulation Status
</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>OutPSt</AttributeName>
    <Meaning>Output Positioning Status</Meaning>
    <Description>Output Positioning Status
</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>TrSt</AttributeName>
    <Meaning>Tracking Status</Meaning>
    <Description>Tracking Status
</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>ActSP</AttributeName>
    <Meaning>Active Setpoint</Meaning>
    <Description>Active Setpoint Value</Description>
    <isCommunicated>true</isCommunicated>
    <isArchived>true</isArchived>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>MSPSt</AttributeName>
    <Meaning>Manual Setpoint Status</Meaning>

```

```

    <Description>Setpoint requested by operator</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuSPSt</AttributeName>
    <Meaning>Auto Setpoint Status</Meaning>
    <Description>Setpoint proposed by the control logic</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>ActKc</AttributeName>
    <Meaning>Active Kc</Meaning>
    <Description>Active Gain. PID parameter</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <DefaultValue>1.0</DefaultValue>
</Attribute>
<Attribute>
    <AttributeName>ActTi</AttributeName>
    <Meaning>Active Ti</Meaning>
    <Description>Active Integration Time. PID parameter value</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <DefaultValue>100.0</DefaultValue>
</Attribute>
<Attribute>
    <AttributeName>ActTd</AttributeName>
    <Meaning>Active Td</Meaning>
    <Description>Active Time Derivative. PID parameter value</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <DefaultValue>0.0</DefaultValue>
</Attribute>
<Attribute>
    <AttributeName>ActTds</AttributeName>
    <Meaning>Active Tds</Meaning>
    <Description>Active Filter Time Derivative. PID parameter</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <DefaultValue>0.0</DefaultValue>

```

```

</Attribute>
<Attribute>
  <AttributeName>ActSPH</AttributeName>
  <Meaning>Active Setpoint High</Meaning>
  <Description>Active Setpoint High Limit value</Description>
  <isCommunicated>>true</isCommunicated>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <DefaultValue>100.0</DefaultValue>
</Attribute>
<Attribute>
  <AttributeName>ActSPL</AttributeName>
  <Meaning>Active Setpoint Low</Meaning>
  <Description>Active Setpoint Low Limit value</Description>
  <isCommunicated>>true</isCommunicated>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <DefaultValue>0.0</DefaultValue>
</Attribute>
<Attribute>
  <AttributeName>ActOutH</AttributeName>
  <Meaning>Active Output High</Meaning>
  <Description>Active Output High Limit value</Description>
  <isCommunicated>>true</isCommunicated>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <DefaultValue>100.0</DefaultValue>
</Attribute>
<Attribute>
  <AttributeName>ActOutL</AttributeName>
  <Meaning>Active Output Low</Meaning>
  <Description>Active Output Low Limit value</Description>
  <isCommunicated>>true</isCommunicated>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <DefaultValue>0.0</DefaultValue>
</Attribute>
<Attribute>
  <AttributeName>AlUnack</AttributeName>
  <Meaning>Alarm Unacknowledged</Meaning>
  <Description>Alarm Unacknowledged</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>PosAlSt</AttributeName>
  <Meaning>Position Alarm Status</Meaning>

```

```

    <Description>Position Alarm Status</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>DMoOV</AttributeName>
    <Meaning>Drive Mode Order Value</Meaning>
    <Description>MFC Drive mode Output Value applied</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>SHORTINT16</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>CCOV</AttributeName>
    <Meaning>Calibration Curve Order Value</Meaning>
    <Description>Calibration curve applied.</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>SHORTINT16</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>ActDMo</AttributeName>
    <Meaning>Active Drive Mode</Meaning>
    <Description>Current value of the Drive Mode.</Description>
    <isCommunicated>>true</isCommunicated>
    <isArchived>>true</isArchived>
    <PrimitiveType>SHORTINT16</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>ActToMo</AttributeName>
    <Meaning>Active Totalizer Mode</Meaning>
    <Description>Current value of the Totalizer Mode.</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>SHORTINT16</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>ActCC</AttributeName>
    <Meaning>Active Calibration Curve</Meaning>
    <Description>Current Calibration Curve number: Plus Gas manufacturer reference
Number.</Description>
    <isCommunicated>>true</isCommunicated>
    <isArchived>>true</isArchived>
    <PrimitiveType>SHORTINT16</PrimitiveType>
</Attribute>
<Attribute>

```

```

    <AttributeName>ActOutOV</AttributeName>
    <Meaning>Active Output Order Value</Meaning>
    <Description>Current value Setpoint active in the MFC.</Description>
    <isCommunicated>>true</isCommunicated>
    <isArchived>>true</isArchived>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuDMoRSt</AttributeName>
    <Meaning>Auto Drive Mode Request Status</Meaning>
    <Description>Auto Drive Mode Request.</Description>
    <isCommunicated>>true</isCommunicated>
    <isArchived>>true</isArchived>
    <PrimitiveType>SHORTINT16</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuToRSt</AttributeName>
    <Meaning>Auto Totalizer Request Status</Meaning>
    <Description>Auto Totalizer Mode Request.</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>SHORTINT16</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuCCRSt</AttributeName>
    <Meaning>Auto Calibration Curve Request Status</Meaning>
    <Description>Auto Calibration Curve Request Status.</Description>
    <isCommunicated>>true</isCommunicated>
    <isArchived>>true</isArchived>
    <PrimitiveType>SHORTINT16</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuSpRSt</AttributeName>
    <Meaning>Auto Setpoint Request Status</Meaning>
    <Description>Auto Setpoint Request Status.</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>MaxSPSt</AttributeName>
    <Meaning>Maximum Setpoint Status</Meaning>
    <Description>The Maximum flow or Setpoint associated to the calibration curve
selected.</Description>

```

```

    <isCommunicated>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>ToSt</AttributeName>
    <Meaning>Totalizer Status</Meaning>
    <Description>The calculated integrated flow of the controlled gas.</Description>
    <isCommunicated>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuToOfSt</AttributeName>
    <Meaning>Auto Totalizer Offset Status</Meaning>
    <Description>Offset applied by the process to the totalizer.</Description>
    <isCommunicated>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>OMFC</AttributeName>
    <Description>Order to the hardware device</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
<Attribute>
    <AttributeName>OutOV</AttributeName>
    <Meaning>Output Order Value</Meaning>
    <Description>Output Order Value sent to the process generally through an Analog Output
Object</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>DMoOV</AttributeName>
    <Meaning>Drive Mode Output Value</Meaning>
    <Description>MFC Drive mode Output Value applied</Description>
    <PrimitiveType>SHORTINT16</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>CCOV</AttributeName>
    <Meaning>Calibration Curve Applied</Meaning>
    <Description>Calibration curve applied.</Description>
    <PrimitiveType>SHORTINT16</PrimitiveType>
</Attribute>
</Attribute>
<Attribute>

```

```

    <AttributeName>DOutOV</AttributeName>
    <Meaning>Valve Order</Meaning>
    <Description>OnOff object representing a valve located in front of the device.
Must be a declared OnOff object.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Valve Order</NameRepresentation>
        <TypeRepresentation>STRING</TypeRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>This valve will be driven by the MFC.
It prevents leaks because the MFC cannot be fully hermetic when at minimum flow or
closed.</Usage>
        <DependentAttributes>See corresponding OnOff device</DependentAttributes>
        <Constraints>Must be a declared OnOff object</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>CWRef</AttributeName>
    <Meaning>ClockWise as Reference</Meaning>
    <Description>Use the ClockWise LimitSwitch as a Reference Switch. Must be a
DO.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>ClockWise to Reference Switch</NameRepresentation>
        <TypeRepresentation>STRING</TypeRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>Use the ClockWise Limit Switch as a Reference Switch in old equipment that don't
allow to do it directly.</Usage>
        <DependentAttributes/>
        <Constraints>Must be a DO.</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>SimRef</AttributeName>
    <Meaning>Simulate Reference Switch</Meaning>
    <Description>Simulate Reference Switch. Must be a DO.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Simulated Reference Switch</NameRepresentation>
        <TypeRepresentation>STRING</TypeRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>Used to simulate Reference Switch in equipment that doesn't have it.</Usage>
        <DependentAttributes/>

```

```

    <Constraints>Must be a DO.</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DrvEn</AttributeName>
  <Meaning>Driver Enable</Meaning>
  <Description>Enables the external Power Unit Driver for the motor.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Driver Enable</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Used to power off/on the Driver for doing the reference search without
moving.</Usage>
    <DependentAttributes/>
    <Constraints>Must be a DO.</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>SpdSt</AttributeName>
  <Meaning>Speed Status</Meaning>
  <Description>Current Speed</Description>
  <isCommunicated>>true</isCommunicated>
  <isArchived>>true</isArchived>
  <PrimitiveType>SHORTINT16</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuSpdRSt</AttributeName>
  <Meaning>Auto Position Speed Status</Meaning>
  <Description>Current status of the Auto Speed Request</Description>
  <isCommunicated>>true</isCommunicated>
  <PrimitiveType>SHORTINT16</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>MSpdRSt</AttributeName>
  <Meaning>Manual Speed Request Status</Meaning>
  <Description>Current status of the Manual Speed Request</Description>
  <isCommunicated>>true</isCommunicated>
  <PrimitiveType>SHORTINT16</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>SpdRSt</AttributeName>

```



```

    <Meaning>Speed Request Status</Meaning>
    <Description>Speed Request Status</Description>
    <isCommunicated>>true</isCommunicated>
    <isArchived>>true</isArchived>
    <PrimitiveType>SHORTINT16</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>PMinRanSt</AttributeName>
    <Meaning>Parameter Minimum Range Status</Meaning>
    <Description>Minimum Range that the device can reach.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>PMaxRanSt</AttributeName>
    <Meaning>Parameter Maximum Range Status</Meaning>
    <Description>Maximum Range that the device can reach.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>PScaSt</AttributeName>
    <Meaning>Parameter Maximum Range Status</Meaning>
    <Description>Number of Steps to move for one engineering unit.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>PosModeSt</AttributeName>
    <Meaning>Positioning Mode Status</Meaning>
    <Description>The device is on the positioning Mode.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>RefSMoSt</AttributeName>
    <Meaning>Reference Search Mode Status</Meaning>
    <Description>The device is in the reference Search Mode Status. </Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>HFCWSt</AttributeName>
    <Meaning>Hardware Feedback ClockWise Status</Meaning>
    <Description>The Hardware Feedback for the ClockWise Limit was activated.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>

```

```

<Attribute>
  <AttributeName>HFCCWSt</AttributeName>
  <Meaning>Hardware Feedback CounterClockWise Status</Meaning>
  <Description>The Hardware Feedback for the CounterClockWise Limit was
activated.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>MovCWSt</AttributeName>
  <Meaning>Moving ClockWise Status</Meaning>
  <Description>The Motor is moving in ClockWise direction.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>MovCCWSt</AttributeName>
  <Meaning>Moving CounterClockWise Direction</Meaning>
  <Description>The Motor is moving in CounterClockWise direction</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceVariables</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>DefPID</AttributeName>
    <Description>Saved Parameters of the controller</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Default PID Parameters</NameRepresentation>
      <TypeRepresentation>STRING</TypeRepresentation>
      <isValueRequired>>true</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints/>
    </isSpecificationAttribute>
    <Attribute>
      <AttributeName>DefSP</AttributeName>
      <Description>Default Set-Point of the Controller at the initialization of the PLC.
Must be between Range Min and Range Max of the Measured Value.
If blank, will be set to 0.0 by default.</Description>
      <PrimitiveType>FLOAT32</PrimitiveType>
      <isSpecificationAttribute>

```

```

    <NameRepresentation>Setpoint</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>can be a positive number or a parameter</Usage>
    <DependentAttributes/>
    <Constraints>Must be between Range Min and Range Max of the Measured Value.
If blank, will be set to 0.0 by default.</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DefKc</AttributeName>
  <Description>Default Kc parameter (Gain) of the Controller at the initialization of the PLC.
Must be positive. If reverse action, put TRUE in the "Reverse Action" field.
If blank, will be set to 1.0 by default.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Kc</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>can be a positive number or a parameter</Usage>
    <DependentAttributes/>
    <Constraints>Must be positive. If reverse action, put TRUE in the "Reverse Action" field.
If blank, will be set to 1.0 by default.</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DefTi</AttributeName>
  <Description>Default Ti parameter (Integration Time) of the Controller at the initialization of
the PLC.
Must be >= 0.
If = 0, then integral component is removed.
If blank, will be set to 100.0s by default.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Ti</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>can be a positive number or a parameter</Usage>
    <DependentAttributes/>
    <Constraints>Must be >= 0.
If = 0, then integral component is removed.
If blank, will be set to 100.0s by default.</Constraints>

```

```

    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>DefTd</AttributeName>
    <Description>Default Td parameter (Derivative Time) of the Controller at the initialization of
the PLC.
Must be >= 0.
If = 0, then derivative component is removed.
If blank, will be set to 0.0s by default.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Td</NameRepresentation>
      <TypeRepresentation>STRING</TypeRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>can be a positive number or a parameter</Usage>
      <DependentAttributes/>
      <Constraints>Must be >= 0.
If = 0, then derivative component is removed.
If blank, will be set to 0.0s by default.</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>DefTds</AttributeName>
    <Description>Default Tds parameter (time constant of the 1st order filter on the derivative
term)
of the Controller at the initialization of the PLC.
Must be >= 0.
If = 0, then no filtering of the derivative term.
If blank, will be set to 0.0s by default.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Tds</NameRepresentation>
      <TypeRepresentation>STRING</TypeRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>can be a positive number or a parameter</Usage>
      <DependentAttributes/>
      <Constraints>Must be >= 0.
If = 0, then no filtering of the derivative term.
If blank, will be set to 0.0s by default.</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>DefSPH</AttributeName>

```

*<Description>Default High Limit for the Controller Set-Point at the initialization of the PLC.
Must be between Range Min and Range Max of the Measured Value (MV).*

If blank, will be set to Range Max of the MV.</Description>

<PrimitiveType>FLOAT32</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>SP High Limit</NameRepresentation>

<TypeRepresentation>STRING</TypeRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>can be a positive number or a parameter</Usage>

<DependentAttributes/>

<Constraints>Must be between Range Min and Range Max of the Measured Value (MV).

If blank, will be set to Range Max of the MV</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>DefSPL</AttributeName>

<Description>Default Low Limit for the Controller Set-Point at the initialization of the PLC.

Must be between Range Min and Range Max of the Measured Value (MV).

If blank, will be set to Range Min of the MV.</Description>

<PrimitiveType>FLOAT32</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>SP Low Limit</NameRepresentation>

<TypeRepresentation>STRING</TypeRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>can be a positive number or a parameter</Usage>

<DependentAttributes/>

<Constraints>Must be between Range Min and Range Max of the Measured Value (MV).

If blank, will be set to Range Min of the MV</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>DefOutH</AttributeName>

<Description>Default High Limit for the Controller output at the initialization of the PLC.

Must be between Output Range Min and Output Range Max of the controlled device.

If blank, will be set to Output Range Max.</Description>

<PrimitiveType>FLOAT32</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Out High Limit</NameRepresentation>

<TypeRepresentation>STRING</TypeRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>can be a positive number or a parameter</Usage>

<DependentAttributes/>

<Constraints>Must be between Output Range Min and Output Range Max of the controlled device.

If blank, will be set to Output Range Max</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>DefOutL</AttributeName>

<Description>Default Low Limit for the Controller output at the initialization of the PLC.

Must be between Output Range Min and Output Range Max of the controlled device.

If blank, will be set to Output Range Min.</Description>

<PrimitiveType>FLOAT32</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Out Low Limit</NameRepresentation>

<TypeRepresentation>STRING</TypeRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>can be a positive number or a parameter</Usage>

<DependentAttributes/>

<Constraints>Must be between Output Range Min and Output Range Max of the controlled device.

If blank, will be set to Output Range Min</Constraints>

</isSpecificationAttribute>

</Attribute>

</Attribute>

</AttributeFamily>

<AttributeFamily>

<AttributeFamilyName>FEDeviceIOConfig</AttributeFamilyName>

<UserExpandable>>true</UserExpandable>

<Attribute>

<AttributeName>FEType</AttributeName>

<Description>Parameter used to set up the periphery address of the device according to the various hardware module types used at the PLC level.

Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>FE Encoding Type</NameRepresentation>

<TypeRepresentation>STRING</TypeRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Usage>

<DependentAttributes>FEChannel.InterfaceParamX (where X=1-10)</DependentAttributes>

<Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Constraints>

```

    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>FEChannel</AttributeName>
    <Description>Indicates how to map the acquisition of the information from the field I/O
interface.</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
    <Attribute>
      <AttributeName>InterfaceParam1</AttributeName>
      <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
      <PrimitiveType>STRING</PrimitiveType>
      <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
        <DependentAttributes>FE Encoding Type</DependentAttributes>
        <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
      </isSpecificationAttribute>
    </Attribute>
    <Attribute>
      <AttributeName>InterfaceParam2</AttributeName>
      <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
      <PrimitiveType>STRING</PrimitiveType>
      <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
        <DependentAttributes>FE Encoding Type</DependentAttributes>
        <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
      </isSpecificationAttribute>
    </Attribute>
    <Attribute>
      <AttributeName>InterfaceParam3</AttributeName>
      <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.

```

Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation

`<PrimitiveType>STRING</PrimitiveType>`

`<isSpecificationAttribute>`

`<isValueRequired>>false</isValueRequired>`

Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation

`<DependentAttributes>FE Encoding Type</DependentAttributes>`

Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation

`</isSpecificationAttribute>`

`</Attribute>`

`<Attribute>`

`<AttributeName>InterfaceParam4</AttributeName>`

Parameter used to set up the periphery address of the device according to the various hardware module types used at the PLC level.

Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation

`<PrimitiveType>STRING</PrimitiveType>`

`<isSpecificationAttribute>`

`<isValueRequired>>false</isValueRequired>`

Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation

`<DependentAttributes>FE Encoding Type</DependentAttributes>`

Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation

`</isSpecificationAttribute>`

`</Attribute>`

`<Attribute>`

`<AttributeName>InterfaceParam5</AttributeName>`

Parameter used to set up the periphery address of the device according to the various hardware module types used at the PLC level.

Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation

`<PrimitiveType>STRING</PrimitiveType>`

`<isSpecificationAttribute>`

`<isValueRequired>>false</isValueRequired>`

Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation

`<DependentAttributes>FE Encoding Type</DependentAttributes>`

Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation

`</isSpecificationAttribute>`

`</Attribute>`


```

<Attribute>
  <AttributeName>InterfaceParam6</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam7</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam8</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>

```

```

    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam9</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam10</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADeviceGraphics</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>PosStUnit</AttributeName>
    <Description>Unit of the device to be displayed in SCADA</Description>

```

```

<PrimitiveType>STRING</PrimitiveType>
<isSpecificationAttribute>
  <NameRepresentation>Unit</NameRepresentation>
  <isValueRequired>>false</isValueRequired>
  <Usage/>
  <DependentAttributes/>
  <Constraints>In principle there is no limit to the number of characters used,
however a long name may result in display issues at the SCADA level.
Forbidden characters: *[: "'@`#$^&#x27;*?!.,;=+~(){}&lt;&gt;|]</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PosStFormat</AttributeName>
  <Description>Format of the value to be displayed in SCADA. Supported formats:
### (fixed number of decimal places, in this case 2),
EXP or xEXP (exponential, 3 or x digits after '.'),
xD or xd (fixed digit format, x=number of digits, e.g.: 3D=0.01, 12.0, 123)</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Format</NameRepresentation>
    <isValueRequired>>true</isValueRequired>
    <Usage>Example: use format ### to display value to 2 decimal places.
To the left of the decimal point, the SCADA layer will display as many digits as required, therefore a
single # is enough.</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>WidgetType</AttributeName>
  <Description>Define the widget type to display in the SCADA device tree overview only.
The widget displayed in the process panel will be selected when the user creates the
panel.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Widget Type</NameRepresentation>
    <isValueRequired>>true</isValueRequired>
    <isCaseSensitive>>true</isCaseSensitive>
    <PermittedValue>AnalogInput_Small</PermittedValue>
    <PermittedValue>AnalogInput_SciOrPrecision </PermittedValue>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>

```

```

    </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>LabelOn</AttributeName>
  <Description>SCADA description associated to the State of the object</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Label On</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>LabelOff</AttributeName>
  <Description>SCADA description associated to the State of the object</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Label Off</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Pattern</AttributeName>
  <Description>List of individual messages associated with the value of the object.
  Strict format: "Nbr=Message,Nbr=Message". The message CAN contain a space.
  If WordStatusBit: append "no_status=xxx,multiple_status=yyy" to set display for 0 or multiple
  bits</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>When not empty, the message corresponding to the value is displayed on the
  panel.</Usage>
    <DependentAttributes/>
    <Constraints>Strict format: "Nbr=Message,Nbr=Message". The message CAN contain a
  space.
  If WordStatusBit: append "no_status=xxx,multiple_status=yyy" to set display for 0 or multiple
  bits</Constraints>
  </isSpecificationAttribute>

```

```

</Attribute>
<Attribute>
  <AttributeName>Synoptic</AttributeName>
  <Description>Define link between the device and an existing synoptic where it appears.
The synoptic specified here can be accessed from the device right-click menu item
"Synoptic".</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Specify the path of the .pnl file under the "\panel" directory of the PVSS
project.</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DiagnosticPanel</AttributeName>
  <Description>Define link between the device and an existing diagnostic panel for the device.
The panel specified here can be accessed from the device right-click menu item "Diagnostic"
as well as from the "Diagnostic" button on the object faceplate.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Diagnostic</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Specify the path of the .pnl file under the "\panel" directory of the PVSS project
</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>WWWLink</AttributeName>
  <Description>Define link between the device and an existing web page (or pdf file, or other file
which can be opened with IE).
The link can be accessed from the device right-click menu item "Info" as well as from the "Info"
button on the object faceplate.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>WWW Link</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>

```

```

    </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DisplayName</AttributeName>
  <Description>Short Name displayed in the PCO widget in SCADA.
Should be &lt;= 8 characters to be correctly displayed in PCO widget.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Display Name</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints>Should be &lt;= 8 characters to be correctly displayed in PCO
widget</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>CurveName</AttributeName>
  <Description>Name of the gas associated to calibration curve.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <Attribute>
    <AttributeName>CC0</AttributeName>
    <Description>Fluid name associated with calibration curve 0, to be displayed in SCADA.
Cannot be null/empty (there must be at least one fluid).</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>true</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints>Cannot be null/empty (there must be at least one fluid)</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>CC1</AttributeName>
    <Description>Fluid name associated with calibration curve 1, to be displayed in SCADA.
Can be null/empty.</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints>Can be null/empty.</Constraints>

```

```

    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>CC2</AttributeName>
    <Description>Fluid name associated with calibration curve 2, to be displayed in SCADA.
Can be null/empty.</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints>Can be null/empty.</Constraints>
    </isSpecificationAttribute>
  </Attribute>
</Attribute>
<Attribute>
  <AttributeName>Flow</AttributeName>
  <Description> Flow Position physical Format,unit MaxPosSt, PosSt,AuPosRSt,ActOutOV
(converted)
</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <Attribute>
    <AttributeName>Unit</AttributeName>
    <Description>Physical measurement unit associated with the set point and flow, to be
displayed in SCADA.</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Unit</NameRepresentation>
      <isValueRequired>>true</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
<Attribute>
  <AttributeName>Format</AttributeName>
  <Description>Format of the value to be displayed in SCADA</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Format</NameRepresentation>
    <isValueRequired>>true</isValueRequired>
    <Usage>Example: use format #.## to display value to 2 decimal places.

```

To the left of the decimal point, the SCADA layer will display as many digits as required, therefore a single # is enough.</Usage>

```
<DependentAttributes/>
  <Constraints/>
</isSpecificationAttribute>
</Attribute>
</Attribute>
<Attribute>
  <AttributeName>Calibration</AttributeName>
  <Description>Flow Unit and Reference Gas Name used for the hardware
calibration.</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <Attribute>
    <AttributeName>Unit</AttributeName>
    <Description>Physical measurement unit selected by the manufacturer of the hardware
device during the calibration, to be displayed in SCADA.</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Unit</NameRepresentation>
      <isValueRequired>>true</isValueRequired>
      <Usage>This is the physical unit used by the manufacturer to calibrate the device
</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>GasName</AttributeName>
  <Description>Fluid name used to calibrate the device, to be displayed in
SCADA.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Gas Name</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
</Attribute>
<Attribute>
  <AttributeName>Totalizer</AttributeName>
  <Description>Volume format and type</Description>
```



```

<PrimitiveType>STRUCT</PrimitiveType>
<Attribute>
  <AttributeName>Unit</AttributeName>
  <Description>Physical measurement unit associated with the fluid totalizer value, to be
displayed in SCADA.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Unit</NameRepresentation>
    <isValueRequired>>true</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Format</AttributeName>
  <Description>Format of the value to be displayed in SCADA</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Format</NameRepresentation>
    <isValueRequired>>true</isValueRequired>
    <Usage>Example: use format #.## to display value to 2 decimal places.
To the left of the decimal point, the SCADA layer will display as many digits as required, therefore a
single # is enough.</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADeviceFunctionals</AttributeFamilyName>
  <UserExpandable>>false</UserExpandable>
  <Attribute>
    <AttributeName>MaskEvent</AttributeName>
    <Description>If TRUE: the events of the device will be masked in SCADA and not diplayed or
archived in the Event List.
An 'event' is defined as a bit change in StsReg01 or StsReg02</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Mask Event</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage/>
    </isSpecificationAttribute>
  </Attribute>
</AttributeFamily>

```

```

    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>AccessControlDomain</AttributeName>
  <Description>Define Access Control on the device to an existing SCADA Domain
Forbidden characters: *[: "'@`#%^^&*?!;=+~(){}&lt;&gt;|]</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Access Control Domain</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>This domain is used to grant access to this specific device.
The domain specified for this object will allow access to the object only to registered users on that
domain</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[: "'@`#%^^&*?!;=+~(){}&lt;&gt;|]</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>SCADADeviceClassificationTags</AttributeName>
  <Description>It defines the Domain, Nature and DeviceLinks for the SCADA
visualization</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <Attribute>
    <AttributeName>Domain</AttributeName>
    <Description>Domain of the device. If empty, the domain will be the name of the application
Forbidden characters: *[: "'@`#%^^&*?!;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>Domain is used to filter the devices in the alarm list or in the device tree
overview</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[:
"'@`#%^^&*?!;=+~(){}&lt;&gt;|]</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Nature</AttributeName>
  <Description>Nature of the device. If empty, the nature will be the type of the device
Forbidden characters: *[: "'@`#%^^&*?!;=+~(){}&lt;&gt;|]</Description>
  <PrimitiveType>STRING</PrimitiveType>

```

```

<isSpecificationAttribute>
  <isValueRequired>>false</isValueRequired>
  <Usage>Nature is used to filter the devices in the alarm list or in the device tree
overview</Usage>
  <DependentAttributes/>
  <Constraints>Forbidden characters: *[:
"@`#$$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
"/isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DeviceLinks</AttributeName>
  <Description>Define links to other devices (separate device names with commas).
Note: it is not necessary to link to master, parents or children because these links are automatically
created.
Forbidden characters: *[: "@`#$$%^&*?!;=+~(){}&lt;&gt;|]</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Device Links</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Linked devices will be shown in the device right-click menu</Usage>
    <DependentAttributes>Expert Name or Name.
The name of the device(s) specified here *must* correspond to "Expert Name" if it is defined.
If "Expert Name" is not defined, the name of the device(s) specified here corresponds to
"Name".</DependentAttributes>
    <Constraints>Forbidden characters: *[:
"@`#$$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
  </isSpecificationAttribute>
  </Attribute>
</Attribute>
<Attribute>
  <AttributeName>ModeLabel</AttributeName>
  <Description>Modes Label Table</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Mode Label</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>true</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
  <Attribute>
    <AttributeName>ModeLabel1</AttributeName>

```

```

    <Description>Label assigned to the option mode and displayed on the PCO widget in SCADA.
Should be &lt;= 16 characters to be correctly displayed in PCO widget.</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Option Mode 1 Label</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints>Should be &lt;= 16 characters to be correctly displayed in PCO
widget</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>ModeLabel2</AttributeName>
    <Description>Label assigned to the option mode and displayed on the PCO widget in SCADA.
Should be &lt;= 16 characters to be correctly displayed in PCO widget.</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Option Mode 2 Label</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints>Should be &lt;= 16 characters to be correctly displayed in PCO
widget</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>ModeLabel3</AttributeName>
    <Description>Label assigned to the option mode and displayed on the PCO widget in SCADA.
Should be &lt;= 16 characters to be correctly displayed in PCO widget.</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Option Mode 3 Label</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints>Should be &lt;= 16 characters to be correctly displayed in PCO
widget</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>ModeLabel4</AttributeName>
    <Description>Label assigned to the option mode and displayed on the PCO widget in SCADA.

```

```

Should be &lt;= 16 characters to be correctly displayed in PCO widget.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Option Mode 4 Label</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints>Should be &lt;= 16 characters to be correctly displayed in PCO
widget</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>ModeLabel5</AttributeName>
  <Description>Label assigned to the option mode and displayed on the PCO widget in SCADA.
Should be &lt;= 16 characters to be correctly displayed in PCO widget.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Option Mode 5 Label</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints>Should be &lt;= 16 characters to be correctly displayed in PCO
widget</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>ModeLabel6</AttributeName>
  <Description>Label assigned to the option mode and displayed on the PCO widget in SCADA.
Should be &lt;= 16 characters to be correctly displayed in PCO widget.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Option Mode 6 Label</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints>Should be &lt;= 16 characters to be correctly displayed in PCO
widget</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>ModeLabel7</AttributeName>
  <Description>Label assigned to the option mode and displayed on the PCO widget in SCADA.
Should be &lt;= 16 characters to be correctly displayed in PCO widget.</Description>

```

```

<PrimitiveType>STRING</PrimitiveType>
<isSpecificationAttribute>
  <NameRepresentation>Option Mode 7 Label</NameRepresentation>
  <isValueRequired>>false</isValueRequired>
  <Usage/>
  <DependentAttributes/>
  <Constraints>Should be &lt;= 16 characters to be correctly displayed in PCO
widget</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>ModeLabel8</AttributeName>
  <Description>Label assigned to the option mode and displayed on the PCO widget in SCADA.
Should be &lt;= 16 characters to be correctly displayed in PCO widget.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Option Mode 8 Label</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints>Should be &lt;= 16 characters to be correctly displayed in PCO
widget</Constraints>
  </isSpecificationAttribute>
</Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADataArchiving</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>ArchiveMode</AttributeName>
    <Description>Archive mode of the object engineering values. Archive if:
Old/New Comparison: value changes
Time: value changes after Time Filter
Deadband: value &lt; or &gt; deadband
AND: at least one of the conditions is fulfilled
OR: both conditions are fulfilled</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Archive Mode</NameRepresentation>
      <isValueRequired>>true</isValueRequired>
      <PermittedValue>No</PermittedValue>
      <PermittedValue>Deadband</PermittedValue>

```

```

    <PermittedValue>Time</PermittedValue>
    <PermittedValue>Deadband AND Time</PermittedValue>
    <PermittedValue>Deadband OR Time</PermittedValue>
    <PermittedValue>Old/New Comparison</PermittedValue>
    <PermittedValue>Old/New Comparison AND Time</PermittedValue>
    <PermittedValue>Old/New Comparison OR Time</PermittedValue>
    <Usage>This archive mode is used to archive data in the PVSS database</Usage>
    <DependentAttributes>If "Time" is selected, "Time Filter (s)" must be filled
    If "Deadband" is selected: "Deadband Type" and "Deadband Value" must be
    filled.</DependentAttributes>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>TimeFilter</AttributeName>
  <Description>Time filter for the SCADA archiving of the engineering values of the object. Must
  be positive.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Time Filter (s)</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes>Valid if "Time" has been selected as Archive
    Mode</DependentAttributes>
    <Constraints>Must be positive</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DeadbandType</AttributeName>
  <Description>Deadband type (Relative or Absolute) of the deadband for the SCADA archiving
  of the engineering values of the object</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Deadband Type</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <PermittedValue>Relative</PermittedValue>
    <PermittedValue>Absolute</PermittedValue>
    <Usage>The value is archived if the difference between the latest archived value and the
    actual value exceeds, either:
    - if 'Absolute': the "Deadband Value"
    - if 'Relative': the "Deadband Value" as a percent of the latest archived value</Usage>
    <DependentAttributes>Valid if "Deadband" has been selected as Archive
    Mode</DependentAttributes>

```

```

    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DeadbandValue</AttributeName>
  <Description>Deadband value for the SCADA archiving of the engineering values of the object
Must be positive and larger than the deadband specified for the driver data smoothing (Driver
deadband)</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Deadband Value</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes>Valid if "Deadband" has been selected as Archive
Mode</DependentAttributes>
    <Constraints>Must be positive and larger than the deadband specified for the driver data
smoothing (Driver deadband)</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>BooleanArch</AttributeName>
  <Description>Name of the Boolean archive
Forbidden characters: *[: ""@`#$%^&*?!.,;=+~(){}&lt;&gt;|]</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Boolean Archive</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>The boolean values of the device will be archived in the specified PVSS database.
The archive must be created in PVSS before importing the object.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[:
""@`#$%^&*?!.,;=+~(){}&lt;&gt;|]</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>AnalogArch</AttributeName>
  <Description>Name of the analog archive
Forbidden characters: *[: ""@`#$%^&*?!.,;=+~(){}&lt;&gt;|]</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Analog Archive</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>The analog values of the device will be archived in the specified PVSS database.

```



```

The archive must be created in PVSS before importing the object.</Usage>
  <DependentAttributes/>
  <Constraints>Forbidden characters: *[:
"@`#$$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>EventArch</AttributeName>
  <Description>Name of the event archive
Forbidden characters: *[: "@`#$$%^&*?!;=+~(){}&lt;&gt;|]</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Event Archive</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>The events generated by the device will be archived in the specified PVSS database.
The archive must be created in PVSS before importing the object.</Usage>
  <DependentAttributes/>
  <Constraints>Forbidden characters: *[:
"@`#$$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterlockArchiving</AttributeName>
  <Description>Archiving parameters for the boolean interlock signal</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Interlock Archiving</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
<Attribute>
  <AttributeName>ArchiveMode</AttributeName>
  <Description>Define the archive action when there is a change on the interlock state.
Archive if:
Old/New Comparison: value changes</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Archive Mode</NameRepresentation>
    <isValueRequired>>true</isValueRequired>
    <PermittedValue>No</PermittedValue>
    <PermittedValue>Old/New Comparison</PermittedValue>

```

```

    <Usage>This archive mode is used to archive alarm output state in the PVSS
database</Usage>
    <DependentAttributes/>
    <Constraints>No, or Old/New Comparison</Constraints>
</isSpecificationAttribute>
</Attribute>
</Attribute>
<Attribute>
    <AttributeName>MVArchiving</AttributeName>
    <Description>Optional : Specify specific archiving if different than connected AI for the
Measured-Value and for the Setpoint.</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>MV and SP Archiving</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage/>
        <DependentAttributes/>
        <Constraints/>
    </isSpecificationAttribute>
    <Attribute>
        <AttributeName>ArchiveMode</AttributeName>
        <Description>Archive mode of MV and SP. Archive if:
Old/New Comparison: value changes
Time: value changes after the specified Time Filter
Deadband: value < or > specified deadband
AND: at least one of the conditions is fulfilled
OR: both conditions are fulfilled</Description>
        <PrimitiveType>STRING</PrimitiveType>
        <isSpecificationAttribute>
            <NameRepresentation>Archive Mode</NameRepresentation>
            <isValueRequired>>false</isValueRequired>
            <PermittedValue>No</PermittedValue>
            <PermittedValue>Deadband</PermittedValue>
            <PermittedValue>Time</PermittedValue>
            <PermittedValue>Deadband AND Time</PermittedValue>
            <PermittedValue>Deadband OR Time</PermittedValue>
            <PermittedValue>Old/New Comparison</PermittedValue>
            <PermittedValue>Old/New Comparison AND Time</PermittedValue>
            <PermittedValue>Old/New Comparison OR Time</PermittedValue>
            <Usage>This archive mode is used to archive data in the PVSS database</Usage>
            <DependentAttributes>If "Time" is selected, "MV and SP Archiving.Time Filter (s)" must be
filled

```

If "Deadband" is selected: "MV and SP Archiving.Deadband Type" and "MV and SP Archiving.Deadband Value" must be filled.</DependentAttributes>

```
<Constraints/>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>TimeFilter</AttributeName>
  <Description>Time filter for the SCADA archiving of Controller MV and SP.
Must be positive.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Time Filter (s)</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes>Valid if "Time" has been selected as "MV and SP Archiving.Archive
Mode"</DependentAttributes>
    <Constraints>Must be positive</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DeadbandType</AttributeName>
  <Description>Deadband type (Relative or Absolute) of the deadband for the SCADA
archiving of Controller MV and SP</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Deadband Type</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <PermittedValue>Relative</PermittedValue>
    <PermittedValue>Absolute</PermittedValue>
    <Usage/>
    <DependentAttributes>Valid if "Deadband" has been selected as "MV and SP
Archiving.Archive Mode"</DependentAttributes>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DeadbandValue</AttributeName>
  <Description>Deadband value for the SCADA archiving of Controller MV and SP.
Must be positive and larger than the deadband specified for the driver data smoothing (Driver
deadband).</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Deadband Value</NameRepresentation>
```

```

    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes>Valid if "Deadband" has been selected as "MV and SP
Archiving.Archive Mode"</DependentAttributes>
    <Constraints>Must be positive and larger than the deadband specified for the driver data
smoothing (Driver deadband)</Constraints>
    </isSpecificationAttribute>
  </Attribute>
</Attribute>
<Attribute>
  <AttributeName>OutArchiving</AttributeName>
  <Description>Optional : Specify specific archiving if different than connected AO for PID
Outputs.</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Output Archiving</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
  <AttributeName>ArchiveMode</AttributeName>
  <Description>Archive mode of Output. Archive if:
Old/New Comparison: value changes
Time: value changes after the specified Time Filter
Deadband: value < or > specified deadband
AND: at least one of the conditions is fulfilled
OR: both conditions are fulfilled</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Archive Mode</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <PermittedValue>No</PermittedValue>
    <PermittedValue>Deadband</PermittedValue>
    <PermittedValue>Time</PermittedValue>
    <PermittedValue>Deadband AND Time</PermittedValue>
    <PermittedValue>Deadband OR Time</PermittedValue>
    <PermittedValue>Old/New Comparison</PermittedValue>
    <PermittedValue>Old/New Comparison AND Time</PermittedValue>
    <PermittedValue>Old/New Comparison OR Time</PermittedValue>
    <Usage>This archive mode is used to archive data in the PVSS database</Usage>
    <DependentAttributes>If "Time" is selected, "Time Filter (s)" must be filled

```

If "Deadband" is selected: "Deadband Type" and "Deadband Value" must be filled.</DependentAttributes>

```
<Constraints/>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>TimeFilter</AttributeName>
  <Description>Time filter for the SCADA archiving of Controller Output.
Must be positive.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Time Filter (s)</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes>Valid if "Time" has been selected as "Output Archiving.Archive
Mode"</DependentAttributes>
    <Constraints>Must be positive</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DeadbandType</AttributeName>
  <Description>Deadband type (Relative or Absolute) of the deadband for the SCADA
archiving of Controller Output</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Deadband Type</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <PermittedValue>Relative</PermittedValue>
    <PermittedValue>Absolute</PermittedValue>
    <Usage/>
    <DependentAttributes>Valid if "Deadband" has been selected as "Output
Archiving.Archive Mode"</DependentAttributes>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DeadbandValue</AttributeName>
  <Description>Deadband value for the SCADA archiving of Controller Output.
Must be positive and larger than the deadband specified for the driver data smoothing (Driver
deadband).</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Deadband Value</NameRepresentation>
```

```

    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes>Valid if "Deadband" has been selected as "Output
Archiving.Archive Mode"</DependentAttributes>
    <Constraints>Must be positive and larger than the deadband specified for the driver data
smoothing (Driver deadband)</Constraints>
    </isSpecificationAttribute>
  </Attribute>
</Attribute>
<Attribute>
  <AttributeName>Flow</AttributeName>
  <Description>Specify the archiving of PosSt, AuPosRSt, ActOutOV (converted).</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <Attribute>
    <AttributeName>ArchiveMode</AttributeName>
    <Description>Archive mode of the object engineering values. Archive if:
Old/New Comparison: value changes
Time: value changes after Time Filter
Deadband: value &lt; or &gt; deadband
AND: at least one of the conditions is fulfilled
OR: both conditions are fulfilled</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Archive Mode</NameRepresentation>
      <isValueRequired>>true</isValueRequired>
      <PermittedValue>No</PermittedValue>
      <PermittedValue>Deadband</PermittedValue>
      <PermittedValue>Time</PermittedValue>
      <PermittedValue>Deadband AND Time</PermittedValue>
      <PermittedValue>Deadband OR Time</PermittedValue>
      <PermittedValue>Old/New Comparison</PermittedValue>
      <PermittedValue>Old/New Comparison AND Time</PermittedValue>
      <PermittedValue>Old/New Comparison OR Time</PermittedValue>
      <Usage>This archive mode is used to archive data in the PVSS database</Usage>
      <DependentAttributes>If "Time" is selected, "Time Filter (s)" must be filled
If "Deadband" is selected: "Deadband Type" and "Deadband Value" must be
filled.</DependentAttributes>
      <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
</Attribute>
<Attribute>
  <AttributeName>TimeFilter</AttributeName>
  <Description>Time filter for the SCADA archiving of the engineering values of the object.

```

```

Must be positive.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Time Filter (s)</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes>Valid if "Time" has been selected as Archive
Mode</DependentAttributes>
    <Constraints>Must be positive</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DeadbandType</AttributeName>
  <Description>Deadband type (Relative or Absolute) of the deadband for the SCADA
archiving of the Flow.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Deadband Type</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <PermittedValue>relative</PermittedValue>
    <PermittedValue>Absolute</PermittedValue>
    <Usage>The value is archived if the difference between the latest archived value and the
actual value exceeds, either:
- if 'Absolute': the "Deadband Value"
- if 'Relative': the "Deadband Value" as a percent of the latest archived value</Usage>
    <DependentAttributes>Valid if "Deadband" has been selected as Archive
Mode</DependentAttributes>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DeadbandValue</AttributeName>
  <Description>Deadband value for the SCADA archiving of the Flow.
Must be positive and larger than the deadband specified for the driver data smoothing (Driver
deadband).</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Deadband Value</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes>Valid if "Deadband" has been selected as Archive
Mode</DependentAttributes>

```

<Constraints>Must be positive and larger than the deadband specified for the driver data smoothing (Driver deadband)</Constraints>

</isSpecificationAttribute>

</Attribute>

</Attribute>

<Attribute>

<AttributeName>Totalizer</AttributeName>

<Description>Specify the Totalizer archiving</Description>

<PrimitiveType>STRUCT</PrimitiveType>

<Attribute>

<AttributeName>ArchiveMode</AttributeName>

<Description>Archive mode of the object engineering values. Archive if:

Old/New Comparison: value changes

Time: value changes after Time Filter

Deadband: value < or > deadband

AND: at least one of the conditions is fulfilled

OR: both conditions are fulfilled</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Archive Mode</NameRepresentation>

<isValueRequired>>true</isValueRequired>

<PermittedValue>No</PermittedValue>

<PermittedValue>Deadband</PermittedValue>

<PermittedValue>Time</PermittedValue>

<PermittedValue>Deadband AND Time</PermittedValue>

<PermittedValue>Deadband OR Time</PermittedValue>

<PermittedValue>Old/New Comparison</PermittedValue>

<PermittedValue>Old/New Comparison AND Time</PermittedValue>

<PermittedValue>Old/New Comparison OR Time</PermittedValue>

<Usage>This archive mode is used to archive data in the PVSS database</Usage>

<DependentAttributes>If "Time" is selected, "Time Filter (s)" must be filled

If "Deadband" is selected: "Deadband Type" and "Deadband Value" must be filled.</DependentAttributes>

<Constraints/>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>TimeFilter</AttributeName>

<Description>Time filter for the SCADA archiving of the engineering values of the object</Description>

<PrimitiveType>FLOAT32</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Time Filter (s)</NameRepresentation>


```

    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes>Valid if "Time" has been selected as Archive
Mode</DependentAttributes>
    <Constraints>Must be positive</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>DeadbandType</AttributeName>
    <Description>Deadband type (Relative or Absolute) of the deadband for the SCADA
archiving of the Totalizer value.</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Deadband Type</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <PermittedValue>relative</PermittedValue>
        <PermittedValue>Absolute</PermittedValue>
        <Usage>The value is archived if the difference between the latest archived value and the
actual value exceeds, either:
- if 'Absolute': the "Deadband Value"
- if 'Relative': the "Deadband Value" as a percent of the latest archived value</Usage>
    <DependentAttributes>Valid if "Deadband" has been selected as Archive
Mode</DependentAttributes>
    <Constraints/>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>DeadbandValue</AttributeName>
    <Description>Deadband value for the SCADA archiving of the Totalizer value.
Must be positive and larger than the deadband specified for the driver data smoothing (Driver
deadband).</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Deadband Value</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage/>
        <DependentAttributes>Valid if "Deadband" has been selected as Archive
Mode</DependentAttributes>
        <Constraints>Must be positive and larger than the deadband specified for the driver data
smoothing (Driver deadband).</Constraints>
    </isSpecificationAttribute>
</Attribute>
</Attribute>

```

```

<Attribute>
  <AttributeName>Modes</AttributeName>
  <Description>Specify the archiving of command Modes signals. Archive is always based on
Old/new comparaison</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <Attribute>
    <AttributeName>ArchiveMode</AttributeName>
    <Description>Archive mode of the object engineering values. Archive if:
Old/New Comparison: value changes
Time: value changes after Time Filter
Deadband: value &lt; or &gt; deadband
AND: at least one of the conditions is fulfilled
OR: both conditions are fulfilled</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Archive Mode</NameRepresentation>
      <isValueRequired>>true</isValueRequired>
      <PermittedValue>No</PermittedValue>
      <PermittedValue>Old/New Comparison</PermittedValue>
      <Usage>This archive mode is used to archive data in the PVSS database</Usage>
      <DependentAttributes>If "Time" is selected, "Time Filter (s)" must be filled
If "Deadband" is selected: "Deadband Type" and "Deadband Value" must be
filled.</DependentAttributes>
      <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADriverDataSmoothing</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>DeadbandType</AttributeName>
    <Description>Deadband type (None, Relative, Absolute or Old/New) for the SCADA driver data
smoothing (Driver deadband)</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Deadband Type</NameRepresentation>
      <isValueRequired>>true</isValueRequired>
      <PermittedValue>No</PermittedValue>
      <PermittedValue>Relative</PermittedValue>
      <PermittedValue>Absolute</PermittedValue>
      <PermittedValue>Old/New</PermittedValue>

```

```

    <Usage>Used for the online display in SCADA</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DeadbandValue</AttributeName>
  <Description>Deadband value for the SCADA driver data smoothing
Must be positive and smaller than the deadband specified for the archiving</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Deadband Value</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Used for the online display in SCADA</Usage>
    <DependentAttributes/>
    <Constraints>Must be positive and smaller than the deadband specified for the
archiving</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>MVDeadband</AttributeName>
  <Description>Deadband parameters for Driver Smoothing on MV and SP</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>MV and SP Smoothing</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
  <AttributeName>DeadbandType</AttributeName>
  <Description>Deadband type (None, Relative, Absolute or Old/New) for the SCADA driver
data smoothing of Controller MV and SP</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Deadband Type</NameRepresentation>
    <isValueRequired>>true</isValueRequired>
    <PermittedValue>No</PermittedValue>
    <PermittedValue>Relative</PermittedValue>
    <PermittedValue>Absolute</PermittedValue>
    <PermittedValue>Old/New</PermittedValue>
    <Usage>Used for the online display in SCADA</Usage>

```

```

    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DeadbandValue</AttributeName>
  <Description>Deadband value for the SCADA driver data smoothing (Driver deadband) of
Controller MV and SP.
Must be positive and smaller than the deadband specified in "MV and SP Archiving.Deadband
Value"</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Deadband Value</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Used for the online display in SCADA</Usage>
    <DependentAttributes/>
    <Constraints>Must be positive and smaller than the deadband specified in "MV and SP
Archiving.Deadband Value"</Constraints>
  </isSpecificationAttribute>
</Attribute>
</Attribute>
<Attribute>
  <AttributeName>OutDeadband</AttributeName>
  <Description>Deadband parameters for Driver Smoothing on Output</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Output Smoothing</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
  <AttributeName>DeadbandType</AttributeName>
  <Description>Deadband type (None, Relative, Absolute or Old/New) for the SCADA driver
data smoothing (Driver deadband) of Controller Output</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Deadband Type</NameRepresentation>
    <isValueRequired>>true</isValueRequired>
    <PermittedValue>No</PermittedValue>
    <PermittedValue>Relative</PermittedValue>
    <PermittedValue>Absolute</PermittedValue>

```

```

    <PermittedValue>Old/New</PermittedValue>
    <Usage>Used for the online display in SCADA</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DeadbandValue</AttributeName>
  <Description>Deadband value for the SCADA driver data smoothing (Driver deadband) of
Controller Output.
Must be positive and smaller than the deadband specified in "Output Archiving.Deadband
Value"</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Deadband Value</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Used for the online display in SCADA</Usage>
    <DependentAttributes/>
    <Constraints>Must be positive and smaller than the deadband specified in "Output
Archiving.Deadband Value"</Constraints>
  </isSpecificationAttribute>
</Attribute>
</Attribute>
<Attribute>
  <AttributeName>Flow</AttributeName>
  <Description>Flow Drive Smoothing</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <Attribute>
    <AttributeName>DeadbandType</AttributeName>
    <Description>Deadband type (None, Relative, Absolute or Old/New) for the SCADA driver
data smoothing (Driver deadband) of Flow.</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Deadband Type</NameRepresentation>
      <isValueRequired>>true</isValueRequired>
      <PermittedValue>No</PermittedValue>
      <PermittedValue>Realtive</PermittedValue>
      <PermittedValue>Absolute</PermittedValue>
      <PermittedValue>Old/New</PermittedValue>
      <Usage>The value is archived if the difference between the latest archived value and the
actual value exceeds, either:
- if 'Absolute': the "Deadband Value"
- if 'Relative': the "Deadband Value" as a percent of the latest archived value</Usage>

```

```

    <DependentAttributes/>
    <Constraints>Valid if "Deadband" has been selected as Archive Mode</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DeadbandValue</AttributeName>
  <Description>Deadband value for the SCADA driver data smoothing (Driver deadband) of
Flow.
Must be positive and smaller than the deadband specified for the archiving.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Deadband Value</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Used for the online display in SCADA</Usage>
    <DependentAttributes/>
    <Constraints>Must be positive and smaller than the deadband specified for the
archiving</Constraints>
  </isSpecificationAttribute>
</Attribute>
</Attribute>
<Attribute>
  <AttributeName>Totalizer</AttributeName>
  <Description>Volume Totalizer Drive Smoothing</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <Attribute>
    <AttributeName>DeadbandType</AttributeName>
    <Description>Deadband type (None, Relative, Absolute or Old/New) for the SCADA driver
data smoothing (Driver deadband) of Totalizer value.</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Deadband Type</NameRepresentation>
      <isValueRequired>>true</isValueRequired>
      <PermittedValue>No</PermittedValue>
      <PermittedValue>Relative</PermittedValue>
      <PermittedValue>Absolute</PermittedValue>
      <PermittedValue>Old/New</PermittedValue>
      <Usage>The value is archived if the difference between the latest archived value and the
actual value exceeds, either:
- if 'Absolute': the "Deadband Value"
- if 'Relative': the "Deadband Value" as a percent of the latest archived value</Usage>
    <DependentAttributes/>
    <Constraints>Valid if "Deadband" has been selected as Archive Mode</Constraints>
  </isSpecificationAttribute>

```

```

</Attribute>
<Attribute>
  <AttributeName>DeadbandValue</AttributeName>
  <Description>Deadband value for the SCADA driver data smoothing (Driver deadband) of
Totalizer value.
Must be positive and smaller than the deadband specified for the archiving.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Deadband Value</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Used for the online display in SCADA</Usage>
    <DependentAttributes/>
    <Constraints>Must be positive and smaller than the deadband specified for the
archiving</Constraints>
  </isSpecificationAttribute>
</Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADeviceAlarms</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>AlarmConfig</AttributeName>
    <Description>Configuration of Alarm under SCADA</Description>
    <PrimitiveType>INT32</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Alarm Config</NameRepresentation>
      <isValueRequired>>true</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints/>
    </isSpecificationAttribute>
  <Attribute>
    <AttributeName>SMSCategory</AttributeName>
    <Description>This Alarm message will follow rules defined in the corresponding SMS User
Group (comma-separated list)</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>SMS Category</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>Defines a specific treatment for each SMS message</Usage>
      <DependentAttributes/>

```

```

    <Constraints>The name must correspond to the SMS user group
(unProcessAlarm,...)</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>AutoAcknowledge</AttributeName>
  <Description>The SCADA automatically performs the alarm acknowledge</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Auto Acknowledge</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>When TRUE, the SCADA automatically acknowledges the alarm at its occurrence.
The operator doesn't have to act on this alarm.</Usage>
    <DependentAttributes/>
    <Constraints>TRUE/FALSE</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Masked</AttributeName>
  <Description>Alarm signal is ignored by the SCADA</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>When TRUE, the Alarm signal is not recorded into the ALARM database</Usage>
    <DependentAttributes/>
    <Constraints>TRUE/FALSE</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Level</AttributeName>
  <Description>Classification of the importance of the Alarm</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <PermittedValue>Information</PermittedValue>
    <PermittedValue>Warning</PermittedValue>
    <PermittedValue>Alarm</PermittedValue>
    <PermittedValue>Safety Alarm</PermittedValue>
    <Usage>Level 0: Information
Level 1: Warning
Level 2: Alarm
Level 3: Safety Alarm</Usage>

```



```

    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
</Attribute>
<Attribute>
  <AttributeName>BinaryState</AttributeName>
  <Description/>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Binary State</NameRepresentation>
    <isValueRequired>>true</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
  <Attribute>
    <AttributeName>AlarmOnState</AttributeName>
    <Description>State of the device where the PVSS alert should be triggered.
Blank/empty (=default) indicates that there is no PVSS alert.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Alarm On State</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>This alarm is only used at SCADA level for information and It has no impact on
the process.</Usage>
      <DependentAttributes/>
      <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
</Attribute>
<Attribute>
  <AttributeName>Message</AttributeName>
  <Description>Message to display when alarm is set in SCADA</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>The message specified here will be displayed in the Alarm List</Usage>
    <DependentAttributes/>
    <Constraints>In principle there is no limit to the number of characters used,
however a long name may result in display issues at the SCADA level.
Forbidden characters: *["'@#$$%^&?*!.,;+=~(){}&lt;&gt;|]</Constraints>

```

```

    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>AnalogThresholds</AttributeName>
    <Description>Analog alarm condition </Description>
    <PrimitiveType>STRUCT</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Analog Thresholds</NameRepresentation>
      <isValueRequired>>true</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>HHAlarm</AttributeName>
    <Description>High High (HH) Alarm Threshold
All defined thresholds must be ordered (HH>H>L>LL)</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>HH Alarm</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>Used to define an HH Alarm on the sensor at SCADA level.
This alarm is only used at SCADA level for information and It has no impact on the process.
If empty, no alarm is created.</Usage>
      <DependentAttributes/>
      <Constraints>All defined thresholds must be ordered
(HH>H>L>LL)</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>HWarning</AttributeName>
    <Description>High (H) Alarm Threshold
All defined thresholds must be ordered (HH>H>L>LL)</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>H Warning</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>Used to define an H Alarm on the sensor at SCADA level.
This alarm is only used at SCADA level for information and It has no impact on the process.
If empty, no alarm is created.</Usage>
      <DependentAttributes/>
      <Constraints>All defined thresholds must be ordered
(HH>H>L>LL)</Constraints>

```

```

    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>LWarning</AttributeName>
    <Description>Low (L) Alarm Threshold
All defined thresholds must be ordered (HH>H>L>LL)</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>L Warning</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>Used to define an L Alarm on the sensor at SCADA level.
This alarm is only used at SCADA level for information and It has no impact on the process.
If empty, no alarm is created.</Usage>
      <DependentAttributes/>
      <Constraints>All defined thresholds must be ordered
(HH>H>L>LL)</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>LLAlarm</AttributeName>
    <Description>Low Low (LL) Alarm Threshold
All defined thresholds must be ordered (HH>H>L>LL)</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>LL Alarm</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>Used to define an LL Alarm on the sensor at SCADA level.
This alarm is only used at SCADA level for information and It has no impact on the process.
If empty, no alarm is created.</Usage>
      <DependentAttributes/>
      <Constraints>All defined thresholds must be ordered
(HH>H>L>LL)</Constraints>
    </isSpecificationAttribute>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADeviceParameters</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>FMinRan</AttributeName>
    <Description>Floating value corresponding to the Minimal Range.
Must be present when the Widget Type is "Word2AnalogStatus".</Description>

```

```

    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>F Range Min</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>When the Widget Type is "Word2AnalogStatus" the word value will be converted
at the level of the SCADA into a Float number .</Usage>
      <DependentAttributes>Widget Type</DependentAttributes>
      <Constraints>Must be present when the Widget Type is
"Word2AnalogStatus".</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>FMaxRan</AttributeName>
    <Description>Floating value corresponding to the Maximal Range.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>F Range Max</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>When the Widget Type is "Word2AnalogStatus" the word value will be converted
at the level of the SCADA into a Float number .</Usage>
      <DependentAttributes>Widget Type</DependentAttributes>
      <Constraints>Must be present when the Widget Type is
"Word2AnalogStatus"</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>RecipeType</AttributeName>
    <Description>Recipies familie name</Description>
    <PrimitiveType>STRING</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>RecipeInitName</AttributeName>
    <Description>Name of the collection of defaults values associated to the RecipeType
</Description>
    <PrimitiveType>STRING</PrimitiveType>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>LogicDeviceDefinitions</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>MasterDevice</AttributeName>

```

```

    <Description>Master of the device (relative to the hierarchy of dependent
objects).</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Master</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>The master will give automatic requests to the device.
The master object will appear in the list of "Device Links" in the device right-click menu.</Usage>
        <DependentAttributes/>
        <Constraints>Must be a single PCO for field objects, controller, or PCO.
Must be PCO or field objects for alarms (several masters are allowed in the case of multiple alarms,
separated by commas or spaces).</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>ExternalMaster</AttributeName>
    <Description>Master of the device if located in another PLC for WinCCOA.</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>External Master</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>The external master will give automatic requests to the device from another PLC. To
be specified only if master is empty.</Usage>
        <DependentAttributes/>
        <Constraints>Must be a single PCO for field objects, controller, or PCO. </Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>CustomLogicParameters</AttributeName>
    <Description>User defined meaning, used by the logic generators.</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
    <Attribute>
        <AttributeName>Parameter1</AttributeName>
        <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
        <PrimitiveType>STRING</PrimitiveType>
        <isSpecificationAttribute>
            <isValueRequired>>false</isValueRequired>
            <Usage>This parameter can be used in user logic templates to define specific logic for the
device.
If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
            <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>

```

```

        <Constraints>Forbidden characters: '$' </Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter2</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device.
If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
        <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
        <Constraints>Forbidden characters: '$' </Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter3</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device.
If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
        <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
        <Constraints>Forbidden characters: '$' </Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter4</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device.
If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>

```

```

    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter5</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device.
If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter6</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device.
If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter7</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>

```

<Usage>This parameter can be used in user logic templates to define specific logic for the device.

If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter8</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: '\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device.

If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter9</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: '\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device.

If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter10</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: '\$' </Description>

<PrimitiveType>STRING</PrimitiveType>


```

    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>This parameter can be used in user logic templates to define specific logic for the
device.
If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
      <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
      <Constraints>Forbidden characters: '$' </Constraints>
    </isSpecificationAttribute>
  </Attribute>
</Attribute>
<Attribute>
  <AttributeName>CustomLogicSections</AttributeName>
  <Description>If specified, these sections will override the default logic sections (UNICOS
provided).</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
<Attribute>
  <AttributeName>IL</AttributeName>
  <Description>Define user template for the Interlock Logic</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>IL User Template</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Specify path of the python script located under the "UserSpecific"
directory</Usage>
    <DependentAttributes>CustomLogicParameters.ParameterX (where X=1-
10)</DependentAttributes>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>CL</AttributeName>
  <Description>Define user template for the Configuration Logic</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>CL User Template</NameRepresentation>
    <isValueRequired>>false</isValueRequired>

```

```

    <Usage>Specify path of the python script located under the "UserSpecific"
directory</Usage>
    <DependentAttributes>CustomLogicParameters.ParameterX (where X=1-
10)</DependentAttributes>
    <Constraints/>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>BL</AttributeName>
    <Description>Define user template for the Basic Logic</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>BL User Template</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>Specify path of the python script located under the "UserSpecific"
directory</Usage>
        <DependentAttributes>CustomLogicParameters.ParameterX (where X=1-
10)</DependentAttributes>
        <Constraints/>
        </isSpecificationAttribute>
    </Attribute>
</Attribute>
<Attribute>
    <AttributeName>INST</AttributeName>
    <Description>Define user template for the instantiation of the PCO</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>INST User Template</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>Specify path of the python script located under the "UserSpecific"
directory</Usage>
        <DependentAttributes>CustomLogicParameters.ParameterX (where X=1-
10)</DependentAttributes>
        <Constraints/>
        </isSpecificationAttribute>
    </Attribute>
</Attribute>
<Attribute>
    <AttributeName>GL</AttributeName>
    <Description>Define user template for the Global Logic</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>GL User Template</NameRepresentation>
        <isValueRequired>>false</isValueRequired>

```

```

    <Usage>Specify path of the python script located under the "UserSpecific"
directory</Usage>
    <DependentAttributes>CustomLogicParameters.ParameterX (where X=1-
10)</DependentAttributes>
    <Constraints/>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>TL</AttributeName>
    <Description>Define user template for the Transition Logic</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>TL User Template</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>Specify path of the python script located under the "UserSpecific"
directory</Usage>
        <DependentAttributes>CustomLogicParameters.ParameterX (where X=1-
10)</DependentAttributes>
        <Constraints/>
        </isSpecificationAttribute>
    </Attribute>
</Attribute>
<Attribute>
    <AttributeName>SL</AttributeName>
    <Description>Define user template for the Sequencer Logic</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>SL User Template</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>Specify path of the python script located under the "UserSpecific"
directory</Usage>
        <DependentAttributes>CustomLogicParameters.ParameterX (where X=1-
10)</DependentAttributes>
        <Constraints/>
        </isSpecificationAttribute>
    </Attribute>
</Attribute>
<Attribute>
    <AttributeName>CDOL</AttributeName>
    <Description>Define user template for the Common Dependent Object Logic</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>CDOL User Template</NameRepresentation>
        <isValueRequired>>false</isValueRequired>

```

```

    <Usage>Specify path of the python script located under the "UserSpecific"
directory</Usage>
    <DependentAttributes>CustomLogicParameters.ParameterX (where X=1-
10)</DependentAttributes>
    <Constraints/>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>DL</AttributeName>
    <Description>Define user template for the Dependent Logic</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>DL User Template</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>Specify path of the python script located under the "UserSpecific"
directory</Usage>
        <DependentAttributes>CustomLogicParameters.ParameterX (where X=1-
10)</DependentAttributes>
        <Constraints/>
        </isSpecificationAttribute>
    </Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>DeviceTechnical</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>PROCOSConfiguration</AttributeName>
        <Description>PROCOS parameters allowing simulation</Description>
        <PrimitiveType>STRUCT</PrimitiveType>
    <Attribute>
        <AttributeName>Config</AttributeName>
        <Description>Device mode configuration for simulation (Simulated, Forced or
Empty)</Description>
        <PrimitiveType>STRING</PrimitiveType>
    </Attribute>
    <Attribute>
        <AttributeName>ForcedValue</AttributeName>
        <Description>Forced value defined (e.g.: analog: 4.5, digital: 0 or 1)</Description>
        <PrimitiveType>STRING</PrimitiveType>
    </Attribute>
    <Attribute>
        <AttributeName>Hierarchy</AttributeName>

```

```

    <Description>Hierarchy definition following the Simulation model</Description>
    <PrimitiveType>STRING</PrimitiveType>
  </Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>TargetDeviceInformation</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>Target</AttributeName>
    <Description>Identifies a target type (e.g. SIEMENS, SCHNEIDER...)</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
    <DefaultValue>Siemens</DefaultValue>
    <Attribute>
      <AttributeName>RepresentationName</AttributeName>
      <Description>It's the name used ...</Description>
      <PrimitiveType>STRING</PrimitiveType>
    </Attribute>
    <Attribute>
      <AttributeName>Optimized</AttributeName>
      <Description>Is this object an optimized Object?</Description>
      <PrimitiveType>BOOLEAN</PrimitiveType>
      <DefaultValue>>true</DefaultValue>
    </Attribute>
    <Attribute>
      <AttributeName>LimitSize</AttributeName>
      <Description>Maximun number of instances allowed</Description>
      <PrimitiveType>INT32</PrimitiveType>
      <DefaultValue>1000</DefaultValue>
    </Attribute>
    <Attribute>
      <AttributeName>FastInterlock</AttributeName>
      <Description>Is this object a fast interlock object?</Description>
      <PrimitiveType>BOOLEAN</PrimitiveType>
      <DefaultValue>>false</DefaultValue>
    </Attribute>
  </Attribute>
</AttributeFamily>
</UNICOSMetaModel>

```

2.13. DigitalAlarmDeviceType.xml

```
<?xml version="1.0" encoding="UTF-8"?>  
<UNICOSMetaModel xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"  
xsi:noNamespaceSchemaLocation="..\unicos\UNICOSMetaModel.xsd">
```

```
  <Information>  
    <Package>${devicePackageName}</Package>  
    <Name>DigitalAlarm</Name>  
    <ObjectTypeFamily>ControlObjectFamily</ObjectTypeFamily>  
    <Description>Digital Alarm Device</Description>  
    <Version>${LastChangedRevision: 170121} </Version>  
  </Information>  
  <AttributeFamily>  
    <AttributeFamilyName>DeviceIdentification</AttributeFamilyName>  
    <UserExpandable>>false</UserExpandable>  
    <Attribute>  
      <AttributeName>Name</AttributeName>  
      <Description>Name of the device. It must be unique.
```

Max length:

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: [:"'@`#\$%^&*?!.,;+~(){}<>|]-., double underscore, and page break</Description>

```
    <PrimitiveType>STRING</PrimitiveType>  
    <isSpecificationAttribute>  
      <isValueRequired>>true</isValueRequired>  
      <Usage>Name displayed at the SCADA level if "Expert Name" is not specified.
```

This name will appear in the datapoints created in the SCADA layer.</Usage>

```
    <DependentAttributes>Device Links.
```

The name of the device(s) specified in Device Links *must* correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to "Name".</DependentAttributes>

```
    <Constraints>Max length:
```

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: [:"'@`#\$%^&*?!.,;+~(){}<>|]-., double underscore, and page break

Name must be unique.</Constraints>

```
  </isSpecificationAttribute>  
</Attribute>  
<Attribute>  
  <AttributeName>ExpertName</AttributeName>  
  <Description>Name of the device displayed at the SCADA level. It must be unique.
```

Forbidden characters: *[: "'@`#\$%^&*?!;=+~(){}<>|] </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Expert Name</NameRepresentation>

<TypeRepresentation>STRING</TypeRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>It does not affect to the datapoints names in the SCADA layer.</Usage>

<DependentAttributes>Device Links.

The name of the device(s) specified in Device Links **must** correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to "Name".</DependentAttributes>

<Constraints>In principle there is no limit to the number of characters used, however a long name may result in display issues at the SCADA level.

Forbidden characters: *[: "'@`#\$%^&*?!;=+~(){}<>|]

Expert Name must be unique.</Constraints>

</isSpecificationAttribute>

</Attribute>

</AttributeFamily>

<AttributeFamily>

<AttributeFamilyName>DeviceDocumentation</AttributeFamilyName>

<UserExpandable>>true</UserExpandable>

<Attribute>

<AttributeName>DeviceDescription</AttributeName>

<Description>Description of the device. </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Description</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>Used in the SCADA layer in the device faceplate</Usage>

<DependentAttributes/>

<Constraints>In principle there is no limit to the number of characters used, however a long description may result in display issues at the SCADA level.

Forbidden characters: ;</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Remarks</AttributeName>

<Description>Field used to add relevant information about the device. </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This information is not used in the generation process, it remains only at the specification level for documentation purposes.</Usage>

<DependentAttributes/>

<Constraints>Forbidden characters: ;</Constraints>

</isSpecificationAttribute>

</Attribute>

</AttributeFamily>

<AttributeFamily>

<AttributeFamilyName>FEDeviceParameters</AttributeFamilyName>

<UserExpandable>>true</UserExpandable>

<Attribute>

<AttributeName>PAuAckAl</AttributeName>

<Meaning>Parameter Auto Acknowledge Alarm</Meaning>

<Description>Parameter Auto Acknowledge Alarm</Description>

<PrimitiveType>BOOLEAN</PrimitiveType>

</Attribute>

<Attribute>

<AttributeName>PAIDt</AttributeName>

<Meaning>Parameter Alarm Time Delay in seconds</Meaning>

<Description>Time delay applied to the condition that sets an Alarm.

Can be a number (>= 0), an object (AS,APAR), or empty (set to 0 by default).

If = 0, then no delay.</Description>

<PrimitiveType>FLOAT32</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Alarm Delay (s)</NameRepresentation>

<TypeRepresentation>STRING</TypeRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>Active alarm of a duration lower than this delay are ignored.

Filter on spikes in Alarm condition.</Usage>

<DependentAttributes/>

<Constraints>Can be a number (>= 0), an object (AS,APAR), or empty (set to 0 by default).

If = 0, then no delay.</Constraints>

</isSpecificationAttribute>

</Attribute>

</AttributeFamily>

<AttributeFamily>

<AttributeFamilyName>FEDeviceAutoRequests</AttributeFamilyName>

<UserExpandable>>true</UserExpandable>

<Attribute>

<AttributeName>AuEAl</AttributeName>

<Meaning>Auto Enable Alarm</Meaning>

<Description>Process Enable the Alarm (default value : true)</Description>


```

    <PrimitiveType>BOOLEAN</PrimitiveType>
    <DefaultValue>1</DefaultValue>
</Attribute>
<Attribute>
    <AttributeName>AuAlAck</AttributeName>
    <Meaning>Auto Alarm Acknowledgement</Meaning>
    <Description>Auto Alarm Acknowledgement: The control logic requests and Acknowledgment
of the Alarm Start and Stop Interlocks</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AulhMB</AttributeName>
    <Meaning>Auto Inhibit Manual Blocked</Meaning>
    <Description>Auto Inhibit Manual Blocked </Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>FEDeviceManualRequests</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>ManReg01</AttributeName>
        <Meaning>Manual Register 1</Meaning>
        <Description>Manual Register 1</Description>
        <isCommunicated>>true</isCommunicated>
        <PrimitiveType>WORD</PrimitiveType>
    <Attribute>
        <AttributeName>MAIBSetRst</AttributeName>
        <Meaning>Manual Alarm Block Set/Reset</Meaning>
        <Description>Manual Alarm Block Set/Reset: Operator request to set/reset the alarm
block.</Description>
        <PrimitiveType>BIT1</PrimitiveType>
        <BitPosition>10</BitPosition>
    </Attribute>
    <Attribute>
        <AttributeName>MAIAckR</AttributeName>
        <Meaning>Manual Alarm Acknowledgement Request</Meaning>
        <Description>Manual Alarm Acknowledgement Request: The operator requests Interlocks or
Alarms acknowledgement</Description>
        <PrimitiveType>BIT1</PrimitiveType>
        <BitPosition>15</BitPosition>
    </Attribute>
</Attribute>

```

```

</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceAlarm</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>Type</AttributeName>
    <Description>Definition of the Alarm action in the Process:
AL: Alarm; no interlock
FS: Full Stop
TS: Temporary Stop (until alarm disappears)
SI: Start Interlock; block ON mode request
Multiple: Several PCO/Field objects depend on Alarm - see Multiple Types.</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <PermittedValue>AL</PermittedValue>
      <PermittedValue>FS</PermittedValue>
      <PermittedValue>TS</PermittedValue>
      <PermittedValue>SI</PermittedValue>
      <PermittedValue>Multiple</PermittedValue>
      <Usage>There are 4 valid alarm types:
AL: Alarm; will have no effect on PCO/Field
FS: Full Stop; will Stop PCO/Field
TS: Temporary Stop; will Stop PCO/Field until it disappears.
SI: Start Interlock; will block ON mode request applied to the PCO/Field.</Usage>
      <DependentAttributes>All PCO/Field object specified in this Instance
If "Multiple", then must fill out Multiple Types field</DependentAttributes>
    </isSpecificationAttribute>
    </Attribute>
  <Attribute>
    <AttributeName>MultipleTypes</AttributeName>
    <Description>Declaration of all types of alarm in the case of a multiple dependent objects.
Valid only when FEDeviceAlarm::Type is "Multiple", syntax "AllType,AllType".
"AllType" must be one of the following valid alarm types: AL,FS,TS,SI.</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Multiple Types</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>Provide to the SCADA information on the Alarm types when several PCO/field
objects are dependent of this Alarm</Usage>
      <DependentAttributes>FEDeviceAlarm::Type</DependentAttributes>

```

*<Constraints>Valid only when FEDeviceAlarm::Type is "Multiple", syntax "AType,AType"
"AType" must be one of the following valid alarm types: AL,FS,TS,SI</Constraints>*

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>AutoAcknowledge</AttributeName>

<Description>The SCADA automatically performs the alarm acknowledge</Description>

<PrimitiveType>BOOLEAN</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Auto Acknowledge</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>When TRUE, the SCADA automatically acknowledges the alarm at its occurrence.

The operator doesn't have to act on this alarm.</Usage>

<DependentAttributes/>

<Constraints>TRUE/FALSE</Constraints>

</isSpecificationAttribute>

</Attribute>

</AttributeFamily>

<AttributeFamily>

<AttributeFamilyName>FEDeviceEnvironmentInputs</AttributeFamilyName>

<UserExpandable>>true</UserExpandable>

<Attribute>

<AttributeName>I</AttributeName>

<Meaning>Interlock</Meaning>

<Description>Logic for the Alarm input signal.

If blank or "logic", then input is defined inside the logic.

If not blank, either a single object or simplified PLC logic (e.g. RUN.X AND NOT DIOBJECT) is allowed.</Description>

<PrimitiveType>BOOLEAN</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Input</NameRepresentation>

<TypeRepresentation>STRING</TypeRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>Logic for the Alarm input signal.</Usage>

<DependentAttributes/>

<Constraints>If blank or "logic", then input is defined inside the logic.

If not blank, either a single object or simplified PLC logic (e.g. RUN.X AND NOT DIOBJECT) is allowed.</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>IOError</AttributeName>

<Meaning>Input/Output Error</Meaning>

```

    <Description>IOError state in any of the dependant objects or the PLC channel assigned to the
object</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>IOSimu</AttributeName>
    <Meaning>Input/Output Simulated</Meaning>
    <Description>Any of the dependant objects is in Forced or Manual Mode</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>FEDeviceOutputs</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
<Attribute>
    <AttributeName>StsReg01</AttributeName>
    <Meaning>Status Register 1</Meaning>
    <Description>Status Register 1</Description>
    <isEventAttribute>>true</isEventAttribute>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>WORD</PrimitiveType>
<Attribute>
    <AttributeName>ISt</AttributeName>
    <Meaning>Interlock Status</Meaning>
    <Description>Interlock Status</Description>
    <isArchived>>true</isArchived>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>0</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>ConfigW</AttributeName>
    <Meaning>Config Warning</Meaning>
    <Description>The Process has disabled the Alarm</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>5</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>IOErrorW</AttributeName>
    <Meaning>Input/Output Error Warning</Meaning>
    <Description>Current status of the IOError</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>6</BitPosition>

```

```

</Attribute>
<Attribute>
  <AttributeName>IOSimuW</AttributeName>
  <Meaning>Input/Output Simulated Warning</Meaning>
  <Description>Current status of the IOSimu</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>7</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>AuEAISt</AttributeName>
  <Meaning>Auto Enable Alarm Status</Meaning>
  <Description>Auto Enable te Alarm </Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>8</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>PosW</AttributeName>
  <Meaning>Position Warning</Meaning>
  <Description>There is discrepancy between the order status and the position status
according to Time Delay and Dead-band.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>9</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>AlUnAck</AttributeName>
  <Meaning>Alarm UnAcknowledged</Meaning>
  <Description>Alarm UnAcknowledged: The alarm or at least one of the alarms associated to
the object is not acknowledged</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>12</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MAIBRSt</AttributeName>
  <Meaning>Manual Alarm Blocked Request Status</Meaning>
  <Description>Alarm Blocked Request Status.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>14</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>AulhMB</AttributeName>
  <Meaning>Auto Inhibit Manual Blocked Status</Meaning>
  <Description>Auto Inhibit Manual Blocked Status</Description>
  <PrimitiveType>BIT1</PrimitiveType>

```

```

    <BitPosition>15</BitPosition>
  </Attribute>
</Attribute>
<Attribute>
  <AttributeName>ISt</AttributeName>
  <Meaning>Interlock Status</Meaning>
  <Description>Interlock Status</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>IOErrorW</AttributeName>
  <Meaning>Input/Output Error Warning</Meaning>
  <Description>Current status of the IOError</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>IOSimuW</AttributeName>
  <Meaning>Input/Output Simulated Warning</Meaning>
  <Description>Current status of the IOSimu</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AlUnAck</AttributeName>
  <Meaning>Alarm UnAcknowledged</Meaning>
  <Description>Alarm UnAcknowledged: The alarm or at least one of the alarms associated to
the object is not acknowledged</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>MAIBRSt</AttributeName>
  <Meaning>Manual Alarm Blocked Request Status</Meaning>
  <Description>Alarm Blocked Request Status.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADeviceGraphics</AttributeFamilyName>
  <UserExpandable>true</UserExpandable>
  <Attribute>
    <AttributeName>WidgetType</AttributeName>
    <Description>Define the widget type to display in the SCADA device tree overview only.
The widget displayed in the process panel will be selected when the user creates the
panel.</Description>

```

```

<PrimitiveType>STRING</PrimitiveType>
<isSpecificationAttribute>
  <NameRepresentation>Widget Type</NameRepresentation>
  <isValueRequired>>true</isValueRequired>
  <isCaseSensitive>>true</isCaseSensitive>
  <PermittedValue>DigitalAlarm</PermittedValue>
  <Usage/>
  <DependentAttributes/>
  <Constraints/>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Synoptic</AttributeName>
  <Description>Define link between the device and an existing synoptic where it appears. The
synoptic specified here can be accessed from the device right-click menu item
"Synoptic".</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Specify the path of the .pnl file under the "\panel" directory of the PVSS
project.</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DiagnosticPanel</AttributeName>
  <Description>Define link between the device and an existing diagnostic panel for the device.
The panel specified here can be accessed from the device right-click menu item "Diagnostic" as well
as from the "Diagnostic" button on the object faceplate.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Diagnostic</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Specify the path of the .pnl file under the "\panel" directory of the PVSS project
</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>WWWLink</AttributeName>

```

<Description>Define link between the device and an existing web page (or pdf file, or other file which can be opened with IE). The link can be accessed from the device right-click menu item "Info" as well as from the "Info" button on the object faceplate.</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>WWW Link</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage/>

<DependentAttributes/>

<Constraints/>

</isSpecificationAttribute>

</Attribute>

</AttributeFamily>

<AttributeFamily>

<AttributeFamilyName>SCADADeviceFunctionals</AttributeFamilyName>

<UserExpandable>>false</UserExpandable>

<Attribute>

<AttributeName>MaskEvent</AttributeName>

<Description>If TRUE: the events of the device will be masked in SCADA and not displayed or archived in the Event List.

An 'event' is defined as a bit change in StsReg01 or StsReg02</Description>

<PrimitiveType>BOOLEAN</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Mask Event</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage/>

<DependentAttributes/>

<Constraints/>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>AccessControlDomain</AttributeName>

<Description>Define Access Control on the device to an existing SCADA Domain

*Forbidden characters: *[: ""@`#\$%^&*?!;=+~(){}<>|]</Description>*

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Access Control Domain</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>This domain is used to grant access to this specific device. The domain specified for this object will allow access to the object only to registered users on that domain</Usage>

<DependentAttributes/>

*<Constraints>Forbidden characters: *[: ""@`#\$%^&*?!;=+~(){}<>|]</Constraints>*

</isSpecificationAttribute>


```

</Attribute>
<Attribute>
  <AttributeName>SCADADeviceClassificationTags</AttributeName>
  <Description>It defines the Domain, Nature and DeviceLinks for the SCADA
visualization</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <Attribute>
    <AttributeName>Domain</AttributeName>
    <Description>Domain of the device. If empty, the domain will be the name of the application
Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>Domain is used to filter the devices in the alarm list or in the device tree
overview</Usage>
      <DependentAttributes/>
      <Constraints>Forbidden characters: *[:
""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>Nature</AttributeName>
    <Description>Nature of the device. If empty, the nature will be the type of the device
Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>Nature is used to filter the devices in the alarm list or in the device tree
overview</Usage>
      <DependentAttributes/>
      <Constraints>Forbidden characters: *[:
""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>DeviceLinks</AttributeName>
    <Description>Define links to other devices (separate device names with commas).
Note: it is not necessary to link to master, parents or children because these links are automatically
created.
Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Device Links</NameRepresentation>

```

```

    <isValueRequired>>false</isValueRequired>
    <Usage>Linked devices will be shown in the device right-click menu</Usage>
    <DependentAttributes>Expert Name or Name.

```

The name of the device(s) specified here *must* correspond to "Expert Name" if it is defined. If "Expert Name" is not defined, the name of the device(s) specified here corresponds to "Name".</DependentAttributes>

```

    <Constraints>Forbidden characters: *[:
    "'@`#%$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
    </Attribute>
    </Attribute>
    </AttributeFamily>
    <AttributeFamily>
    <AttributeName>SCADADataArchiving</AttributeName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
    <AttributeName>ArchiveMode</AttributeName>
    <Description>Archive mode of the object engineering values. Archive if:
    Old/New Comparison: value changes</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <NameRepresentation>Archive Mode</NameRepresentation>
    <isValueRequired>>true</isValueRequired>
    <PermittedValue>No</PermittedValue>
    <PermittedValue>Old/New Comparison</PermittedValue>
    <Usage>This archive mode is used to archive data in the PVSS database</Usage>
    <DependentAttributes/>
    <Constraints/>
    </isSpecificationAttribute>
    </Attribute>
    <Attribute>
    <AttributeName>BooleanArch</AttributeName>
    <Description>Name of the Boolean archive
    Forbidden characters: *[: "'@`#%$%^&*?!;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <NameRepresentation>Boolean Archive</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>The boolean values of the device will be archived in the specified PVSS database.
    The archive must be created in PVSS before importing the object.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[:
    "'@`#%$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>

```

```

    </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>AnalogArch</AttributeName>
  <Description>Name of the analog archive
Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Analog Archive</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>The analog values of the device will be archived in the specified PVSS database. The
archive must be created in PVSS before importing the object.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[:
""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>EventArch</AttributeName>
  <Description>Name of the event archive
Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Event Archive</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>The events generated by the device will be archived in the specified PVSS database.
The archive must be created in PVSS before importing the object.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[:
""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
  </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADeviceAlarms</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>AlarmConfig</AttributeName>
    <Description>Configuration of Alarm under SCADA</Description>
    <PrimitiveType>INT32</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Alarm Config</NameRepresentation>
      <isValueRequired>>true</isValueRequired>

```

```

    <Usage/>
    <DependentAttributes/>
    <Constraints/>
</isSpecificationAttribute>
<Attribute>
    <AttributeName>SMSCategory</AttributeName>
    <Description>This Alarm message will follow rules defined in the corresponding SMS User
Group(s) (comma-separated list)</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>SMS Category</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>Defines a specific treatment for each SMS message</Usage>
        <DependentAttributes/>
        <Constraints>The name must correspond to the SMS user group
(unProcessAlarm,...)</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Masked</AttributeName>
    <Description>Alarm signal is ignored by the SCADA</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>When TRUE, the Alarm signal is not recorded into the ALARM database</Usage>
        <DependentAttributes/>
        <Constraints>TRUE/FALSE</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Level</AttributeName>
    <Description>Classification of the importance of the Alarm</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <PermittedValue>Information</PermittedValue>
        <PermittedValue>Warning</PermittedValue>
        <PermittedValue>Alarm</PermittedValue>
        <PermittedValue>Safety Alarm</PermittedValue>
        <Usage>Level 0: Information
Level 1: Warning
Level 2: Alarm
Level 3: Safety Alarm</Usage>

```

```

    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
</Attribute>
<Attribute>
  <AttributeName>Message</AttributeName>
  <Description>Message to display when alarm is set in SCADA</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>The message specified here will be displayed in the Alarm List</Usage>
    <DependentAttributes/>
    <Constraints>In principle there is no limit to the number of characters used, however a long
name may result in display issues at the SCADA level.
Forbidden characters: *["'@`#$%^&*?!;,=+~(){}&lt;&gt;|]</Constraints>
  </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>LogicDeviceDefinitions</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>MasterDevice</AttributeName>
    <Description>Master of the device (relative to the hierarchy of dependent
objects).</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Master</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>The master will give automatic requests to the device. The master object will
appear in the list of "Device Links" in the device right-click menu.</Usage>
      <DependentAttributes/>
      <Constraints>Must be a single PCO for field objects, controller, or PCO.
Must be PCO or field objects for alarms (several masters are allowed in the case of multiple alarms,
separated by commas or spaces).</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>Fast Interlock Type</AttributeName>
    <Description>Type of fast interlock object if necessary</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>

```

```

    <isValueRequired>>false</isValueRequired>
    <PermittedValue>Hardware Interrupt</PermittedValue>
    <PermittedValue>Cyclic Interrupt</PermittedValue>
    <Usage>This parameter is used to determinate if the object will be processed in the fast
interlock logic</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>CustomLogicParameters</AttributeName>
  <Description>User defined meaning, used by the logic generators.</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <Attribute>
    <AttributeName>Parameter1</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
      <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
      <Constraints>Forbidden characters: '$' </Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>Parameter2</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
      <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
      <Constraints>Forbidden characters: '$' </Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>Parameter3</AttributeName>

```

```

    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
        <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
        <Constraints>Forbidden characters: '$' </Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter4</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
        <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
        <Constraints>Forbidden characters: '$' </Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter5</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
        <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
        <Constraints>Forbidden characters: '$' </Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter6</AttributeName>
    <Description>Parameter to be used in the logic templates

```

Forbidden characters: "\$' </Description>
 <PrimitiveType>STRING</PrimitiveType>
 <isSpecificationAttribute>
 <isValueRequired>>false</isValueRequired>
 <Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
 <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User Template"? file</DependentAttributes>
 <Constraints>Forbidden characters: "\$' </Constraints>
 </isSpecificationAttribute>
 </Attribute>

<Attribute>
 <AttributeName>Parameter7</AttributeName>
 <Description>Parameter to be used in the logic templates

Forbidden characters: "\$' </Description>
 <PrimitiveType>STRING</PrimitiveType>
 <isSpecificationAttribute>
 <isValueRequired>>false</isValueRequired>
 <Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
 <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User Template"? file</DependentAttributes>
 <Constraints>Forbidden characters: "\$' </Constraints>
 </isSpecificationAttribute>
 </Attribute>

<Attribute>
 <AttributeName>Parameter8</AttributeName>
 <Description>Parameter to be used in the logic templates

Forbidden characters: "\$' </Description>
 <PrimitiveType>STRING</PrimitiveType>
 <isSpecificationAttribute>
 <isValueRequired>>false</isValueRequired>
 <Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
 <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User Template"? file</DependentAttributes>
 <Constraints>Forbidden characters: "\$' </Constraints>
 </isSpecificationAttribute>
 </Attribute>

<Attribute>
 <AttributeName>Parameter9</AttributeName>
 <Description>Parameter to be used in the logic templates

Forbidden characters: "\$' </Description>


```

    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
      <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
      <Constraints>Forbidden characters: '$' </Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>Parameter10</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
      <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
      <Constraints>Forbidden characters: '$' </Constraints>
    </isSpecificationAttribute>
  </Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>TargetDeviceInformation</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>Target</AttributeName>
    <Description>Identifies a target type (e.g. SIEMENS, SCHNEIDER...)</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
    <DefaultValue>Siemens</DefaultValue>
  <Attribute>
    <AttributeName>RepresentationName</AttributeName>
    <Description>It's the name used ...</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <DefaultValue>DA</DefaultValue>
  </Attribute>
  <Attribute>
    <AttributeName>Optimized</AttributeName>
    <Description>Is this object an optimized Object?</Description>

```

```
<PrimitiveType>BOOLEAN</PrimitiveType>
  <DefaultValue>>true</DefaultValue>
</Attribute>
<Attribute>
  <AttributeName>LimitSize</AttributeName>
  <Description>Maximun number of instances allowed</Description>
  <PrimitiveType>INT32</PrimitiveType>
  <DefaultValue>1000</DefaultValue>
</Attribute>
<Attribute>
  <AttributeName>FastInterlock</AttributeName>
  <Description>Is this object a fast interlock object?</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <DefaultValue>>true</DefaultValue>
</Attribute>
</Attribute>
</AttributeFamily>
</UNICOSMetaModel>
```

2.14. DigitalInputDeviceType.xml

```
<?xml version='1.0' encoding='UTF-8'?>
<UNICOSMetaModel xmlns:xsi='http://www.w3.org/2001/XMLSchema-instance'
xsi:noNamespaceSchemaLocation='..\unicos\UNICOSMetaModel.xsd'>
  <Information>
    <Package>${devicePackageName}</Package>
    <Name>DigitalInput</Name>
    <ObjectTypeFamily>IOObjectFamily</ObjectTypeFamily>
    <Description>Digital Input Device</Description>
    <Version>${LastChangedRevision: 170110} $</Version>
  </Information>
  <AttributeFamily>
    <AttributeFamilyName>DeviceIdentification</AttributeFamilyName>
    <UserExpandable>>false</UserExpandable>
    <Attribute>
      <AttributeName>Name</AttributeName>
      <Description>Name of the device. It must be unique.
```

Max length:

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: [:"'@`#\$%^&*?!.,;+~(){}<>|]-., double underscore, and page break</Description>

```
  <PrimitiveType>STRING</PrimitiveType>
```

```
  <isSpecificationAttribute>
```

```
    <isValueRequired>>true</isValueRequired>
```

```
    <Usage>Name displayed at the SCADA level if "Expert Name" is not specified.
```

This name will appear in the datapoints created in the SCADA layer.</Usage>

```
    <DependentAttributes>Device Links.
```

The name of the device(s) specified in Device Links *must* correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to "Name".</DependentAttributes>

```
    <Constraints>Max length:
```

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: [:"'@`#\$%^&*?!.,;+~(){}<>|]-., double underscore, and page break Name must be unique.</Constraints>

```
  </isSpecificationAttribute>
```

```
</Attribute>
```

```
<Attribute>
```

```
  <AttributeName>ExpertName</AttributeName>
```

```
  <Description>Name of the device displayed at the SCADA level. It must be unique.
```

Forbidden characters: *[: "'@#%^^&*?!;=+~(){}<>|] </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Expert Name</NameRepresentation>

<TypeRepresentation>STRING</TypeRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>It does not affect to the datapoints names in the SCADA layer.</Usage>

<DependentAttributes>Device Links.

The name of the device(s) specified in Device Links **must** correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to "Name".</DependentAttributes>

<Constraints>In principle there is no limit to the number of characters used, however a long name may result in display issues at the SCADA level.

Forbidden characters: *[: "'@#%^^&*?!;=+~(){}<>|]

Expert Name must be unique.</Constraints>

</isSpecificationAttribute>

</Attribute>

</AttributeFamily>

<AttributeFamily>

<AttributeFamilyName>DeviceDocumentation</AttributeFamilyName>

<UserExpandable>>true</UserExpandable>

<Attribute>

<AttributeName>DeviceDescription</AttributeName>

<Description>Description of the device. </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Description</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>Used in the SCADA layer in the device faceplate</Usage>

<DependentAttributes/>

<Constraints>In principle there is no limit to the number of characters used, however a long description may result in display issues at the SCADA level.

Forbidden characters: ;</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>ElectricalDiagram</AttributeName>

<Description>Reference to the electrical diagram in which the device is represented.</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Electrical Diagram</NameRepresentation>

```

    <isValueRequired>>false</isValueRequired>
    <Usage>Used in the SCADA layer: added to the device description in the device
faceplate.</Usage>
    <DependentAttributes/>
    <Constraints>In principle there is no limit to the number of characters used, however a long
name may result in display issues at the SCADA level.
Forbidden characters: *[: ""@ #\$%^&?*!;,=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Remarks</AttributeName>
    <Description>Field used to add relevant information about the device. </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This information is not used in the generation process, it remains only at the
specification level for documentation purposes.</Usage>
        <DependentAttributes/>
        <Constraints>Forbidden characters: ;</Constraints>
        </isSpecificationAttribute>
    </Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>FEDeviceAutoRequests</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>AulhFoMo</AttributeName>
        <Meaning>Auto Inhibit Forced Mode</Meaning>
        <Description>Auto Inhibit Forced Mode (by logic): The control logic blocks the forced mode
operation.</Description>
        <PrimitiveType>BOOLEAN</PrimitiveType>
    </Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>FEDeviceManualRequests</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>ManReg01</AttributeName>
        <Meaning> Manual Register 1</Meaning>
        <Description>Manual Register 1</Description>
        <isCommunicated>>true</isCommunicated>
        <PrimitiveType>WORD</PrimitiveType>
    </Attribute>

```

```

    <AttributeName>MAuMoR</AttributeName>
    <Meaning>Manual Auto Mode Request</Meaning>
    <Description>Manual Auto Mode Request: The operator requests the Auto Mode.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>0</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>MFoMoR</AttributeName>
    <Meaning>Manual Forced Mode Request</Meaning>
    <Description>Manual Forced Mode Request: The operator requests the Forced
Mode.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>2</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>MOnR</AttributeName>
    <Meaning>Manual On Request</Meaning>
    <Description>Manual On Request: The operator requests the On/Open position</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>4</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>MOffR</AttributeName>
    <Meaning>Manual Off Request</Meaning>
    <Description>Manual Off Request: The operator requests the Off/Close position</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>5</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>MIOErBSetRst</AttributeName>
    <Meaning>Manual Input/Output Error Block Set/Reset</Meaning>
    <Description>Manual IO Error Block Set/Reset: This action allows to set/reset the
IOError.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>10</BitPosition>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceEnvironmentInputs</AttributeFamilyName>
  <UserExpandable>true</UserExpandable>
  <Attribute>
    <AttributeName>HFPos</AttributeName>

```

```

    <Meaning>Hardware Feedback Position</Meaning>
    <Description>Analog Feedback of the actuator.
Must be an AI/AIR/AS.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>IOError</AttributeName>
    <Meaning>Input/Output Error</Meaning>
    <Description>IOError state in any of the dependant objects or the PLC channel assigned to the
object</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>IOSimu</AttributeName>
    <Meaning>Input/Output Simulated</Meaning>
    <Description>Any of the dependant objects is in Forced or Manual Mode</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>FEDeviceOutputs</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
<Attribute>
    <AttributeName>StsReg01</AttributeName>
    <Meaning>Status Register 1</Meaning>
    <Description>Status Register 1</Description>
    <isEventAttribute>>true</isEventAttribute>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>WORD</PrimitiveType>
<Attribute>
    <AttributeName>PosSt</AttributeName>
    <Meaning>Position Status</Meaning>
    <Description>Digital Position Status</Description>
    <isArchived>true</isArchived>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>0</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AuMoSt</AttributeName>
    <Meaning>Auto Mode Status</Meaning>
    <Description>Current status of the Auto Mode</Description>
    <PrimitiveType>BIT1</PrimitiveType>

```

```

    <BitPosition>2</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>FoMoSt</AttributeName>
    <Meaning>Forced Mode Status</Meaning>
    <Description>Current status of the Forced Mode.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>4</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>IOErrorW</AttributeName>
    <Meaning>Input/Output Error Warning</Meaning>
    <Description>Current status of the IOError</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>6</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>IOSimuW</AttributeName>
    <Meaning>Input/Output Simulated Warning</Meaning>
    <Description>Current status of the IOSimu</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>7</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>FoDiProW</AttributeName>
    <Meaning>Forced Differs from Process Warning</Meaning>
    <Description>The Manual or Forced Position requested by the operator differs from the
    Process</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>8</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>MIOErBRSt</AttributeName>
    <Meaning>Manual Input/Output Error Block Request Status</Meaning>
    <Description>Manual IOError Block Request Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>9</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>AulhFoMoSt</AttributeName>
    <Meaning>Auto Inhibit Forced Mode Status</Meaning>
    <Description>Auto Inhibit Forced Mode status: Current status of the Auto Inhibit forced
    mode.</Description>

```



```

    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>13</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>HFSt</AttributeName>
    <Meaning>Hardware Feedback Status</Meaning>
    <Description>Hardware feedback status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>14</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MPosRSt</AttributeName>
    <Meaning>Manual Position Requested Status</Meaning>
    <Description>Manual Position Requested Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>15</BitPosition>
</Attribute>
</Attribute>
<Attribute>
    <AttributeName>PosSt</AttributeName>
    <Meaning>Position status</Meaning>
    <Description>Position Status</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>HFSt</AttributeName>
    <Meaning>Hardware Feedback Status</Meaning>
    <Description>Current engeneering value of the Hardware feedback position sensor</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>MPosRSt</AttributeName>
    <Meaning>Manual Position Request Status</Meaning>
    <Description>Manual Position request status</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuMoSt</AttributeName>
    <Meaning>Auto Mode Status</Meaning>
    <Description>Current status of the Auto Mode</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>

```

```

<Attribute>
  <AttributeName>FoMoSt</AttributeName>
  <Meaning>Forced Mode Status</Meaning>
  <Description>Current status of the Forced Mode.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>IOErrorW</AttributeName>
  <Meaning>Input/Output Error Warning</Meaning>
  <Description>Current status of the IOError</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>IOSimuW</AttributeName>
  <Meaning>Input/Output Simulated Warning</Meaning>
  <Description>Current status of the IOSimu</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>FoDiProW</AttributeName>
  <Meaning>Forced Differs from Process Warning</Meaning>
  <Description>The Manual or Forced Position requested by the operator differs from the
Process</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceIOConfig</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>FEType</AttributeName>
    <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>FE Encoding Type</NameRepresentation>
      <TypeRepresentation>STRING</TypeRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
      <DependentAttributes>FEChannel.InterfaceParamX (where X=1-10)</DependentAttributes>

```

```

    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>FEChannel</AttributeName>
  <Description>Indicates how to map the acquisition of the information from the field I/O
interface.</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <Attribute>
    <AttributeName>InterfaceParam1</AttributeName>
    <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
      <DependentAttributes>FE Encoding Type</DependentAttributes>
      <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>InterfaceParam2</AttributeName>
    <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
      <DependentAttributes>FE Encoding Type</DependentAttributes>
      <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>InterfaceParam3</AttributeName>

```

<Description>Parameter used to set up the periphery address of the device according to the various hardware module types used at the PLC level.

Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Usage>

<DependentAttributes>FE Encoding Type</DependentAttributes>

<Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>InterfaceParam4</AttributeName>

<Description>Parameter used to set up the periphery address of the device according to the various hardware module types used at the PLC level.

Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Usage>

<DependentAttributes>FE Encoding Type</DependentAttributes>

<Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>InterfaceParam5</AttributeName>

<Description>Parameter used to set up the periphery address of the device according to the various hardware module types used at the PLC level.

Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Usage>

<DependentAttributes>FE Encoding Type</DependentAttributes>

<Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Constraints>

```

</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam6</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam7</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam8</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>

```

```

    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>InterfaceParam9</AttributeName>
    <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>InterfaceParam10</AttributeName>
    <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
</isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>SCADADeviceGraphics</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>

```

```

<Attribute>
  <AttributeName>WidgetType</AttributeName>
  <Description>Define the widget type to display in the SCADA device tree overview only.
The widget displayed in the process panel will be selected when the user creates the
panel.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Widget Type</NameRepresentation>
    <isValueRequired>>true</isValueRequired>
    <isCaseSensitive>>true</isCaseSensitive>
    <PermittedValue>DigitalInput</PermittedValue>
  </isSpecificationAttribute>
  <Usage/>
  <DependentAttributes/>
  <Constraints/>
</Attribute>
<Attribute>
  <AttributeName>Synoptic</AttributeName>
  <Description>Define link between the device and an existing synoptic where it appears. The
synoptic specified here can be accessed from the device right-click menu item
"Synoptic".</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Specify the path of the .pnl file under the "\panel" directory of the PVSS
project.</Usage>
  <DependentAttributes/>
  <Constraints/>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DiagnosticPanel</AttributeName>
  <Description>Define link between the device and an existing diagnostic panel for the device. The
panel specified here can be accessed from the device right-click menu item "Diagnostic" as well as
from the "Diagnostic" button on the object faceplate.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Diagnostic</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Specify the path of the .pnl file under the "\panel" directory of the PVSS project
</Usage>
  <DependentAttributes/>
  <Constraints/>

```

```

</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>WWWLink</AttributeName>
  <Description>Define link between the device and an existing web page (or pdf file, or other file
which can be opened with IE). The link can be accessed from the device right-click menu item "Info"
as well as from the "Info" button on the object faceplate.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>WWW Link</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADeviceFunctionals</AttributeFamilyName>
  <UserExpandable>>false</UserExpandable>
  <Attribute>
    <AttributeName>MaskEvent</AttributeName>
    <Description>If TRUE: the events of the device will be masked in SCADA and not displayed or
archived in the Event List.
An 'event' is defined as a bit change in StsReg01 or StsReg02</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Mask Event</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>AccessControlDomain</AttributeName>
    <Description>Define Access Control on the device to an existing SCADA Domain
Forbidden characters: *[: ""@ #$$%^&amp;*?!;=+~(){}&lt;&gt;;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Access Control Domain</NameRepresentation>
      <isValueRequired>>false</isValueRequired>

```


<Usage>This domain is used to grant access to this specific device. The domain specified for this object will allow access to the object only to registered users on that domain</Usage>

<DependentAttributes/>

*<Constraints>Forbidden characters: *[: ""@`#\$%^&*?!;=+~(){}<>|]</Constraints>*

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>SCADADeviceClassificationTags</AttributeName>

<Description>It defines the Domain, Nature and DeviceLinks for the SCADA visualization</Description>

<PrimitiveType>STRUCT</PrimitiveType>

<Attribute>

<AttributeName>Domain</AttributeName>

*<Description>Domain of the device. If empty, the domain will be the name of the application
Forbidden characters: *[: ""@`#\$%^&*?!;=+~(){}<>|]</Description>*

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>Domain is used to filter the devices in the alarm list or in the device tree overview</Usage>

<DependentAttributes/>

*<Constraints>Forbidden characters: *[: ""@`#\$%^&*?!;=+~(){}<>|]</Constraints>*

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Nature</AttributeName>

*<Description>Nature of the device. If empty, the nature will be the type of the device
Forbidden characters: *[: ""@`#\$%^&*?!;=+~(){}<>|]</Description>*

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>Nature is used to filter the devices in the alarm list or in the device tree overview</Usage>

<DependentAttributes/>

*<Constraints>Forbidden characters: *[: ""@`#\$%^&*?!;=+~(){}<>|]</Constraints>*

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>DeviceLinks</AttributeName>

<Description>Define links to other devices (separate device names with commas).

Note: it is not necessary to link to master, parents or children because these links are automatically created.

*Forbidden characters: *[: ""@`#\$%^&*?!;=+~(){}<>|]</Description>*

```

<PrimitiveType>STRING</PrimitiveType>
<isSpecificationAttribute>
  <NameRepresentation>Device Links</NameRepresentation>
  <isValueRequired>>false</isValueRequired>
  <Usage>Linked devices will be shown in the device right-click menu</Usage>
  <DependentAttributes>Expert Name or Name.
The name of the device(s) specified here must correspond to "Expert Name" if it is defined.
If "Expert Name" is not defined, the name of the device(s) specified here corresponds to
"Name".</DependentAttributes>
  <Constraints>Forbidden characters: *[: "'@ # $ % ^ & * ? ! , ; = + ~ ( ) { } &lt; &gt; | ]</Constraints>
</isSpecificationAttribute>
</Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADA Device Data Archiving</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>ArchiveMode</AttributeName>
    <Description>Archive mode of the object engineering values. Archive if:
Old/New Comparison: value changes
Time: value changes after Time Filter
Deadband: value &lt; or &gt; deadband
AND: at least one of the conditions is fulfilled
OR: both conditions are fulfilled</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Archive Mode</NameRepresentation>
      <isValueRequired>>true</isValueRequired>
      <PermittedValue>No</PermittedValue>
      <PermittedValue>Old/New Comparison</PermittedValue>
      <Usage>This archive mode is used to archive data in the PVSS database</Usage>
      <DependentAttributes>If "Time" is selected, "Time Filter (s)" must be filled
If "Deadband" is selected: "Deadband Type" and "Deadband Value" must be
filled.</DependentAttributes>
    <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>BooleanArch</AttributeName>
    <Description>Name of the Boolean archive
Forbidden characters: *[: "'@ # $ % ^ & * ? ! , ; = + ~ ( ) { } &lt; &gt; | ]</Description>
    <PrimitiveType>STRING</PrimitiveType>

```

```

<isSpecificationAttribute>
  <NameRepresentation>Boolean Archive</NameRepresentation>
  <isValueRequired>>false</isValueRequired>
  <Usage>The boolean values of the device will be archived in the specified PVSS database. The
archive must be created in PVSS before importing the object.</Usage>
  <DependentAttributes/>
  <Constraints>Forbidden characters: *[: "'@`#$%^&*?!.,;=+~(){}&lt;&gt;|]</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>AnalogArch</AttributeName>
  <Description>Name of the analog archive
Forbidden characters: *[: "'@`#$%^&*?!.,;=+~(){}&lt;&gt;|]</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Analog Archive</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>The analog values of the device will be archived in the specified PVSS database. The
archive must be created in PVSS before importing the object.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[: "'@`#$%^&*?!.,;=+~(){}&lt;&gt;|]</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>EventArch</AttributeName>
  <Description>Name of the event archive
Forbidden characters: *[: "'@`#$%^&*?!.,;=+~(){}&lt;&gt;|]</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Event Archive</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>The events generated by the device will be archived in the specified PVSS database. The
archive must be created in PVSS before importing the object.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[: "'@`#$%^&*?!.,;=+~(){}&lt;&gt;|]</Constraints>
  </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADeviceAlarms</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>AlarmConfig</AttributeName>

```

```

<Description>Configuration of Alarm under SCADA</Description>
<PrimitiveType>INT32</PrimitiveType>
<isSpecificationAttribute>
  <NameRepresentation>Alarm Config</NameRepresentation>
  <isValueRequired>>true</isValueRequired>
  <Usage/>
  <DependentAttributes/>
  <Constraints/>
</isSpecificationAttribute>
<Attribute>
  <AttributeName>SMSCategory</AttributeName>
  <Description>This Alarm message will follow rules defined in the corresponding SMS User Group
(comma-separated list)</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>SMS Category</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Defines a specific treatment for each SMS message</Usage>
    <DependentAttributes/>
    <Constraints>The name must correspond to the SMS user group
(unProcessAlarm,...)</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>AutoAcknowledge</AttributeName>
  <Description>The SCADA automatically performs the alarm acknowledge</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Auto Acknowledge</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>When TRUE, the SCADA automatically acknowledges the alarm at its occurrence.
The operator doesn't have to act on this alarm.</Usage>
    <DependentAttributes/>
    <Constraints>TRUE/FALSE</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Masked</AttributeName>
  <Description>Alarm signal is ignored by the SCADA</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>When TRUE, the Alarm signal is not recorded into the ALARM database</Usage>

```

```

    <DependentAttributes/>
    <Constraints>TRUE/FALSE</Constraints>
  </isSpecificationAttribute>
</Attribute>
</Attribute>
<Attribute>
  <AttributeName>BinaryState</AttributeName>
  <Description/>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Binary State</NameRepresentation>
    <isValueRequired>>true</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
  <AttributeName>AlarmOnState</AttributeName>
  <Description>State of the device where the PVSS alert should be triggered.
Blank/empty (=default) indicates that there is no PVSS alert.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Alarm On State</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>This alarm is only used at SCADA level for information and It has no impact on the
process.</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
</Attribute>
<Attribute>
  <AttributeName>Message</AttributeName>
  <Description>Message to display when alarm is set in SCADA</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>The message specified here will be displayed in the Alarm List</Usage>
    <DependentAttributes/>
    <Constraints>In principle there is no limit to the number of characters used, however a long
name may result in display issues at the SCADA level.
Forbidden characters: *[:"@#$$%^&*?!.,;=+~(){}&lt;&gt;|]</Constraints>
  </isSpecificationAttribute>

```

```

</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>LogicDeviceDefinitions</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>Fast Interlock Type</AttributeName>
    <Description>Type of fast interlock object if necessary</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <PermittedValue>Hardware Interrupt</PermittedValue>
      <PermittedValue>Cyclic Interrupt</PermittedValue>
      <Usage>This parameter is used to determinate if the object will be processed in the fast interlock
      logic</Usage>
      <DependentAttributes/>
      <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>CustomLogicParameters</AttributeName>
    <Description>User defined meaning, used by the logic generators.</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
    <Attribute>
      <AttributeName>Parameter1</AttributeName>
      <Description>Parameter to be used in the logic templates
      Forbidden characters: '$' </Description>
      <PrimitiveType>STRING</PrimitiveType>
      <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
        device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
        <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
        Template"? file</DependentAttributes>
        <Constraints>Forbidden characters: '$' </Constraints>
      </isSpecificationAttribute>
    </Attribute>
    <Attribute>
      <AttributeName>Parameter2</AttributeName>
      <Description>Parameter to be used in the logic templates
      Forbidden characters: '$' </Description>
      <PrimitiveType>STRING</PrimitiveType>
      <isSpecificationAttribute>

```

```

    <isValueRequired>>false</isValueRequired>
    <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter3</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter4</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter5</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>

```

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter6</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: '\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter7</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: '\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter8</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: '\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter9</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: '\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter10</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: '\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

</Attribute>

</AttributeFamily>

<AttributeFamily>

<AttributeFamilyName>DeviceTechnical</AttributeFamilyName>

<UserExpandable>>true</UserExpandable>

<Attribute>

<AttributeName>PROCOSConfiguration</AttributeName>

<Description>PROCOS parameters allowing simulation</Description>

```

<PrimitiveType>STRUCT</PrimitiveType>
<Attribute>
  <AttributeName>Config</AttributeName>
  <Description>Device mode configuration for simulation (Simulated, Forced or
Empty)</Description>
  <PrimitiveType>STRING</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>ForcedValue</AttributeName>
  <Description>Forced value defined (e.g.: analog: 4.5, digital: 0 or 1)</Description>
  <PrimitiveType>STRING</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>Hierarchy</AttributeName>
  <Description>Hierarchy definition following the Simulation model</Description>
  <PrimitiveType>STRING</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>TargetDeviceInformation</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>Target</AttributeName>
    <Description>Identifies a target type (e.g. SIEMENS, SCHNEIDER...)</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
    <DefaultValue>Siemens</DefaultValue>
  <Attribute>
    <AttributeName>RepresentationName</AttributeName>
    <Description>It's the name used ...</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <DefaultValue>DI</DefaultValue>
  </Attribute>
  <Attribute>
    <AttributeName>Optimized</AttributeName>
    <Description>Is this object an optimized Object?</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <DefaultValue>>true</DefaultValue>
  </Attribute>
  <Attribute>
    <AttributeName>LimitSize</AttributeName>
    <Description>Maximun number of instances allowed</Description>

```

```
<PrimitiveType>INT32</PrimitiveType>
<DefaultValue>1300</DefaultValue>
</Attribute>
<Attribute>
  <AttributeName>FastInterlock</AttributeName>
  <Description>Is this object a fast interlock object?</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <DefaultValue>true</DefaultValue>
</Attribute>
</Attribute>
</AttributeFamily>
</UNICOSMetaModel>
```

2.15. DigitalOutputDeviceType.xml

```
<?xml version='1.0' encoding='UTF-8'?>
<UNICOSMetaModel xmlns:xsi='http://www.w3.org/2001/XMLSchema-instance'
xsi:noNamespaceSchemaLocation='..\unicos\UNICOSMetaModel.xsd'>
  <Information>
    <Package>${devicePackageName}</Package>
    <Name>DigitalOutput</Name>
    <ObjectTypeFamily>IOObjectFamily</ObjectTypeFamily>
    <Description>Digital Output Device</Description>
    <Version>${LastChangedRevision: 170110} $</Version>
  </Information>
  <AttributeFamily>
    <AttributeFamilyName>DeviceIdentification</AttributeFamilyName>
    <UserExpandable>>false</UserExpandable>
    <Attribute>
      <AttributeName>Name</AttributeName>
      <Description>Name of the device. It must be unique.
```

Max length:

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: [:"'@`#\$%^&*?!.,;+~(){}<>|]-., double underscore, and page break</Description>

```
  <PrimitiveType>STRING</PrimitiveType>
```

```
  <isSpecificationAttribute>
```

```
    <isValueRequired>>true</isValueRequired>
```

```
    <Usage>Name displayed at the SCADA level if "Expert Name" is not specified.
```

This name will appear in the datapoints created in the SCADA layer.</Usage>

```
    <DependentAttributes>Device Links.
```

The name of the device(s) specified in Device Links *must* correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to "Name".</DependentAttributes>

```
    <Constraints>Max length:
```

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: [:"'@`#\$%^&*?!.,;+~(){}<>|]-., double underscore, and page break Name must be unique.</Constraints>

```
  </isSpecificationAttribute>
```

```
</Attribute>
```

```
<Attribute>
```

```
  <AttributeName>ExpertName</AttributeName>
```

```
  <Description>Name of the device displayed at the SCADA level. It must be unique.
```

Forbidden characters: *[: "'@#\$\$%^&*?!;=+~(){}<>|] </Description>

```
<PrimitiveType>STRING</PrimitiveType>
<isSpecificationAttribute>
  <NameRepresentation>Expert Name</NameRepresentation>
  <TypeRepresentation>STRING</TypeRepresentation>
  <isValueRequired>>false</isValueRequired>
  <Usage>It does not affect to the datapoints names in the SCADA layer.</Usage>
  <DependentAttributes>Device Links.
```

The name of the device(s) specified in Device Links **must** correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to "Name". </DependentAttributes>

<Constraints>In principle there is no limit to the number of characters used, however a long name may result in display issues at the SCADA level.

Forbidden characters: *[: "'@#\$\$%^&*?!;=+~(){}<>|]

Expert Name must be unique. </Constraints>

```
</isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>DeviceDocumentation</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>DeviceDescription</AttributeName>
    <Description>Description of the device. </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Description</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>Used in the SCADA layer in the device faceplate</Usage>
      <DependentAttributes/>
```

<Constraints>In principle there is no limit to the number of characters used, however a long description may result in display issues at the SCADA level.

Forbidden characters: ; </Constraints>

```
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>ElectricalDiagram</AttributeName>
  <Description>Reference to the electrical diagram in which the device is
represented.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Electrical Diagram</NameRepresentation>
```

```

    <isValueRequired>>false</isValueRequired>
    <Usage>Used in the SCADA layer: added to the device description in the device
faceplate.</Usage>
    <DependentAttributes/>
    <Constraints>In principle there is no limit to the number of characters used, however a long
name may result in display issues at the SCADA level.
Forbidden characters: *[: ""@ # $ % ^ & amp; * ? ! , ; = + ~ ( ) { } & lt; & gt; | ]</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Remarks</AttributeName>
    <Description>Field used to add relevant information about the device. </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This information is not used in the generation process, it remains only at the
specification level for documentation purposes.</Usage>
        <DependentAttributes/>
        <Constraints>Forbidden characters: ;</Constraints>
    </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>FEDeviceAutoRequests</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>AulhFoMo</AttributeName>
        <Meaning>Auto Inhibit Forced Mode</Meaning>
        <Description>Auto Inhibit Forced Mode (by logic): The control logic blocks the forced mode
operation.</Description>
        <PrimitiveType>BOOLEAN</PrimitiveType>
    </Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>FEDeviceManualRequests</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>ManReg01</AttributeName>
        <Meaning> Manual Register 1</Meaning>
        <Description>Manual Register 1</Description>
        <isCommunicated>>true</isCommunicated>
        <PrimitiveType>WORD</PrimitiveType>
    </Attribute>

```

```

    <AttributeName>MAuMoR</AttributeName>
    <Meaning>Manual Auto Mode Request</Meaning>
    <Description>Manual Auto Mode Request: The operator requests the Auto Mode.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>0</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>MFoMoR</AttributeName>
    <Meaning>Manual Forced Mode Request</Meaning>
    <Description>Manual Forced Mode Request: The operator requests the Forced
Mode.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>2</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>MOnR</AttributeName>
    <Meaning>Manual On Request</Meaning>
    <Description>Manual On Request: The operator requests the On/Open position</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>4</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>MOffR</AttributeName>
    <Meaning>Manual Off Request</Meaning>
    <Description>Manual Off Request: The operator requests the Off/Close position</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>5</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>MIOErBSetRst</AttributeName>
    <Meaning>Manual Input/Output Error Block Set/Reset</Meaning>
    <Description>Manual IO Error Block Set/Reset: This action allows to set/reset the
IOError.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>10</BitPosition>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceEnvironmentInputs</AttributeFamilyName>
  <UserExpandable>true</UserExpandable>
  <Attribute>
    <AttributeName>AuPosR</AttributeName>

```

```

    <Meaning>Auto Position Request</Meaning>
    <Description>Auto Position Request</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>IOError</AttributeName>
    <Meaning>Input/Output Error</Meaning>
    <Description>IOError state in any of the dependant objects or the PLC channel assigned to the
object</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>IOSimu</AttributeName>
    <Meaning>Input/Output Simulated</Meaning>
    <Description>Any of the dependant objects is in Forced or Manual Mode</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceOutputs</AttributeFamilyName>
  <UserExpandable>true</UserExpandable>
  <Attribute>
    <AttributeName>StsReg01</AttributeName>
    <Meaning>Status Register 1</Meaning>
    <Description>Status Register 1</Description>
    <isEventAttribute>true</isEventAttribute>
    <isCommunicated>true</isCommunicated>
    <PrimitiveType>WORD</PrimitiveType>
  <Attribute>
    <AttributeName>PosSt</AttributeName>
    <Meaning>Position Status</Meaning>
    <Description>Digital Position Status</Description>
    <isArchived>true</isArchived>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>0</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>AuMoSt</AttributeName>
    <Meaning>Auto Mode Status</Meaning>
    <Description>Current status of the Auto Mode</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>2</BitPosition>

```



```

</Attribute>
<Attribute>
  <AttributeName>FoMoSt</AttributeName>
  <Meaning>Forced Mode Status</Meaning>
  <Description>Current status of the Forced Mode.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>4</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>IOErrorW</AttributeName>
  <Meaning>Input/Output Error Warning</Meaning>
  <Description>Current status of the IOError</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>6</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>IOSimuW</AttributeName>
  <Meaning>Input/Output Simulated Warning</Meaning>
  <Description>Current status of the IOSimu</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>7</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>FoDiAuW</AttributeName>
  <Meaning>Forced Differs Auto Warning</Meaning>
  <Description>The Manual or Forced Position requested by the operator differs from the Auto
Position</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>8</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MIOErBRSt</AttributeName>
  <Meaning>Manual Input/Output Error Block Request Status</Meaning>
  <Description>Manual IOError Block Request Status</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>9</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>AulhFoMoSt</AttributeName>
  <Meaning>Auto Inhibit Forced Mode Status</Meaning>
  <Description>Auto Inhibit Forced Mode status: Current status of the Auto Inhibit forced
mode.</Description>
  <PrimitiveType>BIT1</PrimitiveType>

```

```

    <BitPosition>13</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>AuPosRSt</AttributeName>
    <Meaning>Auto Position Request Status</Meaning>
    <Description>Auto Position Request Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>14</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>MPosRSt</AttributeName>
    <Meaning>Manual Position Requested Status</Meaning>
    <Description>Manual Position Requested Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>15</BitPosition>
  </Attribute>
</Attribute>
<Attribute>
  <AttributeName>PosSt</AttributeName>
  <Meaning>Position status</Meaning>
  <Description>Position Status</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuPosRSt</AttributeName>
  <Meaning>Auto Position Request Status</Meaning>
  <Description>Status of the position of the object in auto mode.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>MPosRSt</AttributeName>
  <Meaning>Manual Position Request Status</Meaning>
  <Description>Manual Position request status</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuMoSt</AttributeName>
  <Meaning>Auto Mode Status</Meaning>
  <Description>Current status of the Auto Mode</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>

```

```

    <AttributeName>FoMoSt</AttributeName>
    <Meaning>Forced Mode Status</Meaning>
    <Description>Current status of the Forced Mode.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>IOErrorW</AttributeName>
    <Meaning>Input/Output Error Warning</Meaning>
    <Description>Current status of the IOError</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>IOSimuW</AttributeName>
    <Meaning>Input/Output Simulated Warning</Meaning>
    <Description>Current status of the IOSimu</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>FoDiAuW</AttributeName>
    <Meaning>Forced Differs Auto Warning</Meaning>
    <Description>The Manual or Forced Position requested by the operator differs from the Auto
    Position</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceIOConfig</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>FEType</AttributeName>
    <Description>Parameter used to set up the periphery address of the device according to the
    various hardware module types used at the PLC level.
    Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
    documentation</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>FE Encoding Type</NameRepresentation>
      <TypeRepresentation>STRING</TypeRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
      documentation</Usage>
      <DependentAttributes>FEChannel.InterfaceParamX (where X=1-10)</DependentAttributes>
    </isSpecificationAttribute>
  </Attribute>

```

```

    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>FEChannel</AttributeName>
  <Description>Indicates how to map the acquisition of the information from the field I/O
interface.</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <Attribute>
    <AttributeName>InterfaceParam1</AttributeName>
    <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
      <DependentAttributes>FE Encoding Type</DependentAttributes>
      <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>InterfaceParam2</AttributeName>
    <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
      <DependentAttributes>FE Encoding Type</DependentAttributes>
      <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>InterfaceParam3</AttributeName>

```

<Description>Parameter used to set up the periphery address of the device according to the various hardware module types used at the PLC level.

Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Usage>

<DependentAttributes>FE Encoding Type</DependentAttributes>

<Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>InterfaceParam4</AttributeName>

<Description>Parameter used to set up the periphery address of the device according to the various hardware module types used at the PLC level.

Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Usage>

<DependentAttributes>FE Encoding Type</DependentAttributes>

<Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>InterfaceParam5</AttributeName>

<Description>Parameter used to set up the periphery address of the device according to the various hardware module types used at the PLC level.

Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Usage>

<DependentAttributes>FE Encoding Type</DependentAttributes>

<Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Constraints>

```

</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam6</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam7</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam8</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>

```

```

    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>InterfaceParam9</AttributeName>
    <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>InterfaceParam10</AttributeName>
    <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
</isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>SCADADeviceGraphics</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>

```

```

<Attribute>
  <AttributeName>WidgetType</AttributeName>
  <Description>Define the widget type to display in the SCADA device tree overview only.
The widget displayed in the process panel will be selected when the user creates the
panel.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Widget Type</NameRepresentation>
    <isValueRequired>>true</isValueRequired>
    <isCaseSensitive>>true</isCaseSensitive>
    <PermittedValue>DigitalOutput</PermittedValue>
  </isSpecificationAttribute>
  <Usage/>
  <DependentAttributes/>
  <Constraints/>
</Attribute>
<Attribute>
  <AttributeName>Synoptic</AttributeName>
  <Description>Define link between the device and an existing synoptic where it appears. The
synoptic specified here can be accessed from the device right-click menu item
"Synoptic".</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Specify the path of the .pnl file under the "\panel" directory of the PVSS
project.</Usage>
  <DependentAttributes/>
  <Constraints/>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DiagnosticPanel</AttributeName>
  <Description>Define link between the device and an existing diagnostic panel for the device. The
panel specified here can be accessed from the device right-click menu item "Diagnostic" as well as
from the "Diagnostic" button on the object faceplate.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Diagnostic</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Specify the path of the .pnl file under the "\panel" directory of the PVSS project
</Usage>
  <DependentAttributes/>
  <Constraints/>

```



```

</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>WWWLink</AttributeName>
  <Description>Define link between the device and an existing web page (or pdf file, or other file
which can be opened with IE). The link can be accessed from the device right-click menu item "Info"
as well as from the "Info" button on the object faceplate.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>WWW Link</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADeviceFunctionals</AttributeFamilyName>
  <UserExpandable>>false</UserExpandable>
  <Attribute>
    <AttributeName>MaskEvent</AttributeName>
    <Description>If TRUE: the events of the device will be masked in SCADA and not displayed or
archived in the Event List.
An 'event' is defined as a bit change in StsReg01 or StsReg02</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Mask Event</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>AccessControlDomain</AttributeName>
    <Description>Define Access Control on the device to an existing SCADA Domain
Forbidden characters: *[: ""@ #$$%^&amp;*?!;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Access Control Domain</NameRepresentation>
      <isValueRequired>>false</isValueRequired>

```

<Usage>This domain is used to grant access to this specific device. The domain specified for this object will allow access to the object only to registered users on that domain</Usage>

<DependentAttributes/>

*<Constraints>Forbidden characters: *[: ""@`#\$%^&*?!;=+~(){}<>|]</Constraints>*

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>SCADADeviceClassificationTags</AttributeName>

<Description>It defines the Domain, Nature and DeviceLinks for the SCADA visualization</Description>

<PrimitiveType>STRUCT</PrimitiveType>

<Attribute>

<AttributeName>Domain</AttributeName>

*<Description>Domain of the device. If empty, the domain will be the name of the application
Forbidden characters: *[: ""@`#\$%^&*?!;=+~(){}<>|]</Description>*

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>Domain is used to filter the devices in the alarm list or in the device tree overview</Usage>

<DependentAttributes/>

*<Constraints>Forbidden characters: *[: ""@`#\$%^&*?!;=+~(){}<>|]</Constraints>*

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Nature</AttributeName>

*<Description>Nature of the device. If empty, the nature will be the type of the device
Forbidden characters: *[: ""@`#\$%^&*?!;=+~(){}<>|]</Description>*

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>Nature is used to filter the devices in the alarm list or in the device tree overview</Usage>

<DependentAttributes/>

*<Constraints>Forbidden characters: *[: ""@`#\$%^&*?!;=+~(){}<>|]</Constraints>*

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>DeviceLinks</AttributeName>

<Description>Define links to other devices (separate device names with commas).

Note: it is not necessary to link to master, parents or children because these links are automatically created.

*Forbidden characters: *[: ""@`#\$%^&*?!;=+~(){}<>|]</Description>*

```

<PrimitiveType>STRING</PrimitiveType>
<isSpecificationAttribute>
  <NameRepresentation>Device Links</NameRepresentation>
  <isValueRequired>>false</isValueRequired>
  <Usage>Linked devices will be shown in the device right-click menu</Usage>
  <DependentAttributes>Expert Name or Name.
The name of the device(s) specified here *must* correspond to "Expert Name" if it is defined.
If "Expert Name" is not defined, the name of the device(s) specified here corresponds to
"Name".</DependentAttributes>
  <Constraints>Forbidden characters: *[: "'@`#$$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
</isSpecificationAttribute>
</Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADataArchiving</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>ArchiveMode</AttributeName>
    <Description>Archive mode of the object engineering values. Archive if:
Old/New Comparison: value changes
Time: value changes after Time Filter
Deadband: value &lt; or &gt; deadband
AND: at least one of the conditions is fulfilled
OR: both conditions are fulfilled</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Archive Mode</NameRepresentation>
      <isValueRequired>>true</isValueRequired>
      <PermittedValue>No</PermittedValue>
      <PermittedValue>Old/New Comparison</PermittedValue>
      <Usage>This archive mode is used to archive data in the PVSS database</Usage>
      <DependentAttributes>If "Time" is selected, "Time Filter (s)" must be filled
If "Deadband" is selected: "Deadband Type" and "Deadband Value" must be
filled.</DependentAttributes>
    <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>BooleanArch</AttributeName>
    <Description>Name of the Boolean archive
Forbidden characters: *[: "'@`#$$%^&*?!;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>

```

```

<isSpecificationAttribute>
  <NameRepresentation>Boolean Archive</NameRepresentation>
  <isValueRequired>>false</isValueRequired>
  <Usage>The boolean values of the device will be archived in the specified PVSS database. The
archive must be created in PVSS before importing the object.</Usage>
  <DependentAttributes/>
  <Constraints>Forbidden characters: *[: "'@`#$%^&*?!.,;=+~(){}&lt;&gt;|]</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>AnalogArch</AttributeName>
  <Description>Name of the analog archive
Forbidden characters: *[: "'@`#$%^&*?!.,;=+~(){}&lt;&gt;|]</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Analog Archive</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>The analog values of the device will be archived in the specified PVSS database. The
archive must be created in PVSS before importing the object.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[: "'@`#$%^&*?!.,;=+~(){}&lt;&gt;|]</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>EventArch</AttributeName>
  <Description>Name of the event archive
Forbidden characters: *[: "'@`#$%^&*?!.,;=+~(){}&lt;&gt;|]</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Event Archive</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>The events generated by the device will be archived in the specified PVSS database. The
archive must be created in PVSS before importing the object.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[: "'@`#$%^&*?!.,;=+~(){}&lt;&gt;|]</Constraints>
  </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADeviceAlarms</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>AlarmConfig</AttributeName>

```

```

<Description>Configuration of Alarm under SCADA</Description>
<PrimitiveType>INT32</PrimitiveType>
<isSpecificationAttribute>
  <NameRepresentation>Alarm Config</NameRepresentation>
  <isValueRequired>>true</isValueRequired>
  <Usage/>
  <DependentAttributes/>
  <Constraints/>
</isSpecificationAttribute>
<Attribute>
  <AttributeName>SMSCategory</AttributeName>
  <Description>This Alarm message will follow rules defined in the corresponding SMS User Group
(comma-separated list)</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>SMS Category</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Defines a specific treatment for each SMS message</Usage>
    <DependentAttributes/>
    <Constraints>The name must correspond to the SMS user group
(unProcessAlarm,...)</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>AutoAcknowledge</AttributeName>
  <Description>The SCADA automatically performs the alarm acknowledge</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Auto Acknowledge</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>When TRUE, the SCADA automatically acknowledges the alarm at its occurrence.
The operator doesn't have to act on this alarm.</Usage>
    <DependentAttributes/>
    <Constraints>TRUE/FALSE</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Masked</AttributeName>
  <Description>Alarm signal is ignored by the SCADA</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>When TRUE, the Alarm signal is not recorded into the ALARM database</Usage>

```

```

    <DependentAttributes/>
    <Constraints>TRUE/FALSE</Constraints>
  </isSpecificationAttribute>
</Attribute>
</Attribute>
<Attribute>
  <AttributeName>BinaryState</AttributeName>
  <Description/>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Binary State</NameRepresentation>
    <isValueRequired>>true</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
  <AttributeName>AlarmOnState</AttributeName>
  <Description>State of the device where the PVSS alert should be triggered.
Blank/empty (=default) indicates that there is no PVSS alert.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Alarm On State</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>This alarm is only used at SCADA level for information and It has no impact on the
process.</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
</Attribute>
<Attribute>
  <AttributeName>Message</AttributeName>
  <Description>Message to display when alarm is set in SCADA</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>The message specified here will be displayed in the Alarm List</Usage>
    <DependentAttributes/>
    <Constraints>In principle there is no limit to the number of characters used, however a long
name may result in display issues at the SCADA level.
Forbidden characters: *[:"@#$$%^&*?!.,;=+~(){}&lt;&gt;|]</Constraints>
  </isSpecificationAttribute>

```

```

</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>LogicDeviceDefinitions</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>Fast Interlock Type</AttributeName>
    <Description>Type of fast interlock object if necessary</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <PermittedValue>Hardware Interrupt</PermittedValue>
      <PermittedValue>Cyclic Interrupt</PermittedValue>
      <Usage>This parameter is used to determinate if the object will be processed in the fast interlock
      logic</Usage>
      <DependentAttributes/>
      <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>CustomLogicParameters</AttributeName>
    <Description>User defined meaning, used by the logic generators.</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
    <Attribute>
      <AttributeName>Parameter1</AttributeName>
      <Description>Parameter to be used in the logic templates
      Forbidden characters: '$' </Description>
      <PrimitiveType>STRING</PrimitiveType>
      <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
        device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
        <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
        Template"? file</DependentAttributes>
        <Constraints>Forbidden characters: '$' </Constraints>
      </isSpecificationAttribute>
    </Attribute>
    <Attribute>
      <AttributeName>Parameter2</AttributeName>
      <Description>Parameter to be used in the logic templates
      Forbidden characters: '$' </Description>
      <PrimitiveType>STRING</PrimitiveType>
      <isSpecificationAttribute>

```

```

    <isValueRequired>>false</isValueRequired>
    <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter3</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter4</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter5</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>

```


<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter6</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: '\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter7</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: '\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter8</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: '\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter9</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: '\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter10</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: '\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

</Attribute>

</AttributeFamily>

<AttributeFamily>

<AttributeFamilyName>DeviceTechnicals</AttributeFamilyName>

<UserExpandable>>true</UserExpandable>

<Attribute>

<AttributeName>PROCOSConfiguration</AttributeName>

<Description>PROCOS parameters allowing simulation</Description>

```

<PrimitiveType>STRUCT</PrimitiveType>
<Attribute>
  <AttributeName>Config</AttributeName>
  <Description>Device mode configuration for simulation (Simulated, Forced or
Empty)</Description>
  <PrimitiveType>STRING</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>ForcedValue</AttributeName>
  <Description>Forced value defined (e.g.: analog: 4.5, digital: 0 or 1)</Description>
  <PrimitiveType>STRING</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>Hierarchy</AttributeName>
  <Description>Hierarchy definition following the Simulation model</Description>
  <PrimitiveType>STRING</PrimitiveType>
</Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>TargetDeviceInformation</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>Target</AttributeName>
    <Description>Identifies a target type (e.g. SIEMENS, SCHNEIDER...)</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
    <DefaultValue>Siemens</DefaultValue>
  <Attribute>
    <AttributeName>RepresentationName</AttributeName>
    <Description>It's the name used ...</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <DefaultValue>DO</DefaultValue>
  </Attribute>
  <Attribute>
    <AttributeName>Optimized</AttributeName>
    <Description>Is this object an optimized Object?</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <DefaultValue>>true</DefaultValue>
  </Attribute>
  <Attribute>
    <AttributeName>LimitSize</AttributeName>
    <Description>Maximun number of instances allowed</Description>

```

```
<PrimitiveType>INT32</PrimitiveType>
<DefaultValue>1300</DefaultValue>
</Attribute>
<Attribute>
  <AttributeName>FastInterlock</AttributeName>
  <Description>Is this object a fast interlock object?</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <DefaultValue>true</DefaultValue>
</Attribute>
</Attribute>
</AttributeFamily>
</UNICOSMetaModel>
```

2.16. DigitalParameterDeviceType.xml

```
<?xml version='1.0' encoding='UTF-8'?>
<UNICOSMetaModel xmlns:xsi='http://www.w3.org/2001/XMLSchema-instance'
xsi:noNamespaceSchemaLocation='..\unicos\UNICOSMetaModel.xsd'>
  <Information>
    <Package>${devicePackageName}</Package>
    <Name>DigitalParameter</Name>
    <ObjectTypeFamily>InterfaceObjectFamily</ObjectTypeFamily>
    <Description>Digital Parameter Device</Description>
    <Version>${LastChangedRevision: 170110} $</Version>
  </Information>
  <AttributeFamily>
    <AttributeFamilyName>DeviceIdentification</AttributeFamilyName>
    <UserExpandable>>false</UserExpandable>
    <Attribute>
      <AttributeName>Name</AttributeName>
      <Description>Name of the device. It must be unique.
```

Max length:

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: [:"'@`#\$%^&*?!.,;+~(){}<>|]-., double underscore, and page break</Description>

```
  <PrimitiveType>STRING</PrimitiveType>
```

```
  <isSpecificationAttribute>
```

```
    <isValueRequired>>true</isValueRequired>
```

```
    <Usage>Name displayed at the SCADA level if "Expert Name" is not specified.
```

This name will appear in the datapoints created in the SCADA layer.</Usage>

```
    <DependentAttributes>Device Links.
```

The name of the device(s) specified in Device Links *must* correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to "Name".</DependentAttributes>

```
    <Constraints>Max length:
```

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: [:"'@`#\$%^&*?!.,;+~(){}<>|]-., double underscore, and page break Name must be unique.</Constraints>

```
  </isSpecificationAttribute>
```

```
</Attribute>
```

```
<Attribute>
```

```
  <AttributeName>ExpertName</AttributeName>
```

```
  <Description>Name of the device displayed at the SCADA level. It must be unique.
```

Forbidden characters: *[: "'@#%\$%^&*?!;=+~(){}<>|] </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Expert Name</NameRepresentation>

<TypeRepresentation>STRING</TypeRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>It does not affect to the datapoints names in the SCADA layer.</Usage>

<DependentAttributes>Device Links.

The name of the device(s) specified in Device Links **must** correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to "Name".</DependentAttributes>

<Constraints>In principle there is no limit to the number of characters used, however a long name may result in display issues at the SCADA level.

Forbidden characters: *[: "'@#%\$%^&*?!;=+~(){}<>|]

Expert Name must be unique.</Constraints>

</isSpecificationAttribute>

</Attribute>

</AttributeFamily>

<AttributeFamily>

<AttributeFamilyName>DeviceDocumentation</AttributeFamilyName>

<UserExpandable>>true</UserExpandable>

<Attribute>

<AttributeName>DeviceDescription</AttributeName>

<Description>Description of the device. </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Description</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>Used in the SCADA layer in the device faceplate</Usage>

<DependentAttributes/>

<Constraints>In principle there is no limit to the number of characters used, however a long description may result in display issues at the SCADA level.

Forbidden characters: ;</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Remarks</AttributeName>

<Description>Field used to add relevant information about the device. </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

```

    <Usage>This information is not used in the generation process, it remains only at the
specification level for documentation purposes.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: ;</Constraints>
</isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>FEDeviceParameters</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>DefaultValue</AttributeName>
        <Meaning>Default value</Meaning>
        <Description>Default value for the parameter </Description>
        <PrimitiveType>BOOLEAN</PrimitiveType>
        <isSpecificationAttribute>
            <NameRepresentation>Default Value</NameRepresentation>
            <TypeRepresentation>BOOLEAN</TypeRepresentation>
            <isValueRequired>>true</isValueRequired>
            <Usage>This is the default parameter value assigned into the PLC variable and in the SCADA
datapoint element. </Usage>
            <DependentAttributes/>
            <Constraints/>
        </isSpecificationAttribute>
        </Attribute>
    </AttributeFamily>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>FEDeviceManualRequests</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>ManReg01</AttributeName>
        <Meaning>Manual Register 1</Meaning>
        <Description>Manual Register 1</Description>
        <isCommunicated>>true</isCommunicated>
        <PrimitiveType>WORD</PrimitiveType>
        <Attribute>
            <AttributeName>ArmRcp</AttributeName>
            <Meaning>Armed Recipe</Meaning>
            <Description>A Recipe is Armed : New values are available at the input</Description>
            <PrimitiveType>BIT1</PrimitiveType>
            <BitPosition>2</BitPosition>
        </Attribute>
    </Attribute>
</Attribute>

```

```

    <AttributeName>ActRcp</AttributeName>
    <Meaning>Activate Recipe</Meaning>
    <Description>Activate Recipe : All new signals at the inputs are activated.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>3</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>MOnR</AttributeName>
    <Meaning>Manual On Request</Meaning>
    <Description>Manual On Request: The operator requests the On/Open position</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>4</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>MOffR</AttributeName>
    <Meaning>Manual Off Request</Meaning>
    <Description>Manual Off Request: The operator requests the Off/Close position</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>5</BitPosition>
  </Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceOutputs</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>StsReg01</AttributeName>
    <Meaning>Status Register 1</Meaning>
    <Description>Status Register 1</Description>
    <isEventAttribute>>true</isEventAttribute>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>WORD</PrimitiveType>
  <Attribute>
    <AttributeName>PosSt</AttributeName>
    <Meaning>Position Status</Meaning>
    <Description>Digital Position Status</Description>
    <isArchived>true</isArchived>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>0</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>ArmRcpSt</AttributeName>

```



```

    <Meaning>Armed Recipe Status</Meaning>
    <Description>A Recipe is Armed : New values are available at the input</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>3</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>MOnRSt</AttributeName>
    <Meaning>Manual On Request Status</Meaning>
    <Description>Manual On Request Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>4</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>MOffRSt</AttributeName>
    <Meaning>Manual Off Request Status</Meaning>
    <Description>Manual Off Request Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>5</BitPosition>
  </Attribute>
</Attribute>
  <Attribute>
    <AttributeName>PosSt</AttributeName>
    <Meaning>Position status</Meaning>
    <Description>Position Status</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADeviceGraphics</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>WidgetType</AttributeName>
    <Description>Define the widget type to display in the SCADA device tree overview only.
    The widget displayed in the process panel will be selected when the user creates the
    panel.</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Widget Type</NameRepresentation>
      <isValueRequired>true</isValueRequired>
      <isCaseSensitive>true</isCaseSensitive>
      <PermittedValue>DigitalParameter</PermittedValue>
    </isSpecificationAttribute>
  </Attribute>
</Usage/>

```

```

    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Synoptic</AttributeName>
  <Description>Define link between the device and an existing synoptic where it appears. The
synoptic specified here can be accessed from the device right-click menu item
"Synoptic".</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Specify the path of the .pnl file under the "\panel" directory of the PVSS
project.</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DiagnosticPanel</AttributeName>
  <Description>Define link between the device and an existing diagnostic panel for the device. The
panel specified here can be accessed from the device right-click menu item "Diagnostic" as well as
from the "Diagnostic" button on the object faceplate.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Diagnostic</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Specify the path of the .pnl file under the "\panel" directory of the PVSS project
</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>WWWLink</AttributeName>
  <Description>Define link between the device and an existing web page (or pdf file, or other file
which can be opened with IE). The link can be accessed from the device right-click menu item "Info"
as well as from the "Info" button on the object faceplate.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>WWW Link</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
  <Usage/>
  <DependentAttributes/>

```

```

    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADeviceFunctionals</AttributeFamilyName>
  <UserExpandable>>false</UserExpandable>
  <Attribute>
    <AttributeName>MaskEvent</AttributeName>
    <Description>If TRUE: the events of the device will be masked in SCADA and not displayed or
archived in the Event List.
An 'event' is defined as a bit change in StsReg01 or StsReg02</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Mask Event</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>AccessControlDomain</AttributeName>
    <Description>Define Access Control on the device to an existing SCADA Domain
Forbidden characters: *[: "'@ # $ % ^ & amp; * ? ! ; = + ~ ( ) { } & lt; & gt; | ]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Access Control Domain</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>This domain is used to grant access to this specific device. The domain specified for this
object will allow access to the object only to registered users on that domain</Usage>
      <DependentAttributes/>
      <Constraints>Forbidden characters: *[: "'@ # $ % ^ & amp; * ? ! ; = + ~ ( ) { } & lt; & gt; | ]</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>SCADADeviceClassificationTags</AttributeName>
    <Description>It defines the Domain, Nature and DeviceLinks for the SCADA
visualization</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
    <Attribute>
      <AttributeName>Domain</AttributeName>
      <Description>Domain of the device. If empty, the domain will be the name of the application

```

```

Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]/Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Domain is used to filter the devices in the alarm list or in the device tree
overview</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]/Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Nature</AttributeName>
  <Description>Nature of the device. If empty, the nature will be the type of the device

```

```

Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]/Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Nature is used to filter the devices in the alarm list or in the device tree
overview</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]/Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DeviceLinks</AttributeName>
  <Description>Define links to other devices (separate device names with commas).

```

Note: it is not necessary to link to master, parents or children because these links are automatically created.

```

Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]/Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Device Links</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Linked devices will be shown in the device right-click menu</Usage>
    <DependentAttributes>Expert Name or Name.

```

The name of the device(s) specified here *must* correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified here corresponds to "Name".</DependentAttributes>

```

  <Constraints>Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]/Constraints>
  </isSpecificationAttribute>
</Attribute>
</Attribute>
</AttributeFamily>

```

```

<AttributeFamily>
  <AttributeFamilyName>SCADADeviceDataArchiving</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>ArchiveMode</AttributeName>
    <Description>Archive mode of the object engineering values. Archive if:
    Old/New Comparison: value changes
    Time: value changes after Time Filter
    Deadband: value &lt; or &gt; deadband
    AND: at least one of the conditions is fulfilled
    OR: both conditions are fulfilled</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Archive Mode</NameRepresentation>
      <isValueRequired>>true</isValueRequired>
      <PermittedValue>No</PermittedValue>
      <PermittedValue>Old/New Comparison</PermittedValue>
      <Usage>This archive mode is used to archive data in the PVSS database</Usage>
      <DependentAttributes>If "Time" is selected, "Time Filter (s)" must be filled
      If "Deadband" is selected: "Deadband Type" and "Deadband Value" must be
      filled.</DependentAttributes>
      <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>BooleanArch</AttributeName>
    <Description>Name of the Boolean archive
    Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Boolean Archive</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>The boolean values of the device will be archived in the specified PVSS database. The
      archive must be created in PVSS before importing the object.</Usage>
      <DependentAttributes/>
      <Constraints>Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>AnalogArch</AttributeName>
    <Description>Name of the analog archive
    Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>

```

```

<isSpecificationAttribute>
  <NameRepresentation>Analog Archive</NameRepresentation>
  <isValueRequired>>false</isValueRequired>
  <Usage>The analog values of the device will be archived in the specified PVSS database. The
archive must be created in PVSS before importing the object.</Usage>
  <DependentAttributes/>
  <Constraints>Forbidden characters: *[: ""@`#$%^&*?!.,;=+~(){}&lt;&gt;|]</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>EventArch</AttributeName>
  <Description>Name of the event archive
Forbidden characters: *[: ""@`#$%^&*?!.,;=+~(){}&lt;&gt;|]</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Event Archive</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>The events generated by the device will be archived in the specified PVSS database. The
archive must be created in PVSS before importing the object.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[: ""@`#$%^&*?!.,;=+~(){}&lt;&gt;|]</Constraints>
  </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADeviceParameters</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>RecipeType</AttributeName>
    <Description>Recipies familie name</Description>
    <PrimitiveType>STRING</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>RecipeInitName</AttributeName>
    <Description>Name of the collection of defaults values associated to the RecipeType
</Description>
    <PrimitiveType>STRING</PrimitiveType>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>TargetDeviceInformation</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>

```

```

<AttributeName>Target</AttributeName>
<Description>Identifies a target type (e.g. SIEMENS, SCHNEIDER...)</Description>
<PrimitiveType>STRUCT</PrimitiveType>
<DefaultValue>Siemens</DefaultValue>
<Attribute>
  <AttributeName>RepresentationName</AttributeName>
  <Description>It's the name used ...</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <DefaultValue>DPAR</DefaultValue>
</Attribute>
<Attribute>
  <AttributeName>Optimized</AttributeName>
  <Description>Is this object an optimized Object?</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <DefaultValue>>true</DefaultValue>
</Attribute>
<Attribute>
  <AttributeName>LimitSize</AttributeName>
  <Description>Maximun number of instances allowed</Description>
  <PrimitiveType>INT32</PrimitiveType>
  <DefaultValue>2000</DefaultValue>
</Attribute>
<Attribute>
  <AttributeName>FastInterlock</AttributeName>
  <Description>Is this object a fast interlock object?</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <DefaultValue>>false</DefaultValue>
</Attribute>
</Attribute>
</AttributeFamily>
</UNICOSMetaModel>

```

2.17. EncoderDeviceType.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<UNICOSMetaModel xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="UNICOSMetaModel.xsd">
```

```
  <Information>
    <Package>${devicePackageName}</Package>
    <Name>Encoder</Name>
    <ObjectTypeFamily>IOObjectFamily</ObjectTypeFamily>
    <Description>Encoder Device</Description>
    <Version>1.0</Version>
  </Information>
  <AttributeFamily>
    <AttributeFamilyName>DeviceIdentification</AttributeFamilyName>
    <UserExpandable>true</UserExpandable>
    <Attribute>
      <AttributeName>Name</AttributeName>
      <Description>Name of the device. It must be unique.
```

Max length:

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: [:"'@`#\$%^&*?!.,;+~(){}<>|]-., double underscore, and page break</Description>

```
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>true</isValueRequired>
    <Usage>Name displayed at the SCADA level if "Expert Name" is not specified.
```

This name will appear in the datapoints created in the SCADA layer.</Usage>

```
  <DependentAttributes>Device Links.
```

The name of the device(s) specified in Device Links *must* correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to "Name".</DependentAttributes>

```
  <Constraints>Max length:
```

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: [:"'@`#\$%^&*?!.,;+~(){}<>|]-., double underscore, and page break

Name must be unique.</Constraints>

```
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>ExpertName</AttributeName>
  <Description>Name of the device displayed at the SCADA level. It must be unique.
```


Forbidden characters: *[: "'@#%\$%^&*?!;=+~(){}<>|] </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Expert Name</NameRepresentation>

<TypeRepresentation>STRING</TypeRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>It does not affect to the datapoints names in the SCADA layer.</Usage>

<DependentAttributes>Device Links.

The name of the device(s) specified in Device Links **must** correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to "Name".</DependentAttributes>

<Constraints>In principle there is no limit to the number of characters used, however a long name may result in display issues at the SCADA level.

Forbidden characters: *[: "'@#%\$%^&*?!;=+~(){}<>|]

Expert Name must be unique.</Constraints>

</isSpecificationAttribute>

</Attribute>

</AttributeFamily>

<AttributeFamily>

<AttributeFamilyName>DeviceDocumentation</AttributeFamilyName>

<UserExpandable>>true</UserExpandable>

<Attribute>

<AttributeName>DeviceDescription</AttributeName>

<Description>Description of the device. </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Description</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>Used in the SCADA layer in the device faceplate</Usage>

<DependentAttributes/>

<Constraints>In principle there is no limit to the number of characters used, however a long description may result in display issues at the SCADA level.

Forbidden characters: ;</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>ElectricalDiagram</AttributeName>

<Description>Reference to the electrical diagram in which the device is represented.</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Electrical Diagram</NameRepresentation>

```

    <isValueRequired>>false</isValueRequired>
    <Usage>Used in the SCADA layer: added to the device description in the device
faceplate.</Usage>
    <DependentAttributes/>
    <Constraints>In principle there is no limit to the number of characters used, however a long
name may result in display issues at the SCADA level.
Forbidden characters: *[: ""@ #\$%^&?*!;,=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Remarks</AttributeName>
    <Description>Field used to add relevant information about the device. </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This information is not used in the generation process, it remains only at the
specification level for documentation purposes.</Usage>
        <DependentAttributes/>
        <Constraints>Forbidden characters: ;</Constraints>
    </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>FEDeviceParameters</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>PMinRan</AttributeName>
        <Meaning>Parameter Minimum Range</Meaning>
        <Description>Minimum engineering value of the device.</Description>
        <PrimitiveType>FLOAT32</PrimitiveType>
        <isSpecificationAttribute>
            <NameRepresentation>Range Min</NameRepresentation>
            <isValueRequired>>true</isValueRequired>
            <Usage>A linear conversion is performed between the raw range and engineering
range.</Usage>
            <DependentAttributes/>
            <Constraints>The value specified here must be consistent with the format defined in the
field "Format".</Constraints>
        </isSpecificationAttribute>
    </Attribute>
    <Attribute>
        <AttributeName>PMaxRan</AttributeName>
        <Meaning>Parameter Maximum Range</Meaning>

```

```

<Description>Maximum engineering value of the device.</Description>
<PrimitiveType>FLOAT32</PrimitiveType>
<isSpecificationAttribute>
  <NameRepresentation>Range Max</NameRepresentation>
  <isValueRequired>>true</isValueRequired>
  <Usage>A linear conversion is performed between the raw range and engineering
range.</Usage>
  <DependentAttributes/>
  <Constraints>The value specified here must be consistent with the format defined in the
field "Format".</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PMinRaw</AttributeName>
  <Meaning>Parameter Minimum Raw</Meaning>
  <Description>Minimum raw value of the device.</Description>
  <PrimitiveType>SHORTINT16</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Raw Min</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>true</isValueRequired>
    <Usage>A linear conversion is performed between the raw range and engineering
range.</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PMaxRaw</AttributeName>
  <Meaning>Parameter Maximum Raw</Meaning>
  <Description>Minimum raw value of the device.</Description>
  <PrimitiveType>SHORTINT16</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Raw Max</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>true</isValueRequired>
    <Usage>A linear conversion is performed between the raw range and engineering
range.</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>

```

```

    <AttributeName>PDb</AttributeName>
    <Meaning>Parameter Deadband</Meaning>
    <Description>Deadband applied to the Engineering value at the PLC level.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Deadband (%)</NameRepresentation>
        <TypeRepresentation>FLOAT32</TypeRepresentation>
        <isValueRequired>>true</isValueRequired>
        <Usage>The value entered here must be consistent with the resolution of the PLC channel.
    </Usage>
        <DependentAttributes/>
        <Constraints>Variations of the Engineering value below the % of the Engineering range will
    be discarded.</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>PEType</AttributeName>
    <Meaning>Encoder Type</Meaning>
    <Description>Type of encoder in use.</Description>
    <PrimitiveType>INT32</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Encoder Type</NameRepresentation>
        <TypeRepresentation>STRING</TypeRepresentation>
        <isValueRequired>>false</isValueRequired>
        <PermittedValue>Linac</PermittedValue>
        <PermittedValue>Moore</PermittedValue>
        <Usage>Here you can choose between different encoder types.</Usage>
        <DependentAttributes/>
        <Constraints/>
    </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>FEDeviceAutoRequests</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>AulhFoMo</AttributeName>
        <Meaning>Auto Inhibit Forced Mode</Meaning>
        <Description>Auto Inhibit Forced Mode (by logic): The control logic blocks the forced mode
    operation.</Description>
        <PrimitiveType>BOOLEAN</PrimitiveType>
    </Attribute>
</AttributeFamily>

```

```

<AttributeFamily>
  <AttributeFamilyName>FEDeviceManualRequests</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>ManReg01</AttributeName>
    <Meaning>Manual Register 1</Meaning>
    <Description>Manual Register 1</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>WORD</PrimitiveType>
    <Attribute>
      <AttributeName>MAuMoR</AttributeName>
      <Meaning>Manual Auto Mode Request</Meaning>
      <Description>Manual Auto Mode Request: The operator requests the Auto
Mode.</Description>
      <PrimitiveType>BIT1</PrimitiveType>
      <BitPosition>0</BitPosition>
    </Attribute>
    <Attribute>
      <AttributeName>MFoMoR</AttributeName>
      <Meaning>Manual Forced Mode Request</Meaning>
      <Description>Manual Forced Mode Request: The operator requests the Forced
Mode.</Description>
      <PrimitiveType>BIT1</PrimitiveType>
      <BitPosition>2</BitPosition>
    </Attribute>
    <Attribute>
      <AttributeName>MNewPosR</AttributeName>
      <Meaning>Manual New Position Request</Meaning>
      <Description>Manual New Position Request: The operator requests a new position to the
object</Description>
      <PrimitiveType>BIT1</PrimitiveType>
      <BitPosition>6</BitPosition>
    </Attribute>
    <Attribute>
      <AttributeName>MIOErBSetRst</AttributeName>
      <Meaning>Manual Input/Output Error Block Set/Reset</Meaning>
      <Description>Manual IO Error Block Set/Reset: This action allows to set/reset the
IOError.</Description>
      <PrimitiveType>BIT1</PrimitiveType>
      <BitPosition>10</BitPosition>
    </Attribute>
  </Attribute>
</Attribute>
<Attribute>

```

```

    <AttributeName>MPosR</AttributeName>
    <Meaning>Manual Position Request</Meaning>
    <Description>Manual Position Request: Value of the position requested by
operator</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceEnvironmentInputs</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>HFPos</AttributeName>
    <Meaning>Hardware Feedback Position</Meaning>
    <Description>Analog Feedback of the actuator.
Must be an AI/AIR/AS.</Description>
    <PrimitiveType>INT32</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>IOError</AttributeName>
    <Meaning>Input/Output Error</Meaning>
    <Description>IOError state in any of the dependant objects or the PLC channel assigned to the
object</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>IOSimu</AttributeName>
    <Meaning>Input/Output Simulated</Meaning>
    <Description>Any of the dependant objects is in Forced or Manual Mode</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceOutputs</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>StsReg01</AttributeName>
    <Meaning>Status Register 1</Meaning>
    <Description>Status Register 1</Description>
    <isEventAttribute>>true</isEventAttribute>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>WORD</PrimitiveType>
  </Attribute>

```

```

    <AttributeName>AuMoSt</AttributeName>
    <Meaning>Auto Mode Status</Meaning>
    <Description>Current status of the Auto Mode</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>2</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>FoMoSt</AttributeName>
    <Meaning>Forced Mode Status</Meaning>
    <Description>Current status of the Forced Mode.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>4</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>IOErrorW</AttributeName>
    <Meaning>Input/Output Error Warning</Meaning>
    <Description>Current status of the IOError</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>6</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>IOSimuW</AttributeName>
    <Meaning>Input/Output Simulated Warning</Meaning>
    <Description>Current status of the IOSimu</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>7</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>FoDiProW</AttributeName>
    <Meaning>Forced Differs from Process Warning</Meaning>
    <Description>The Manual or Forced Position requested by the operator differs from the
Process</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>8</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MIOErBRSt</AttributeName>
    <Meaning>Manual Input/Output Error Block Request Status</Meaning>
    <Description>Manual IOError Block Request Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>9</BitPosition>
</Attribute>

```

```

<Attribute>
  <AttributeName>AulhFoMoSt</AttributeName>
  <Meaning>Auto Inhibit Forced Mode Status</Meaning>
  <Description>Auto Inhibit Forced Mode status: Current status of the Auto Inhibit forced
mode.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>13</BitPosition>
</Attribute>
</Attribute>
<Attribute>
  <AttributeName>PosSt</AttributeName>
  <Meaning>Position status</Meaning>
  <Description>Position Status</Description>
  <isCommunicated>>true</isCommunicated>
  <isArchived>>true</isArchived>
  <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>HFSt</AttributeName>
  <Meaning>Hardware Feedback Status</Meaning>
  <Description>Current engeneering value of the Hardware feedback position
sensor</Description>
  <isCommunicated>>true</isCommunicated>
  <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuMoSt</AttributeName>
  <Meaning>Auto Mode Status</Meaning>
  <Description>Current status of the Auto Mode</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>FoMoSt</AttributeName>
  <Meaning>Forced Mode Status</Meaning>
  <Description>Current status of the Forced Mode.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>IOErrorW</AttributeName>
  <Meaning>Input/Output Error Warning</Meaning>
  <Description>Current status of the IOError</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>

```



```

<Attribute>
  <AttributeName>IOSimuW</AttributeName>
  <Meaning>Inpout/Output Simulated Warning</Meaning>
  <Description>Current status of the IOSimu</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>FoDiProW</AttributeName>
  <Meaning>Forced Differs from Process Warning</Meaning>
  <Description>The Manual or Forced Position requested by the operator differs from the
Process</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceIOConfig</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>FEType</AttributeName>
    <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>FE Encoding Type</NameRepresentation>
      <TypeRepresentation>STRING</TypeRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
      <DependentAttributes>FEChannel.InterfaceParamX (where X=1-10)</DependentAttributes>
      <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>FEChannel</AttributeName>
    <Description>Indicates how to map the acquisition of the information from the field I/O
interface.</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
    <Attribute>
      <AttributeName>InterfaceParam1</AttributeName>

```

<Description>Parameter used to set up the periphery address of the device according to the various hardware module types used at the PLC level.

Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Usage>

<DependentAttributes>FE Encoding Type</DependentAttributes>

<Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>InterfaceParam2</AttributeName>

<Description>Parameter used to set up the periphery address of the device according to the various hardware module types used at the PLC level.

Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Usage>

<DependentAttributes>FE Encoding Type</DependentAttributes>

<Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>InterfaceParam3</AttributeName>

<Description>Parameter used to set up the periphery address of the device according to the various hardware module types used at the PLC level.

Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Usage>

<DependentAttributes>FE Encoding Type</DependentAttributes>

<Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Constraints>

```

    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>InterfaceParam4</AttributeName>
    <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
      <DependentAttributes>FE Encoding Type</DependentAttributes>
      <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>InterfaceParam5</AttributeName>
    <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
      <DependentAttributes>FE Encoding Type</DependentAttributes>
      <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>InterfaceParam6</AttributeName>
    <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>

```

```

    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam7</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam8</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam9</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.

```

Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation

`<PrimitiveType>STRING</PrimitiveType>`

`<isSpecificationAttribute>`

`<isValueRequired>>false</isValueRequired>`

Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation

`<DependentAttributes>FE Encoding Type</DependentAttributes>`

Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation

`</isSpecificationAttribute>`

`</Attribute>`

`<Attribute>`

`<AttributeName>InterfaceParam10</AttributeName>`

Parameter used to set up the periphery address of the device according to the various hardware module types used at the PLC level.

Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation

`<PrimitiveType>STRING</PrimitiveType>`

`<isSpecificationAttribute>`

`<isValueRequired>>false</isValueRequired>`

Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation

`<DependentAttributes>FE Encoding Type</DependentAttributes>`

Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation

`</isSpecificationAttribute>`

`</Attribute>`

`</Attribute>`

`</AttributeFamily>`

`<AttributeFamily>`

`<AttributeFamilyName>SCADADeviceGraphics</AttributeFamilyName>`

`<UserExpandable>>true</UserExpandable>`

`<Attribute>`

`<AttributeName>PosStUnit</AttributeName>`

`<Description>Unit of the device to be displayed in SCADA</Description>`

`<PrimitiveType>STRING</PrimitiveType>`

`<isSpecificationAttribute>`

`<NameRepresentation>Unit</NameRepresentation>`

`<isValueRequired>>false</isValueRequired>`

`<Usage/>`

`<DependentAttributes/>`

In principle there is no limit to the number of characters used, however a long name may result in display issues at the SCADA level.

```

Forbidden characters: *[: "'@ # $ ^ & * ? ! , ; = + ~ ( ) { } &lt; &gt; | ] </Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PosStFormat</AttributeName>
  <Description>Format of the value to be displayed in SCADA. Supported formats:
#.# (fixed number of decimal places, in this case 2),
EXP or xEXP (exponential, 3 or x digits after '.'),
xD or xd (fixed digit format, x=number of digits, e.g.: 3D=0.01, 12.0, 123)</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Format</NameRepresentation>
    <isValueRequired>>true</isValueRequired>
    <Usage>Example: use format #.# to display value to 2 decimal places. To the left of the
decimal point, the SCADA layer will display as many digits as required by the object value, therefore a
single # is enough.</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>WidgetType</AttributeName>
  <Description>Define the widget type to display in the SCADA device tree overview only.
The widget displayed in the process panel will be selected when the user creates the
panel.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Widget Type</NameRepresentation>
    <isValueRequired>>true</isValueRequired>
    <PermittedValue>AnalogInput_Small</PermittedValue>
    <PermittedValue>AnalogInput_SciOrPrecision</PermittedValue>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Synoptic</AttributeName>
  <Description>Define link between the device and an existing synoptic where it appears. The
synoptic specified here can be accessed from the device right-click menu item
"Synoptic".</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>

```

```

        <isValueRequired>>false</isValueRequired>
        <Usage>Specify the path of the .pnl file under the "\panel" directory of the PVSS
project.</Usage>
        <DependentAttributes/>
        <Constraints/>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>DiagnosticPanel</AttributeName>
    <Description>Define link between the device and an existing diagnostic panel for the device.
The panel specified here can be accessed from the device right-click menu item "Diagnostic" as well
as from the "Diagnostic" button on the object faceplate.</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Diagnostic</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>Specify the path of the .pnl file under the "\panel" directory of the PVSS project
</Usage>
        <DependentAttributes/>
        <Constraints/>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>WWWLink</AttributeName>
    <Description>Define link between the device and an existing web page (or pdf file, or other file
which can be opened with IE). The link can be accessed from the device right-click menu item "Info"
as well as from the "Info" button on the object faceplate.</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>WWW Link</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage/>
        <DependentAttributes/>
        <Constraints/>
    </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>SCADADeviceFunctionals</AttributeFamilyName>
    <UserExpandable>>false</UserExpandable>
    <Attribute>
        <AttributeName>MaskEvent</AttributeName>

```

<Description>If TRUE: the events of the device will be masked in SCADA and not displayed or archived in the Event List.

An 'event' is defined as a bit change in StsReg01 or StsReg02</Description>

<PrimitiveType>BOOLEAN</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Mask Event</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage/>

<DependentAttributes/>

<Constraints/>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>AccessControlDomain</AttributeName>

<Description>Define Access Control on the device to an existing SCADA Domain

*Forbidden characters: *[: ""@ #%^&*?!;=+~(){}<>|]</Description>*

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Access Control Domain</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>This domain is used to grant access to this specific device. The domain specified for this object will allow access to the object only to registered users on that domain</Usage>

<DependentAttributes/>

*<Constraints>Forbidden characters: *[: ""@ #%^&*?!;=+~(){}<>|]</Constraints>*

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>SCADADeviceClassificationTags</AttributeName>

<Description>It defines the Domain, Nature and DeviceLinks for the SCADA visualization</Description>

<PrimitiveType>STRUCT</PrimitiveType>

<Attribute>

<AttributeName>Domain</AttributeName>

<Description>Domain of the device. If empty, the domain will be the name of the application

*Forbidden characters: *[: ""@ #%^&*?!;=+~(){}<>|]</Description>*

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>Domain is used to filter the devices in the alarm list or in the device tree overview</Usage>

<DependentAttributes/>

*<Constraints>Forbidden characters: *[: ""@ #%^&*?!;=+~(){}<>|]</Constraints>*


```

    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>Nature</AttributeName>
    <Description>Nature of the device. If empty, the nature will be the type of the device
Forbidden characters: *[: "'@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>Nature is used to filter the devices in the alarm list or in the device tree
overview</Usage>
      <DependentAttributes/>
      <Constraints>Forbidden characters: *[:
"'@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>DeviceLinks</AttributeName>
    <Description>Define links to other devices (separate device names with commas).

```

Note: it is not necessary to link to master, parents or children because these links are automatically created.

```

Forbidden characters: *[: "'@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Device Links</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>Linked devices will be shown in the device right-click menu</Usage>
      <DependentAttributes>Expert Name or Name.

```

The name of the device(s) specified here *must* correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified here corresponds to "Name".</DependentAttributes>

```

      <Constraints>Forbidden characters: *[:
"'@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
  </Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADataArchiving</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>ArchiveMode</AttributeName>
    <Description>Archive mode of the object engineering values. Archive if:

```

Old/New Comparison: value changes
Time: value changes after Time Filter
Deadband: value < or >; deadband
AND: at least one of the conditions is fulfilled
OR: both conditions are fulfilled</Description>

```

<PrimitiveType>STRING</PrimitiveType>
<isSpecificationAttribute>
  <NameRepresentation>Archive Mode</NameRepresentation>
  <isValueRequired>>true</isValueRequired>
  <PermittedValue>No</PermittedValue>
  <PermittedValue>Deadband</PermittedValue>
  <PermittedValue>Time</PermittedValue>
  <PermittedValue>Deadband AND Time</PermittedValue>
  <PermittedValue>Deadband OR Time</PermittedValue>
  <PermittedValue>Old/New Comparison</PermittedValue>
  <PermittedValue>Old/New Comparison AND Time</PermittedValue>
  <PermittedValue>Old/New Comparison OR Time</PermittedValue>
  <Usage>This archive mode is used to archive data in the PVSS database</Usage>
  <DependentAttributes>If "Time" is selected, "Time Filter (s)" must be filled
  If "Deadband" is selected: "Deadband Type" and "Deadband Value" must be
  filled.</DependentAttributes>
  <Constraints/>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>TimeFilter</AttributeName>
  <Description>Time filter for the SCADA archiving of the engineering values of the object. Must
  be positive.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Time Filter (s)</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes>Valid if "Time" has been selected as Archive
    Mode</DependentAttributes>
    <Constraints>Must be positive</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DeadbandType</AttributeName>
  <Description>Deadband type (Relative or Absolute) of the deadband for the SCADA archiving
  of the engineering values of the object</Description>
  <PrimitiveType>STRING</PrimitiveType>

```

```

<isSpecificationAttribute>
  <NameRepresentation>Deadband Type</NameRepresentation>
  <isValueRequired>>false</isValueRequired>
  <PermittedValue>Relative</PermittedValue>
  <PermittedValue>Absolute</PermittedValue>
  <Usage>The value is archived if the difference between the latest archived value and the
actual value exceeds, either:
- if 'Absolute': the "Deadband Value"
- if 'Relative': the "Deadband Value" as a percent of the latest archived value</Usage>
  <DependentAttributes>Valid if "Deadband" has been selected as Archive
Mode</DependentAttributes>
  <Constraints/>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DeadbandValue</AttributeName>
  <Description>Deadband value for the SCADA archiving of the engineering values of the object
Must be positive and larger than the deadband specified for the driver data smoothing (Driver
deadband)</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Deadband Value</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes>Valid if "Deadband" has been selected as Archive
Mode</DependentAttributes>
    <Constraints>Must be positive and larger than the deadband specified for the driver data
smoothing (Driver deadband)</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>BooleanArch</AttributeName>
  <Description>Name of the Boolean archive
Forbidden characters: *[: ""@`#$%^&?*?!;=+~(){}&lt;&gt;|]</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Boolean Archive</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>The boolean values of the device will be archived in the specified PVSS database.
The archive must be created in PVSS before importing the object.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[:
""@`#$%^&?*?!;=+~(){}&lt;&gt;|]</Constraints>

```

```

    </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>AnalogArch</AttributeName>
  <Description>Name of the analog archive
Forbidden characters: *[: ""@`#$%^&?*?!;=+~(){}&lt;&gt;|]</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Analog Archive</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>The analog values of the device will be archived in the specified PVSS database. The
archive must be created in PVSS before importing the object.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[:
""@`#$%^&?*?!;=+~(){}&lt;&gt;|]</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>EventArch</AttributeName>
  <Description>Name of the event archive
Forbidden characters: *[: ""@`#$%^&?*?!;=+~(){}&lt;&gt;|]</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Event Archive</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>The events generated by the device will be archived in the specified PVSS database.
The archive must be created in PVSS before importing the object.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[:
""@`#$%^&?*?!;=+~(){}&lt;&gt;|]</Constraints>
  </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADriverDataSmoothing</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>DeadbandType</AttributeName>
    <Description>Deadband type (None, Relative, Absolute or Old/New) for the SCADA driver data
smoothing (Driver deadband)</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Deadband Type</NameRepresentation>

```

```

    <isValueRequired>true</isValueRequired>
    <PermittedValue>No</PermittedValue>
    <PermittedValue>Relative</PermittedValue>
    <PermittedValue>Absolute</PermittedValue>
    <PermittedValue>Old/New</PermittedValue>
    <Usage>Used for the online display in SCADA</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DeadbandValue</AttributeName>
  <Description>Deadband value for the SCADA driver data smoothing
Must be positive and smaller than the deadband specified for the archiving</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Deadband Value</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Used for the online display in SCADA</Usage>
    <DependentAttributes/>
    <Constraints>Must be positive and smaller than the deadband specified for the
archiving</Constraints>
  </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADeviceAlarms</AttributeFamilyName>
  <UserExpandable>>false</UserExpandable>
  <Attribute>
    <AttributeName>AlarmConfig</AttributeName>
    <Description>Configuration of Alarm under SCADA</Description>
    <PrimitiveType>INT32</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Alarm Config</NameRepresentation>
      <isValueRequired>true</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints/>
    </isSpecificationAttribute>
  <Attribute>
    <AttributeName>SMSCategory</AttributeName>
    <Description>This Alarm message will follow rules defined in the corresponding SMS User
Group (comma-separated list)</Description>

```

```

<PrimitiveType>STRING</PrimitiveType>
<isSpecificationAttribute>
  <NameRepresentation>SMS Category</NameRepresentation>
  <isValueRequired>>false</isValueRequired>
  <Usage>Defines a specific treatment for each SMS message</Usage>
  <DependentAttributes/>
  <Constraints>The name must correspond to the SMS user group
(unProcessAlarm,...)</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>AutoAcknowledge</AttributeName>
  <Description>The SCADA automatically performs the alarm acknowledge</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Auto Acknowledge</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>When TRUE, the SCADA automatically acknowledges the alarm at its occurrence.
The operator doesn't have to act on this alarm.</Usage>
    <DependentAttributes/>
    <Constraints>TRUE/FALSE</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Masked</AttributeName>
  <Description>Alarm signal is ignored by the SCADA</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>When TRUE, the Alarm signal is not recorded into the ALARM database</Usage>
    <DependentAttributes/>
    <Constraints>TRUE/FALSE</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Level</AttributeName>
  <Description>Classification of the importance of the Alarm</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <PermittedValue>Information</PermittedValue>
    <PermittedValue>Warning</PermittedValue>
  </isSpecificationAttribute>

```

```

    <PermittedValue>Alarm</PermittedValue>
    <PermittedValue>Safety Alarm</PermittedValue>
    <Usage>Level 0: Information
Level 1: Warning
Level 2: Alarm
Level 3: Safety Alarm</Usage>
    <DependentAttributes/>
    <Constraints/>
</isSpecificationAttribute>
</Attribute>
</Attribute>
<Attribute>
    <AttributeName>Message</AttributeName>
    <Description>Message to display when alarm is set in SCADA</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>The message specified here will be displayed in the Alarm List</Usage>
        <DependentAttributes/>
        <Constraints>In principle there is no limit to the number of characters used, however a long
name may result in display issues at the SCADA level.
Forbidden characters: *[:"@#$%^&*?!.,;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>AnalogThresholds</AttributeName>
    <Description>Analog alarm condition </Description>
    <PrimitiveType>STRUCT</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Analog Thresholds</NameRepresentation>
        <isValueRequired>>true</isValueRequired>
        <Usage/>
        <DependentAttributes/>
        <Constraints/>
    </isSpecificationAttribute>
<Attribute>
    <AttributeName>HHAlarm</AttributeName>
    <Description>High High (HH) Alarm Threshold
All defined thresholds must be ordered (HH&gt;H&gt;L&gt;LL)</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>HH Alarm</NameRepresentation>

```

```

    <isValueRequired>>false</isValueRequired>
    <Usage>Used to define an HH Alarm on the sensor at SCADA level. This alarm is only used
at SCADA level for information and It has no impact on the process. If empty, no alarm is
created.</Usage>
    <DependentAttributes/>
    <Constraints>All defined thresholds must be ordered
(HH>H>L>LL)</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>HWarning</AttributeName>
    <Description>High (H) Alarm Threshold
All defined thresholds must be ordered (HH>H>L>LL)</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>H Warning</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>Used to define an H Alarm on the sensor at SCADA level. This alarm is only used
at SCADA level for information and It has no impact on the process. If empty, no alarm is
created.</Usage>
        <DependentAttributes/>
        <Constraints>All defined thresholds must be ordered
(HH>H>L>LL)</Constraints>
        </isSpecificationAttribute>
    </Attribute>
<Attribute>
    <AttributeName>LWarning</AttributeName>
    <Description>Low (L) Alarm Threshold
All defined thresholds must be ordered (HH>H>L>LL)</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>L Warning</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>Used to define an L Alarm on the sensor at SCADA level. This alarm is only used at
SCADA level for information and It has no impact on the process. If empty, no alarm is
created.</Usage>
        <DependentAttributes/>
        <Constraints>All defined thresholds must be ordered
(HH>H>L>LL)</Constraints>
        </isSpecificationAttribute>
    </Attribute>
<Attribute>
    <AttributeName>LLAlarm</AttributeName>
    <Description>Low Low (LL) Alarm Threshold

```



```

All defined thresholds must be ordered (HH>H>L>LL)
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>LL Alarm</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Used to define an LL Alarm on the sensor at SCADA level. This alarm is only used
at SCADA level for information and It has no impact on the process. If empty, no alarm is
created.</Usage>
    <DependentAttributes/>
    <Constraints>All defined thresholds must be ordered
(HH>H>L>LL)</Constraints>
  </isSpecificationAttribute>
</Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>LogicDeviceDefinitions</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>CustomLogicParameters</AttributeName>
    <Description>User defined meaning, used by the logic generators.</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
    <Attribute>
      <AttributeName>Parameter1</AttributeName>
      <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
      <PrimitiveType>STRING</PrimitiveType>
      <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
        <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
        <Constraints>Forbidden characters: '$' </Constraints>
      </isSpecificationAttribute>
    </Attribute>
  </Attribute>
    <AttributeName>Parameter2</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>

```

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter3</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: '\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter4</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: '\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter5</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: '\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter6</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: '\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter7</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: '\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter8</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: '\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter9</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: '\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter10</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: '\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

</Attribute>

</AttributeFamily>

<AttributeFamily>

<AttributeFamilyName>DeviceTechnical</AttributeFamilyName>

<UserExpandable>>false</UserExpandable>

</AttributeFamily>

<AttributeFamily>

<AttributeFamilyName>TargetDeviceInformation</AttributeFamilyName>

```

<UserExpandable>true</UserExpandable>
<Attribute>
  <AttributeName>Target</AttributeName>
  <Description>Identifies a target type (e.g. SIEMENS, SCHNEIDER...)</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <DefaultValue>Siemens</DefaultValue>
  <Attribute>
    <AttributeName>RepresentationName</AttributeName>
    <Description>It's the name used ...</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <DefaultValue>ENC</DefaultValue>
  </Attribute>
  <Attribute>
    <AttributeName>Optimized</AttributeName>
    <Description>Is this object an optimized Object?</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <DefaultValue>>true</DefaultValue>
  </Attribute>
  <Attribute>
    <AttributeName>LimitSize</AttributeName>
    <Description>Maximun number of instances allowed</Description>
    <PrimitiveType>INT32</PrimitiveType>
    <DefaultValue>1000</DefaultValue>
  </Attribute>
  <Attribute>
    <AttributeName>FastInterlock</AttributeName>
    <Description>Is this object a fast interlock object?</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <DefaultValue>>false</DefaultValue>
  </Attribute>
</Attribute>
</AttributeFamily>
</UNICOSMetaModel>

```

2.18. LocalDeviceType.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<UNICOSMetaModel xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="..\unicos\UNICOSMetaModel.xsd">
  <Information>
    <Package>${devicePackageName}</Package>
    <Name>Local</Name>
    <ObjectTypeFamily>FieldObjectFamily</ObjectTypeFamily>
    <Description>Local Device</Description>
    <Version>${LastChangedRevision: 170110} </Version>
  </Information>
  <AttributeFamily>
    <AttributeFamilyName>DeviceIdentification</AttributeFamilyName>
    <UserExpandable>>false</UserExpandable>
    <Attribute>
      <AttributeName>Name</AttributeName>
      <Description>Name of the device. It must be unique.
```

Max length:

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: [:"'@`#\$%^&*?!.,;+~(){}<>|]-., double underscore, and page break</Description>

```
  <PrimitiveType>STRING</PrimitiveType>
```

```
  <isSpecificationAttribute>
```

```
    <isValueRequired>>true</isValueRequired>
```

```
    <Usage>Name displayed at the SCADA level if "Expert Name" is not specified.
```

This name will appear in the datapoints created in the SCADA layer.</Usage>

```
    <DependentAttributes>Device Links.
```

The name of the device(s) specified in Device Links *must* correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to "Name".</DependentAttributes>

```
    <Constraints>Max length:
```

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: [:"'@`#\$%^&*?!.,;+~(){}<>|]-., double underscore, and page break
Name must be unique.</Constraints>

```
  </isSpecificationAttribute>
```

```
</Attribute>
```

```
<Attribute>
```

```
  <AttributeName>ExpertName</AttributeName>
```

```
  <Description>Name of the device displayed at the SCADA level. It must be unique.
```

Forbidden characters: *[: "'@#%\$%^&*?!;=+~(){}<>|] </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Expert Name</NameRepresentation>

<TypeRepresentation>STRING</TypeRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>It does not affect to the datapoints names in the SCADA layer.</Usage>

<DependentAttributes>Device Links.

The name of the device(s) specified in Device Links **must** correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to "Name".</DependentAttributes>

<Constraints>In principle there is no limit to the number of characters used, however a long name may result in display issues at the SCADA level.

Forbidden characters: *[: "'@#%\$%^&*?!;=+~(){}<>|]

Expert Name must be unique.</Constraints>

</isSpecificationAttribute>

</Attribute>

</AttributeFamily>

<AttributeFamily>

<AttributeFamilyName>DeviceDocumentation</AttributeFamilyName>

<UserExpandable>>true</UserExpandable>

<Attribute>

<AttributeName>DeviceDescription</AttributeName>

<Description>Description of the device. </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Description</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>Used in the SCADA layer in the device faceplate</Usage>

<DependentAttributes/>

<Constraints>In principle there is no limit to the number of characters used, however a long description may result in display issues at the SCADA level.

Forbidden characters: ;</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Remarks</AttributeName>

<Description>Field used to add relevant information about the device. </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

```

    <Usage>This information is not used in the generation process, it remains only at the
specification level for documentation purposes.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: ;</Constraints>
    </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>FEDeviceParameters</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>ParReg</AttributeName>
        <Meaning>Parameter Register</Meaning>
        <Description>Parametrisation register: This register contains all the boolean parameters of
the object</Description>
        <PrimitiveType>WORD</PrimitiveType>
    <Attribute>
        <AttributeName>PHFOn</AttributeName>
        <Meaning>Parameter Hardware Feedback On</Meaning>
        <Description>Enables the activation of the Feedback ON of the object via a hardware
sensor</Description>
        <PrimitiveType>BIT1</PrimitiveType>
        <BitPosition>1</BitPosition>
    </Attribute>
    <Attribute>
        <AttributeName>PHFOff</AttributeName>
        <Meaning>Parameter Hardware Feedback Off</Meaning>
        <Description>Enables the activation of the Feedback OFF of the object via a hardware
sensor.</Description>
        <PrimitiveType>BIT1</PrimitiveType>
        <BitPosition>2</BitPosition>
    </Attribute>
    <Attribute>
        <AttributeName>PAnim</AttributeName>
        <Meaning>Parameter Animation</Meaning>
        <Description>Full/Empty Widget Animation type:
If Full/Empty, the object is always animated full/empty if active Feedback Off/On is not set.
Otherwise, if Full/Half/Empty, the object is only animated half full.
For more details, see OnOff object description</Description>
        <PrimitiveType>BIT1</PrimitiveType>
        <BitPosition>6</BitPosition>
        <isSpecificationAttribute>
            <NameRepresentation>Full/Empty Animation</NameRepresentation>

```



```

    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>true</isValueRequired>
    <PermittedValue>Full/Empty</PermittedValue>
    <PermittedValue>Full/Half/Empty</PermittedValue>
    <Usage>To always represent the widget as Full or Empty when only one Hardware
Feedback is declared.</Usage>
    <DependentAttributes/>
    <Constraints>Full/Empty Animation is applied, when only one Hardware Feedback is
declared (PHFOn or PHFOff).</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>PPosAIE</AttributeName>
    <Meaning>Parameter Position Alarm Enable</Meaning>
    <Description>If TRUE, set Position Alarm if a Local object has no hardware feedback from its
only active feedback signal</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>10</BitPosition>
    <isSpecificationAttribute>
        <NameRepresentation>Position Alarm</NameRepresentation>
        <TypeRepresentation>BOOLEAN</TypeRepresentation>
        <isValueRequired>>false</isValueRequired>
        <PermittedValue>TRUE</PermittedValue>
        <PermittedValue>FALSE</PermittedValue>
        <Usage>Position Alarm will display SCADA widget in red in this case and allow user to
quickly identify valves which are not in correct position</Usage>
        <DependentAttributes/>
        <Constraints>Position Alarm Animation is applied, when only one Hardware Feedback is
declared (PHFOn or PHFOff).</Constraints>
        </isSpecificationAttribute>
    </Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>FEDeviceManualRequests</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>ManReg01</AttributeName>
        <Meaning>Manual Register 1</Meaning>
        <Description>Manual Register 1</Description>
        <isCommunicated>>true</isCommunicated>
        <PrimitiveType>WORD</PrimitiveType>
    </Attribute>

```

```

</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceEnvironmentInputs</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>HFOn</AttributeName>
    <Meaning>Hardware Feedback On</Meaning>
    <Description>Feedback On of the actuator.
Must be a DI.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Feedback On</NameRepresentation>
      <TypeRepresentation>STRING</TypeRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>Used to compute the "On" status of the device</Usage>
      <DependentAttributes/>
      <Constraints>Must be a DI</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>HFOff</AttributeName>
    <Meaning>Hardware Feedback Off</Meaning>
    <Description>Feedback Off of the actuator.
Must be a DI.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Feedback Off</NameRepresentation>
      <TypeRepresentation>STRING</TypeRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>Used to compute the "Off" status of the device</Usage>
      <DependentAttributes/>
      <Constraints>Must be a DI</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>IOError</AttributeName>
    <Meaning>Input/Output Error</Meaning>
    <Description>IOError state in any of the dependant objects or the PLC channel assigned to the
object</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>

```

```

    <AttributeName>IOSimu</AttributeName>
    <Meaning>Input/Output Simulated</Meaning>
    <Description>Any of the dependant objects is in Forced or Manual Mode</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceOutputs</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>StsReg01</AttributeName>
    <Meaning>Status Register 1</Meaning>
    <Description>Status Register 1</Description>
    <isEventAttribute>>true</isEventAttribute>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>WORD</PrimitiveType>
  <Attribute>
    <AttributeName>OnSt</AttributeName>
    <Meaning>On Status</Meaning>
    <Description>On/Open Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>0</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>OffSt</AttributeName>
    <Meaning>Off Status</Meaning>
    <Description>Off/Closed Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>1</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>IOErrorW</AttributeName>
    <Meaning>Input/Output Error Warning</Meaning>
    <Description>Current status of the IOError</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>6</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>IOSimuW</AttributeName>
    <Meaning>Input/Output Simulated Warning</Meaning>
    <Description>Current status of the IOSimu</Description>
    <PrimitiveType>BIT1</PrimitiveType>
  </Attribute>

```

```

    <BitPosition>7</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>PosW</AttributeName>
    <Meaning>Position Warning</Meaning>
    <Description>There is discrepancy between the order status and the position status
according to Time Delay and Dead-band.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>9</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>PosAlSt</AttributeName>
    <Meaning>Position Alarm Status</Meaning>
    <Description>Position Alarm Status. When there is no feedback activated for Local object
with only one feedback</Description>
    <isArchived>true</isArchived>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>10</BitPosition>
  </Attribute>
</Attribute>
  <Attribute>
    <AttributeName>OnSt</AttributeName>
    <Meaning>On Status</Meaning>
    <Description>On/Open Status</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>OffSt</AttributeName>
    <Meaning>Off Status</Meaning>
    <Description>Off/Closed Status</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>IOErrorW</AttributeName>
    <Meaning>Input/Output Error Warning</Meaning>
    <Description>Current status of the IOError</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>IOSimuW</AttributeName>
    <Meaning>Inpout/Output Simulated Warning</Meaning>
    <Description>Current status of the IOSimu</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>

```

```

</Attribute>
<Attribute>
  <AttributeName>PosAlSt</AttributeName>
  <Meaning>Position Alarm Status</Meaning>
  <Description>Position Alarm Status</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>PosW</AttributeName>
  <Meaning>Position Warning</Meaning>
  <Description>Position Warning Status</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADeviceGraphics</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>WidgetType</AttributeName>
    <Description>Define the widget type to display in the SCADA device tree overview only.
    The widget displayed in the process panel will be selected when the user creates the
    panel.</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Widget Type</NameRepresentation>
      <isValueRequired>>true</isValueRequired>
      <isCaseSensitive>>true</isCaseSensitive>
      <PermittedValue>LocalSquare</PermittedValue>
      <PermittedValue>LocalValveHorizontal</PermittedValue>
      <PermittedValue>LocalValveVertical</PermittedValue>
      <PermittedValue>LocalPumpHorizontalLeft</PermittedValue>
      <PermittedValue>LocalPumpHorizontalRight</PermittedValue>
      <PermittedValue>LocalPumpVerticalHigh</PermittedValue>
      <PermittedValue>LocalPumpVerticalLow</PermittedValue>
      <PermittedValue>LocalDamperHorizontal</PermittedValue>
      <PermittedValue>LocalDoubleDamperHorizontal</PermittedValue>
      <PermittedValue>LocalHeaterHorizontal</PermittedValue>
      <PermittedValue>LocalHeaterVertical</PermittedValue>
      <PermittedValue>LocalMotor</PermittedValue>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </Attribute>
</AttributeFamily>

```

```

    </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Synoptic</AttributeName>
  <Description>Define link between the device and an existing synoptic where it appears. The
synoptic specified here can be accessed from the device right-click menu item
"Synoptic".</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Specify the path of the .pnl file under the "\panel" directory of the PVSS
project.</Usage>
  <DependentAttributes/>
  <Constraints/>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DiagnosticPanel</AttributeName>
  <Description>Define link between the device and an existing diagnostic panel for the device.
The panel specified here can be accessed from the device right-click menu item "Diagnostic" as well
as from the "Diagnostic" button on the object faceplate.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Diagnostic</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Specify the path of the .pnl file under the "\panel" directory of the PVSS project
</Usage>
  <DependentAttributes/>
  <Constraints/>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>WWWLink</AttributeName>
  <Description>Define link between the device and an existing web page (or pdf file, or other file
which can be opened with IE). The link can be accessed from the device right-click menu item "Info"
as well as from the "Info" button on the object faceplate.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>WWW Link</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
  <Usage/>
  <DependentAttributes/>
  <Constraints/>
</isSpecificationAttribute>

```

```

</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADeviceFunctionals</AttributeFamilyName>
  <UserExpandable>>false</UserExpandable>
  <Attribute>
    <AttributeName>MaskEvent</AttributeName>
    <Description>If TRUE: the events of the device will be masked in SCADA and not displayed or
archived in the Event List.
An 'event' is defined as a bit change in StsReg01 or StsReg02</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Mask Event</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>AccessControlDomain</AttributeName>
    <Description>Define Access Control on the device to an existing SCADA Domain
Forbidden characters: *[: ""@`#%^^&,*?!;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Access Control Domain</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>This domain is used to grant access to this specific device. The domain specified for
this object will allow access to the object only to registered users on that domain</Usage>
      <DependentAttributes/>
      <Constraints>Forbidden characters: *[: ""@`#%^^&,*?!;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>SCADADeviceClassificationTags</AttributeName>
    <Description>It defines the Domain, Nature and DeviceLinks for the SCADA
visualization</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
    <Attribute>
      <AttributeName>Domain</AttributeName>
      <Description>Domain of the device. If empty, the domain will be the name of the application
Forbidden characters: *[: ""@`#%^^&,*?!;=+~(){}&lt;&gt;|]</Description>
      <PrimitiveType>STRING</PrimitiveType>

```

```

<isSpecificationAttribute>
  <isValueRequired>>false</isValueRequired>
  <Usage>Domain is used to filter the devices in the alarm list or in the device tree
overview</Usage>
  <DependentAttributes/>
  <Constraints>Forbidden characters: *[:
"@`#$$%^&amp;*?!;=+~(){}&lt;&gt;|]</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>

```

```

  <AttributeName>Nature</AttributeName>
  <Description>Nature of the device. If empty, the nature will be the type of the device
Forbidden characters: *[: "@`#$$%^&amp;*?!;=+~(){}&lt;&gt;|]</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Nature is used to filter the devices in the alarm list or in the device tree
overview</Usage>

```

```

  <DependentAttributes/>
  <Constraints>Forbidden characters: *[:
"@`#$$%^&amp;*?!;=+~(){}&lt;&gt;|]</Constraints>
</isSpecificationAttribute>
</Attribute>

```

```

<Attribute>
  <AttributeName>DeviceLinks</AttributeName>
  <Description>Define links to other devices (separate device names with commas).

```

Note: it is not necessary to link to master, parents or children because these links are automatically created.

```

Forbidden characters: *[: "@`#$$%^&amp;*?!;=+~(){}&lt;&gt;|]</Description>
  <PrimitiveType>STRING</PrimitiveType>

```

```

  <isSpecificationAttribute>
    <NameRepresentation>Device Links</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Linked devices will be shown in the device right-click menu</Usage>
    <DependentAttributes>Expert Name or Name.

```

The name of the device(s) specified here *must* correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified here corresponds to "Name".</DependentAttributes>

```

  <Constraints>Forbidden characters: *[:
"@`#$$%^&amp;*?!;=+~(){}&lt;&gt;|]</Constraints>
</isSpecificationAttribute>
</Attribute>
</Attribute>

```



```

</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADeviceDataArchiving</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>ArchiveMode</AttributeName>
    <Description>Archive mode of the object engineering values. Archive if:
    Old/New Comparison: value changes
    Time: value changes after Time Filter
    Deadband: value &lt; or &gt; deadband
    AND: at least one of the conditions is fulfilled
    OR: both conditions are fulfilled</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Archive Mode</NameRepresentation>
      <isValueRequired>>true</isValueRequired>
      <PermittedValue>No</PermittedValue>
      <PermittedValue>Old/New Comparison</PermittedValue>
      <Usage>This archive mode is used to archive data in the PVSS database</Usage>
      <DependentAttributes/>
      <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>BooleanArch</AttributeName>
    <Description>Name of the Boolean archive
    Forbidden characters: *[: ""@`#$%^&amp;*?!;,=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Boolean Archive</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>The boolean values of the device will be archived in the specified PVSS database.
      The archive must be created in PVSS before importing the object.</Usage>
      <DependentAttributes/>
      <Constraints>Forbidden characters: *[:
      ""@`#$%^&amp;*?!;,=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>AnalogArch</AttributeName>
    <Description>Name of the analog archive
    Forbidden characters: *[: ""@`#$%^&amp;*?!;,=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>

```

```

<isSpecificationAttribute>
  <NameRepresentation>Analog Archive</NameRepresentation>
  <isValueRequired>>false</isValueRequired>
  <Usage>The analog values of the device will be archived in the specified PVSS database. The
archive must be created in PVSS before importing the object.</Usage>
  <DependentAttributes/>
  <Constraints>Forbidden characters: *[:
"@`#$$%^&*?!.,;=+~(){}&lt;&gt;|]</Constraints>
"/isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>EventArch</AttributeName>
  <Description>Name of the event archive
Forbidden characters: *[: "@`#$$%^&*?!.,;=+~(){}&lt;&gt;|]</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Event Archive</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>The events generated by the device will be archived in the specified PVSS database.
The archive must be created in PVSS before importing the object.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[:
"@`#$$%^&*?!.,;=+~(){}&lt;&gt;|]</Constraints>
  /isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADeviceAlarms</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>AlarmConfig</AttributeName>
    <Description>Configuration of Alarm under SCADA</Description>
    <PrimitiveType>INT32</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Alarm Config</NameRepresentation>
      <isValueRequired>>true</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints/>
    /isSpecificationAttribute>
  <Attribute>
    <AttributeName>SMSCategory</AttributeName>

```

```

    <Description>This Alarm message will follow rules defined in the corresponding SMS User
    Group (comma-separated list)</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>SMS Category</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>Defines a specific treatment for each SMS message</Usage>
        <DependentAttributes/>
        <Constraints>The name must correspond to the SMS user group
        (unProcessAlarm,...)</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>AutoAcknowledge</AttributeName>
    <Description>The SCADA automatically performs the alarm acknowledge</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Auto Acknowledge</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>When TRUE, the SCADA automatically acknowledges the alarm at its occurrence.
        The operator doesn't have to act on this alarm.</Usage>
        <DependentAttributes/>
        <Constraints>TRUE/FALSE</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Masked</AttributeName>
    <Description>Alarm signal is ignored by the SCADA</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>When TRUE, the Alarm signal is not recorded into the ALARM database</Usage>
        <DependentAttributes/>
        <Constraints>TRUE/FALSE</Constraints>
    </isSpecificationAttribute>
</Attribute>
</Attribute>
<Attribute>
    <AttributeName>Message</AttributeName>
    <Description>Message to display when alarm is set in SCADA</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>

```

```

    <Usage>The message specified here will be displayed in the Alarm List</Usage>
    <DependentAttributes/>
    <Constraints>In principle there is no limit to the number of characters used, however a long
name may result in display issues at the SCADA level.
Forbidden characters: *[:"@`#$%^&?*?!,:;+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>LogicDeviceDefinitions</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>CustomLogicParameters</AttributeName>
    <Description>User defined meaning, used by the logic generators.</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
    <Attribute>
      <AttributeName>Parameter1</AttributeName>
      <Description>Parameter to be used in the logic templates
Forbidden characters: "$' </Description>
      <PrimitiveType>STRING</PrimitiveType>
      <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
        <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
        <Constraints>Forbidden characters: "$' </Constraints>
      </isSpecificationAttribute>
    </Attribute>
  <Attribute>
    <AttributeName>Parameter2</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: "$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
      <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
      <Constraints>Forbidden characters: "$' </Constraints>
    </isSpecificationAttribute>
  </Attribute>

```

```

<Attribute>
  <AttributeName>Parameter3</AttributeName>
  <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Parameter4</AttributeName>
  <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Parameter5</AttributeName>
  <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>

```

```

    <AttributeName>Parameter6</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
        <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
        <Constraints>Forbidden characters: '$' </Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter7</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
        <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
        <Constraints>Forbidden characters: '$' </Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter8</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
        <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
        <Constraints>Forbidden characters: '$' </Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter9</AttributeName>

```

```

    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
        <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
        <Constraints>Forbidden characters: '$' </Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter10</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
        <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
        <Constraints>Forbidden characters: '$' </Constraints>
    </isSpecificationAttribute>
</Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>DeviceTechnical</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>PROCOSConfiguration</AttributeName>
        <Description>PROCOS parameters allowing simulation</Description>
        <PrimitiveType>STRUCT</PrimitiveType>
    </Attribute>
        <AttributeName>Config</AttributeName>
        <Description>Device mode configuration for simulation (Simulated, Forced or
Empty)</Description>
        <PrimitiveType>STRING</PrimitiveType>
    </Attribute>
    <Attribute>
        <AttributeName>ForcedValue</AttributeName>

```

```

    <Description>Forced value defined (e.g.: analog: 4.5, digital: 0 or 1)</Description>
    <PrimitiveType>STRING</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>Hierarchy</AttributeName>
    <Description>Hierarchy definition following the Simulation model</Description>
    <PrimitiveType>STRING</PrimitiveType>
</Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>TargetDeviceInformation</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>Target</AttributeName>
        <Description>Identifies a target type (e.g. SIEMENS, SCHNEIDER...)</Description>
        <PrimitiveType>STRUCT</PrimitiveType>
        <DefaultValue>Siemens</DefaultValue>
    <Attribute>
        <AttributeName>RepresentationName</AttributeName>
        <Description>It's the name used ...</Description>
        <PrimitiveType>STRING</PrimitiveType>
        <DefaultValue>LOCAL</DefaultValue>
    </Attribute>
    <Attribute>
        <AttributeName>Optimized</AttributeName>
        <Description>Is this object an optimized Object?</Description>
        <PrimitiveType>BOOLEAN</PrimitiveType>
        <DefaultValue>>false</DefaultValue>
    </Attribute>
    <Attribute>
        <AttributeName>LimitSize</AttributeName>
        <Description>Maximun number of instances allowed</Description>
        <PrimitiveType>INT32</PrimitiveType>
        <DefaultValue>250</DefaultValue>
    </Attribute>
    <Attribute>
        <AttributeName>FastInterlock</AttributeName>
        <Description>Is this object a fast interlock object?</Description>
        <PrimitiveType>BOOLEAN</PrimitiveType>
        <DefaultValue>>false</DefaultValue>
    </Attribute>

```



```
</Attribute>  
</AttributeFamily>  
</UNICOSMetaModel>
```

2.19. MassFlowControllerDeviceType.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<UNICOSMetaModel xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="..\unicos\UNICOSMetaModel.xsd">
```

```
  <Information>
    <Package>${devicePackageName}</Package>
    <Name>MassFlowController</Name>
    <ObjectTypeFamily>FieldObjectFamily</ObjectTypeFamily>
    <Description>Mass Flow Controller Device</Description>
    <Version>${LastChangedRevision: 170121} </Version>
  </Information>
  <AttributeFamily>
    <AttributeFamilyName>DeviceIdentification</AttributeFamilyName>
    <UserExpandable>>false</UserExpandable>
    <Attribute>
      <AttributeName>Name</AttributeName>
      <Description>Name of the device. It must be unique.
```

Max length:

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: [:"'@`#\$%^&*?!.,;+~(){}<>|]-., double underscore, and page break</Description>

```
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>true</isValueRequired>
      <Usage>Name displayed at the SCADA level if "Expert Name" is not specified.
```

This name will appear in the datapoints created in the SCADA layer.</Usage>

```
    <DependentAttributes>Device Links.
```

The name of the device(s) specified in Device Links *must* correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to "Name".</DependentAttributes>

```
    <Constraints>Max length:
```

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: [:"'@`#\$%^&*?!.,;+~(){}<>|]-., double underscore, and page break
Name must be unique.</Constraints>

```
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>ExpertName</AttributeName>
  <Description>Name of the device displayed at the SCADA level. It must be unique.
```

Forbidden characters: *[: "'@#%\$%^&*?!;=+~(){}<>|]</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Expert Name</NameRepresentation>

<TypeRepresentation>STRING</TypeRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>It does not affect to the datapoints names in the SCADA layer.</Usage>

<DependentAttributes>Device Links.

The name of the device(s) specified in Device Links **must** correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to "Name".</DependentAttributes>

<Constraints>In principle there is no limit to the number of characters used, however a long name may result in display issues at the SCADA level.

Forbidden characters: *[: "'@#%\$%^&*?!;=+~(){}<>|]

Expert Name must be unique.</Constraints>

</isSpecificationAttribute>

</Attribute>

</AttributeFamily>

<AttributeFamily>

<AttributeFamilyName>DeviceDocumentation</AttributeFamilyName>

<UserExpandable>>true</UserExpandable>

<Attribute>

<AttributeName>DeviceDescription</AttributeName>

<Description>Description of the device. </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Description</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>Used in the SCADA layer in the device faceplate</Usage>

<DependentAttributes/>

<Constraints>In principle there is no limit to the number of characters used, however a long description may result in display issues at the SCADA level.

Forbidden characters: ;</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>ElectricalDiagram</AttributeName>

<Description>Reference to the electrical diagram in which the device is represented.</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Electrical Diagram</NameRepresentation>

```

    <isValueRequired>>false</isValueRequired>
    <Usage>Used in the SCADA layer: added to the device description in the device
faceplate.</Usage>
    <DependentAttributes/>
    <Constraints>In principle there is no limit to the number of characters used, however a long
name may result in display issues at the SCADA level.
Forbidden characters: *[: ""@ #\$%^&amp;*?!.,;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Remarks</AttributeName>
    <Description>Field used to add relevant information about the device. </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This information is not used in the generation process, it remains only at the
specification level for documentation purposes.</Usage>
        <DependentAttributes/>
        <Constraints>Forbidden characters: ;</Constraints>
    </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>FEDeviceParameters</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>ParReg</AttributeName>
        <Meaning>Parameter Register</Meaning>
        <Description>Parametrisation register: This register contains all the boolean parameters of
the object</Description>
        <PrimitiveType>WORD</PrimitiveType>
        <Attribute>
            <AttributeName>PFsPosOn</AttributeName>
            <Meaning>Parameter Fail-Safe position ON/Open</Meaning>
            <Description>Fail Safe position of the actuator</Description>
            <PrimitiveType>BIT1</PrimitiveType>
            <BitPosition>0</BitPosition>
            <isSpecificationAttribute>
                <NameRepresentation>Fail-Safe</NameRepresentation>
                <TypeRepresentation>STRING</TypeRepresentation>
                <isValueRequired>>true</isValueRequired>
                <PermittedValue>On/Open</PermittedValue>
                <PermittedValue>Off/Close</PermittedValue>
            </isSpecificationAttribute>
        </Attribute>
    </Attribute>
</AttributeFamily>

```

```

    <Usage>This is the position of the device in case of interlock.</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PFeedbackOff</AttributeName>
  <Meaning>The MFC does not provide order feedback</Meaning>
  <Description>The hardware device does not provide feedback signals.
If TRUE, all feedback signals from the hardware will be simulated.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>1</BitPosition>
  <isSpecificationAttribute>
    <NameRepresentation>Feedback Off</NameRepresentation>
    <TypeRepresentation>BOOLEAN</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <PermittedValue>TRUE</PermittedValue>
    <PermittedValue>FALSE</PermittedValue>
    <Usage/>
    <DependentAttributes/>
    <Constraints>TRUE/FALSE</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PIhMVoT</AttributeName>
  <Description>The operator cannot act on the control of the Flow totalizer.
If TRUE, the flow totalizer is only managed by the process.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>2</BitPosition>
  <isSpecificationAttribute>
    <NameRepresentation>Inhibit Totalizer cmd</NameRepresentation>
    <TypeRepresentation>BOOLEAN</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <PermittedValue>TRUE</PermittedValue>
    <PermittedValue>FALSE</PermittedValue>
    <Usage/>
    <DependentAttributes/>
    <Constraints>TRUE/FALSE</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PPercent</AttributeName>

```

```

    <Meaning>Convert ratio to Unit/time</Meaning>
    <Description>Set this flag to TRUE if the hardware reads flow as a ratio (%) of max flow.
    If TRUE, all set point and flow values will be converted from % into physical units using the max flow
    defined in "CCn Max Flow (Unit/time)" attribute.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>6</BitPosition>
    <isSpecificationAttribute>
        <NameRepresentation>Convert ratio to Unit/time</NameRepresentation>
        <TypeRepresentation>BOOLEAN</TypeRepresentation>
        <isValueRequired>>false</isValueRequired>
        <PermittedValue>TRUE</PermittedValue>
        <PermittedValue>FALSE</PermittedValue>
        <Usage/>
        <DependentAttributes>CCn Max Flow (Unit/time)</DependentAttributes>
        <Constraints>TRUE/FALSE</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>PNoiseF</AttributeName>
    <Meaning>Activate the Noise filter</Meaning>
    <Description>Remove noisy flow measurements for low flow set points.
    If TRUE noisy flow measurements (&lt; 0.1% of the Max flow) will be suppressed when the valve
    setpoint is Min or closed.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>7</BitPosition>
    <isSpecificationAttribute>
        <NameRepresentation>Noise Filter</NameRepresentation>
        <TypeRepresentation>BOOLEAN</TypeRepresentation>
        <isValueRequired>>false</isValueRequired>
        <PermittedValue>TRUE</PermittedValue>
        <PermittedValue>FALSE</PermittedValue>
        <Usage/>
        <DependentAttributes>CCn Max Flow (Unit/time)</DependentAttributes>
        <Constraints>TRUE/FALSE</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>PEnrstart</AttributeName>
    <Meaning>Parameter Enable Restart</Meaning>
    <Description>Strategy to adopt to restart the device after a Full Stop
    Interlock.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>8</BitPosition>

```

```

<isSpecificationAttribute>
  <NameRepresentation>Manual Restart after Full Stop</NameRepresentation>
  <TypeRepresentation>STRING</TypeRepresentation>
  <isValueRequired>>true</isValueRequired>
  <PermittedValue>FALSE</PermittedValue>
  <PermittedValue>TRUE only if Full Stop disappeared</PermittedValue>
  <PermittedValue>TRUE even if Full Stop still active</PermittedValue>
  <Usage>FALSE: Device restarts after acknowledge.
  TRUE only if Full Stop disappeared: Ack+Allow Restart needed (possible only if FS disappeared)
  TRUE even if Full Stop still active: Ack+Allow Restart needed (possible at any moment)</Usage>
  <DependentAttributes/>
  <Constraints>All devices of the application should have the same "Manual Restart after
Full Stop"</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PRstartFS</AttributeName>
  <Meaning>Parameter Restart after Full Stop</Meaning>
  <Description>Parameter Restart after Full Stop</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>9</BitPosition>
</Attribute>
</Attribute>
<Attribute>
  <AttributeName>PWDt</AttributeName>
  <Meaning>Position Warning Delay time</Meaning>
  <Description>Delay applied to the Position Alarm when there is a discordance between
OutputOrder and Feedback position.
Must be positive.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Warning Time Delay (s)</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints>Must be positive</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PMInSpd</AttributeName>
  <Meaning>Parameter Manual Increase Speed</Meaning>
  <Description>Increase speed of the actuator when user requests a new value from SCADA.
Must be positive.</Description>

```

```

<PrimitiveType>FLOAT32</PrimitiveType>
<isSpecificationAttribute>
  <NameRepresentation>Manual Increase Speed (Unit/s)</NameRepresentation>
  <isValueRequired>>false</isValueRequired>
  <Usage/>
  <DependentAttributes/>
  <Constraints>Must be positive</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PMDeSpd</AttributeName>
  <Meaning>Parameter Manual Decrease Speed</Meaning>
  <Description>Decrease speed of the actuator when user requests a new value from SCADA.
Must be positive.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Manual Decrease Speed (Unit/s)</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints>Must be positive</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PFIConversion</AttributeName>
  <Description>Scale factor to convert set point and flow values to different units, for display
and control purposes.
Use this factor when the device works in one physical unit (e.g. l/min) but the operator wants to view
in another unit (e.g. l/h) </Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Flow Conversion</NameRepresentation>
    <isValueRequired>>true</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints>Must be > 0</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PToConversion</AttributeName>
  <Description>Scale factor to convert measured volume to different units.
Use this factor when the device works in one physical unit (e.g. l) but the operator wants to view in
another unit (e.g. m3).

```



```

Value 0 should not be applied.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Volume Conversion</NameRepresentation>
    <isValueRequired>true</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints>Value 0 should not be applied.</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>MaxFICC0</AttributeName>
  <Description>Device maximum flow (when fully open) with the fluid corresponding to
calibration curve 0.
Unit/time defined by the operator.
Cannot be null/empty (there must be at least one fluid).</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>CC0 Max Flow (Unit/time)</NameRepresentation>
    <isValueRequired>true</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints>Cannot be null/empty (there must be at least one fluid)</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>MaxFICC1</AttributeName>
  <Description>Device maximum flow (when fully open) with the fluid corresponding to
calibration curve 0.
Unit/time defined by the operator.
Can be null/empty.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>CC1 Max Flow (Unit/time)</NameRepresentation>
    <isValueRequired>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints>Can be null/empty.</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>MaxFICC2</AttributeName>

```

<Description>Device maximum flow (when fully open) with the fluid corresponding to calibration curve 0.

Unit/time defined by the operator.

Can be null/empty.</Description>

<PrimitiveType>FLOAT32</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>CC2 Max Flow (Unit/time)</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage/>

<DependentAttributes/>

<Constraints>Can be null/empty.</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Deadband</AttributeName>

<Description>Hardware deadband applied to input signals (% of Maxflow)</Description>

<PrimitiveType>FLOAT32</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Deadband (%)</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage/>

<DependentAttributes/>

<Constraints/>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>FofEn</AttributeName>

<Description>First Order Filter applied to the Engineering value at the PLC level.</Description>

<PrimitiveType>FLOAT32</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Filtering Time (s)</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>A first order filter is applied to the engineering value.</Usage>

<DependentAttributes/>

<Constraints>the filter will absorb the noise of the signal</Constraints>

</isSpecificationAttribute>

</Attribute>

</AttributeFamily>

<AttributeFamily>

<AttributeFamilyName>FEDeviceInterlocks</AttributeFamilyName>

<UserExpandable>>true</UserExpandable>

<Attribute>

```

    <AttributeName>StartI</AttributeName>
    <Meaning>Start Interlock</Meaning>
    <Description>Start Interlock Request: When active, the ON request is blocked.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>TStopI</AttributeName>
    <Meaning>Temporary Stop Interlock</Meaning>
    <Description>Temporary Stop Interlock Request: When active, the object goes automatically
to its fail safe position and returns to the previous position after acknowledgement.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>FuStopI</AttributeName>
    <Meaning>Full Stop Interlock</Meaning>
    <Description>Full Stop Interlock Request: Devices goes to Fail-Safe position and remains until
acknowledged.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>Al</AttributeName>
    <Meaning>Alarm</Meaning>
    <Description>Alarm input. This is not an interlock; it has no functional impact on the object. It
will just display A on the widget with lower priority than other interlocks.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>FEDeviceAutoRequests</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>AuDMoR</AttributeName>
        <Meaning>Auto Drive Mode Request</Meaning>
        <Description>The control logic requests a specific MFC Drive Mode.</Description>
        <PrimitiveType>SHORTINT16</PrimitiveType>
    </Attribute>
    <Attribute>
        <AttributeName>AuVoTMoR</AttributeName>
        <Meaning>Auto Volume Totalizer Mode Request</Meaning>
        <Description>The control logic requests a Volume Totalizer command.</Description>
        <PrimitiveType>SHORTINT16</PrimitiveType>
    </Attribute>
</Attribute>

```

```

    <AttributeName>AuCCR</AttributeName>
    <Meaning>Auto Calibration Curve Request</Meaning>
    <Description>The control logic requests a specific MFC Calibration Curve Value.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuPosR</AttributeName>
    <Meaning>Auto Position Request.</Meaning>
    <Description>Auto Position Request: The control logic requests a specific position on the
object.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuVoTOf</AttributeName>
    <Meaning>Auto Volume Totalizer Offset</Meaning>
    <Description>Totalizer offset add to the Totalizer by the control logic.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuInSpd</AttributeName>
    <Meaning>Auto Increase Speed</Meaning>
    <Description>Auto Increase Setpoint Speed: The control logic sets a variation speed for
Setpoint increase.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuDeSpd</AttributeName>
    <Meaning>Auto Decrease Speed</Meaning>
    <Description>Auto Decrease Setpoint Speed: The control logic sets a variation speed for
Setpoint decrease.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuAuMoR</AttributeName>
    <Meaning>Auto Auto Mode Request</Meaning>
    <Description>Auto Auto Mode Request. The control logic requests Auto Mode on the
object</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AulhMMo</AttributeName>
    <Meaning>Auto Inhibit Manual Mode</Meaning>

```

```

    <Description>Auto Inhibit Manual Mode (by logic): The control logic blocks the manual mode
operation</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AulhFoMo</AttributeName>
    <Meaning>Auto Inhibit Forced Mode</Meaning>
    <Description>Auto Inhibit Forced Mode (by logic): The control logic blocks the forced mode
operation.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuAlAck</AttributeName>
    <Meaning>Auto Alarm Acknowledgement</Meaning>
    <Description>Auto Alarm Acknowledgement: The control logic requests and Acknowledgment
of the Alarm Start and Stop Interlocks</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuRStart</AttributeName>
    <Meaning>Auto Enable Restart Request</Meaning>
    <Description>Perform an auto "Allow Restart" from the PLC logic</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>FEDeviceManualRequests</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>ManReg01</AttributeName>
        <Description>Manual Register 1</Description>
        <isCommunicated>true</isCommunicated>
        <PrimitiveType>WORD</PrimitiveType>
        <Attribute>
            <AttributeName>MAuMoR</AttributeName>
            <Meaning>Manual Auto Mode Request</Meaning>
            <Description>Manual Auto Mode Request: The operator requests the Auto
Mode.</Description>
            <PrimitiveType>BIT1</PrimitiveType>
            <BitPosition>0</BitPosition>
        </Attribute>
        <Attribute>
            <AttributeName>MMMoR</AttributeName>

```

```

    <Meaning>Manual Manual Mode Request</Meaning>
    <Description>Manual Manual Mode Request: The operator requests the Manual
Mode</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>1</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MFoMoR</AttributeName>
    <Meaning>Manual Forced Mode Request</Meaning>
    <Description>Manual Forced Mode Request: The operator requests the Forced
Mode.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>2</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MSoftLDR</AttributeName>
    <Meaning>Manual Software Local Mode</Meaning>
    <Description>The operator requests the Software Local Mode</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>3</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MNewPosR</AttributeName>
    <Meaning>Manual New Position Request</Meaning>
    <Description>Manual New Position Request: The operator requests a new position to the
object</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>6</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MEnRstartR</AttributeName>
    <Meaning>Manual Enable Restart Request</Meaning>
    <Description>Manual Enable Restart Request: The Operator requests a Manual Restart after
Full Stop</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>9</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MNewDMoR</AttributeName>
    <Meaning>Manual New Drive Mode Request</Meaning>
    <Description>The operator requests to apply the Manual Drive Mode Request
Value.</Description>
    <PrimitiveType>BIT1</PrimitiveType>

```

```

    <BitPosition>12</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>MNewTMoR</AttributeName>
    <Meaning>Manual New Vol.Totalizer Mode Request</Meaning>
    <Description>The operator requests to apply the Manual Totalizer Mode Request Value.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>13</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>MNewCCR</AttributeName>
    <Meaning>Manual New Calibration Curve Request</Meaning>
    <Description>The operator requests to apply the Manual Calibration Curve Request Value.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>14</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>MAIAckR</AttributeName>
    <Meaning>Manual Alarm Acknowledgement Request</Meaning>
    <Description>Manual Alarm Acknowledgement Request: The operator requests Interlocks or Alarms acknowledgement</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>15</BitPosition>
  </Attribute>
</Attribute>
  <Attribute>
    <AttributeName>MDMoR</AttributeName>
    <Meaning>Manual Drive Mode Request</Meaning>
    <Description>The operator requests a MFC Drive Mode.</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>SHORTINT16</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>MVoTMoR</AttributeName>
    <Meaning>Manual Volume Totalizer Mode Request</Meaning>
    <Description>The operator requests a Volume Totalizer Mode</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>SHORTINT16</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>MCCR</AttributeName>

```

```

    <Meaning>Manual Calibration Curve Request</Meaning>
    <Description>The operator requests a Calibration Curve value</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>SHORTINT16</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>MPosR</AttributeName>
    <Meaning>Manual Position Request</Meaning>
    <Description>Manual Position Request: Value of the position requested by
operator</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceEnvironmentInputs</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>HFDMo</AttributeName>
    <Meaning>Hardware Feedback Drive Mode</Meaning>
    <Description>Hardware feedback of the MFC Drive Mode.</Description>
    <PrimitiveType>SHORTINT16</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>HFCC</AttributeName>
    <Meaning>Hardware Feedback Calibration Curve</Meaning>
    <Description>Hardware Feedback of the selected MFC Calibration curve.</Description>
    <PrimitiveType>SHORTINT16</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>HFOutOV</AttributeName>
    <Meaning>Hardware Feedback Output Order Value</Meaning>
    <Description>Hardware Feedback of the MFC output order value (Setpoint).</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>HFPos</AttributeName>
    <Meaning>Hardware Feedback Position</Meaning>
    <Description>Analog Feedback of the actuator.
Must be an AI/AIR/AS.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
  </Attribute>

```



```

<Attribute>
  <AttributeName>IOError</AttributeName>
  <Meaning>Input/Output Error</Meaning>
  <Description>IOError state in any of the dependant objects or the PLC channel assigned to the
object</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>IOSimu</AttributeName>
  <Meaning>Input/Output Simulated</Meaning>
  <Description>Any of the dependant objects is in Forced or Manual Mode</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AlB</AttributeName>
  <Meaning>Alarm Blocked</Meaning>
  <Description>Alarm Blocked: Any of the device dependant alarm objects has been blocked by
the operator</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceOutputs</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>StsReg01</AttributeName>
    <Description>Status Register 1</Description>
    <isEventAttribute>true</isEventAttribute>
    <isCommunicated>true</isCommunicated>
    <PrimitiveType>WORD</PrimitiveType>
    <Attribute>
      <AttributeName>OnSt</AttributeName>
      <Meaning>On Status</Meaning>
      <Description>On/Open Status</Description>
      <PrimitiveType>BIT1</PrimitiveType>
      <BitPosition>0</BitPosition>
    </Attribute>
    <Attribute>
      <AttributeName>OffSt</AttributeName>
      <Meaning>Off Status</Meaning>
      <Description>Off/Closed Status</Description>
      <PrimitiveType>BIT1</PrimitiveType>
      <BitPosition>1</BitPosition>
    </Attribute>
  </Attribute>
</AttributeFamily>

```

```

</Attribute>
<Attribute>
  <AttributeName>AuMoSt</AttributeName>
  <Meaning>Auto Mode Status</Meaning>
  <Description>Current status of the Auto Mode</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>2</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MMoSt</AttributeName>
  <Meaning>Manual Mode Status</Meaning>
  <Description>Current status of the Manual Mode</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>3</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>FoMoSt</AttributeName>
  <Meaning>Forced Mode Status</Meaning>
  <Description>Current status of the Forced Mode.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>4</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>ConfigW</AttributeName>
  <Meaning>Config Warning</Meaning>
  <Description>One condition creates a config problem in the MFC </Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>5</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>IOErrorW</AttributeName>
  <Meaning>Input/Output Error Warning</Meaning>
  <Description>Current status of the IOError</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>6</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>IOSimuW</AttributeName>
  <Meaning>Input/Output Simulated Warning</Meaning>
  <Description>Current status of the IOSimu</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>7</BitPosition>

```

```

</Attribute>
<Attribute>
  <AttributeName>AuMRW</AttributeName>
  <Meaning>Auto Manual Request Warning Status.</Meaning>
  <Description>Auto and manual requests discrepancy when Manual/Forced mode
active.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>8</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>PosW</AttributeName>
  <Meaning>Position Warning</Meaning>
  <Description>There is discrepancy between the order status and the position status
according to Time Delay and Dead-band.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>9</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>StartISt</AttributeName>
  <Meaning>Start Interlock Status</Meaning>
  <Description>Current status of the Start Interlock</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>10</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>TStopISt</AttributeName>
  <Meaning>Temporary Stop Interlock Status</Meaning>
  <Description>Current status of the Temporary Stop Interlock</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>11</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>AlUnAck</AttributeName>
  <Meaning>Alarm UnAcknowledged</Meaning>
  <Description>Alarm UnAcknowledged: The alarm or at least one of the alarms associated to
the object is not acknowledged</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>12</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>AulhFoMoSt</AttributeName>
  <Meaning>Auto Inhibit Forced Mode Status</Meaning>

```

<Description>Auto Inhibit Forced Mode status: Current status of the Auto Inhibit forced mode.</Description>

<PrimitiveType>BIT1</PrimitiveType>

<BitPosition>13</BitPosition>

</Attribute>

<Attribute>

<AttributeName>AlSt</AttributeName>

<Meaning>Alarm Status</Meaning>

<Description>Alarm Status</Description>

<PrimitiveType>BIT1</PrimitiveType>

<BitPosition>14</BitPosition>

</Attribute>

<Attribute>

<AttributeName>AulhMMoSt</AttributeName>

<Meaning>Auto Inhibit Manual Mode Status</Meaning>

<Description>Auto Inhibit Manual Mode Status</Description>

<PrimitiveType>BIT1</PrimitiveType>

<BitPosition>15</BitPosition>

</Attribute>

</Attribute>

<Attribute>

<AttributeName>StsReg02</AttributeName>

<Meaning>Status Register 2</Meaning>

<Description>Status Register 2</Description>

<isEventAttribute>>true</isEventAttribute>

<isCommunicated>>true</isCommunicated>

<PrimitiveType>WORD</PrimitiveType>

<Attribute>

<AttributeName>FuStopISt</AttributeName>

<Meaning>Full Stop Interlock Status</Meaning>

<Description>Full Stop Interlock Status</Description>

<PrimitiveType>BIT1</PrimitiveType>

<BitPosition>10</BitPosition>

</Attribute>

<Attribute>

<AttributeName>EnRstartSt</AttributeName>

<Meaning>Enable Restart Status</Meaning>

<Description>Manual Restart after full stop status</Description>

<PrimitiveType>BIT1</PrimitiveType>

<BitPosition>11</BitPosition>

</Attribute>

<Attribute>

```

    <AttributeName>SoftLDSt</AttributeName>
    <Meaning>Software Local Mode Status</Meaning>
    <Description>Current status of the Software Local Mode.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>12</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AlBW</AttributeName>
    <Meaning>Alarm Blocked Warning</Meaning>
    <Description>When true, the alarm or any of the device dependant alarm objects have been
blocked by the operator</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>13</BitPosition>
</Attribute>
</Attribute>
<Attribute>
    <AttributeName>OMFC</AttributeName>
    <Description>Order to the hardware device</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
    <Attribute>
        <AttributeName>OutOV</AttributeName>
        <Meaning>Output Order Value</Meaning>
        <Description>Output Order Value sent to the process generally through an Analog Output
Object</Description>
        <PrimitiveType>FLOAT32</PrimitiveType>
    </Attribute>
    <Attribute>
        <AttributeName>DMoOV</AttributeName>
        <Meaning>Drive Mode Output Value</Meaning>
        <Description>MFC Drive mode Output Value applied</Description>
        <PrimitiveType>SHORTINT16</PrimitiveType>
    </Attribute>
    <Attribute>
        <AttributeName>CCOV</AttributeName>
        <Meaning>Calibration Curve Applied</Meaning>
        <Description>Calibration curve applied.</Description>
        <PrimitiveType>SHORTINT16</PrimitiveType>
    </Attribute>
</Attribute>
<Attribute>
    <AttributeName>DOutOV</AttributeName>
    <Meaning>Valve Order</Meaning>
    <Description>OnOff object representing a valve located in front of the device.

```

Must be a declared OnOff object.</Description>

<PrimitiveType>BOOLEAN</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Valve Order</NameRepresentation>

<TypeRepresentation>STRING</TypeRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>This valve will be driven by the MFC.

It prevents leaks because the MFC cannot be fully hermetic when at minimum flow or closed.</Usage>

<DependentAttributes>See corresponding OnOff device</DependentAttributes>

<Constraints>Must be a declared OnOff object</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>PosSt</AttributeName>

<Meaning>Position status</Meaning>

<Description>Position Status</Description>

<isCommunicated>>true</isCommunicated>

<isArchived>>true</isArchived>

<PrimitiveType>FLOAT32</PrimitiveType>

</Attribute>

<Attribute>

<AttributeName>PosRSt</AttributeName>

<Meaning>Position Request Status</Meaning>

<Description>Position request status</Description>

<isCommunicated>>true</isCommunicated>

<isArchived>>true</isArchived>

<PrimitiveType>FLOAT32</PrimitiveType>

</Attribute>

<Attribute>

<AttributeName>MaxPosSt</AttributeName>

<Meaning>Maximum Position Status</Meaning>

<Description>The Maximum flow or Position Setpoint associated to the selected calibration curve.</Description>

<isCommunicated>>true</isCommunicated>

<isArchived>>true</isArchived>

<PrimitiveType>FLOAT32</PrimitiveType>

</Attribute>

<Attribute>

<AttributeName>IOErrorW</AttributeName>

<Meaning>Input/Output Error Warning</Meaning>

<Description>Current status of the IOError</Description>

<PrimitiveType>BOOLEAN</PrimitiveType>

```

</Attribute>
<Attribute>
  <AttributeName>IOSimuW</AttributeName>
  <Meaning>Inpout/Output Simulated Warning</Meaning>
  <Description>Current status of the IOSimu</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>StartISt</AttributeName>
  <Meaning>Start Interlock Status</Meaning>
  <Description>Current status of StartI</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>FuStopISt</AttributeName>
  <Meaning>Full Stop Interlock Status</Meaning>
  <Description>Full Stop Interlock Status</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>TStopISt</AttributeName>
  <Meaning>Temporary Stop Interlock Status</Meaning>
  <Description>Current status of TStopI</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuDMoRSt</AttributeName>
  <Meaning>Auto Drive Mode Request Status</Meaning>
  <Description>Auto Drive Mode Request.</Description>
  <isCommunicated>>true</isCommunicated>
  <isArchived>>true</isArchived>
  <PrimitiveType>SHORTINT16</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuVoTMRSt</AttributeName>
  <Meaning>Auto Volume Totalizer Mode Request Status</Meaning>
  <Description>Auto Volume Totalizer Mode Request.</Description>
  <isCommunicated>>true</isCommunicated>
  <isArchived>>true</isArchived>
  <PrimitiveType>SHORTINT16</PrimitiveType>
</Attribute>
<Attribute>

```

```

    <AttributeName>AuCCRSt</AttributeName>
    <Meaning>Auto Calibration Curve Request Status</Meaning>
    <Description>Auto Calibration Curve Request Status.</Description>
    <isCommunicated>>true</isCommunicated>
    <isArchived>>true</isArchived>
    <PrimitiveType>SHORTINT16</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuPosRSt</AttributeName>
    <Meaning>Auto Position Request Status</Meaning>
    <Description>Status of the position of the object in auto mode.</Description>
    <isCommunicated>>true</isCommunicated>
    <isArchived>>true</isArchived>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuVoTOfSt</AttributeName>
    <Meaning>Volume offset add to the Totalizer</Meaning>
    <Description>Auto Volume Totalizer offset status</Description>
    <isCommunicated>>true</isCommunicated>
    <isArchived>>true</isArchived>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>VoTSt</AttributeName>
    <Meaning>Volume calculated</Meaning>
    <Description>Volume Totalizer Status</Description>
    <isCommunicated>>true</isCommunicated>
    <isArchived>>true</isArchived>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>ActOutOV</AttributeName>
    <Meaning>Active Output Order Value</Meaning>
    <Description>Current value Setpoint active in the MFC.</Description>
    <isCommunicated>>true</isCommunicated>
    <isArchived>>true</isArchived>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>ActDMo</AttributeName>
    <Meaning>Active Drive Mode</Meaning>

```



```

    <Description>Current value of the Drive Mode.</Description>
    <isCommunicated>>true</isCommunicated>
    <isArchived>>true</isArchived>
    <PrimitiveType>SHORTINT16</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>ActCC</AttributeName>
    <Meaning>Active Calibration Curve</Meaning>
    <Description>Current Calibration Curve number: Plus Gas manufacturer reference
Number.</Description>
    <isCommunicated>>true</isCommunicated>
    <isArchived>>true</isArchived>
    <PrimitiveType>SHORTINT16</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>ActVoTMo</AttributeName>
    <Meaning>Active Volume Totalizer Mode</Meaning>
    <Description>Current value of the Totalizer Mode.</Description>
    <isCommunicated>>true</isCommunicated>
    <isArchived>>true</isArchived>
    <PrimitiveType>SHORTINT16</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>MDMoRSt</AttributeName>
    <Meaning>Manual Drive Mode Request Status</Meaning>
    <Description>Manual Drive Mode Request Status</Description>
    <isCommunicated>>true</isCommunicated>
    <isArchived>>true</isArchived>
    <PrimitiveType>SHORTINT16</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>MCCRSt</AttributeName>
    <Meaning>Manual Calibration Curve Request Status</Meaning>
    <Description>Manual Calibration Curve Request Status</Description>
    <isCommunicated>>true</isCommunicated>
    <isArchived>>true</isArchived>
    <PrimitiveType>SHORTINT16</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>MPosRSt</AttributeName>
    <Meaning>Manual Position Request Status</Meaning>
    <Description>Manual Position request status</Description>

```

```

    <isCommunicated>true</isCommunicated>
    <isArchived>true</isArchived>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>MVoTMRSt</AttributeName>
    <Meaning>Manual Volume Totalizer mode Reques Status</Meaning>
    <Description>Manual Volume Totalizer mode Reques Status</Description>
    <isCommunicated>true</isCommunicated>
    <isArchived>true</isArchived>
    <PrimitiveType>SHORTINT16</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AlUnAck</AttributeName>
    <Meaning>Alarm UnAcknowledged</Meaning>
    <Description>Alarm UnAcknowledged: The alarm or at least one of the alarms associated to
the object is not acknowledged</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AlSt</AttributeName>
    <Meaning>Alarm Status</Meaning>
    <Description>Alarm Status</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>FoMoSt</AttributeName>
    <Meaning>Forced Mode Status</Meaning>
    <Description>Current status of the Forced Mode.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuMoSt</AttributeName>
    <Meaning>Auto Mode Status</Meaning>
    <Description>Current status of the Auto Mode</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>MMoSt</AttributeName>
    <Meaning>Manual Mode Status</Meaning>
    <Description>Current status of the Manual Mode request</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>

```

```

</Attribute>
<Attribute>
  <AttributeName>SoftLDSt</AttributeName>
  <Meaning>Software Local Drive Status</Meaning>
  <Description>Current status of the Software Local mode request</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>EnRStartSt</AttributeName>
  <Meaning>Enable Restart Status</Meaning>
  <Description>Manual Restart after full stop status possible</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>RdyStartSt</AttributeName>
  <Meaning>Ready To Start Status</Meaning>
  <Description>The object is ready to start, there is no blocking process to start.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceIOConfig</AttributeFamilyName>
  <UserExpandable>true</UserExpandable>
  <Attribute>
    <AttributeName>FEType</AttributeName>
    <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>FE Encoding Type</NameRepresentation>
      <TypeRepresentation>STRING</TypeRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
      <DependentAttributes>FEChannel.InterfaceParamX (where X=1-10)</DependentAttributes>
      <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>FEChannel</AttributeName>

```

```

    <Description>Indicates how to map the acquisition of the information from the field I/O
interface.</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
    <Attribute>
        <AttributeName>InterfaceParam1</AttributeName>
        <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
        <PrimitiveType>STRING</PrimitiveType>
        <isSpecificationAttribute>
            <isValueRequired>>false</isValueRequired>
            <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
            <DependentAttributes>FE Encoding Type</DependentAttributes>
            <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
        </isSpecificationAttribute>
    </Attribute>
    <Attribute>
        <AttributeName>InterfaceParam2</AttributeName>
        <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
        <PrimitiveType>STRING</PrimitiveType>
        <isSpecificationAttribute>
            <isValueRequired>>false</isValueRequired>
            <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
            <DependentAttributes>FE Encoding Type</DependentAttributes>
            <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
        </isSpecificationAttribute>
    </Attribute>
    <Attribute>
        <AttributeName>InterfaceParam3</AttributeName>
        <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
        <PrimitiveType>STRING</PrimitiveType>
        <isSpecificationAttribute>
            <isValueRequired>>false</isValueRequired>

```

```

    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam4</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam5</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam6</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.

```

Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Usage>

<DependentAttributes>FE Encoding Type</DependentAttributes>

<Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>InterfaceParam7</AttributeName>

<Description>Parameter used to set up the periphery address of the device according to the various hardware module types used at the PLC level.

Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Usage>

<DependentAttributes>FE Encoding Type</DependentAttributes>

<Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>InterfaceParam8</AttributeName>

<Description>Parameter used to set up the periphery address of the device according to the various hardware module types used at the PLC level.

Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Usage>

<DependentAttributes>FE Encoding Type</DependentAttributes>

<Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Constraints>

</isSpecificationAttribute>

</Attribute>

```

<Attribute>
  <AttributeName>InterfaceParam9</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam10</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADeviceGraphics</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>WidgetType</AttributeName>
    <Description>Define the widget type to display in the SCADA device tree overview only.
The widget displayed in the process panel will be selected when the user creates the
panel.</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>

```

```

    <NameRepresentation>Widget Type</NameRepresentation>
    <isValueRequired>>true</isValueRequired>
    <isCaseSensitive>>true</isCaseSensitive>
    <PermittedValue>MassFlowController</PermittedValue>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Synoptic</AttributeName>
  <Description>Define link between the device and an existing synoptic where it appears. The
synoptic specified here can be accessed from the device right-click menu item
"Synoptic".</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Specify the path of the .pnl file under the "\panel" directory of the PVSS
project.</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DiagnosticPanel</AttributeName>
  <Description>Define link between the device and an existing diagnostic panel for the device.
The panel specified here can be accessed from the device right-click menu item "Diagnostic" as well
as from the "Diagnostic" button on the object faceplate.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Diagnostic</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Specify the path of the .pnl file under the "\panel" directory of the PVSS project
</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>WWWLink</AttributeName>
  <Description>Define link between the device and an existing web page (or pdf file, or other file
which can be opened with IE). The link can be accessed from the device right-click menu item "Info"
as well as from the "Info" button on the object faceplate.</Description>
  <PrimitiveType>STRING</PrimitiveType>

```



```

<isSpecificationAttribute>
  <NameRepresentation>WWW Link</NameRepresentation>
  <isValueRequired>>false</isValueRequired>
  <Usage/>
  <DependentAttributes/>
  <Constraints/>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>CurveName</AttributeName>
  <Description>Name of the gas associated to calibration curve.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <Attribute>
    <AttributeName>CC0</AttributeName>
    <Description>Fluid name associated with calibration curve 0, to be displayed in SCADA.
    Cannot be null/empty (there must be at least one fluid).</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>true</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints>Cannot be null/empty (there must be at least one fluid)</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>CC1</AttributeName>
    <Description>Fluid name associated with calibration curve 1, to be displayed in SCADA.
    Can be null/empty.</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints>Can be null/empty.</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>CC2</AttributeName>
    <Description>Fluid name associated with calibration curve 2, to be displayed in SCADA.
    Can be null/empty.</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>

```

```

    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints>Can be null/empty.</Constraints>
</isSpecificationAttribute>
</Attribute>
</Attribute>
<Attribute>
  <AttributeName>Flow</AttributeName>
  <Description> Flow Position physical Format,unit MaxPosSt, PosSt,AuPosRSt,ActOutOV
(converted)
</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <Attribute>
    <AttributeName>Unit</AttributeName>
    <Description>Physical measurement unit associated with the set point and flow, to be
displayed in SCADA.</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Unit</NameRepresentation>
      <isValueRequired>>true</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>Format</AttributeName>
    <Description>Format of the value to be displayed in SCADA. Supported formats:
### (fixed number of decimal places, in this case 2),
EXP or xEXP (exponential, 3 or x digits after '!'),
xD or xd (fixed digit format, x=number of digits, e.g.: 3D=0.01, 12.0, 123)</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Format</NameRepresentation>
      <isValueRequired>>true</isValueRequired>
      <Usage>Example: use format ### to display value to 2 decimal places. To the left of the
decimal point, the SCADA layer will display as many digits as required by the object value, therefore a
single # is enough.</Usage>
      <DependentAttributes/>
      <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
</Attribute>

```

```

</Attribute>
<Attribute>
  <AttributeName>Calibration</AttributeName>
  <Description>Flow Unit and Reference Gas Name used for the hardware
calibration.</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <Attribute>
    <AttributeName>Unit</AttributeName>
    <Description>Physical measurement unit selected by the manufacturer of the hardware
device during the calibration, to be displayed in SCADA.</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Unit</NameRepresentation>
      <isValueRequired>>true</isValueRequired>
      <Usage>This is the physical unit used by the manufacturer to calibrate the device
</Usage>
      <DependentAttributes/>
      <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>GasName</AttributeName>
    <Description>Fluid name used to calibrate the device, to be displayed in
SCADA.</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Gas Name</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
</Attribute>
<Attribute>
  <AttributeName>Totalizer</AttributeName>
  <Description>Volume format and type</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <Attribute>
    <AttributeName>Unit</AttributeName>
    <Description>Physical measurement unit associated with the fluid totalizer value, to be
displayed in SCADA.</Description>
    <PrimitiveType>STRING</PrimitiveType>

```

```

<isSpecificationAttribute>
  <NameRepresentation>Unit</NameRepresentation>
  <isValueRequired>>true</isValueRequired>
  <Usage/>
  <DependentAttributes/>
  <Constraints/>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Format</AttributeName>
  <Description>Format of the value to be displayed in SCADA. Supported formats:
### (fixed number of decimal places, in this case 2),
EXP or xEXP (exponential, 3 or x digits after '!'),
xD or xd (fixed digit format, x=number of digits, e.g.: 3D=0.01, 12.0, 123)</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Format</NameRepresentation>
    <isValueRequired>>true</isValueRequired>
    <Usage>Example: use format ### to display value to 2 decimal places. To the left of the
    decimal point, the SCADA layer will display as many digits as required by the object value, therefore a
    single # is enough.</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADeviceFunctionals</AttributeFamilyName>
  <UserExpandable>>false</UserExpandable>
  <Attribute>
    <AttributeName>MaskEvent</AttributeName>
    <Description>If TRUE: the events of the device will be masked in SCADA and not displayed or
    archived in the Event List.
    An 'event' is defined as a bit change in StsReg01 or StsReg02</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Mask Event</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
</AttributeFamily>

```

```

</Attribute>
<Attribute>
  <AttributeName>AccessControlDomain</AttributeName>
  <Description>Define Access Control on the device to an existing SCADA Domain
Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Access Control Domain</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>This domain is used to grant access to this specific device. The domain specified for
this object will allow access to the object only to registered users on that domain</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>SCADADeviceClassificationTags</AttributeName>
  <Description>It defines the Domain, Nature and DeviceLinks for the SCADA
visualization</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <Attribute>
    <AttributeName>Domain</AttributeName>
    <Description>Domain of the device. If empty, the domain will be the name of the application
Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>Domain is used to filter the devices in the alarm list or in the device tree
overview</Usage>
      <DependentAttributes/>
      <Constraints>Forbidden characters: *[:
""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>Nature</AttributeName>
    <Description>Nature of the device. If empty, the nature will be the type of the device
Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>Nature is used to filter the devices in the alarm list or in the device tree
overview</Usage>

```

```

    <DependentAttributes/>
    <Constraints>Forbidden characters: *[:
"@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DeviceLinks</AttributeName>
  <Description>Define links to other devices (separate device names with commas).

```

Note: it is not necessary to link to master, parents or children because these links are automatically created.

```

Forbidden characters: *[: "@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Device Links</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Linked devices will be shown in the device right-click menu</Usage>
    <DependentAttributes>Expert Name or Name.

```

The name of the device(s) specified here *must* correspond to "Expert Name" if it is defined. If "Expert Name" is not defined, the name of the device(s) specified here corresponds to "Name".</DependentAttributes>

```

    <Constraints>Forbidden characters: *[:
"@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
  </isSpecificationAttribute>
</Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADataArchiving</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>Modes</AttributeName>
    <Description>Specify the archiving of command Modes signals. Archive is always based on
    Old/new comparison</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
    <Attribute>
      <AttributeName>ArchiveMode</AttributeName>
      <Description>Archive mode of the object engineering values. Archive if:
      Old/New Comparison: value changes</Description>
      <PrimitiveType>STRING</PrimitiveType>
      <isSpecificationAttribute>
        <NameRepresentation>Archive Mode</NameRepresentation>
        <isValueRequired>>true</isValueRequired>
        <PermittedValue>No</PermittedValue>

```

```

    <PermittedValue>Old/New Comparison</PermittedValue>
    <Usage>This archive mode is used to archive data in the PVSS database</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
</Attribute>
<Attribute>
  <AttributeName>Flow</AttributeName>
  <Description>Specify the archiving of PosSt, AuPosRSt, ActOutOV (converted).</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <Attribute>
    <AttributeName>ArchiveMode</AttributeName>
    <Description>Archive mode of the object engineering values. Archive if:
    Old/New Comparison: value changes
    Time: value changes after Time Filter
    Deadband: value &lt; or &gt; deadband
    AND: at least one of the conditions is fulfilled
    OR: both conditions are fulfilled</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Archive Mode</NameRepresentation>
      <isValueRequired>>true</isValueRequired>
      <PermittedValue>No</PermittedValue>
      <PermittedValue>Deadband</PermittedValue>
      <PermittedValue>Time</PermittedValue>
      <PermittedValue>Deadband AND Time</PermittedValue>
      <PermittedValue>Deadband OR Time</PermittedValue>
      <PermittedValue>Old/New Comparison</PermittedValue>
      <PermittedValue>Old/New Comparison AND Time</PermittedValue>
      <PermittedValue>Old/New Comparison OR Time</PermittedValue>
      <Usage>This archive mode is used to archive data in the PVSS database</Usage>
      <DependentAttributes>If "Time" is selected, "Time Filter (s)" must be filled
      If "Deadband" is selected: "Deadband Type" and "Deadband Value" must be
      filled.</DependentAttributes>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>TimeFilter</AttributeName>
  <Description>Time filter for the SCADA archiving of the engineering values of the object.
  Must be positive.</Description>

```

```

<PrimitiveType>FLOAT32</PrimitiveType>
<isSpecificationAttribute>
  <NameRepresentation>Time Filter (s)</NameRepresentation>
  <isValueRequired>>false</isValueRequired>
  <Usage/>
  <DependentAttributes>Valid if "Time" has been selected as Archive
Mode</DependentAttributes>
  <Constraints>Must be positive</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DeadbandType</AttributeName>
  <Description>Deadband type (Relative or Absolute) of the deadband for the SCADA
archiving of the Flow.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Deadband Type</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <PermittedValue>Relative</PermittedValue>
    <PermittedValue>Absolute</PermittedValue>
    <Usage>The value is archived if the difference between the latest archived value and the
actual value exceeds, either:
- if 'Absolute': the "Deadband Value"
- if 'Relative': the "Deadband Value" as a percent of the latest archived value</Usage>
    <DependentAttributes>Valid if "Deadband" has been selected as Archive
Mode</DependentAttributes>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DeadbandValue</AttributeName>
  <Description>Deadband value for the SCADA archiving of the Flow.
Must be positive and larger than the deadband specified for the driver data smoothing (Driver
deadband).</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Deadband Value</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes>Valid if "Deadband" has been selected as Archive
Mode</DependentAttributes>
    <Constraints>Must be positive and larger than the deadband specified for the driver data
smoothing (Driver deadband)</Constraints>

```



```

    </isSpecificationAttribute>
  </Attribute>
</Attribute>
<Attribute>
  <AttributeName>Totalizer</AttributeName>
  <Description>Specify the Totalizer archiving</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <Attribute>
    <AttributeName>ArchiveMode</AttributeName>
    <Description>Archive mode of the object engineering values. Archive if:
    Old/New Comparison: value changes
    Time: value changes after Time Filter
    Deadband: value < or > deadband
    AND: at least one of the conditions is fulfilled
    OR: both conditions are fulfilled</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Archive Mode</NameRepresentation>
      <isValueRequired>>true</isValueRequired>
      <PermittedValue>No</PermittedValue>
      <PermittedValue>Deadband</PermittedValue>
      <PermittedValue>Time</PermittedValue>
      <PermittedValue>Deadband AND Time</PermittedValue>
      <PermittedValue>Deadband OR Time</PermittedValue>
      <PermittedValue>Old/New Comparison</PermittedValue>
      <PermittedValue>Old/New Comparison AND Time</PermittedValue>
      <PermittedValue>Old/New Comparison OR Time</PermittedValue>
      <Usage>This archive mode is used to archive data in the PVSS database</Usage>
      <DependentAttributes>If "Time" is selected, "Time Filter (s)" must be filled
      If "Deadband" is selected: "Deadband Type" and "Deadband Value" must be
      filled.</DependentAttributes>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>TimeFilter</AttributeName>
  <Description>Time filter for the SCADA archiving of the engineering values of the
  object</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Time Filter (s)</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
  </isSpecificationAttribute>
</Attribute>

```

```

    <DependentAttributes>Valid if "Time" has been selected as Archive
Mode</DependentAttributes>
    <Constraints>Must be positive</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>DeadbandType</AttributeName>
    <Description>Deadband type (Relative or Absolute) of the deadband for the SCADA
archiving of the Totalizer value.</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Deadband Type</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <PermittedValue>Relative</PermittedValue>
        <PermittedValue>Absolute</PermittedValue>
        <Usage>The value is archived if the difference between the latest archived value and the
actual value exceeds, either:
- if 'Absolute': the "Deadband Value"
- if 'Relative': the "Deadband Value" as a percent of the latest archived value</Usage>
    <DependentAttributes>Valid if "Deadband" has been selected as Archive
Mode</DependentAttributes>
    <Constraints/>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>DeadbandValue</AttributeName>
    <Description>Deadband value for the SCADA archiving of the Totalizer value.
Must be positive and larger than the deadband specified for the driver data smoothing (Driver
deadband).</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Deadband Value</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage/>
        <DependentAttributes>Valid if "Deadband" has been selected as Archive
Mode</DependentAttributes>
        <Constraints>Must be positive and larger than the deadband specified for the driver data
smoothing (Driver deadband).</Constraints>
    </isSpecificationAttribute>
</Attribute>
</Attribute>
<Attribute>
    <AttributeName>BooleanArch</AttributeName>

```

```

    <Description>Name of the Boolean archive
Forbidden characters: *[: "'@`#%^^&*?!;,=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Boolean Archive</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>The boolean values of the device will be archived in the specified PVSS database.
The archive must be created in PVSS before importing the object.</Usage>
        <DependentAttributes/>
        <Constraints>Forbidden characters: *[:
"'@`#%^^&*?!;,=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>AnalogArch</AttributeName>
    <Description>Name of the analog archive
Forbidden characters: *[: "'@`#%^^&*?!;,=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Analog Archive</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>The analog values of the device will be archived in the specified PVSS database. The
archive must be created in PVSS before importing the object.</Usage>
        <DependentAttributes/>
        <Constraints>Forbidden characters: *[:
"'@`#%^^&*?!;,=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>EventArch</AttributeName>
    <Description>Name of the event archive
Forbidden characters: *[: "'@`#%^^&*?!;,=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Event Archive</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>The events generated by the device will be archived in the specified PVSS database.
The archive must be created in PVSS before importing the object.</Usage>
        <DependentAttributes/>
        <Constraints>Forbidden characters: *[:
"'@`#%^^&*?!;,=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
</Attribute>

```

```

</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADriverDataSmoothing</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>Flow</AttributeName>
    <Description>Flow Drive Smoothing</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
    <Attribute>
      <AttributeName>DeadbandType</AttributeName>
      <Description>Deadband type (None, Relative, Absolute or Old/New) for the SCADA driver
data smoothing (Driver deadband) of Flow.</Description>
      <PrimitiveType>STRING</PrimitiveType>
      <isSpecificationAttribute>
        <NameRepresentation>Deadband Type</NameRepresentation>
        <isValueRequired>>true</isValueRequired>
        <PermittedValue>No</PermittedValue>
        <PermittedValue>Relative</PermittedValue>
        <PermittedValue>Absolute</PermittedValue>
        <PermittedValue>Old/New</PermittedValue>
        <Usage>The value is archived if the difference between the latest archived value and the
actual value exceeds, either:
- if 'Absolute': the "Deadband Value"
- if 'Relative': the "Deadband Value" as a percent of the latest archived value</Usage>
        <DependentAttributes/>
        <Constraints>Valid if "Deadband" has been selected as Archive Mode</Constraints>
      </isSpecificationAttribute>
    </Attribute>
    <Attribute>
      <AttributeName>DeadbandValue</AttributeName>
      <Description>Deadband value for the SCADA driver data smoothing (Driver deadband) of
Flow.
Must be positive and smaller than the deadband specified for the archiving.</Description>
      <PrimitiveType>FLOAT32</PrimitiveType>
      <isSpecificationAttribute>
        <NameRepresentation>Deadband Value</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>Used for the online display in SCADA</Usage>
        <DependentAttributes/>
        <Constraints>Must be positive and smaller than the deadband specified for the
archiving</Constraints>
      </isSpecificationAttribute>
    </Attribute>
  </Attribute>

```

```

</Attribute>
<Attribute>
  <AttributeName>Totalizer</AttributeName>
  <Description>Volume Totalizer Drive Smoothing</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <Attribute>
    <AttributeName>DeadbandType</AttributeName>
    <Description>Deadband type (None, Relative, Absolute or Old/New) for the SCADA driver
data smoothing (Driver deadband) of Totalizer value.</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Deadband Type</NameRepresentation>
      <isValueRequired>>true</isValueRequired>
      <PermittedValue>No</PermittedValue>
      <PermittedValue>Relative</PermittedValue>
      <PermittedValue>Absolute</PermittedValue>
      <PermittedValue>Old/New</PermittedValue>
      <Usage>The value is archived if the difference between the latest archived value and the
actual value exceeds, either:
- if 'Absolute': the "Deadband Value"
- if 'Relative': the "Deadband Value" as a percent of the latest archived value</Usage>
      <DependentAttributes/>
      <Constraints>Valid if "Deadband" has been selected as Archive Mode</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>DeadbandValue</AttributeName>
    <Description>Deadband value for the SCADA driver data smoothing (Driver deadband) of
Totalizer value.
Must be positive and smaller than the deadband specified for the archiving.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Deadband Value</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>Used for the online display in SCADA</Usage>
      <DependentAttributes/>
      <Constraints>Must be positive and smaller than the deadband specified for the
archiving</Constraints>
    </isSpecificationAttribute>
  </Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>

```

```

<AttributeFamilyName>LogicDeviceDefinitions</AttributeFamilyName>
<UserExpandable>>true</UserExpandable>
<Attribute>
  <AttributeName>MasterDevice</AttributeName>
  <Description>Master of the device (relative to the hierarchy of dependent
objects).</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Master</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>The master will give automatic requests to the device. The master object will
appear in the list of "Device Links" in the device right-click menu.</Usage>
    <DependentAttributes/>
    <Constraints>Must be a single PCO for field objects, controller, or PCO.
Must be PCO or field objects for alarms (several masters are allowed in the case of multiple alarms,
separated by commas or spaces).</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>ExternalMaster</AttributeName>
  <Description>Master of the device if located in another PLC for WinCCOA.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>External Master</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>The external master will give automatic requests to the device from another PLC. To
be specified only if master is empty.</Usage>
    <DependentAttributes/>
    <Constraints>Must be a single PCO for field objects, controller, or PCO. </Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>CustomLogicParameters</AttributeName>
  <Description>User defined meaning, used by the logic generators.</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <Attribute>
    <AttributeName>Parameter1</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: "$' </Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>

```

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter2</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: '\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter3</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: '\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter4</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: '\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter5</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: '\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter6</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: '\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter7</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: '\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter8</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: '\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter9</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: '\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter10</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: '\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

</Attribute>

<Attribute>

<AttributeName>CustomLogicSections</AttributeName>

<Description>If specified, these sections will override the default logic sections (UNICOS provided).</Description>

<PrimitiveType>STRUCT</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage/>

<DependentAttributes/>

<Constraints/>

</isSpecificationAttribute>

<Attribute>

<AttributeName>DL</AttributeName>

<Description>Define user template for the Dependent Logic</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>DL User Template</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>Specify path of the python script located under the "UserSpecific" directory</Usage>

<DependentAttributes>CustomLogicParameters.ParameterX (where X=1-10)</DependentAttributes>

<Constraints/>

</isSpecificationAttribute>

</Attribute>

</Attribute>

</AttributeFamily>

<AttributeFamily>

<AttributeFamilyName>DeviceTechnicals</AttributeFamilyName>

<UserExpandable>>true</UserExpandable>

<Attribute>

<AttributeName>PROCOSConfiguration</AttributeName>

<Description>PROCOS parameters allowing simulation</Description>

<PrimitiveType>STRUCT</PrimitiveType>

<Attribute>

```

    <AttributeName>Config</AttributeName>
    <Description>Device mode configuration for simulation (Simulated, Forced or
Empty)</Description>
    <PrimitiveType>STRING</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>ForcedValue</AttributeName>
    <Description>Forced value defined (e.g.: analog: 4.5, digital: 0 or 1)</Description>
    <PrimitiveType>STRING</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>Hierarchy</AttributeName>
    <Description>Hierarchy definition following the Simulation model</Description>
    <PrimitiveType>STRING</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>TargetDeviceInformation</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>Target</AttributeName>
        <Description>Identifies a target type (e.g. SIEMENS, SCHNEIDER...)</Description>
        <PrimitiveType>STRUCT</PrimitiveType>
        <DefaultValue>Siemens</DefaultValue>
    <Attribute>
        <AttributeName>RepresentationName</AttributeName>
        <Description>It's the name used ...</Description>
        <PrimitiveType>STRING</PrimitiveType>
        <DefaultValue>MFC</DefaultValue>
    </Attribute>
    <Attribute>
        <AttributeName>Optimized</AttributeName>
        <Description>Is this object an optimized Object?</Description>
        <PrimitiveType>BOOLEAN</PrimitiveType>
        <DefaultValue>>false</DefaultValue>
    </Attribute>
    <Attribute>
        <AttributeName>LimitSize</AttributeName>
        <Description>Maximun number of instances allowed</Description>
        <PrimitiveType>INT32</PrimitiveType>
        <DefaultValue>1000</DefaultValue>

```

```
</Attribute>
<Attribute>
  <AttributeName>FastInterlock</AttributeName>
  <Description>Is this object a fast interlock object?</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <DefaultValue>>false</DefaultValue>
</Attribute>
</Attribute>
</AttributeFamily>
</UNICOSMetaModel>
```

2.20. OnOffDeviceType.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<UNICOSMetaModel xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="..\unicos\UNICOSMetaModel.xsd">
```

```
  <Information>
    <Package>${devicePackageName}</Package>
    <Name>OnOff</Name>
    <ObjectTypeFamily>FieldObjectFamily</ObjectTypeFamily>
    <Description>OnOff Device</Description>
    <Version>${LastChangedRevision: 170121} $</Version>
  </Information>
  <AttributeFamily>
    <AttributeFamilyName>DeviceIdentification</AttributeFamilyName>
    <UserExpandable>>false</UserExpandable>
    <Attribute>
      <AttributeName>Name</AttributeName>
      <Description>Name of the device. It must be unique.
```

Max length:

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: [:"'@`#\$%^&*?!.,;+~(){}<>|]-., double underscore, and page break</Description>

```
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>true</isValueRequired>
    <Usage>Name displayed at the SCADA level if "Expert Name" is not specified.
```

This name will appear in the datapoints created in the SCADA layer.</Usage>

```
  <DependentAttributes>Device Links.
```

The name of the device(s) specified in Device Links *must* correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to "Name".</DependentAttributes>

```
  <Constraints>Max length:
```

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: [:"'@`#\$%^&*?!.,;+~(){}<>|]-., double underscore, and page break
Name must be unique.</Constraints>

```
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>ExpertName</AttributeName>
  <Description>Name of the device displayed at the SCADA level. It must be unique.
```

Forbidden characters: *[: "'@`#\$%^&*?!;=+~(){}<>|] </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Expert Name</NameRepresentation>

<TypeRepresentation>STRING</TypeRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>It does not affect to the datapoints names in the SCADA layer.</Usage>

<DependentAttributes>Device Links.

The name of the device(s) specified in Device Links **must** correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to "Name".</DependentAttributes>

<Constraints>In principle there is no limit to the number of characters used, however a long name may result in display issues at the SCADA level.

Forbidden characters: *[: "'@`#\$%^&*?!;=+~(){}<>|]

Expert Name must be unique.</Constraints>

</isSpecificationAttribute>

</Attribute>

</AttributeFamily>

<AttributeFamily>

<AttributeFamilyName>DeviceDocumentation</AttributeFamilyName>

<UserExpandable>>true</UserExpandable>

<Attribute>

<AttributeName>DeviceDescription</AttributeName>

<Description>Description of the device. </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Description</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>Used in the SCADA layer in the device faceplate</Usage>

<DependentAttributes/>

<Constraints>In principle there is no limit to the number of characters used, however a long description may result in display issues at the SCADA level.

Forbidden characters: ;</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Remarks</AttributeName>

<Description>Field used to add relevant information about the device. </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

```

    <Usage>This information is not used in the generation process, it remains only at the
specification level for documentation purposes.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: ;</Constraints>
  </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceParameters</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>ParReg</AttributeName>
    <Meaning>Parameter Register</Meaning>
    <Description>Parametrisation register: This register contains all the boolean parameters of
the object</Description>
    <PrimitiveType>WORD</PrimitiveType>
  <Attribute>
    <AttributeName>PFsPosOn</AttributeName>
    <Meaning>Parameter Fail-Safe position ON/Open</Meaning>
    <Description>Fail Safe position of the actuator</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>0</BitPosition>
    <isSpecificationAttribute>
      <NameRepresentation>Fail-Safe</NameRepresentation>
      <TypeRepresentation>STRING</TypeRepresentation>
      <isValueRequired>>true</isValueRequired>
      <PermittedValue>On/Open</PermittedValue>
      <PermittedValue>Off/Close</PermittedValue>
      <PermittedValue>2 DO Off</PermittedValue>
      <PermittedValue>2 DO On</PermittedValue>
      <Usage>This is the position of the device in case of interlock.</Usage>
      <DependentAttributes/>
      <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>PHFOn</AttributeName>
    <Meaning>Parameter Hardware Feedback On</Meaning>
    <Description>Enables the activation of the Feedback ON of the object via a hardware
sensor</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>1</BitPosition>
  </Attribute>

```

```

<Attribute>
  <AttributeName>PHFOff</AttributeName>
  <Meaning>Parameter Hardware Feedback Off</Meaning>
  <Description>Enables the activation of the Feedback OFF of the object via a hardware
sensor.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>2</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>PPulse</AttributeName>
  <Meaning>Parameter Pulse</Meaning>
  <Description>Enables Pulsed output. When this parameter is TRUE the output of the Object
is driven by a pulse.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>3</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>PHLD</AttributeName>
  <Meaning>Parameter Hardware Local Drive</Meaning>
  <Description>Enables the local drive feedback. When this input is TRUE the feedback is
received via the HFLD.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>4</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>PHLDCmd</AttributeName>
  <Meaning>Parameter Hardware Local Drive Command</Meaning>
  <Description>Enables the local drive command. When this input is TRUE the command is
received via the HFLD.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>5</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>PAnim</AttributeName>
  <Meaning>Parameter Animation</Meaning>
  <Description>Full/Empty Widget Animation type:
If Full/Empty, the object is always animated full/empty if active Feedback Off/On is not set.
Otherwise, if Full/Half/Empty, the object is only animated half full.
For more details, see OnOff object description</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>6</BitPosition>
  <isSpecificationAttribute>
    <NameRepresentation>Full/Empty Animation</NameRepresentation>

```



```

    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>true</isValueRequired>
    <PermittedValue>Full/Empty</PermittedValue>
    <PermittedValue>Full/Half/Empty</PermittedValue>
    <Usage>To always represent the widget as Full or Empty when only one Hardware
Feedback is declared.</Usage>
    <DependentAttributes/>
    <Constraints>Full/Empty Animation is applied, when only one Hardware Feedback is
declared (PHFOn or PHFOff).</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>POutOff</AttributeName>
    <Meaning>Parameter Output Off</Meaning>
    <Description>Inverted output Parameter. When true the Inverted output of the object is
enabled</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>7</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>PEnRstart</AttributeName>
    <Meaning>Parameter Enable Restart</Meaning>
    <Description>Strategy to adopt to restart the device after a Full Stop
Interlock.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>8</BitPosition>
    <isSpecificationAttribute>
        <NameRepresentation>Manual Restart after Full Stop</NameRepresentation>
        <TypeRepresentation>STRING</TypeRepresentation>
        <isValueRequired>>true</isValueRequired>
        <PermittedValue>FALSE</PermittedValue>
        <PermittedValue>TRUE only if Full Stop disappeared</PermittedValue>
        <PermittedValue>TRUE even if Full Stop still active</PermittedValue>
        <Usage>FALSE: Device restarts after acknowledge.
TRUE only if Full Stop disappeared: Ack+Allow Restart needed (possible only if FS disappeared)
TRUE even if Full Stop still active: Ack+Allow Restart needed (possible at any moment)</Usage>
        <DependentAttributes/>
        <Constraints>All devices of the application should have the same "Manual Restart after
Full Stop"</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>PRstartFS</AttributeName>

```

```

    <Meaning>Parameter Restart after Full Stop</Meaning>
    <Description>Parameter Restart after Full Stop</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>9</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>PFsPosOn2</AttributeName>
    <Meaning>Parameter Fail-Safe Position for 2 DO</Meaning>
    <Description>Reset or activate the 2 DO when 2 DO are present after
interlock</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>10</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>PPulseCste</AttributeName>
    <Meaning>Parameter Pulse Constant</Meaning>
    <Description>Only relevant if object is pulsed (Pulse Duration (s) column is not blank):
- if blank/FALSE: output is pulsed until feedback is received
- if TRUE: output will always pulse for specified duration, regardless of the feedback</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>11</BitPosition>
    <isSpecificationAttribute>
        <NameRepresentation>Constant Time Pulse</NameRepresentation>
        <TypeRepresentation>BOOLEAN</TypeRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage/>
        <DependentAttributes>Pulse Duration (s)</DependentAttributes>
        <Constraints>Only taken into account if Pulse Duration (s) is not blank</Constraints>
    </isSpecificationAttribute>
</Attribute>
</Attribute>
<Attribute>
    <AttributeName>PWDt</AttributeName>
    <Meaning>Position Warning Delay time</Meaning>
    <Description>Delay applied to the Position Alarm when there is a discordance between
OutputOrder and Feedback position.
Must be positive.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Warning Time Delay (s)</NameRepresentation>
        <TypeRepresentation>STRING</TypeRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>can be a positive number or a parameter</Usage>

```

```

    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PPulseLe</AttributeName>
  <Meaning>Parameter Pulse Length</Meaning>
  <Description>Pulse duration (s).
- if != 0, OnOff output will be pulsed for X seconds.
- if blank or =0, output is not pulsed.
N.B. Pulse behaviour depends on "Constant Time Pulse" column.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Pulse Duration (s)</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Determines whether OnOff object is pulsed or not</Usage>
    <DependentAttributes>Constant Time Pulse</DependentAttributes>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceInterlocks</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>StartI</AttributeName>
    <Meaning>Start Interlock</Meaning>
    <Description>Start Interlock Request: When active, the ON request is blocked.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>TStopI</AttributeName>
    <Meaning>Temporary Stop Interlock</Meaning>
    <Description>Temporary Stop Interlock Request: When active, the object goes automatically
to its fail safe position and returns to the previous position after acknowledgement.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>FuStopI</AttributeName>
    <Meaning>Full Stop Interlock</Meaning>
    <Description>Full Stop Interlock Request: Devices goes to Fail-Safe position and remains until
acknowledged.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>

```

```

</Attribute>
<Attribute>
  <AttributeName>Al</AttributeName>
  <Meaning>Alarm</Meaning>
  <Description>Alarm input. This is not an interlock; it has no functional impact on the object. It will just display A on the widget with lower priority than other interlocks.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceAutoRequests</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>AuOnR</AttributeName>
    <Meaning>Auto On Request</Meaning>
    <Description>Auto On Request (by logic): The control logic requests ON/Open on the object.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>AuOffR</AttributeName>
    <Meaning>Auto Off Request</Meaning>
    <Description>Auto Off Request (by logic): The control logic requests Off/Close on the object.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>AulhFoMo</AttributeName>
    <Meaning>Auto Inhibit Forced Mode</Meaning>
    <Description>Auto Inhibit Forced Mode (by logic): The control logic blocks the forced mode operation.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>AulhMMo</AttributeName>
    <Meaning>Auto Inhibit Manual Mode</Meaning>
    <Description>Auto Inhibit Manual Mode (by logic): The control logic blocks the manual mode operation</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>AuAuMoR</AttributeName>
    <Meaning>Auto Auto Mode Request</Meaning>

```

```

    <Description>Auto Auto Mode Request. The control logic requests Auto Mode on the
object</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuAlAck</AttributeName>
    <Meaning>Auto Alarm Acknowledgement</Meaning>
    <Description>Auto Alarm Acknowledgement: The control logic requests and Acknowledgment
of the Alarm Start and Stop Interlocks</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>IhAuMRW</AttributeName>
    <Meaning>Inhibit Auto Manual Request Warning</Meaning>
    <Description>Inhibit Auto Manual Request Warning: The control logic requests to inhibit the
warning from discrepancy between manual request and auto request.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuRStart</AttributeName>
    <Meaning>Auto Enable Restart Request</Meaning>
    <Description>Perform an auto "Allow Restart" from the PLC logic</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>FEDeviceManualRequests</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>ManReg01</AttributeName>
        <Meaning>Manual Register 1</Meaning>
        <Description>Manual Register 1</Description>
        <isCommunicated>>true</isCommunicated>
        <PrimitiveType>WORD</PrimitiveType>
    </Attribute>
        <AttributeName>MAuMoR</AttributeName>
        <Meaning>Manual Auto Mode Request</Meaning>
        <Description>Manual Auto Mode Request: The operator requests the Auto
Mode.</Description>
        <PrimitiveType>BIT1</PrimitiveType>
        <BitPosition>0</BitPosition>
    </Attribute>
    <Attribute>

```

```

    <AttributeName>MMMoR</AttributeName>
    <Meaning>Manual Manual Mode Request</Meaning>
    <Description>Manual Manual Mode Request: The operator requests the Manual
Mode</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>1</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MFoMoR</AttributeName>
    <Meaning>Manual Forced Mode Request</Meaning>
    <Description>Manual Forced Mode Request: The operator requests the Forced
Mode.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>2</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MSoftLDR</AttributeName>
    <Meaning>Manual Software Local Mode</Meaning>
    <Description>The operator requests the Software Local Mode</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>3</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MOnR</AttributeName>
    <Meaning>Manual On Request</Meaning>
    <Description>Manual On Request: The operator requests the On/Open
position</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>4</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MOffR</AttributeName>
    <Meaning>Manual Off Request</Meaning>
    <Description>Manual Off Request: The operator requests the Off/Close
position</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>5</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MEnRstartR</AttributeName>
    <Meaning>Manual Enable Restart Request</Meaning>
    <Description>Manual Enable Restart Request: The Operator requests a Manual Restart after
Full Stop</Description>

```

```

    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>9</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>MAIAckR</AttributeName>
    <Meaning>Manual Alarm Acknowledgement Request</Meaning>
    <Description>Manual Alarm Acknowledgement Request: The operator requests Interlocks or
Alarms acknowledgement</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>15</BitPosition>
  </Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceEnvironmentInputs</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>HFOn</AttributeName>
    <Meaning>Hardware Feedback On</Meaning>
    <Description>Feedback On of the actuator.
Must be a DI.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Feedback On</NameRepresentation>
      <TypeRepresentation>STRING</TypeRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>Used to compute the "On" status of the device</Usage>
      <DependentAttributes/>
      <Constraints>Must be a DI</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>HFOff</AttributeName>
    <Meaning>Hardware Feedback Off</Meaning>
    <Description>Feedback Off of the actuator.
Must be a DI.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Feedback Off</NameRepresentation>
      <TypeRepresentation>STRING</TypeRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>Used to compute the "Off" status of the device</Usage>

```

```

    <DependentAttributes/>
    <Constraints>Must be a DI</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>HLD</AttributeName>
  <Meaning>Hardware Local Drive</Meaning>
  <Description>Activation of the Hardware Local Drive.
Must be a DI.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Local Drive</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Signal to put the actuator in Hardware Local Mode</Usage>
    <DependentAttributes/>
    <Constraints>Must be a DI</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>HOnR</AttributeName>
  <Meaning>Hardware On Request</Meaning>
  <Description>Local On Request to the actuator when it is in Hardware Local Mode.
Must be a DI.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Local On</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Signal to send a Local On Request to the device</Usage>
    <DependentAttributes/>
    <Constraints>Must be a DI</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>HOffR</AttributeName>
  <Meaning>Hardware Off Request</Meaning>
  <Description>Local Off Request to the actuator when it is in Hardware Local Mode.
Must be a DI.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Local Off</NameRepresentation>

```



```

    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Signal to send a Local Off Request to the device</Usage>
    <DependentAttributes/>
    <Constraints>Must be a DI</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>IOError</AttributeName>
    <Meaning>Input/Output Error</Meaning>
    <Description>IOError state in any of the dependant objects or the PLC channel assigned to the
object</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>IOSimu</AttributeName>
    <Meaning>Input/Output Simulated</Meaning>
    <Description>Any of the dependant objects is in Forced or Manual Mode</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AIB</AttributeName>
    <Meaning>Alarm Blocked</Meaning>
    <Description>Alarm Blocked: Any of the device dependant alarm objects has been blocked by
the operator</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>FEDeviceOutputs</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>OutOnOV</AttributeName>
        <Meaning>Output On Order Value</Meaning>
        <Description>Output connected to the process.
Must be a DO.</Description>
        <PrimitiveType>BOOLEAN</PrimitiveType>
        <isSpecificationAttribute>
            <NameRepresentation>Process Output</NameRepresentation>
            <TypeRepresentation>STRING</TypeRepresentation>
            <isValueRequired>>false</isValueRequired>
            <Usage/>
            <DependentAttributes/>

```

```

    <Constraints>Must be a DO</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>OutOffOV</AttributeName>
  <Meaning>Output Off Order Value</Meaning>
  <Description>Output Off connected to the process.
Must be a DO.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Process Output Off</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Used when the actuator is driven by 2 DO. Some actuators (rare) have 1 DO to
open and 1 DO to close (bistable behavior). This DO closes the device.</Usage>
    <DependentAttributes>Process Output must be filled</DependentAttributes>
    <Constraints>Must be a DO</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>StsReg01</AttributeName>
  <Meaning>Status Register 1</Meaning>
  <Description>Status Register 1</Description>
  <isEventAttribute>>true</isEventAttribute>
  <isCommunicated>>true</isCommunicated>
  <PrimitiveType>WORD</PrimitiveType>
  <Attribute>
    <AttributeName>OnSt</AttributeName>
    <Meaning>On Status</Meaning>
    <Description>On/Open Status</Description>
    <isArchived>>true</isArchived>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>0</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>OffSt</AttributeName>
    <Meaning>Off Status</Meaning>
    <Description>Off/Closed Status</Description>
    <isArchived>>true</isArchived>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>1</BitPosition>
  </Attribute>
</Attribute>

```

```

<Attribute>
  <AttributeName>AuMoSt</AttributeName>
  <Meaning>Auto Mode Status</Meaning>
  <Description>Current status of the Auto Mode</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>2</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MMoSt</AttributeName>
  <Meaning>Manual Mode Status</Meaning>
  <Description>Current status of the Manual Mode</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>3</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>FoMoSt</AttributeName>
  <Meaning>Forced Mode Status</Meaning>
  <Description>Current status of the Forced Mode.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>4</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>LDSt</AttributeName>
  <Meaning>Local Drive Status</Meaning>
  <Description>Current status of the Local Mode. The object is driven locally.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>5</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>IOErrorW</AttributeName>
  <Meaning>Input/Output Error Warning</Meaning>
  <Description>Current status of the IOError</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>6</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>IOSimuW</AttributeName>
  <Meaning>Input/Output Simulated Warning</Meaning>
  <Description>Current status of the IOSimu</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>7</BitPosition>
</Attribute>

```

```

<Attribute>
  <AttributeName>AuMRW</AttributeName>
  <Meaning>Auto Manual Request Warning Status.</Meaning>
  <Description>Auto and manual requests discrepancy when Manual/Forced mode
active.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>8</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>PosW</AttributeName>
  <Meaning>Position Warning</Meaning>
  <Description>There is discrepancy between the order status and the position status
according to Time Delay and Dead-band.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>9</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>StartISt</AttributeName>
  <Meaning>Start Interlock Status</Meaning>
  <Description>Current status of the Start Interlock</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>10</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>TStopISt</AttributeName>
  <Meaning>Temporary Stop Interlock Status</Meaning>
  <Description>Current status of the Temporary Stop Interlock</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>11</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>AlUnAck</AttributeName>
  <Meaning>Alarm UnAcknowledged</Meaning>
  <Description>Alarm UnAcknowledged: The alarm or at least one of the alarms associated to
the object is not acknowledged</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>12</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>AulhFoMoSt</AttributeName>
  <Meaning>Auto Inhibit Forced Mode Status</Meaning>
  <Description>Auto Inhibit Forced Mode status: Current status of the Auto Inhibit forced
mode.</Description>

```

```

    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>13</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AlSt</AttributeName>
    <Meaning>Alarm Status</Meaning>
    <Description>Alarm Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>14</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AulhMMoSt</AttributeName>
    <Meaning>Auto Inhibit Manual Mode Status</Meaning>
    <Description>Auto Inhibit Manual Mode Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>15</BitPosition>
</Attribute>
</Attribute>
<Attribute>
    <AttributeName>StsReg02</AttributeName>
    <Meaning>Status Register 2</Meaning>
    <Description>Status Register 2</Description>
    <isEventAttribute>true</isEventAttribute>
    <isCommunicated>true</isCommunicated>
    <PrimitiveType>WORD</PrimitiveType>
    <Attribute>
        <AttributeName>OutOnOVSt</AttributeName>
        <Meaning>Output On Order Value Status</Meaning>
        <Description>Output On Order Value Status</Description>
        <PrimitiveType>BIT1</PrimitiveType>
        <BitPosition>0</BitPosition>
    </Attribute>
    <Attribute>
        <AttributeName>AuOnRSt</AttributeName>
        <Meaning>Auto On Request Status</Meaning>
        <Description>Auto On/Open Request Status</Description>
        <PrimitiveType>BIT1</PrimitiveType>
        <BitPosition>1</BitPosition>
    </Attribute>
    <Attribute>
        <AttributeName>MOnRSt</AttributeName>
        <Meaning>Manual On Request Status</Meaning>

```

```

    <Description>Manual On/Open Request Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>2</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AuOffRSt</AttributeName>
    <Meaning>Auto Off Request Status</Meaning>
    <Description>Auto Off/Close request status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>3</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MOffRSt</AttributeName>
    <Meaning>Manual Off Request Status</Meaning>
    <Description>Manual Off/Close request status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>4</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>HOnRSt</AttributeName>
    <Meaning>Hardware On Request Status</Meaning>
    <Description>Hardware On/Open request</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>5</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>HOffRSt</AttributeName>
    <Meaning>Hardware Off Request Status</Meaning>
    <Description>Hardware Off/Close request status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>6</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>FuStopISt</AttributeName>
    <Meaning>Full Stop Interlock Status</Meaning>
    <Description>Full Stop Interlock Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>10</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>EnRstartSt</AttributeName>
    <Meaning>Enable Restart Status</Meaning>

```

```

    <Description>Manual Restart after full stop status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>11</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>SoftLDSt</AttributeName>
    <Meaning>Software Local Mode Status</Meaning>
    <Description>Current status of the Software Local Mode.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>12</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AIBW</AttributeName>
    <Meaning>Alarm Blocked Warning</Meaning>
    <Description>When true, the alarm or any of the device dependant alarm objects have been
blocked by the operator</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>13</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>OutOffOVSt</AttributeName>
    <Meaning>Output Off Order Value Status</Meaning>
    <Description>Output Off Order Value Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>14</BitPosition>
</Attribute>
</Attribute>
<Attribute>
    <AttributeName>OnSt</AttributeName>
    <Meaning>On Status</Meaning>
    <Description>On/Open Status</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>OffSt</AttributeName>
    <Meaning>Off Status</Meaning>
    <Description>Off/Closed Status</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>HOnRSt</AttributeName>
    <Meaning>Hardware On Request Status</Meaning>

```

```

    <Description>Hardware On Request Status</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>HOffRSt</AttributeName>
    <Meaning>Hardware Off Request Status</Meaning>
    <Description>Hardware Off Request Status</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuOnRSt</AttributeName>
    <Meaning>Auto On Request Status</Meaning>
    <Description>Auto On Request Status</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuOffRSt</AttributeName>
    <Meaning>Auto Off Request Status</Meaning>
    <Description>Auto Off Request Status</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>MOnRSt</AttributeName>
    <Meaning>Manual On Request Status</Meaning>
    <Description>Manual On Request Status</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>MOffRSt</AttributeName>
    <Meaning>Manual Off Request Status</Meaning>
    <Description>Manual Off Request Status</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuMoSt</AttributeName>
    <Meaning>Auto Mode Status</Meaning>
    <Description>Current status of the Auto Mode</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>MMoSt</AttributeName>
    <Meaning>Manual Mode Status</Meaning>

```



```

    <Description>Current status of the Manual Mode request</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>FoMoSt</AttributeName>
    <Meaning>Forced Mode Status</Meaning>
    <Description>Current status of the Forced Mode.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>LDSt</AttributeName>
    <Meaning>Local Drive Status</Meaning>
    <Description>Current status of the Local mode.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>SoftLDSt</AttributeName>
    <Meaning>Software Local Drive Status</Meaning>
    <Description>Current status of the Software Local mode request</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>IOErrorW</AttributeName>
    <Meaning>Input/Output Error Warning</Meaning>
    <Description>Current status of the IOError</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>IOSimuW</AttributeName>
    <Meaning>Input/Output Simulated Warning</Meaning>
    <Description>Current status of the IOSimu</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AIBW</AttributeName>
    <Meaning>Alarm Blocked Warning</Meaning>
    <Description>When true, the alarm or any of the device dependant alarm objects have been
    blocked by the operator</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuMRW</AttributeName>

```

```

    <Meaning>Auto Manual Request Warning</Meaning>
    <Description>Auto and manual requests discrepancy when Manual/Forced mode
active</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>PosW</AttributeName>
    <Meaning>Position Warning</Meaning>
    <Description>Position Warning Status</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>StartISt</AttributeName>
    <Meaning>Start Interlock Status</Meaning>
    <Description>Current status of StartI</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>TStopISt</AttributeName>
    <Meaning>Temporary Stop Interlock Status</Meaning>
    <Description>Current status of TStopI</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>FuStopISt</AttributeName>
    <Meaning>Full Stop Interlock Status</Meaning>
    <Description>Full Stop Interlock Status</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AlUnAck</AttributeName>
    <Meaning>Alarm UnAcknowledged</Meaning>
    <Description>Alarm UnAcknowledged: The alarm or at least one of the alarms associated to
the object is not acknowledged</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>EnRStartSt</AttributeName>
    <Meaning>Enable Restart Status</Meaning>
    <Description>Manual Restart after full stop status possible</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>

```

```

    <AttributeName>RdyStartSt</AttributeName>
    <Meaning>Ready To Start Status</Meaning>
    <Description>The object is ready to start, there is no blocking process to start.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AlSt</AttributeName>
    <Meaning>Alarm Status</Meaning>
    <Description>Alarm Status</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>SCADADeviceGraphics</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>WidgetType</AttributeName>
        <Description>Define the widget type to display in the SCADA device tree overview only.
The widget displayed in the process panel will be selected when the user creates the
panel.</Description>
        <PrimitiveType>STRING</PrimitiveType>
        <isSpecificationAttribute>
            <NameRepresentation>Widget Type</NameRepresentation>
            <isValueRequired>>true</isValueRequired>
            <isCaseSensitive>>true</isCaseSensitive>
            <PermittedValue>OnOffSquare</PermittedValue>
            <PermittedValue>OnOffMotor</PermittedValue>
            <PermittedValue>OnOffPumpHorizontalLeft</PermittedValue>
            <PermittedValue>OnOffPumpHorizontalRight</PermittedValue>
            <PermittedValue>OnOffPumpVerticalHigh</PermittedValue>
            <PermittedValue>OnOffPumpVerticalLow</PermittedValue>
            <PermittedValue>OnOffHeaterHorizontal</PermittedValue>
            <PermittedValue>OnOffHeaterVertical</PermittedValue>
            <PermittedValue>OnOffValveHorizontal</PermittedValue>
            <PermittedValue>OnOffValveVertical</PermittedValue>
            <PermittedValue>OnOffElectricValveHorizontal</PermittedValue>
            <PermittedValue>OnOffElectricValveVertical</PermittedValue>
            <PermittedValue>OnOffFan</PermittedValue>
            <PermittedValue>OnOffManualValveHorizontal</PermittedValue>
            <PermittedValue>OnOffManualValveVertical</PermittedValue>
            <PermittedValue>OnOffDamperHorizontal</PermittedValue>
            <PermittedValue>OnOffDamperVertical</PermittedValue>
        </isSpecificationAttribute>
    </Attribute>
</AttributeFamily>

```

```

    <PermittedValue>OnOffDoubleDamperHorizontal</PermittedValue>
    <PermittedValue>OnOffDoubleDamperVertical</PermittedValue>
    <PermittedValue>OnOffElecHeaterHorizontal</PermittedValue>
    <PermittedValue>OnOffElecHeaterVertical</PermittedValue>
    <PermittedValue>OnOffInvertedValveHorizontal</PermittedValue>
    <PermittedValue>OnOff3WayValveVerticalLeftOnDown</PermittedValue>
    <PermittedValue>OnOff3WayValveVerticalRightOnUp</PermittedValue>
    <PermittedValue>OnOff3WayValveHorizontalDownOnLeft</PermittedValue>
    <PermittedValue>OnOff3WayValveHorizontalDownOnRight</PermittedValue>
    <PermittedValue>OnOff3WayValveHorizontalUpOnLeft</PermittedValue>
    <PermittedValue>OnOff3WayValveHorizontalUpOnRight</PermittedValue>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>LabelOn</AttributeName>
  <Description>SCADA description associated to the State of the object</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Label On</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>LabelOff</AttributeName>
  <Description>SCADA description associated to the State of the object</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Label Off</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Synoptic</AttributeName>

```

<Description>Define link between the device and an existing synoptic where it appears. The synoptic specified here can be accessed from the device right-click menu item "Synoptic".</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>Specify the path of the .pnl file under the "\\panel" directory of the PVSS project.</Usage>

<DependentAttributes/>

<Constraints/>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>DiagnosticPanel</AttributeName>

<Description>Define link between the device and an existing diagnostic panel for the device. The panel specified here can be accessed from the device right-click menu item "Diagnostic" as well as from the "Diagnostic" button on the object faceplate.</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Diagnostic</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>Specify the path of the .pnl file under the "\\panel" directory of the PVSS project</Usage>

<DependentAttributes/>

<Constraints/>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>WWWLink</AttributeName>

<Description>Define link between the device and an existing web page (or pdf file, or other file which can be opened with IE). The link can be accessed from the device right-click menu item "Info" as well as from the "Info" button on the object faceplate.</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>WWW Link</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage/>

<DependentAttributes/>

<Constraints/>

</isSpecificationAttribute>

</Attribute>

</AttributeFamily>

<AttributeFamily>

<AttributeFamilyName>SCADADeviceFunctionals</AttributeFamilyName>

```

<UserExpandable>>false</UserExpandable>
<Attribute>
  <AttributeName>MaskEvent</AttributeName>
  <Description>If TRUE: the events of the device will be masked in SCADA and not displayed or archived in the Event List.
  An 'event' is defined as a bit change in StsReg01 or StsReg02</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Mask Event</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>AccessControlDomain</AttributeName>
  <Description>Define Access Control on the device to an existing SCADA Domain
  Forbidden characters: *[: ""@`#%^^&,*?!;=+~(){}&lt;&gt;|]</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Access Control Domain</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>This domain is used to grant access to this specific device. The domain specified for this object will allow access to the object only to registered users on that domain</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[: ""@`#%^^&,*?!;=+~(){}&lt;&gt;|]</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>SCADADeviceClassificationTags</AttributeName>
  <Description>It defines the Domain, Nature and DeviceLinks for the SCADA visualization</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <Attribute>
    <AttributeName>Domain</AttributeName>
    <Description>Domain of the device. If empty, the domain will be the name of the application
    Forbidden characters: *[: ""@`#%^^&,*?!;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>Domain is used to filter the devices in the alarm list or in the device tree overview</Usage>
  </Attribute>

```

```

    <DependentAttributes/>
    <Constraints>Forbidden characters: *[:
"@`#$$%^&?*?!;=+~(){}&lt;&gt;|]</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Nature</AttributeName>
  <Description>Nature of the device. If empty, the nature will be the type of the device
Forbidden characters: *[: "@`#$$%^&?*?!;=+~(){}&lt;&gt;|]</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Nature is used to filter the devices in the alarm list or in the device tree
overview</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[:
"@`#$$%^&?*?!;=+~(){}&lt;&gt;|]</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DeviceLinks</AttributeName>
  <Description>Define links to other devices (separate device names with commas).

```

Note: it is not necessary to link to master, parents or children because these links are automatically created.

```

Forbidden characters: *[: "@`#$$%^&?*?!;=+~(){}&lt;&gt;|]</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Device Links</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Linked devices will be shown in the device right-click menu</Usage>
    <DependentAttributes>Expert Name or Name.

```

The name of the device(s) specified here *must* correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified here corresponds to "Name".</DependentAttributes>

```

    <Constraints>Forbidden characters: *[:
"@`#$$%^&?*?!;=+~(){}&lt;&gt;|]</Constraints>
  </isSpecificationAttribute>
</Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADataArchiving</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>

```

```

<Attribute>
  <AttributeName>BooleanArch</AttributeName>
  <Description>Name of the Boolean archive
Forbidden characters: *[: ""@`#$%^&*?!;,+~(){}&lt;&gt;|]</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Boolean Archive</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>The boolean values of the device will be archived in the specified PVSS database.
The archive must be created in PVSS before importing the object.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[:
""@`#$%^&*?!;,+~(){}&lt;&gt;|]</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>AnalogArch</AttributeName>
  <Description>Name of the analog archive
Forbidden characters: *[: ""@`#$%^&*?!;,+~(){}&lt;&gt;|]</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Analog Archive</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>The analog values of the device will be archived in the specified PVSS database. The
archive must be created in PVSS before importing the object.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[:
""@`#$%^&*?!;,+~(){}&lt;&gt;|]</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>EventArch</AttributeName>
  <Description>Name of the event archive
Forbidden characters: *[: ""@`#$%^&*?!;,+~(){}&lt;&gt;|]</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Event Archive</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>The events generated by the device will be archived in the specified PVSS database.
The archive must be created in PVSS before importing the object.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[:
""@`#$%^&*?!;,+~(){}&lt;&gt;|]</Constraints>

```



```

    </isSpecificationAttribute>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>LogicDeviceDefinitions</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>MasterDevice</AttributeName>
    <Description>Master of the device (relative to the hierarchy of dependent
objects).</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Master</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>The master will give automatic requests to the device. The master object will
appear in the list of "Device Links" in the device right-click menu.</Usage>
      <DependentAttributes/>
      <Constraints>Must be a single PCO for field objects, controller, or PCO.
Must be PCO or field objects for alarms (several masters are allowed in the case of multiple alarms,
separated by commas or spaces).</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>ExternalMaster</AttributeName>
    <Description>Master of the device if located in another PLC for WinCCOA.</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>External Master</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>The external master will give automatic requests to the device from another PLC. To
be specified only if master is empty.</Usage>
      <DependentAttributes/>
      <Constraints>Must be a single PCO for field objects, controller, or PCO. </Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>Fast Interlock Type</AttributeName>
    <Description>Type of fast interlock object if necesary</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <PermittedValue>Hardware Interrupt</PermittedValue>
      <PermittedValue>Cyclic Interrupt</PermittedValue>

```

<Usage>This parameter is used to determinate if the object will be processed in the fast interlock logic</Usage>

<DependentAttributes/>

<Constraints/>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>CustomLogicParameters</AttributeName>

<Description>User defined meaning, used by the logic generators.</Description>

<PrimitiveType>STRUCT</PrimitiveType>

<Attribute>

<AttributeName>Parameter1</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: "\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: "\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter2</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: "\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: "\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter3</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: "\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

```

    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
      <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
      <Constraints>Forbidden characters: '$' </Constraints>
    </isSpecificationAttribute>
  </Attribute>
<Attribute>
  <AttributeName>Parameter4</AttributeName>
  <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Parameter5</AttributeName>
  <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Parameter6</AttributeName>
  <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>

```

```

    <isValueRequired>>false</isValueRequired>
    <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter7</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
        <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
        <Constraints>Forbidden characters: '$' </Constraints>
        </isSpecificationAttribute>
    </Attribute>
<Attribute>
    <AttributeName>Parameter8</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
        <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
        <Constraints>Forbidden characters: '$' </Constraints>
        </isSpecificationAttribute>
    </Attribute>
<Attribute>
    <AttributeName>Parameter9</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>

```

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Parameter10</AttributeName>

<Description>Parameter to be used in the logic templates

Forbidden characters: '\$' </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections. User Template"?, parameter is ignored.</Usage>*

<DependentAttributes>Parameter will be used in specified "CustomLogicSections. User Template"? file</DependentAttributes>*

<Constraints>Forbidden characters: '\$' </Constraints>

</isSpecificationAttribute>

</Attribute>

</Attribute>

<Attribute>

<AttributeName>CustomLogicSections</AttributeName>

<Description>If specified, these sections will override the default logic sections (UNICOS provided).</Description>

<PrimitiveType>STRUCT</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage/>

<DependentAttributes/>

<Constraints/>

</isSpecificationAttribute>

<Attribute>

<AttributeName>DL</AttributeName>

<Description>Define user template for the Dependent Logic</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>DL User Template</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>Specify path of the python script located under the "UserSpecific" directory</Usage>

```

    <DependentAttributes>CustomLogicParameters.ParameterX (where X=1-
10)</DependentAttributes>
    <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>TargetDeviceInformation</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>Target</AttributeName>
    <Description>Identifies a target type (e.g. SIEMENS, SCHNEIDER...)</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
    <DefaultValue>Siemens</DefaultValue>
    <Attribute>
      <AttributeName>RepresentationName</AttributeName>
      <Description>It's the name used ...</Description>
      <PrimitiveType>STRING</PrimitiveType>
      <DefaultValue>ONOFF</DefaultValue>
    </Attribute>
    <Attribute>
      <AttributeName>Optimized</AttributeName>
      <Description>Is this object an optimized Object?</Description>
      <PrimitiveType>BOOLEAN</PrimitiveType>
      <DefaultValue>>false</DefaultValue>
    </Attribute>
    <Attribute>
      <AttributeName>LimitSize</AttributeName>
      <Description>Maximun number of instances allowed</Description>
      <PrimitiveType>INT32</PrimitiveType>
      <DefaultValue>250</DefaultValue>
    </Attribute>
    <Attribute>
      <AttributeName>FastInterlock</AttributeName>
      <Description>Is this object a fast interlock object?</Description>
      <PrimitiveType>BOOLEAN</PrimitiveType>
      <DefaultValue>>true</DefaultValue>
    </Attribute>
  </Attribute>
</AttributeFamily>
</UNICOSMetaModel>

```


2.21. ProcessControlObjectDeviceType.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<UNICOSMetaModel xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="..\unicos\UNICOSMetaModel.xsd">
```

```
  <Information>
    <Package>${devicePackageName}</Package>
    <Name>ProcessControlObject</Name>
    <ObjectTypeFamily>ControlObjectFamily</ObjectTypeFamily>
    <Description>Process Control Object Device</Description>
    <Version>${LastChangedRevision: 170121} $</Version>
  </Information>
  <AttributeFamily>
    <AttributeFamilyName>DeviceIdentification</AttributeFamilyName>
    <UserExpandable>>false</UserExpandable>
    <Attribute>
      <AttributeName>Name</AttributeName>
      <Description>Name of the device. It must be unique.
```

Max length:

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: [:"'@`#\$%^&*?!.,;+~(){}<>|]-., double underscore, and page break</Description>

```
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>true</isValueRequired>
    <Usage>Name displayed at the SCADA level if "Expert Name" is not specified.
```

This name will appear in the datapoints created in the SCADA layer.</Usage>

```
  <DependentAttributes>Device Links.
```

The name of the device(s) specified in Device Links *must* correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to "Name".</DependentAttributes>

```
  <Constraints>Max length:
```

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: [:"'@`#\$%^&*?!.,;+~(){}<>|]-., double underscore, and page break

Name must be unique.</Constraints>

```
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>ExpertName</AttributeName>
  <Description>Name of the device displayed at the SCADA level. It must be unique.
```


Forbidden characters: *[: "'@`#\$%^&*?!;=+~(){}<>|] </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Expert Name</NameRepresentation>

<TypeRepresentation>STRING</TypeRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>It does not affect to the datapoints names in the SCADA layer.</Usage>

<DependentAttributes>Device Links.

The name of the device(s) specified in Device Links **must** correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to "Name".</DependentAttributes>

<Constraints>In principle there is no limit to the number of characters used, however a long name may result in display issues at the SCADA level.

Forbidden characters: *[: "'@`#\$%^&*?!;=+~(){}<>|]

Expert Name must be unique.</Constraints>

</isSpecificationAttribute>

</Attribute>

</AttributeFamily>

<AttributeFamily>

<AttributeFamilyName>DeviceDocumentation</AttributeFamilyName>

<UserExpandable>>true</UserExpandable>

<Attribute>

<AttributeName>DeviceDescription</AttributeName>

<Description>Description of the device. </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Description</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>Used in the SCADA layer in the device faceplate</Usage>

<DependentAttributes/>

<Constraints>In principle there is no limit to the number of characters used, however a long description may result in display issues at the SCADA level.

Forbidden characters: ;</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Remarks</AttributeName>

<Description>Field used to add relevant information about the device. </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

```

    <Usage>This information is not used in the generation process, it remains only at the
specification level for documentation purposes.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: ;</Constraints>
  </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceParameters</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>ParReg</AttributeName>
    <Meaning>Parameter Register</Meaning>
    <Description>Parametrisation register: This register contains all the boolean parameters of
the object</Description>
    <PrimitiveType>WORD</PrimitiveType>
  <Attribute>
    <AttributeName>PEnrstart</AttributeName>
    <Meaning>Parameter Enable Restart</Meaning>
    <Description>Strategy to adopt to restart the device after a Full Stop
Interlock.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>8</BitPosition>
  <isSpecificationAttribute>
    <NameRepresentation>Manual Restart after Full Stop</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>true</isValueRequired>
    <PermittedValue>FALSE</PermittedValue>
    <PermittedValue>TRUE only if Full Stop disappeared</PermittedValue>
    <PermittedValue>TRUE even if Full Stop still active</PermittedValue>
    <Usage>FALSE: Device restarts after acknowledge.
TRUE only if Full Stop disappeared: Ack+Allow Restart needed (possible only if FS disappeared)
TRUE even if Full Stop still active: Ack+Allow Restart needed (possible at any moment)</Usage>
    <DependentAttributes/>
    <Constraints>All devices of the application should have the same "Manual Restart after
Full Stop"</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PRstartFS</AttributeName>
  <Meaning>Parameter Restart after Full Stop</Meaning>
  <Description>Parameter Restart after Full Stop</Description>
  <PrimitiveType>BIT1</PrimitiveType>

```

```

    <BitPosition>9</BitPosition>
  </Attribute>
</Attribute>
<Attribute>
  <AttributeName>POpMoTa</AttributeName>
  <Meaning>Parameter Option Mode Table </Meaning>
  <Description>Modes Option Allowance Table</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Option Mode Allowance Table</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>true</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
  <Attribute>
    <AttributeName>AllowanceOptionMode1</AttributeName>
    <Meaning>Allowance Option Mode 1</Meaning>
    <Description>Allow the transition from one option mode to another when the PCO is
running.
String of 8 Booleans (0/1) to define if transition is allowed to other option modes.</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Option Mode 1 Allowance</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>AllowanceOptionMode2</AttributeName>
    <Meaning>Allowance Option Mode 2</Meaning>
    <Description>Allow the transition from one option mode to another when the PCO is
running.
String of 8 Booleans (0/1) to define if transition is allowed to other option modes.</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Option Mode 2 Allowance</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage/>
      <DependentAttributes/>
    </isSpecificationAttribute>
  </Attribute>

```

```

    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>AllowanceOptionMode3</AttributeName>
  <Meaning>Allowance Option Mode 3</Meaning>
  <Description>Allow the transition from one option mode to another when the PCO is
running.
String of 8 Booleans (0/1) to define if transition is allowed to other option modes.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Option Mode 3 Allowance</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>AllowanceOptionMode4</AttributeName>
  <Meaning>Allowance Option Mode 4</Meaning>
  <Description>Allow the transition from one option mode to another when the PCO is
running.
String of 8 Booleans (0/1) to define if transition is allowed to other option modes.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Option Mode 4 Allowance</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>AllowanceOptionMode5</AttributeName>
  <Meaning>Allowance Option Mode 5</Meaning>
  <Description>Allow the transition from one option mode to another when the PCO is
running.
String of 8 Booleans (0/1) to define if transition is allowed to other option modes.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Option Mode 5 Allowance</NameRepresentation>
    <isValueRequired>>false</isValueRequired>

```

```

    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>AllowanceOptionMode6</AttributeName>
  <Meaning>Allowance Option Mode 6</Meaning>
  <Description>Allow the transition from one option mode to another when the PCO is
running.
String of 8 Booleans (0/1) to define if transition is allowed to other option modes.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Option Mode 6 Allowance</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>AllowanceOptionMode7</AttributeName>
  <Meaning>Allowance Option Mode 7</Meaning>
  <Description>Allow the transition from one option mode to another when the PCO is
running.
String of 8 Booleans (0/1) to define if transition is allowed to other option modes.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Option Mode 7 Allowance</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>AllowanceOptionMode8</AttributeName>
  <Meaning>Allowance Option Mode 8</Meaning>
  <Description>Allow the transition from one option mode to another when the PCO is
running.
String of 8 Booleans (0/1) to define if transition is allowed to other option modes.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>

```

```

    <NameRepresentation>Option Mode 8 Allowance</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceInterlocks</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>StartI</AttributeName>
    <Meaning>Start Interlock</Meaning>
    <Description>Start Interlock Request: When active, the ON request is blocked.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>TStopI</AttributeName>
    <Meaning>Temporary Stop Interlock</Meaning>
    <Description>Temporary Stop Interlock Request: When active, the object goes automatically
to its fail safe position and returns to the previous position after acknowledgement.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>FuStopI</AttributeName>
    <Meaning>Full Stop Interlock</Meaning>
    <Description>Full Stop Interlock Request: Devices goes to Fail-Safe position and remains until
acknowledged.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>Al</AttributeName>
    <Meaning>Alarm</Meaning>
    <Description>Alarm input. This is not an interlock; it has no functional impact on the object. It
will just display A on the widget with lower priority than other interlocks.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEConfigurationLogicRequest</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>

```

```

<Attribute>
  <AttributeName>FOn</AttributeName>
  <Meaning>Feedback On</Meaning>
  <Description>Feedback On, if it is TRUE the PCO is on (only for PCOs)</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>FOff</AttributeName>
  <Meaning>Feedback Off</Meaning>
  <Description>Feedback Off, if it is TRUE the PCO is off (only for PCOs)</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>CStopFin</AttributeName>
  <Meaning>Controlled Stop finished</Meaning>
  <Description>Controlled stop finished. The controlled stop sequence is ended.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>lhAuMRW</AttributeName>
  <Meaning>Inhibit Auto Manual Request Warning</Meaning>
  <Description>Inhibit Auto Manual Request Warning. This input allows the PCO to know that
there are no parent master and avoid warning animation when set by the operator.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceAutoRequests</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>AuOnR</AttributeName>
    <Meaning>Auto On Request</Meaning>
    <Description>Auto On Request (by logic): The control logic requests ON/Open on the
object.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>AuOffR</AttributeName>
    <Meaning>Auto Off Request</Meaning>
    <Description>Auto Off Request (by logic): The control logic requests Off/Close on the
object.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>

```

```

<Attribute>
  <AttributeName>AuAuMoR</AttributeName>
  <Meaning>Auto Auto Mode Request</Meaning>
  <Description>Auto Auto Mode Request. The control logic requests Auto Mode on the
object</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AulhMMo</AttributeName>
  <Meaning>Auto Inhibit Manual Mode</Meaning>
  <Description>Auto Inhibit Manual Mode (by logic): The control logic blocks the manual mode
operation</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AulhFoMo</AttributeName>
  <Meaning>Auto Inhibit Forced Mode</Meaning>
  <Description>Auto Inhibit Forced Mode (by logic): The control logic blocks the forced mode
operation.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuCStopR</AttributeName>
  <Meaning>Auto Controlled Stop Request</Meaning>
  <Description>Auto Controlled Stop Request</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuAuDepR</AttributeName>
  <Meaning>Auto Auto Dependant Request</Meaning>
  <Description>Auto Mode Request to all Dependant objects</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuOpMoR</AttributeName>
  <Meaning>Auto Option Mode Request</Meaning>
  <Description>Auto Option Mode Request</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuRStart</AttributeName>
  <Meaning>Auto Enable Restart Request</Meaning>
  <Description>Perform an auto "Allow Restart" from the PLC logic</Description>

```



```

    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
</Attribute>
  <AttributeName>AuAlAck</AttributeName>
  <Meaning>Auto Alarm Acknowledgement</Meaning>
  <Description>Auto Alarm Acknowledgement: The control logic requests and Acknowledgment
of the Alarm Start and Stop Interlocks</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceManualRequests</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>ManReg01</AttributeName>
    <Meaning>Manual Register 1</Meaning>
    <Description>Manual Register 1</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>WORD</PrimitiveType>
  </Attribute>
    <AttributeName>MAuMoR</AttributeName>
    <Meaning>Manual Auto Mode Request</Meaning>
    <Description>Manual Auto Mode Request: The operator requests the Auto
Mode.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>0</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>MMMoR</AttributeName>
    <Meaning>Manual Manual Mode Request</Meaning>
    <Description>Manual Manual Mode Request: The operator requests the Manual
Mode.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>1</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>MFoMoR</AttributeName>
    <Meaning>Manual Forced Mode Request</Meaning>
    <Description>Manual Forced Mode Request: The operator requests the Forced
Mode.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>2</BitPosition>
  </Attribute>

```

```

<Attribute>
  <AttributeName>MSoftLDR</AttributeName>
  <Meaning>Manual Software Local Mode</Meaning>
  <Description>The operator requests the Software Local Mode</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>3</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MOnR</AttributeName>
  <Meaning>Manual On Request</Meaning>
  <Description>Manual On Request: The operator requests the On/Open
position</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>4</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MOffR</AttributeName>
  <Meaning>Manual Off Request</Meaning>
  <Description>Manual Off Request: The operator requests the Off/Close
position</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>5</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MCStopR</AttributeName>
  <Meaning>Manual Controlled Stop Request</Meaning>
  <Description>Manual Controlled Stop Request</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>6</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MTSasFSSetRst</AttributeName>
  <Meaning>Manual Temporary Stop as Full Stop Set/Reset</Meaning>
  <Description>Manual Temporary Stop as Full Stop Set/Reset.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>8</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MEnRstartR</AttributeName>
  <Meaning>Manual Enable Restart Request</Meaning>
  <Description>Manual Enable Restart Request: The Operator requests a Manual Restart after
Full Stop</Description>
  <PrimitiveType>BIT1</PrimitiveType>

```

```

    <BitPosition>9</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>MAIBSetRst</AttributeName>
    <Meaning>Manual Alarm Block Set/Reset</Meaning>
    <Description>Manual Alarm Block Set/Reset: Operator request to set/reset the alarm
    block.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>10</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>MNewOpMoR</AttributeName>
    <Meaning>Manual New Option Mode Request</Meaning>
    <Description>Option Manual Pulse</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>12</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>MAuDepR</AttributeName>
    <Meaning>Manual Auto Dependant Request</Meaning>
    <Description>Manual Auto Mode Request to all Dependent Object.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>13</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>MAIAck</AttributeName>
    <Meaning>Manual Alarm Acknowledgement</Meaning>
    <Description>Manual Alarm Acknowledgement</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>15</BitPosition>
  </Attribute>
</Attribute>
  <Attribute>
    <AttributeName>MOpMoR</AttributeName>
    <Meaning>Manual Option Mode Request</Meaning>
    <Description>Manual Option Mode Request</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
  </Attribute>
</AttributeFamily>
  <AttributeFamily>
    <AttributeFamilyName>FEDeviceEnvironmentInputs</AttributeFamilyName>

```

```

<UserExpandable>true</UserExpandable>
<Attribute>
  <AttributeName>IOError</AttributeName>
  <Meaning>Input/Output Error</Meaning>
  <Description>IOError state in any of the dependant objects or the PLC channel assigned to the
object</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>IOSimu</AttributeName>
  <Meaning>Input/Output Simulated</Meaning>
  <Description>Any of the dependant objects is in Forced or Manual Mode</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AlB</AttributeName>
  <Meaning>Alarm Blocked</Meaning>
  <Description>Alarm Blocked: Any of the device dependant alarm objects has been blocked by
the operator</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceOutputs</AttributeFamilyName>
  <UserExpandable>true</UserExpandable>
  <Attribute>
    <AttributeName>StsReg01</AttributeName>
    <Meaning>Status Register 1</Meaning>
    <Description>Status Register 1</Description>
    <isEventAttribute>true</isEventAttribute>
    <isCommunicated>true</isCommunicated>
    <PrimitiveType>WORD</PrimitiveType>
    <Attribute>
      <AttributeName>OnSt</AttributeName>
      <Meaning>On Status</Meaning>
      <Description>On/Open Status</Description>
      <PrimitiveType>BIT1</PrimitiveType>
      <BitPosition>0</BitPosition>
    </Attribute>
    <Attribute>
      <AttributeName>OffSt</AttributeName>
      <Meaning>Off Status</Meaning>
      <Description>Off/Closed Status</Description>
    </Attribute>
  </Attribute>

```

```

    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>1</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AuMoSt</AttributeName>
    <Meaning>Auto Mode Status</Meaning>
    <Description>Current status of the Auto Mode</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>2</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MMoSt</AttributeName>
    <Meaning>Manual Mode Status</Meaning>
    <Description>Current status of the Manual Mode</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>3</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>FoMoSt</AttributeName>
    <Meaning>Forced Mode Status</Meaning>
    <Description>Current status of the Forced Mode.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>4</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>IOErrorW</AttributeName>
    <Meaning>Input/Output Error Warning</Meaning>
    <Description>Current status of the IOError</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>6</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>IOSimuW</AttributeName>
    <Meaning>Input/Output Simulated Warning</Meaning>
    <Description>Current status of the IOSimu</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>7</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AuMRW</AttributeName>
    <Meaning>Auto Manual Request Warning Status.</Meaning>

```

```

    <Description>Auto and manual requests discrepancy when Manual/Forced mode
active.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>8</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>FuStopISt</AttributeName>
    <Meaning>Full Stop InterLock Status</Meaning>
    <Description>Full Stop InterLock Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>9</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>StartISt</AttributeName>
    <Meaning>Start Interlock Status</Meaning>
    <Description>Current status of the Start Interlock</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>10</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>TStopISt</AttributeName>
    <Meaning>Temporary Stop Interlock Status</Meaning>
    <Description>Current status of the Temporary Stop Interlock</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>11</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AlUnAck</AttributeName>
    <Meaning>Alarm UnAcknowledged</Meaning>
    <Description>Alarm UnAcknowledged: The alarm or at least one of the alarms associated to
the object is not acknowledged</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>12</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AulhFoMoSt</AttributeName>
    <Meaning>Auto Inhibit Forced Mode Status</Meaning>
    <Description>Auto Inhibit Forced Mode status: Current status of the Auto Inhibit forced
mode.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>13</BitPosition>
</Attribute>
<Attribute>

```

```

    <AttributeName>AlSt</AttributeName>
    <Meaning>Alarm Status</Meaning>
    <Description>Alarm Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>14</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AulhMMoSt</AttributeName>
    <Meaning>Auto Inhibit Manual Mode Status</Meaning>
    <Description>Auto Inhibit Manual Mode Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>15</BitPosition>
</Attribute>
</Attribute>
<Attribute>
    <AttributeName>StsReg02</AttributeName>
    <Meaning>Status Register 2</Meaning>
    <Description>Status Register 2</Description>
    <isEventAttribute>true</isEventAttribute>
    <isCommunicated>true</isCommunicated>
    <PrimitiveType>WORD</PrimitiveType>
<Attribute>
    <AttributeName>RunOSt</AttributeName>
    <Meaning>Run Order Status</Meaning>
    <Description>Run Order Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>0</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AuOnRSt</AttributeName>
    <Meaning>Auto On Request Status</Meaning>
    <Description>Auto On/Open Request Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>1</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MOnRSt</AttributeName>
    <Meaning>Manual On Request Status</Meaning>
    <Description>Manual On/Open Request Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>2</BitPosition>
</Attribute>

```

```

<Attribute>
  <AttributeName>AuAuDepRSt</AttributeName>
  <Meaning>Auto Auto Dependant Request Status</Meaning>
  <Description>Auto Mode Request Requested by operator</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>3</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>AuDepOSt</AttributeName>
  <Meaning>Auto Dependant Objects Status</Meaning>
  <Description>Auto Mode Request Order to all dependant Objects.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>4</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>AuCStopRSt</AttributeName>
  <Meaning>Auto Controlled Stop Request Status</Meaning>
  <Description>Auto Controlled Stop Request Status</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>5</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MAIBRSt</AttributeName>
  <Meaning>Manual Alarm Block Request Status</Meaning>
  <Description>Manual Alarm Block Request Status</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>6</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>MTSasFSRSt</AttributeName>
  <Meaning>Manual Temporary Stop as Full Stop Request Status</Meaning>
  <Description>Manual Temporary Stop as Full Stop Request Status</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>7</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>CStopOSt</AttributeName>
  <Meaning>Controlled Stop Order Status</Meaning>
  <Description>Control Stop Order Status</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>8</BitPosition>
</Attribute>

```



```

<Attribute>
  <AttributeName>EnRstartSt</AttributeName>
  <Meaning>Enable Restart Status</Meaning>
  <Description>Manual Restart after full stop status</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>11</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>SoftLDSt</AttributeName>
  <Meaning>Software Local Mode Status</Meaning>
  <Description>Current status of the Software Local Mode.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>12</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>AIBW</AttributeName>
  <Meaning>Alarm Blocked Warning</Meaning>
  <Description>When true, the alarm or any of the device dependant alarm objects have been
blocked by the operator</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>13</BitPosition>
</Attribute>
</Attribute>
<Attribute>
  <AttributeName>OnSt</AttributeName>
  <Meaning>On Status</Meaning>
  <Description>On/Open Status</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>OffSt</AttributeName>
  <Meaning>Off Status</Meaning>
  <Description>Off/Closed Status</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>RunOSt</AttributeName>
  <Meaning>Run Order Status</Meaning>
  <Description>Run Order. Indicate that the Object start is requested and there is no
interlock</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>

```

```

    <AttributeName>CStopOSt</AttributeName>
    <Meaning>Controlled Stop Order Status</Meaning>
    <Description>Control Stop Order. Control Stop Requested</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuDepOSt</AttributeName>
    <Meaning>Auto Dependant Objects Status</Meaning>
    <Description>Auto Mode Request Order to all dependant Objects.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>OpMoSt</AttributeName>
    <Meaning>Option Mode Status</Meaning>
    <Description>Option Mode Status : Active Option Mode.</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuOpMoSt</AttributeName>
    <Meaning>Auto Option Mode Status</Meaning>
    <Description>Auto Option Mode Status : Option Mode requested by Control
Logic</Description>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuMoSt</AttributeName>
    <Meaning>Auto Mode Status</Meaning>
    <Description>Current status of the Auto Mode</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>MMoSt</AttributeName>
    <Meaning>Manual Mode Status</Meaning>
    <Description>Current status of the Manual Mode request</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>FoMoSt</AttributeName>
    <Meaning>Forced Mode Status</Meaning>
    <Description>Current status of the Forced Mode.</Description>

```

```

    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>SoftLDSt</AttributeName>
    <Meaning>Software Local Drive Status</Meaning>
    <Description>Current status of the Software Local mode request</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>IOErrorW</AttributeName>
    <Meaning>Input/Output Error Warning</Meaning>
    <Description>Current status of the IOError</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>IOSimuW</AttributeName>
    <Meaning>Input/Output Simulated Warning</Meaning>
    <Description>Current status of the IOSimu</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AlUnAck</AttributeName>
    <Meaning>Alarm UnAcknowledged</Meaning>
    <Description>Alarm UnAcknowledged: The alarm or at least one of the alarms associated to
the object is not acknowledged</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>FuStopISt</AttributeName>
    <Meaning>Full Stop Interlock Status</Meaning>
    <Description>Full Stop Interlock Status</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>StartISt</AttributeName>
    <Meaning>Start Interlock Status</Meaning>
    <Description>Current status of StartI</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>TStopISt</AttributeName>
    <Meaning>Temporary Stop Interlock Status</Meaning>

```

```

    <Description>Current status of TStopl</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuMRW</AttributeName>
    <Meaning>Auto Manual Request Warning</Meaning>
    <Description>Auto and manual requests discrepancy when Manual/Forced mode
active</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AlBW</AttributeName>
    <Meaning>Alarm Blocked Warning</Meaning>
    <Description>When true, the alarm or any of the device dependant alarm objects have been
blocked by the operator</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>EnRStartSt</AttributeName>
    <Meaning>Enable Restart Status</Meaning>
    <Description>Manual Restart after full stop status possible</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>RdyStartSt</AttributeName>
    <Meaning>Ready To Start Status</Meaning>
    <Description>The object is ready to start, there is no blocking process to start.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AlSt</AttributeName>
    <Meaning>Alarm Status</Meaning>
    <Description>Alarm Status</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>SCADADeviceGraphics</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>WidgetType</AttributeName>
        <Description>Define the widget type to display in the SCADA device tree overview only.

```

The widget displayed in the process panel will be selected when the user creates the panel.</Description>

```
<PrimitiveType>STRING</PrimitiveType>
<isSpecificationAttribute>
  <NameRepresentation>Widget Type</NameRepresentation>
  <isValueRequired>>true</isValueRequired>
  <isCaseSensitive>>true</isCaseSensitive>
  <PermittedValue>PCO</PermittedValue>
  <PermittedValue>PCOAirHandlingUniHorizontalLeft</PermittedValue>
  <PermittedValue>PCOAirHandlingUniVerticalDown</PermittedValue>
  <PermittedValue>PCOAirHandlingUniVerticalUp</PermittedValue>
  <PermittedValue>PCOCompressorHorizontalLeft</PermittedValue>
  <PermittedValue>PCOCompressorHorizontalRight</PermittedValue>
  <PermittedValue>PCOCompressorVerticalHigh</PermittedValue>
  <PermittedValue>PCOCompressorVerticalLow</PermittedValue>
  <PermittedValue>PCOTurbineHorizontalLeft</PermittedValue>
  <PermittedValue>PCOTurbineHorizontalRight</PermittedValue>
  <PermittedValue>PCOTurbineVerticalHigh</PermittedValue>
  <PermittedValue>PCOTurbineVerticalLow</PermittedValue>
  <Usage/>
  <DependentAttributes/>
  <Constraints/>
</isSpecificationAttribute>
```

```
</Attribute>
```

```
<Attribute>
```

```
<AttributeName>DisplayName</AttributeName>
```

```
<Description>Short Name displayed in the PCO widget in SCADA.
```

Should be <= 8 characters to be correctly displayed in PCO widget.</Description>

```
<PrimitiveType>STRING</PrimitiveType>
```

```
<isSpecificationAttribute>
```

```
<NameRepresentation>Display Name</NameRepresentation>
```

```
<isValueRequired>>false</isValueRequired>
```

```
<Usage/>
```

```
<DependentAttributes/>
```

```
<Constraints>Should be &lt;= 8 characters to be correctly displayed in PCO
widget</Constraints>
```

```
</isSpecificationAttribute>
```

```
</Attribute>
```

```
<Attribute>
```

```
<AttributeName>Synoptic</AttributeName>
```

```
<Description>Define link between the device and an existing synoptic where it appears. The
synoptic specified here can be accessed from the device right-click menu item
"Synoptic".</Description>
```

```

    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>Specify the path of the .pnl file under the "\panel" directory of the PVSS
project.</Usage>
      <DependentAttributes/>
      <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>DiagnosticPanel</AttributeName>
    <Description>Define link between the device and an existing diagnostic panel for the device.
The panel specified here can be accessed from the device right-click menu item "Diagnostic" as well
as from the "Diagnostic" button on the object faceplate.</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Diagnostic</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>Specify the path of the .pnl file under the "\panel" directory of the PVSS project
</Usage>
      <DependentAttributes/>
      <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>WWWLink</AttributeName>
    <Description>Define link between the device and an existing web page (or pdf file, or other file
which can be opened with IE). The link can be accessed from the device right-click menu item "Info"
as well as from the "Info" button on the object faceplate.</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>WWW Link</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADeviceFunctionals</AttributeFamilyName>
  <UserExpandable>>false</UserExpandable>
</Attribute>

```

```

    <AttributeName>MaskEvent</AttributeName>
    <Description>If TRUE: the events of the device will be masked in SCADA and not displayed or
archived in the Event List.
An 'event' is defined as a bit change in StsReg01 or StsReg02</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Mask Event</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage/>
        <DependentAttributes/>
        <Constraints/>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>AccessControlDomain</AttributeName>
    <Description>Define Access Control on the device to an existing SCADA Domain
Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Access Control Domain</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>This domain is used to grant access to this specific device. The domain specified for
this object will allow access to the object only to registered users on that domain</Usage>
        <DependentAttributes/>
        <Constraints>Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>ModeLabel</AttributeName>
    <Description>Modes Label Table</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Mode Label</NameRepresentation>
        <TypeRepresentation>STRING</TypeRepresentation>
        <isValueRequired>>true</isValueRequired>
        <Usage/>
        <DependentAttributes/>
        <Constraints/>
    </isSpecificationAttribute>
<Attribute>
    <AttributeName>ModeLabel1</AttributeName>
    <Description>Label assigned to the option mode and displayed on the PCO widget in SCADA.
Should be &lt;= 16 characters to be correctly displayed in PCO widget.</Description>

```

```

<PrimitiveType>STRING</PrimitiveType>
<isSpecificationAttribute>
  <NameRepresentation>Option Mode 1 Label</NameRepresentation>
  <isValueRequired>>false</isValueRequired>
  <Usage/>
  <DependentAttributes/>
  <Constraints>Should be &lt;= 16 characters to be correctly displayed in PCO
widget</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>ModeLabel2</AttributeName>
  <Description>Label assigned to the option mode and displayed on the PCO widget in SCADA.
Should be &lt;= 16 characters to be correctly displayed in PCO widget.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Option Mode 2 Label</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints>Should be &lt;= 16 characters to be correctly displayed in PCO
widget</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>ModeLabel3</AttributeName>
  <Description>Label assigned to the option mode and displayed on the PCO widget in SCADA.
Should be &lt;= 16 characters to be correctly displayed in PCO widget.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Option Mode 3 Label</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints>Should be &lt;= 16 characters to be correctly displayed in PCO
widget</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>ModeLabel4</AttributeName>
  <Description>Label assigned to the option mode and displayed on the PCO widget in SCADA.
Should be &lt;= 16 characters to be correctly displayed in PCO widget.</Description>
  <PrimitiveType>STRING</PrimitiveType>

```



```

<isSpecificationAttribute>
  <NameRepresentation>Option Mode 4 Label</NameRepresentation>
  <isValueRequired>>false</isValueRequired>
  <Usage/>
  <DependentAttributes/>
  <Constraints>Should be &lt;= 16 characters to be correctly displayed in PCO
widget</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>ModeLabel5</AttributeName>
  <Description>Label assigned to the option mode and displayed on the PCO widget in SCADA.
Should be &lt;= 16 characters to be correctly displayed in PCO widget.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Option Mode 5 Label</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints>Should be &lt;= 16 characters to be correctly displayed in PCO
widget</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>ModeLabel6</AttributeName>
  <Description>Label assigned to the option mode and displayed on the PCO widget in SCADA.
Should be &lt;= 16 characters to be correctly displayed in PCO widget.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Option Mode 6 Label</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints>Should be &lt;= 16 characters to be correctly displayed in PCO
widget</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>ModeLabel7</AttributeName>
  <Description>Label assigned to the option mode and displayed on the PCO widget in SCADA.
Should be &lt;= 16 characters to be correctly displayed in PCO widget.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>

```

```

    <NameRepresentation>Option Mode 7 Label</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints>Should be &lt;= 16 characters to be correctly displayed in PCO
widget</Constraints>
    </isSpecificationAttribute>
  </Attribute>
</Attribute>
<Attribute>
  <AttributeName>ModeLabel8</AttributeName>
  <Description>Label assigned to the option mode and displayed on the PCO widget in SCADA.
Should be &lt;= 16 characters to be correctly displayed in PCO widget.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Option Mode 8 Label</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints>Should be &lt;= 16 characters to be correctly displayed in PCO
widget</Constraints>
    </isSpecificationAttribute>
  </Attribute>
</Attribute>
<Attribute>
  <AttributeName>SCADADeviceClassificationTags</AttributeName>
  <Description>It defines the Domain, Nature and DeviceLinks for the SCADA
visualization</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <Attribute>
    <AttributeName>Domain</AttributeName>
    <Description>Domain of the device. If empty, the domain will be the name of the application
Forbidden characters: *[: ""@ # $ % ^ & amp; * ? ! , ; = + ~ ( ) { } & lt; & gt; | ]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>Domain is used to filter the devices in the alarm list or in the device tree
overview</Usage>
      <DependentAttributes/>
      <Constraints>Forbidden characters: *[:
""@ # $ % ^ & amp; * ? ! , ; = + ~ ( ) { } & lt; & gt; | ]</Constraints>
    </isSpecificationAttribute>
  </Attribute>
</Attribute>

```

```

    <AttributeName>Nature</AttributeName>
    <Description>Nature of the device. If empty, the nature will be the type of the device
Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>Nature is used to filter the devices in the alarm list or in the device tree
overview</Usage>
        <DependentAttributes/>
        <Constraints>Forbidden characters: *[:
""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
</Attribute>

```

```
<Attribute>
```

```
    <AttributeName>DeviceLinks</AttributeName>
```

```
    <Description>Define links to other devices (separate device names with commas).
```

Note: it is not necessary to link to master, parents or children because these links are automatically created.

```
Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
```

```
    <PrimitiveType>STRING</PrimitiveType>
```

```
    <isSpecificationAttribute>
```

```
        <NameRepresentation>Device Links</NameRepresentation>
```

```
        <isValueRequired>>false</isValueRequired>
```

```
        <Usage>Linked devices will be shown in the device right-click menu</Usage>
```

```
        <DependentAttributes>Expert Name or Name.
```

The name of the device(s) specified here *must* correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified here corresponds to

```
"Name".</DependentAttributes>
```

```
    <Constraints>Forbidden characters: *[:
```

```
""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
```

```
    </isSpecificationAttribute>
```

```
</Attribute>
```

```
</Attribute>
```

```
</AttributeFamily>
```

```
<AttributeFamily>
```

```
    <AttributeFamilyName>SCADADataArchiving</AttributeFamilyName>
```

```
    <UserExpandable>>true</UserExpandable>
```

```
    <Attribute>
```

```
        <AttributeName>BooleanArch</AttributeName>
```

```
        <Description>Name of the Boolean archive
```

```
Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
```

```
        <PrimitiveType>STRING</PrimitiveType>
```

```
        <isSpecificationAttribute>
```

```

    <NameRepresentation>Boolean Archive</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>The boolean values of the device will be archived in the specified PVSS database.
The archive must be created in PVSS before importing the object.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[:
"@`#$$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
"/isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>AnalogArch</AttributeName>
    <Description>Name of the analog archive
Forbidden characters: *[: "@`#$$%^&*?!;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Analog Archive</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>The analog values of the device will be archived in the specified PVSS database. The
archive must be created in PVSS before importing the object.</Usage>
        <DependentAttributes/>
        <Constraints>Forbidden characters: *[:
"@`#$$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
"/isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>EventArch</AttributeName>
    <Description>Name of the event archive
Forbidden characters: *[: "@`#$$%^&*?!;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Event Archive</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>The events generated by the device will be archived in the specified PVSS database.
The archive must be created in PVSS before importing the object.</Usage>
        <DependentAttributes/>
        <Constraints>Forbidden characters: *[:
"@`#$$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
"/isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>LogicDeviceDefinitions</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>

```

```

<Attribute>
  <AttributeName>MasterDevice</AttributeName>
  <Description>Master of the device (relative to the hierarchy of dependent
objects).</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Master</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>The master will give automatic requests to the device. The master object will
appear in the list of "Device Links" in the device right-click menu.</Usage>
    <DependentAttributes/>
    <Constraints>Must be a single PCO for field objects, controller, or PCO.
Must be PCO or field objects for alarms (several masters are allowed in the case of multiple alarms,
separated by commas or spaces).</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>ExternalMaster</AttributeName>
  <Description>Master of the device if located in another PLC for WinCCOA.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>External Master</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>The external master will give automatic requests to the device from another PLC. To
be specified only if master is empty.</Usage>
    <DependentAttributes/>
    <Constraints>Must be a single PCO for field objects, controller, or PCO. </Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>CustomLogicParameters</AttributeName>
  <Description>User defined meaning, used by the logic generators.</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <Attribute>
    <AttributeName>Parameter1</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: "$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>

```

```

    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter2</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
        <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
        <Constraints>Forbidden characters: '$' </Constraints>
        </isSpecificationAttribute>
    </Attribute>
<Attribute>
    <AttributeName>Parameter3</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
        <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
        <Constraints>Forbidden characters: '$' </Constraints>
        </isSpecificationAttribute>
    </Attribute>
<Attribute>
    <AttributeName>Parameter4</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>

```

```

    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter5</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
        <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
        <Constraints>Forbidden characters: '$' </Constraints>
        </isSpecificationAttribute>
    </Attribute>
<Attribute>
    <AttributeName>Parameter6</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
        <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
        <Constraints>Forbidden characters: '$' </Constraints>
        </isSpecificationAttribute>
    </Attribute>
<Attribute>
    <AttributeName>Parameter7</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>

```

```

    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter8</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter9</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter10</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: '$' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>

```



```

    <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
    <Constraints>Forbidden characters: '$' </Constraints>
  </isSpecificationAttribute>
</Attribute>
</Attribute>
<Attribute>
  <AttributeName>CustomLogicSections</AttributeName>
  <Description>If specified, these sections will override the default logic sections (UNICOS
provided).</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
  <AttributeName>IL</AttributeName>
  <Description>Define user template for the Interlock Logic</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>IL User Template</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Specify path of the python script located under the "UserSpecific"
directory</Usage>
    <DependentAttributes>CustomLogicParameters.ParameterX (where X=1-
10)</DependentAttributes>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>CL</AttributeName>
  <Description>Define user template for the Configuration Logic</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>CL User Template</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Specify path of the python script located under the "UserSpecific"
directory</Usage>
    <DependentAttributes>CustomLogicParameters.ParameterX (where X=1-
10)</DependentAttributes>
    <Constraints/>

```

```

    </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>BL</AttributeName>
  <Description>Define user template for the Basic Logic</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>BL User Template</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Specify path of the python script located under the "UserSpecific"
directory</Usage>
    <DependentAttributes>CustomLogicParameters.ParameterX (where X=1-
10)</DependentAttributes>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>INST</AttributeName>
  <Description>Define user template for the instantiation of the PCO</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>INST User Template</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Specify path of the python script located under the "UserSpecific"
directory</Usage>
    <DependentAttributes>CustomLogicParameters.ParameterX (where X=1-
10)</DependentAttributes>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>GL</AttributeName>
  <Description>Define user template for the Global Logic</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>GL User Template</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Specify path of the python script located under the "UserSpecific"
directory</Usage>
    <DependentAttributes>CustomLogicParameters.ParameterX (where X=1-
10)</DependentAttributes>
    <Constraints/>
  </isSpecificationAttribute>

```

```

</Attribute>
<Attribute>
  <AttributeName>TL</AttributeName>
  <Description>Define user template for the Transition Logic</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>TL User Template</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Specify path of the python script located under the "UserSpecific"
directory</Usage>
    <DependentAttributes>CustomLogicParameters.ParameterX (where X=1-
10)</DependentAttributes>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>SL</AttributeName>
  <Description>Define user template for the Sequencer Logic</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>SL User Template</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Specify path of the python script located under the "UserSpecific"
directory</Usage>
    <DependentAttributes>CustomLogicParameters.ParameterX (where X=1-
10)</DependentAttributes>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>CDOL</AttributeName>
  <Description>Define user template for the Common Dependent Object Logic</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>CDOL User Template</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Specify path of the python script located under the "UserSpecific"
directory</Usage>
    <DependentAttributes>CustomLogicParameters.ParameterX (where X=1-
10)</DependentAttributes>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>

```

```

<Attribute>
  <AttributeName>DL</AttributeName>
  <Description>Define user template for the Dependent Logic</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>DL User Template</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Specify path of the python script located under the "UserSpecific"
directory</Usage>
    <DependentAttributes>CustomLogicParameters.ParameterX (where X=1-
10)</DependentAttributes>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>DeviceTechnical</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>PROCOSConfiguration</AttributeName>
    <Description>PROCOS parameters allowing simulation</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
  <Attribute>
    <AttributeName>Config</AttributeName>
    <Description>Device mode configuration for simulation (Simulated, Forced or
Empty)</Description>
    <PrimitiveType>STRING</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>ForcedValue</AttributeName>
    <Description>Forced value defined (e.g.: analog: 4.5, digital: 0 or 1)</Description>
    <PrimitiveType>STRING</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>Hierarchy</AttributeName>
    <Description>Hierarchy definition following the Simulation model</Description>
    <PrimitiveType>STRING</PrimitiveType>
  </Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>TargetDeviceInformation</AttributeFamilyName>

```

```

<UserExpandable>true</UserExpandable>
<Attribute>
  <AttributeName>Target</AttributeName>
  <Description>Identifies a target type (e.g. SIEMENS, SCHNEIDER...)</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <DefaultValue>Siemens</DefaultValue>
  <Attribute>
    <AttributeName>RepresentationName</AttributeName>
    <Description>It's the name used ...</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <DefaultValue>PCO</DefaultValue>
  </Attribute>
  <Attribute>
    <AttributeName>Optimized</AttributeName>
    <Description>Is this object an optimized Object?</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <DefaultValue>>false</DefaultValue>
  </Attribute>
  <Attribute>
    <AttributeName>LimitSize</AttributeName>
    <Description>Maximun number of instances allowed</Description>
    <PrimitiveType>INT32</PrimitiveType>
    <DefaultValue>500</DefaultValue>
  </Attribute>
  <Attribute>
    <AttributeName>FastInterlock</AttributeName>
    <Description>Is this object a fast interlock object?</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <DefaultValue>>false</DefaultValue>
  </Attribute>
</Attribute>
</AttributeFamily>
</UNICOSMetaModel>

```

2.22. SteppingMotorDeviceType.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<!-- edited with XMLSpy v2008 sp1 (http://www.altova.com) by amerezhi (CERN) -->
<UNICOSMetaModel xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="..\unicos\UNICOSMetaModel.xsd">
  <Information>
    <Package>${devicePackageName}</Package>
    <Name>SteppingMotor</Name>
    <ObjectTypeFamily>FieldObjectFamily</ObjectTypeFamily>
    <Description>Unicos TCT type for the Stepping Motor Object Device</Description>
    <Version>${LastChangedRevision: 0001} $</Version>
  </Information>
  <AttributeFamily>
    <AttributeFamilyName>DeviceIdentification</AttributeFamilyName>
    <UserExpandable>false</UserExpandable>
    <Attribute>
      <AttributeName>Name</AttributeName>
      <Description>Name of the device. It must be unique.
```

Max length:

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: *[: "'@`#\$%^&*?!;=+~(){}<>;], double underscore, and page break</Description>

```
<PrimitiveType>STRING</PrimitiveType>
```

```
<isSpecificationAttribute>
```

```
<isValueRequired>>true</isValueRequired>
```

```
<Usage>Name displayed at the SCADA level if "Expert Name" is not specified.
```

This name will appear in the datapoints created in the SCADA layer.</Usage>

```
<DependentAttributes>Device Links.
```

The name of the device(s) specified in Device Links *must* correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to "Name".</DependentAttributes>

```
<Constraints>Max length:
```

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: *[: "'@`#\$%^&*?!;=+~(){}<>;], double underscore, and page break
Name must be unique.</Constraints>

```
</isSpecificationAttribute>
```

```
</Attribute>
```

```
<Attribute>
```

```
<AttributeName>ExpertName</AttributeName>
```

<Description>Name of the device displayed at the SCADA level. It must be unique.
Forbidden characters: *[: "'@ # \$ % ^ & * ? ! , ; = + ~ () { } < > |]</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Expert Name</NameRepresentation>

<TypeRepresentation>STRING</TypeRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>It does not affect to the datapoints names in the SCADA layer.</Usage>

<DependentAttributes>Device Links.

The name of the device(s) specified in Device Links **must** correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to "Name".</DependentAttributes>

<Constraints>In principle there is no limit to the number of characters used, however a long name may result in display issues at the SCADA level.
Forbidden characters: *[: "'@ # \$ % ^ & * ? ! , ; = + ~ () { } < > |]</Constraints>

Expert Name must be unique.</Constraints>

</isSpecificationAttribute>

</Attribute>

</AttributeFamily>

<AttributeFamily>

<AttributeFamilyName>DeviceDocumentation</AttributeFamilyName>

<UserExpandable>>true</UserExpandable>

<Attribute>

<AttributeName>DeviceDescription</AttributeName>

<Description>Description of the device. </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Description</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>Used in the SCADA layer in the device faceplate</Usage>

<DependentAttributes/>

<Constraints>In principle there is no limit to the number of characters used, however a long description may result in display issues at the SCADA level.
Forbidden characters: ;</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Remarks</AttributeName>

<Description>Field used to add relevant information about the device. </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

```

    <Usage>This information is not used in the generation process, it remains only at the
specification level for documentation purposes.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: ;</Constraints>
  </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceParameters</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>ParReg</AttributeName>
    <Meaning>Parameter Register</Meaning>
    <Description>Parametrisation register: This register contains all the boolean parameters of
the object</Description>
    <PrimitiveType>WORD</PrimitiveType>
  <Attribute>
    <AttributeName>PHFInt</AttributeName>
    <Meaning>Parameter Hardware Feedback Internal</Meaning>
    <Description>Enables the activation of the Feedback ClockWise and CounterClockWise of
the object via a hardware sensor connected to the stepper module.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>1</BitPosition>
  <isSpecificationAttribute>
    <NameRepresentation>Switches Configuration</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>true</isValueRequired>
    <PermittedValue>2 End Switches + Ref. Switch</PermittedValue>
    <PermittedValue>2 End Switches with faked Ref. Switch</PermittedValue>
    <PermittedValue>2 Switches plugged into the 1STEP</PermittedValue>
    <PermittedValue>No End Switches.</PermittedValue>
    <Usage>This describes the switches configuration in the physical installation.</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PHFCW</AttributeName>
  <Meaning>Parameter Hardware Feedback ClockWise</Meaning>
  <Description>Enables the activation of the Feedback ClockWise of the object via a hardware
sensor</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>2</BitPosition>

```



```

</Attribute>
<Attribute>
  <AttributeName>PHFCCW</AttributeName>
  <Meaning>Parameter Hardware Feedback CounterClockWise</Meaning>
  <Description>Enables the activation of the Feedback CounterClockWise of the object via a
hardware sensor</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>3</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>PHFRefS</AttributeName>
  <Meaning>Parameter Hardware Feedback Reference Switch</Meaning>
  <Description>Enables the activation of the Feedback of the Reference Switch of the object
via a hardware sensor</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>4</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>PHFPot</AttributeName>
  <Meaning>Parameter Hardware Feedback Potentiometer</Meaning>
  <Description>Enables the activation of the Feedback of the Potentiometer of the object via a
hardware sensor</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>5</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>PHFEnc</AttributeName>
  <Meaning>Parameter Hardware Feedback Encoder</Meaning>
  <Description>Enables the activation of the Feedback of the Encoder of the object via
hardware sensors</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>6</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>PHFAnFbSup</AttributeName>
  <Meaning>Parameter Hardware Analog Feedback as Support</Meaning>
  <Description>Enables the use of the Analog Feedback from the potentiometer as Support
for positioning, but still open loop.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>7</BitPosition>
  <isSpecificationAttribute>
    <NameRepresentation>Feedback</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
  </isSpecificationAttribute>

```

```

    <isValueRequired>>false</isValueRequired>
    <PermittedValue>Potentiometer</PermittedValue>
    <PermittedValue>Potentiometer (support)</PermittedValue>
    <PermittedValue>Encoder</PermittedValue>
    <Usage>Activate this option to use the Feedback from the potentiometer as support
instead of defining position.</Usage>
    <DependentAttributes/>
    <Constraints/>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>PEnrstart</AttributeName>
    <Meaning>Parameter Enable Restart</Meaning>
    <Description>Strategy to adopt to restart the device after a Full Stop
Interlock.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>8</BitPosition>
    <isSpecificationAttribute>
        <NameRepresentation>Manual Restart after Full Stop</NameRepresentation>
        <TypeRepresentation>STRING</TypeRepresentation>
        <isValueRequired>>true</isValueRequired>
        <PermittedValue>FALSE</PermittedValue>
        <PermittedValue>TRUE only if Full Stop disappeared</PermittedValue>
        <PermittedValue>TRUE even if Full Stop still active</PermittedValue>
        <Usage>FALSE: Device restarts after acknowledge.
TRUE only if Full Stop disappeared: Ack+Allow Restart needed (possible only if FS disappeared)
TRUE even if Full Stop still active: Ack+Allow Restart needed (possible at any moment)</Usage>
        <DependentAttributes/>
        <Constraints>All devices of the application should have the same "Manual Restart after
Full Stop"</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>PRstartFS</AttributeName>
    <Meaning>Parameter Restart after Full Stop</Meaning>
    <Description>Parameter Restart after Full Stop</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>9</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>PNoMovRefS</AttributeName>
    <Meaning>Parameter No Move in Reference Search</Meaning>

```

```

    <Description>In systems with encoder Reference search can be done without
movement.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>10</BitPosition>
  </Attribute>
</Attribute>
<Attribute>
  <AttributeName>PRefPos</AttributeName>
  <Meaning>Reference Position</Meaning>
  <Description>Position of the Reference Switch in engineering units referenced to the Minimum
and Maximum Position.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Reference Position</NameRepresentation>
    <TypeRepresentation>FLOAT32</TypeRepresentation>
    <isValueRequired>false</isValueRequired>
    <Usage>Position of the device after finishing the reference search.</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PMinRan</AttributeName>
  <Meaning>Parameter Minimum Value</Meaning>
  <Description>Lowest Position that the device can reach. </Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Minimum Range</NameRepresentation>
    <TypeRepresentation>FLOAT32</TypeRepresentation>
    <isValueRequired>false</isValueRequired>
    <Usage>Lowest position that the device can reach.</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PMaxRan</AttributeName>
  <Meaning>Parameter Maximum Value</Meaning>
  <Description>Highest Position that the device can reach. </Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Maximum Range</NameRepresentation>
    <TypeRepresentation>FLOAT32</TypeRepresentation>

```

```

    <isValueRequired>>false</isValueRequired>
    <Usage>Highest Position that the device can reach.</Usage>
    <DependentAttributes/>
    <Constraints>Must be bigger than Minimum Range.</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PScal</AttributeName>
  <Meaning>Parameter Scale</Meaning>
  <Description>Number of Steps to move for one engineering unit.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Scale</NameRepresentation>
    <TypeRepresentation>FLOAT32</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>To calculate the number of steps that the motor will move, the distance is
multiplied by this number. </Usage>
    <DependentAttributes/>
    <Constraints>Must be positive</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>POffset</AttributeName>
  <Meaning>Parameter Offset</Meaning>
  <Description>Offset added in engineering units for the conversion between steps and
engineering units.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Offset</NameRepresentation>
    <TypeRepresentation>FLOAT32</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints>Must be positive</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PMaxSpd</AttributeName>
  <Meaning>Parameter Maximum Speed</Meaning>
  <Description>Maximum speed allowed. It has to be between 1 and 254</Description>
  <PrimitiveType>SHORTINT16</PrimitiveType>
  <MaxValue>254</MaxValue>
  <isSpecificationAttribute>

```

```

    <NameRepresentation>Max Speed</NameRepresentation>
    <TypeRepresentation>SHORTINT16</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Specifies the maximum speed that the device can move safely.</Usage>
    <DependentAttributes/>
    <Constraints>Must be less than 254</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PWDt</AttributeName>
  <Meaning>Position Warning Delay time</Meaning>
  <Description>Delay applied to the Position Alarm when there is a discordance between
OutputOrder and Feedback position.
Must be positive.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Warning Time Delay (s)</NameRepresentation>
    <TypeRepresentation>FLOAT32</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints>Must be positive</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PWDb</AttributeName>
  <Meaning>Parameter </Meaning>
  <Description>Deadband value to compute the position warning of the device (Discordance).
Must be positive.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Warning Deadband Value (Unit)</NameRepresentation>
    <TypeRepresentation>FLOAT32</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints>Must be positive</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PDbT</AttributeName>
  <Meaning>Parameter Deadband Trigger</Meaning>

```

```

    <Description>Deadband value in engineering units to Trigger a new Positioning
job</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Deadband Trigger</NameRepresentation>
        <TypeRepresentation>FLOAT32</TypeRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>Minimum difference between the Actual position and the Commanded position to
trigger a new positioning job.</Usage>
        <DependentAttributes/>
        <Constraints>Must be positive</Constraints>
    </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>FEDeviceInterlocks</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>StartI</AttributeName>
        <Meaning>Start Interlock</Meaning>
        <Description>Start Interlock Request: When active, the ON request is blocked.</Description>
        <PrimitiveType>BOOLEAN</PrimitiveType>
    </Attribute>
    <Attribute>
        <AttributeName>TStopI</AttributeName>
        <Meaning>Temporary Stop Interlock</Meaning>
        <Description>Temporary Stop Interlock Request: When active, the object goes automatically
to its fail safe position and returns to the previous position after acknowledgement.</Description>
        <PrimitiveType>BOOLEAN</PrimitiveType>
    </Attribute>
    <Attribute>
        <AttributeName>FuStopI</AttributeName>
        <Meaning>Full Stop Interlock</Meaning>
        <Description>Full Stop Interlock Request: Devices goes to Fail-Safe position and remains until
acknowledged.</Description>
        <PrimitiveType>BOOLEAN</PrimitiveType>
    </Attribute>
    <Attribute>
        <AttributeName>Al</AttributeName>
        <Meaning>Alarm</Meaning>
        <Description>Alarm input. This is not an interlock; it has no functional impact on the object. It
will just display A on the widget with lower priority than other interlocks.</Description>
        <PrimitiveType>BOOLEAN</PrimitiveType>

```

```

    </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceAutoRequests</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>AuPosR</AttributeName>
    <Meaning>Auto Position Request.</Meaning>
    <Description>Auto Position Request: The control logic requests a specific position on the
object.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>AuSpdR</AttributeName>
    <Meaning>Auto Speed Request</Meaning>
    <Description>Auto Position Request: The control logic requests a specific speed for the
movements.</Description>
    <PrimitiveType>SHORTINT16</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>AuRefSR</AttributeName>
    <Meaning>Auto Reference Search Request</Meaning>
    <Description>Auto Reference Search. The control logic requests finding the reference
position.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>AuStopR</AttributeName>
    <Meaning>Auto Stop Request</Meaning>
    <Description>Auto Stop Request. The control logic requests stop the motor.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>AuNewConfigR</AttributeName>
    <Meaning>Auto New Config Request</Meaning>
    <Description>Auto New Config Request. The control logic requests a new configuration in the
range and offset of the motor.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
  </Attribute>
  <Attribute>
    <AttributeName>AuOffsetR</AttributeName>
    <Meaning>Auto Offset Request.</Meaning>

```

```

    <Description>Auto Offset Request: The control logic requests a new offset for the
object.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuAuMoR</AttributeName>
    <Meaning>Auto Auto Mode Request</Meaning>
    <Description>Auto Auto Mode Request. The control logic requests Auto Mode on the
object</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AulhMMo</AttributeName>
    <Meaning>Auto Inhibit Manual Mode</Meaning>
    <Description>Auto Inhibit Manual Mode (by logic): The control logic blocks the manual mode
operation</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AulhFoMo</AttributeName>
    <Meaning>Auto Inhibit Forced Mode</Meaning>
    <Description>Auto Inhibit Forced Mode (by logic): The control logic blocks the forced mode
operation.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>lhAuMRW</AttributeName>
    <Meaning>Inhibit Auto Manual Request Warning</Meaning>
    <Description>Inhibit Auto Manual Request Warning: The control logic requests to inhibit the
warning from discrepancy between manual request and auto request.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuAlAck</AttributeName>
    <Meaning>Auto Alarm Acknowledgement</Meaning>
    <Description>Auto Alarm Acknowledgement: The control logic requests and Acknowledgment
of the Alarm Start and Stop Interlocks</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>FEDeviceManualRequests</AttributeFamilyName>
    <UserExpandable>true</UserExpandable>

```



```

<Attribute>
  <AttributeName>ManReg01</AttributeName>
  <Meaning>Manual Register 1</Meaning>
  <Description>Manual Register 1</Description>
  <isCommunicated>>true</isCommunicated>
  <PrimitiveType>WORD</PrimitiveType>
  <Attribute>
    <AttributeName>MAuMoR</AttributeName>
    <Meaning>Manual Auto Mode Request</Meaning>
    <Description>Manual Auto Mode Request: The operator requests the Auto
Mode.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>0</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>MMMoR</AttributeName>
    <Meaning>Manual Manual Mode Request</Meaning>
    <Description>Manual Manual Mode Request: The operator requests the Manual
Mode.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>1</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>MFoMoR</AttributeName>
    <Meaning>Manual Forced Mode Request</Meaning>
    <Description>Manual Forced Mode Request: The operator requests the Forced
Mode.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>2</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>MSoftLDR</AttributeName>
    <Meaning>Manual Software Local Mode</Meaning>
    <Description>The operator requests the Software Local Mode</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>3</BitPosition>
  </Attribute>
  <Attribute>
    <AttributeName>MNewConfigR</AttributeName>
    <Meaning>Manual New Config Request</Meaning>
    <Description>Manual New Config Request: The operator requests a new Configuration to
the range of work and offset.</Description>
    <PrimitiveType>BIT1</PrimitiveType>

```

```

    <BitPosition>4</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MStopR</AttributeName>
    <Meaning>Manual Stop Request</Meaning>
    <Description>Manual Stop Request: The operator requests the motor to stop.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>5</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MNewPosR</AttributeName>
    <Meaning>Manual New Position Request</Meaning>
    <Description>Manual New Position Request: The operator requests a new position to the
object</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>6</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MNewSpdR</AttributeName>
    <Meaning>Manual New Speed Request</Meaning>
    <Description>Manual New Speed Request: The operator requests a new speed to the
object</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>7</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MRefsR</AttributeName>
    <Meaning>Manual Reference Search Request</Meaning>
    <Description>The operator Request a new Reference Search by the object.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>8</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MEnRstartR</AttributeName>
    <Meaning>Manual Enable Restart Request</Meaning>
    <Description>Manual Enable Restart Request: The Operator requests a Manual Restart after
Full Stop</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>9</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MAIAckR</AttributeName>
    <Meaning>Manual Alarm Acknowledgement Request</Meaning>

```

```

    <Description>Manual Alarm Acknowledgement Request: The operator requests Interlocks or
Alarms acknowledgement</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>15</BitPosition>
  </Attribute>
</Attribute>
<Attribute>
  <AttributeName>MPosR</AttributeName>
  <Meaning>Manual Position Request</Meaning>
  <Description>Manual Position Request: Value of the position requested by
operator</Description>
  <isCommunicated>>true</isCommunicated>
  <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>MSpdR</AttributeName>
  <Meaning>Manual Speed Request</Meaning>
  <Description>Value for the speed of the movements requested by the operator</Description>
  <isCommunicated>>true</isCommunicated>
  <PrimitiveType>SHORTINT16</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceEnvironmentInputs</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>HFPos</AttributeName>
    <Meaning>Hardware Feedback Position</Meaning>
    <Description>Analog Feedback of the actuator received from the potentiometer
Must be an AI/AIR/AS. </Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Feedback Analog</NameRepresentation>
      <TypeRepresentation>STRING</TypeRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>Used to compare with the internal feedback of the device</Usage>
      <DependentAttributes/>
      <Constraints>Must be a AI</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>HFCW</AttributeName>
    <Meaning>Hardware Feedback ClockWise</Meaning>

```

```

<Description>Hardware Feedback limit in clockwise reached</Description>
<PrimitiveType>BOOLEAN</PrimitiveType>
<isSpecificationAttribute>
  <NameRepresentation>ClockWise Limit</NameRepresentation>
  <TypeRepresentation>STRING</TypeRepresentation>
  <isValueRequired>>false</isValueRequired>
  <Usage>Used to compute if the device has reached the limit in the ClockWise
direction</Usage>
  <DependentAttributes/>
  <Constraints>Must be a DI</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>HFCCW</AttributeName>
  <Meaning>Hardware Feedback CounterClockWise</Meaning>
  <Description>Hardware Feedback limit in CounterClocWise reached</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>CounterClockWise Limit</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Used to compute if the device has reached the limit in the CounterClockWise
direction</Usage>
    <DependentAttributes/>
    <Constraints>Must be a DI</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>IOError</AttributeName>
  <Meaning>Input/Output Error</Meaning>
  <Description>IOError state in any of the dependant objects or the PLC channel assigned to the
object</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>IOSimu</AttributeName>
  <Meaning>Input/Output Simulated</Meaning>
  <Description>Any of the dependant objects is in Forced or Manual Mode</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AIB</AttributeName>
  <Meaning>Alarm Blocked</Meaning>

```

<Description>Alarm Blocked: Any of the device dependant alarm objects has been blocked by the operator</Description>

<PrimitiveType>BOOLEAN</PrimitiveType>

</Attribute>

</AttributeFamily>

<AttributeFamily>

<AttributeFamilyName>FEDeviceOutputs</AttributeFamilyName>

<UserExpandable>>true</UserExpandable>

<Attribute>

<AttributeName>StsReg01</AttributeName>

<Meaning>Status Register 1</Meaning>

<Description>Status Register 1</Description>

<isEventAttribute>>true</isEventAttribute>

<isCommunicated>>true</isCommunicated>

<PrimitiveType>WORD</PrimitiveType>

<Attribute>

<AttributeName>AuMoSt</AttributeName>

<Meaning>Auto Mode Status</Meaning>

<Description>Current status of the Auto Mode</Description>

<PrimitiveType>BIT1</PrimitiveType>

<BitPosition>2</BitPosition>

</Attribute>

<Attribute>

<AttributeName>MMoSt</AttributeName>

<Meaning>Manual Mode Status</Meaning>

<Description>Current status of the Manual Mode</Description>

<PrimitiveType>BIT1</PrimitiveType>

<BitPosition>3</BitPosition>

</Attribute>

<Attribute>

<AttributeName>FoMoSt</AttributeName>

<Meaning>Forced Mode Status</Meaning>

<Description>Current status of the Forced Mode.</Description>

<PrimitiveType>BIT1</PrimitiveType>

<BitPosition>4</BitPosition>

</Attribute>

<Attribute>

<AttributeName>IOErrorW</AttributeName>

<Meaning>Input/Output Error Warning</Meaning>

<Description>Current status of the IOError</Description>

<PrimitiveType>BIT1</PrimitiveType>

<BitPosition>6</BitPosition>

```

</Attribute>
<Attribute>
  <AttributeName>IOSimuW</AttributeName>
  <Meaning>Input/Output Simulated Warning</Meaning>
  <Description>Current status of the IOSimu</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>7</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>AuMRW</AttributeName>
  <Meaning>Auto Manual Request Warning Status.</Meaning>
  <Description>Auto and manual requests discrepancy when Manual/Forced mode
active.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>8</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>PosW</AttributeName>
  <Meaning>Position Warning</Meaning>
  <Description>There is discrepancy between the order status and the position status
according to Time Delay and Dead-band.</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>9</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>StartISt</AttributeName>
  <Meaning>Start Interlock Status</Meaning>
  <Description>Current status of the Start Interlock</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>10</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>TStopISt</AttributeName>
  <Meaning>Temporary Stop Interlock Status</Meaning>
  <Description>Current status of the Temporary Stop Interlock</Description>
  <PrimitiveType>BIT1</PrimitiveType>
  <BitPosition>11</BitPosition>
</Attribute>
<Attribute>
  <AttributeName>AlUnAck</AttributeName>
  <Meaning>Alarm UnAcknowledged</Meaning>
  <Description>Alarm UnAcknowledged: The alarm or at least one of the alarms associated to
the object is not acknowledged</Description>

```

```

    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>12</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AulhFoMoSt</AttributeName>
    <Meaning>Auto Inhibit Forced Mode Status</Meaning>
    <Description>Auto Inhibit Forced Mode status: Current status of the Auto Inhibit forced
mode.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>13</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AlSt</AttributeName>
    <Meaning>Alarm Status</Meaning>
    <Description>Alarm Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>14</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AulhMMoSt</AttributeName>
    <Meaning>Auto Inhibit Manual Mode Status</Meaning>
    <Description>Auto Inhibit Manual Mode Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>15</BitPosition>
</Attribute>
</Attribute>
<Attribute>
    <AttributeName>StsReg02</AttributeName>
    <Meaning>Status Register 2</Meaning>
    <Description>Status Register 2</Description>
    <isEventAttribute>true</isEventAttribute>
    <isCommunicated>true</isCommunicated>
    <PrimitiveType>WORD</PrimitiveType>
<Attribute>
    <AttributeName>PosModeSt</AttributeName>
    <Meaning>Positioning Mode Status</Meaning>
    <Description>The device is on the positioning Mode.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>0</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>RefSMoSt</AttributeName>

```

```

    <Meaning>Reference Search Mode Status</Meaning>
    <Description>The device is in the reference Search Mode Status. </Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>1</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MovingSt</AttributeName>
    <Meaning>Moving Status</Meaning>
    <Description>The device is emitting pulses in order to move a motor. </Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>2</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>RefSearchNeededSt</AttributeName>
    <Meaning>Reference Search Needed</Meaning>
    <Description>The device need to perform a Reference Search.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>3</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>ErrorJobSt</AttributeName>
    <Meaning>Error Job Status</Meaning>
    <Description>The device has rejected the work sent.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>4</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>HFCWSt</AttributeName>
    <Meaning>Hardware Feedback ClockWise Status</Meaning>
    <Description>The Hardware Feedback for the ClockWise Limit was activated.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>5</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>HFCCWSt</AttributeName>
    <Meaning>Hardware Feedback CounterClockWise Status</Meaning>
    <Description>The Hardware Feedback for the CounterClockWise Limit was
activated.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>6</BitPosition>
</Attribute>
<Attribute>

```



```

    <AttributeName>MovCWSt</AttributeName>
    <Meaning>Moving ClockWise Status</Meaning>
    <Description>The Motor is moving in ClockWise direction.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>8</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>MovCCWSt</AttributeName>
    <Meaning>Moving CounterClockWise Direction</Meaning>
    <Description>The Motor is moving in CounterClockWise direction</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>9</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>FuStopISt</AttributeName>
    <Meaning>Full Stop Interlock Status</Meaning>
    <Description>Full Stop Interlock Status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>10</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>EnRstartSt</AttributeName>
    <Meaning>Enable Restart Status</Meaning>
    <Description>Manual Restart after full stop status</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>11</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>SoftLDSt</AttributeName>
    <Meaning>Software Local Mode Status</Meaning>
    <Description>Current status of the Software Local Mode.</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>12</BitPosition>
</Attribute>
<Attribute>
    <AttributeName>AlBW</AttributeName>
    <Meaning>Alarm Blocked Warning</Meaning>
    <Description>When true, the alarm or any of the device dependant alarm objects have been
blocked by the operator</Description>
    <PrimitiveType>BIT1</PrimitiveType>
    <BitPosition>13</BitPosition>
</Attribute>

```

```

</Attribute>
<Attribute>
  <AttributeName>CWRef</AttributeName>
  <Meaning>ClockWise as Reference</Meaning>
  <Description>Use the ClockWise LimitSwitch as a Reference Switch. Must be a
DO.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>ClockWise to Reference Switch</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Use the ClockWise Limit Switch as a Reference Switch in old equipment that don't
allow to do it directly.</Usage>
    <DependentAttributes/>
    <Constraints>Must be a DO.</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>SimRef</AttributeName>
  <Meaning>Simulate Reference Switch</Meaning>
  <Description>Simulate Reference Switch. Must be a DO.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Simulated Reference Switch</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Used to simulate Reference Switch in equipment that doesn't have it.</Usage>
    <DependentAttributes/>
    <Constraints>Must be a DO.</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DrvEn</AttributeName>
  <Meaning>Driver Enable</Meaning>
  <Description>Enables the external Power Unit Driver for the motor.</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Driver Enable</NameRepresentation>
    <TypeRepresentation>STRING</TypeRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Used to power off/on the Driver for doing the reference search without
moving.</Usage>
    <DependentAttributes/>

```

```

    <Constraints>Must be a DO.</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>PosSt</AttributeName>
  <Meaning>Position Status</Meaning>
  <Description>Current Position</Description>
  <isCommunicated>true</isCommunicated>
  <isArchived>true</isArchived>
  <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>SpdSt</AttributeName>
  <Meaning>Speed Status</Meaning>
  <Description>Current Speed</Description>
  <isCommunicated>true</isCommunicated>
  <isArchived>true</isArchived>
  <PrimitiveType>SHORTINT16</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuPosRSt</AttributeName>
  <Meaning>Auto Position Request Status</Meaning>
  <Description>Current status of the Auto Position Request</Description>
  <isCommunicated>true</isCommunicated>
  <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>AuSpdRSt</AttributeName>
  <Meaning>Auto Position Speed Status</Meaning>
  <Description>Current status of the Auto Speed Request</Description>
  <isCommunicated>true</isCommunicated>
  <PrimitiveType>SHORTINT16</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>MPosRSt</AttributeName>
  <Meaning>Manual Position Request Status</Meaning>
  <Description>Current status of the Manual Position Request</Description>
  <isCommunicated>true</isCommunicated>
  <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>MSpdRSt</AttributeName>

```

```

    <Meaning>Manual Speed Request Status</Meaning>
    <Description>Current status of the Manual Speed Request</Description>
    <isCommunicated>true</isCommunicated>
    <PrimitiveType>SHORTINT16</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>PosRSt</AttributeName>
    <Meaning>Position Request Status</Meaning>
    <Description>Position Request Status</Description>
    <isCommunicated>true</isCommunicated>
    <isArchived>true</isArchived>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>SpdRSt</AttributeName>
    <Meaning>Speed Request Status</Meaning>
    <Description>Speed Request Status</Description>
    <isCommunicated>true</isCommunicated>
    <isArchived>true</isArchived>
    <PrimitiveType>SHORTINT16</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>HFPosSt</AttributeName>
    <Meaning>Hardware Feedback Position Status</Meaning>
    <Description>Current Position given by the external Hardware.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>PMinRanSt</AttributeName>
    <Meaning>Parameter Minimum Range Status</Meaning>
    <Description>Minimum Range that the device can reach.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>PMaxRanSt</AttributeName>
    <Meaning>Parameter Maximum Range Status</Meaning>
    <Description>Maximum Range that the device can reach.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>PScaSt</AttributeName>
    <Meaning>Parameter Maximum Range Status</Meaning>

```

```

    <Description>Number of Steps to move for one engineering unit.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>PosModeSt</AttributeName>
    <Meaning>Positioning Mode Status</Meaning>
    <Description>The device is on the positioning Mode.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>RefsModeSt</AttributeName>
    <Meaning>Reference Search Mode Status</Meaning>
    <Description>The device is in the reference Search Mode Status. </Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>HFCWSt</AttributeName>
    <Meaning>Hardware Feedback ClockWise Status</Meaning>
    <Description>The Hardware Feedback for the ClockWise Limit was activated.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>HFCCWSt</AttributeName>
    <Meaning>Hardware Feedback CounterClockWise Status</Meaning>
    <Description>The Hardware Feedback for the CounterClockWise Limit was
activated.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>MovCWSt</AttributeName>
    <Meaning>Moving ClockWise Status</Meaning>
    <Description>The Motor is moving in ClockWise direction.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>MovCCWSt</AttributeName>
    <Meaning>Moving CounterClockWise Direction</Meaning>
    <Description>The Motor is moving in CounterClockWise direction</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuMoSt</AttributeName>

```

```

    <Meaning>Auto Mode Status</Meaning>
    <Description>Current Status of the Auto Mode</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>MMoSt</AttributeName>
    <Meaning>Manual Mode Status</Meaning>
    <Description>Current status of the Manual Mode request</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>FoMoSt</AttributeName>
    <Meaning>Forced Mode Status</Meaning>
    <Description>Current status of the Forced Mode.</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>SoftLDSt</AttributeName>
    <Meaning>Software Local Drive Status</Meaning>
    <Description>Current status of the Sotware Local mode request</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>IOErrorW</AttributeName>
    <Meaning>Input/Output Error Warning</Meaning>
    <Description>Current status of the IOError</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>IOSimuW</AttributeName>
    <Meaning>Inpout/Output Simulated Warning</Meaning>
    <Description>Current status of the IOSimu</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AuMRW</AttributeName>
    <Meaning>Auto Manual Request Warning</Meaning>
    <Description>Auto and manual requests discrepancy when Manual/Forced mode
active</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>

```

```

    <AttributeName>StartISt</AttributeName>
    <Meaning>Start Interlock Status</Meaning>
    <Description>Current status of StartI</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>TStopISt</AttributeName>
    <Meaning>Temporary Stop Interlock Status</Meaning>
    <Description>Current status of TStopI</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>FuStopISt</AttributeName>
    <Meaning>Full Stop Interlock Status</Meaning>
    <Description>Full Stop Interlock Status</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AlUnAck</AttributeName>
    <Meaning>Alarm UnAcknowledged</Meaning>
    <Description>Alarm UnAcknowledged: The alarm or at least one of the alarms associated to
the object is not acknowledged</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AlBW</AttributeName>
    <Meaning>Alarm Blocked Warning</Meaning>
    <Description>When true, the alarm or any of the device dependant alarm objects have been
blocked by the operator</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>EnRStartSt</AttributeName>
    <Meaning>Enable Restart Status</Meaning>
    <Description>Manual Restart after full stop status possible</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>
<Attribute>
    <AttributeName>AlSt</AttributeName>
    <Meaning>Alarm Status</Meaning>
    <Description>Alarm Status</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
</Attribute>

```

```

</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceIOConfig</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>FEType</AttributeName>
    <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>FE Encoding Type</NameRepresentation>
      <TypeRepresentation>STRING</TypeRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
      <DependentAttributes>FEChannel.InterfaceParamX (where X=1-10)</DependentAttributes>
      <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>FEChannel</AttributeName>
    <Description>Indicates how to map the acquisition of the information from the field I/O
interface.</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
    <Attribute>
      <AttributeName>InterfaceParam1</AttributeName>
      <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
      <PrimitiveType>STRING</PrimitiveType>
      <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
        <DependentAttributes>FE Encoding Type</DependentAttributes>
        <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
      </isSpecificationAttribute>
    </Attribute>
  </Attribute>

```



```

    <AttributeName>InterfaceParam2</AttributeName>
    <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
        <DependentAttributes>FE Encoding Type</DependentAttributes>
        <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>InterfaceParam3</AttributeName>
    <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
        <DependentAttributes>FE Encoding Type</DependentAttributes>
        <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>InterfaceParam4</AttributeName>
    <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
        <DependentAttributes>FE Encoding Type</DependentAttributes>

```

```

    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam5</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam6</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam7</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>

```

```

    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam8</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam9</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam10</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.

```

Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Usage>

<DependentAttributes>FE Encoding Type</DependentAttributes>

<Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Constraints>

</isSpecificationAttribute>

</Attribute>

</Attribute>

</AttributeFamily>

<AttributeFamily>

<AttributeFamilyName>SCADADeviceGraphics</AttributeFamilyName>

<UserExpandable>>true</UserExpandable>

<Attribute>

<AttributeName>PosStUnit</AttributeName>

<Description>Unit of the device to be displayed in SCADA</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Unit</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage/>

<DependentAttributes/>

<Constraints>In principle there is no limit to the number of characters used, however a long name may result in display issues at the SCADA level.

Forbidden characters: *[: ""@ #\$^&*?!.,;=+~(){}<>|]</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>PosStFormat</AttributeName>

<Description>Format of the value to be displayed in SCADA</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Format</NameRepresentation>

<isValueRequired>>true</isValueRequired>

<Usage>Example: use format #.## to display value to 2 decimal places. To the left of the decimal point, the SCADA layer will display as many digits as required by the object value, therefore a single # is enough.</Usage>

<DependentAttributes/>

<Constraints/>

```

    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>WidgetType</AttributeName>
    <Description>Define the widget type to display in the SCADA device tree overview only.
The widget displayed in the process panel will be selected when the user creates the
panel.</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Widget Type</NameRepresentation>
        <isValueRequired>>true</isValueRequired>
        <PermittedValue>SteppingMotor</PermittedValue>
        <Usage/>
        <DependentAttributes/>
        <Constraints/>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Synoptic</AttributeName>
    <Description>Define link between the device and an existing synoptic where it appears. The
synoptic specified here can be accessed from the device right-click menu item
"Synoptic".</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>Specify the path of the .pnl file under the "\panel" directory of the PVSS
project.</Usage>
        <DependentAttributes/>
        <Constraints/>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>DiagnosticPanel</AttributeName>
    <Description>Define link between the device and an existing diagnostic panel for the device.
The panel specified here can be accessed from the device right-click menu item "Diagnostic" as well
as from the "Diagnostic" button on the object faceplate.</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Diagnostic</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>Specify the path of the .pnl file under the "\panel" directory of the PVSS project
</Usage>
        <DependentAttributes/>

```

```

    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>WWWLink</AttributeName>
  <Description>Define link between the device and an existing web page (or pdf file, or other file
which can be opened with IE). The link can be accessed from the device right-click menu item "Info"
as well as from the "Info" button on the object faceplate.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>WWW Link</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADeviceFunctionals</AttributeFamilyName>
  <UserExpandable>>false</UserExpandable>
  <Attribute>
    <AttributeName>MaskEvent</AttributeName>
    <Description>If TRUE: the events of the device will be masked in SCADA and not displayed or
archived in the Event List.
An 'event' is defined as a bit change in StsReg01 or StsReg02</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Mask Event</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage/>
      <DependentAttributes/>
      <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>AccessControlDomain</AttributeName>
    <Description>Define Access Control on the device to an existing SCADA Domain
Forbidden characters: *[: ""@ # $ % ^ & amp; * ? ! ; = + ~ ( ) { } & lt; & gt; | ]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Access Control Domain</NameRepresentation>
      <isValueRequired>>false</isValueRequired>

```

```

    <Usage>This domain is used to grant access to this specific device. The domain specified for
this object will allow access to the object only to registered users on that domain</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>SCADADeviceClassificationTags</AttributeName>
    <Description>It defines the Domain, Nature and DeviceLinks for the SCADA
visualization</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
    <Attribute>
        <AttributeName>Domain</AttributeName>
        <Description>Domain of the device. If empty, the domain will be the name of the application
Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
        <PrimitiveType>STRING</PrimitiveType>
        <isSpecificationAttribute>
            <isValueRequired>>false</isValueRequired>
            <Usage>Domain is used to filter the devices in the alarm list or in the device tree
overview</Usage>
            <DependentAttributes/>
            <Constraints>Forbidden characters: *[:
""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
            </isSpecificationAttribute>
        </Attribute>
    </Attribute>
    <Attribute>
        <AttributeName>Nature</AttributeName>
        <Description>Nature of the device. If empty, the nature will be the type of the device
Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
        <PrimitiveType>STRING</PrimitiveType>
        <isSpecificationAttribute>
            <isValueRequired>>false</isValueRequired>
            <Usage>Nature is used to filter the devices in the alarm list or in the device tree
overview</Usage>
            <DependentAttributes/>
            <Constraints>Forbidden characters: *[:
""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
            </isSpecificationAttribute>
        </Attribute>
    </Attribute>
    <AttributeName>DeviceLinks</AttributeName>
    <Description>Define links to other devices (separate device names with commas).

```

Note: it is not necessary to link to master, parents or children because these links are automatically created.

Forbidden characters: *[: "'@#%\$^&*?!;=+~(){}<>|]~/Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Device Links</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>Linked devices will be shown in the device right-click menu</Usage>

<DependentAttributes>Expert Name or Name.

The name of the device(s) specified here *must* correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified here corresponds to "Name".</DependentAttributes>

<Constraints>Forbidden characters: *[:

"'@#%\$^&*?!;=+~(){}<>|]~/Constraints>

</isSpecificationAttribute>

</Attribute>

</Attribute>

</AttributeFamily>

<AttributeFamily>

<AttributeFamilyName>SCADADeviceDataArchiving</AttributeFamilyName>

<UserExpandable>>true</UserExpandable>

<Attribute>

<AttributeName>ArchiveMode</AttributeName>

<Description>Archive mode of the object engineering values. Archive if:

Old/New Comparison: value changes

Time: value changes after Time Filter

Deadband: value < or > deadband

AND: at least one of the conditions is fulfilled

OR: both conditions are fulfilled</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Archive Mode</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<PermittedValue>No</PermittedValue>

<PermittedValue>Deadband</PermittedValue>

<PermittedValue>Time</PermittedValue>

<PermittedValue>Deadband AND Time</PermittedValue>

<PermittedValue>Deadband OR Time</PermittedValue>

<PermittedValue>Old/New Comparison</PermittedValue>

<PermittedValue>Old/New Comparison AND Time</PermittedValue>

<PermittedValue>Old/New Comparison OR Time</PermittedValue>

<Usage>This archive mode is used to archive data in the PVSS database</Usage>

<DependentAttributes>If "Time" is selected, "Time Filter (s)" must be filled

If "Deadband" is selected: "Deadband Type" and "Deadband Value" must be filled.</DependentAttributes>

```

    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>TimeFilter</AttributeName>
  <Description>Time filter for the SCADA archiving of the engineering values of the object. Must be positive.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Time Filter (s)</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes>Valid if "Time" has been selected as Archive Mode</DependentAttributes>
    <Constraints>Must be positive</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DeadbandType</AttributeName>
  <Description>Deadband type (Relative or Absolute) of the deadband for the SCADA archiving of the engineering values of the object</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Deadband Type</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <PermittedValue>Relative</PermittedValue>
    <PermittedValue>Absolute</PermittedValue>
    <Usage>The value is archived if the difference between the latest archived value and the actual value exceeds, either:
    - if 'Absolute': the "Deadband Value"
    - if 'Relative': the "Deadband Value" as a percent of the latest archived value</Usage>
    <DependentAttributes>Valid if "Deadband" has been selected as Archive Mode</DependentAttributes>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DeadbandValue</AttributeName>
  <Description>Deadband value for the SCADA archiving of the engineering values of the object Must be positive and larger than the deadband specified for the driver data smoothing (Driver deadband)</Description>

```

```

<PrimitiveType>FLOAT32</PrimitiveType>
<isSpecificationAttribute>
  <NameRepresentation>Deadband Value</NameRepresentation>
  <isValueRequired>>false</isValueRequired>
  <Usage/>
  <DependentAttributes>Valid if "Deadband" has been selected as Archive
Mode</DependentAttributes>
  <Constraints>Must be positive and larger than the deadband specified for the driver data
smoothing (Driver deadband)</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>BooleanArch</AttributeName>
  <Description>Name of the Boolean archive
Forbidden characters: *[: ""@`#$%^&*?!.,;=+~(){}&lt;&gt;|]</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Boolean Archive</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>The boolean values of the device will be archived in the specified PVSS database.
The archive must be created in PVSS before importing the object.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[:
""@`#$%^&*?!.,;=+~(){}&lt;&gt;|]</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>AnalogArch</AttributeName>
  <Description>Name of the analog archive
Forbidden characters: *[: ""@`#$%^&*?!.,;=+~(){}&lt;&gt;|]</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Analog Archive</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>The analog values of the device will be archived in the specified PVSS database. The
archive must be created in PVSS before importing the object.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[:
""@`#$%^&*?!.,;=+~(){}&lt;&gt;|]</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>EventArch</AttributeName>

```

```

    <Description>Name of the event archive
Forbidden characters: *[: "'@`#%^^&*?!.,;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Event Archive</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>The events generated by the device will be archived in the specified PVSS database.
The archive must be created in PVSS before importing the object.</Usage>
        <DependentAttributes/>
        <Constraints>Forbidden characters: *[:
"'@`#%^^&*?!.,;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>SCADADriverDataSmoothing</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>DeadbandType</AttributeName>
        <Description>Deadband type (None, Relative, Absolute or Old/New) for the SCADA driver data
smoothing (Driver deadband)</Description>
        <PrimitiveType>STRING</PrimitiveType>
        <isSpecificationAttribute>
            <NameRepresentation>Deadband Type</NameRepresentation>
            <isValueRequired>>true</isValueRequired>
            <PermittedValue>No</PermittedValue>
            <PermittedValue>Relative</PermittedValue>
            <PermittedValue>Absolute</PermittedValue>
            <PermittedValue>Old/New</PermittedValue>
            <Usage>Used for the online display in SCADA</Usage>
            <DependentAttributes/>
            <Constraints/>
        </isSpecificationAttribute>
    </Attribute>
    <Attribute>
        <AttributeName>DeadbandValue</AttributeName>
        <Description>Deadband value for the SCADA driver data smoothing
Must be positive and smaller than the deadband specified for the archiving</Description>
        <PrimitiveType>FLOAT32</PrimitiveType>
        <isSpecificationAttribute>
            <NameRepresentation>Deadband Value</NameRepresentation>
            <isValueRequired>>false</isValueRequired>
            <Usage>Used for the online display in SCADA</Usage>

```

```

    <DependentAttributes/>
    <Constraints>Must be positive and smaller than the deadband specified for the
archiving</Constraints>
  </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>LogicDeviceDefinitions</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>MasterDevice</AttributeName>
    <Description>Master of the device (relative to the hierarchy of dependent
objects).</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Master</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>The master will give automatic requests to the device. The master object will
appear in the list of "Device Links" in the device right-click menu.</Usage>
      <DependentAttributes/>
      <Constraints>Must be a single PCO for field objects, controller, or PCO.
Must be PCO or field objects for alarms (several masters are allowed in the case of multiple alarms,
separated by commas or spaces).</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>ExternalMaster</AttributeName>
    <Description>Master of the device if located in another PLC for WinCCOA.</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>External Master</NameRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>The external master will give automatic requests to the device from another PLC. To
be specified only if master is empty.</Usage>
      <DependentAttributes/>
      <Constraints>Must be a single PCO for field objects, controller, or PCO. </Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>CustomLogicParameters</AttributeName>
    <Description>User defined meaning, used by the logic generators.</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
  </Attribute>

```

```

    <AttributeName>Parameter1</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: "$&lt;&gt;' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
        <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
        <Constraints>Forbidden characters: "$&lt;&gt;' </Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter2</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: "$&lt;&gt;' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
        <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
        <Constraints>Forbidden characters: "$&lt;&gt;' </Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter3</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: "$&lt;&gt;' </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
        <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
        <Constraints>Forbidden characters: "$&lt;&gt;' </Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter4</AttributeName>

```

```

    <Description>Parameter to be used in the logic templates
Forbidden characters: "$&lt;&gt;" </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
        <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
        <Constraints>Forbidden characters: "$&lt;&gt;" </Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter5</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: "$&lt;&gt;" </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
        <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
        <Constraints>Forbidden characters: "$&lt;&gt;" </Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter6</AttributeName>
    <Description>Parameter to be used in the logic templates
Forbidden characters: "$&lt;&gt;" </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
        <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
        <Constraints>Forbidden characters: "$&lt;&gt;" </Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Parameter7</AttributeName>
    <Description>Parameter to be used in the logic templates

```

Forbidden characters: "\$<>" </Description>
 <PrimitiveType>STRING</PrimitiveType>
 <isSpecificationAttribute>
 <isValueRequired>>false</isValueRequired>
 <Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
 <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User Template"? file</DependentAttributes>
 <Constraints>Forbidden characters: "\$<>" </Constraints>
 </isSpecificationAttribute>
 </Attribute>

<Attribute>
 <AttributeName>Parameter8</AttributeName>
 <Description>Parameter to be used in the logic templates

Forbidden characters: "\$<>" </Description>
 <PrimitiveType>STRING</PrimitiveType>
 <isSpecificationAttribute>
 <isValueRequired>>false</isValueRequired>
 <Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
 <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User Template"? file</DependentAttributes>
 <Constraints>Forbidden characters: "\$<>" </Constraints>
 </isSpecificationAttribute>
 </Attribute>

<Attribute>
 <AttributeName>Parameter9</AttributeName>
 <Description>Parameter to be used in the logic templates

Forbidden characters: "\$<>" </Description>
 <PrimitiveType>STRING</PrimitiveType>
 <isSpecificationAttribute>
 <isValueRequired>>false</isValueRequired>
 <Usage>This parameter can be used in user logic templates to define specific logic for the device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
 <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User Template"? file</DependentAttributes>
 <Constraints>Forbidden characters: "\$<>" </Constraints>
 </isSpecificationAttribute>
 </Attribute>

<Attribute>
 <AttributeName>Parameter10</AttributeName>
 <Description>Parameter to be used in the logic templates

Forbidden characters: "\$<>" </Description>

```

    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>This parameter can be used in user logic templates to define specific logic for the
device. If no "CustomLogicSections.* User Template"?, parameter is ignored.</Usage>
        <DependentAttributes>Parameter will be used in specified "CustomLogicSections.* User
Template"? file</DependentAttributes>
        <Constraints>Forbidden characters: '$&lt;&gt;' </Constraints>
    </isSpecificationAttribute>
</Attribute>
</Attribute>
<Attribute>
    <AttributeName>CustomLogicSections</AttributeName>
    <Description>If specified, these sections will override the default logic sections (UNICOS
provided).</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage/>
        <DependentAttributes/>
        <Constraints/>
    </isSpecificationAttribute>
    <Attribute>
        <AttributeName>DL</AttributeName>
        <Description>Define user template for the Dependent Logic</Description>
        <PrimitiveType>STRING</PrimitiveType>
        <isSpecificationAttribute>
            <NameRepresentation>DL User Template</NameRepresentation>
            <isValueRequired>>false</isValueRequired>
            <Usage>Specify path of the python script located under the "UserSpecific"
directory</Usage>
            <DependentAttributes>CustomLogicParameters.ParameterX (where X=1-
10)</DependentAttributes>
            <Constraints/>
        </isSpecificationAttribute>
    </Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>DeviceTechnical</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
</AttributeFamily>
<AttributeFamily>

```



```

<AttributeFamilyName>TargetDeviceInformation</AttributeFamilyName>
<UserExpandable>>true</UserExpandable>
<Attribute>
  <AttributeName>Target</AttributeName>
  <Description>SIEMENS</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <DefaultValue>Siemens</DefaultValue>
  <Attribute>
    <AttributeName>RepresentationName</AttributeName>
    <Description>It's the name used ...</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <DefaultValue>STPMOT</DefaultValue>
  </Attribute>
  <Attribute>
    <AttributeName>Optimized</AttributeName>
    <Description>Is this object an optimized Object?</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <DefaultValue>>false</DefaultValue>
  </Attribute>
  <Attribute>
    <AttributeName>LimitSize</AttributeName>
    <Description>Maximun number of instances allowed</Description>
    <PrimitiveType>INT32</PrimitiveType>
    <DefaultValue>250</DefaultValue>
  </Attribute>
  <Attribute>
    <AttributeName>FastInterlock</AttributeName>
    <Description>Is this object a fast interlock object?</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <DefaultValue>>false</DefaultValue>
  </Attribute>
</Attribute>
</AttributeFamily>
</UNICOSMetaModel>

```

2.23. WordParameterDeviceType.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<UNICOSMetaModel xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="..\unicos\UNICOSMetaModel.xsd">
```

```
  <Information>
    <Package>${devicePackageName}</Package>
    <Name>WordParameter</Name>
    <ObjectTypeFamily>InterfaceObjectFamily</ObjectTypeFamily>
    <Description>Word Parameter Device</Description>
    <Version>${LastChangedRevision: 170110} </Version>
  </Information>
  <AttributeFamily>
    <AttributeFamilyName>DeviceIdentification</AttributeFamilyName>
    <UserExpandable>>false</UserExpandable>
    <Attribute>
      <AttributeName>Name</AttributeName>
      <Description>Name of the device. It must be unique.
```

Max length:

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: [:"'@`#\$%^&*?!;=+~(){}<>|]-., double underscore, and page break</Description>

```
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>true</isValueRequired>
      <Usage>Name displayed at the SCADA level if "Expert Name" is not specified.
```

This name will appear in the datapoints created in the SCADA layer.</Usage>

```
    <DependentAttributes>Device Links.
```

The name of the device(s) specified in Device Links *must* correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to "Name".</DependentAttributes>

```
    <Constraints>Max length:
```

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: [:"'@`#\$%^&*?!;=+~(){}<>|]-., double underscore, and page break

Name must be unique.</Constraints>

```
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>ExpertName</AttributeName>
  <Description>Name of the device displayed at the SCADA level. It must be unique.
```

Forbidden characters: *[: "'@`#\$%^&*?!;=+~(){}<>|] </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Expert Name</NameRepresentation>

<TypeRepresentation>STRING</TypeRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>It does not affect to the datapoints names in the SCADA layer.</Usage>

<DependentAttributes>Device Links.

The name of the device(s) specified in Device Links **must** correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to "Name".</DependentAttributes>

<Constraints>In principle there is no limit to the number of characters used, however a long name may result in display issues at the SCADA level.

Forbidden characters: *[: "'@`#\$%^&*?!;=+~(){}<>|]

Expert Name must be unique.</Constraints>

</isSpecificationAttribute>

</Attribute>

</AttributeFamily>

<AttributeFamily>

<AttributeFamilyName>DeviceDocumentation</AttributeFamilyName>

<UserExpandable>>true</UserExpandable>

<Attribute>

<AttributeName>DeviceDescription</AttributeName>

<Description>Description of the device. </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Description</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>Used in the SCADA layer in the device faceplate</Usage>

<DependentAttributes/>

<Constraints>In principle there is no limit to the number of characters used, however a long description may result in display issues at the SCADA level.

Forbidden characters: ;</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Remarks</AttributeName>

<Description>Field used to add relevant information about the device. </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

```

    <Usage>This information is not used in the generation process, it remains only at the
specification level for documentation purposes.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: ;</Constraints>
  </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceParameters</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>PMinRan</AttributeName>
    <Meaning>Parameter Minimum Range</Meaning>
    <Description>Minimum engineering value of the device.</Description>
    <PrimitiveType>WORD</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Range Min</NameRepresentation>
      <isValueRequired>>true</isValueRequired>
      <Usage>A linear conversion is performed between the raw range and engineering
range.</Usage>
      <DependentAttributes/>
      <Constraints>The value specified here must be consistent with the format defined in the
field "Format".</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>PMaxRan</AttributeName>
    <Meaning>Parameter Maximum Range</Meaning>
    <Description>Maximum engineering value of the device.</Description>
    <PrimitiveType>WORD</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Range Max</NameRepresentation>
      <isValueRequired>>true</isValueRequired>
      <Usage>A linear conversion is performed between the raw range and engineering
range.</Usage>
      <DependentAttributes/>
      <Constraints>The value specified here must be consistent with the format defined in the
field "Format".</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>DefaultValue</AttributeName>
    <Meaning>Default value</Meaning>

```

```

<Description>Default value for the parameter </Description>
<PrimitiveType>WORD</PrimitiveType>
<isSpecificationAttribute>
  <NameRepresentation>Default Value</NameRepresentation>
  <isValueRequired>true</isValueRequired>
  <Usage>This is the default parameter value assigned into the PLC variable and in the SCADA
datapoint element. </Usage>
  <DependentAttributes/>
  <Constraints/>
</isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceManualRequests</AttributeFamilyName>
  <UserExpandable>true</UserExpandable>
  <Attribute>
    <AttributeName>ManReg01</AttributeName>
    <Meaning>Manual Register 1</Meaning>
    <Description>Manual Register 1</Description>
    <isCommunicated>true</isCommunicated>
    <PrimitiveType>WORD</PrimitiveType>
    <Attribute>
      <AttributeName>ArmRcp</AttributeName>
      <Meaning>Armed Recipe</Meaning>
      <Description>A Recipe is Armed : New values are available at the input</Description>
      <PrimitiveType>BIT1</PrimitiveType>
      <BitPosition>2</BitPosition>
    </Attribute>
    <Attribute>
      <AttributeName>ActRcp</AttributeName>
      <Meaning>Activate Recipe</Meaning>
      <Description>Activate Recipe : All new signals at the inputs are activated.</Description>
      <PrimitiveType>BIT1</PrimitiveType>
      <BitPosition>3</BitPosition>
    </Attribute>
    <Attribute>
      <AttributeName>MNewMR</AttributeName>
      <Meaning>Manual New Manual Request</Meaning>
      <Description>Manual New Manual Request : A New Manual Request is
available</Description>
      <PrimitiveType>BIT1</PrimitiveType>
      <BitPosition>6</BitPosition>
    </Attribute>
  </Attribute>

```

```

</Attribute>
<Attribute>
  <AttributeName>MPosR</AttributeName>
  <Meaning>Manual Position Request</Meaning>
  <Description>Manual Position Request: Value of the position requested by
operator</Description>
  <isCommunicated>>true</isCommunicated>
  <PrimitiveType>WORD</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceOutputs</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>StsReg01</AttributeName>
    <Meaning>Status Register 1</Meaning>
    <Description>Status Register 1</Description>
    <isEventAttribute>>true</isEventAttribute>
    <isCommunicated>>true</isCommunicated>
    <PrimitiveType>WORD</PrimitiveType>
    <Attribute>
      <AttributeName>ArmRcpSt</AttributeName>
      <Meaning>Armed Recipe Status</Meaning>
      <Description>A Recipe is Armed : New values are available at the input</Description>
      <PrimitiveType>BIT1</PrimitiveType>
      <BitPosition>3</BitPosition>
    </Attribute>
  </Attribute>
</Attribute>
<Attribute>
  <AttributeName>PosSt</AttributeName>
  <Meaning>Position status</Meaning>
  <Description>Position Status</Description>
  <isCommunicated>>true</isCommunicated>
  <isArchived>>true</isArchived>
  <PrimitiveType>WORD</PrimitiveType>
</Attribute>
<Attribute>
  <AttributeName>MPosRSt</AttributeName>
  <Meaning>Manual Position Request Status</Meaning>
  <Description>Manual Position request status</Description>
  <isCommunicated>>true</isCommunicated>
  <PrimitiveType>WORD</PrimitiveType>

```

```

    </Attribute>
  </AttributeFamily>
  <AttributeFamily>
    <AttributeFamilyName>FEDeviceIOConfig</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
      <AttributeName>FEType</AttributeName>
      <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
      <PrimitiveType>STRING</PrimitiveType>
      <isSpecificationAttribute>
        <NameRepresentation>FE Encoding Type</NameRepresentation>
        <TypeRepresentation>STRING</TypeRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
        <DependentAttributes>FEChannel.InterfaceParamX (where X=1-10)</DependentAttributes>
        <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
      </isSpecificationAttribute>
    </Attribute>
    <Attribute>
      <AttributeName>FEChannel</AttributeName>
      <Description>Indicates how to map the acquisition of the information from the field I/O
interface.</Description>
      <PrimitiveType>STRUCT</PrimitiveType>
      <Attribute>
        <AttributeName>InterfaceParam1</AttributeName>
        <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
        <PrimitiveType>STRING</PrimitiveType>
        <isSpecificationAttribute>
          <isValueRequired>>false</isValueRequired>
          <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
          <DependentAttributes>FE Encoding Type</DependentAttributes>
          <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
        </isSpecificationAttribute>
      </Attribute>
    </Attribute>
  </AttributeFamily>

```

```

<Attribute>
  <AttributeName>InterfaceParam2</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam3</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam4</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>

```



```

    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam5</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam6</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam7</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>

```

```

    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam8</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam9</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and
Schneider documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam10</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.

```

Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Usage>

<DependentAttributes>FE Encoding Type</DependentAttributes>

<Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Constraints>

</isSpecificationAttribute>

</Attribute>

</Attribute>

</AttributeFamily>

<AttributeFamily>

<AttributeFamilyName>SCADADeviceGraphics</AttributeFamilyName>

<UserExpandable>>true</UserExpandable>

<Attribute>

<AttributeName>PosStUnit</AttributeName>

<Description>Unit of the device to be displayed in SCADA</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Unit</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage/>

<DependentAttributes/>

<Constraints>In principle there is no limit to the number of characters used, however a long name may result in display issues at the SCADA level.

Forbidden characters: *[: "'@ # \$ ^ & amp; * ? ! , ; = + ~ () { } & lt; & gt; |]</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>PosStFormat</AttributeName>

<Description>Format of the value to be displayed in SCADA. Supported formats:

(fixed number of decimal places, in this case 2),

EXP or xEXP (exponential, 3 or x digits after '!'),

xD or xd (fixed digit format, x=number of digits, e.g.: 3D=0.01, 12.0, 123)</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Format</NameRepresentation>

<isValueRequired>>true</isValueRequired>

<Usage>Example: use format #.## to display value to 2 decimal places. To the left of the decimal point, the SCADA layer will display as many digits as required by the object value, therefore a single # is enough.</Usage>

<DependentAttributes/>

<Constraints/>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>WidgetType</AttributeName>

<Description>Define the widget type to display in the SCADA device tree overview only.

The widget displayed in the process panel will be selected when the user creates the panel.</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Widget Type</NameRepresentation>

<isValueRequired>>true</isValueRequired>

<isCaseSensitive>>true</isCaseSensitive>

<PermittedValue>WordParameter</PermittedValue>

<PermittedValue>WordParameterStat</PermittedValue>

<Usage/>

<DependentAttributes/>

<Constraints/>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Pattern</AttributeName>

<Description>List of individual messages associated with the value of the object.

Strict format: "Nbr=Message,Nbr=Message". The message CAN contain a space.</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>When not empty, the message corresponding to the value is displayed on the panel.</Usage>

<DependentAttributes/>

<Constraints>Strict format: "Nbr=Message,Nbr=Message". The message CAN contain a space.</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Synoptic</AttributeName>

<Description>Define link between the device and an existing synoptic where it appears. The synoptic specified here can be accessed from the device right-click menu item "Synoptic".</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>Specify the path of the .pnl file under the "\\panel" directory of the PVSS project.</Usage>

<DependentAttributes/>

<Constraints/>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>DiagnosticPanel</AttributeName>

<Description>Define link between the device and an existing diagnostic panel for the device. The panel specified here can be accessed from the device right-click menu item "Diagnostic" as well as from the "Diagnostic" button on the object faceplate.</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Diagnostic</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>Specify the path of the .pnl file under the "\\panel" directory of the PVSS project</Usage>

<DependentAttributes/>

<Constraints/>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>WWWLink</AttributeName>

<Description>Define link between the device and an existing web page (or pdf file, or other file which can be opened with IE). The link can be accessed from the device right-click menu item "Info" as well as from the "Info" button on the object faceplate.</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>WWW Link</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage/>

<DependentAttributes/>

<Constraints/>

</isSpecificationAttribute>

</Attribute>

</AttributeFamily>

<AttributeFamily>

<AttributeFamilyName>SCADADeviceFunctionals</AttributeFamilyName>

```

<UserExpandable>>false</UserExpandable>
<Attribute>
  <AttributeName>MaskEvent</AttributeName>
  <Description>If TRUE: the events of the device will be masked in SCADA and not displayed or archived in the Event List.
An 'event' is defined as a bit change in StsReg01 or StsReg02</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Mask Event</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>AccessControlDomain</AttributeName>
  <Description>Define Access Control on the device to an existing SCADA Domain
Forbidden characters: *[: ""@`#%^^&,*?!;=+~(){}&lt;&gt;|]</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Access Control Domain</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>This domain is used to grant access to this specific device. The domain specified for this object will allow access to the object only to registered users on that domain</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[: ""@`#%^^&,*?!;=+~(){}&lt;&gt;|]</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>SCADADeviceClassificationTags</AttributeName>
  <Description>It defines the Domain, Nature and DeviceLinks for the SCADA visualization</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <Attribute>
    <AttributeName>Domain</AttributeName>
    <Description>Domain of the device. If empty, the domain will be the name of the application
Forbidden characters: *[: ""@`#%^^&,*?!;=+~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>Domain is used to filter the devices in the alarm list or in the device tree overview</Usage>
    </isSpecificationAttribute>
  </Attribute>
</Attribute>

```

```

    <DependentAttributes/>
    <Constraints>Forbidden characters: *[:
"@`#$$%^&?*?!;=+~(){}&lt;&gt;|] </Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>Nature</AttributeName>
    <Description>Nature of the device. If empty, the nature will be the type of the device
Forbidden characters: *[: "@`#$$%^&?*?!;=+~(){}&lt;&gt;|] </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <isValueRequired>>false</isValueRequired>
        <Usage>Nature is used to filter the devices in the alarm list or in the device tree
overview</Usage>
        <DependentAttributes/>
        <Constraints>Forbidden characters: *[:
"@`#$$%^&?*?!;=+~(){}&lt;&gt;|] </Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>DeviceLinks</AttributeName>
    <Description>Define links to other devices (separate device names with commas).

```

Note: it is not necessary to link to master, parents or children because these links are automatically created.

```

Forbidden characters: *[: "@`#$$%^&?*?!;=+~(){}&lt;&gt;|] </Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Device Links</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>Linked devices will be shown in the device right-click menu</Usage>
        <DependentAttributes>Expert Name or Name.

```

The name of the device(s) specified here *must* correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified here corresponds to "Name".</DependentAttributes>

```

    <Constraints>Forbidden characters: *[:
"@`#$$%^&?*?!;=+~(){}&lt;&gt;|] </Constraints>
    </isSpecificationAttribute>
</Attribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>SCADADataArchiving</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>

```

```

<Attribute>
  <AttributeName>ArchiveMode</AttributeName>
  <Description>Archive mode of the object engineering values. Archive if:
Old/New Comparison: value changes
Time: value changes after Time Filter
AND: at least one of the conditions is fulfilled
OR: both conditions are fulfilled</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Archive Mode</NameRepresentation>
    <isValueRequired>>true</isValueRequired>
    <PermittedValue>No</PermittedValue>
    <PermittedValue>Time</PermittedValue>
    <PermittedValue>Old/New Comparison</PermittedValue>
    <PermittedValue>Old/New Comparison AND Time</PermittedValue>
    <PermittedValue>Old/New Comparison OR Time</PermittedValue>
    <Usage>This archive mode is used to archive data in the PVSS database</Usage>
    <DependentAttributes>If "Time" is selected, "Time Filter (s)" must be
filled.</DependentAttributes>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>TimeFilter</AttributeName>
  <Description>Time filter for the SCADA archiving of the engineering values of the object. Must
be positive.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Time Filter (s)</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes>Valid if "Time" has been selected as Archive
Mode</DependentAttributes>
    <Constraints>Must be positive</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>BooleanArch</AttributeName>
  <Description>Name of the Boolean archive
Forbidden characters: *[: "'@ # $ % ^ & amp; * ? ! , ; = + ~ ( ) { } & lt; & gt; | ]</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Boolean Archive</NameRepresentation>

```



```

        <isValueRequired>>false</isValueRequired>
        <Usage>The boolean values of the device will be archived in the specified PVSS database.
The archive must be created in PVSS before importing the object.</Usage>
        <DependentAttributes/>
        <Constraints>Forbidden characters: *[:
"@`#%^&*?!.,;+=~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>AnalogArch</AttributeName>
    <Description>Name of the analog archive
Forbidden characters: *[: "@`#%^&*?!.,;+=~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Analog Archive</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>The analog values of the device will be archived in the specified PVSS database. The
archive must be created in PVSS before importing the object.</Usage>
        <DependentAttributes/>
        <Constraints>Forbidden characters: *[:
"@`#%^&*?!.,;+=~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>EventArch</AttributeName>
    <Description>Name of the event archive
Forbidden characters: *[: "@`#%^&*?!.,;+=~(){}&lt;&gt;|]</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Event Archive</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>The events generated by the device will be archived in the specified PVSS database.
The archive must be created in PVSS before importing the object.</Usage>
        <DependentAttributes/>
        <Constraints>Forbidden characters: *[:
"@`#%^&*?!.,;+=~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>SCADADriverDataSmoothing</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
</Attribute>

```

```

    <AttributeName>DeadbandType</AttributeName>
    <Description>Deadband type (None, Relative, Absolute or Old/New) for the SCADA driver data
smoothing (Driver deadband)</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Deadband Type</NameRepresentation>
        <isValueRequired>>true</isValueRequired>
        <PermittedValue>No</PermittedValue>
        <PermittedValue>Relative</PermittedValue>
        <PermittedValue>Absolute</PermittedValue>
        <PermittedValue>Old/New</PermittedValue>
        <Usage>Used for the online display in SCADA</Usage>
        <DependentAttributes/>
        <Constraints/>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>DeadbandValue</AttributeName>
    <Description>Deadband value for the SCADA driver data smoothing
Must be positive and smaller than the deadband specified for the archiving</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Deadband Value</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>Used for the online display in SCADA</Usage>
        <DependentAttributes/>
        <Constraints>Must be positive and smaller than the deadband specified for the
archiving</Constraints>
    </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>SCADADeviceParameters</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>RecipeType</AttributeName>
        <Description>Recipies familie name</Description>
        <PrimitiveType>STRING</PrimitiveType>
    </Attribute>
    <Attribute>
        <AttributeName>RecipeInitName</AttributeName>
        <Description>Name of the collection of defaults values associated to the RecipeType
</Description>

```

```

    <PrimitiveType>STRING</PrimitiveType>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>TargetDeviceInformation</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>Target</AttributeName>
    <Description>Identifies a target type (e.g. SIEMENS, SCHNEIDER...)</Description>
    <PrimitiveType>STRUCT</PrimitiveType>
    <DefaultValue>Siemens</DefaultValue>
  <Attribute>
    <AttributeName>RepresentationName</AttributeName>
    <Description>It's the name used ...</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <DefaultValue>WPAR</DefaultValue>
  </Attribute>
  <Attribute>
    <AttributeName>Optimized</AttributeName>
    <Description>Is this object an optimized Object?</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <DefaultValue>>true</DefaultValue>
  </Attribute>
  <Attribute>
    <AttributeName>LimitSize</AttributeName>
    <Description>Maximun number of instances allowed</Description>
    <PrimitiveType>INT32</PrimitiveType>
    <DefaultValue>2000</DefaultValue>
  </Attribute>
  <Attribute>
    <AttributeName>FastInterlock</AttributeName>
    <Description>Is this object a fast interlock object?</Description>
    <PrimitiveType>BOOLEAN</PrimitiveType>
    <DefaultValue>>false</DefaultValue>
  </Attribute>
</Attribute>
</AttributeFamily>
</UNICOSMetaModel>

```

2.24. WordStatusDeviceType.xml

```
<?xml version='1.0' encoding='UTF-8'?>
<UNICOSMetaModel xmlns:xsi='http://www.w3.org/2001/XMLSchema-instance'
xsi:noNamespaceSchemaLocation='..\unicos\UNICOSMetaModel.xsd'>
  <Information>
    <Package>${devicePackageName}</Package>
    <Name>WordStatus</Name>
    <ObjectTypeFamily>InterfaceObjectFamily</ObjectTypeFamily>
    <Description>Word Status Device</Description>
    <Version>${LastChangedRevision: 170110} $</Version>
  </Information>
  <AttributeFamily>
    <AttributeFamilyName>DeviceIdentification</AttributeFamilyName>
    <UserExpandable>>false</UserExpandable>
    <Attribute>
      <AttributeName>Name</AttributeName>
      <Description>Name of the device. It must be unique.
```

Max length:

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: [:"'@`#\$%^&*?!.,;+~(){}<>|]-., double underscore, and page break</Description>

```
  <PrimitiveType>STRING</PrimitiveType>
```

```
  <isSpecificationAttribute>
```

```
    <isValueRequired>>true</isValueRequired>
```

```
    <Usage>Name displayed at the SCADA level if "Expert Name" is not specified.
```

This name will appear in the datapoints created in the SCADA layer.</Usage>

```
    <DependentAttributes>Device Links.
```

The name of the device(s) specified in Device Links *must* correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to "Name".</DependentAttributes>

```
    <Constraints>Max length:
```

- Schneider: 23

- Siemens: Field objects, Controller and PCO: 19; Local: 21; otherwise: 24

Forbidden chars: [:"'@`#\$%^&*?!.,;+~(){}<>|]-., double underscore, and page break Name must be unique.</Constraints>

```
  </isSpecificationAttribute>
```

```
</Attribute>
```

```
<Attribute>
```

```
  <AttributeName>ExpertName</AttributeName>
```

```
  <Description>Name of the device displayed at the SCADA level. It must be unique.
```

Forbidden characters: *[: "'@#\$\$%^&*?!;=+~(){}<>|] </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Expert Name</NameRepresentation>

<TypeRepresentation>STRING</TypeRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>It does not affect to the datapoints names in the SCADA layer.</Usage>

<DependentAttributes>Device Links.

The name of the device(s) specified in Device Links **must** correspond to "Expert Name" if it is defined.

If "Expert Name" is not defined, the name of the device(s) specified in Device Links corresponds to "Name".</DependentAttributes>

<Constraints>In principle there is no limit to the number of characters used, however a long name may result in display issues at the SCADA level.

Forbidden characters: *[: "'@#\$\$%^&*?!;=+~(){}<>|]

Expert Name must be unique.</Constraints>

</isSpecificationAttribute>

</Attribute>

</AttributeFamily>

<AttributeFamily>

<AttributeFamilyName>DeviceDocumentation</AttributeFamilyName>

<UserExpandable>>true</UserExpandable>

<Attribute>

<AttributeName>DeviceDescription</AttributeName>

<Description>Description of the device. </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<NameRepresentation>Description</NameRepresentation>

<isValueRequired>>false</isValueRequired>

<Usage>Used in the SCADA layer in the device faceplate</Usage>

<DependentAttributes/>

<Constraints>In principle there is no limit to the number of characters used, however a long description may result in display issues at the SCADA level.

Forbidden characters: ;</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>Remarks</AttributeName>

<Description>Field used to add relevant information about the device. </Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

```

    <Usage>This information is not used in the generation process, it remains only at the
specification level for documentation purposes.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: ;</Constraints>
</isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>FEDeviceParameters</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>PMinRan</AttributeName>
        <Meaning>Parameter Minimum Range</Meaning>
        <Description>Minimum engineering value of the device.</Description>
        <PrimitiveType>WORD</PrimitiveType>
        <isSpecificationAttribute>
            <NameRepresentation>Range Min</NameRepresentation>
            <TypeRepresentation>SHORTINT16</TypeRepresentation>
            <isValueRequired>>true</isValueRequired>
            <Usage>A linear conversion is performed between the raw range and engineering
range.</Usage>
            <DependentAttributes/>
            <Constraints>The value specified here must be consistent with the format defined in the field
"Format".</Constraints>
        </isSpecificationAttribute>
    </Attribute>
    <Attribute>
        <AttributeName>PMaxRan</AttributeName>
        <Meaning>Parameter Maximum Range</Meaning>
        <Description>Maximum engineering value of the device.</Description>
        <PrimitiveType>WORD</PrimitiveType>
        <isSpecificationAttribute>
            <NameRepresentation>Range Max</NameRepresentation>
            <isValueRequired>>true</isValueRequired>
            <Usage>A linear conversion is performed between the raw range and engineering
range.</Usage>
            <DependentAttributes/>
            <Constraints>The value specified here must be consistent with the format defined in the field
"Format".</Constraints>
        </isSpecificationAttribute>
    </Attribute>
</AttributeFamily>
</AttributeFamily>

```

```

<AttributeFamilyName>FEDeviceAutoRequests</AttributeFamilyName>
<UserExpandable>>true</UserExpandable>
<Attribute>
  <AttributeName>AuPosR</AttributeName>
  <Meaning>Auto Position Request.</Meaning>
  <Description>Auto Position Request: The control logic requests a specific position on the
object.</Description>
  <PrimitiveType>WORD</PrimitiveType>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceOutputs</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>PosSt</AttributeName>
    <Meaning>Position status</Meaning>
    <Description>Position Status</Description>
    <isCommunicated>>true</isCommunicated>
    <isArchived>>true</isArchived>
    <PrimitiveType>WORD</PrimitiveType>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>FEDeviceIOConfig</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>FEType</AttributeName>
    <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>FE Encoding Type</NameRepresentation>
      <TypeRepresentation>STRING</TypeRepresentation>
      <isValueRequired>>false</isValueRequired>
      <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
      <DependentAttributes>FEChannel.InterfaceParamX (where X=1-10)</DependentAttributes>
      <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
    </isSpecificationAttribute>
  </Attribute>

```

```

<Attribute>
  <AttributeName>FEChannel</AttributeName>
  <Description>Indicates how to map the acquisition of the information from the field I/O
interface.</Description>
  <PrimitiveType>STRUCT</PrimitiveType>
  <Attribute>
    <AttributeName>InterfaceParam1</AttributeName>
    <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
      <DependentAttributes>FE Encoding Type</DependentAttributes>
      <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>InterfaceParam2</AttributeName>
    <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
      <DependentAttributes>FE Encoding Type</DependentAttributes>
      <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>InterfaceParam3</AttributeName>
    <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
    <PrimitiveType>STRING</PrimitiveType>

```



```

<isSpecificationAttribute>
  <isValueRequired>>false</isValueRequired>
  <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
  <DependentAttributes>FE Encoding Type</DependentAttributes>
  <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam4</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam5</AttributeName>
  <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
    <DependentAttributes>FE Encoding Type</DependentAttributes>
    <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>InterfaceParam6</AttributeName>

```

<Description>Parameter used to set up the periphery address of the device according to the various hardware module types used at the PLC level.

Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Usage>

<DependentAttributes>FE Encoding Type</DependentAttributes>

<Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>InterfaceParam7</AttributeName>

<Description>Parameter used to set up the periphery address of the device according to the various hardware module types used at the PLC level.

Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Usage>

<DependentAttributes>FE Encoding Type</DependentAttributes>

<Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Constraints>

</isSpecificationAttribute>

</Attribute>

<Attribute>

<AttributeName>InterfaceParam8</AttributeName>

<Description>Parameter used to set up the periphery address of the device according to the various hardware module types used at the PLC level.

Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Description>

<PrimitiveType>STRING</PrimitiveType>

<isSpecificationAttribute>

<isValueRequired>>false</isValueRequired>

<Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Usage>

<DependentAttributes>FE Encoding Type</DependentAttributes>

<Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider documentation</Constraints>

```

    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>InterfaceParam9</AttributeName>
    <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
      <DependentAttributes>FE Encoding Type</DependentAttributes>
      <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
    </isSpecificationAttribute>
  </Attribute>
  <Attribute>
    <AttributeName>InterfaceParam10</AttributeName>
    <Description>Parameter used to set up the periphery address of the device according to the
various hardware module types used at the PLC level.
Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <isValueRequired>>false</isValueRequired>
      <Usage>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Usage>
      <DependentAttributes>FE Encoding Type</DependentAttributes>
      <Constraints>Refer to FEEncodingType.xlsx in Specs/ folder for specific Siemens and Schneider
documentation</Constraints>
    </isSpecificationAttribute>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADeviceGraphics</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>PosStUnit</AttributeName>
    <Description>Unit of the device to be displayed in SCADA</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>

```

```

<NameRepresentation>Unit</NameRepresentation>
<isValueRequired>>false</isValueRequired>
<Usage/>
<DependentAttributes/>
<Constraints>In principle there is no limit to the number of characters used, however a long
name may result in display issues at the SCADA level.
Forbidden characters: *[: "'@#$%^&*?!.,;=+~(){}&lt;&gt;|]</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
<AttributeName>PosStFormat</AttributeName>
<Description>Format of the value to be displayed in SCADA. Supported formats:
### (fixed number of decimal places, in this case 2),
EXP or xEXP (exponential, 3 or x digits after '.'),
xD or xd (fixed digit format, x=number of digits, e.g.: 3D=0.01, 12.0, 123)</Description>
<PrimitiveType>STRING</PrimitiveType>
<isSpecificationAttribute>
<NameRepresentation>Format</NameRepresentation>
<isValueRequired>>true</isValueRequired>
<Usage>Example: use format ### to display value to 2 decimal places. To the left of the decimal
point, the SCADA layer will display as many digits as required by the object value, therefore a single #
is enough.</Usage>
<DependentAttributes/>
<Constraints/>
</isSpecificationAttribute>
</Attribute>
<Attribute>
<AttributeName>WidgetType</AttributeName>
<Description>Define the widget type to display in the SCADA device tree overview only.
The widget displayed in the process panel will be selected when the user creates the
panel.</Description>
<PrimitiveType>STRING</PrimitiveType>
<isSpecificationAttribute>
<NameRepresentation>Widget Type</NameRepresentation>
<isValueRequired>>true</isValueRequired>
<isCaseSensitive>>true</isCaseSensitive>
<PermittedValue>WordStatus</PermittedValue>
<PermittedValue>WordStatusWide</PermittedValue>
<PermittedValue>WordStatusBit</PermittedValue>
<PermittedValue>WordStatusBitBig</PermittedValue>
<PermittedValue>Word2AnalogStatus</PermittedValue>
<Usage/>
<DependentAttributes/>

```

```

    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Pattern</AttributeName>
  <Description>List of individual messages associated with the value of the object.
  Strict format: "Nbr=Message,Nbr=Message". The message CAN contain a space.
  If WordStatusBit: append "no_status=xxx,multiple_status=yyy" to set display for 0 or multiple
  bits</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>When not empty, the message corresponding to the value is displayed on the
    panel.</Usage>
    <DependentAttributes/>
    <Constraints>Strict format: "Nbr=Message,Nbr=Message". The message CAN contain a space.
    If WordStatusBit: append "no_status=xxx,multiple_status=yyy" to set display for 0 or multiple
    bits</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Synoptic</AttributeName>
  <Description>Define link between the device and an existing synoptic where it appears. The
  synoptic specified here can be accessed from the device right-click menu item
  "Synoptic".</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Specify the path of the .pnl file under the "\panel" directory of the PVSS
    project.</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DiagnosticPanel</AttributeName>
  <Description>Define link between the device and an existing diagnostic panel for the device. The
  panel specified here can be accessed from the device right-click menu item "Diagnostic" as well as
  from the "Diagnostic" button on the object faceplate.</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Diagnostic</NameRepresentation>
    <isValueRequired>>false</isValueRequired>

```

```

    <Usage>Specify the path of the .pnl file under the "\panel" directory of the PVSS project
</Usage>
    <DependentAttributes/>
    <Constraints/>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>WWWLink</AttributeName>
    <Description>Define link between the device and an existing web page (or pdf file, or other file
which can be opened with IE). The link can be accessed from the device right-click menu item "Info"
as well as from the "Info" button on the object faceplate.</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>WWW Link</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes/>
    <Constraints/>
</isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>SCADADeviceFunctionals</AttributeFamilyName>
    <UserExpandable>>false</UserExpandable>
    <Attribute>
        <AttributeName>AccessControlDomain</AttributeName>
        <Description>Define Access Control on the device to an existing SCADA Domain
Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
        <PrimitiveType>STRING</PrimitiveType>
        <isSpecificationAttribute>
            <NameRepresentation>Access Control Domain</NameRepresentation>
            <isValueRequired>>false</isValueRequired>
        <Usage>This domain is used to grant access to this specific device. The domain specified for this
object will allow access to the object only to registered users on that domain</Usage>
        <DependentAttributes/>
        <Constraints>Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>SCADADeviceClassificationTags</AttributeName>
    <Description>It defines the Domain, Nature and DeviceLinks for the SCADA
visualization</Description>
    <PrimitiveType>STRUCT</PrimitiveType>

```

```

<Attribute>
  <AttributeName>Domain</AttributeName>
  <Description>Domain of the device. If empty, the domain will be the name of the application
Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Domain is used to filter the devices in the alarm list or in the device tree
overview</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>Nature</AttributeName>
  <Description>Nature of the device. If empty, the nature will be the type of the device
Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <isValueRequired>>false</isValueRequired>
    <Usage>Nature is used to filter the devices in the alarm list or in the device tree
overview</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DeviceLinks</AttributeName>
  <Description>Define links to other devices (separate device names with commas).
Note: it is not necessary to link to master, parents or children because these links are automatically
created.
Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Device Links</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Linked devices will be shown in the device right-click menu</Usage>
    <DependentAttributes>Expert Name or Name.
The name of the device(s) specified here must correspond to "Expert Name" if it is defined.
If "Expert Name" is not defined, the name of the device(s) specified here corresponds to
"Name".</DependentAttributes>
    <Constraints>Forbidden characters: *[: ""@`#$%^&*?!;=+~(){}&lt;&gt;|]</Constraints>
  </isSpecificationAttribute>

```

```

    </Attribute>
  </Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADeviceDataArchiving</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>ArchiveMode</AttributeName>
    <Description>Archive mode of the object engineering values. Archive if:
    Old/New Comparison: value changes
    Time: value changes after Time Filter
    Deadband: value &lt; or &gt; deadband
    AND: at least one of the conditions is fulfilled
    OR: both conditions are fulfilled</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>Archive Mode</NameRepresentation>
      <isValueRequired>>true</isValueRequired>
      <PermittedValue>No</PermittedValue>
      <PermittedValue>Time</PermittedValue>
      <PermittedValue>Deadband</PermittedValue>
      <PermittedValue>Deadband AND Time</PermittedValue>
      <PermittedValue>Deadband OR Time</PermittedValue>
      <PermittedValue>Old/New Comparison</PermittedValue>
      <PermittedValue>Old/New Comparison AND Time</PermittedValue>
      <PermittedValue>Old/New Comparison OR Time</PermittedValue>
      <Usage>This archive mode is used to archive data in the PVSS database</Usage>
      <DependentAttributes>If "Time" is selected, "Time Filter (s)" must be filled
      If "Deadband" is selected: "Deadband Type" and "Deadband Value" must be
      filled.</DependentAttributes>
      <Constraints/>
    </isSpecificationAttribute>
  </Attribute>
<Attribute>
  <AttributeName>TimeFilter</AttributeName>
  <Description>Time filter for the SCADA archiving of the engineering values of the object. Must be
  positive.</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Time Filter (s)</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage/>
  </isSpecificationAttribute>
</Attribute>

```



```

    <DependentAttributes>Valid if "Time" has been selected as Archive
Mode</DependentAttributes>
    <Constraints>Must be positive</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>DeadbandType</AttributeName>
    <Description>Deadband type (Relative or Absolute) of the deadband for the SCADA archiving of
the engineering values of the object</Description>
    <PrimitiveType>STRING</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Deadband Type</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <PermittedValue>Absolute</PermittedValue>
        <PermittedValue>Relative</PermittedValue>
        <Usage>The value is archived if the difference between the latest archived value and the actual
value exceeds, either:
- if 'Absolute': the "Deadband Value"
- if 'Relative': the "Deadband Value" as a percent of the latest archived value</Usage>
    <DependentAttributes>Valid if "Deadband" has been selected as Archive
Mode</DependentAttributes>
    <Constraints/>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>DeadbandValue</AttributeName>
    <Description>Deadband value for the SCADA archiving of the engineering values of the object
Must be positive and larger than the deadband specified for the driver data smoothing (Driver
deadband)</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>Deadband Value</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
    <Usage/>
    <DependentAttributes>Valid if "Deadband" has been selected as Archive
Mode</DependentAttributes>
    <Constraints>Must be positive and larger than the deadband specified for the driver data
smoothing (Driver deadband)</Constraints>
    </isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>BooleanArch</AttributeName>
    <Description>Name of the Boolean archive

```

```

Forbidden characters: *[: "'@#%&*?!;=+~(){}&lt;&gt;|]/Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Boolean Archive</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>The boolean values of the device will be archived in the specified PVSS database. The
archive must be created in PVSS before importing the object.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[: "'@#%&*?!;=+~(){}&lt;&gt;|]/Constraints>
  </isSpecificationAttribute>
</Attribute>

```

```

<Attribute>
  <AttributeName>AnalogArch</AttributeName>
  <Description>Name of the analog archive

```

```

Forbidden characters: *[: "'@#%&*?!;=+~(){}&lt;&gt;|]/Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Analog Archive</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>The analog values of the device will be archived in the specified PVSS database. The
archive must be created in PVSS before importing the object.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[: "'@#%&*?!;=+~(){}&lt;&gt;|]/Constraints>
  </isSpecificationAttribute>
</Attribute>

```

```

<Attribute>
  <AttributeName>EventArch</AttributeName>
  <Description>Name of the event archive

```

```

Forbidden characters: *[: "'@#%&*?!;=+~(){}&lt;&gt;|]/Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Event Archive</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>The events generated by the device will be archived in the specified PVSS database. The
archive must be created in PVSS before importing the object.</Usage>
    <DependentAttributes/>
    <Constraints>Forbidden characters: *[: "'@#%&*?!;=+~(){}&lt;&gt;|]/Constraints>
  </isSpecificationAttribute>
</Attribute>

```

```

</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADriverDataSmoothing</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>

```

```

<Attribute>
  <AttributeName>DeadbandType</AttributeName>
  <Description>Deadband type (None, Relative, Absolute or Old/New) for the SCADA driver data
smoothing (Driver deadband)</Description>
  <PrimitiveType>STRING</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Deadband Type</NameRepresentation>
    <isValueRequired>>true</isValueRequired>
    <PermittedValue>No</PermittedValue>
    <PermittedValue>Relative</PermittedValue>
    <PermittedValue>Absolute</PermittedValue>
    <PermittedValue>Old/New</PermittedValue>
    <Usage>Used for the online display in SCADA</Usage>
    <DependentAttributes/>
    <Constraints/>
  </isSpecificationAttribute>
</Attribute>
<Attribute>
  <AttributeName>DeadbandValue</AttributeName>
  <Description>Deadband value for the SCADA driver data smoothing
Must be positive and smaller than the deadband specified for the archiving</Description>
  <PrimitiveType>FLOAT32</PrimitiveType>
  <isSpecificationAttribute>
    <NameRepresentation>Deadband Value</NameRepresentation>
    <isValueRequired>>false</isValueRequired>
    <Usage>Used for the online display in SCADA</Usage>
    <DependentAttributes/>
    <Constraints>Must be positive and smaller than the deadband specified for the
archiving</Constraints>
  </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
  <AttributeFamilyName>SCADADeviceParameters</AttributeFamilyName>
  <UserExpandable>>true</UserExpandable>
  <Attribute>
    <AttributeName>FMinRan</AttributeName>
    <Description>Floating value corresponding to the Minimal Range.
Must be present when the Widget Type is "Word2AnalogStatus".</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
      <NameRepresentation>F Range Min</NameRepresentation>
      <isValueRequired>>false</isValueRequired>

```

```

    <Usage>When the Widget Type is "Word2AnalogStatus" the word value will be converted at the
level of the SCADA into a Float number .</Usage>
    <DependentAttributes>Widget Type</DependentAttributes>
    <Constraints>Must be present when the Widget Type is "Word2AnalogStatus".</Constraints>
</isSpecificationAttribute>
</Attribute>
<Attribute>
    <AttributeName>FMaxRan</AttributeName>
    <Description>Floating value corresponding to the Maximal Range.</Description>
    <PrimitiveType>FLOAT32</PrimitiveType>
    <isSpecificationAttribute>
        <NameRepresentation>F Range Max</NameRepresentation>
        <isValueRequired>>false</isValueRequired>
        <Usage>When the Widget Type is "Word2AnalogStatus" the word value will be converted at the
level of the SCADA into a Float number .</Usage>
        <DependentAttributes>Widget Type</DependentAttributes>
        <Constraints>Must be present when the Widget Type is "Word2AnalogStatus"</Constraints>
    </isSpecificationAttribute>
</Attribute>
</AttributeFamily>
<AttributeFamily>
    <AttributeFamilyName>TargetDeviceInformation</AttributeFamilyName>
    <UserExpandable>>true</UserExpandable>
    <Attribute>
        <AttributeName>Target</AttributeName>
        <Description>Identifies a target type (e.g. SIEMENS, SCHNEIDER...)</Description>
        <PrimitiveType>STRUCT</PrimitiveType>
        <DefaultValue>Siemens</DefaultValue>
    </Attribute>
        <AttributeName>RepresentationName</AttributeName>
        <Description>It's the name used ...</Description>
        <PrimitiveType>STRING</PrimitiveType>
        <DefaultValue>WS</DefaultValue>
    </Attribute>
    <Attribute>
        <AttributeName>Optimized</AttributeName>
        <Description>Is this object an optimized Object?</Description>
        <PrimitiveType>BOOLEAN</PrimitiveType>
        <DefaultValue>>true</DefaultValue>
    </Attribute>
    <Attribute>
        <AttributeName>LimitSize</AttributeName>
        <Description>Maximun number of instances allowed</Description>

```

```
<PrimitiveType>INT32</PrimitiveType>
<DefaultValue>2000</DefaultValue>
</Attribute>
<Attribute>
  <AttributeName>FastInterlock</AttributeName>
  <Description>Is this object a fast interlock object?</Description>
  <PrimitiveType>BOOLEAN</PrimitiveType>
  <DefaultValue>>false</DefaultValue>
</Attribute>
</Attribute>
</AttributeFamily>
</UNICOSMetaModel>
```

3. PlcParams

3.1. Siemens.xml

```
<SiemensPLC Name="PLC1" Description="PLC1 declaration"
xmlns="http://www.parametershandling.unicos.cern.ch.research">
    <PLCName Value="" Description="PLC name (unique within the same unicos application)"
DefaultValue="PLC1"/>
    <PLCType Value="" Description="PLC Type"/>
    <ParameterList Name="SiemensSpecificParameters" Description="Specific parameters for
Siemens manufacturer" isExpertField="false">
        <ParameterList Name="GeneralConfiguration" Description="General configuration">
            <PositiveIntegerParameter Name="EventBufferSize" Value="1000"
Description="Number of configured events" DefaultValue="1000" MinValue="50"
MaxValue="6000"/>
            <BooleanParameter Name="LargeApplication" Value="false" Description="If
this parameter is true the DB simple for DI and AIR will be created" DefaultValue="false"/>
        </ParameterList>
        <ParameterList Name="TypeMemorySize" Description="">
            <PositiveIntegerParameter Name="LONG64" Value="8" Description=""
DefaultValue="8"/>
            <PositiveIntegerParameter Name="INT32" Value="4" Description=""
DefaultValue="4"/>
            <PositiveIntegerParameter Name="SHORTINT16" Value="2" Description=""
DefaultValue="2"/>
            <PositiveIntegerParameter Name="BYTE8" Value="2" Description=""
DefaultValue="2"/>
            <PositiveIntegerParameter Name="BOOLEAN" Value="2" Description=""
DefaultValue="2"/>
            <PositiveIntegerParameter Name="BIT1" Value="2" Description=""
DefaultValue="2"/>
            <PositiveIntegerParameter Name="DOUBLE64" Value="8" Description=""
DefaultValue="8"/>
            <PositiveIntegerParameter Name="FLOAT32" Value="4" Description=""
DefaultValue="4"/>
            <PositiveIntegerParameter Name="WORD" Value="2" Description=""
DefaultValue="2"/>
        </ParameterList>
        <ParameterList Name="PLCEquivalence" Description="">
            <StringParameter Name="SHORTINT16" Value="INT"
Description="Equivalence for Siemens PLC" DefaultValue="INT" isExpertField="true"/>
            <StringParameter Name="FLOAT32" Value="REAL" Description="Equivalence
for Siemens PLC" DefaultValue="REAL" isExpertField="true"/>
            <StringParameter Name="BIT1" Value="WORD" Description="Equivalence
for Siemens PLC" DefaultValue="WORD" isExpertField="true"/>
        </ParameterList>
    </ParameterList>
</SiemensPLC>
```

```

        <StringParameter Name="BOOLEAN" Value="WORD"
Description="Equivalence for Siemens PLC" DefaultValue="WORD" isExpertField="true"/>
        <StringParameter Name="WORD" Value="WORD" Description="Equivalence
for Siemens PLC" DefaultValue="WORD" isExpertField="true"/>
        <StringParameter Name="INT32" Value="DINT" Description="Equivalence
for Siemens PLC" DefaultValue="DINT" isExpertField="true"/>
        <StringParameter Name="BYTE8" Value="BYTE" Description="Equivalence
for Siemens PLC" DefaultValue="BYTE" isExpertField="true"/>
    </ParameterList>
    <ParameterList Name="PLCS7Connection">
        <HexParameter Name="LocalId" Value="1" Description="PLC connection ID
(see NetPro S7 Connection settings)" DefaultValue="1"/>
        <PositiveIntegerParameter Name="LocalRack" Value="0" Description="PLC
Rack Number (see NetPro S7 Connection settings)" DefaultValue="0"/>
        <PositiveIntegerParameter Name="LocalSlot" Value="2" Description="PLC
CPU Slot Number (see NetPro S7 Connection settings)" DefaultValue="2"/>
        <HexParameter Name="LocalConnResource" Value="10" Description="PLC
Connection Resources (see NetPro S7 Connection settings)" DefaultValue="A0"/>
        <StringParameter Name="LocalInterface" Value="" Description="Connection
interface for the S7-300 PLC" DefaultValue="" />
    </ParameterList>
    <ParameterList Name="AddressConfig" Description="">
        <PositiveIntegerParameter Name="PartnerRack" Value="0" Description="PC
Partner Rack (see NetPro S7 Connection settings)" DefaultValue="0"/>
        <PositiveIntegerParameter Name="PartnerSlot" Value="0" Description="PC
Partner Slot (see NetPro S7 Connection settings)" DefaultValue="0"/>
        <HexParameter Name="PartnerConnResource" Value="10" MinValue="10"
Description="PC Connection Resources (see NetPro S7 Connection settings)" DefaultValue="10"/>
        <PositiveIntegerParameter Name="Timeout" Value="5000" Description="S7
Driver connection timeout" DefaultValue="5000"/>
        <PathParameter Name="DeviceOrderFilePath"
Value="Resources/PlcParams/SiemensDeviceAddressOrder.xml" Description="Relative path to the
file containing the correct device order for processing the memory addressing"
DefaultValue="Resources/PlcParams/SiemensDeviceAddressOrder.xml"/>
    </ParameterList>
    <ParameterList Name="PLCMemory" Description="">
        <PositiveIntegerParameter Name="1stFB" Value="100" MinValue="100"
Description="UAB will create FBs to produce the objects instances and logic starting from the FB
number specified here." DefaultValue="100"/>
        <PositiveIntegerParameter Name="1stFC" Value="100" MinValue="100"
Description="UAB will create FCs to produce the objects instances and logic starting from the FC
number specified here." DefaultValue="100"/>
        <PositiveIntegerParameter Name="1stDB" Value="100" MinValue="100"
Description="UAB will create DBs to produce the objects data resources starting from the DB number
specified here." DefaultValue="100"/>

```

```

        <PositiveIntegerParameter Name="1stUDT" Value="100" MinValue="100"
Description="UAB will create UDTs to produce the objects data resources starting from the UDT
number specified here." DefaultValue="100"/>
        <PositiveIntegerParameter DefaultValue="7000" Description="UAB will
create the UNICOSExtended resouces to produce the objects instances and logic starting from the
number specified here and counting backwards." Value="7000" Name="LastUNICOSExtended"/>
        <PositiveIntegerParameter DefaultValue="50" Description="Block size for the
CPC sub packages (VACUUM, CRYO)" Value="50" Name="SubPackageBlockSize"/>
    </ParameterList>
    <ParameterList Name="PLCReservedMemory" Description="">
        <ParameterList Name="T_CYCLE" Description="">
            <StringParameter Name="Name" Value="T_CYCLE" Description=""
DefaultValue="T_CYCLE"/>
            <StringParameter Name="Nature" Value="M" Description="PLC
memory" DefaultValue="M"/>
            <StringParameter Name="Address" Value="MD 100"
Description="" DefaultValue="MD 100"/>
            <StringParameter Name="Type" Value="TIME " Description=""
DefaultValue="TIME "/>
            <StringParameter Name="Description" Value="Cyclic Time of OB1"
Description="" DefaultValue="Cyclic Time of OB1"/>
        </ParameterList>
        <ParameterList Name="PID_EXEC_CYCLE" Description="">
            <StringParameter Name="Name" Value="PID_EXEC_CYCLE "
Description="" DefaultValue="PID_EXEC_CYCLE "/>
            <StringParameter Name="Nature" Value="M" Description="PLC
memory" DefaultValue="M"/>
            <StringParameter Name="Address" Value="MD 104"
Description="" DefaultValue="MD 104"/>
            <StringParameter Name="Type" Value="TIME" Description=""
DefaultValue="TIME"/>
            <StringParameter Name="Description" Value="Cyclic Time of calling
all controllers" Description="" DefaultValue="Cyclic Time of calling all controllers"/>
        </ParameterList>
        <ParameterList Name="comm" Description="">
            <StringParameter Name="Name" Value="comm" Description=""
DefaultValue="comm"/>
            <StringParameter Name="Nature" Value="M" Description="PLC
memory" DefaultValue="M"/>
            <StringParameter Name="Address" Value="M 108.0"
Description="" DefaultValue="M 108.0"/>
            <StringParameter Name="Type" Value="BOOL" Description=""
DefaultValue="BOOL"/>
            <StringParameter Name="Description" Value="= 1 when FC_event is
called" Description="" DefaultValue="= 1 when FC_event is called"/>
        </ParameterList>

```



```

        <ParameterList Name="UNICOS_LiveCounter" Description="">
            <StringParameter Name="Name" Value="UNICOS_LiveCounter"
Description="" DefaultValue="UNICOS_LiveCounter"/>
            <StringParameter Name="Nature" Value="M" Description="PLC
memory" DefaultValue="M"/>
            <StringParameter Name="Address" Value="MD 110"
Description="" DefaultValue="MD 110"/>
            <StringParameter Name="Type" Value="DINT" Description=""
DefaultValue="DINT"/>
            <StringParameter Name="Description" Value="Live Counter
icncremented each 1 second" Description="" DefaultValue="Live Counter icncremented each 1
second"/>
        </ParameterList>
        <ParameterList Name="UNICOS_TimeSmooth" Description="">
            <StringParameter Name="Name" Value="UNICOS_TimeSmooth"
Description="" DefaultValue="UNICOS_TimeSmooth"/>
            <StringParameter Name="Nature" Value="M" Description="PLC
memory" DefaultValue="M"/>
            <StringParameter Name="Address" Value="MW 114"
Description="" DefaultValue="MW 114"/>
            <StringParameter Name="Type" Value="INT" Description=""
DefaultValue="INT"/>
            <StringParameter Name="Description" Value="TimeSmoothing for
alarms (user)" Description="" DefaultValue="TimeSmoothing for alarms (user)"/>
        </ParameterList>
        <ParameterList Name="UNICOS_Counter1" Description="">
            <StringParameter Name="Name" Value="UNICOS_Counter1"
Description="" DefaultValue="UNICOS_Counter1"/>
            <StringParameter Name="Nature" Value="M" Description="PLC
memory" DefaultValue="M"/>
            <StringParameter Name="Address" Value="MW 116"
Description="" DefaultValue="MW 116"/>
            <StringParameter Name="Type" Value="INT" Description=""
DefaultValue="INT"/>
            <StringParameter Name="Description" Value="Counter of PLC
sampling til 1 second" Description="" DefaultValue="Counter of PLC sampling til 1 second"/>
        </ParameterList>
        <ParameterList Name="First_Cycle " Description="">
            <StringParameter Name="Name" Value="First_Cycle "
Description="" DefaultValue="First_Cycle "/>
            <StringParameter Name="Nature" Value="M" Description="PLC
memory" DefaultValue="M"/>
            <StringParameter Name="Address" Value="M 118.0"
Description="" DefaultValue="M 118.0"/>
            <StringParameter Name="Type" Value="BOOL" Description=""
DefaultValue="BOOL"/>

```

```

        <StringParameter Name="Description" Value="Bit to identify the
first cycle in the PLC" Description="" DefaultValue="Bit to identify the first cycle in the PLC"/>
    </ParameterList>
    <ParameterList Name="BSEND_S7300" Description="">
        <StringParameter Name="Name" Value="BSEND_S7300"
Description="" DefaultValue="BSEND_S7300"/>
        <StringParameter Name="Nature" Value="FB" Description="PLC
memory" DefaultValue="FB"/>
        <StringParameter Name="Address" Value="FB 12" Description=""
DefaultValue="FB 12"/>
        <StringParameter Name="Type" Value="FB 12" Description=""
DefaultValue="FB 12"/>
        <StringParameter Name="Description" Value="BSEND used for
S7300 without integrated PN interface" Description="" DefaultValue="BSEND used for S7300 without
integrated PN interface"/>
    </ParameterList>
    <ParameterList Name="BSEND_S7300PNDP" Description="">
        <StringParameter Name="Name" Value="BSEND_S7300PNDP"
Description="" DefaultValue="BSEND_S7300PNDP"/>
        <StringParameter Name="Nature" Value="FB" Description="PLC
memory" DefaultValue="FB"/>
        <StringParameter Name="Address" Value="FB 14" Description=""
DefaultValue="FB 14"/>
        <StringParameter Name="Type" Value="FB 14" Description=""
DefaultValue="FB 14"/>
        <StringParameter Name="Description" Value="BSEND used for
S7300 with integrated PN interface" Description="" DefaultValue="BSEND used for S7300 with
integrated PN interface"/>
    </ParameterList>
    <ParameterList Name="CYCL_FLT" Description="">
        <StringParameter Name="Name" Value="CYCL_FLT" Description=""
DefaultValue="CYCL_FLT"/>
        <StringParameter Name="Nature" Value="OB" Description="PLC
memory" DefaultValue="OB"/>
        <StringParameter Name="Address" Value="OB 80" Description=""
DefaultValue="OB 80"/>
        <StringParameter Name="Type" Value="OB 80" Description=""
DefaultValue="OB 80"/>
        <StringParameter Name="Description" Value="Cycle Time Fault"
Description="" DefaultValue="Cycle Time Fault"/>
    </ParameterList>
    <ParameterList Name="PROG_ERR" Description="">
        <StringParameter Name="Name" Value="PROG_ERR" Description=""
DefaultValue="PROG_ERR"/>
        <StringParameter Name="Nature" Value="OB" Description="PLC
memory" DefaultValue="OB"/>

```

```

        <StringParameter Name="Address" Value="OB 121"
Description="" DefaultValue="OB 121"/>
        <StringParameter Name="Type" Value="OB 121" Description=""
DefaultValue="OB 121"/>
        <StringParameter Name="Description" Value="Programming error
Organization Block" Description="" DefaultValue="Programming error Organization Block"/>
    </ParameterList>
    <ParameterList Name="MOD_ERR" Description="">
        <StringParameter Name="Name" Value="MOD_ERR" Description=""
DefaultValue="MOD_ERR"/>
        <StringParameter Name="Nature" Value="OB" Description="PLC
memory" DefaultValue="OB"/>
        <StringParameter Name="Address" Value="OB 122"
Description="" DefaultValue="OB 122"/>
        <StringParameter Name="Type" Value="OB 122" Description=""
DefaultValue="OB 122"/>
        <StringParameter Name="Description" Value="IO Access error
organization block" Description="" DefaultValue="IO Access error organization block"/>
    </ParameterList>
    <ParameterList Name="LAG1ST" Description="">
        <StringParameter Name="Name" Value="LAG1ST" Description=""
DefaultValue="LAG1ST"/>
        <StringParameter Name="Nature" Value="FB" Description="PLC
memory" DefaultValue="FB"/>
        <StringParameter Name="Address" Value="FB 9" Description=""
DefaultValue="FB 9"/>
        <StringParameter Name="Type" Value="FB 9" Description=""
DefaultValue="FB 9"/>
        <StringParameter Name="Description" Value="First order time lag"
Description="" DefaultValue="First order time lag"/>
    </ParameterList>
    <ParameterList Name="LMNGEN_C" Description="">
        <StringParameter Name="Name" Value="LMNGEN_C"
Description="" DefaultValue="LMNGEN_C"/>
        <StringParameter Name="Nature" Value="FB" Description="PLC
memory" DefaultValue="FB"/>
        <StringParameter Name="Address" Value="FB 13" Description=""
DefaultValue="FB 13"/>
        <StringParameter Name="Type" Value="FB 13" Description=""
DefaultValue="FB 13"/>
        <StringParameter Name="Description" Value="limiter with PID"
Description="" DefaultValue="limiter with PID"/>
    </ParameterList>
    <ParameterList Name="OBNL_FLT" Description="">
        <StringParameter Name="Name" Value="OBNL_FLT" Description=""
DefaultValue="OBNL_FLT"/>

```

```

memory" DefaultValue="OB"/>
    <StringParameter Name="Nature" Value="OB" Description="PLC
    <StringParameter Name="Address" Value="OB 85" Description=""
    DefaultValue="OB 85"/>
    <StringParameter Name="Type" Value="OB 85" Description=""
    DefaultValue="OB 85"/>
    <StringParameter Name="Description" Value="OB Not Loaded Fault"
    Description="" DefaultValue="OB Not Loaded Fault"/>
    </ParameterList>
    <ParameterList Name="PID" Description="">
    <StringParameter Name="Name" Value="PID" Description=""
    DefaultValue="PID"/>
    <StringParameter Name="Nature" Value="FB" Description="PLC
    memory" DefaultValue="FB"/>
    <StringParameter Name="Address" Value="FB 19" Description=""
    DefaultValue="FB 19"/>
    <StringParameter Name="Type" Value="FB 19" Description=""
    DefaultValue="FB 19"/>
    <StringParameter Name="Description" Value="PID BLOC"
    Description="" DefaultValue="PID BLOC"/>
    </ParameterList>
    <ParameterList Name="PULSEGEN" Description="">
    <StringParameter Name="Name" Value="PULSEGEN" Description=""
    DefaultValue="PULSEGEN"/>
    <StringParameter Name="Nature" Value="FB" Description="PLC
    memory" DefaultValue="FB"/>
    <StringParameter Name="Address" Value="FB 20" Description=""
    DefaultValue="FB 20"/>
    <StringParameter Name="Type" Value="FB 20" Description=""
    DefaultValue="FB 20"/>
    <StringParameter Name="Description" Value="PWM BLOC"
    Description="" DefaultValue="PWM BLOC"/>
    </ParameterList>
    <ParameterList Name="RACK_FLT" Description="">
    <StringParameter Name="Name" Value="RACK_FLT" Description=""
    DefaultValue="RACK_FLT"/>
    <StringParameter Name="Nature" Value="OB" Description="PLC
    memory" DefaultValue="OB"/>
    <StringParameter Name="Address" Value="OB 86" Description=""
    DefaultValue="OB 86"/>
    <StringParameter Name="Type" Value="OB 86" Description=""
    DefaultValue="OB 86"/>
    <StringParameter Name="Description" Value="Loss of Rack Fault"
    Description="" DefaultValue="Loss of Rack Fault"/>
    </ParameterList>
    <ParameterList Name="ROC_LIM" Description="">

```

```

        <StringParameter Name="Name" Value="ROC_LIM" Description=""
DefaultValue="ROC_LIM"/>
        <StringParameter Name="Nature" Value="FB" Description="PLC
memory" DefaultValue="FB"/>
        <StringParameter Name="Address" Value="FB 22" Description=""
DefaultValue="FB 22"/>
        <StringParameter Name="Type" Value="FB 22" Description=""
DefaultValue="FB 22"/>
        <StringParameter Name="Description" Value="RAMP FUNCTION"
Description="" DefaultValue="RAMP FUNCTION"/>
    </ParameterList>
    <ParameterList Name="LP_SCHED" Description="">
        <StringParameter Name="Name" Value="LP_SCHED" Description=""
DefaultValue="LP_SCHED"/>
        <StringParameter Name="Nature" Value="FC" Description="PLC
memory" DefaultValue="FC"/>
        <StringParameter Name="Address" Value="FC 1" Description=""
DefaultValue="FC 1"/>
        <StringParameter Name="Type" Value="FC 1" Description=""
DefaultValue="FC 1"/>
        <StringParameter Name="Description" Value="PID scheduler"
Description="" DefaultValue="PID scheduler"/>
    </ParameterList>
    <ParameterList Name="G7_STD_3" Description="">
        <StringParameter Name="Name" Value="G7_STD_3" Description=""
DefaultValue="G7_STD_3"/>
        <StringParameter Name="Nature" Value="FC" Description="PLC
memory" DefaultValue="FC"/>
        <StringParameter Name="Address" Value="FC 72" Description=""
DefaultValue="FC 72"/>
        <StringParameter Name="Type" Value="FC 72" Description=""
DefaultValue="FC 72"/>
        <StringParameter Name="Description" Value="S7 Graph sequencer
runtime system" Description="" DefaultValue="S7 Graph sequencer runtime system"/>
    </ParameterList>
    <ParameterList Name="TOF" Description="">
        <StringParameter Name="Name" Value="TOF" Description=""
DefaultValue="TOF"/>
        <StringParameter Name="Nature" Value="SFB" Description="PLC
memory" DefaultValue="SFB"/>
        <StringParameter Name="Address" Value="SFB 5" Description=""
DefaultValue="SFB 5"/>
        <StringParameter Name="Type" Value="SFB 5" Description=""
DefaultValue="SFB 5"/>
        <StringParameter Name="Description" Value="Generate an Off
Delay" Description="" DefaultValue="Generate an Off Delay"/>

```

```

        </ParameterList>
        <ParameterList Name="TON" Description="">
            <StringParameter Name="Name" Value="TON" Description=""
DefaultValue="TON"/>
            <StringParameter Name="Nature" Value="SFB" Description="PLC
memory" DefaultValue="SFB"/>
            <StringParameter Name="Address" Value="SFB 4" Description=""
DefaultValue="SFB 4"/>
            <StringParameter Name="Type" Value="SFB 4" Description=""
DefaultValue="SFB 4"/>
            <StringParameter Name="Description" Value="Generate an On
Delay" Description="" DefaultValue="Generate an On Delay"/>
        </ParameterList>
        <ParameterList Name="TP" Description="">
            <StringParameter Name="Name" Value="TP" Description=""
DefaultValue="TP"/>
            <StringParameter Name="Nature" Value="SFB" Description="PLC
memory" DefaultValue="SFB"/>
            <StringParameter Name="Address" Value="SFB 3" Description=""
DefaultValue="SFB 3"/>
            <StringParameter Name="Type" Value="SFB 3" Description=""
DefaultValue="SFB 3"/>
            <StringParameter Name="Description" Value="Generate a Pulse"
Description="" DefaultValue="Generate a Pulse"/>
        </ParameterList>
        <ParameterList Name="VAT_TSPP" Description="">
            <StringParameter Name="Name" Value="VAT_TSPP" Description=""
DefaultValue="VAT_TSPP"/>
            <StringParameter Name="Nature" Value="VAT" Description="PLC
memory" DefaultValue="VAT"/>
            <StringParameter Name="Address" Value="VAT 2" Description=""
DefaultValue="VAT 2"/>
            <StringParameter Name="Type" Value="" Description=""
DefaultValue=""/>
            <StringParameter Name="Description" Value="TSPP main
parameters visualization" Description="" DefaultValue="TSPP main parameters visualization"/>
        </ParameterList>
    </ParameterList>
    <ParameterList Name="BaselineResources" Description="Contains All the Baseline
Resources">

        <!-- ===== FBs ===== -->

        <ParameterList Name="TSPP_UNICOS_Manager" Description="">

```

```

        <StringParameter Name="Name" Value="" Description=""
DefaultValue="TSPP_UNICOS_Manager"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue="TSPP_UNICOS_Manager"/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="TSPP FB for the communication between Siemens PLC and WinCC O.A. SCADA"/>
    </ParameterList>
    <ParameterList Name="AVG" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="AVG"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="FB created to calculate the average of the N last values of X"/>
    </ParameterList>
    <ParameterList Name="CPC_FB_RECIPES" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="CPC_FB_RECIPES"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="Implementation of Recipe Mechanism"/>
    </ParameterList>
    <ParameterList Name="FB_RTM" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="FB_RTM"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="RunTime Meter"
Description="" DefaultValue="RunTime Meter"/>
    </ParameterList>
    <ParameterList Name="FB_Diag1" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="FB_Diag1"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>

```

```

        <StringParameter Name="Description" Value="" Description=""
DefaultValue="FB_Diag1"/>
    </ParameterList>
    <ParameterList Description="" Name="FB_FI_PIU">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="FB_FI_PIU"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="FB for fast interlock peripheral input update"/>
    </ParameterList>
    <ParameterList Description="" Name="TSPP_FI">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="TSPP_FI"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="TSPP FB for the FI communication between Siemens PLC and WinCC O.A. SCADA"/>
    </ParameterList>

    <!-- ===== FCs ===== -->

    <ParameterList Name="R_EDGE" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="R_EDGE"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="FC to detect a Rising Edge on a signal"/>
    </ParameterList>
    <ParameterList Name="F_EDGE" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="F_EDGE"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="FC to detect a Falling Edge on a signal"/>

```



```

        </ParameterList>
        <ParameterList Name="FC_Event" Description="">
            <StringParameter Name="Name" Value="" Description=""
DefaultValue="FC_Event"/>
            <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
            <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
            <StringParameter Name="Description" Value="" Description=""
DefaultValue="FC to Generate Events for evstsreg01 and call TS_EVENT_MANAGER "/>
        </ParameterList>
        <ParameterList Name="FC_Diag1" Description="">
            <StringParameter Name="Name" Value="" Description=""
DefaultValue="FC_Diag1"/>
            <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
            <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
            <StringParameter Name="Description" Value="" Description=""
DefaultValue="FC_Diag1"/>
        </ParameterList>
        <ParameterList Name="FC_Diag2" Description="">
            <StringParameter Name="Name" Value="" Description=""
DefaultValue="FC_Diag2"/>
            <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
            <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
            <StringParameter Name="Description" Value="" Description=""
DefaultValue="FC_Diag2"/>
        </ParameterList>
        <ParameterList Name="ReadPAValve" Description="">
            <StringParameter Name="Name" Value="" Description=""
DefaultValue="ReadPAValve"/>
            <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
            <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
            <StringParameter Name="Description" Value="" Description=""
DefaultValue="Function returning the value of a PA Valve to an AO "/>
        </ParameterList>
        <ParameterList Name="WritePAValve" Description="">
            <StringParameter Name="Name" Value="" Description=""
DefaultValue="WritePAValve "/>

```

```

        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="Function Writing the value of an AI in a PA Valve "/>
    </ParameterList>
    <ParameterList Name="UpdatePAStatus" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="UpdatePAStatus"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="Function updating the value of a PA Valve "/>
    </ParameterList>
    <ParameterList Name="READ_Profibus_PA" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="READ_Profibus_PA"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="Function returning the value of a DP profibus instrument"/>
    </ParameterList>
    <ParameterList Name="READ_Profibus_DP" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="READ_Profibus_DP"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="Function returning the value of a DP profibus instrument "/>
    </ParameterList>
    <ParameterList Name="FC_TSPP" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="FC_TSPP"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="Function for TSPP communication"/>

```

```

        </ParameterList>
        <ParameterList Name="DETECT_EDGE" Description="">
            <StringParameter Name="Name" Value="" Description=""
DefaultValue="DETECT_EDGE"/>
            <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
            <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
            <StringParameter Name="Description" Value="" Description=""
DefaultValue="Function to detect a Rising Edge on a signal "/>
        </ParameterList>
        <ParameterList Name="FC_unicos1" Description="">
            <StringParameter Name="Name" Value="" Description=""
DefaultValue="FC_unicos1"/>
            <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
            <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
            <StringParameter Name="Description" Value="" Description=""
DefaultValue="user defined Function"/>
        </ParameterList>
        <ParameterList Name="FC_unicos2" Description="">
            <StringParameter Name="Name" Value="" Description=""
DefaultValue="FC_unicos2"/>
            <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
            <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
            <StringParameter Name="Description" Value="" Description=""
DefaultValue="user defined Function"/>
        </ParameterList>
        <ParameterList Name="FC_unicos3" Description="">
            <StringParameter Name="Name" Value="" Description=""
DefaultValue="FC_unicos3"/>
            <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
            <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
            <StringParameter Name="Description" Value="" Description=""
DefaultValue="user defined Function"/>
        </ParameterList>
        <ParameterList Name="FC_unicos4" Description="">
            <StringParameter Name="Name" Value="" Description=""
DefaultValue="FC_unicos4"/>

```

```

        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="user defined Function"/>
    </ParameterList>
    <ParameterList Name="FC_unicos5" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="FC_unicos5"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="user defined Function"/>
    </ParameterList>
    <ParameterList Name="FC_CONTROLLER" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="FC_CONTROLLER"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="This Function call every Controller_DL() Functions"/>
    </ParameterList>
    <ParameterList Name="FC_PCO_LOGIC" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="FC_PCO_LOGIC"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="This Function call every section PCO Function"/>
    </ParameterList>
    <ParameterList Name="IO_ACCESS_AI" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="IO_ACCESS_AI"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="Addressing of IO objects "/>

```

```

        </ParameterList>
        <ParameterList Name="IO_ACCESS_AIR" Description="">
            <StringParameter Name="Name" Value="" Description=""
DefaultValue="IO_ACCESS_AIR"/>
            <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
            <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
            <StringParameter Name="Description" Value="" Description=""
DefaultValue="Addressing of IO objects "/>
        </ParameterList>
        <ParameterList Name="IO_ACCESS_AO" Description="">
            <StringParameter Name="Name" Value="" Description=""
DefaultValue="IO_ACCESS_AO"/>
            <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
            <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
            <StringParameter Name="Description" Value="" Description=""
DefaultValue="Addressing of IO objects "/>
        </ParameterList>
        <ParameterList Name="IO_ACCESS_AOR" Description="">
            <StringParameter Name="Name" Value="" Description=""
DefaultValue="IO_ACCESS_AOR"/>
            <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
            <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
            <StringParameter Name="Description" Value="" Description=""
DefaultValue="Addressing of IO objects "/>
        </ParameterList>
        <ParameterList Name="IO_ACCESS_DI" Description="">
            <StringParameter Name="Name" Value="" Description=""
DefaultValue="IO_ACCESS_DI"/>
            <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
            <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
            <StringParameter Name="Description" Value="" Description=""
DefaultValue="Addressing of IO objects "/>
        </ParameterList>
        <ParameterList Name="IO_ACCESS_DO" Description="">
            <StringParameter Name="Name" Value="" Description=""
DefaultValue="IO_ACCESS_DO"/>

```

```

        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="Addressing of IO objects "/>
    </ParameterList>
    <ParameterList Name="IO_ACCESS_AS" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="IO_ACCESS_AS"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="Addressing of IO objects "/>
    </ParameterList>
    <ParameterList Name="IO_ACCESS_WS" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="IO_ACCESS_WS"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="Addressing of IO objects "/>
    </ParameterList>
    <ParameterList Name="IO_ACCESS_WPAR" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="IO_ACCESS_WPAR"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="Addressing of IO objects "/>
    </ParameterList>
    <ParameterList Name="FC_ANALOG2" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="FC_ANALOG2"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="when exceeded the limit size"/>

```

```

        </ParameterList>
        <ParameterList Name="FC_ANALOG3" Description="">
            <StringParameter Name="Name" Value="" Description=""
DefaultValue="FC_ANALOG3"/>
            <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
            <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
            <StringParameter Name="Description" Value="" Description=""
DefaultValue="when exceeded the limit size"/>
        </ParameterList>
        <ParameterList Name="FC_ANALOG4" Description="">
            <StringParameter Name="Name" Value="" Description=""
DefaultValue="FC_ANALOG4"/>
            <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
            <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
            <StringParameter Name="Description" Value="" Description=""
DefaultValue="when exceeded the limit size"/>
        </ParameterList>
        <ParameterList Name="WRITE_Profibus_DP" Description="">
            <StringParameter Name="Name" Value="" Description=""
DefaultValue="WRITE_Profibus_DP "/>
            <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
            <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
            <StringParameter Name="Description" Value="" Description=""
DefaultValue="Consistent write of PROFIBUS DP data"/>
        </ParameterList>
        <ParameterList Name="IO_ACCESS_ENC" Description="">
            <StringParameter Name="Name" Value="" Description=""
DefaultValue="IO_ACCESS_ENC"/>
            <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
            <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
            <StringParameter Name="Description" Value="" Description=""
DefaultValue="Addressing of IO objects "/>
        </ParameterList>
        <ParameterList Name="IO_ACCESS_DWI" Description="">
            <StringParameter Name="Name" Value="" Description=""
DefaultValue="IO_ACCESS_DWI"/>

```

```

        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="Addressing of IO objects "/>
    </ParameterList>
    <ParameterList Name="IO_ACCESS_DWO" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="IO_ACCESS_DWO"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="Addressing of IO objects "/>
    </ParameterList>
    <ParameterList Name="FC_FOF" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="FC_FOF"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value=""
Description="Function First Order Filter" DefaultValue=""/>
    </ParameterList>
    <ParameterList Description="" Name="FI_POU">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="FI_POU"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="Function for fast interlock peripheral output update"/>
    </ParameterList>
    <ParameterList Description="" Name="FC_Event_FI">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="FC_Event_FI"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>

```



```

        <StringParameter Name="Description" Value="" Description=""
DefaultValue="FC to Generate Events for evstsreg01 and call TS_EVENT_MANAGER of fast interlock
"/>
    </ParameterList>
    <ParameterList Description="" Name="FC_FI_LOGIC">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="FC_FI_LOGIC"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="This Function call every DL of fast interlock OnOff"/>
    </ParameterList>

    <!-- ===== DBs ===== -->

    <ParameterList Name="DB_WINCCOA" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="DB_WINCCOA"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="global_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="Contains TSPP parameters for WINCC O. A."/>
    </ParameterList>
    <ParameterList Name="DB_SCHED" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="DB_SCHED"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="global_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="DB scheduler to manage the PID sampling times"/>
    </ParameterList>
    <ParameterList Name="DB_COMM" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="DB_COMM"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="global_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>

```

```

        <StringParameter Name="Description" Value="" Description=""
DefaultValue="Contains all numbers of status DB"/>
    </ParameterList>
    <ParameterList Name="DB_ERROR_SIMU" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="DB_ERROR_SIMU"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="global_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="Error and Simu Signals of all PCO functions"/>
    </ParameterList>
    <ParameterList Name="DB_EventData" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="DB_EventData"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="global_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="Contains pointers on evstsreg which have been changed"/>
    </ParameterList>
    <ParameterList Name="DB_Diagnostic" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="DB_Diagnostic"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="global_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="user DB"/>
    </ParameterList>
    <ParameterList Name="DB_PAValue" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="DB_PAValue"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="global_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="DB with DP/PA information for AI/AO"/>
    </ParameterList>
    <ParameterList Name="DB_status_PA_VALVES" Description="">

```

```

        <StringParameter Name="Name" Value="" Description=""
DefaultValue="DB_status_PA_VALVES"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="global_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="DB with DP/PA information for AI/AO"/>
    </ParameterList>
    <ParameterList Name="DB_DPValue" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="DB_DPValue"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="global_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="DB for DP Value"/>
    </ParameterList>
    <ParameterList Name="DB_unicos1" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="DB_unicos1"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="global_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="user DB"/>
    </ParameterList>
    <ParameterList Name="DB_unicos2" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="DB_unicos2"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="global_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="user DB"/>
    </ParameterList>
    <ParameterList Name="DB_unicos3" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="DB_unicos3"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="global_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>

```

```

        <StringParameter Name="Description" Value="" Description=""
DefaultValue="user DB"/>
    </ParameterList>
    <ParameterList Name="DB_unicos4" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="DB_unicos4"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="global_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="user DB"/>
    </ParameterList>
    <ParameterList Name="DB_unicos5" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="DB_unicos5"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="global_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="user DB"/>
    </ParameterList>
    <ParameterList Name="TSPP_UNICOS_DB" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="TSPP_UNICOS_DB"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="instance_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue="TSPP_UNICOS_Manager"/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="Instance DB of TSPP_UNICOS_Manager function"/>
    </ParameterList>
    <ParameterList Name="CPC_DB_RECIPES" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="CPC_DB_RECIPES"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="instance_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue="CPC_FB_RECIPES"/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="Instance DB of RECIPES function"/>
    </ParameterList>
    <ParameterList Name="DB_RECIPES_INTERFACE" Description="">

```

```

        <StringParameter Name="Name" Value="DB_RECIPES_INTERFACE"
Description="" DefaultValue="DB_RECIPES_INTERFACE"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="global_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="DB created for the Siemens recipes mechanism"/>
    </ParameterList>
    <ParameterList Name="DB_RECIPES_INTERFACE_old" Description="">
        <StringParameter Name="Name"
Value="DB_RECIPES_INTERFACE_old" Description="" DefaultValue="DB_RECIPES_INTERFACE_old"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="global_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="DB created for the Siemens recipes mechanism"/>
    </ParameterList>
    <ParameterList Name="CPC_DB_VERSION" Description="">
        <StringParameter Name="Name" Value="CPC_DB_VERSION"
Description="" DefaultValue="CPC_DB_VERSION"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="global_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="DB created to include the Baseline version"/>
    </ParameterList>
    <ParameterList Name="DB_DI_ALL_S" Description="">
        <StringParameter Name="Name" Value="DB_DI_ALL_S"
Description="" DefaultValue="DB_DI_ALL_S"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="global_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="SIMPLIFIED DB instance DI"/>
    </ParameterList>
    <ParameterList Name="DB_AIR_ALL_S" Description="">
        <StringParameter Name="Name" Value="DB_AIR_ALL_S"
Description="" DefaultValue="DB_AIR_ALL_S"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="global_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>

```

```

        <StringParameter Name="Description" Value="" Description=""
DefaultValue="SIMPLIFIED DB instance AIR"/>
    </ParameterList>
    <ParameterList Name="CPC_DB_DPReadout" Description="">
        <StringParameter Name="Name" Value="CPC_DB_DPReadout"
Description="" DefaultValue="CPC_DB_DPReadout"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="global_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="Data block for the consistent readout of PROFIBUS DP data"/>
    </ParameterList>
    <ParameterList Name="CPC_DB_DPWrite" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="CPC_DB_DPWrite"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="global_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="Data block for the consistent write of PROFIBUS DP data"/>
    </ParameterList>
    <ParameterList Name="DB_IO_Diagnostic" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="DB_IO_Diagnostic"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="instance_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue="FB_Diag1"/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="Instance DB of FB_Diag1 Contains data of IO Error diagnostic"/>
    </ParameterList>
    <ParameterList Name="DB_AI_ALL_S" Description="">
        <StringParameter Name="Name" Value="DB_AI_ALL_S"
Description="" DefaultValue="DB_AI_ALL_S"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="global_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="SIMPLIFIED DB instance AI"/>
    </ParameterList>
    <ParameterList Description="" Name="DB_FI_PIU">

```

```

        <StringParameter Name="Name" Value="" Description=""
DefaultValue="DB_FI_PIU"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="instance_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue="FB_FI_PIU"/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="DB for fast interlock peripheral input update"/>
    </ParameterList>
    <ParameterList Description="" Name="DB_FIEvent">
        <StringParameter Name="Name" Value="DB_FIEvent"
Description="" DefaultValue="DB_FIEvent"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="global_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="Contains pointers on evstsreg of fast interlock which have been changed"/>
    </ParameterList>
    <ParameterList Description="" Name="TSPP_FI_DB">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="TSPP_FI_DB"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="instance_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue="TSPP_FI"/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="Instance DB of TSPP_FI function"/>
    </ParameterList>

    <!-- ===== UDTs ===== -->

    <ParameterList Name="CPC_ANALOG_PARAM" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="CPC_ANALOG_PARAM"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="UDT"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="parameters of Analog Objects"/>
    </ParameterList>
    <ParameterList Name="CPC_ANALOGALARM_PARAM" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="CPC_ANALOGALARM_PARAM"/>

```

```

DefaultValue="UDT"/>
    <StringParameter Name="Nature" Value="" Description=""
DefaultValue="UDT"/>
    <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
    <StringParameter Name="Description" Value="" Description=""
DefaultValue="parameters of AA Objects"/>
    </ParameterList>
    <ParameterList Name="PARAMETERS_LIMIT" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="PARAMETERS_LIMIT"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="UDT"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="Limit parameters"/>
    </ParameterList>
    <ParameterList Name="CPC_PID_LIB_PARAM" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="CPC_PID_LIB_PARAM"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="UDT"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="Parameters of the PID"/>
    </ParameterList>
    <ParameterList Name="CPC_PID_PARAM" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="CPC_PID_PARAM"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="UDT"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="Parameters of controller objects"/>
    </ParameterList>
    <ParameterList Name="CPC_PCO_PARAM" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="CPC_PCO_PARAM"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="UDT"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="Parameters of PCO objects"/>

```



```

        </ParameterList>
        <ParameterList Name="CPC_RAMP_PARAM" Description="">
            <StringParameter Name="Name" Value="" Description=""
DefaultValue="CPC_RAMP_PARAM"/>
            <StringParameter Name="Nature" Value="" Description=""
DefaultValue="UDT"/>
            <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
            <StringParameter Name="Description" Value="" Description=""
DefaultValue="Ramp parameters for PID"/>
        </ParameterList>
        <ParameterList Name="CPC_DB_COMM" Description="">
            <StringParameter Name="Name" Value="" Description=""
DefaultValue="CPC_DB_COMM"/>
            <StringParameter Name="Nature" Value="" Description=""
DefaultValue="UDT"/>
            <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
            <StringParameter Name="Description" Value="" Description=""
DefaultValue="Type for the communication DB"/>
        </ParameterList>
        <ParameterList Name="CPC_IOERROR" Description="">
            <StringParameter Name="Name" Value="" Description=""
DefaultValue="CPC_IOERROR"/>
            <StringParameter Name="Nature" Value="" Description=""
DefaultValue="UDT"/>
            <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
            <StringParameter Name="Description" Value="" Description=""
DefaultValue="Used for AI/DI/AO/DO_Error"/>
        </ParameterList>
        <ParameterList Name="CPC_ANADIG_PWM_PARAM" Description="">
            <StringParameter Name="Name" Value="" Description=""
DefaultValue="CPC_ANADIG_PWM_PARAM"/>
            <StringParameter Name="Nature" Value="" Description=""
DefaultValue="UDT"/>
            <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
            <StringParameter Name="Description" Value="" Description=""
DefaultValue="Parameters of the Pulse Wave Modulation of Anadig objects"/>
        </ParameterList>
        <ParameterList Name="STATUS_PID" Description="">
            <StringParameter Name="Name" Value="" Description=""
DefaultValue="STATUS_PID"/>

```

```

DefaultValue="UDT"/>
    <StringParameter Name="Nature" Value="" Description=""
DefaultValue="UDT"/>
    <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
    <StringParameter Name="Description" Value="" Description=""
DefaultValue="UDT for PID status"/>
    </ParameterList>
    <ParameterList Name="CPC_DB_PA_STATUS" Description="">
    <StringParameter Name="Name" Value="" Description=""
DefaultValue="CPC_DB_PA_STATUS"/>
    <StringParameter Name="Nature" Value="" Description=""
DefaultValue="UDT"/>
    <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
    <StringParameter Name="Description" Value="" Description=""
DefaultValue="UDT for PID status"/>
    </ParameterList>
    <ParameterList Name="CPC_ONOFF_PARAM" Description="">
    <StringParameter Name="Name" Value="" Description=""
DefaultValue="CPC_ONOFF_PARAM"/>
    <StringParameter Name="Nature" Value="" Description=""
DefaultValue="UDT"/>
    <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
    <StringParameter Name="Description" Value="" Description=""
DefaultValue="Parameters of ONOFF"/>
    </ParameterList>
    <ParameterList Name="CPC_LOCAL_PARAM" Description="">
    <StringParameter Name="Name" Value="" Description=""
DefaultValue="CPC_LOCAL_PARAM"/>
    <StringParameter Name="Nature" Value="" Description=""
DefaultValue="UDT"/>
    <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
    <StringParameter Name="Description" Value="" Description=""
DefaultValue="Parameters of Local"/>
    </ParameterList>
    <ParameterList Name="CPC_DB_DI_S" Description="">
    <StringParameter Name="Name" Value="CPC_DB_DI_S"
Description="" DefaultValue="CPC_DB_DI_S"/>
    <StringParameter Name="Nature" Value="" Description=""
DefaultValue="UDT"/>
    <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
    <StringParameter Name="Description" Value="" Description=""
DefaultValue="SIMPLIFIED DIGITAL INPUT OBJECT DATA STRUCTURE"/>

```

```

        </ParameterList>
        <ParameterList Name="CPC_DB_AIR_S" Description="">
            <StringParameter Name="Name" Value="CPC_DB_AIR_S"
Description="" DefaultValue="CPC_DB_AIR_S"/>
            <StringParameter Name="Nature" Value="" Description=""
DefaultValue="UDT"/>
            <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
            <StringParameter Name="Description" Value="" Description=""
DefaultValue="SIMPLIFIED AIR OBJECT DATA STRUCTURE"/>
        </ParameterList>
        <ParameterList Name="CPC_STPMOT_PARAM" Description="">
            <StringParameter Name="Name" Value="" Description=""
DefaultValue="CPC_STPMOT_PARAM"/>
            <StringParameter Name="Nature" Value="" Description=""
DefaultValue="UDT"/>
            <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
            <StringParameter Name="Description" Value="" Description=""
DefaultValue="parameters of Stepping Motor Objects"/>
        </ParameterList>
        <ParameterList Name="FOF" Description="">
            <StringParameter Name="Name" Value="" Description=""
DefaultValue="FOF"/>
            <StringParameter Name="Nature" Value="" Description=""
DefaultValue="UDT"/>
            <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
            <StringParameter Name="Description" Value="" Description="UDT
to manage First Order Filter data" DefaultValue=""/>
        </ParameterList>
        <ParameterList Name="CPC_DB_AI_S" Description="">
            <StringParameter Name="Name" Value="CPC_DB_AI_S"
Description="" DefaultValue="CPC_DB_AI_S"/>
            <StringParameter Name="Nature" Value="" Description=""
DefaultValue="UDT"/>
            <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
            <StringParameter Name="Description" Value="" Description=""
DefaultValue="SIMPLIFIED AI OBJECT DATA STRUCTURE"/>
        </ParameterList>
    </ParameterList>
    <ParameterList Name="OptimizedTypeResources" Description="">
        <ParameterList Name="CPC_FB_Type">

```

```

        <StringParameter Name="Name" Value="" Description=""
DefaultValue="CPC_FB_Type"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="FB to define the behavior for the UNICOS type"/>
    </ParameterList>
    <ParameterList Name="DB_bin_Status_Type" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="DB_bin_Status_Type"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="global_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="DB to store the binary status"/>
    </ParameterList>
    <ParameterList Name="DB_bin_Status_Type_old" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="DB_bin_Status_Type_old"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="global_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="DB to store the old binary status"/>
    </ParameterList>
    <ParameterList Name="DB_Event_Type" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="DB_Event_Type"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="global_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="DB to store the events"/>
    </ParameterList>
    <ParameterList Name="DB_Type" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="DB_Type"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="instance_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue="CPC_FB_Type"/>

```

```

        <StringParameter Name="Description" Value="" Description=""
DefaultValue="Instance DB"/>
    </ParameterList>
    <ParameterList Name="Type_ERROR" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="Type_ERROR"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="global_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="DB to store the errors"/>
    </ParameterList>
    <ParameterList Name="FB_Type_all" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="FB_Type_all"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="FB to optimize the UNICOS objects"/>
    </ParameterList>
    <ParameterList Name="FB_Type_all2" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="FB_Type_all2"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="FB to optimize the UNICOS objects"/>
    </ParameterList>
    <ParameterList Name="DB_Type_all" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="DB_Type_all"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="instance_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue="FB_Type_all"/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="DB intance of FB_Type_all"/>
    </ParameterList>
    <ParameterList Name="DB_Type_all2" Description="">

```

```

        <StringParameter Name="Name" Value="" Description=""
DefaultValue="DB_Type_all2"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="instance_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue="FB_Type_all2"/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="DB intance of FB_Type_all2"/>
    </ParameterList>
    <ParameterList Name="DB_ana_Status_Type" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="DB_ana_Status_Type"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="global_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="DB to store the analog status"/>
    </ParameterList>
    <ParameterList Name="DB_ana_Status_Type_old" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="DB_ana_Status_Type_old"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="global_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="DB to store the old analog status"/>
    </ParameterList>
    <ParameterList Name="CPC_DB_Type" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="CPC_DB_Type"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="UDT"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="UDT created for optimized objects"/>
    </ParameterList>
    <ParameterList Name="Type_ManRequest" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="Type_ManRequest"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="UDT"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>

```

```

        <StringParameter Name="Description" Value="" Description=""
DefaultValue="Structure for DB_Type_Inputs"/>
    </ParameterList>
    <ParameterList Name="Type_event" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="Type_event"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="UDT"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="Structure for DB_Event_Type"/>
    </ParameterList>
    <ParameterList Name="Type_bin_Status" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="Type_bin_Status"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="UDT"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="Structure for DB_bin_Status_Type and DB_bin_Status_Type_old"/>
    </ParameterList>
    <ParameterList Name="Type_ana_Status" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="Type_ana_Status"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="UDT"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="Structure for DB_ana_Status_Type and DB_Ana_Status_Type_old"/>
    </ParameterList>
    <ParameterList Name="DB_Type_ManRequest" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="DB_Type_ManRequest"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="global_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="DB to map inputs from SCADA"/>
    </ParameterList>
</ParameterList>
<ParameterList Name="NoOptimizedTypeResources" Description="">

```

```

        <ParameterList Name="CPC_FB_Type">
            <StringParameter Name="Name" Value="" Description=""
DefaultValue="CPC_FB_Type"/>
            <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FB"/>
            <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
            <StringParameter Name="Description" Value="" Description=""
DefaultValue="FB to define the behavior for the UNICOS type"/>
        </ParameterList>
        <ParameterList Name="DB_bin_Status_Type" Description="">
            <StringParameter Name="Name" Value="" Description=""
DefaultValue="DB_bin_Status_Type"/>
            <StringParameter Name="Nature" Value="" Description=""
DefaultValue="global_DB"/>
            <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
            <StringParameter Name="Description" Value="" Description=""
DefaultValue="DB to store the binary status"/>
        </ParameterList>
        <ParameterList Name="DB_bin_Status_Type_old" Description="">
            <StringParameter Name="Name" Value="" Description=""
DefaultValue="DB_bin_Status_Type_old"/>
            <StringParameter Name="Nature" Value="" Description=""
DefaultValue="global_DB"/>
            <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
            <StringParameter Name="Description" Value="" Description=""
DefaultValue="DB to store the old binary status"/>
        </ParameterList>
        <ParameterList Name="FC_Type" Description="">
            <StringParameter Name="Name" Value="" Description=""
DefaultValue="FC_Type"/>
            <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
            <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
            <StringParameter Name="Description" Value="" Description=""
DefaultValue="Function for no-optimized objects"/>
        </ParameterList>
        <ParameterList Name="DB_Equipment_Location_Name" Description="">
            <StringParameter Name="Name" Value="" Description=""
DefaultValue="DB_Equipment_Location_Name"/>
            <StringParameter Name="Nature" Value="" Description=""
DefaultValue="instance_DB"/>

```



```

        <StringParameter Name="Associated" Value="" Description=""
DefaultValue="CPC_FB_Type"/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="DB created for each instance of no-optimized objects"/>
    </ParameterList>
    <ParameterList Name="DB_Event_Type" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="DB_Event_Type"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="global_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="DB to store the events of each type"/>
    </ParameterList>
    <ParameterList Name="Master_Equipment_Location_Name" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="Master_Equipment_Location_Name"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="Function created for the Dependent Logic "/>
    </ParameterList>
    <ParameterList Name="DB_ana_Status_Type" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="DB_ana_Status_Type"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="global_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="DB to store the analog status"/>
    </ParameterList>
    <ParameterList Name="DB_ana_Status_Type_old" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="DB_ana_Status_Type_old"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="global_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="DB to store the old analog status"/>
    </ParameterList>

```

```

        <ParameterList Name="Type_ManRequest" Description="">
            <StringParameter Name="Name" Value="" Description=""
DefaultValue="Type_ManRequest"/>
            <StringParameter Name="Nature" Value="" Description=""
DefaultValue="UDT"/>
            <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
            <StringParameter Name="Description" Value="" Description=""
DefaultValue="Structure for DB_Type_Inputs"/>
        </ParameterList>
        <ParameterList Name="Type_bin_Status" Description="">
            <StringParameter Name="Name" Value="" Description=""
DefaultValue="Type_bin_Status"/>
            <StringParameter Name="Nature" Value="" Description=""
DefaultValue="UDT"/>
            <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
            <StringParameter Name="Description" Value="" Description=""
DefaultValue="Structure for DB_bin_Status_Type and DB_bin_Status_Type_old"/>
        </ParameterList>
        <ParameterList Name="Type_ana_Status" Description="">
            <StringParameter Name="Name" Value="" Description=""
DefaultValue="Type_ana_Status"/>
            <StringParameter Name="Nature" Value="" Description=""
DefaultValue="UDT"/>
            <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
            <StringParameter Name="Description" Value="" Description=""
DefaultValue="Structure for DB_ana_Status_Type and DB_Ana_Status_Type_old"/>
        </ParameterList>
        <ParameterList Name="DB_Type_ManRequest" Description="">
            <StringParameter Name="Name" Value="" Description=""
DefaultValue="DB_Type_ManRequest"/>
            <StringParameter Name="Nature" Value="" Description=""
DefaultValue="global_DB"/>
            <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
            <StringParameter Name="Description" Value="" Description=""
DefaultValue="DB to map inputs from SCADA"/>
        </ParameterList>
        <ParameterList Name="Type_event" Description="">
            <StringParameter Name="Name" Value="" Description=""
DefaultValue="Type_event"/>
            <StringParameter Name="Nature" Value="" Description=""
DefaultValue="UDT"/>

```

```

        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="Structure for DB_Event_Type"/>
    </ParameterList>
</ParameterList>
<ParameterList Name="FastInterlockResources" Description="">
    <ParameterList Name="FB_Type_FI" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="FB_Type_FI"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="FB for the fast interlock UNICOS objects"/>
    </ParameterList>
    <ParameterList Name="DB_Type_FI" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="DB_Type_FI"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="instance_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue="FB_Type_FI"/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="DB intance of FB_Type_FI"/>
    </ParameterList>
    <ParameterList Name="FC_Type_FI" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="FC_Type_FI"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="Function for fast interlock objects"/>
    </ParameterList>
    <ParameterList Name="DB_bin_Status_Type_FI" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="DB_bin_Status_Type_FI"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="global_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>

```

```

        <StringParameter Name="Description" Value="" Description=""
DefaultValue="DB to store the binary status of fast interlock"/>
    </ParameterList>
    <ParameterList Name="DB_bin_Status_Type_FI_old" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="DB_bin_Status_Type_FI_old"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="global_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="DB to store the old binary status of fast interlock"/>
    </ParameterList>
    <ParameterList Name="DB_Event_Type_FI" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="DB_Event_Type_FI"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="global_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="DB to store the events of fast interlock"/>
    </ParameterList>
    <ParameterList Name="DB_Type_FI_ManRequest" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="DB_Type_FI_ManRequest"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="global_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description=""
DefaultValue="DB to map inputs from SCADA of fast interlock"/>
    </ParameterList>
</ParameterList>
<ParameterList Name="UNICOSExtended" Description="Contains new requirements
in terms of resources Starting from Address 7000, counting backwards">
    <!-- FUNCTION -->
        <ParameterList Name="FC_AA" Description="">
            <StringParameter Name="Name" Value="" Description=""
DefaultValue="FC_AA"/>
            <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
            <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>

```

```

        <StringParameter Name="Description" Value=""
Description="Function for optimized objects" DefaultValue=""/>
    </ParameterList>
    <ParameterList Name="FC_AI" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="FC_AI"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value=""
Description="Function for optimized objects" DefaultValue=""/>
    </ParameterList>
    <ParameterList Name="FC_AIR" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="FC_AIR"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value=""
Description="Function for optimized objects" DefaultValue=""/>
    </ParameterList>
    <ParameterList Name="FC_AO" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="FC_AO"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value=""
Description="Function for optimized objects" DefaultValue=""/>
    </ParameterList>
    <ParameterList Name="FC_AOR" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="FC_AOR"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value=""
Description="Function for optimized objects" DefaultValue=""/>
    </ParameterList>
    <ParameterList Name="FC_APAR" Description="">

```

```

DefaultValue="FC_APAR"/>
    <StringParameter Name="Name" Value="" Description=""
DefaultValue="FUNCTION"/>
    <StringParameter Name="Nature" Value="" Description=""
DefaultValue=""/>
    <StringParameter Name="Associated" Value="" Description=""
Description="Function for optimized objects" DefaultValue=""/>
    </ParameterList>
    <ParameterList Name="FC_AS" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="FC_AS"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value=""
Description="Function for optimized objects" DefaultValue=""/>
    </ParameterList>
    <ParameterList Name="FC_DA" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="FC_DA"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value=""
Description="Function for optimized objects" DefaultValue=""/>
    </ParameterList>
    <ParameterList Name="FC_DI" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="FC_DI"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value=""
Description="Function for optimized objects" DefaultValue=""/>
    </ParameterList>
    <ParameterList Name="FC_DO" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="FC_DO"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>

```

```

        <StringParameter Name="Description" Value=""
Description="Function for optimized objects" DefaultValue=""/>
    </ParameterList>
    <ParameterList Name="FC_DPAR" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="FC_DPAR"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value=""
Description="Function for optimized objects" DefaultValue=""/>
    </ParameterList>
    <ParameterList Name="FC_WPAR" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="FC_WPAR"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value=""
Description="Function for optimized objects" DefaultValue=""/>
    </ParameterList>
    <ParameterList Name="FC_WS" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="FC_WS"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value=""
Description="Function for optimized objects" DefaultValue=""/>
    </ParameterList>
    <ParameterList Name="FC_ENC" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="FC_ENC"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value=""
Description="Function for Encoders" DefaultValue=""/>
    </ParameterList>
    <ParameterList Name="FC_ANALOG20" Description="">

```

```

        <StringParameter Name="Name" Value="" Description=""
DefaultValue="FC_ANALOG20"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description="when
exceeded the limit size" DefaultValue=""/>
    </ParameterList>
    <ParameterList Name="FC_ANALOG21" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="FC_ANALOG21"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description="when
exceeded the limit size" DefaultValue=""/>
    </ParameterList>
    <ParameterList Name="FC_ONOFF2" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="FC_ONOFF2"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="FUNCTION"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description="when
exceeded the limit size" DefaultValue=""/>
    </ParameterList>
    <ParameterList Name="FOF_AI_all" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="FOF_AI_all"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="global_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description="Data
block for AI First Order Filter" DefaultValue=""/>
    </ParameterList>
    <ParameterList Name="FOF_AIR_all" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="FOF_AIR_all"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="global_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>

```



```

        <StringParameter Name="Description" Value="" Description="Data
block for AIR First Order Filter" DefaultValue=""/>
    </ParameterList>
    <ParameterList Name="FOF_AS_all" Description="">
        <StringParameter Name="Name" Value="" Description=""
DefaultValue="FOF_AS_all"/>
        <StringParameter Name="Nature" Value="" Description=""
DefaultValue="global_DB"/>
        <StringParameter Name="Associated" Value="" Description=""
DefaultValue=""/>
        <StringParameter Name="Description" Value="" Description="Data
block for AS First Order Filter" DefaultValue=""/>
    </ParameterList>
</ParameterList>
<ParameterList Name="SubPackageResources" Description="">
    </ParameterList>
    <ParameterList Name="EthernetParameters" Description="" isExpertField="false">
        <IPAddress Name="IpAddressPlc" Value="137.138.192.1" Description="Ip
Address PLC"/>
    </ParameterList>
    <ParameterList Name="UserResources" Description="">
        <OptionalPathParameter Name="UserResourcesFile" Value=""
Description="Path to the xml file where the additional resources (FBs, FCs, ...) can be defined by the
user." DefaultValue=""/>
        <OptionalPathParameter Name="FixUserResourcesFile" Value=""
Description="Path to the xml file where the additional resources (M, SFBs, SFCs, FBs, FCs, ...) can be
defined by the user with a fix address." DefaultValue=""/>
    </ParameterList>
    <ParameterList Name="RecipeParameters" Description="">
        <BooleanParameter Name="GenerateBuffers" Value="true" Description="All
resources (functions and databases) in both PLC and SCADA associated to the recipe tool will be
created." DefaultValue="false"/>
        <PositiveIntegerParameter Name="ActivationTimeout" Value="100"
Description="Recipe activation timeout (sec.)" DefaultValue="100"/>
        <PositiveIntegerParameter Name="HeaderBufferSize" Value="20"
Description="Size of the header and status buffers" DefaultValue="20"/>
        <PositiveIntegerParameter Name="BufferSize" Value="1000"
Description="Maximum number of data used in a recipe [1-1000]" DefaultValue="1000"/>
    </ParameterList>
</ParameterList>
<ParameterList Name="S7-400HParameters" Description="Specific parameters for Siemens
S7-400H PLC" isExpertField="false">
    <ParameterList Name="PlcConfigParameters" Description="" isExpertField="false">
        <BooleanParameter Name="RedundantModeEnabled" Value="true"
Description="True if the PLC redundant mode must be enabled." DefaultValue="true"/>
    </ParameterList>

```

```

</ParameterList>
<ParameterList Name="EthernetParameters" Description="" isExpertField="false">
  <IPAddress Name="RedundantIpAddressPlc" Value="137.138.192.2"
Description="Redundant Ip Address"/>
</ParameterList>
<ParameterList Name="PLCS7Connection">
  <HexParameter Name="RedundantLocalId" Value="2" Description="PLC
connection ID (see NetPro S7 Connection settings)" DefaultValue="2"/>
  <PositiveIntegerParameter Name="RedundantLocalRack" Value="1"
Description="PLC Rack Number (see NetPro S7 Connection settings)" DefaultValue="1"/>
  <PositiveIntegerParameter Name="RedundantLocalSlot" Value="3"
Description="PLC CPU Slot Number (see NetPro S7 Connection settings)" DefaultValue="3"/>
  <HexParameter Name="RedundantLocalConnResource" Value="11"
Description="PLC Connection Resources (see NetPro S7 Connection settings)" DefaultValue="11"/>
</ParameterList>
<ParameterList Name="AddressConfig" Description="">
  <HexParameter Name="RedundantPartnerConnResource" Value="11"
MinValue="10" Description="PC Connection Resources (see NetPro S7 Connection settings)"
DefaultValue="11"/>
  <PositiveIntegerParameter Name="RedundantTimeout" Value="5000"
Description="S7 Driver connection timeout" DefaultValue="5000"/>
  <PositiveIntegerParameter Name="RedundantPartnerRack" Value="0"
Description="PC Partner Rack (see NetPro S7 Connection settings)" DefaultValue="0"/>
  <PositiveIntegerParameter Name="RedundantPartnerSlot" Value="0"
Description="PC Partner Slot (see NetPro S7 Connection settings)" DefaultValue="0"/>
</ParameterList>
</ParameterList>
</SiemensPLC>

```

4.S7InstanceGenerator

4.1. Config

4.1.1. CPC_TSPP_UNICOS_FI.scl

```
FUNCTION_BLOCK TSPP_Unicos_Manager //### FBxxx The symbol must be declared first

TITLE = 'TSPP_Unicos_Manager'
//
// Commentaire du bloc ...
//
VERSION : '4.3' //optimization of the redundant implementation
AUTHOR : 'UNICOS'
NAME : 'COMM'
FAMILY : 'COMMS'

CONST
(* #####
These parameters MUST be adjusted to fullfill the user requirements *)
MaxNbOfTSEvent := 100; //### Const1:To be set by the user
// Nb of event wich will trig the send to WinCCOA
SpareEventNumber := 50; //### Const2:To be set by the user
// spare places to be able to continue to ../.
// record event when the send function is buzy
Word_in_one_TSEvent := 2; //### Const3:To be set by the user
// Number of data word in one Event
MaxStatusTable := 100; //### Const4:To be set by the user
// Max number of status tables (the length of one
// table is 200 bytes without the header)
MaxTableInOneSend := 100; //### Const5:To be set by the user
//(MAX value S7-400:250 S7-300:100)
// Max nb of status tables in one TSPP message
// Must lower or equal to MaxStatusTable
Redundant_PLC := FALSE; // Const6:To be set by the user
// Using a S7-400H PLC in Redundance mode
ListEventSize := 1000; //### Const7:To be set by the user
// Size of the Event List
(*#####*)

ExtendedNbOfEvent := MaxNbOfTSEvent + SpareEventNumber; // Full size of event buffer
TSEventHeaderSize := 6; // TimeStamp + DB number + Address
TSEventWordSize := Word_in_one_TSEvent + TSEventHeaderSize;
```

```

TSEventByteSize := TSEventWordSize*2;
EventByteDataSize := Word_in_one_TSEvent *2;
MaxStatusReqNb := MaxStatusTable;
StatusReqListSize := MaxStatusReqNb +1;
StatusWordSize := 100; // Size of status table
StatusByteSize := StatusWordSize * 2;
MaxReqNumber := 3;
ReqListSize := MaxReqNumber +1;
MaxBufferSize_Event := 6 + (TSEventByteSize*ExtendedNbOfEvent);
MaxBufferSize_Status:= 6 + ((StatusByteSize + 12)*MaxTableInOneSend);
MaxBufferSize := MaxBufferSize_Status+(MaxBufferSize_Event-MaxBufferSize_Status)
                *(1/(1+MaxBufferSize_Status/(MaxBufferSize_Event+1)));
EventExtension := (MaxBufferSize_Event-MaxBufferSize_Status)
                *(1 DIV (1+(MaxBufferSize_Status DIV MaxBufferSize_Event)));

// List of error codes
EventBufferFull := w#16#F001; // The number of event is exceeded
WrongDBNumber := w#16#F002; // The DB number is 0
WrongEventSize := w#16#F003; // In Event size <> Event size in buffer
MainQueueFull := w#16#F004; // Number of req in the global queue exceeded
NbTableExceeded := w#16#F005; // Number of tables exceeded
NoAccessToStatus := w#16#F007; // Error during access to one or more status table
EventAccessError := w#16#F008; // Error during access of the event (in application part)
TimeStampError := w#16#F009; // READ_CLK error
SendTimeOutError := w#16#F00A; // No reaction from network after sendind TSPP frame
Transmission_Error := w#16#F00B; // The BSEND error code is added to this value

END_CONST

VAR_TEMP
//Variables temporaires
Er_Code : INT;
Result : INT;
TempAdr : DWORD;
CurrentTime : TIME;
InEventByteDataSize : INT;
NumberOfEvents : INT;
CurrentInEvent: INT;
EventListElemPtr : ANY;
EventListElement AT EventListElemPtr : STRUCT
    IDAndType : WORD;
    DataAndDBNb : DWORD;

```

```

    Address    : DWORD;
END_STRUCT;
EventPtr     : ANY;
Event AT EventPtr : STRUCT
    S7_ID     : BYTE;
    DataType  : BYTE;
    NbOfData  : INT;
    DBNumber  : INT;
    Address   : DWORD;
END_STRUCT;
EventListAdr : INT;
Index        : INT;
Index2       : INT;
Index3       : INT;
First        : INT;
Last         : INT;
Src          : ANY;
ATSrc AT Src : STRUCT
    S7_ID     : BYTE;
    DataType  : BYTE;
    NbOfData  : INT;
    DBNumber  : INT;
    Address   : DWORD;
END_STRUCT;
DWNumber     : INT;
TempCounter  : INT;
ActualTable  : ANY;
CreateActual AT ActualTable : STRUCT
    S7_ID     : BYTE;
    DataType  : BYTE;
    NbOfData  : INT;
    DBNumber  : INT;
    Address   : DWORD;
END_STRUCT;
OldTable     : ANY;
CreateOld AT OldTable : STRUCT
    S7_ID     : BYTE;
    DataType  : BYTE;
    NbOfData  : INT;
    DBNumber  : INT;
    Address   : DWORD;
END_STRUCT;

```

```

TSPPTableIndex: INT;
NumberOfTableDB : INT;
TablesInDB : INT;
LastTableSize : INT;
ChangeInTable : BOOL;
// LocPtr : ANY;
// Local AT LocPtr : ARRAY[1..StatusWordSize] OF WORD;

NbOfDelayedInterrupts : INT;
NbOfQueuedInterrupts : INT;
END_VAR

VAR_INPUT
// Input Variables
Init : BOOL; // Initialisation of the function
SendID0 : WORD; // ID0 of the S7 link with WinCCOA (CPU0 if redundant)
SendID1 : WORD; // ID1 of the S7 link with WinCCOA (CPU1 if redundant)
SendEventPeriod : TIME; // Period for sending event buffer
NewEvent : BOOL; // New event indication
EventTSIncluded : BOOL; // Event(s) with(out)time stamp indication
MultipleEvent : BOOL; // EventData point to a list of events
EventData : ANY; // Pointer to event
IN_Event AT EventData : STRUCT
    S7_ID : BYTE;
    DataType : BYTE;
    NbOfData : INT;
    DBNumber : INT;
    Address : DWORD;
END_STRUCT;
EventListDB : BLOCK_DB; // For
ListOfStatusTable : BLOCK_DB; // DB containing the list of status tables
SendAllStatus : BOOL;
WatchDog : ANY;
IN_WatchDog AT WatchDog : STRUCT
    S7_ID : BYTE;
    DataType : BYTE;
    NbOfData : INT;
    DBNumber : WORD;
    Address : DWORD;
END_STRUCT;
END_VAR

```

```

VAR_OUTPUT
  Error      : BOOL; // Function error indicator
  Error_code  : WORD; // Function error code
  Special_code : WORD; // Error code of internally used functions
END_VAR

```

```

VAR
(*%%START Redundancy Code%%*)
Connection_to_use : BOOL; //FALSE=Connection 0 , TRUE= Connection 1
Connection_old_state: BOOL; //FALSE=Connection 0 , TRUE= Connection 1
Connection_changed : BOOL; //Error - Connection lost-try to connect to the other CPU
Connection_Problem0 : BOOL; //for CPU0
Connection_Problem1 : BOOL; //for CPU1
Connection_Problem : BOOL; //for all redundant system (CPU0 and CPU1)
BSENDcpu0_ERROR : BOOL;
BSENDcpu1_ERROR : BOOL;
BSENDcpu0_Status : WORD;
BSENDcpu1_Status : WORD;
//PLC_master : BOOL; //FALSE=CPU0 , TRUE=CPU1
(*%%END Redundancy Code%%*)

```

```

ID_NewEvent : INT;
ID_EventSent : INT;
CurrentEvent : INT := 0;
EventBufferSize : INT := 6;
Bsend_Done : BOOL;
Bsend_Error : BOOL;
TimerFlag : BOOL;
TimeOut : BOOL;
SendReq : BOOL;
BufferFullSendReq : BOOL;
ExtendedBufFull : BOOL := FALSE;
SendPending : BOOL := FALSE;
SendProblem : BOOL := FALSE;
InitDone : BOOL := FALSE;
Dummy : BOOL := TRUE;
RemoveFromList : BOOL := FALSE;
BufferToSend : BOOL := FALSE;
WaitDelay : BOOL;
SendAllStatusReq : BOOL := FALSE;
LinkNotEstablish : BOOL;
WatchDogInList : BOOL;

```

```

StatusInList      : BOOL;
IPReceived        : BOOL;
SendStatusCommand : BOOL;
EventInList       : BOOL;
TSPPTableFull    : BOOL := FALSE;
WatchDogMissing   : BOOL;
WatchDogTimeOut   : BOOL;
WinCCOANotAlive  : BOOL;
OldSendAllStatus  : BOOL;
Bsend_Status      : WORD;
NbOfTables        : INT;
NBOfGroupOfTable  : INT := 1;
WorkingGroup      : INT := 1;
SizeOfLastGroup   : INT;
NbOfStatusReq     : INT;
NbOfRequest       : INT := 0;
BsendLen          : WORD;
TSComm_Alive      : STRUCT
    TSPP_ID1       : CHAR := 'T';
    TSPP_ID2       : CHAR := 'S';
    TSPP_ID3       : CHAR := 'P';
    Nb_of_TSWord   : BYTE := 1;
    TS_Data_Length : INT := 7;
    TimeStamp      : DATE_AND_TIME;
    DBNumber       : WORD;
    Address        : INT;
    CommAliveCounter : INT;
END_STRUCT;
LocalActual       : ARRAY[1..StatusWordSize] OF WORD;
LocalOld          : ARRAY[1..StatusWordSize] OF WORD;
ReqList           : ARRAY[1..MaxReqNumber+1] OF INT := ReqListSize(0);
StatusReqList     : ARRAY[1..MaxStatusReqNb+1] OF INT := StatusReqListSize(0);
AlreadyInReqList  : ARRAY[1..MaxStatusTable] OF BOOL := MaxStatusTable(FALSE);
ActualTableList   : ARRAY[1..MaxStatusTable] OF STRUCT
    S7_ID : BYTE;
    DataType : BYTE;
    NbOfData : INT;
    DBNumber : INT;
    Address : DWORD;
END_STRUCT;
OldTableList      : ARRAY[1..MaxStatusTable] OF STRUCT
    S7_ID : BYTE;

```



```

    DataType : BYTE;
    NbOfData : INT;
    DBNumber : INT;
    Address : DWORD;
END_STRUCT;
TS_EventBuffer : STRUCT
    TSPP_ID1 : CHAR := 'T';
    TSPP_ID2 : CHAR := 'S';
    TSPP_ID3 : CHAR := 'P';
    Nb_of_TSWord : BYTE := Word_in_one_TSEvent;
    TS_Data_Length : INT;
    Data : ARRAY[1..ExtendedNbOfEvent] OF
        STRUCT
            TimeStamp : DATE_AND_TIME;
            DBNumber : INT;
            Address : INT;
            Data : ARRAY[1..Word_in_one_TSEvent] OF WORD;
        END_STRUCT;
END_STRUCT;
END_STRUCT;
BSendBuffer : STRUCT // Also used directly as StatusBuffer
    TSPP_ID1 : CHAR := 'T';
    TSPP_ID2 : CHAR := 'S';
    TSPP_ID3 : CHAR := 'P';
    Nb_of_TSWord : BYTE;
    TS_Data_Length : INT;
    TableList : ARRAY[1..MaxTableInOneSend] OF
        STRUCT
            TimeStamp : DATE_AND_TIME;
            DBNumber : INT;
            Address : INT;
            Table : ARRAY[1..StatusWordSize] OF WORD;
        END_STRUCT;
    ExtendedData : ARRAY[0..EventExtension] OF BYTE;
END_STRUCT;
SEND : BSEND; // Dynamic call to the right BSEND depending of the PLC type. In this case,
PLCType = S7-400H
(*%%START Redundancy Code%%*)
SEND1 : BSEND; // Dynamic call to the right BSEND depending of the PLC type. In this case,
PLCType = S7-400H
SENDcpu0 : BSEND; // Dynamic call to the right BSEND depending of the PLC type. In this case,
PLCType = S7-400H
SENDcpu1 : BSEND; // Dynamic call to the right BSEND depending of the PLC type. In this case,
PLCType = S7-400H

```

```

(*%%END Redundancy Code%%*)
SendTimeOutTimer : TON;
SendEventTimer : TON;
WatchDogTimer : TON;
NbOfRetry : INT := 0;
END_VAR

//Program

// Timer for sending events
SendEventTimer(IN := NOT(TimerFlag)
,PT := SendEventPeriod
);
TimerFlag := SendEventTimer.Q;
CurrentTime := SendEventTimer.ET;

// Timer for communication time out and retry
SendTimeOutTimer(IN := SendPending
,PT := t#10s
);
TimeOut := SendTimeOutTimer.Q;
CurrentTime := SendTimeOutTimer.ET;

// Timer for watch dog
WatchDogTimer(IN := WatchDogMissing
,PT := t#10s
);
WatchDogTimeOut := WatchDogTimer.Q;
CurrentTime := WatchDogTimer.ET;

Error := FALSE;
Error_code := 0;
Special_code := 0;

// Initialisation
IF Init OR NOT InitDone THEN

ID_NewEvent := 0; //changed TNR
ID_EventSent := 0; //changed TNR
(*%%START Redundancy Code%%*)
Connection_to_use := FALSE; // Redundancy, it starts with Connection 1 and in the next cycle it
updates if necessary

```

```

(*%%END Redundancy Code%%*)
Error_code := 0;
Special_code := 0;
InitDone := TRUE;
Init := FALSE;
//////////LOCK//////////
NbOfDelayedInterrupts := DIS_AIRT();
CurrentEvent := 0;
EventBufferSize := 6;           //Taille du header
BufferFullSendReq:= FALSE;
ExtendedBufFull := FALSE;
NbOfTables := 0;
NbOfStatusReq := 0;
SendProblem := FALSE;
RemoveFromList := FALSE;
BufferToSend := FALSE;
WaitDelay := FALSE;
SendAllStatusReq := FALSE;
SendStatusCommand := FALSE;
WatchDogInList := FALSE;
StatusInList := FALSE;
EventInList := FALSE;
TSPPTableFull := FALSE;
WorkingGroup := 1;
TS_EventBuffer.TS_Data_Length := 0;
//////////UNLOCK//////////
NbOfQueuedInterrupts := EN_AIRT();
NbOfRequest := 0;
FOR Index := 1 TO MaxReqNumber+1 BY 1 DO
  ReqList[Index] := 0;
END_FOR;
FOR Index := 1 TO MaxStatusReqNb +1 BY 1 DO
  StatusReqList[Index] := 0;
END_FOR;
FOR Index := 1 TO MaxStatusTable BY 1 DO
  AlreadyInReqList[Index] := FALSE;
END_FOR;

SendPending := FALSE;
SendReq := FALSE;

// Create table list

```

```

NumberOfTableDB := WORD_TO_INT(ListOfStatusTable.dw0);
Index3 := 0;
FOR Index := 1 TO NumberOfTableDB BY 1 DO // scan of DBs containing tables
    TablesInDB := WORD_TO_INT(ListOfStatusTable.dw[6+((Index-1)*6)]) DIV StatusByteSize;
    LastTableSize := WORD_TO_INT(ListOfStatusTable.dw[6+((Index-1)*6)]) MOD StatusByteSize;
    IF LastTableSize <> 0 THEN TablesInDB := TablesInDB +1;
    ELSE LastTableSize := StatusByteSize;
    END_IF;
    FOR Index2 := 1 TO TablesInDB BY 1 DO // scan of tables inside each DB
        Index3 := Index3+1;
        IF Index3 > MaxStatusTable THEN
            Error := TRUE;
            Error_code := NbTableExceeded;
            Special_code := 0;
            InitDone := FALSE;
        ELSE
            ActualTableList[Index3].S7_ID := b#16#10;
            ActualTableList[Index3].DataType := 2;
            OldTableList[Index3].S7_ID := b#16#10;
            OldTableList[Index3].DataType := 2;
            IF Index2 = TablesInDB THEN // Last table in the DB (can be shorter)
                ActualTableList[Index3].NbOfData := LastTableSize;
                OldTableList[Index3].NbOfData := LastTableSize;
            ELSE
                ActualTableList[Index3].NbOfData := StatusByteSize;
                OldTableList[Index3].NbOfData := StatusByteSize;
            END_IF;
            ActualTableList[Index3].DBNumber := WORD_TO_INT(ListOfStatusTable.dw[2+((Index-1)*6)]);
            OldTableList[Index3].DBNumber := WORD_TO_INT(ListOfStatusTable.dw[4+((Index-1)*6)]);
            ActualTableList[Index3].Address := DINT_TO_DWORD((INT_TO_DINT(Index2)-1) *
StatusByteSize * 8)
                OR dw#16#84000000;
            OldTableList[Index3].Address := DINT_TO_DWORD((INT_TO_DINT(Index2)-1) * StatusByteSize *
8)
                OR dw#16#84000000;
        END_IF;
    END_FOR;
END_FOR;
SendAllStatusReq := TRUE;
NbOfTables := Index3; // Total number of tables
NbOfGroupOfTable := NbOfTables DIV MaxTableInOneSend;
SizeOfLastGroup := NbOfTables MOD MaxTableInOneSend;
IF SizeOfLastGroup = 0 THEN

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    SizeOfLastGroup := MaxTableInOneSend;
ELSE
    NbOfGroupOfTable := NbOfGroupOfTable +1;
END_IF;

// End create table list

ELSE
// End of initialisation

// Send all table
// Copy Tables to OldTables and Put to SendTable queue in order to ..
// send all tables...
// 1 - once at the beginning,
// 2 - on request,
// 3 - after communication lost and re-establishment
// For cases 1 and 3: wait enable from WinCCOA by IPReceived, that is to guaranty
// that WinCCOA is ready to receive the tables
// For case 2: send on the rising edge of SendAllStatus
IF (SendAllStatus AND NOT OldSendAllStatus)
    OR (SendAllStatusReq AND IPReceived) THEN
    SendStatusCommand := TRUE;
    SendAllStatusReq := FALSE;
END_IF;
OldSendAllStatus := SendAllStatus;
IF SendStatusCommand THEN
FOR Index := 1 TO NbOfTables BY 1 DO
    CreateActual := ActualTableList[Index];
    CreateOld := OldTableList[Index];
    Result := BLKMOV(SRCBLK := ActualTable
        ,DSTBLK := OldTable
    );
    IF Result <> 0 THEN
        Error := TRUE;
        Error_code := NoAccessToStatus;
        Special_code := INT_TO_WORD(Result);
    ELSE
        IF NOT AlreadyInReqList[Index] THEN
            NbOfStatusReq := NbOfStatusReq +1;
            StatusReqList[NbOfStatusReq] := Index; // Table number to send in waiting list
            AlreadyInReqList[Index] := TRUE;
        END_IF;

```

```

    END_IF;
END_FOR;
SendStatusCommand := FALSE;
END_IF;

// Events treatment
IF NewEvent THEN
    IF MultipleEvent THEN
        //EventListAdr := 0;
        //NumberOfEvents := WORD_TO_INT(EventListDB.DW[EventListAdr]);
        NumberOfEvents := ID_NewEvent - ID_EventSent;
        IF NumberOfEvents < 0 THEN
            NumberOfEvents := NumberOfEvents + ListEventSize;
        END_IF;
        EventListAdr := 2 + ID_EventSent * 10;
        EventListElement.IDAndType := EventListDB.DW[EventListAdr];
        EventListElement.DataAndDBNb := EventListDB.DD[EventListAdr+2];
        EventListElement.Address := EventListDB.DD[EventListAdr+6];
        EventPtr := EventListElemPtr;
    ELSE
        NumberOfEvents := 0;
        EventPtr :=EventData;
    END_IF;
    CurrentInEvent := 1;
    REPEAT
        CASE CHAR_TO_INT(BYTE_TO_CHAR(Event.DataType)) OF
            2 :
                InEventByteDataSize := Event.NbOfData;
            4..5 :
                InEventByteDataSize := Event.NbOfData *2;
            6..8 :
                InEventByteDataSize := Event.NbOfData *4;
        ELSE:
            ;
        END_CASE;
        IF EventTSIncluded THEN
            InEventByteDataSize := InEventByteDataSize - 8; //data size without time stamp
        END_IF;
        IF InEventByteDataSize <> EventByteDataSize THEN
            Error := TRUE;
            Error_code := WrongEventSize;
            Special_code := 0;
        END_IF;
    END_REPEAT;
END_IF;

```

```

ELSIF Event.DBNumber = 0 THEN
    Error := TRUE;
    Error_code := WrongDBNumber;
    Special_code := 0;
ELSIF CurrentEvent >= ExtendedNbOfEvent THEN
    Error := TRUE;
    Error_code := EventBufferFull;
    Special_code := 0;
    ExtendedBufFull := TRUE;
ELSE // Record new event
    ////////////LOCK//////////
    NbOfDelayedInterrupts := DIS_AIRT();
    CurrentEvent := CurrentEvent + 1;
    TS_EventBuffer.Data[CurrentEvent].DBNumber := Event.DBNumber;
    TempAdr := SHR(IN:=Event.Address,N:=3);
    IF EventTSIncluded THEN
        TS_EventBuffer.Data[CurrentEvent].Address := DWORD_TO_INT(TempAdr)+8;// Address of
data
        Event.DataType := 2;
        Event.NbOfData := 8;
        Result := BLKMOV(SRCBLK := EventData
            ,DSTBLK := TS_EventBuffer.Data[CurrentEvent].TimeStamp
            ); // Transfer associated timestamp
        IF Result <> 0 THEN
            Error := TRUE;
            Error_code := EventAccessError;
            Special_code := INT_TO_WORD(Result);
            END_IF;
            Event.NBOfData := InEventByteDataSize; //Size of data only
            Event.Address := DINT_TO_DWORD(DWORD_TO_DINT(Event.Address) + 64);//8 bytes more
        ELSE
            TS_EventBuffer.Data[CurrentEvent].Address := DWORD_TO_INT(TempAdr);
            Er_code := READ_CLK(CDT := TS_EventBuffer.Data[CurrentEvent].TimeStamp);
            END_IF;
            Result := BLKMOV(SRCBLK := EventPtr// IN: ANY
                ,DSTBLK := TS_EventBuffer.Data[CurrentEvent].Data // OUT: ANY
                ); // INT
            IF Result = 0 THEN
                TS_EventBuffer.TS_Data_Length := TS_EventBuffer.TS_Data_Length + TSEventWordSize;
                EventBufferSize := EventBufferSize + TSEventByteSize;
            ELSE
                CurrentEvent := CurrentEvent - 1;

```

```

    Error := TRUE;
    Error_code := EventAccessError;
    Special_code := INT_TO_WORD(Result);
END_IF;
//////////UNLOCK//////////
NbOfQueuedInterrupts := EN_AIRT();
IF CurrentEvent > MaxNbOfTSEvent THEN
    BufferFullSendReq:= TRUE;
END_IF;
END_IF;
IF MultipleEvent THEN
    ID_EventSent := ID_EventSent + 1; //changed tnr

    IF ID_EventSent > ListEventSize - 1 THEN
        ID_EventSent := 0;
        EventListAdr := 2 + ID_EventSent * 10;
    ELSE
        EventListAdr := EventListAdr + 10;
    END_IF;

    EventListElement.IDAndType := EventListDB.DW[EventListAdr];
    EventListElement.DataAndDBNb := EventListDB.DD[EventListAdr+2];
    EventListElement.Address := EventListDB.DD[EventListAdr+6];
    EventPtr := EventListElemPtr;
    CurrentInEvent := CurrentInEvent +1;
END_IF;
UNTIL CurrentInEvent > NumberOfEvents OR Error
END_REPEAT;
//DB_EventData.ID_NewEvent := DB_EventData.ID_NewEvent + NumberOfEvents;//changed tnr
END_IF;
IF (TimerFlag AND CurrentEvent <> 0) OR BufferFullSendReq THEN
    IF NbOfRequest < MaxReqNumber AND NOT EventInlist THEN
        NbOfRequest := NbOfRequest + 1; // One more event in send queue
        Reqlist[NbOfRequest] := 1; // Code 1 = send Event Buffer
        EventInList := TRUE;
    END_IF;
END_IF;
// END manage event

// Status table treatment
// Scan all tables, and in case of change :

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```

    // copy Actual to Old
    // put the table number in the send waiting list
WorkingGroup := WorkingGroup +1;
IF WorkingGroup > NbOfGroupOfTable THEN WorkingGroup := 1; END_IF;
First := 1 + ((WorkingGroup -1)* MaxTableInOneSend);
IF WorkingGroup = NbOfGroupOfTable THEN
    Last := First + SizeOfLastGroup -1;
ELSE
    Last := First + MaxTableInOneSend -1;
END_IF;
FOR Index := First TO Last BY 1 DO
    IF NOT AlreadyInReqList[Index] THEN
        CreateActual := ActualTableList[Index];
        CreateOld := OldTableList[Index];
        Result := BLKMOV(SRCBLK := ActualTable// IN: ANY
            ,DSTBLK := LocalActual // OUT: ANY
            ); // INT
        IF Result <> 0 THEN
            Error := TRUE;
            Error_code := NoAccessToStatus;
            Special_code := INT_TO_WORD(Result);
            InitDone := FALSE;
        END_IF;
        Result := BLKMOV(SRCBLK := OldTable// IN: ANY
            ,DSTBLK := LocalOld // OUT: ANY
            ); // INT
        IF Result <> 0 THEN
            Error := TRUE;
            Error_code := NoAccessToStatus;
            Special_code := INT_TO_WORD(Result);
            InitDone := FALSE;
        END_IF;
        // Check for change in table
        ChangeInTable := FALSE;
        FOR Index2 := 1 TO CreateActual.NbOfData/2 BY 1 DO
            IF LocalActual[Index2] <> LocalOld[Index2] THEN
                ChangeInTable := TRUE;
            END_IF;
        END_FOR;

        IF ChangeInTable THEN
            NbOfStatusReq := NbOfStatusReq +1;

```

```

        StatusReqList[NbOfStatusReq] := Index; // Table number to send in waiting list
        AlreadyInReqList[Index] := TRUE;
    END_IF;
END_IF; // IF NOT AlreadyInReqList
END_FOR;
// Put TS_Table in the global waiting list
IF StatusReqList[1] <> 0 AND NOT StatusInList AND (NbOfRequest < MaxReqNumber) THEN
    NbOfRequest := NbOfRequest + 1; // One more event in send queue
    Reqlist[NbOfRequest] := 2; // Code 2= send Status Table
    StatusInList := TRUE;
END_IF;
// END Status table treatment

// Communication watch-dog treatment
IF DWORD_TO_DINT(WORD_TO_BLOCK_DB(IN_WatchDog.DBNumber).DD[0]) <> -1 THEN // new IP
received
    WORD_TO_BLOCK_DB(IN_WatchDog.DBNumber).DD[0] := DINT_TO_DWORD(-1);
    IPReceived := TRUE;
    WatchDogMissing := FALSE;
    IF WinCCOANotAlive THEN // Si WinCCOA était inactif auparavant
        SendAllStatusReq := TRUE; // On renvoie toutes les tables
    END_IF;
    WinCCOANotAlive := FALSE;
    TempAdr := SHR(IN:=IN_WatchDog.Address,N:=3);
    DWNumber := 4; // Counter address in watch dog DB
    TempCounter :=
WORD_TO_INT(WORD_TO_BLOCK_DB(IN_WatchDog.DBNumber).DW[DWNumber]);
    TempCounter := TempCounter + 1;
    IF TempCounter < 0 THEN TempCounter := 0; END_IF;
    WORD_TO_BLOCK_DB(IN_WatchDog.DBNumber).DW[DWNumber]:=
INT_TO_WORD(TempCounter);
    Er_code := READ_CLK(CDT := TSComm_Alive.TimeStamp);
    TSComm_Alive.DBNumber := IN_WatchDog.DBNumber;
    TSComm_Alive.Address := DWORD_TO_INT(TempAdr);
    TSComm_Alive.CommAliveCounter := TempCounter;
    IF NOT WatchDogInList THEN
        IF NbOfRequest < MaxReqNumber THEN
            NbOfRequest := NbOfRequest + 1; // One more event in send queue
            Reqlist[NbOfRequest] := 3; // Code 3= send comm alive Buffer
            WatchDogInList := TRUE;
        ELSE
            Error := TRUE;
            Error_code := MainQueueFull;
        END_IF;
    END_IF;
END_IF;

```

```

    Special_code := 0;
  END_IF;
END_IF;
ELSE
  IPReceived := FALSE;
  WatchDogMissing := TRUE;
END_IF;
IF WatchDogTimeOut THEN
  WinCCOANotAlive := TRUE;
END_IF;
// END comm alive treatment

(*%%START Redundancy Code%%*)
//S7-400H PLC REDUNDANCY
//Select which connection to use
//Criteria: -Active connection
//      -Master PLC (not being used)

//Check connection status
IF Redundant_PLC AND BufferToSend AND Connection_Problem THEN

  SENDcpu0(REQ := FALSE // IN: BOOL
    ,ID := SendID0 // IN: WORD
    ,SD_1 := BSendBuffer// INOUT: ANY
    ,R_ID := W#16#3 // IN: DWORD
    ,LEN := BSendLen // INOUT: WORD
  );
  BSENDcpu0_ERROR := SENDcpu0.ERROR; // OUT: BOOL
  BSENDcpu0_Status := SENDcpu0.STATUS; // OUT: WORD

  SENDcpu1(REQ := FALSE // IN: BOOL
    ,ID := SendID1 // IN: WORD
    ,R_ID := W#16#4 // IN: DWORD
    ,SD_1 := BSendBuffer // INOUT: ANY
    ,LEN := BSendLen // INOUT: WORD
  );
  BSENDcpu1_ERROR := SENDcpu1.ERROR; // OUT: BOOL
  BSENDcpu1_Status := SENDcpu1.STATUS; // OUT: WORD

  //Define Connection Problems Flags
  IF BSENDcpu0_ERROR AND BSENDcpu0_Status = 1 THEN
    Connection_Problem0 := TRUE;

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```

ELSE
    Connection_Problem0 := FALSE;
END_IF;
IF BSENDcpu1_ERROR AND BSENDcpu1_Status = 1 THEN
    Connection_Problem1 := TRUE;
ELSE
    Connection_Problem1 := FALSE;
END_IF;

//Choose the connection to use

//Save old_State
Connection_old_state := Connection_to_use;
//Variable: Connection_to_use, FALSE»Connection1 TRUE»Connection2
IF NOT Connection_Problem0 AND Connection_Problem1 THEN //Connection 1 is active and
Connection 2 is not
    Connection_to_use := FALSE;
ELSIF Connection_Problem0 AND NOT Connection_Problem1 THEN //Connection 2 is active and
Connection 1 is not
    Connection_to_use := TRUE;
END_IF;

//Compare Old and current Redundant Connection state (for error purposes)
IF Connection_old_state <> Connection_to_use THEN
    Connection_changed:= TRUE;
END_IF;

END_IF;
(*%%END Redundancy Code%%*)

// Check if last message sent
IF BufferToSend THEN
    (*%%START Redundancy Code%%*)
    IF (NOT Connection_to_use AND Redundant_PLC) OR NOT Redundant_PLC THEN
        (*%%END Redundancy Code%%*)
        SEND(REQ := FALSE      // IN: BOOL
            ,ID := SendID0     // IN: WORD
            ,SD_1 := BSendBuffer // INOUT: ANY
            ,R_ID := W#16#1     // IN: DWORD
            ,LEN := BSendLen    // INOUT: WORD
        );
    
```

```
Bsend_Done := SEND.DONE; // OUT: BOOL
Bsend_Error := SEND.ERROR; // OUT: BOOL
Bsend_Status := SEND.STATUS; // OUT: WORD
```

```
(*%%START Redundancy Code%%*)
```

```
ELSIF (Connection_to_use AND Redundant_PLC) THEN
```

```
SEND1(REQ := FALSE // IN: BOOL
, ID := SendID1 // IN: WORD
, SD_1 := BSendBuffer // INOUT: ANY
, R_ID := W#16#2 // IN: DWORD
, LEN := BSendLen // INOUT: WORD
);
Bsend_Done := SEND1.DONE; // OUT: BOOL
Bsend_Error := SEND1.ERROR; // OUT: BOOL
Bsend_Status := SEND1.STATUS; // OUT: WORD
```

```
END_IF;
```

```
(*%%END Redundancy Code%%*)
```

```
IF Bsend_Done THEN // Transmission of data finished
```

```
SendPending := FALSE;
```

```
BufferToSend := FALSE;
```

```
WaitDelay := FALSE;
```

```
IF LinkNotEstablish THEN
```

```
LinkNotEstablish := FALSE;
```

```
SendAllStatusReq := TRUE;
```

```
END_IF;
```

```
(*%%START Redundancy Code%%*)
```

```
//Reset Flag - Redundancy
```

```
IF Connection_Problem AND Redundant_PLC THEN
```

```
Connection_Problem := FALSE;
```

```
SendAllStatusReq := TRUE;
```

```
END_IF;
```

```
(*%%END Redundancy Code%%*)
```

```
END_IF;
```

```
END_IF;
```

```
// Check if buffer free and if there is data to send
```

```

IF NOT BufferToSend THEN
CASE ReqList[1] OF
1 :      // It's an event
  RemoveFromList := TRUE;
  EventInList := FALSE;
  ///////////LOCK//////////
  NbOfDelayedInterrupts := DIS_AIRT();
  Src := TS_EventBuffer;
  ATSrc.NbOfData := EventBufferSize;
  Result := BLKMOV(SRCBLK := Src// IN: ANY
  ,DSTBLK := BSendBuffer // OUT: ANY
  ); // INT
  BSendLen := INT_TO_WORD(EventBufferSize);
  CurrentEvent := 0;
  EventBufferSize := 6; //Taille du header
  TS_EventBuffer.TS_Data_Length := 0;
  BufferFullSendReq := FALSE;
  ExtendedBufFull := FALSE;
  ///////////UNLOCK//////////
  NbOfQueuedInterrupts := EN_AIRT();
2 :      // It's a status table
  RemoveFromList := TRUE;
  StatusInList := FALSE;
  // Put the status tables from the status queue directly to the BSend buffer
  TSPPTableIndex := 1;
  BSendBuffer.TS_Data_Length := 0;
  TSPPTableFull := FALSE;
  BSendBuffer.Nb_of_TSWord := StatusWordSize;
  WHILE StatusReqList[1] <> 0 AND NOT TSPPTableFull DO // There is table to send
    CreateActual := ActualTableList[StatusReqList[1]];
    CreateOld := OldTableList[StatusReqList[1]];
    Result := BLKMOV(SRCBLK := ActualTable// Copy Actual table in BSend buffer
    ,DSTBLK := BSendBuffer.TableList[TSPPTableIndex].Table // OUT: ANY
    ); // INT
    Result := BLKMOV(SRCBLK := ActualTable// Copy actual table in old table
    ,DSTBLK := OldTable // OUT: ANY
    ); // INT
    Er_code := READ_CLK(CDT:= BSendBuffer.TableList[TSPPTableIndex].TimeStamp);
    BSendBuffer.TableList[TSPPTableIndex].DBNumber := CreateActual.DBNumber;
    TempAdr := SHR(IN:=CreateActual.Address,N:=3);
    BSendBuffer.TableList[TSPPTableIndex].Address :=
WORD_TO_INT(DWORD_TO_WORD(TempAdr));

```

```

BSendBuffer.TS_Data_Length := BSendBuffer.TS_Data_Length + StatusWordSize + 6;
// Remove table from table waiting list
AlreadyInReqList[StatusReqList[1]]:= FALSE; // The current table is nomore in list
FOR Index := 1 TO NBOfTables BY 1 DO
    StatusReqList[Index] := StatusReqList[Index+1];
END_FOR;
NbOfStatusReq := NbOfStatusReq-1;
TSPPTableIndex := TSPPTableIndex +1;
IF TSPPTableIndex > MaxTableInOneSend THEN TSPPTableFull := TRUE; END_IF;
END_WHILE;
BSendLen := INT_TO_WORD((BSendBuffer.TS_Data_Length * 2) +6);
3 :    // It's a watch dog event
WatchDogInList := FALSE;
RemoveFromList := TRUE;
Result := BLKMOV(SRCBLK := TSComm_Alive// IN: ANY
    ,DSTBLK := BSendBuffer    // OUT: ANY
    );    // INT
BSendLen := 20;
ELSE:
;
END_CASE;

IF RemoveFromList THEN
FOR Index := 1 TO NbOfRequest BY 1 DO
    ReqList[Index] := ReqList[Index+1];
END_FOR;
NbOfRequest := NbOfRequest-1;
RemoveFromList := FALSE;
BufferToSend := TRUE;
SendReq := TRUE;
WaitDelay := FALSE;
SendPending := FALSE;
END_IF;
END_IF;

// Check if there is data in buffer fand try to send them
IF BufferToSend THEN
    (*****START Redundancy Code*****)
    IF (NOT Connection_to_use AND Redundant_PLC) OR (Connection_to_use AND Redundant_PLC
AND ReqList[1] = 3 AND NOT Connection_Problem) OR NOT Redundant_PLC THEN
        (*****END Redundancy Code*****)
        SEND(REQ := SendReq // IN: BOOL

```

```

        ,ID := SendID0      // IN: WORD
        ,SD_1 := BSendBuffer // INOUT: ANY
        ,R_ID := W#16#1
        ,LEN := BSendLen   // INOUT: WORD
    );
(*%%START Redundancy Code%%*)
    IF (NOT Connection_to_use AND Redundant_PLC) OR NOT Redundant_PLC THEN
(*%%END Redundancy Code%%*)
        Bsend_Done := SEND.DONE; // OUT: BOOL
        Bsend_Error := SEND.ERROR; // OUT: BOOL
        Bsend_Status := SEND.STATUS; // OUT: WORD
(*%%START Redundancy Code%%*)
    END_IF;
END_IF;
(*%%END Redundancy Code%%*)

(*%%START Redundancy Code%%*)
    IF (Connection_to_use AND Redundant_PLC) OR (NOT Connection_to_use AND Redundant_PLC
AND ReqList[1] = 3 AND NOT Connection_Problem) THEN

        SEND1(REQ := SendReq // IN: BOOL
        ,ID := SendID1 // IN: WORD
        ,SD_1 := BSendBuffer // INOUT: ANY
        ,R_ID := W#16#2 // IN: DWORD
        ,LEN := BSendLen // INOUT: WORD
        );

    IF (Connection_to_use AND Redundant_PLC) THEN
        Bsend_Done := SEND1.DONE; // OUT: BOOL
        Bsend_Error := SEND1.ERROR; // OUT: BOOL
        Bsend_Status := SEND1.STATUS; // OUT: WORD
    END_IF;
END_IF;
(*%%END Redundancy Code%%*)

    IF SendReq THEN
        SendPending := TRUE;
        SendReq := FALSE;
    END_IF;

    IF Bsend_Done THEN // Transmission of data finished
        SendPending := FALSE;

```



```

BufferToSend := FALSE;
WaitDelay := FALSE;
IF LinkNotEstablish THEN
    LinkNotEstablish := FALSE;
    SendAllStatusReq := TRUE;
END_IF;
ELSIF Bsend_Error THEN
    Error := TRUE;
    Error_code := Transmission_Error;
    Special_code := Bsend_Status;
    WaitDelay := TRUE;
    IF Bsend_Status = 1 THEN
        LinkNotEstablish := TRUE;
        (*****START Redundancy Code*****)
        Connection_Problem := TRUE;
        (*****END Redundancy Code*****)
    END_IF;

    (*****START Redundancy Code*****)
ELSIF Connection_changed THEN //One connection was lost
    Error := TRUE;
    Connection_changed := FALSE;
    SendAllStatusReq := TRUE;
    (*****END Redundancy Code*****)
ELSIF WaitDelay THEN
    Error := TRUE;
    Error_code := SendTimeOutError;
    Special_code := Bsend_Status;
END_IF;

IF TimeOut THEN // No answer from peer or retry delay riched
    IF Bsend_Error THEN
        Error := TRUE;
        Error_code := Transmission_Error;
        Special_code := Bsend_Status;
    ELSE
        Error := TRUE;
        Error_code := SendTimeOutError;
        Special_code := 0;
        WaitDelay := TRUE;
    END_IF;
    SendPending := FALSE;

```

```

    SendReq := TRUE; // Retry
    NbOfRetry := NbOfRetry + 1;
    END_IF;
END_IF; // End send buffer
IF ExtendedBufFull THEN // BufferFull information of higher priority ...
    Error := TRUE; // it must inform the user that he has ...
    Error_Code := EventBufferFull; // to retry to send the event
END_IF;
END_IF; // Else Init

END_FUNCTION_BLOCK

DATA_BLOCK TSPP_Unicos_DB TSPP_Unicos_Manager ///### DBxxx FBxxx The symbols must be
declared first
BEGIN
END_DATA_BLOCK

(*USER DEFINED*****
FUNCTION_BLOCK TSPP_FI

TITLE = 'TSPP_FI'
//
// Commentaire du bloc ...
//
VERSION : '4.3' //optimization of the redundant implementation
AUTHOR : 'UNICOS'
NAME : 'COMM'
FAMILY : 'COMMS'

CONST
(* #####
These parameters MUST be adjusted to fullfill the user requirements *)
MaxNbOfTSEvent := 100; // ### Const1:To be set by the user
// Nb of event wich will trig the send to WinCCOA
SpareEventNumber := 50; // ### Const2:To be set by the user
// spare places to be able to continue to ../.
// record event when the send function is buzy
Word_in_one_TSEvent := 2; // ### Const3:To be set by the user
// Number of data word in one Event
MaxStatusTable := 31; // ### Const4:To be set by the user

```

```

// Max number of status tables (the length of one
// table is 200 bytes without the header)
MaxTableInOneSend := 31; // ### Const5: To be set by the user
// (MAX value S7-400:250 S7-300:100)
// Max nb of status tables in one TSPP message
// Must lower or equal to MaxStatusTable
Redundant_PLC := FALSE; // Const6: To be set by the user
// Using a S7-400H PLC in Redundance mode
ListEventSize := 1000; // ### Const7: To be set by the user
// Size of the Event List
(*#####*)

ExtendedNbOfEvent := MaxNbOfTSEvent + SpareEventNumber; // Full size of event buffer
TSEventHeaderSize := 6; // TimeStamp + DB number + Address
TSEventWordSize := Word_in_one_TSEvent + TSEventHeaderSize;
TSEventByteSize := TSEventWordSize*2;
EventByteDataSize := Word_in_one_TSEvent *2;
MaxStatusReqNb := MaxStatusTable;
StatusReqListSize := MaxStatusReqNb +1;
StatusWordSize := 100; // Size of status table
StatusByteSize := StatusWordSize * 2;
MaxReqNumber := 3;
ReqListSize := MaxReqNumber +1;
MaxBufferSize_Event := 6 + (TSEventByteSize*ExtendedNbOfEvent);
MaxBufferSize_Status:= 6 + ((StatusByteSize + 12)*MaxTableInOneSend);
MaxBufferSize := MaxBufferSize_Status+(MaxBufferSize_Event-MaxBufferSize_Status)
*(1/(1+MaxBufferSize_Status/(MaxBufferSize_Event+1)));
EventExtension := (MaxBufferSize_Event-MaxBufferSize_Status)
*(1 DIV (1+(MaxBufferSize_Status DIV MaxBufferSize_Event)));

// List of error codes
EventBufferFull := w#16#F001; // The number of event is exceeded
WrongDBNumber := w#16#F002; // The DB number is 0
WrongEventSize := w#16#F003; // In Event size <> Event size in buffer
MainQueueFull := w#16#F004; // Number of req in the global queue exceeded
NbTableExceeded := w#16#F005; // Number of tables exceeded
NoAccessToStatus := w#16#F007; // Error during access to one or more status table
EventAccessError := w#16#F008; // Error during access of the event (in application part)
TimeStampError := w#16#F009; // READ_CLK error

END_CONST

```

```

VAR_TEMP
//Variables temporaires
Result : INT;
NumberOfEvents : INT;
EventListAdr : INT;
EventListElemPtr : ANY;
EventListElement AT EventListElemPtr : STRUCT
    IDAndType : WORD;
    DataAndDBNb : DWORD;
    Address : DWORD;
END_STRUCT;
EventPtr : ANY;
Event AT EventPtr : STRUCT
    S7_ID : BYTE;
    DataType : BYTE;
    NbOfData : INT;
    DBNumber : INT;
    Address : DWORD;
END_STRUCT;
CurrentInEvent: INT;
InEventByteDataSize : INT;
TempAdr : DWORD;
Er_Code : INT;

CurrentDT : DT;

END_VAR

VAR_INPUT
//Input Variables
NewEvent : BOOL;
MultipleEvent : BOOL;
EventListDB : BLOCK_DB;
EventTSIncluded : BOOL; // Event(s) with(out)time stamp indication
EventData : ANY; // Pointer to event
IN_Event AT EventData : STRUCT
    S7_ID : BYTE;
    DataType : BYTE;
    NbOfData : INT;
    DBNumber : INT;
    Address : DWORD;
END_STRUCT;

```

END_VAR

VAR_OUTPUT

Error : BOOL; // Function error indicator
Error_code : WORD; // Function error code
Special_code : WORD; // Error code of internally used functions

END_VAR

VAR_IN_OUT

CurrentEvent : INT;
ExtendedBufFull : BOOL;
TS_EventBuffer : STRUCT
 TSPP_ID1 : CHAR;
 TSPP_ID2 : CHAR;
 TSPP_ID3 : CHAR;
 Nb_of_TSWord : BYTE;
 TS_Data_Length : INT;
 Data : ARRAY[1..ExtendedNbOfEvent] OF
 STRUCT
 TimeStamp : DATE_AND_TIME;
 DBNumber : INT;
 Address : INT;
 Data : ARRAY[1..Word_in_one_TSEvent] OF WORD;
 END_STRUCT;
 END_STRUCT;
EventBufferSize : INT;
BufferFullSendReq : BOOL;

END_VAR

VAR

ID_NewEvent : INT;
ID_EventSent : INT;

END_VAR

// Events treatment
IF NewEvent THEN
 IF MultipleEvent THEN
 //EventListAdr := 0;

```

//NumberOfEvents := WORD_TO_INT(EventListDB.DW[EventListAdr]);
NumberOfEvents := ID_NewEvent - ID_EventSent;
IF NumberOfEvents < 0 THEN
    NumberOfEvents := NumberOfEvents + ListEventSize;
END_IF;
EventListAdr := 2 + ID_EventSent * 10;
EventListElement.IDAndType := EventListDB.DW[EventListAdr];
EventListElement.DataAndDBNb := EventListDB.DD[EventListAdr+2];
EventListElement.Address := EventListDB.DD[EventListAdr+6];
EventPtr := EventListElemPtr;
ELSE
    NumberOfEvents := 0;
    EventPtr := EventData;
END_IF;
CurrentInEvent := 1;
REPEAT
CASE CHAR_TO_INT(BYTE_TO_CHAR(Event.DataType)) OF
    2 :
        InEventByteDataSize := Event.NbOfData;
    4..5 :
        InEventByteDataSize := Event.NbOfData *2;
    6..8 :
        InEventByteDataSize := Event.NbOfData *4;
ELSE:
    ;
END_CASE;
IF EventTSIncluded THEN
    InEventByteDataSize := InEventByteDataSize - 8; //data size without time stamp
END_IF;
IF InEventByteDataSize <> EventByteDataSize THEN
    Error := TRUE;
    Error_code := WrongEventSize;
    Special_code := 0;
ELSIF Event.DBNumber = 0 THEN
    Error := TRUE;
    Error_code := WrongDBNumber;
    Special_code := 0;
ELSIF CurrentEvent >= ExtendedNbOfEvent THEN
    Error := TRUE;
    Error_code := EventBufferFull;
    Special_code := 0;
    ExtendedBufFull := TRUE;

```

```

ELSE // Record new event
  CurrentEvent := CurrentEvent + 1;
  TS_EventBuffer.Data[CurrentEvent].DBNumber := Event.DBNumber;
  TempAdr := SHR(IN:=Event.Address,N:=3);
  IF EventTSIncluded THEN
    TS_EventBuffer.Data[CurrentEvent].Address := DWORD_TO_INT(TempAdr)+8;// Address of
data
    Event.DataType := 2;
    Event.NbOfData := 8;
    Result := BLKMOV(SRCBLK := EventData
      ,DSTBLK := TS_EventBuffer.Data[CurrentEvent].TimeStamp
      ); // Transfer associated timestamp
    IF Result <> 0 THEN
      Error := TRUE;
      Error_code := EventAccessError;
      Special_code := INT_TO_WORD(Result);
    END_IF;
    Event.NBOfData := InEventByteDataSize; //Size of data only
    Event.Address := DINT_TO_DWORD(DWORD_TO_DINT(Event.Address) + 64);//8 bytes more
  ELSE
    TS_EventBuffer.Data[CurrentEvent].Address := DWORD_TO_INT(TempAdr);
    Er_code := READ_CLK(CDT := CurrentDT);
    TS_EventBuffer.Data[CurrentEvent].TimeStamp := CurrentDT;
  END_IF;
  Result := BLKMOV(SRCBLK := EventPtr// IN: ANY
    ,DSTBLK := TS_EventBuffer.Data[CurrentEvent].Data // OUT: ANY
    ); // INT
  IF Result = 0 THEN
    TS_EventBuffer.TS_Data_Length := TS_EventBuffer.TS_Data_Length + TSEventWordSize;
    EventBufferSize := EventBufferSize + TSEventByteSize;
  ELSE
    CurrentEvent := CurrentEvent - 1;
    Error := TRUE;
    Error_code := EventAccessError;
    Special_code := INT_TO_WORD(Result);
  END_IF;
  IF CurrentEvent > MaxNbOfTSEvent THEN
    BufferFullSendReq:= TRUE;
  END_IF;
END_IF;
IF MultipleEvent THEN
  ID_EventSent := ID_EventSent + 1; //changed tnr

```

```

IF ID_EventSent > ListEventSize - 1 THEN
  ID_EventSent := 0;
  EventListAdr := 2 + ID_EventSent * 10;
ELSE
  EventListAdr := EventListAdr + 10;
END_IF;

EventListElement.IDAndType := EventListDB.DW[EventListAdr];
EventListElement.DataAndDBNb := EventListDB.DD[EventListAdr+2];
EventListElement.Address := EventListDB.DD[EventListAdr+6];
EventPtr := EventListElemPtr;
CurrentInEvent := CurrentInEvent + 1;
END_IF;
UNTIL CurrentInEvent > NumberOfEvents OR Error
END_REPEAT;
//DB_EventData.ID_NewEvent := DB_EventData.ID_NewEvent + NumberOfEvents;//changed tnr
END_IF;
// END manage event

END_FUNCTION_BLOCK

DATA_BLOCK TSPP_FI_DB TSPP_FI //### DBxxx FBxxx The symbols must be declared first
BEGIN
END_DATA_BLOCK

```


4.2. Rules

4.2.1. GlobalTemplates

4.2.1.1 S7Inst_Communication_Template.py

```
# -*- coding: utf-8 -*-
# UNICOS
# (c) Copyright CERN 2013 all rights reserved
# Jython source file for Communication Objects.
from S7Inst_Generic_Template import S7Inst_Generic_Template
from research.ch.cern.unicos.utilities import DeviceTypeFactory

import FI_Functions

class Communication_Template(S7Inst_Generic_Template):

    def process(self, unicos_project, xml_config, generate_global_files, *_):
        """
        General Steps for the Communication file:
        1. DB_WinCCOA creation. This DB contains the TSPP parameters for WinCCOA
        2. DB_COMM creation. This DB contains all numbers of status DB
        3. DB_EventData creation. This DB contains pointers on evstsreg which have been changed
        4. FC_TSPP creation. This FUNCTION calls the TSPP manager function
        5. FC_Event creation. This FUNCTION generates an event for evstsreg01 and calls the
        TS_EVENT_MANAGER

        :param unicos_project:
        :param xml_config:
        :param generate_global_files: comes from "Global files scope" dropdown on Wizard.
            true = All types. false = Selected types.
        """
        resource_package_version = self.thePlugin.getResourcesVersion()
        # remove the "-beta-..." if it exists
        pos = resource_package_version.find("-")
        if pos > 0:
            resource_package_version = resource_package_version[:pos]
        major_version, minor_version, small_version = resource_package_version.split(".")

        params = {
            'application_version': xml_config.getConfigInfoParameter("version"),
            'major_version': major_version,
            'minor_version': minor_version,
```

```

        'small_version': small_version,
        'db_comm_assignment': [],
        'db_comm_amount': 0,
        'EventBufferSize':
xml_config.getPLCParameter("SiemensSpecificParameters:GeneralConfiguration:EventBufferSize"),
        'events_assignments': [],
        'local_id':
xml_config.getPLCParameter("SiemensSpecificParameters:PLCS7Connection:LocalId"),
        'redundant_local_id': xml_config.getPLCParameter("S7-
400HParameters:PLCS7Connection:RedundantLocalId"),
        'FC_Event_FI': "
    }

```

```

device_type_definitions = DeviceTypeFactory.getInstance()
types_to_process = self.get_types_to_process(self.thePlugin, unicos_project, xml_config,
generate_global_files)
instance_vector = unicos_project.getDeviceType("DigitalInput").getAllDeviceTypeInstances()
FI_instance_list = FI_Functions.get_FI_instance_list(instance_vector)
fast_interlock_present = len(FI_instance_list) != 0 # Fast interlock presence detected by any fast
interlock digital input
if fast_interlock_present:
    params['FC_Event_FI'] = self.get_FI_event(params['EventBufferSize'], types_to_process)
if xml_config.getPLCParameter("RecipeParameters:GenerateBuffers").strip().lower() == "true":
    params['db_comm_amount'] += 1
    params['db_comm_assignment'].append(self.get_recipe_comm_db(xml_config))
for device_type, instance_amount in types_to_process.iteritems():
    device_type_name = device_type.getDeviceTypeName()
    representation_name =
self.thePlugin.getTargetDeviceInformationParam("RepresentationName", device_type_name)
    FI_instance_list = FI_Functions.get_FI_instance_list(device_type.getAllDeviceTypeInstances())
    fast_interlock_device_present = len(FI_instance_list) != 0
    if fast_interlock_device_present:
        instance_amount =
len(FI_Functions.get_normal_instance_list(device_type.getAllDeviceTypeInstances())) # instance
amount of the not fast interlock objects

    size = self.thePlugin.getDeviceCommSize(device_type_name, "BIN")
    if size > 0:
        if fast_interlock_device_present:
            params['db_comm_amount'] += 1
            params['db_comm_assignment'].append(self.get_comm_db("DB_bin_Status_",
representation_name, size, params['db_comm_amount'], len(FI_instance_list), True))
            params['db_comm_amount'] += 1

```

```

        params['db_comm_assignment'].append(self.get_comm_db("DB_bin_Status_",
representation_name, size, params['db_comm_amount'], instance_amount, False))
        size = self.thePlugin.getDeviceCommSize(device_type_name, "ANA")
        if size > 0:
            if fast_interlock_device_present:
                params['db_comm_amount'] += 1
                params['db_comm_assignment'].append(self.get_comm_db("DB_ana_Status_",
representation_name, size, params['db_comm_amount'], len(FI_instance_list), True))
                params['db_comm_amount'] += 1
                params['db_comm_assignment'].append(self.get_comm_db("DB_ana_Status_",
representation_name, size, params['db_comm_amount'], instance_amount, False))

    for device_type in types_to_process:
        FI_instance_list = FI_Functions.get_FI_instance_list(device_type.getAllDeviceTypeInstances())
        fast_interlock_device_present = len(FI_instance_list) != 0
        device_type_name = device_type.getDeviceTypeName()
        attributeFamilyList =
device_type_definitions.getDeviceType(device_type_name).getAttributeFamily()
        representation_name =
self.thePlugin.getTargetDeviceInformationParam("RepresentationName", device_type_name)
        for attributeFamily in attributeFamilyList:
            attributeFamilyName = attributeFamily.getAttributeFamilyName()
            if attributeFamilyName == "FEDeviceOutputs":
                attributes = [attr.getAttributeName() for attr in attributeFamily.getAttribute()]
                if "StsReg02" in attributes:
                    addr_shift = 8
                else:
                    addr_shift = 4
                if "StsReg01" in attributes:
                    if fast_interlock_device_present:
                        params['events_assignments'].append(self.get_event_db("StsReg01",
representation_name, addr_shift, False, True)) # Fast interlocks, normal processing
                        params['events_assignments'].append(self.get_event_db("StsReg01",
representation_name, addr_shift, False, False))
                    if "StsReg02" in attributes:
                        if fast_interlock_device_present:
                            params['events_assignments'].append(self.get_event_db("StsReg02",
representation_name, addr_shift, False, True)) # Fast interlocks, normal processing
                            params['events_assignments'].append(self.get_event_db("StsReg02",
representation_name, addr_shift, False, False))

    output = self.process_template(".scl", params)
    self.thePlugin.writeInstanceInfo("COMMUNICATION.scl", output)

```

```

def get_FI_event(self, EventBufferSize, types_to_process):
    params = {'EventBufferSize': EventBufferSize,
              'events_assignments': [],
              'events_overwrite': []}

    device_type_definitions = DeviceTypeFactory.getInstance()

    for device_type in types_to_process:
        FI_instance_list = FI_Functions.get_FI_instance_list(device_type.getAllDeviceTypeInstances())
        fast_interlock_device_present = len(FI_instance_list) != 0
        if fast_interlock_device_present:
            device_type_name = device_type.getDeviceTypeName()
            attributeFamilyList =
device_type_definitions.getDeviceType(device_type_name).getAttributeFamily()
            representation_name =
self.thePlugin.getTargetDeviceInformationParam("RepresentationName", device_type_name)
            for attributeFamily in attributeFamilyList:
                attributeFamilyName = attributeFamily.getAttributeFamilyName()
                if attributeFamilyName == "FEDeviceOutputs":
                    attributes = [attr.getAttributeName() for attr in attributeFamily.getAttribute()]
                    if "StsReg02" in attributes:
                        addr_shift = 8
                    else:
                        addr_shift = 4
                    if "StsReg01" in attributes:
                        params['events_assignments'].append(self.get_event_db("StsReg01",
representation_name, addr_shift, True, True)) # Fast interlocks, fast interlock processing
                        params['events_overwrite'].append(self.get_event_copy_FI("StsReg01",
representation_name, device_type_name))
                    if "StsReg02" in attributes:
                        params['events_assignments'].append(self.get_event_db("StsReg02",
representation_name, addr_shift, True, True)) # Fast interlocks, fast interlock processing
                        params['events_overwrite'].append(self.get_event_copy_FI("StsReg02",
representation_name, device_type_name))
            return self.process_template("_FI.scl", params)

    def get_comm_db(self, name_prefix, representation_name, size, index, instance_amount,
FI_treatment):
        comm_db = ""
        (* Global %(type)s status DB of %(device_name)s*)
        DB_List[%(index)s].Status_DB := %(status_db)s;
        DB_List[%(index)s].Status_DB_old := %(status_db_old)s;
        DB_List[%(index)s].size := %(size)s;

```

```

// nbDB:= %(index)s'''

params = {
    'index': index,
    'device_name': representation_name,
    'size': size * instance_amount,
    'status_db': self.thePlugin.getAddress(name_prefix + representation_name),
    'status_db_old': self.thePlugin.getAddress(name_prefix + representation_name + "_old"),
    'type': "Binary" if "_bin_" in name_prefix else "Analog"
}

if FI_treatment:
    params['status_db'] = self.thePlugin.getAddress(name_prefix + representation_name + "_FI")
    if representation_name == "ONOFF":
        params['status_db_old'] = self.thePlugin.getAddress(name_prefix + "OO_FI_old")
    else:
        params['status_db_old'] = self.thePlugin.getAddress(name_prefix + representation_name +
            "_FI_old")

return comm_db % params

def get_recipe_comm_db(self, xml_config):
    recipe_assignment_scl = ""
    (* Recipes interface DB *)
    DB_List[1].Status_DB := %(Status_DB)s;
    DB_List[1].Status_DB_old := %(Status_DB_old)s;
    DB_List[1].size := %(size)s;
    // nbDB:= 1'''
    params = {
        'Status_DB': self.thePlugin.getAddress("DB_RECIPES_INTERFACE"),
        'Status_DB_old': self.thePlugin.getAddress("DB_RECIPES_INTERFACE_old"),
        'size': int(xml_config.getPLCParameter("RecipeParameters:HeaderBufferSize")) * 4 + 2
    }

return recipe_assignment_scl % params

@staticmethod
def get_event_db(stsreg_name, device_name, addr_shift, FI_DB_event, FI_block):
    full_device_name = device_name + "_FI" if FI_block else device_name

    event_db = ""(*Test if %(event_name)s of %(device_name)s have changed*)
    FOR i:= 1 TO DB_event_%(full_device_name)s.Nb_%(device_name)s DO

```

```

//if new_stsreg <> old_stsreg
IF DWORD_TO_WORD(%(event_pin)s) <> DWORD_TO_WORD(ROR(IN:=%(event_pin)s, N:= 16))
THEN
  NewEvent := 1;
  j := j+1;
  IF j>ListEventSize THEN j:=1; END_IF;
  %(DB_name)s.List_Event[j].S7_ID := B#16#10;
  %(DB_name)s.List_Event[j].DataType := 6; //DWORD
  %(DB_name)s.List_Event[j].NbOfData := 1;
  %(DB_name)s.List_Event[j].DBNumber :=
WORD_TO_INT(BLOCK_DB_TO_WORD(DB_event_%(full_device_name)s));
  %(DB_name)s.List_Event[j].Address := SHL(IN:=INT_TO_DWORD(%(addr_position)s),N:=3) OR
DW#16#84000000;
  END_IF;
END_FOR;
'''
  event_name = 'ev' + stsreg_name.lower()
  event_pin = "DB_event_%(full_device_name)s.%(device_name)s_evstsreg[i].%(event_name)s" %
\
      {'full_device_name': full_device_name, 'device_name': device_name, 'event_name':
event_name}
  if stsreg_name == "StsReg01":
    addr_position = "(i-1)*%s+k" % addr_shift
  else:
    addr_position = "(i-1)*%s+k+4" % addr_shift
  params = {
    'device_name': device_name,
    'event_name': event_name,
    'event_pin': event_pin,
    'addr_position': addr_position,
    'full_device_name': full_device_name,
    'DB_name': "DB_FIEvent" if FI_DB_event else "DB_EventData"
  }
  if stsreg_name == "StsReg02":
    # TODO can it be removed?
    first_obj = "First_obj := DB_event_%s.Nb_%s;\n" % (full_device_name, device_name)
    event_db = first_obj + event_db
  return event_db % params

def get_event_copy_FI(self, stsreg_name, device_name, device_type_name):
  event_db = ""(*Copy actual to old of %(event_name)s of %(device_name)s*)
FOR i:= 1 TO DB_event_%(device_name)s_FI.Nb_%(device_name)s DO
  //if new_stsreg <> old_stsreg

```

```

IF DWORD_TO_WORD%(event_pin)s <> DWORD_TO_WORD(ROR(IN:=%(event_pin)s, N:= 16))
THEN
    %(overWrite)s
END_IF;
END_FOR;
'''
    event_name = 'ev' + stsreg_name.lower()
    event_pin = "DB_event_%(device_name)s_FI.%(device_name)s_evstsreg[i].%(event_name)s" % \
        {'device_name': device_name, 'event_name': event_name}
    params = {
        'device_name': device_name,
        'event_name': event_name,
        'event_pin': event_pin,
        'stsreg_name': stsreg_name,
        'overWrite': ''
    }

    if device_type_name.startswith("Digital"): #DI, DO, DA
        params['overWrite'] = self.get_indiv_event_copy_FI(stsreg_name, device_name, 'StsReg01[!])
    else: #OnOff
        value_changes = []
        instance_vector =
self.thePlugin.getUnicosProject().getDeviceType(device_type_name).getAllDeviceTypeInstances()
#####CHECK ALL TYPES
        FI_instance_list = FI_Functions.get_FI_instance_list(instance_vector)
        for idx, instance in enumerate(FI_instance_list, 1):
            value_changes.append(' ' + str(idx) + ':')
            value_changes.append(self.get_indiv_event_copy_FI(stsreg_name, device_name,
instance.getAttributeData("DeviceIdentification:Name")))
            value_changes = "\n".join(value_changes)
            params['overWrite'] = "'CASE i OF
$value_changes$
ELSE: ;
END_CASE;'"

    if stsreg_name == "StsReg02":
        # TODO can it be removed?
        first_obj = "First_obj := DB_event_%s_FI.Nb_%s;\n" % (device_name, device_name)
        event_db = first_obj + event_db
        return event_db % params

def get_indiv_event_copy_FI(self, stsreg_name, device_name, instance_name):

```

```

event = ""      tempsts :=
DB_bin_status_%(device_name)s_Fl.%(instance_name)s.%(stsreg_name)s;
    %(event_pin)s := DB_bin_status_%(device_name)s_Fl.%(instance_name)s.%(stsreg_name)s
OR ROR(IN:=tempsts, N:=16);"
event_name = 'ev' + stsreg_name.lower()
event_pin = "DB_event_%(device_name)s_Fl.%(device_name)s_evstsreg[i].%(event_name)s" % \
    {'device_name': device_name, 'event_name': event_name}
params = {
    'device_name': device_name,
    'event_pin': event_pin,
    'stsreg_name': stsreg_name,
    'instance_name': instance_name
}

return event % params

```


4.2.1.2 S7Inst_Communication_Template.scl

DATA_BLOCK DB_WinCCOA

```
TITLE = 'DB_WinCCOA'
//
// Contains TSPP parameters for WinCCOA
//
AUTHOR: 'UNICOS'
NAME: 'Comm'
FAMILY: 'COMMS'
STRUCT
  address_IP:          DINT;          //Address IP of WinCCOA
  address_Counter:     INT;           //Watchdog Counter
  address_CommandInterface: ARRAY [1..5] OF WORD; //Command Interface FOR WinCCOA
(Synchro - RequestAll)
  Data:                ARRAY [1..5] OF WORD; //information about S7 PLC (cycle/Error)

  TSPP_EventPeriod:    TIME := T#2s; //Period before sending Event to WinCCOA if
stack not full
  TSPP_Reqlist:        ARRAY[1..4] OF INT; //Reqlist of TSPP_UNICOS_Manager
  TSPP_Error:          BOOL;          //Function error indicator of TSPP
  TSPP_Error_code:     WORD;          //Function error code of TSPP
  TSPP_Special_code:   WORD;          //Error code of internaly used functions
  UNICOS_LiveCounter:  DINT;          //Live counter (1 second)
  Application_version: REAL:= $application_version$; //Application version
  ResourcePackage_version: STRUCT //Resource Package version
    Major:             INT:= $major_version$;
    Minor:             INT:= $minor_version$;
    Small:             INT:= $small_version$;
  END_STRUCT;
  SCADA_IP:            DINT;          //Diagnostics address IP of WinCCOA
  UNICOS_NewExtensions: ARRAY[1..38] OF WORD; // Future extensions of S7-UNICOS
END_STRUCT
BEGIN
END_DATA_BLOCK

DATA_BLOCK DB_COMM
TITLE = 'DB_COMM'
//
// Contains all numbers of status DB
//
```

```

AUTHOR: 'UNICOS'
NAME: 'Comm'
FAMILY: 'COMMS'
STRUCT
  nbDB : INT;
  DB_List : ARRAY [1..$db_comm_amount$] OF CPC_DB_COMM;
END_STRUCT;
BEGIN

```

```

  $db_comm_assignment$

```

```

  nbDB:= $db_comm_amount$;
END_DATA_BLOCK

```

```

DATA_BLOCK DB_EventData

```

```

  TITLE = 'EventData'

```

```

  //

```

```

  // Contains pointers on evstsreg which have been changed

```

```

  //

```

```

  AUTHOR: 'ICE/PLC'

```

```

  NAME: 'Comm'

```

```

  FAMILY: 'UNICOS'

```

```

  STRUCT

```

```

    Nb_Event : INT;

```

```

    List_Event : ARRAY [1..$EventBufferSize$] OF STRUCT

```

```

        S7_ID : BYTE;

```

```

        DataType : BYTE;

```

```

        NbOfData : INT;

```

```

        DBNumber : INT;

```

```

        Address : DWORD;

```

```

    END_STRUCT;

```

```

  END_STRUCT;

```

```

  BEGIN

```

```

  END_DATA_BLOCK

```

```

FUNCTION FC_TSPP: VOID

```

```

  TITLE = 'FC_TSPP'

```

```

  //

```

```

  // Calls the TSPP manager function

```

```

  //

```

```

AUTHOR: 'UNICOS'
NAME: 'Comm'
FAMILY: 'COMMS'
VAR_INPUT
    NE: BOOL;
    RA: BOOL;
END_VAR
// Optimal TSPP parameters:
// MaxStatusTable = NbStatusTables solved in the TSPP file generated
// MaxTableInOneSend = MaxTableInOneSend solved in the TSPP file generated
// StatusWordSize = 100

```

```

TSPP_UNICOS_Manager.TSPP_UNICOS_DB(
    Init := FALSE
    ,SendID0 := B#16#$local_id$
    ,SendID1 := B#16#$redundant_local_id$
    ,SendEventPeriod := DB_WinCCOA.TSPP_EventPeriod
    ,NewEvent := NE
    ,EventTSIncluded := FALSE
    ,MultipleEvent := TRUE
    ,EventListDB := DB_EventData
    ,SendAllStatus := RA
    ,ListOfStatusTable := DB_COMM
    ,WatchDog := DB_WinCCOA.Address_Counter
);

```

```

END_FUNCTION

```

(*FUNCTION WHICH GENERATE EVENT FOR evstsreg01 and CALL TS_EVENT_MANAGER*)

```

FUNCTION FC_Event : VOID

```

```

    TITLE = 'FC_Event'

```

```

//

```

```

// FUNCTION WHICH GENERATE EVENT FOR evstsreg01 and CALL TS_EVENT_MANAGER

```

```

//

```

```

AUTHOR: 'ICE/PLC'

```

```

NAME: 'Comm'

```

```

FAMILY: 'UNICOS'

```

```

VAR

```

```

    NewEvent :    BOOL;

```

```

    RequestAll:  BOOL;

```

```

    Synchro:    BOOL;

```

```

i:      INT;
j:      INT;
k:      INT;
First_obj:  INT;
dummyVar:  INT;
ListEventSize: INT;
END_VAR
BEGIN
DB_EventData.Nb_Event  := 0;
First_obj              := 0;
k                      := 2;
j                      := TSPP_Unicos_DB.ID_NewEvent;
NewEvent               := 0;
RequestAll             := FALSE;
Synchro                := FALSE;
ListEventSize         := $EventBufferSize$;

$sevents_assignments$

DB_EventData.Nb_Event := j;
TSPP_Unicos_DB.ID_NewEvent := j;
(*Action by WinCCOA via the Command Interface*)
CASE WORD_TO_INT(DB_WinCCOA.Address_CommandInterface[1]) OF
  1 : Synchro := TRUE;// Synchronisation of timing from WinCCOA
      DB_WinCCOA.Address_CommandInterface[1] := 0;
  2 : RequestAll := TRUE;// Request All : All object status are sent to WinCCOA
      DB_WinCCOA.Address_CommandInterface[1] := 0;
END_CASE;
// First Time: Events are not sent when cold start (overload of events !!)
IF Comm = 0 THEN Comm := 1;
ELSE
  FC_TSPP(NE :=NewEvent & comm,RA := RequestAll);
END_IF;

Synchro := FALSE;
RequestAll := FALSE;
DB_WinCCOA.Data[1] := DINT_TO_WORD(TIME_TO_DINT(T_CYCLE)); //PLC cycle
DB_WinCCOA.Data[2] := INT_TO_WORD(TSPP_UNICOS_DB.NbOfTables);
DB_WinCCOA.Data[3] := INT_TO_WORD(TSPP_UNICOS_DB.NbOfStatusReq);
DB_WinCCOA.Data[4] := TSPP_UNICOS_DB.Error_code;
DB_WinCCOA.Data[5] := TSPP_UNICOS_DB.Special_code;

```

```
(*From TS Event Manager*)
DB_WinCCOA.TSPP_Reqlist      := TSPP_UNICOS_DB.Reqlist;
DB_WinCCOA.TSPP_Error       := TSPP_UNICOS_DB.Error;
DB_WinCCOA.TSPP_Error_code  := TSPP_UNICOS_DB.Error_code;
DB_WinCCOA.TSPP_Special_code := TSPP_UNICOS_DB.Special_code;
// Live Counter (Time in seconds from last startUP)
DB_WinCCOA.UNICOS_LiveCounter := UNICOS_LiveCounter;

END_FUNCTION

$FC_Event_FI$
```

4.2.1.3 S7Inst_Communication_Template_FI.scl

```
DATA_BLOCK DB_FIEvent
TITLE = 'EventData'
//
// Contains pointers on evstsreg which have been changed
//
AUTHOR: 'ICE/PLC'
NAME: 'Comm'
FAMILY: 'UNICOS'
STRUCT

    Nb_Event : INT;
    List_Event : ARRAY [1..$EventBufferSize$] OF STRUCT
        S7_ID : BYTE;
        DataType : BYTE;
        NbOfData : INT;
        DBNumber : INT;
        Address : DWORD;
    END_STRUCT;
END_STRUCT;
BEGIN
END_DATA_BLOCK

(*FUNCTION WHICH GENERATE EVENT FOR evstsreg01 and CALL TS_EVENT_MANAGER*)
FUNCTION FC_Event_FI : VOID
TITLE = 'FC_Event_FI'
//
// FUNCTION WHICH GENERATE EVENT FOR evstsreg01 and CALL TS_EVENT_MANAGER
//
AUTHOR: 'ICE/PLC'
NAME: 'Comm'
FAMILY: 'UNICOS'
VAR
    NewEvent : BOOL;
    i: INT;
    j: INT;
    k: INT;
    First_obj: INT;
    ListEventSize: INT;

    tempsts: DWORD;
END_VAR
```

```

BEGIN
First_obj      := 0;
k              := 2;
j              := TSPP_FI_DB.ID_NewEvent;
NewEvent       := 0;
ListEventSize := $EventBufferSize$;

$sevents_assignments$

DB_FIEvent.Nb_Event := j;
TSPP_FI_DB.ID_NewEvent := j;

TSPP_FI.TSPP_FI_DB(NewEvent := NewEvent    //Inputs
, MultipleEvent := TRUE
, EventListDB := DB_FIEvent
, EventTSIncluded := FALSE
, CurrentEvent := TSPP_UNICOS_DB.CurrentEvent //I/O
, ExtendedBufFull := TSPP_UNICOS_DB.ExtendedBufFull
, TS_EventBuffer := TSPP_UNICOS_DB.TS_EventBuffer
, EventBufferSize := TSPP_UNICOS_DB.EventBufferSize
, BufferFullSendReq := TSPP_UNICOS_DB.BufferFullSendReq
);

$sevents_overwrite$

DB_WinCCOA.Data[4] := TSPP_FI_DB.Error_code;
DB_WinCCOA.Data[5] := TSPP_FI_DB.Special_code;

(*From TS Event Manager*)
DB_WinCCOA.TSPP_Error      := TSPP_FI_DB.Error;
DB_WinCCOA.TSPP_Error_code := TSPP_FI_DB.Error_code;
DB_WinCCOA.TSPP_Special_code := TSPP_FI_DB.Special_code;
// Live Counter (Time in seconds from last startUP)
DB_WinCCOA.UNICOS_LiveCounter := UNICOS_LiveCounter;

END_FUNCTION

```

4.2.1.4 S7Inst_CompilationOB_Template.py

```
# -*- coding: utf-8 -*-
# UNICOS
# (c) Copyright CERN 2013 all rights reserved
# Jython source file for Communication Objects.
from S7Inst_Generic_Template import S7Inst_Generic_Template

import FI_Functions

class CompilationOB_Template(S7Inst_Generic_Template):

    def process(self, unicos_project, xml_config, generate_global_files, *_):
        """
        General Steps for the Compilation file:
        1. Starting OB (100,102)
        2. Diagnostic OB (82)
        3. Errors and Hot restart: 81, 83, 84, 101 (only S7-400)
        4. Diagnostic functions : FC_Diag1&2
        5. OB1(main cycle)
        6. Call the Recipes mechanism and provide the right values form WinCCOA
        7. OB32 (UNICOS live counter)
        8. OB35 (sampling PIDs)
        9. All other errors treatment are included in the baseline

        :param unicos_project:
        :param xml_config:
        :param generate_global_files: comes from "Global files scope" dropdown on Wizard.
            true = All types. false = Selected types.
        """
        params = {
            'FC_CONTROLLER': '',
            'S7_400_DB': '',
            'DB_DIAGNOSTIC': '',
            'OB82': '',
            'OB1_1': '', 'OB1_2': '', 'OB1_3': '', 'OB1_4': '',
            'DB_RECIPES': '',
            'OB1_COUNTER': '', 'OB32': '',
            'OB86': '',
            'OB35': '',
            'FI': ''
        }
```



```

plc_declaration = xml_config.getPLCDeclarations()[0]
plc_type = str(plc_declaration.getPLCType().getValue())

types_to_process = self.get_types_to_process(self.thePlugin, unicos_project, xml_config,
generate_global_files)
type_names_to_process = [device_type.getDeviceTypeName() for device_type in
types_to_process]

diagnostic = self.thePlugin.getPluginParameter("GeneralData:DiagnosticChannel")
if "Controller" in type_names_to_process:
    params['FC_CONTROLLER'] = "'FC_CONTROLLER(group:=0);// All Controllers running
(option=0)'"

if plc_type.startswith("S7-400"):
    params['S7_400_DB'] = self.get_s7_400_db('Controller' in type_names_to_process)

instance_vector = unicos_project.getDeviceType("DigitalInput").getAllDeviceTypeInstances()
FIdeviceVector = FI_Functions.get_FI_instance_list(instance_vector)
fast_interlocks_present = len(FIdeviceVector) != 0 # Fast interlock presence detected by any fast
interlock digital input
if fast_interlocks_present:
    params['FI'] = self.get_FI_block(unicos_project)

# order of devices is important and hard-coded in this file
if "DigitalInput" in type_names_to_process:
    params['OB1_1'] += "' FC_DI(); // Digital inputs\n'"
if "AnalogInput" in type_names_to_process:
    params['OB1_1'] += "' FC_AI(); // Analog inputs\n'"
if "AnalogInputReal" in type_names_to_process:
    params['OB1_1'] += "' FC_AIR(); // Analog inputs Real\n'"
if "Encoder" in type_names_to_process:
    params['OB1_1'] += "' FC_ENC(); // Encoders\n'"
if "Controller" in type_names_to_process:
    params['OB1_2'] += "' (*Controller functions called in FC_PCO_LOGIC(). Activate only if no
PID Logic declared*)\n'"
    params['OB1_2'] += "' // FC_CONTROLLER(group:=0);// All Controllers running (option=0)\n'"
if "ProcessControlObject" in type_names_to_process:
    params['OB1_2'] += "' (*Process Logic Control *)\n'"
    params['OB1_2'] += "' FC_PCO_LOGIC(); // Process Control object logic\n'"

for device_type, instance_amount in types_to_process.iteritems():
    device_type_name = device_type.getDeviceTypeName()
    family_name = device_type.getObjectType()

```

```

        representation_name =
self.thePlugin.getTargetDeviceInformationParam("RepresentationName", device_type_name)
        if family_name == "InterfaceObjectFamily":
            params['OB1_1'] += "    FC_%s(); // %s objects\n" % (representation_name,
device_type_name)
        elif family_name == "FieldObjectFamily":
            limit_size = int(self.thePlugin.getTargetDeviceInformationParam("LimitSize",
device_type_name))
            optimized = self.thePlugin.getTargetDeviceInformationParam("Optimized",
device_type_name).lower()
            if optimized == 'true' and device_type_name != 'Analog': # TODO: check if this ever
executed?
                params['OB1_3'] += "    FB_%(repr)s_All.DB_%(repr)s_All(); // %(type)s objects\n" % \
                {'repr': representation_name, 'type': device_type_name}
                if instance_amount > limit_size:
                    params['OB1_3'] += "    FB_%(repr)s_All2.DB_%(repr)s_All2(); // %(type)s objects\n"
% \
                    {'repr': representation_name, 'type': device_type_name}
            elif device_type_name != 'Analog':
                params['OB1_3'] += "    FC_%(repr)s(); // %(type)s objects\n" % \
                {'repr': representation_name, 'type': device_type_name}
                if instance_amount > limit_size: # TODO FC_2() ?
                    params['OB1_3'] += "    FC_%(repr)s2(); // %(type)s objects\n" % \
                    {'repr': representation_name, 'type': device_type_name}
            else: # Analog needs special treatment
                numbersToBeGenerated = []

                instance_list = device_type.getAllDeviceTypeInstances()
                air_limit_size = int(self.thePlugin.getTargetDeviceInformationParam("LimitSize",
"AnalogInputReal"))
                instance_split = {1: []}
                for instance in instance_list:
                    pos = self.get_instance_pos(unicos_project, instance, air_limit_size)
                    if pos not in instance_split:
                        instance_split[pos] = []
                    instance_split[pos].append(instance)
                positions = instance_split.keys()
                positions.sort()
                for pos in positions:
                    optimized_blocks_amount = len(instance_split[pos]) / (limit_size + 1)
                    start_idx = 1 if pos == 1 else pos * 10
                    for block_number in range(optimized_blocks_amount + 1):
                        numbersToBeGenerated.append(start_idx + block_number)

```

```

# print:
for number in numbersToBeGenerated:
    block_number = number
    if block_number == 1:
        block_number = ""
        params['OB1_3'] += " FC_%(repr)s%(number)s(); //%(type)s objects\n" % \
            {'repr': representation_name, 'type': device_type_name, 'number': block_number}

if "DigitalAlarm" in type_names_to_process:
    params['OB1_3'] += " FC_DA(); // DIGITAL ALARM objects\n"
if "AnalogAlarm" in type_names_to_process:
    params['OB1_3'] += " FC_AA(); // ANALOG ALARM objects\n"
if "DigitalOutput" in type_names_to_process:
    params['OB1_4'] += " FC_DO(); //Digital Outputs\n"
if "AnalogOutput" in type_names_to_process:
    params['OB1_4'] += " FC_AO(); //Analog Outputs\n"
if "AnalogOutputReal" in type_names_to_process:
    params['OB1_4'] += " FC_AOR(); //Analog Outputs REAL\n"

params['DB_RECIPES'] = self.get_recipe_db(xml_config)

if plc_type.startswith("S7-300"):
    params['OB1_COUNTER'] = ""
// 1 second counter to simulate OB32 in a S7-300
UNICOS_Counter1:=UNICOS_Counter1+OB1_PREV_CYCLE;
IF UNICOS_Counter1 > 1000 THEN
    UNICOS_Counter1:= UNICOS_Counter1 -1000;
    UNICOS_LiveCounter:=UNICOS_LiveCounter+1;
END_IF;
""
else:
    params['OB32'] = ""
// UNICOS Live Counter
ORGANIZATION_BLOCK OB32
VAR_TEMP
// Counter 1 second
Info: ARRAY[0..19] OF BYTE;
// Temporary Variables
END_VAR
UNICOS_LiveCounter:=UNICOS_LiveCounter+1;

```

END_ORGANIZATION_BLOCK

```
""

    if diagnostic == 'true':
        params['DB_DIAGNOSTIC'] = self.get_diagnostic_db(unicos_project, types_to_process)
        params['OB82'] = ""
    DB_IO_DIAGNOSTIC.IOFlag      := OB82_IO_FLAG;
    DB_IO_DIAGNOSTIC.MDL_ADDR    := OB82_MDL_ADDR;
    DB_IO_DIAGNOSTIC.FB_diag1_Exec := TRUE;
    FB_diag1.DB_IO_DIAGNOSTIC ();
""

        params['OB86'] = ""
    DB_IO_DIAGNOSTIC.OB86_EV_CLASS := OB86_EV_CLASS ;    //16#38/39 Event class 3
    DB_IO_DIAGNOSTIC.OB86_FLT_ID   := OB86_FLT_ID ;      //16#C1/C4/C5, Fault identification
code
    DB_IO_DIAGNOSTIC.OB86_RACKS_FLTD := OB86_RACKS_FLTD;    //Racks in fault

//Profibus DP Diagnostics
IF DB_IO_DIAGNOSTIC.OB86_EV_CLASS = B#16#39 AND DB_IO_DIAGNOSTIC.OB86_FLT_ID =
B#16#C4 THEN
    DB_IO_DIAGNOSTIC.OB86_DP_MasterSystem := BYTE_TO_INT (OB86_RACKS_FLTDw[2]);
    DB_IO_DIAGNOSTIC.OB86_DP_Slave       := BYTE_TO_INT (OB86_RACKS_FLTDw[3]);
    DB_IO_DIAGNOSTIC.FC_Diag2_Exec      := TRUE;
    DB_IO_DIAGNOSTIC.OB86_DP_Slave_Error := TRUE;
    FC_Diag2();
END_IF;

IF DB_IO_DIAGNOSTIC.OB86_EV_CLASS = B#16#38 AND DB_IO_DIAGNOSTIC.OB86_FLT_ID =
B#16#C4 THEN
    DB_IO_DIAGNOSTIC.FC_Diag2_Exec      := TRUE;
    DB_IO_DIAGNOSTIC.OB86_DP_Slave_Error := FALSE;
    FC_Diag2();
END_IF;

//Profinet IO Diagnostics
IF DB_IO_DIAGNOSTIC.OB86_EV_CLASS = B#16#39 AND DB_IO_DIAGNOSTIC.OB86_FLT_ID =
B#16#CB THEN
    Temp1 := SHR (IN:=OB86_RACKS_FLTDw[1], N:=11);    //shift right 11
positions to isolate bits 11 to 14
    DB_IO_DIAGNOSTIC.OB86_PN_IOSystem := WORD_TO_INT (Temp1 AND W#16#F);
//bits 11 to 14 of OB86_RACKS_FLTD
    DB_IO_DIAGNOSTIC.OB86_PN_Station := WORD_TO_INT (OB86_RACKS_FLTDw[1] AND
W#16#7FF); //bits 0 to 10 of OB86_RACKS_FLTD
```

```

    DB_IO_DIAGNOSTIC.FC_Diag2_Exec      := TRUE;
    DB_IO_DIAGNOSTIC.OB86_PN_Station_Error := TRUE;
    FC_Diag2();
END_IF;

IF DB_IO_DIAGNOSTIC.OB86_EV_CLASS = B#16#38 AND DB_IO_DIAGNOSTIC.OB86_FLT_ID =
B#16#CB THEN
    DB_IO_DIAGNOSTIC.FC_Diag2_Exec      := TRUE;
    DB_IO_DIAGNOSTIC.OB86_PN_Station_Error := FALSE;
    FC_Diag2();
END_IF;
'''

if 'Controller' not in type_names_to_process:
    params['OB35'] = '''// Scheduling: No controller definition '''
else:
    params['OB35'] = '''// PID sampling time management
ORGANIZATION_BLOCK OB35
VAR_TEMP
OB35_EV_CLASS : BYTE ; //Bits 0-3 = 1 (Coming event), Bits 4-7 = 1 (Event class 1)
OB35_STRT_INF : BYTE ; //16#36 (OB 35 has started)
OB35_PRIORITY : BYTE ; //11 (Priority of 1 is lowest)
OB35_OB_NUMBR : BYTE ; //35 (Organization block 35, OB35)
OB35_RESERVED_1 : BYTE ; //Reserved for system
OB35_RESERVED_2 : BYTE ; //Reserved for system
OB35_PHASE_OFFSET : WORD ; //Phase offset (msec)
OB35_RESERVED_3 : INT ; //Reserved for system
OB35_EXC_FREQ : INT ; //Frequency of execution (msec)
OB35_DATE_TIME : DATE_AND_TIME ; //Date and time OB35 started
I:INT;
END_VAR
"PID_EXEC_CYCLE" := DINT_TO_TIME(INT_TO_DINT(OB35_EXC_FREQ)); //getting OB35 sampling
time

LP_SCHED(TM_BASE :=PID_EXEC_CYCLE
,COM_RST:= false
,DB_NBR := DB_SCHED //IN: BLOCK_DB
);

// Reset bit activated DB_SCHED
FOR I:=1 TO %s DO
    IF DB_SCHED.LOOP_DAT[I].enable THEN
        FC_CONTROLLER(group:=I);

```

```

        DB_SCHED.LOOP_DAT[I].enable:=false;
    END_IF;
END_FOR;
END_ORGANIZATION_BLOCK''' % self.thePlugin.getGroupMaxNb()

    output = self.process_template(".scl", params)
    self.thePlugin.writeInstanceInfo("4_Compilation_OB.scl", output)

def get_FI_block(self, unicos_project):
    fc_block = '''%(FI_FC)s

(*%(OB_Num)s*****
****)
ORGANIZATION_BLOCK %(OB_Num)s
TITLE = '%(Type_interrupt)s Interrupt'
//
// %(Call_Type)s
//
AUTHOR: 'ICE/PLC'
NAME: '%(OB_Num)s'
FAMILY: 'UNICOS'
VAR_TEMP
    (*UNUSED VARIABLE*)
    UNUSED_VARIABLE : ARRAY [0..20] OF BYTE;
%(CI_Vars)s
END_VAR
BEGIN
    (*Update inputs*)
    FB_FI_PIU.DB_FI_PIU(); // Peripheral input update
%(CI_start)s
    (*Getting inputs*)
%(FI_1)s
%(FI_2)s
%(FI_3)s
    (*UNICOS objects calculating*)
%(FI_4)s
    (*Setting Outputs*)
%(FI_5)s
    (*Update outputs*)
    FI_POU(); // Peripheral output update

//Calling TS_Event_Manager for TSPP communication with the SCADA

```

```

FC_Event_FI());
%(CI_end)s
END_ORGANIZATION_BLOCK
'''

```

```

params = {
    'FI_FC': "",
    'Type_interrupt': "",
    'OB_Num': "",
    'Call_Type': "",
    'FI_1': "",
    'FI_2': "",
    'FI_3': "",
    'FI_4': "",
    'FI_5': "",
    'CI_Vars': "",
    'CI_start': "",
    'CI_end': ""
}

```

```

DI_instance_list = unicos_project.getDeviceType("DigitalInput").getAllDeviceTypeInstances()
DI_FI_instance_list = FI_Functions.get_FI_instance_list(DI_instance_list)
fast_interlocks_DI_present = len(DI_FI_instance_list) != 0
ONOFF_instance_list = unicos_project.getDeviceType("OnOff").getAllDeviceTypeInstances()
ONOFF_FI_instance_list = FI_Functions.get_FI_instance_list(ONOFF_instance_list)
fast_interlocks_OnOff_present = len(ONOFF_FI_instance_list) != 0
DA_instance_list = unicos_project.getDeviceType("DigitalAlarm").getAllDeviceTypeInstances()
DA_FI_instance_list = FI_Functions.get_FI_instance_list(DA_instance_list)
fast_interlocks_DA_present = len(DA_FI_instance_list) != 0
DO_instance_list = unicos_project.getDeviceType("DigitalOutput").getAllDeviceTypeInstances()
DO_FI_instance_list = FI_Functions.get_FI_instance_list(DO_instance_list)
fast_interlocks_DO_present = len(DO_FI_instance_list) != 0

if fast_interlocks_DI_present:
    params['FI_1'] += ''' FC_DI_FI(); // Digital inputs\n'''
if fast_interlocks_OnOff_present:
    params['FI_3'] += ''' (*Process Logic Control*)
FC_FI_LOGIC(); // Process Control object logic\n'''
    params['FI_4'] += ''' FC_ONOFF_FI(); // OnOff objects\n'''
if fast_interlocks_DA_present:
    params['FI_2'] += ''' FC_FI_LOGIC();
FC_DA_FI(); // DIGITAL ALARM objects\n'''

```

```

if fast_interlocks_DO_present:
    params['FI_5'] += ''' FC_DO_FI(); //Digital Outputs\n'''

    interrupt_type = DI_FI_instance_list[0].getAttributeData("LogicDeviceDefinitions:Fast Interlock
Type")
    if interrupt_type == "Hardware Interrupt":
        params["OB_Num"] = "OB40"
        params["Type_interrupt"] = "Hardware"
        params["Call_Type"] = "Called after a hardware interrupt trigger"
    elif interrupt_type == "Cyclic Interrupt":
        params["OB_Num"] = "OB34"
        params["Type_interrupt"] = "Cyclic"
        params["Call_Type"] = "Called every user-defined cyclic time"
        params["CI_Vars"] = ''' Dis_error : INT;
En_error : INT;'''
        params["CI_start"] = ''' IF (DB_FI_PIU.Inp_change) THEN
/////////////////LOCK/////////////////
Dis_error := DIS_IRT(MODE := B#16#02, OB_NR := 34);

//Calling TS_Event_Manager for TSP communication with the SCADA
FC_Event_FI();
'''
        params["CI_end"] = ''' ///////////////////UNLOCK/////////////////
En_error := EN_IRT(MODE := B#16#02, OB_NR := 34);
END_IF;'''

    params['FI_FC'] = self.get_FI_FC(DI_FI_instance_list, DO_FI_instance_list, interrupt_type)
    return fc_block % params

def get_FI_FC(self, DI_instance, DO_instance, interrupt_type):
    fc_block = '''
FUNCTION_BLOCK FB_FI_PIU
//
// Peripheral Input Update
//
VAR
%(CI_Vars)s
END_VAR
VAR_TEMP
    PIB_FI: BYTE;
END_VAR
'''

```



```

BEGIN
%(piu)s
END_FUNCTION_BLOCK

DATA_BLOCK DB_FI_PIU FB_FI_PIU // Data block for the peripheral input update function
BEGIN
END_DATA_BLOCK

FUNCTION FI_POU : VOID
//
// Peripheral Output Update
//
BEGIN
%(pou)s
END_FUNCTION
'''

    params = {
        'piu': [],
        'pou': [],
        'CI_Vars': []
    }

    if interrupt_type == "Cyclic Interrupt":
        params['CI_Vars'].append("    First_cycle : BOOL := TRUE;")
        params['piu'].append("    Inp_change := FALSE;")

    remaining_instances = DI_instance
    current_instances = []
    input_byte = None
    bits = []
    while len(remaining_instances) > 0:
        for instance in remaining_instances:
            instance_byte, instance_bit =
instance.getAttributeData("FEDeviceIOConfig:FEChannel:InterfaceParam1").strip().lower().replace("i
", "").replace("db", "").split(".")
            if input_byte is None:
                input_byte = instance_byte
                bits.append(instance_bit)
                current_instances.append(instance)
            elif instance_byte == input_byte:
                bits.append(instance_bit)
                current_instances.append(instance)

```

```

params['piu'].append(self.get_FI_FC_PIU(input_byte, bits, interrupt_type))
if interrupt_type == "Cyclic Interrupt":
    params['Cl_Vars'].append(' LC_IB%s : BYTE;' % input_byte)
for instance in current_instances:
    remaining_instances.remove(instance)
input_byte = None
bits = []
current_instances = []

if interrupt_type == "Cyclic Interrupt":
    params['Cl_Vars'].append("""END_VAR
VAR_OUTPUT
Inp_change : BOOL;""")
    params['piu'].append(""" IF (First_cycle) THEN
First_cycle := FALSE;
END_IF;""")

params['Cl_Vars'] = "\n".join(params['Cl_Vars'])
params['piu'] = "\n".join(params['piu'])

output_bytes = []
for instance in DO_instance:
    instance_byte, instance_bit =
instance.getAttributeData("FEDeviceIOConfig:FEChannel:InterfaceParam1").strip().lower().replace("q
", "").replace("db", "").split(".")
    if instance_byte not in output_bytes:
        output_bytes.append(instance_byte)
for output_byte in output_bytes:
    params['pou'].append(""" PQB [%s] := QB [%s];"" % (output_byte, output_byte))
params['pou'] = "\n".join(params['pou'])
return fc_block % params

def get_FI_FC_PIU(self, input_byte, bits, interrupt_type):
    if interrupt_type == "Hardware Interrupt":
        block = """ PIB_FI := PIB [%s]; //%(bits)s
IB [%s] := (IB[%s] AND 2#%(zero_bits)s) OR (PIB_FI AND 2#%(one_bits)s);
"""
    elif interrupt_type == "Cyclic Interrupt":
        block = """ PIB_FI := PIB [%s]; //%(bits)s
PIB_FI := PIB_FI AND 2#%(one_bits)s;
IF (First_cycle) THEN
LC_IB%(input_byte)s := PIB_FI;
END_IF;

```

```

IF (PIB_FI <> LC_IB%(input_byte)s) THEN
  Inp_change := TRUE;
  LC_IB%(input_byte)s := PIB_FI;
  IB [% (input_byte)s] := (IB [% (input_byte)s] AND 2#%(zero_bits)s) OR PIB_FI;
END_IF;
'''

```

```

params = {
  'input_byte': input_byte,
  'bits': [],
  'zero_bits': [],
  'one_bits': []
}

for current_bit in bits:
  params['bits'].append('%s.%s' % (input_byte, current_bit))
for idx in range(8):
  if str(idx) in bits:
    params['zero_bits'].append('0')
    params['one_bits'].append('1')
  else:
    params['zero_bits'].append('1')
    params['one_bits'].append('0')
params['bits'] = ", ".join(params['bits'])
params['zero_bits'] = "".join(reversed(params['zero_bits']))
params['one_bits'] = "".join(reversed(params['one_bits']))
return block % params

```

```

def get_s7_400_db(self, controller_exists_in_generation):
    """ For S7-400 PLC create:
        OB81 (Power Supply Error detection)
        OB83 (Insert/Remove Module Interrupt detection),
        OB84 (CPU Hardware Fault detection)
        OB101 (Hot Restart).
    """
    s7_400_db = '''
// Power Supply Fault
ORGANIZATION_BLOCK OB81
VAR_TEMP
// Reserved
Info: ARRAY[0..19] OF BYTE;

```

```

// Temporary Variables
END_VAR
;
END_ORGANIZATION_BLOCK

```

```

// I/O Point fault 2
ORGANIZATION_BLOCK OB83
VAR_TEMP
// Reserved
Info: ARRAY[0..19] OF BYTE;
// Temporary Variables
END_VAR
;
END_ORGANIZATION_BLOCK

```

```

// CPU fault
ORGANIZATION_BLOCK OB84
VAR_TEMP
// Reserved
Info: ARRAY[0..19] OF BYTE;
// Temporary Variables
END_VAR;
END_ORGANIZATION_BLOCK

```

```

(*HOT RESTART*****

```

```

ORGANIZATION_BLOCK OB101
VAR_TEMP
OB101_EV_CLASS : BYTE;
OB101_STRUP : BYTE;
OB101_PRIORITY : BYTE;
OB101_OB_NUMBR : BYTE;
OB101_RESERVED_1: BYTE;
OB101_RESERVED_2: BYTE;
OB101_STOP : WORD;
OB101_STRT_INFO : DWORD;
OB101_DATE_TIME : DATE_AND_TIME;
END_VAR
BEGIN

```

```

//Time Smoothing (alarms)
UNICOS_TimeSmooth := 10;

```

```

//Init of First_Cycle variable
  First_Cycle := TRUE;

//Init of Live counter marker form Live counter datablock
  UNICOS_LiveCounter := DB_WINCCOA.UNICOS_LiveCounter;

//TSPP Initialization
  TSPP_UNICOS_Manager.TSPP_UNICOS_DB(
    Init := TRUE
    ,SendID0 := B#16#1
    ,SendID1 := B#16#2
    ,SendEventPeriod := DB_WinCCOA.TSPP_EventPeriod
    ,NewEvent := FALSE
    ,EventTSIncluded := FALSE
    ,MultipleEvent := TRUE
    ,EventListDB := DB_EventData
    ,SendAllStatus := FALSE
    ,ListOfStatusTable := DB_COMM
    ,WatchDog := DB_WinCCOA.Address_Counter
  );
%(FC_CONTROLLER)s
END_ORGANIZATION_BLOCK

(*COLD RESTART*****
ORGANIZATION_BLOCK OB102
VAR_TEMP
  OB102_EV_CLASS : BYTE;
  OB102_STRUP   : BYTE;
  OB102_PRIORITY : BYTE;
  OB102_OB_NUMBR : BYTE;
  OB102_RESERVED_1: BYTE;
  OB102_RESERVED_2: BYTE;
  OB102_STOP    : WORD;
  OB102_STRT_INFO : DWORD;
  OB102_DATE_TIME : DATE_AND_TIME;
END_VAR
BEGIN
// Time Smoothing (alarms)
  UNICOS_TimeSmooth := 10;

//Init of First_Cycle variable

```

```

First_Cycle := TRUE;

//Init of Live counter marker form Live counter datablock
UNICOS_LiveCounter := DB_WINCCOA.UNICOS_LiveCounter;

//TSPP Initialization
TSPP_UNICOS_Manager.TSPP_UNICOS_DB(
    Init := TRUE
    ,SendIDO := B#16#1
    ,SendID1 := B#16#2
    ,SendEventPeriod := DB_WinCCOA.TSPP_EventPeriod
    ,NewEvent := FALSE
    ,EventTSIncluded := FALSE
    ,MultipleEvent := TRUE
    ,EventListDB := DB_EventData
    ,SendAllStatus := FALSE
    ,ListOfStatusTable := DB_COMM
    ,WatchDog := DB_WinCCOA.Address_Counter
);

%(FC_CONTROLLER)s
END_ORGANIZATION_BLOCK
'''
    params = {
        'FC_CONTROLLER': ''
    }
    if controller_exists_in_generation:
        params['FC_CONTROLLER'] = '' FC_CONTROLLER(group:=0);// All Controllers running
(option=0)'''
    return s7_400_db % params

def get_recipe_db(self, xml_config):
    recipe_db = ''
    // Calling the Recipes Mechanism and passing the information from WinCCOA
(DB_RECIPES_INTERFACE) to the CPC_DB_RECIPES
    CPC_FB_RECIPES.CPC_DB_RECIPES(
        Header := DB_RECIPES_INTERFACE.RecipeHeader //Header from DB_RECIPES_INTERFACE to
CPC_DB_RECIPES
        ,DBnum := %(DBnum)s //DB number of Recipe buffers
        ,HeaderBase := %(HeaderBase)s //Header buffer base address
        ,StatusBase := %(StatusBase)s //Recipe Status buffer base address
        ,ManRegAddrBase := %(ManRegAddrBase)s //Manual Requests addresses buffer base
address
        ,ManRegValBase := %(ManRegValBase)s //Manual Reuquests values buffer base address

```

```

,ReqAddrBase := %(ReqAddrBase)s      //Request Address buffer base address
,ReqValBase := %(ReqValBase)s        //Request Values buffer base address
,BuffersBase := %(ManRegAddrBase)s   //Buffers base address
,BuffersEnd := %(BuffersEnd)s        //Buffers last address
,Timeout := T#%(Timeout)ss          //Recipe transfer timeout
);

DB_RECIPES_INTERFACE.RecipeStatus := CPC_DB_RECIPES.Status; //Status from CPC_DB_RECIPES
to DB_RECIPES_INTERFACE
""

generate_buffers =
xml_config.getPLCParameter("RecipeParameters:GenerateBuffers").strip().lower()
if generate_buffers != "true":
return ""

header_buffer_size =
int(xml_config.getPLCParameter("RecipeParameters:HeaderBufferSize").strip())
buffer_size_calculated = self.get_recipe_buffer_size(xml_config)
params = {
'DBnum': self.thePlugin.getAddress("DB_RECIPES_INTERFACE"),
'HeaderBase': '2',
'StatusBase': header_buffer_size * 2 + 2,
'ManRegAddrBase': header_buffer_size * 4 + 2,
'ManRegValBase': header_buffer_size * 4 + buffer_size_calculated * 2 + 2,
'ReqAddrBase': header_buffer_size * 4 + buffer_size_calculated * 4 + 2,
'ReqValBase': header_buffer_size * 4 + buffer_size_calculated * 6 + 2,
'BuffersEnd': header_buffer_size * 4 + buffer_size_calculated * 10 + 2,
'Timeout': xml_config.getPLCParameter("RecipeParameters:ActivationTimeout")
}

return recipe_db % params

def get_diagnostic_db(self, unicos_project, types_to_process):
diagnostic_db = ""(* Diagnostic information from the OB82 and RECORD retrieved from SFB52 *)

FUNCTION_BLOCK FB_diag1
//
// DIAGNOSTIC FUNCTION FOR I/O CARDS
//
AUTHOR: UNICOS
NAME: Diagnose
FAMILY: DIAG
VAR_TEMP

```

```

PLC_ADDR    : REAL;
T           : INT; //type of card (DI=1 AI=2 DO=3 AO=4)
i           : INT;
j           : INT;
k           : INT;
l           : INT;
Nr_Of_Channels : INT;
Index       : INT;
Index2      : INT;
Index3      : INT;
Mask        : BYTE;
Channel_Error : BOOL;
Break       : BOOL;
Card_Error  : BOOL;
END_VAR

VAR
IOFlag      : BYTE;           // = B#16#54 for an Input and B#16#55 for an Output
MDL_ADDR    : WORD;          //Address of the module
RDREC       : RDREC;
RDREC_Data  : ARRAY[0..15] OF BYTE;

OB86_EV_CLASS    : BYTE;           //16#38/39 Event class 3
OB86_FLT_ID      : BYTE;           //16#C1/C4/C5, Fault identification code
OB86_RACKS_FLTD  : DWORD;          //Rack in fault
OB86_DP_MasterSystem : INT;        //DP Master System number
OB86_PN_IOSystem  : INT;          //PN IO System number
OB86_DP_Slave     : INT;          //DP Slave number
OB86_PN_Station   : INT;          //PN IO Station number
OB86_DP_Slave_Error : BOOL;       //DP slave error
OB86_PN_Station_Error : BOOL;     //PN IO Station error
FB_Diag1_Exec     : BOOL;         //Execution of FB_Diag1 in progress
FC_Diag2_Exec     : BOOL;         //Execution of FC_Diag2 in progress
END_VAR

BEGIN
//Call SFB52 (RDREC) constantly until the RECORD is retrieved.
IF IOFlag = B#16#55 THEN
    RDREC.ID := (WORD_TO_DWORD (MDL_ADDR)) OR DW#16#8000;
ELSE
    RDREC.ID := (WORD_TO_DWORD (MDL_ADDR));
END_IF;

```



```

REPEAT
  RDREC(REQ := FB_Diag1_Exec,
        INDEX := 1,
        MLEN := 16,
        RECORD := RDREC_Data);

  FB_Diag1_Exec := FALSE;
UNTIL RDREC.BUSY = FALSE
END_REPEAT;

//Type of card
IF (B#16#7F AND RDREC_Data[4]) = B#16#70 THEN T:= 1; END_IF; //DI
IF ((B#16#7F AND RDREC_Data[4]) = B#16#71) OR ((B#16#7F AND RDREC_Data[4]) = B#16#7B)
THEN T:= 2; END_IF; //AI. Code 7B from ET200S AI modules
IF (B#16#7F AND RDREC_Data[4]) = B#16#72 THEN T:= 3; END_IF; //DO
IF ((B#16#7F AND RDREC_Data[4]) = B#16#73) OR ((B#16#7F AND RDREC_Data[4]) = B#16#7C)
THEN T:= 4; END_IF; //AO. Code 7C from ET200S AO modules

//Number of channels in this module
Nr_Of_Channels := BYTE_TO_INT(RDREC_Data[6]);

//Detection of module error
Card_Error := ((B#16#F0 AND RDREC_Data[0]) <> 0);

//Number of bytes containing information o chanmnel in the RECORD
Index := (Nr_Of_Channels DIV 8) - 1; //Number of groups of 8 channels in the module (e.g if
12 AI module then Index = 1)
IF Index < 0 THEN Index := 0; END_IF; //If 8 or less AI modules, then Index = 0
Index2 := Nr_Of_Channels MOD 8; //Number of channels outside gropus of 8 (e.g 12 AI
module Index2 = 4)

//Scan of all channel information in the RECORD BYTE 7 onwards
FOR k := 0 TO Index DO
  IF k = Index AND Index2 > 0 THEN Index3 := Index2-1; ELSE Index3 := 7; END_IF;
  FOR i := 0 TO Index3 DO
    //Init
    Break := 0;
    Mask := B#16#01;
    Mask := ROL(IN:=Mask, N:=i);

    //Calculation OF PLC Address according to the type of channel
    CASE T OF

```

```

1 : PLC_ADDR := INT_TO_REAL(WORD_TO_INT(MDL_ADDR)) + k + INT_TO_REAL(i)/10; //DI
2 : PLC_ADDR := INT_TO_REAL(WORD_TO_INT(MDL_ADDR)) + 16*k + i*2; //AI
3 : PLC_ADDR := INT_TO_REAL(WORD_TO_INT(MDL_ADDR)) + k + INT_TO_REAL(i)/10;
//DO
4 : PLC_ADDR := INT_TO_REAL(WORD_TO_INT(MDL_ADDR)) + 16*k + i*2; //AO

END_CASE;

//IO Error detection for every channel
IF ((RDREC_Data[7+k] AND Mask) = Mask) OR Card_Error THEN
    Channel_Error := 1; //IO error
ELSE
    Channel_Error:= 0 ; //No IO error
END_IF;

//Init
j:= 1;
CASE T OF
    0 ;
%(DIAGNOSTIC_CASE1)s
%(DIAGNOSTIC_CASE2)s
%(DIAGNOSTIC_CASE3)s
%(DIAGNOSTIC_CASE4)s
    END_CASE;
    END_FOR;
END_FOR;
END_FUNCTION_BLOCK

DATA_BLOCK DB_IO_DIAGNOSTIC FB_Diag1
BEGIN
END_DATA_BLOCK

(* Diagnostic of Profibus slaves *)
FUNCTION FC_Diag2 : VOID
//
// Diagnostic of profibus slaves
//
AUTHOR: UNICOS
NAME: Diagnose
FAMILY: DIAG

```

```

BEGIN
  DB_IO_DIAGNOSTIC.FC_Diag2_Exec := FALSE;

  %(FC_Diag2)s
END_FUNCTION
'''
  params = {
    'DIAGNOSTIC_CASE2': '',
    'DIAGNOSTIC_CASE1': '',
    'DIAGNOSTIC_CASE3': '',
    'DIAGNOSTIC_CASE4': '',
    'FC_Diag2': ''
  }

  for device_type, instance_amount in types_to_process.iteritems():
    device_type_name = device_type.getDeviceTypeName()
    if device_type_name == "DigitalInput":
      params['DIAGNOSTIC_CASE1'] = ""      1 : WHILE (j<%s+1 AND break = 0) DO //DI
        IF DI_ERROR.IOERROR[j].ADDR = PLC_ADDR THEN DI_ERROR.IOERROR[j].Err :=
Channel_Error; break := 1; END_IF;
        j := j+1;
      END_WHILE;''' % instance_amount
    if device_type_name == "AnalogInput":
      params['DIAGNOSTIC_CASE2'] = ""      2 : WHILE (j<%s+1 AND break = 0) DO //AI
        IF AI_ERROR.IOERROR[j].ADDR = PLC_ADDR THEN AI_ERROR.IOERROR[j].Err :=
Channel_Error; break := 1; END_IF;
        j := j+1;
      END_WHILE;''' % instance_amount

    if device_type_name == "DigitalOutput":
      params['DIAGNOSTIC_CASE3'] = ""      3 : WHILE (j<%s+1 AND break = 0) DO //DO
        IF DO_ERROR.IOERROR[j].ADDR = PLC_ADDR THEN DO_ERROR.IOERROR[j].Err :=
Channel_Error; break := 1; END_IF;
        j := j+1;
      END_WHILE;''' % instance_amount

    if device_type_name == "AnalogOutput":
      params['DIAGNOSTIC_CASE4'] = ""      4 : WHILE (j<%s+1 AND break = 0) DO //AO
        IF AO_ERROR.IOERROR[j].ADDR = PLC_ADDR THEN AO_ERROR.IOERROR[j].Err :=
Channel_Error; break := 1; END_IF;
        j := j+1;
      END_WHILE;''' % instance_amount

```

```

DPinstances =
unicos_project.findMatchingInstances("DigitalInput,DigitalOutput,AnalogInput,AnalogOutput",
"#FEDeviceIOConfig:FEChannel:InterfaceParam10#!=""")
PNinstances =
unicos_project.findMatchingInstances("DigitalInput,DigitalOutput,AnalogInput,AnalogOutput",
"#FEDeviceIOConfig:FEChannel:InterfaceParam9#!=""")
DPslaves = {}
PNslaves = {}

for instance in DPinstances:
    DPslave_id = int(instance.getAttributeData("FEDeviceIOConfig:FEChannel:InterfaceParam10"))
    if not DPslaves.has_key(DPslave_id):
        DPslaves[DPslave_id] = list()
    DPslaves[DPslave_id].append(instance)

DPslave_ids = DPslaves.keys()
DPslave_ids.sort()
for DPslave_id in DPslave_ids:
    params['FC_Diag2'] += " (* I/O Objects mapped to DP Slave number %s *)\n" % DPslave_id
    params['FC_Diag2'] += " IF DB_IO_DIAGNOSTIC.OB86_DP_Slave = %s THEN\n" %
DPslave_id
    for instance in DPslaves[DPslave_id]:
        instance_type = instance.getDeviceTypeName()
        instance_number = instance.getInstanceNumber()
        if instance_type == "DigitalInput":
            params['FC_Diag2'] += " DI_ERROR.IOERROR[" + str(instance_number) + "].Err :=
DB_IO_DIAGNOSTIC.OB86_DP_Slave_Error;\n"
        if instance_type == "DigitalOutput":
            params['FC_Diag2'] += " DO_ERROR.IOERROR[" + str(instance_number) + "].Err :=
DB_IO_DIAGNOSTIC.OB86_DP_Slave_Error;\n"
        if instance_type == "AnalogInput":
            params['FC_Diag2'] += " AI_ERROR.IOERROR[" + str(instance_number) + "].Err :=
DB_IO_DIAGNOSTIC.OB86_DP_Slave_Error;\n"
        if instance_type == "AnalogOutput":
            params['FC_Diag2'] += " AO_ERROR.IOERROR[" + str(instance_number) + "].Err :=
DB_IO_DIAGNOSTIC.OB86_DP_Slave_Error;\n"
        params['FC_Diag2'] += " END_IF;\n"

for instance in PNinstances:
    PNslave_id = int(instance.getAttributeData("FEDeviceIOConfig:FEChannel:InterfaceParam9"))
    if not PNslaves.has_key(PNslave_id):
        PNslaves[PNslave_id] = list()
    PNslaves[PNslave_id].append(instance)

```

```

PNslave_ids = PNslaves.keys()
PNslave_ids.sort()
for PNslave_id in PNslave_ids:
    params['FC_Diag2'] += " (* I/O Objects mapped to PN Station number %s *)\n" %
PNslave_id
    params['FC_Diag2'] += " IF DB_IO_DIAGNOSTIC.OB86_PN_Station = %s THEN\n" %
PNslave_id
    for instance in PNslaves[PNslave_id]:
        instance_type = instance.getDeviceTypeName()
        instance_number = instance.getInstanceNumber()
        if instance_type == "DigitalInput":
            params['FC_Diag2'] += "    DI_ERROR.IOERROR[" + str(instance_number) + "].Err :=
DB_IO_DIAGNOSTIC.OB86_PN_Station_Error;\n"
            if instance_type == "DigitalOutput":
                params['FC_Diag2'] += "    DO_ERROR.IOERROR[" + str(instance_number) + "].Err :=
DB_IO_DIAGNOSTIC.OB86_PN_Station_Error;\n"
            if instance_type == "AnalogInput":
                params['FC_Diag2'] += "    AI_ERROR.IOERROR[" + str(instance_number) + "].Err :=
DB_IO_DIAGNOSTIC.OB86_PN_Station_Error;\n"
            if instance_type == "AnalogOutput":
                params['FC_Diag2'] += "    AO_ERROR.IOERROR[" + str(instance_number) + "].Err :=
DB_IO_DIAGNOSTIC.OB86_PN_Station_Error;\n"
            params['FC_Diag2'] += "    END_IF;\n"

return diagnostic_db % params

```

4.2.1.5 S7Inst_CompilationOB_Template.scl

(*

This file contains :

- *starting OB (100,102)*
- *Errors: 81, 83, 84 (only S7-400)*
- *Diagnostic functions : FC_Diag1&2*
- *Diagnostic OB (82)*
- *OB1(main cycle)*
- *OB35 (sampling PIDs)*
- *OB32 (UNICOS live counter)*
- *OB40 (Fast interlock treatment)*
- *OB34 (Fast interlock treatment)*
- *All other errors treatment are included in the baseline*

*)

(*RESTART (WARM RESTART)*****)

ORGANIZATION_BLOCK OB100

TITLE = 'Warm restart'

//

// Called during warm restart

//

AUTHOR: 'UNICOS'

NAME: 'OB100'

FAMILY: 'EXEC'

VAR_TEMP

OB100_EV_CLASS : BYTE;

OB100_STRUP : BYTE;

OB100_PRIORITY : BYTE;

OB100_OB_NUMBR : BYTE;

OB100_RESERVED_1: BYTE;

OB100_RESERVED_2: BYTE;

OB100_STOP : WORD;

OB100_STRT_INFO : DWORD;

OB100_DATE_TIME : DATE_AND_TIME;

END_VAR

BEGIN

//Time Smoothing (alarms)

UNICOS_TimeSmooth := 10;

//Init of First_Cycle variable

First_Cycle := TRUE;

//Init of Live counter marker form Live counter datablock

```
UNICOS_LiveCounter := DB_WINCCOA.UNICOS_LiveCounter;
```

```
//TSPP Initialization
```

```
TSPP_UNICOS_Manager.TSPP_UNICOS_DB(  
    Init := TRUE  
    ,SendIDO := B#16#1  
    ,SendID1 := B#16#2  
    ,SendEventPeriod := DB_WinCCOA.TSPP_EventPeriod  
    ,NewEvent := FALSE  
    ,EventTSIncluded := FALSE  
    ,MultipleEvent := TRUE  
    ,EventListDB := DB_EventData  
    ,SendAllStatus := FALSE  
    ,ListOfStatusTable := DB_COMM  
    ,WatchDog := DB_WinCCOA.Address_Counter  
);
```

```
$FC_CONTROLLER$
```

```
END_ORGANIZATION_BLOCK
```

```
$S7_400_DB$
```

```
$DB_DIAGNOSTIC$
```

```
(* Diagnostic OB for IO Error detection *)
```

```
ORGANIZATION_BLOCK OB82
```

```
TITLE = 'OB82'
```

```
//
```

```
// Called during an error on a channel if the diagnostic option is activated in UAB
```

```
//
```

```
AUTHOR: 'ICE/PLC'
```

```
NAME: 'OB82'
```

```
FAMILY: 'UNICOS'
```

```
VAR_TEMP
```

```
OB82_EV_CLASS : BYTE;
```

```
OB82_FLT_ID : BYTE;
```

```
OB82_PRIORITY : BYTE;
```

```
OB82_OB_NUMBR : BYTE;
```

```
OB82_RESERVED_1 : BYTE;
```

```
OB82_IO_FLAG : BYTE;
```

```

OB82_MDL_ADDR    : WORD;
OB82_MDL_DEFECT  : BOOL;
OB82_INT_FAULT   : BOOL;
OB82_EXT_FAULT   : BOOL;
OB82_PNT_INFO    : BOOL;
OB82_EXT_VOLTAGE : BOOL;
OB82_FLD_CONNCTR : BOOL;
OB82_NO_CONFIG   : BOOL;
OB82_CONFIG_ERR  : BOOL;
OB82_MDL_TYPE    : BYTE;
OB82_SUB_MDL_ERR : BOOL;
OB82_COMM_FAULT  : BOOL;
OB82_MDL_STOP    : BOOL;
OB82_WTCH_DOG_FLT : BOOL;
OB82_INT_PS_FLT  : BOOL;
OB82_PRIM_BATT_FLT : BOOL;
OB82_BCKUP_BATT_FLT : BOOL;
OB82_RESERVED_2  : BOOL;
OB82_RACK_FLT    : BOOL;
OB82_PROC_FLT    : BOOL;
OB82_EPROM_FLT   : BOOL;
OB82_RAM_FLT     : BOOL;
OB82_ADU_FLT     : BOOL;
OB82_FUSE_FLT    : BOOL;
OB82_HW_INTR_FLT : BOOL;
OB82_RESERVED_3  : BOOL;
OB82_DATE_TIME   : DATE_AND_TIME;

```

```
END_VAR
```

```
BEGIN
```

```
$OB82$
```

```
;
```

```
END_ORGANIZATION_BLOCK
```

```
ORGANIZATION_BLOCK OB86
```

```
TITLE = 'OB86'
```

```
//
```

```
// Called during an error on a Profibus Slave if the diagnostic option is activated in UAB
```

```
//
```

```
AUTHOR: 'ICE/PLC'
```

```
NAME: 'OB86'
```

```
FAMILY: 'UNICOS'
```

```
VAR_TEMP
```



```

OB86_EV_CLASS          : BYTE ;           //16#38/39 Event class 3
OB86_FLT_ID            : BYTE ;           //16#C1/C4/C5, Fault identifcation code
OB86_PRIORITY          : BYTE ;           //Priority of OB Execution
OB86_OB_NUMBR         : BYTE ;           //86 (Organization block 86, OB86)
OB86_RESERVED_1       : BYTE ;           //Reserved for system
OB86_RESERVED_2       : BYTE ;           //Reserved for system
OB86_MDL_ADDR         : WORD ;           //Base address of IM module in rack with fault
OB86_RACKS_FLTD       : DWORD;           //Racks in fault
OB86_DATE_TIME        : DATE_AND_TIME ;   //Date and time OB86 started
OB86_RACKS_FLTDb AT OB86_RACKS_FLTD : ARRAY [0..3] OF BYTE;
OB86_RACKS_FLTDw AT OB86_RACKS_FLTD : ARRAY [0..1] OF WORD;
Temp1                  : WORD;
END_VAR
BEGIN
$OB86$
;
END_ORGANIZATION_BLOCK
(*OB1*****
ORGANIZATION_BLOCK OB1
TITLE = 'OB1'
//
// Called during each cycle
//
AUTHOR: 'ICE/PLC'
NAME: 'OB1'
FAMILY: 'UNICOS'
VAR_TEMP
OB1_EV_CLASS : BYTE;
OB1_SCAN_1 : BYTE;
OB1_PRIORITY : BYTE;
OB1_OB_NUMBR : BYTE;
OB1_RESERVED_1 : BYTE;
OB1_RESERVED_2 : BYTE;
OB1_PREV_CYCLE : INT;
OB1_MIN_CYCLE : INT;
OB1_MAX_CYCLE : INT;
OB1_DATE_TIME : DATE_AND_TIME;

END_VAR
BEGIN
" T_CYCLE" := DINT_TO_TIME(INT_TO_DINT(OB1_PREV_CYCLE)); //getting OB1 sampling time

```

```

    (*Getting inputs*)
$OB1_1$
    // Accelerating communications in large applications (comms without events)
    IF Comm = 1 AND OB1_PREV_CYCLE > 250 THEN
        FC_TSPP(NE :=false,RA := false);
    END_IF;
$OB1_2$
    (*UNICOS objects calculating*)
$OB1_3$
    (*Setting Outputs*)
$OB1_4$
$DB_RECIPES$
    //Allow calling TS_Event_Manager for TSPP communication with the SCADA after the 1st cycle
    IF Comm = 0 THEN Comm := 1;
    ELSE FC_Event();
    END_IF;
    First_Cycle:=FALSE; //First cycle terminated
$OB1_COUNTER$
END_ORGANIZATION_BLOCK
$OB32$

$OB35$

$FI$

```

4.2.1.6 S7Inst_TSPP_UNICOS_Template.py

```
# -*- coding: utf-8 -*-
# UNICOS
# (c) Copyright CERN 2013 all rights reserved
# Jython source file for Communication Objects.
import os
from S7Inst_Generic_Template import S7Inst_Generic_Template

import FI_Functions

class TSPP_UNICOS_Template(S7Inst_Generic_Template):

    def process(self, unicos_project, xml_config, generate_global_files, *_):
        """ Generate CPC_TSPP_UNICOS.scl """
        self.thePlugin.writeInUABLog("Generate CPC_TSPP_UNICOS.scl")

        instance_vector = unicos_project.getDeviceType("DigitalInput").getAllDeviceTypeInstances()
        FIdeviceVector = FI_Functions.get_FI_instance_list(instance_vector)
        fast_interlock_present = len(FIdeviceVector) != 0 # Fast interlock presence detected by any fast
interlock digital input
        if fast_interlock_present:
            input_file =
open(os.path.join(self.thePlugin.getPluginConfigPath("GeneralData:ConfigFolder"),
"CPC_TSPP_UNICOS_FI.scl"))
        else:
            input_file =
open(os.path.join(self.thePlugin.getPluginConfigPath("GeneralData:ConfigFolder"),
"CPC_TSPP_UNICOS.scl"))

        skip = False
        plc_type = xml_config.getPLCDeclarations()[0].getPLCType().getValue()
        plc_name = xml_config.getPLCDeclarations()[0].getName()
        nbStatusTables = self.thePlugin.getSumNbStatusTable()

        # Add tables from Fast interlock processing to the number of tables
        instance_vector = unicos_project.getDeviceType("DigitalInput").getAllDeviceTypeInstances()
        FIdeviceVector = FI_Functions.get_FI_instance_list(instance_vector)
        fast_interlock_DI_present = len(FIdeviceVector) != 0
        if fast_interlock_DI_present:
            nbStatusTables += 1
        instance_vector = unicos_project.getDeviceType("DigitalOutput").getAllDeviceTypeInstances()
```

```

FldeviceVector = FI_Functions.get_FI_instance_list(instance_vector)
fast_interlock_DO_present = len(FldeviceVector) != 0
if fast_interlock_DO_present:
    nbStatusTables += 1
instance_vector = unicos_project.getDeviceType("DigitalAlarm").getAllDeviceTypeInstances()
FldeviceVector = FI_Functions.get_FI_instance_list(instance_vector)
fast_interlock_DA_present = len(FldeviceVector) != 0
if fast_interlock_DA_present:
    nbStatusTables += 1
instance_vector = unicos_project.getDeviceType("OnOff").getAllDeviceTypeInstances()
FldeviceVector = FI_Functions.get_FI_instance_list(instance_vector)
fast_interlock_ONOFF_present = len(FldeviceVector) != 0
if fast_interlock_ONOFF_present:
    nbStatusTables += 1

for line in input_file:
    if "SEND      : BSEND;" in line:
        rightBSEND = "BSEND"
        bsendComment = "// Dynamic call to the right BSEND depending on the connection
interface. In this case, PLCType = " + plc_type
        if plc_type == "S7-300":
            local_interface = xml_config.getPLCParameter(plc_name +
":SiemensSpecificParameters:PLCS7Connection:LocalInterface")
            bsendComment += " using " + local_interface
            if local_interface == "Integrated PN/DP":
                rightBSEND = "BSEND_S7300PNDP"
            elif local_interface == "External CP":
                rightBSEND = "BSEND_S7300"
            line = "SEND      : %s; %s\n" % (rightBSEND, bsendComment)
        if "START Redundancy Code" in line:
            skip = True
        if "ListEventSize := " in line:
            line = "ListEventSize := %s; // ### Const7:To be set by the user\n"
            line = line %
xml_config.getPLCParameter("SiemensSpecificParameters:GeneralConfiguration:EventBufferSize")
        if "Redundant_PLC :=" in line:
            line = "Redundant_PLC := %s; // Const6:To be set by the user\n"
            redundant_enabled = "false"
            if plc_type == "S7-400H":
                redundant_enabled = xml_config.getPLCParameter("S7-
400HParameters:PlcConfigParameters:RedundantModeEnabled")
            line = line % redundant_enabled.upper()
        if line.startswith("MaxStatusTable"):

```

```
    line = "MaxStatusTable    := %s; // ### Const4:To be set by the user \n" % nbStatusTables
if line.startswith("MaxTableInOneSend"):
    line = "MaxTableInOneSend := %s; // ### Const5:To be set by the user \n" %
min(nbStatusTables, 150)

if not skip:
    self.thePlugin.writeInstanceInfo("CPC_TSPP_UNICOS.scl", line)
if "END Redundancy Code" in line:
    skip = False
```

4.2.2. TypeTemplates

4.2.2.1 S7Inst_DigitalAlarm_Template.py

```
# -*- coding: utf-8 -*-
# UNICOS
# (c) Copyright CERN 2013 all rights reserved
# Jython source file for Communication Objects.
from S7Inst_Generic_Template import S7Inst_Generic_Template

import FI_Functions

class DigitalAlarm_Template(S7Inst_Generic_Template):

    def process(self, *params):
        current_device_type = params[0]
        self.thePlugin.writeInUABLog("processInstances in Jython for %s." % self.device_name)
        instance_list = current_device_type.getAllDeviceTypeInstances()
        spec_version = self.thePlugin.getUnicosProject().getProjectDocumentation().getSpecsVersion()

        limit_size = int(self.thePlugin.getTargetDeviceInformationParam("LimitSize", "DigitalAlarm"))
        self.thePlugin.writeDebugInUABLog("LimitSize = " + str(limit_size))

        params = {
            'spec_version': spec_version,
            'instance_amount': instance_list.size(),
            'list_of_variables': [],
            'TYPE_ManRequest': [],
            'TYPE_bin_Status': [],
            'TYPE_event': [],
            'DB_bin_status': [],
            'OPTIMIZED_BLOCK': [],
            'OPTIMIZED_FB_CALL': [],
            'DB_DA_FI': "",
            'FB_DA_FI': "",
            'FC_DA_FI': "",
            'FI_CALL': ""
        }

        self.fill_communication_interface(self.device_type_definition.getAttributeFamily(), params)

        FI_instance_list = FI_Functions.get_FI_instance_list(instance_list)
        fast_interlock_DA_present = len(FI_instance_list) != 0
```

```

if fast_interlock_DA_present:
    params['DB_DA_FI'] = self.get_DB_blocks(FI_instance_list, limit_size, True)
    params['FB_DA_FI'] = self.get_optimized_block(0, len(FI_instance_list), FI_instance_list, True)
    params['FC_DA_FI'] = '''FUNCTION FC_DA_FI : VOID
FB_DA_FI.DB_DA_FI();
END_FUNCTION
'''
    params['FI_CALL'] = ''' VAR_TEMP
NbOfDelayedInterrupts : INT;
NbOfQueuedInterrupts : INT;
END_VAR

//////////LOCK//////////
NbOfDelayedInterrupts := DIS_AIRT();
FB_DA_FI.DB_DA_FI();
//////////UNLOCK//////////
NbOfQueuedInterrupts := EN_AIRT();
'''
    #Continue code with not fast interlock instances
    instance_list = FI_Functions.get_normal_instance_list(instance_list)
    params['DB_DA'] = self.get_DB_blocks(instance_list, limit_size, False)
    # split DB based on limit size
    optimized_blocks_amount = (len(instance_list) - 1) / limit_size
    for block_number in range(optimized_blocks_amount + 1):
        block = self.get_optimized_block(block_number, limit_size, instance_list, False)
        params['OPTIMIZED_BLOCK'].append(block)
        params['OPTIMIZED_FB_CALL'].append('''
FB_DA_all%(block_number)s.DB_DA_all%(block_number)s);''' % {'block_number':
DigitalAlarm_Template.get_block_number(block_number)})

self.writeDeviceInstances(self.process_template(".scl", params))

def get_optimized_block(self, block_number, limit, instance_list, FI_block):
    begin_index = block_number * limit
    end_index = begin_index + limit

    params = {'block_number': DigitalAlarm_Template.get_block_number(block_number),
'DA_SET': [],
'DB_DA_all': [],
'begin_index': begin_index + 1,
'end_index': end_index if end_index < len(instance_list) else len(instance_list),
'FI': '_FI' if FI_block else "",
'instance_FB': ''}

```

```

params['instance_FB'] = params['FI'] if FI_block else '_all'

for idx, instance in enumerate(instance_list[begin_index:end_index], params['begin_index']):
    name = instance.getAttributeData("DeviceIdentification:Name")
    params['DA_SET'].append(" %s : CPC_DB_DA; // DA number <%s>" % (name, idx))
    params['DB_DA_all'].append(self.get_instance_assignment(instance, name))

return self.process_template("_optimized.scl", params)

def get_DB_blocks(self, instance_list, limit_size, FI_block):
    params = {'FI': '_FI' if FI_block else "",
              'instance_amount': len(instance_list),
              'list_of_variables': []}

    block_idx = 0
    for idx, instance in enumerate(instance_list, 1):
        name = instance.getAttributeData("DeviceIdentification:Name")
        params['list_of_variables'].append("// [%s] %s" % (idx, name))
        if idx == limit_size:
            block_idx += 1
    return self.process_template("_DB.scl", params)

def get_instance_assignment(self, instance, name):
    instance_assignment = ""
    DA_SET.%(name)s.PAuAckAl := %(PAuAckAl)s;
    %(PAIDt)s""

    params = {
        'name': name}

    auto_acknowledgement = instance.getAttributeData('FEDeviceAlarm:Auto
    Acknowledge').lower().strip()
    params['PAuAckAl'] = 'TRUE' if auto_acknowledgement == 'true' else 'FALSE'

    delay = instance.getAttributeData("FEDeviceParameters:Alarm Delay (s)").strip()
    if delay == "":
        params['PAIDt'] = "" DA_SET.%(name)s.PAIDt := 0;"" % (name)
    elif self.thePlugin.isString(delay):
        params['PAIDt'] = "" // The Alarm Delay is defined in the logic""
    else:
        params['PAIDt'] = "" DA_SET.%(name)s.PAIDt := %s;"" % (name, int(round(float(delay))))

```


return instance_assignment % params

4.2.2.2 S7Inst_DigitalAlarm_Template.scl

//Specs version used for this generation: \$spec_version\$

//Digital Alarm DB Creation file: UNICOS application

*DATA_BLOCK DB_DA CPC_FB_DA
BEGIN
END_DATA_BLOCK*

*TYPE DA_ManRequest
TITLE = DA_ManRequest
//
// parameters of Analog Objects
//
AUTHOR: 'UNICOS'
NAME: 'DataType'
FAMILY: 'Base'
STRUCT
\$TYPE_ManRequest\$
END_STRUCT
END_TYPE*

*TYPE DA_bin_Status
TITLE = DA_bin_Status
//
// parameters of DA Objects
//
AUTHOR: 'UNICOS'
NAME: 'DataType'
FAMILY: 'Base'
STRUCT
\$TYPE_bin_Status\$
END_STRUCT
END_TYPE*

*TYPE DA_event
TITLE = DA_event*

```
//  
// parameters of DA Objects  
//  
AUTHOR: 'UNICOS'  
NAME: 'DataType'  
FAMILY: 'Base'  
STRUCT  
$TYPE_event$  
END_STRUCT  
END_TYPE
```

```
$DB_DA$  
$DB_DA_FI$
```

```
$OPTIMIZED_BLOCK$  
$FB_DA_FI$
```

```
$FC_DA_FI$  
FUNCTION FC_DA : VOID  
$FI_CALL$  
$OPTIMIZED_FB_CALL$  
END_FUNCTION
```

4.2.2.3 S7Inst_DigitalAlarm_Template_DB.scl

```
// DB_DA$FI$ ManRequest
(*DB for THE MAPPING OF UNICOS objects INPUTS*)
DATA_BLOCK DB_DA$FI$ ManRequest
TITLE = DB_DA$FI$ ManRequest
//
// Contains all Manual Request signals from WinCCOA
//
AUTHOR: 'ICE/PLC'
NAME: 'Comm'
FAMILY: 'UNICOS'
STRUCT
    DA_Requests : ARRAY [1..$instance_amount$] OF DA_ManRequest;
END_STRUCT;
BEGIN
END_DATA_BLOCK

// DB_Event_DA$FI$ Creation
(*DB for evstsreg of UNICOS objects*)
DATA_BLOCK DB_Event_DA$FI$
TITLE = 'DB_Event$FI$'
//
// Contains all evstsreg signals of UNICOS objects type DA
//
AUTHOR: 'ICE/PLC'
NAME: 'Comm'
FAMILY: 'UNICOS'
STRUCT
    Nb_DA : INT := $instance_amount$;
    DA_evstsreg : ARRAY [1..$instance_amount$] OF DA_event;
END_STRUCT;
BEGIN
END_DATA_BLOCK

(*Status of the DAs*****
DATA_BLOCK DB_bin_status_DA$FI$
TITLE = 'DB_bin_status_DA$FI$'
//
// Global binary status DB of DA
```

```

//
// List of variables:

$list_of_variables$

AUTHOR: 'UNICOS'
NAME: 'Status'
FAMILY: 'status'

STRUCT
  StsReg01: ARRAY [1..$instance_amount$] OF DA_bin_Status;
END_STRUCT
BEGIN
END_DATA_BLOCK
(*old Status of the DAs*****
DATA_BLOCK DB_bin_status_DA$FI$_old
TITLE = 'DB_bin_status_DA$FI$_old'
//
// Old Global binary status DB of DA
//
// List of variables:

$list_of_variables$

AUTHOR: 'UNICOS'
NAME: 'Status'
FAMILY: 'status'
STRUCT
  StsReg01: ARRAY [1..$instance_amount$] OF DA_bin_Status;
END_STRUCT

BEGIN

END_DATA_BLOCK

```

4.2.2.4 S7Inst_DigitalAlarm_Template_optimized.scl

```
// DA EXEC: Inputs of the DA will be set by the FC logic blocks
FUNCTION_BLOCK FB_DA$instance_FB$
TITLE = 'FB_DA$instance_FB$'
//
// DAs grouped in a single DB
//
AUTHOR: 'UNICOS'
NAME: 'Call DA'
FAMILY: 'DA'
VAR
  DA_SET: STRUCT

$DA_SET$

          END_STRUCT;
// Different variable view declaration
DA AT DA_SET: ARRAY[$begin_index$..$end_index$] OF CPC_DB_DA;

// Support variables
old_status : DWORD;
I: INT;
END_VAR
  FOR I:=$begin_index$ TO $end_index$ DO

    old_status := DB_bin_status_DA$I$.StsReg01[I].StsReg01;
    old_status := ROR(IN:=old_status, N:=16);

    // Call (Inputs will be set in the FC logic)
    CPC_FB_DA.DB_DA(
      Manreg01 :=
DB_DA$I$.ManRequest.DA_Requests[I].Manreg01
      ,StsReg01 := DB_bin_status_DA$I$.StsReg01[I].Stsreg01
      ,Perst := DA[I]
    );

    // Events
    DB_Event_DA$I$.DA_evstsreg[I].evstsreg01 := old_status OR
DB_bin_status_DA$I$.StsReg01[I].StsReg01;

  END_FOR;
END_FUNCTION_BLOCK
```

```
// DA DB: all instance data
DATA_BLOCK DB_DA$instance_FB$ FB_DA$instance_FB$
BEGIN

$DB_DA_all$

END_DATA_BLOCK
```

4.2.2.5 S7Inst_DigitalInput_Template.py

```
# -*- coding: utf-8 -*-
# UNICOS
# (c) Copyright CERN 2013 all rights reserved
# Jython source file for Communication Objects.
from S7Inst_Generic_Template import S7Inst_Generic_Template

import FI_Functions

class DigitalInput_Template(S7Inst_Generic_Template):

    def process(self, *params):
        current_device_type = params[0]
        self.thePlugin.writeInUABLog("processInstances in Jython for %s." % self.device_name)
        instance_list = current_device_type.getAllDeviceTypeInstances()

        spec_version = self.thePlugin.getUnicosProject().getProjectDocumentation().getSpecsVersion()

        limit_size = int(self.thePlugin.getTargetDeviceInformationParam("LimitSize", "DigitalInput"))

        params = {'spec_version': spec_version,
                 'DB_DI_ALL_S': "",
                 'TYPE_ManRequest': [],
                 'TYPE_bin_Status': [],
                 'TYPE_event': [],
                 'OPTIMIZED_BLOCK': [],
                 'OPTIMIZED_FB_CALL': [],
                 'ERROR_DB': "",
                 'DB_DI_FI': "",
                 'FB_DI_FI': "",
                 'FC_DI_FI': "",
                 'FI_CALL': ""}

        self.fill_communication_interface(self.device_type_definition.getAttributeFamily(), params)

        diagnostic = self.thePlugin.getPluginParameter("GeneralData:DiagnosticChannel")
        if diagnostic == "true":
            params['ERROR_DB'] = self.get_error_db(instance_list)
            params['diagnostic_logic'] = ""
        // Assign the IOERROR
        IF (DI[I].FEType = 1) THEN
```



```

        DI[I].IoError := DI_ERROR.IOERROR[I].Err; // IO Hardware
ELSIF (DI[I].FEType = 0) THEN
    ; // Object without connections.
ELSE
    DI[I].IoError := IOError_Var;
END_IF;'''
    else:
        params['diagnostic_logic'] = ''
// No diagnostic
// DI[I].IoError := IOError_Var;'''

    FI_instance_list = FI_Functions.get_FI_instance_list(instance_list)
    fast_interlock_DI_present = len(FI_instance_list) != 0
    if fast_interlock_DI_present:
        params['DB_DI_FI'] = "\n" + self.get_DB_blocks(FI_instance_list, limit_size, True)
        params['FB_DI_FI'] = self.get_optimized_block(0, len(FI_instance_list), FI_instance_list, False,
True)
        params['FC_DI_FI'] = ''
FUNCTION FC_DI_FI : VOID
    FB_DI_FI.DB_DI_FI();
END_FUNCTION
'''
        params['FI_CALL'] = "VAR_TEMP
NbOfDelayedInterrupts : INT;
NbOfQueuedInterrupts : INT;
END_VAR

//////////LOCK//////////
NbOfDelayedInterrupts := DIS_AIRT();
FB_DI_FI.DB_DI_FI();
//////////UNLOCK//////////
NbOfQueuedInterrupts := EN_AIRT();
'''

        #Continue code with not fast interlock instances
        instance_list = FI_Functions.get_normal_instance_list(instance_list)
        params['DB_DI'] = self.get_DB_blocks(instance_list, limit_size, False)

        is_large_application = self.spec.is_large_application()
        if is_large_application:
            params['DB_DI_ALL_S'] = self.get_simplified_block(instance_list)

        # split DB based on limit size

```

```

    optimized_blocks_amount = (len(instance_list) - 1) / limit_size
    for block_number in range(optimized_blocks_amount + 1):
        block = self.get_optimized_block(block_number, limit_size, instance_list, is_large_application,
False)
        params['OPTIMIZED_BLOCK'].append(block)

params['OPTIMIZED_FB_CALL'].append("""FB_DI_all%(block_number)s.DB_DI_all%(block_number)s());
"" % {'block_number': DigitalInput_Template.get_block_number(block_number)})

    self.writeDeviceInstances(self.process_template(".scl", params))

def get_simplified_block(self, instance_list):
    params = {'DI_SET': []}
    for idx, instance in enumerate(instance_list, 1):
        name = instance.getAttributeData("DeviceIdentification:Name")
        params['DI_SET'].append("    %s    : CPC_DB_DI_S; // DI number <%s>"" % (name, idx))
    return self.process_template("_simplified.scl", params)

def get_DB_blocks(self, instance_list, limit_size, FI_block):
    params = {'FI': '_FI' if FI_block else "",
        'instance_amount': len(instance_list),
        'list_of_variables': []}

    block_idx = 0
    for idx, instance in enumerate(instance_list, 1):
        if instance:
            name = instance.getAttributeData("DeviceIdentification:Name")
            params['list_of_variables'].append("// [" + str(idx) + "] "" + name)
            if idx == limit_size:
                block_idx += 1
    return self.process_template("_DB.scl", params)

def get_optimized_block(self, block_number, limit, instance_list, is_large_application, FI_block):
    begin_index = block_number * limit
    end_index = begin_index + limit

    params = {'block_number': DigitalInput_Template.get_block_number(block_number),
        'DI_SET': [],
        'LARGE_APPLICATION': "",
        'DB_DI_all': [],
        'begin_index': begin_index + 1,
        'end_index': end_index if end_index < len(instance_list) else len(instance_list),
        'FI': '_FI' if FI_block else "",

```

```

        'instance_FB': ''}

    params['instance_FB'] = params['FI'] if FI_block else '_all' + params['block_number']

    for idx, instance in enumerate(instance_list[begin_index:end_index], params['begin_index']):
        name = instance.getAttributeData("DeviceIdentification:Name")
        params['DI_SET'].append(" %s : CPC_DB_DI; // DI number <%s>" % (name, idx))
        params['DB_DI_all'].append(self.get_instance_assignment(instance, idx, name))
        params['DB_DI_all'].append(self.get_instance_io_config(instance, name))

    if is_large_application:
        params['LARGE_APPLICATION'] = ""
        DB_DI_All_S.DX [((I-1)*SIZE_DB_DI_S_IN_BYTES)+OFFSET_POSST_IN_BYTES,BIT_POSST]:=
        DI[I].PosSt;
        DB_DI_All_S.DX [((I-1)*SIZE_DB_DI_S_IN_BYTES)+OFFSET_FOMOST_IN_BYTES,BIT_FOMOST]:=
        DI[I].FoMoSt;
        DB_DI_All_S.DX [((I-
1)*SIZE_DB_DI_S_IN_BYTES)+OFFSET_IOERRORW_IN_BYTES,BIT_IOERRORW]:= DI[I].IOErrorW;
        DB_DI_All_S.DX [((I-1)*SIZE_DB_DI_S_IN_BYTES)+OFFSET_IOSIMUW_IN_BYTES,BIT_IOSIMUW]:=
        DI[I].IOSimuW;""

    return self.process_template("_optimized.scl", params)

def get_instance_assignment(self, instance, idx, name):
    instance_assignment = "DI_SET.%(name)s.index := %(index)s;
DI_SET.%(name)s.FEType := %(FEType)s;""
    params = {
        'name': name,
        'FEType': self.spec.get_attribute_value(instance, "FEDeviceIOConfig:FE Encoding Type", "0"),
        'index': idx
    }
    return instance_assignment % params

def get_error_db(self, instance_list):
    ERROR_DB = ""
    (*DB for IoError on Channels with OB82*)
    DATA_BLOCK DI_ERROR
    TITLE = 'DI_ERROR'
    //
    // DB with IoError signals of DI
    //
    AUTHOR: 'EN/ICE'
    NAME: Error

```

```

FAMILY: Error
STRUCT
    IOERROR : ARRAY[1..%(instancesNumber)s] OF CPC_IOERROR;
END_STRUCT
BEGIN

%(ASSIGNMENT)s

END_DATA_BLOCK'''
    params = {
        "instancesNumber": instance_list.size(),
        "ASSIGNMENT": ""
    }
    for idx, instance in enumerate(instance_list, 1):
        fe_type = instance.getAttributeData("FEDeviceIOConfig:FE Encoding Type")
        if fe_type == "1":
            interface_param1 =
instance.getAttributeData("FEDeviceIOConfig:FEChannel:InterfaceParam1").strip()
            if interface_param1.startswith("P"):
                params["ASSIGNMENT"] += " IOERROR[%s].ADDR :=%s;\n" % (idx,
interface_param1[2:8])
            elif interface_param1.startswith("I"):
                params["ASSIGNMENT"] += " IOERROR[%s].ADDR :=%s;\n" % (idx,
interface_param1[1:8])

        return ERROR_DB % params

    @staticmethod
    def get_instance_io_config(instance, name):
        result = []
        interface_param1 =
instance.getAttributeData("FEDeviceIOConfig:FEChannel:InterfaceParam1").strip().lower()
        interface_param2 =
instance.getAttributeData("FEDeviceIOConfig:FEChannel:InterfaceParam2").strip().lower()
        interface_param3 =
instance.getAttributeData("FEDeviceIOConfig:FEChannel:InterfaceParam3").strip().lower()
        interface_param4 =
instance.getAttributeData("FEDeviceIOConfig:FEChannel:InterfaceParam4").strip().lower()
        interface_param5 =
instance.getAttributeData("FEDeviceIOConfig:FEChannel:InterfaceParam5").strip().lower()
        interface_param6 =
instance.getAttributeData("FEDeviceIOConfig:FEChannel:InterfaceParam6").strip().lower()
        fe_type = instance.getAttributeData("FEDeviceIOConfig:FE Encoding Type")

```

```

interface_param1 = interface_param1.replace("i", "").replace("db", "")
interface_param2 = interface_param2.replace("dbb", "")
interface_param4 = interface_param4.replace("db", "")
interface_param5 = interface_param5.replace("dbb", "")

if fe_type == "1":
    per_byte, per_bit = interface_param1.split(".")
    result.append("DI_SET.%s.perByte := %s;" % (name, per_byte))
    result.append("DI_SET.%s.perBit := %s;" % (name, per_bit))

if fe_type == "101":
    result.append("DI_SET.%s.DBnum := %s;" % (name, interface_param1))
    result.append("DI_SET.%s.perByte := %s;" % (name, interface_param2))
    result.append("DI_SET.%s.perBit := %s;" % (name, interface_param3))

if fe_type == "102" or fe_type == "103":
    result.append("DI_SET.%s.DBnum := %s;" % (name, interface_param1))
    result.append("DI_SET.%s.perByte := %s;" % (name, interface_param2))
    result.append("DI_SET.%s.perBit := %s;" % (name, interface_param3))
    result.append("DI_SET.%s.DBnumloError := %s;" % (name, interface_param4))
    result.append("DI_SET.%s.DBposloError := %s;" % (name, interface_param5))
    result.append("DI_SET.%s.DBbitloError := %s;" % (name, interface_param6))

return '\n'.join(result)

```

4.2.2.6 S7Inst_DigitalInput_Template.scl

```
//Specs version used for this generation: $spec_version$  
//Digital Input DB Creation file: UNICOS application
```

```
DATA_BLOCK DB_DI CPC_FB_DI  
BEGIN  
END_DATA_BLOCK
```

```
TYPE DI_ManRequest  
TITLE = DI_ManRequest  
//  
// parameters of Analog Objects  
//  
AUTHOR: 'UNICOS'  
NAME: 'DataType'  
FAMILY: 'Base'  
STRUCT
```

```
$TYPE_ManRequest$
```

```
END_STRUCT  
END_TYPE
```

```
TYPE DI_bin_Status  
TITLE = DI_bin_Status  
//  
// parameters of Analog Objects  
//  
AUTHOR: 'UNICOS'  
NAME: 'DataType'  
FAMILY: 'Base'  
STRUCT
```

```
$TYPE_bin_Status$
```

```
END_STRUCT  
END_TYPE
```

```
TYPE DI_event  
TITLE = DI_event  
//  
// parameters of DI Objects
```

```
//  
AUTHOR: 'UNICOS'  
NAME: 'DataType'  
FAMILY: 'Base'  
STRUCT  
  
$TYPE_event$  
  
END_STRUCT  
END_TYPE  
  
$DB_DI$  
$DB_DI_FI$  
  
$ERROR_DB$  
  
$DB_DI_ALL_S$  
  
$OPTIMIZED_BLOCK$  
$FB_DI_FI$  
  
$FC_DI_FI$  
FUNCTION FC_DI : VOID  
$FI_CALL$  
$OPTIMIZED_FB_CALL$  
END_FUNCTION
```

4.2.2.7 S7Inst_DigitalInput_Template_DB.scl

```
// DB_DI$FI$_ManRequest
(*DB for THE MAPPING OF UNICOS objects INPUTS*)
DATA_BLOCK DB_DI$FI$_ManRequest
TITLE = DB_DI$FI$_ManRequest
//
// Contains all Manual Request signals from WinCCOA
//
AUTHOR: 'ICE/PLC'
NAME: 'Comm'
FAMILY: 'UNICOS'
STRUCT

    DI_Requests : ARRAY [1..$instance_amount$] OF DI_ManRequest;
END_STRUCT;
BEGIN
END_DATA_BLOCK

// DB_Event_DI$FI$ Creation
(*DB for evstsreg of UNICOS objects*)
DATA_BLOCK DB_Event_DI$FI$
TITLE = 'DB_Event$FI$'
//
// Contains all evstsreg signals of UNICOS objects type DI
//
AUTHOR: 'ICE/PLC'
NAME: 'Comm'
FAMILY: 'UNICOS'
STRUCT

    Nb_DI : INT := $instance_amount$;
    DI_evstsreg : ARRAY [1..$instance_amount$] OF DI_event;

END_STRUCT;
BEGIN
END_DATA_BLOCK

(*Status of the DIs*****
DATA_BLOCK DB_bin_status_DI$FI$
TITLE = 'DB_bin_status_DI$FI$'
//
// Global binary status DB of DI
```



```

//
// List of variables:

$list_of_variables$

AUTHOR: 'UNICOS'
NAME: 'Status'
FAMILY: 'status'
STRUCT
  StsReg01: ARRAY [1..$instance_amount$] OF DI_bin_Status;
END_STRUCT
BEGIN

END_DATA_BLOCK

(*old Status of the DIs*****
DATA_BLOCK DB_bin_status_DI$FI$_old
TITLE = 'DB_bin_status_DI$FI$_old'
//
// Old Global binary status DB of DI
//
// List of variables:
$list_of_variables$

AUTHOR: 'UNICOS'
NAME: 'Status'
FAMILY: 'status'
STRUCT
  StsReg01: ARRAY [1..$instance_amount$] OF DI_bin_Status;
END_STRUCT
BEGIN
END_DATA_BLOCK

```

4.2.2.8 S7Inst_DigitalInput_Template_optimized.scl

```
(***** DI EXEC *****)
FUNCTION_BLOCK FB_DI$instance_FB$
TITLE = 'FB_DI$instance_FB$'
//
// Call the DI$block_number$ treatment
//
AUTHOR: 'UNICOS'
NAME: 'CallDI$block_number$'
FAMILY: 'DI$block_number$'

CONST
    // Constants for the CPC_DB_DI_S ENS-7060
    SIZE_DB_DI_S_IN_BYTES:=2; //one WORD
    OFFSET_POSST_IN_BYTES:=0; //Same WORD
    OFFSET_FOMOST_IN_BYTES:=0; //Same WORD
    OFFSET_IOERRORW_IN_BYTES:=0; //Same WORD
    OFFSET_IOSIMUW_IN_BYTES:=0; //Same WORD
    BIT_POSST:=0;
    BIT_FOMOST:=1;
    BIT_IOERRORW:=2;
    BIT_IOSIMUW:=3;
END_CONST

VAR
    // Static variables
    DI_SET: STRUCT

    $DI_SET$

END_STRUCT;

// Different variable view declaration
DI AT DI_SET: ARRAY[$begin_index$..$end_index$] OF CPC_DB_DI;

// Support variables
old_status : DWORD;
I: INT;
IOError_Var: BOOL;

END_VAR
```

```

FOR I:=$begin_index TO $end_index DO
    // Call the IO_ACCESS_DI function
    IF (DI[I].FEType <> 0) THEN
        IO_ACCESS_DI(
            Channel := DI[I].perByte,
            Bit := DI[I].perBit,
            FEType := DI[I].FEType,
            InterfaceParam1 := DI[I].DBnum,
            InterfaceParam2 := DI[I].perByte,
            InterfaceParam3 := DI[I].perBit,
            InterfaceParam4 := DI[I].DBnumloError,
            InterfaceParam5 := DI[I].DBposloError,
            InterfaceParam6 := DI[I].DBbitloError,
            HFPos := DI[I].HFPos,
            IOError := IOError_Var);
    END_IF;

    old_status := DB_bin_status_DI$FI.StsReg01[I].StsReg01;
    old_status := ROR(IN:=old_status, N:=16);

    $diagnostic_logic

    // Calls the Baseline function
    CPC_FB_DI.DB_DI(
        Manreg01 := DB_DI$FI_ManRequest.DI_Requests[I].Manreg01 // set by
WinCCOA in the DB_DI_ManRequest
        ,StsReg01 := DB_bin_status_DI$FI.StsReg01[I].StsReg01
        ,Perst := DI[I]
    );

    $LARGE_APPLICATION

    // Events
    DB_Event_DI$FI.DI_evstsreg[I].evstsreg01 := old_status OR
DB_bin_status_DI$FI.StsReg01[I].StsReg01;
    END_FOR;
END_FUNCTION_BLOCK

DATA_BLOCK DB_DI$instance_FB FB_DI$instance_FB
//
// Instance DB for the whole DI devices
//
BEGIN

```

\$DB_DI_all\$

END_DATA_BLOCK

4.2.2.9 S7Inst_DigitalOutput_Template.py

```
# -*- coding: utf-8 -*-
# UNICOS
# (c) Copyright CERN 2013 all rights reserved
# Jython source file for Communication Objects.
from S7Inst_Generic_Template import S7Inst_Generic_Template

import FI_Functions

class DigitalOutput_Template(S7Inst_Generic_Template):

    def process(self, *params):
        current_device_type = params[0]
        self.thePlugin.writeInUABLog("processInstances in Jython for %s." % self.device_name)
        instance_list = current_device_type.getAllDeviceTypeInstances()
        spec_version = self.thePlugin.getUnicosProject().getProjectDocumentation().getSpecsVersion()

        params = {"spec_version": spec_version,
                  "TYPE_ManRequest": [],
                  "TYPE_bin_Status": [],
                  "TYPE_event": [],
                  "instaceNumber": str(instance_list.size()),
                  "ERROR_DB": "",
                  "DO_FI": ""}
        self.fill_communication_interface(self.device_type_definition.getAttributeFamily(), params)

        diagnostic = self.thePlugin.getPluginParameter("GeneralData:DiagnosticChannel").lower()
        params['diagnostic_logic'] = self.get_diagnostic(diagnostic)
        if diagnostic == "true":
            params['ERROR_DB'] = self.get_error_db(instance_list)

        FI_instance_list = FI_Functions.get_FI_instance_list(instance_list)
        fast_interlock_DO_present = len(FI_instance_list) != 0
        if fast_interlock_DO_present:
            params['DO_FI'] = self.get_all_blocks(FI_instance_list, fast_interlock_DO_present, True) + "\n"
            #Continue code with not fast interlock instances
            instance_list = FI_Functions.get_normal_instance_list(instance_list)
        params['DO'] = self.get_all_blocks(instance_list, fast_interlock_DO_present, False)

        self.writeDeviceInstances(self.process_template(".scl", params))
```

```

def get_all_blocks(self, instance_list, FI_present, FI_block):
    params = {'FI': '_FI' if FI_block else "",
              'instanceNumber': len(instance_list),
              'LIST_OF_VARIABLES': [],
              'block_instance': "",
              'DO_SET': [],
              'ASSIGNMENTS': [],
              'FI_CALL': ""}

    params["block_instance"] = params['FI'] if FI_block else '_all'
    for idx, instance in enumerate(instance_list, 1):
        name = instance.getAttributeData("DeviceIdentification:Name")
        params["LIST_OF_VARIABLES"].append("// [%s] %s (DO_bin_Status)" % (idx, name))
        params["DO_SET"].append("%s : CPC_DB_DO;" % name)
        params["ASSIGNMENTS"].append(self.get_instance_assignment(instance, idx, name))
        params["ASSIGNMENTS"].append(self.get_instance_io_config(instance, name))
        if not FI_block and FI_present:
            params['FI_CALL'] = ""
VAR_TEMP
NbOfDelayedInterrupts : INT;
NbOfQueuedInterrupts : INT;
END_VAR

//////////LOCK//////////
NbOfDelayedInterrupts := DIS_AIRT();
FB_DO_FI.DB_DO_FI();
//////////UNLOCK//////////
NbOfQueuedInterrupts := EN_AIRT();
'''

    return self.process_template("_blocks.scl", params)

def get_instance_assignment(self, instance, idx, name):
    instance_assignment = '''DO_SET.%(name)s.index := %(index)s;
DO_SET.%(name)s.FEType := %(FEType)s;'''
    params = {
        'name': name,
        'index': idx,
        'FEType': self.spec.get_attribute_value(instance, "FEDeviceIOConfig:FE Encoding Type", "0")
    }
    return instance_assignment % params

```

```

@staticmethod
def get_instance_io_config(instance, name):
    result = []
    fe_type = instance.getAttributeData("FEDeviceIOConfig:FE Encoding Type")
    interface_param1 =
instance.getAttributeData("FEDeviceIOConfig:FEChannel:InterfaceParam1").strip().lower()
    interface_param2 =
instance.getAttributeData("FEDeviceIOConfig:FEChannel:InterfaceParam2").strip().lower()
    interface_param3 =
instance.getAttributeData("FEDeviceIOConfig:FEChannel:InterfaceParam3").strip().lower()
    interface_param4 =
instance.getAttributeData("FEDeviceIOConfig:FEChannel:InterfaceParam4").strip().lower()
    interface_param5 =
instance.getAttributeData("FEDeviceIOConfig:FEChannel:InterfaceParam5").strip().lower()
    interface_param6 =
instance.getAttributeData("FEDeviceIOConfig:FEChannel:InterfaceParam6").strip().lower()
    if fe_type == "1":
        interface_param1 = interface_param1.replace("q", "")
        if "." in interface_param1:
            byte, bit = interface_param1.split(".")
            result.append("DO_SET.%s.perByte := %s;" % (name, byte))
            result.append("DO_SET.%s.perBit := %s;" % (name, bit))
    elif fe_type == "101":
        interface_param1 = interface_param1.strip("db")
        result.append("DO_SET.%s.DBnum := %s;" % (name, interface_param1))
        result.append("DO_SET.%s.perByte := %s;" % (name, interface_param2))
        result.append("DO_SET.%s.perBit := %s;" % (name, interface_param3))
    elif fe_type == "102" or fe_type == "103":
        db_num = interface_param1.strip("db")
        io_error = interface_param4.strip("db")
        result.append("DO_SET.%s.DBnum := %s;" % (name, db_num))
        result.append("DO_SET.%s.perByte := %s;" % (name, interface_param2))
        result.append("DO_SET.%s.perBit := %s;" % (name, interface_param3))
        result.append("DO_SET.%s.DBnumIoError := %s;" % (name, io_error))
        result.append("DO_SET.%s.DBposIoError := %s;" % (name, interface_param5))
        result.append("DO_SET.%s.DBbitIoError := %s;" % (name, interface_param6))
    result.append("")
    return "\n".join(result)

@staticmethod
def get_error_db(instance_list):
    error_db = "(*DB for IoError on Channels with OB82*)"

```

```

DATA_BLOCK DO_ERROR
TITLE = DO_ERROR
//
// DB with IOError signals of DO
//
AUTHOR: AB_CO_IS
NAME: Error
FAMILY: Error
STRUCT

    IOERROR : ARRAY[1..%(instance_amount)s] OF CPC_IOERROR;

END_STRUCT

BEGIN

%(assignments)s

END_DATA_BLOCK'''
    params = {'instance_amount': instance_list.size()}
    assignments = []
    for idx, instance in enumerate(instance_list, 1):
        interface_param1 =
instance.getAttributeData("FEDeviceIOConfig:FEChannel:InterfaceParam1").strip().lower()
        # TODO: check what type of address can be here
        if interface_param1.startswith('p'):
            interface_param1 = interface_param1[2:8]
            assignments.append('"'IOERROR[%s].ADDR := %s;"' % (idx, interface_param1))
        elif interface_param1.startswith('q'):
            interface_param1 = interface_param1[1:8]
            assignments.append('"'IOERROR[%s].ADDR := %s;"' % (idx, interface_param1))
    params['assignments'] = "\n".join(assignments)
    return error_db % params

@staticmethod
def get_diagnostic(diagnostic):
    result = []
    if diagnostic.lower() == "true":
        result.append('"' IF (DDO[I].FEType = 1) THEN"'')
        result.append('"' DDO[I].IoError := DO_ERROR.IOERROR[I].Err;"')
        result.append('"' ELSE"'')
        result.append('"' ; // Object without connections."')

```



```
    result.append(" END_IF;")
else:
    result.append(" // No diagnostic")
    result.append(" // DDO[I].IoError := DO_ERROR.IOERROR[I].Err;")
return "\n".join(result)
```

4.2.2.10 S7Inst_DigitalOutput_Template.scl

//Specs version used for this generation: \$spec_version\$

//Digital Output DB Creation file: UNICOS application

```
DATA_BLOCK DB_DO CPC_FB_DO
BEGIN
END_DATA_BLOCK
```

```
TYPE DO_ManRequest
TITLE = DO_ManRequest
//
// parameters of Analog Objects
//
AUTHOR: 'UNICOS'
NAME: 'DataType'
FAMILY: 'Base'
STRUCT
$TYPE_ManRequest$
END_STRUCT
END_TYPE
```

```
TYPE DO_bin_Status
TITLE = DO_bin_Status
//
// parameters of Analog Objects
//
AUTHOR: 'UNICOS'
NAME: 'DataType'
FAMILY: 'Base'
STRUCT
$TYPE_bin_Status$
END_STRUCT
END_TYPE
```

```
TYPE DO_event
TITLE = DO_event
//
// parameters of AI Objects
//
AUTHOR: 'UNICOS'
NAME: 'DataType'
FAMILY: 'Base'
STRUCT
$TYPE_event$
END_STRUCT
END_TYPE
```

```
$ERROR_DB$
```

```
$DO_FI$
$DO$
```

4.2.2.11 S7Inst_DigitalOutput_Template_blocks.scl

```
// DB_DO$FI$ ManRequest$FI$
(*DB for THE MAPPING OF UNICOS objects INPUTS*)
DATA_BLOCK DB_DO$FI$ ManRequest
TITLE = DB_DO$FI$ ManRequest
//
// Contains all Manual Request signals from WinCCOA
//
AUTHOR: 'ICE/PLC'
NAME: 'Comm'
FAMILY: 'UNICOS'
STRUCT

    DO_Requests : ARRAY [1..$instaceNumber$] OF DO_ManRequest;
END_STRUCT;
BEGIN
END_DATA_BLOCK
```

```
// DB_Event_DO$FI$ Creation
(*DB for evstsreg of UNICOS objects*)
DATA_BLOCK DB_Event_DO$FI$
TITLE = 'DB_Event$FI$'
//
// Contains all evstsreg signals of UNICOS objects type DO
//
AUTHOR: 'ICE/PLC'
NAME: 'Comm'
FAMILY: 'UNICOS'
STRUCT
```

```
    Nb_DO : INT := $instaceNumber$;
    DO_evstsreg : ARRAY [1..$instaceNumber$] OF DO_event;

END_STRUCT;
BEGIN
END_DATA_BLOCK
```

```
(***** Status of the DOs *****)
```

```

DATA_BLOCK DB_bin_status_DO$FI$
TITLE = 'DB_bin_status_DO$FI$'
//
// Global binaries status DB of DO
//
// List of variables:

$LIST_OF_VARIABLES$

AUTHOR: 'UNICOS'
NAME: 'Status'
FAMILY: 'status'
STRUCT
  StsReg01: ARRAY [1..$instaceNumber$] OF DO_bin_Status;
END_STRUCT
BEGIN
END_DATA_BLOCK

(***** old Status of the DOs *****)
DATA_BLOCK DB_bin_status_DO$FI$_old
TITLE = 'DB_bin_status_DO$FI$_old'
//
// Old Global binaries status DB of DO
//
// List of variables:

$LIST_OF_VARIABLES$

AUTHOR: 'UNICOS'
NAME: 'Status'
FAMILY: 'status'
STRUCT
  StsReg01: ARRAY [1..$instaceNumber$] OF DO_bin_Status;
END_STRUCT
BEGIN
END_DATA_BLOCK

(***** EXEC OF DOs *****)
FUNCTION_BLOCK FB_DO$block_instance$
TITLE = 'FB_DO$block_instance$'
//

```

```

// DO calls
//
AUTHOR: 'UNICOS'
NAME: 'Call_DO'
FAMILY: 'DO'
VAR
  // Static variables
  DO_SET: STRUCT

$DO_SET$

END_STRUCT;

  DDO AT DO_SET: ARRAY[1..$instanceNumber$] OF CPC_DB_DO;

  // Support variables
  old_status : DWORD;
  I: INT;

END_VAR
FOR I:=1 TO $instanceNumber$ DO

  old_status := DB_bin_status_DO$FI$.StsReg01[I].StsReg01;
  old_status := ROR(IN:=old_status, N:=16);

$diagnostic_logic$

  // Calls the Baseline function
  CPC_FB_DO.DB_DO(
    ManReg01:= DB_DO$FI$_ManRequest.DO_Requests[I].Manreg01 // set by WinCCOA in the
DB_DO_ManRequest
    ,StsReg01:=DB_bin_status_DO$FI$.StsReg01[I].StsReg01
    ,Perst := DDO[I]);

  // Call the IO_ACCESS_DO function
  IF (DDO[I].FEType <> 0) THEN
    IO_ACCESS_DO(Channel := DDO[I].perByte,

```

```

        Bit := DDO[I].perBit,
        FEType := DDO[I].FEType,
        InterfaceParam1 := DDO[I].DBnum,
        InterfaceParam2 := DDO[I].perByte,
        InterfaceParam3 := DDO[I].perBit,
        InterfaceParam4 := DDO[I].DBnumIoError,
        InterfaceParam5 := DDO[I].DBposIoError,
        InterfaceParam6 := DDO[I].DBbitIoError,
        PosSt := DDO[I].PosSt,
        IOError := DDO[I].IoErrorW);
    END_IF;

    // Events
    DB_Event_DO$FI$.DO_evstsreg[I].evstsreg01 := old_status OR
    DB_bin_status_DO$FI$.StsReg01[I].StsReg01;

END_FOR;
END_FUNCTION_BLOCK

(***** DB instance DO *****)
DATA_BLOCK DB_DO$block_instance$ FB_DO$block_instance$
//
// Instance DB for the whole DO devices
//
BEGIN

$ASSIGNMENTS$

END_DATA_BLOCK

FUNCTION FC_DO$FI$ : VOID
$FI_CALL$
    FB_DO$block_instance$.DB_DO$block_instance$();

END_FUNCTION

```

4.2.2.12 S7Inst_OnOff_Template.py

```
# -*- coding: utf-8 -*-
# UNICOS
# (c) Copyright CERN 2013 all rights reserved
# Jython source file for Communication Objects.
from S7Inst_Generic_Template import S7Inst_Generic_Template

import FI_Functions

class OnOff_Template(S7Inst_Generic_Template):

    def process(self, *params):
        current_device_type = params[0]
        self.thePlugin.writeInUABLog("processInstances in Jython for %s." % self.device_name)
        instance_list = current_device_type.getAllDeviceTypeInstances()
        spec_version = self.thePlugin.getUnicosProject().getProjectDocumentation().getSpecsVersion()
        unicos_project = self.thePlugin.getUnicosProject()

        params = {
            'spec_version': spec_version,
            'TYPE_ManRequest': [],
            'TYPE_bin_Status': [],
            'TYPE_event': [],
            'FC_ONOFF': [],
            'INSTANCE_DB': [],
            'DB_ONOFF': "",
            'DB_ONOFF_FI': "",
            'FC_ONOFF_FI': ""
        }

        self.fill_communication_interface(self.device_type_definition.getAttributeFamily(), params)

        for instance in instance_list:
            name = instance.getAttributeData("DeviceIdentification:Name")
            params['INSTANCE_DB'].append(self.get_instance_db(instance, name))

        FI_instance_list = FI_Functions.get_FI_instance_list(instance_list)
        fast_interlock_OnOff_present = len(FI_instance_list) != 0
        if fast_interlock_OnOff_present:
            params['DB_ONOFF_FI'] = "\n" + self.get_DB_blocks(FI_instance_list, True)
```



```

        params['DB_ONOFF_FI'] = params['DB_ONOFF_FI'].replace('DB_bin_status_ONOFF_FI_old',
'DB_bin_status_OO_FI_old')
        params['FC_ONOFF_FI'] = self.get_fc_block(FI_instance_list, 1, fast_interlock_OnOff_present,
True) + "\n"
        #Continue code with not fast interlock instances
        instance_list = FI_Functions.get_normal_instance_list(instance_list)
        params['DB_ONOFF'] = self.get_DB_blocks(instance_list, False)

        limit_size = int(self.thePlugin.getTargetDeviceInformationParam("LimitSize", "OnOff"))

        blocks_amount = len(instance_list) / (limit_size + 1)
        for block_number in range(blocks_amount + 1):
            begin_index = block_number * limit_size
            end_index = begin_index + limit_size
            intance_split = instance_list[begin_index:end_index]
            params['FC_ONOFF'].append(self.get_fc_block(intance_split, block_number + 1,
fast_interlock_OnOff_present, False))

        self.writeDeviceInstances(self.process_template(".scl", params))

def get_fc_block(self, instance_list, block_number, FI_present, FI_block):
    fc_block = '''(*EXEC of ONOFF*****
FUNCTION FC_ONOFF%(block_number)s : VOID
TITLE = 'FC_ONOFF%(block_number)s'
//
// ONOFF calls
//
AUTHOR: 'UNICOS'
NAME: 'Call_OO'
FAMILY: 'OnOff'
VAR_TEMP
    old_status1 : DWORD;
    old_status2 : DWORD;
    %(FI_variables)s
END_VAR
BEGIN
%(FI)s
%(ASSIGNMENT)s

END_FUNCTION
'''
    if block_number == 1:
        block_number = ""

```

```

params = {
    'block_number': "_FI" if FI_block else block_number,
    'FI_variables': "",
    'FI': ""
}
params['ASSIGNMENT'] = []

if not FI_block and FI_present:
    params['FI_variables'] = ""
NbOfDelayedInterrupts : INT;
NbOfQueuedInterrupts : INT;""
    params['FI'] = ""
//////////LOCK//////////
NbOfDelayedInterrupts := DIS_AIRT();
FC_ONOFF_FI();
//////////UNLOCK//////////
NbOfQueuedInterrupts := EN_AIRT();
""

for idx, instance in enumerate(instance_list, 1):
    params['ASSIGNMENT'].append(self.get_instance_assignment(idx, instance, FI_block))
params['ASSIGNMENT'] = "\n".join(params['ASSIGNMENT'])
return fc_block % params

def get_DB_blocks(self, instance_list, FI_block):
    params = {'FI': '_FI' if FI_block else "",
            'instance_amount': len(instance_list),
            'DB_bin_status': []}

    # iterate over instances
    for instance in instance_list:
        name = instance.getAttributeData("DeviceIdentification:Name")
        params['DB_bin_status'].append(" %s : ONOFF_bin_Status;" % name)

    return self.process_template("_DB.scl", params)

def get_instance_assignment(self, idx, instance, FI_block):
    """ this function returns a piece of content of FC_ONOFF function related to given instance """
    instance_fc = ""// -----
// ---- OnOff <%(index)s>: %(name)s
// -----
old_status1 := DB_bin_status_ONOFF%(nameFI)s.%(name)s.stsreg01;

```

```

old_status2 := DB_bin_status_ONOFF%(nameFI)s.%(name)s.stsreg02;
old_status1 := ROR(IN:=old_status1, N:=16);
old_status2 := ROR(IN:=old_status2, N:=16);
%(name)s.ManReg01:=DB_ONOFF%(nameFI)s_ManRequest.ONOFF_Requests[%(index)s].ManReg01
;
%(PWDt_link)s
%(HFO_n_link)s
%(HFOff_link)s
%(HLD_link)s
%(HOnR_link)s
%(HOffR_link)s
// IOError
%(io_error)s
// IOSimu
%(io_simu)s
// Calls the Baseline function
CPC_FB_ONOFF.%(name)s();
%(OutOnOV_link)s
%(OutOffOV_link)s

//Reset AuAuMoR and AuAlAck
%(name)s.AuAuMoR := FALSE;
%(name)s.AuAlAck := FALSE;
%(name)s.AuRStart := FALSE;

//Recopy new status
DB_bin_status_ONOFF%(nameFI)s.%(name)s.stsreg01:= %(name)s.Stsreg01;
DB_bin_status_ONOFF%(nameFI)s.%(name)s.stsreg02:= %(name)s.Stsreg02;
DB_Event_ONOFF%(nameFI)s.ONOFF_evstsreg[%(index)s].evstsreg01 := old_status1 OR
DB_bin_status_ONOFF%(nameFI)s.%(name)s.stsreg01;
DB_Event_ONOFF%(nameFI)s.ONOFF_evstsreg[%(index)s].evstsreg02 := old_status2 OR
DB_bin_status_ONOFF%(nameFI)s.%(name)s.stsreg02;
'''
    name = instance.getAttributeData("DeviceIdentification:Name")
    params = {
        "name": name,
        "index": idx,
        "PWDt_link": "",
        "HFO_n_link": "",
        "HFOff_link": "",
        "HLD_link": "",
        "HOnR_link": "",
        "HOffR_link": "",

```

```

    "OutOnOV_link": "",
    "OutOffOV_link": "",
    "io_error": "",
    "io_simu": "",
    "nameFI": "_FI" if FI_block else ""
}

warning_delay = self.spec.get_s7db_id(instance, "FEDeviceParameters:Warning Time Delay (s)",
"AnalogParameter,AnalogStatus,AnalogInput,AnalogInputReal")
if warning_delay:
    params['PWDt_link'] = ""%s.POnOff.PWDt := DINT_TO_TIME(REAL_TO_DINT(%s.PosSt *
1000.0));"" % (name, warning_delay)

feedback_on = self.spec.get_s7db_id(instance, "FEDeviceEnvironmentInputs:Feedback On",
"DigitalInput")
if feedback_on:
    params['HFOOn_link'] = ""%s.HFOOn := %s.PosSt;"" % (name, feedback_on)

feedback_off = self.spec.get_s7db_id(instance, "FEDeviceEnvironmentInputs:Feedback Off",
"DigitalInput")
if feedback_off:
    params['HFOff_link'] = ""%s.HFOff := %s.PosSt;"" % (name, feedback_off)

local_drive = self.spec.get_s7db_id(instance, "FEDeviceEnvironmentInputs:Local Drive",
"DigitalInput")
if local_drive:
    params['HLD_link'] = ""%s.HLD := %s.PosSt;"" % (name, local_drive)

local_on = self.spec.get_s7db_id(instance, "FEDeviceEnvironmentInputs:Local On",
"DigitalInput")
if local_on:
    params['HOnR_link'] = ""%s.HOnR := %s.PosSt;"" % (name, local_on)

local_off = self.spec.get_s7db_id(instance, "FEDeviceEnvironmentInputs:Local Off",
"DigitalInput")
if local_off:
    params['HOffR_link'] = ""%s.HOffR := %s.PosSt;"" % (name, local_off)

process_output = self.spec.get_s7db_id(instance, "FEDeviceOutputs:Process Output",
"DigitalOutput")
if process_output:
    params['OutOnOV_link'] = ""%s.AuposR := %s.OutOnOV;"" % (process_output, name)

```

```

    process_output_off = self.spec.get_s7db_id(instance, "FEDeviceOutputs:Process Output Off",
"DigitalOutput")
    if process_output_off:
        params['OutOffOV_link'] = ""%s.AuposR := %s.OutOffOV;"" % (process_output_off, name)

    linked_objects = [feedback_on, feedback_off, local_drive, local_on, local_off, process_output,
process_output_off]
    params['io_error'], params['io_simu'] = self.get_io_error_and_simu(name, linked_objects)

    return instance_fc % params

def get_parreg_value(self, instance):
    """this function returns parreg for given instance"""
    par_reg = ['0'] * 15
    par_reg[14] = self.spec.get_bit_from_attribute(instance, "FEDeviceParameters:ParReg:Fail-
Safe", on_value=["on/open", "2 do on"])
    par_reg[13] = self.spec.get_bit_from_attribute(instance, "FEDeviceEnvironmentInputs:Feedback
On")
    par_reg[12] = self.spec.get_bit_from_attribute(instance, "FEDeviceEnvironmentInputs:Feedback
Off")
    par_reg[11] = self.spec.get_bit_from_attribute(instance, "FEDeviceParameters:Pulse Duration
(s)", off_value=["", "0.0"])
    par_reg[10] = self.spec.get_bit_from_attribute(instance, "FEDeviceEnvironmentInputs:Local
Drive")
    local_on = instance.getAttributeData("FEDeviceEnvironmentInputs:Local On").strip().lower()
    local_off = instance.getAttributeData("FEDeviceEnvironmentInputs:Local Off").strip().lower()
    if local_off == "" and local_on == "":
        par_reg[9] = '0'
    else:
        par_reg[9] = '1'
    par_reg[8] = self.spec.get_bit_from_attribute(instance, "FEDeviceParameters:ParReg:Full/Empty
Animation", on_value="full/empty")
    par_reg[7] = self.spec.get_bit_from_attribute(instance, "FEDeviceOutputs:Process Output Off")
    par_reg[6] = self.spec.get_bit_from_attribute(instance, "FEDeviceParameters:ParReg:Manual
Restart after Full Stop", on_value=['true only if full stop disappeared', 'true even if full stop still
active'])
    par_reg[5] = self.spec.get_bit_from_attribute(instance, "FEDeviceParameters:ParReg:Manual
Restart after Full Stop", on_value='true even if full stop still active')
    par_reg[4] = self.spec.get_bit_from_attribute(instance, "FEDeviceParameters:ParReg:Fail-Safe",
on_value=["2 do on", "2 do off"])
    par_reg[3] = self.spec.get_bit_from_attribute(instance, "FEDeviceParameters:ParReg:Constant
Time Pulse", on_value='true')
    return "".join(par_reg)

def get_instance_db(self, instance, name):

```

```

        """" this function returns DATA_BLOCK for given instance """"
        instance_db = ""DATA_BLOCK %(name)s CPC_FB_ONOFF
BEGIN
    POnOff.ParReg := 2#%(ParReg)s;
    POnOff.PPulseLe := T#%(PPulseLe)ss;
    POnOff.PWDt := T#%(PWDt)ss;
END_DATA_BLOCK
""
    params = {
        'name': name,
        'ParReg': self.get_parreg_value(instance),
        'PPulseLe': self.thePlugin.formatNumberPLC(self.spec.get_attribute_value(instance,
"FEDeviceParameters:Pulse Duration (s)", "0.0")),
        'PWDt': self.thePlugin.formatNumberPLC(self.spec.get_attribute_value(instance,
"FEDeviceParameters:Warning Time Delay (s)", "5.0"))
    }

    return instance_db % params

```

4.2.2.13 S7Inst_OnOff_Template.scl

```
//Specs version used for this generation: $spec_version$  
//OnOff DB Creation file: UNICOS application
```

```
$INSTANCE_DB$
```

```
TYPE ONOFF_ManRequest  
TITLE = ONOFF_ManRequest  
//  
// parameters of OnOff Objects  
//  
AUTHOR: 'UNICOS'  
NAME: 'DataType'  
FAMILY: 'Base'  
STRUCT  
$TYPE_ManRequest$  
END_STRUCT  
END_TYPE
```

```
TYPE ONOFF_bin_Status  
TITLE = ONOFF_bin_Status  
//  
// parameters of OnOff Objects  
//  
AUTHOR: 'UNICOS'  
NAME: 'DataType'  
FAMILY: 'Base'  
STRUCT  
$TYPE_bin_Status$  
END_STRUCT  
END_TYPE
```

```
TYPE ONOFF_event  
TITLE = ONOFF_event  
//  
// parameters of OnOff Objects  
//  
AUTHOR: 'UNICOS'  
NAME: 'DataType'  
FAMILY: 'Base'  
STRUCT  
$TYPE_event$
```

END_STRUCT

END_TYPE

\$DB_ONOFF\$

\$DB_ONOFF_FI\$

\$FC_ONOFF_FI\$

\$FC_ONOFF\$

4.2.2.14 S7Inst_OnOff_Template_DB.scl

```
// DB_ONOFF$FI$ ManRequest
(*DB for THE MAPPING OF UNICOS objects INPUTS*)
DATA_BLOCK DB_ONOFF$FI$ ManRequest
TITLE = DB_ONOFF$FI$ ManRequest
//
// Contains all Manual Request signals from WinCCOA
//
AUTHOR: 'ICE/PLC'
NAME: 'Comm'
FAMILY: 'UNICOS'
STRUCT
    ONOFF_Requests : ARRAY [1..$instance_amount$] OF ONOFF_ManRequest;
END_STRUCT;
BEGIN
END_DATA_BLOCK

// DB_Event_ONOFF$FI$ Creation
(*DB for evstsreg of UNICOS objects*)
DATA_BLOCK DB_Event_ONOFF$FI$
TITLE = 'DB_Event$FI$'
//
// Contains all evstsreg signals of UNICOS objects type ONOFF
//
AUTHOR: 'ICE/PLC'
NAME: 'Comm'
FAMILY: 'UNICOS'
STRUCT
    Nb_ONOFF : INT := $instance_amount$;
    ONOFF_evstsreg : ARRAY [1..$instance_amount$] OF ONOFF_event;
END_STRUCT
BEGIN
END_DATA_BLOCK

(*Status of the ONOFF OBJECTS*****
DATA_BLOCK DB_bin_status_ONOFF$FI$
TITLE = 'DB_bin_status_ONOFF$FI$'
//
// Global binary status DB of ONOFF
//
AUTHOR: 'UNICOS'
NAME: 'Status'
```

```
FAMILY: 'status'  
STRUCT  
$DB_bin_status$  
END_STRUCT  
BEGIN  
END_DATA_BLOCK
```

```
(*old Status of the ONOFF OBJECTS*****)
```

```
DATA_BLOCK DB_bin_status_ONOFF$FI$_old  
TITLE = 'DB_bin_status_ONOFF$FI$_old'  
//  
// Old Global binary status DB of ONOFF  
//  
AUTHOR: 'UNICOS'  
NAME: 'Status'  
FAMILY: 'status'  
STRUCT  
$DB_bin_status$  
END_STRUCT  
BEGIN  
END_DATA_BLOCK
```

5.S7LogicGenerator

5.1. Rules

5.1.1. CommonTemplates

5.1.1.1 S7Logic_DefaultAlarms_Template.py

```
# -*- coding: utf-8 -*-
# UNICOS
# (c) Copyright CERN 2013 all rights reserved
##
# This file contains all the common functions of the logic templates.
##

from java.util import Vector
from java.util import ArrayList
from java.lang import System
from research.ch.cern.unicos.utilities import SemanticVerifier
from research.ch.cern.unicos.cpc.utilities.siemens import S7Functions

import ucpc_library.shared_decorator
reload(ucpc_library.shared_decorator)

def getLparametersSplit(LparamVector):
    """
    These variable are set by default to map directly to the corresponding Specification parameters.
    E.g. Lparam1 = custom logic parameter1
    This (hopefully) should avoid any confusion with the 0-based index of LparamVector array.

    The arguments are:
    @param: LparamVector: the vector containing the 10 logic parameters

    This function returns:
    @return: The 10 parameters in independant variables

    """
    Lparam1 = LparamVector[0]
    Lparam2 = LparamVector[1]
    Lparam3 = LparamVector[2]
    Lparam4 = LparamVector[3]
    Lparam5 = LparamVector[4]
    Lparam6 = LparamVector[5]
```

```
Lparam7 = LparamVector[6]
Lparam8 = LparamVector[7]
Lparam9 = LparamVector[8]
Lparam10 = LparamVector[9]
```

```
return Lparam1, Lparam2, Lparam3, Lparam4, Lparam5, Lparam6, Lparam7, Lparam8, Lparam9,
Lparam10
```

```
def getLparameters(inst):
```

```
    """
```

```
    The arguments are:
```

```
    @param inst: object which is one instance i.e one line in the specification file,
```

```
    This function returns:
```

```
    @return: LparamVector: all the Lparameters in a vector
```

```
    """
```

```
Lparam1 = inst.getAttributeData("LogicDeviceDefinitions:CustomLogicParameters:Parameter1")
Lparam2 = inst.getAttributeData("LogicDeviceDefinitions:CustomLogicParameters:Parameter2")
Lparam3 = inst.getAttributeData("LogicDeviceDefinitions:CustomLogicParameters:Parameter3")
Lparam4 = inst.getAttributeData("LogicDeviceDefinitions:CustomLogicParameters:Parameter4")
Lparam5 = inst.getAttributeData("LogicDeviceDefinitions:CustomLogicParameters:Parameter5")
Lparam6 = inst.getAttributeData("LogicDeviceDefinitions:CustomLogicParameters:Parameter6")
Lparam7 = inst.getAttributeData("LogicDeviceDefinitions:CustomLogicParameters:Parameter7")
Lparam8 = inst.getAttributeData("LogicDeviceDefinitions:CustomLogicParameters:Parameter8")
Lparam9 = inst.getAttributeData("LogicDeviceDefinitions:CustomLogicParameters:Parameter9")
Lparam10 = inst.getAttributeData("LogicDeviceDefinitions:CustomLogicParameters:Parameter10")
LparamVector = [Lparam1, Lparam2, Lparam3, Lparam4, Lparam5, Lparam6, Lparam7, Lparam8,
Lparam9, Lparam10]
return LparamVector
```

```
def getDigitalAlarms(theRawInstances, name):
```

```
    """
```

```
    The arguments are:
```

```
    @param theRawInstances: object which represents the specification file,
```

```
    @param name: the name of the master
```

```
    This function returns:
```

```
    @return: theDigitalAlarms: all the simple digital alarm instances of the master currently treated
(name),
```

@return: theDigitalAlarmsMultiple: all the multiple digital alarms instances of the master currently treated (name),

@return: allTheDigitalAlarms: all the digital alarms instances of the master currently treated (name),

@return: DAListPosition: all the master position for each multiple alarm. The ith element of DAListPosition corresponds to the position of the master currently treated (name) in the master list of the ith element of theDigitalAlarmsMultiple

""

```
DAListPosition = ArrayList()
```

```
theDigitalAlarms = theRawInstances.findMatchingInstances("DigitalAlarm", "$name$",  
"#FEDeviceAlarm:Type#!=", '#FEDeviceAlarm:Type#!='Multiple")
```

```
theDigitalAlarmsMultiple = theRawInstances.findMatchingInstances("DigitalAlarm", "$name$",  
"#FEDeviceAlarm:Multiple Types#!="", DAListPosition)
```

```
allTheDigitalAlarms = Vector(theDigitalAlarms)
```

```
allTheDigitalAlarms.addAll(theDigitalAlarmsMultiple)
```

```
return theDigitalAlarms, theDigitalAlarmsMultiple, allTheDigitalAlarms, DAListPosition
```

```
def getAnalogAlarms(theRawInstances, name):
```

```
""
```

The arguments are:

@param theRawInstances: object which represents the specification file,

@param name: the name of the master

This function returns:

@return theAnalogAlarms: all the simple analog alarm instances of the master currently treated (name),

@return theAnalogAlarmsMultiple: all the multiple analog alarms instances of the master currently treated (name),

@return allTheDigitalAlarms: all the analog alarms instances of the master currently treated (name),

@return AAListPosition: all the master position for each multiple alarm. The ith element of AAListPosition corresponds to the position of the master currently treated (name) in the master list of the ith element of theAnalogAlarmsMultiple

```
""
```

```
AAListPosition = ArrayList()
```

```
theAnalogAlarms = theRawInstances.findMatchingInstances("AnalogAlarm", "$name$",  
"#FEDeviceAlarm:Type#!=", '#FEDeviceAlarm:Type#!='Multiple")
```

```
theAnalogAlarmsMultiple = theRawInstances.findMatchingInstances("AnalogAlarm", "$name$",  
"#FEDeviceAlarm:Multiple Types#!="", AAListPosition)
```

```
allTheAnalogAlarms = Vector(theAnalogAlarms)
```

```
allTheAnalogAlarms.addAll(theAnalogAlarmsMultiple)
```

```
return theAnalogAlarms, theAnalogAlarmsMultiple, allTheAnalogAlarms, AAListPosition
```

```
def getFsAlarms(theRawInstances, name):
```

```
    ""
```

The arguments are:

@param theRawInstances: object which represents the specification file,

@param name: the name of the master

This function returns:

@return: theDAFsAlarms: all the simple digital alarm instances of FS type of the master currently treated (name),

@return: theDAFsAlarmsMultiple: all the multiple digital alarms instances of FS type of the master currently treated (name),

@return: allTheDigitalAlarms: all the digital alarms instances of FS type of the master currently treated (name),

@return: theAAFsAlarms: all the simple analog alarms instances of FS type of the master currently treated (name),

@return: theAAFsAlarmsMultiple: all the multiple analog alarms instances of FS type of the master currently treated (name),

@return: allTheAAFsAlarms: all the analog alarms instances of FS type of the master currently treated (name)

```
    ""
```

```
    theDAFsAlarms = theRawInstances.findMatchingInstances("DigitalAlarm", "$name$",  
    "#FEDeviceAlarm:Type#='FS'")
```

```
    theDAFsAlarmsMultiple = theRawInstances.findMatchingInstances("DigitalAlarm", "$name$",  
    "#FEDeviceAlarm:Multiple Types#='FS'")
```

```
    allTheDAFsAlarms = Vector(theDAFsAlarms)
```

```
    allTheDAFsAlarms.addAll(theDAFsAlarmsMultiple)
```

```
    theAAFsAlarms = theRawInstances.findMatchingInstances("AnalogAlarm", "$name$",  
    "#FEDeviceAlarm:Type#='FS'")
```

```
    theAAFsAlarmsMultiple = theRawInstances.findMatchingInstances("AnalogAlarm", "$name$",  
    "#FEDeviceAlarm:Multiple Types#='FS'")
```

```
    allTheAAFsAlarms = Vector(theAAFsAlarms)
```

```
    allTheAAFsAlarms.addAll(theAAFsAlarmsMultiple)
```

```
    return theDAFsAlarms, theDAFsAlarmsMultiple, allTheDAFsAlarms, theAAFsAlarms,  
    theAAFsAlarmsMultiple, allTheAAFsAlarms
```

```
def getTsAlarms(theRawInstances, name):
```

```
    ""
```

The arguments are:

@param theRawInstances: object which represents the specification file,

@param name: the name of the master

This function returns:

@return: theDATsAlarms: all the simple digital alarm instances of TS type of the master currently treated (name),

@return: theDATsAlarmsMultiple: all the multiple digital alarms instances of TS type of the master currently treated (name),

@return: allTheDATsAlarms: all the digital alarms instances of TS type of the master currently treated (name),

@return: theAATsAlarms: all the simple analog alarms instances of TS type of the master currently treated (name),

@return: theAATsAlarmsMultiple: all the multiple analog alarms instances of TS type of the master currently treated (name),

allTheAATsAlarms: all the analog alarms instances of TS type of the master currently treated (name)

""

```
theDATsAlarms = theRawInstances.findMatchingInstances("DigitalAlarm", "$name$",  
"#FEDeviceAlarm:Type#='TS'")
```

```
theDATsAlarmsMultiple = theRawInstances.findMatchingInstances("DigitalAlarm", "$name$",  
"#FEDeviceAlarm:Multiple Types#='TS'")
```

```
allTheDATsAlarms = Vector(theDATsAlarms)
```

```
allTheDATsAlarms.addAll(theDATsAlarmsMultiple)
```

```
theAATsAlarms = theRawInstances.findMatchingInstances("AnalogAlarm", "$name$",  
"#FEDeviceAlarm:Type#='TS'")
```

```
theAATsAlarmsMultiple = theRawInstances.findMatchingInstances("AnalogAlarm", "$name$",  
"#FEDeviceAlarm:Multiple Types#='TS'")
```

```
allTheAATsAlarms = Vector(theAATsAlarms)
```

```
allTheAATsAlarms.addAll(theAATsAlarmsMultiple)
```

```
return theDATsAlarms, theDATsAlarmsMultiple, allTheDATsAlarms, theAATsAlarms,  
theAATsAlarmsMultiple, allTheAATsAlarms
```

```
def getSiAlarms(theRawInstances, name):
```

```
""
```

The arguments are:

@param theRawInstances: object which represents the specification file,

@param name: string containing the name of the master

This function returns:

@return: theDASiAlarms: all the simple digital alarm instances of SI type of the master currently treated (name),

@return: theDASiAlarmsMultiple: all the multiple digital alarms instances of SI type of the master currently treated (name),

@return: allTheDASiAlarms: all the digital alarms instances of SI type of the master currently treated (name),
@return: theAASiAlarms: all the simple analog alarms instances of SI type of the master currently treated (name),
@return: theAASiAlarmsMultiple: all the multiple analog alarms instances of SI type of the master currently treated (name),
allTheAASiAlarms: all the analog alarms instances of SI type of the master currently treated (name)
 ""

```
theDASiAlarms = theRawInstances.findMatchingInstances("DigitalAlarm", "$name$",
"#FEDeviceAlarm:Type#='SI'")
theDASiAlarmsMultiple = theRawInstances.findMatchingInstances("DigitalAlarm", "$name$",
"#FEDeviceAlarm:Multiple Types#='SI'")
allTheDASiAlarms = Vector(theDASiAlarms)
allTheDASiAlarms.addAll(theDASiAlarmsMultiple)
```

```
theAASiAlarms = theRawInstances.findMatchingInstances("AnalogAlarm", "$name$",
"#FEDeviceAlarm:Type#='SI'")
theAASiAlarmsMultiple = theRawInstances.findMatchingInstances("AnalogAlarm", "$name$",
"#FEDeviceAlarm:Multiple Types#='SI'")
allTheAASiAlarms = Vector(theAASiAlarms)
allTheAASiAlarms.addAll(theAASiAlarmsMultiple)
return theDASiAlarms, theDASiAlarmsMultiple, allTheDASiAlarms, theAASiAlarms,
theAASiAlarmsMultiple, allTheAASiAlarms
```

def getAlAlarms(theRawInstances, name):

""

The arguments are:

@param theRawInstances: object which represents the specification file,

@param name: string containing the name of the master

This function returns:

@return: theDAAIAlarms: all the simple digital alarm instances of AL type of the master currently treated (name),

@return: theDAAIAlarmsMultiple: all the multiple digital alarms instances of AL type of the master currently treated (name),

@return: allTheDAAIAlarms: all the digital alarms instances of AL type of the master currently treated (name),

@return: theAAAIAlarms: all the simple analog alarms instances of AL type of the master currently treated (name),

@return: theAAAIAlarmsMultiple: all the multiple analog alarms instances of AL type of the master currently treated (name),

allTheAAAIAlarms: all the analog alarms instances of AL type of the master currently treated (name)


```

"""

    theDAAIAlarms = theRawInstances.findMatchingInstances("DigitalAlarm", "$name$",
"#FEDeviceAlarm:Type#='AL'")
    theDAAIAlarmsMultiple = theRawInstances.findMatchingInstances("DigitalAlarm", "$name$",
"#FEDeviceAlarm:Multiple Types#='AL'")
    allTheDAAIAlarms = Vector(theDAAIAlarms)
    allTheDAAIAlarms.addAll(theDAAIAlarmsMultiple)

    theAAAIAlarms = theRawInstances.findMatchingInstances("AnalogAlarm", "$name$",
"#FEDeviceAlarm:Type#='AL'")
    theAAAIAlarmsMultiple = theRawInstances.findMatchingInstances("AnalogAlarm", "$name$",
"#FEDeviceAlarm:Multiple Types#='AL'")
    allTheAAAIAlarms = Vector(theAAAIAlarms)
    allTheAAAIAlarms.addAll(theAAAIAlarmsMultiple)
    return theDAAIAlarms, theDAAIAlarmsMultiple, allTheDAAIAlarms, theAAAIAlarms,
theAAAIAlarmsMultiple, allTheAAAIAlarms

def getIOErrorSimuCondition(expression, ED, objectsToRemove=[], isDBSimpleRequested=False):
    """
    This function generates string for IOError and IOSimu condition from given expression

    The arguments are:
    @param expression: expression to analyse
    @param ED: Expression decorator instance
    @param objectsToRemove: list of object names not to be included in IOError/IOSimu (as alarm
object itself or master object)
    @param isDBSimpleRequested: if True, then if AIR or DI, use "DB_Type_All_S.Type_SET." prefix

    This function returns:
    @return IOError condition string
    @return IOSimu condition string
    """
    # get list of UNICOS objects in the condition
    listOfConditionObjects = ED.getListOfUNICOSObjects(expression, ["DI", "DO", "AI", "AO", "AIR",
"AOR"]) # IO Only

    # get list of IO objects depending on the actuators
    listOfConditionObjects.extend(ED.getActuatorsIOs(expression))

    # remove unwanted objects from condition
    for obj in objectsToRemove:

```

```

if obj in listOfConditionObjects:
    listOfConditionObjects.remove(obj)

# empty output strings
IOError = []
IOSimu = []

CRLF = System.getProperty("line.separator")

for obj in listOfConditionObjects:
    IOSimu_str = ""
    objS7db_id = S7Functions.s7db_id(obj).lower() # don't need isDBSimpleRequested in call here
    because just figuring out object type
    # 'DPAR', 'APAR', 'WPAR', 'WS', 'AS' do not have IOErrorW, IOSimuW, FoMoSt
    if objS7db_id.split('.')[1] not in [type + "_set." for type in ["dpar", "apar", "wpar", "ws", "as"]]:
        IOError.append(ED.decorateString(obj + ".IOErrorW", "", [], isDBSimpleRequested))
        IOSimu_str = ED.decorateString(obj + ".IOSimuW", "", [], isDBSimpleRequested)
    # Local, AA, DA do not have FoMoSt
    if objS7db_id.split('.')[1] not in [type + "_set." for type in ["local", "da", "aa"]]:
        IOSimu_str = IOSimu_str + " OR " + ED.decorateString(obj + ".FoMoSt", "", [],
isDBSimpleRequested)
    IOSimu.append(IOSimu_str)

if len(IOError) < 1:
    IOError.append("FALSE")
if len(IOSimu) < 1:
    IOSimu.append("FALSE")

return (" OR" + CRLF).join(IOError), (" OR" + CRLF).join(IOSimu)

```

```

def writeSingleConfiguredDAPParameters(inst, ED, thePlugin):

```

```

    """

```

This function will write PLC code concerning one instance of the digital alarm. It will only write the code concerning the parameters of the digital alarm which are configured in the specification file.

The arguments are:

@param inst: Instance of the Digital Alarm

@param ED: Expression decorator instance

@param thePlugin: object representing the java plug-in

This function returns:

code for given alarm

```

""""
DAName = inst.getAttributeData("DeviceIdentification:Name")
DAI = inst.getAttributeData("FEDeviceEnvironmentInputs:Input")
Delay = inst.getAttributeData("FEDeviceParameters:Alarm Delay (s)")
Description = inst.getAttributeData("DeviceDocumentation:Description")
Master = inst.getAttributeData("LogicDeviceDefinitions:Master")
# EnableCondition =
inst.getAttributeData("LogicDeviceDefinitions:CustomLogicParameters:Parameter6") # this should
be replaced with a new column in the spec

bufferWriteLogic = ""
CRLF = System.getProperty("line.separator")

# Input condition
if DAI != "" and thePlugin.isString(DAI) and DAI.strip().lower() <> "logic":
    DA_IOError, DA_IOSimu = getIOErrorSimuCondition(DAI, ED, [DAName] + Master.split(','), True)
# return DB_SIMPLE if it exists to avoid 'Too Many Symbols' error for large applications

    db_alarm = thePlugin.s7db_id(DAName)

    bufferWriteLogic += "" $db_alarm$$DAName$.I := "" + ED.decorateExpression(DAI, "", [], True)
+ "";" + CRLF # return DB_SIMPLE if it exists to avoid 'Too Many Symbols' error for large applications
    bufferWriteLogic += "" $db_alarm$$DAName$.IOError := "" + DA_IOError + "";" + CRLF
    bufferWriteLogic += "" $db_alarm$$DAName$.IOSimu := "" + DA_IOSimu + "";" + CRLF

# Delay Alarm conditions
if Delay.strip() != "" and thePlugin.isString(Delay) and Delay.strip().lower() <> "logic":
    s7db_id_result = thePlugin.s7db_id(Delay, "AnalogParameter, AnalogStatus")
    bufferWriteLogic += "" $db_alarm$$DAName$.PAIDt := REAL_TO_INT("" + s7db_id_result +
Delay + "" .PosSt);" + CRLF

# Enable Alarm conditions
# if EnableCondition is empty: CONFIGRUED TRUE
# if EnableCondition is "logic": NOT CONFIGRUED TRUE
# if EnableCondition is sth else: CONFIGRUED with CONDITION
# if EnableCondition.strip() == "":
# bufferWriteLogic += ""\tDB_DA_All.DA_SET.$DAName$.AuEAI := TRUE;" + CRLF
# elif EnableCondition.strip().lower() <> "logic":
# bufferWriteLogic += ""\tDB_DA_All.DA_SET.$DAName$.AuEAI := "" +
ED.decorateExpression(EnableCondition, "", [], True) + "";" + CRLF

if len(bufferWriteLogic) > 0:
    bufferWriteLogic = CRLF + "" (* $Description$ *)"" + CRLF + bufferWriteLogic

```

```
return bufferWriteLogic
```

```
def writeSingleConfiguredAAParameters(inst, ED, thePlugin):
```

```
    """
```

This function will write PLC code concerning one instance of the analog alarms. It will only write the code concerning the parameters of the analog alarm which are configured in the specification file.

The arguments are:

@param inst: Instance of the Analog Alarm

@param ED: Expression decorator instance

@param thePlugin: object representing the java plug-in

This function returns:

code for given alarm

```
    """
```

```
    AAName = inst.getAttributeData("DeviceIdentification:Name")
```

```
    AAI = inst.getAttributeData("FEDeviceEnvironmentInputs:Input")
```

```
    Delay = inst.getAttributeData("FEDeviceParameters:Alarm Delay (s)")
```

```
    Master = inst.getAttributeData("LogicDeviceDefinitions:Master")
```

```
    HHAA = inst.getAttributeData("FEDeviceManualRequests:HH Alarm")
```

```
    HWAA = inst.getAttributeData("FEDeviceManualRequests:H Warning")
```

```
    LWAA = inst.getAttributeData("FEDeviceManualRequests:L Warning")
```

```
    LLAA = inst.getAttributeData("FEDeviceManualRequests:LL Alarm")
```

```
    Description = inst.getAttributeData("DeviceDocumentation:Description")
```

```
    EnableCondition = inst.getAttributeData("FEDeviceAlarm:Enable Condition")
```

```
    bufferWriteLogic = ""
```

```
    CRLF = System.getProperty("line.separator")
```

```
    db_alarm = thePlugin.s7db_id(AAName)
```

```
    # Input condition
```

```
    if AAI != "" and thePlugin.isString(AAI) and AAI.strip().lower() <> "logic":
```

```
        AA_IOError, AA_IOSimu = getIOErrorSimuCondition(AAI, ED, [AAName] + Master.split(','), True)
```

```
    # return DB_SIMPLE if it exists to avoid 'Too Many Symbols' error for large applications
```

```
        bufferWriteLogic += "" $db_alarm$$AAName$.I := "" + ED.decorateExpression(AAI, "", [], True) + "";" + CRLF # return DB_SIMPLE if it exists to avoid 'Too Many Symbols' error for large applications
```

```
        bufferWriteLogic += "" $db_alarm$$AAName$.IOError := "" + AA_IOError + "";" + CRLF
```

```
        bufferWriteLogic += "" $db_alarm$$AAName$.IOSimu := "" + AA_IOSimu + "";" + CRLF
```

```

# Delay Alarm conditions
if Delay.strip() != "" and thePlugin.isString(Delay) and Delay.strip().lower() <> "logic":
    s7db_id_result = thePlugin.s7db_id(Delay, "AnalogParameter, AnalogStatus")
    bufferWriteLogic += " $db_alarm$$AAName$.PAIDt := REAL_TO_INT(" + s7db_id_result +
Delay + ".PosSt);" + CRLF

# NOTE: regarding Enable Alarm conditions

# if Threshold is empty:                CONFIGURED FALSE
# if Threshold not empty and EnableCondition empty    NOT CONFIGURED TRUE
# if Threshold not empty and EnableCondition 'logic' NOT CONFIGURED TRUE
# if Threshold not empty and EnableCondition oth    CONFIGURED with CONDITION

# HH conditions
if HHAA != "" and thePlugin.isString(HHAA) and HHAA.lower() <> "logic":
    bufferWriteLogic += " $db_alarm$$AAName$.HH := " + ED.decorateExpression(HHAA, "", [],
True) + ";" + CRLF
if HHAA.strip() == "":
    bufferWriteLogic += " $db_alarm$$AAName$.AuEHH := FALSE;" + CRLF
elif EnableCondition.strip() != "" and thePlugin.isString(EnableCondition) and
EnableCondition.strip().lower() <> "logic":
    bufferWriteLogic += " $db_alarm$$AAName$.AuEHH := " +
ED.decorateExpression(EnableCondition, "", [], True) + ";" + CRLF

# HW conditions
if HWAA != "" and thePlugin.isString(HWAA) and HWAA.lower() <> "logic":
    bufferWriteLogic += " $db_alarm$$AAName$.H := " + ED.decorateExpression(HWAA, "", [],
True) + ";" + CRLF
if HWAA.strip() == "":
    bufferWriteLogic += " $db_alarm$$AAName$.AuEH := FALSE;" + CRLF
elif EnableCondition.strip() != "" and thePlugin.isString(EnableCondition) and
EnableCondition.strip().lower() <> "logic":
    bufferWriteLogic += " $db_alarm$$AAName$.AuEH := " +
ED.decorateExpression(EnableCondition, "", [], True) + ";" + CRLF

# LW conditions
if LWAA != "" and thePlugin.isString(LWAA) and LWAA.lower() <> "logic":
    bufferWriteLogic += " $db_alarm$$AAName$.L := " + ED.decorateExpression(LWAA, "", [],
True) + ";" + CRLF
if LWAA.strip() == "":
    bufferWriteLogic += " $db_alarm$$AAName$.AuEL := FALSE;" + CRLF
elif EnableCondition.strip() != "" and thePlugin.isString(EnableCondition) and
EnableCondition.strip().lower() <> "logic":

```

```
bufferWriteLogic += " $db_alarm$$AAName$.AuEL := "" +  
ED.decorateExpression(EnableCondition, "", [], True) + "";" + CRLF
```

```
# LL conditions
```

```
if LLAA != "" and thePlugin.isString(LLAA) and LLAA.lower() <> "logic":
```

```
bufferWriteLogic += " $db_alarm$$AAName$.LL := "" + ED.decorateExpression(LLAA, "", [],  
True) + "";" + CRLF
```

```
if LLAA.strip() == "":
```

```
bufferWriteLogic += " $db_alarm$$AAName$.AuELL := FALSE;" + CRLF
```

```
elif EnableCondition.strip() != "" and thePlugin.isString(EnableCondition) and  
EnableCondition.strip().lower() <> "logic":
```

```
bufferWriteLogic += " $db_alarm$$AAName$.AuELL := "" +  
ED.decorateExpression(EnableCondition, "", [], True) + "";" + CRLF
```

```
if len(bufferWriteLogic) > 0:
```

```
bufferWriteLogic = CRLF + " (* $Description$ *)" + CRLF + bufferWriteLogic
```

```
return bufferWriteLogic
```

```
def writeConfiguredDAParameters(thePlugin, theDigitalAlarms, theDigitalAlarmsMultiple,  
DAListPosition):
```

```
"""
```

This function will write PLC code concerning the digital alarms. It will only write the code concerning the parameters of the digital alarms which are configured in the specification file.

The arguments are:

@param thePlugin: object representing the java plug-in

@param theDigitalAlarms: vector containing the simple digital alarms which have to be treated

@param theDigitalAlarmsMultiple: vector containing the multiple digital alarms which have to be treated

@param DAListPosition: list containing the position of the master for each multiple alarm. The ith element of DAListPosition should corresponds to the ith element of theDigitalAlarmsMultiple

This function returns:

nothing

```
"""
```

```
ED = ucpc_library.shared_decorator.ExpressionDecorator()
```

```
CRLF = System.getProperty("line.separator")
```

```
#thePlugin.writeDebugInUABLog("defaultAlarmsTemplate: executing  
writeConfiguredAlarmParameters function")
```

Step 1.3: Interlock Conditions (both for analog and digital alarms) and IOError/IOSimu for the Alarms (both for analog and digital alarms)

```
thePlugin.writeSiemensLogic("""
(*Configured alarm parameters: Interlock Conditions to fill in according to the logic spec *)
(*Digital Interlock Conditions to fill in according to the logic spec*)
// Simple Type DA conditions"" + CRLF)
for inst in theDigitalAlarms:
    thePlugin.writeSiemensLogic(writeSingleConfiguredDAParameters(inst, ED, thePlugin))

thePlugin.writeSiemensLogic(""" // Multiple Type DA conditions"" + CRLF)
i = 0
for inst in theDigitalAlarmsMultiple:
    positionDAMaster = DAListPosition[i]
    i = i + 1
    if positionDAMaster == 0:
        thePlugin.writeSiemensLogic(writeSingleConfiguredDAParameters(inst, ED, thePlugin))
    else:
        DAName = inst.getAttributeData("DeviceIdentification:Name")
        Description = inst.getAttributeData("DeviceDocumentation:Description")
        masterString = inst.getAttributeData("LogicDeviceDefinitions:Master").replace(", ", " ")
        masterList = masterString.split()
        firstMasterName = masterList[0]
        thePlugin.writeSiemensLogic(CRLF + "" (* $Description$ *)"" + CRLF)
        thePlugin.writeSiemensLogic(""" // For the Digital Alarm "$DAName$" the conditions have
been created in the section: $firstMasterName$_DL"" + CRLF)
```

```
def writeConfiguredAAParameters(thePlugin, theRawInstances, theAnalogAlarms,
theAnalogAlarmsMultiple, AAListPosition):
```

```
    """"
```

This function will write PLC code concerning the analog alarms. It will only write the code concerning the parameters of the analog alarms which are configured in the specification file.

The arguments are:

@param thePlugin: object representing the java plug-in

@param theAnalogAlarms: vector containing the simple analog alarms which have to be treated

@param theAnalogAlarmsMultiple: vector containing the multiple analog alarms which have to be treated

@param AAListPosition: list containing the position of the master for each multiple alarm. The ith element of AAListPosition should corresponds to the ith element of theAnalogAlarmsMultiple

This function returns:

nothing

```

"""

ED = ucpc_library.shared_decorator.ExpressionDecorator()
CRLF = System.getProperty("line.separator")

thePlugin.writeSiemensLogic(CRLF + ""(*Analog Interlock Conditions to fill in according to the logic
spec*)"" + CRLF)
thePlugin.writeSiemensLogic("" // Simple Type AA conditions"" + CRLF)
for inst in theAnalogAlarms:
    thePlugin.writeSiemensLogic(writeSingleConfiguredAAParameters(inst, ED, thePlugin))

thePlugin.writeSiemensLogic("" // Multiple Type AA conditions"" + CRLF)
i = 0
for inst in theAnalogAlarmsMultiple:
    positionAAMaster = AAListPosition[i]
    i = i + 1
    if positionAAMaster == 0:
        thePlugin.writeSiemensLogic(writeSingleConfiguredAAParameters(inst, ED, thePlugin))

else:
    AAName = inst.getAttributeData("DeviceIdentification:Name")
    Description = inst.getAttributeData("DeviceDocumentation:Description")
    masterString = inst.getAttributeData("LogicDeviceDefinitions:Master").replace(", ", " ")
    masterList = masterString.split()
    firstMasterName = masterList[0]
    thePlugin.writeSiemensLogic(CRLF + "" (* $Description$ *)"" + CRLF)
    thePlugin.writeSiemensLogic("" // For the Analog Alarm "$AAName$" the conditions have
been created in the section: $firstMasterName$_DL"" + CRLF)

```

```

def logicErrorSimuAssignment(thePlugin, theRawInstances, allTheDigitalAlarms, allTheAnalogAlarms,
name):

```

```

    """

```

This function will write PLC code concerning the digital alarms and the analogAlarms. More particularly it will write the code concerning the IOError and IOSimu. A link is created between the alarms and their master in order to propagate the IOError and the IOSimu signal coming from the alarms to their master.

IOError is typically true when there is a problem in the INPUT-OUTPUT card.

IOSimu is typically true when we pass on input or output in forced mode.

The arguments are:

@param thePlugin: object representing the java plug-in

@param theRawInstances: object which represents the specification file,

@param allTheDigitalAlarms: vector containing the digital alarms which have to be treated
@param allTheAnalogAlarms: vector containing the analog alarms which have to be treated
@param name: string containing the name of the master

This function returns:

nothing
""

```
#thePlugin.writeDebugInUABLog("defaultAlarmsTemplate: executing logicErrorSimuAssignment function")
```

```
CRLF = System.getProperty("line.separator")
```

```
# Step 1.5. OnOff IoSimu and IoError: Adding of the IoError from the Logic related to the OnOff object
```

```
thePlugin.writeSiemensLogic("
```

```
(*Adding of the IoError from the Logic related to $name$*****)
```

```
$name$.IoError := DB_ERROR_SIMU.$name$_DL_E OR" + CRLF)
```

```
# First with the theDigitalAlarms
```

```
for inst in allTheDigitalAlarms:
```

```
    DAName = inst.getAttributeData("DeviceIdentification:Name")
```

```
    s7db_id_result = thePlugin.s7db_id(DAName, "DigitalAlarm")
```

```
    thePlugin.writeSiemensLogic("        " + s7db_id_result + DAName + ".IoErrorW OR" + CRLF)
```

```
# Second with the theAnalogAlarms
```

```
for inst in allTheAnalogAlarms:
```

```
    AAName = inst.getAttributeData("DeviceIdentification:Name")
```

```
    s7db_id_result = thePlugin.s7db_id(AAName, "AnalogAlarm")
```

```
    thePlugin.writeSiemensLogic("        " + s7db_id_result + AAName + ".IoErrorW OR" + CRLF)
```

```
thePlugin.writeSiemensLogic("        0;
```

```
(*Adding of the IoSimu from the Logic related to $name$*****)
```

```
$name$.IoSimu := DB_ERROR_SIMU.$name$_DL_S OR" + CRLF)
```

```
# First with the theDigitalAlarms
```

```
for inst in allTheDigitalAlarms:
```

```
    DAName = inst.getAttributeData("DeviceIdentification:Name")
```

```
    s7db_id_result = thePlugin.s7db_id(DAName, "DigitalAlarm")
```

```
    thePlugin.writeSiemensLogic("        " + s7db_id_result + DAName + ".IoSimuW OR" + CRLF)
```

```
# Second with the theAnalogAlarms
```

```

for inst in allTheAnalogAlarms:
    AAName = inst.getAttributeData("DeviceIdentification:Name")
    s7db_id_result = thePlugin.s7db_id(AAName, "AnalogAlarm")
    thePlugin.writeSiemensLogic("    " + s7db_id_result + AAName + ".IoSimuW OR" + CRLF)

thePlugin.writeSiemensLogic("    0;")

```

```

def AuAlAckAlarmsMethod(thePlugin, theRawInstances, name, master, theDigitalAlarms,
theDigitalAlarmsMultiple, theAnalogAlarms, theAnalogAlarmsMultiple, DAListPosition,
AAListPosition):

```

"""

This function will write PLC code concerning the digital alarms and the analogAlarms. More particularly it will write the code concerning the auto acknowledgment. A link is created between the alarms and their master in order to acknowledge the alarm if the master is acknowledged.

The arguments are:

@param thePlugin: object representing the java plug-in

@param theRawInstances: object which represents the specification file,

@param name: string containing the name of the master

@param theDigitalAlarms: vector containing the simple digital alarms which have to be treated

@param theDigitalAlarmsMultiple: vector containing the multiple digital alarms which have to be treated

@param theAnalogAlarms: vector containing the simple analog alarms which have to be treated

@param theAnalogAlarmsMultiple: vector containing the multiple analog alarms which have to be treated

@param DAListPosition: list containing the position of the master for each multiple alarm. The ith element of DAListPosition should corresponds to the ith element of theDigitalAlarmsMultiple

@param AAListPosition: list containing the position of the master for each multiple alarm. The ith element of AAListPosition should corresponds to the ith element of theAnalogAlarmsMultiple

This function returns:

nothing

"""

```

#thePlugin.writeDebugInUABLog("defaultAlarmsTemplate: executing AuAlAckAlarmsMethod
function")

```

```

#thePlugin.writeInUABLog("name = $name$. master = $master$")

```

```

CRLF = System.getProperty("line.separator")

```

```

# Step 1.6: Instantiation of the AuAlAck for the Alarms objects related to the ANALOG object

```

```

thePlugin.writeSiemensLogic("

```

```

(*instantiation of the AuAlAck for the DigitalAlarm objects related to $name$*****)

```

```

// Simple Type DA instantiation")
for inst in theDigitalAlarms:
    DAName = inst.getAttributeData("DeviceIdentification:Name")
    db_alarm = thePlugin.s7db_id(DAName)
    thePlugin.writeSiemensLogic("
$db_alarm$$DAName$.AuAIack:=$name$.E_MAIackR OR $name$.AuAIack;" + CRLF)

thePlugin.writeSiemensLogic(" // Multiple Type DA instantiation")
i = 0
for inst in theDigitalAlarmsMultiple:
    DAName = inst.getAttributeData("DeviceIdentification:Name")
    db_alarm = thePlugin.s7db_id(DAName)
    positionDAMaster = DAListPosition[i]
    i = i + 1
    if positionDAMaster == 0:
        alarmMaster = inst.getAttributeData("LogicDeviceDefinitions:Master").replace(", ", " ")
        AuAIackAssignment = '0'
        alarmMasterList = alarmMaster.split()
        for masterElement in alarmMasterList:
            AuAIackAssignment = AuAIackAssignment + " OR " + CRLF + masterElement + ".E_MAIackR
OR" + CRLF + masterElement + ".AuAIack"
        thePlugin.writeSiemensLogic("
$db_alarm$$DAName$.AuAIack:="" + AuAIackAssignment + "";"")

thePlugin.writeSiemensLogic("
(*instantiation of the AuAIack for the AnalogAlarm objects related to $name$*****)
// Simple Type AA instantiation")
for inst in theAnalogAlarms:
    AAName = inst.getAttributeData("DeviceIdentification:Name")
    db_alarm = thePlugin.s7db_id(AAName)
    thePlugin.writeSiemensLogic("
$db_alarm$$AAName$.AuAIack:=$name$.E_MAIackR OR $name$.AuAIack;" + CRLF)

thePlugin.writeSiemensLogic("
// Multiple Type AA instantiation")
i = 0
for inst in theAnalogAlarmsMultiple:
    AAName = inst.getAttributeData("DeviceIdentification:Name")
    db_alarm = thePlugin.s7db_id(AAName)
    positionAAMaster = AAListPosition[i]
    i = i + 1
    if positionAAMaster == 0:

```

```

alarmMaster = inst.getAttributeData("LogicDeviceDefinitions:Master").replace(", ", " ")
AuAIackAssignment = '0'
alarmMasterList = alarmMaster.split()
for masterElement in alarmMasterList:
    AuAIackAssignment = AuAIackAssignment + " OR " + CRLF + masterElement + ".E_MAIackR
OR " + CRLF + masterElement + ".AuAIack"
    thePlugin.writeSiemensLogic("
$db_alarms$AName$.AuAIack:=" + AuAIackAssignment + ";" + CRLF)

```

```

def interlockAlarmsMethod(thePlugin, theRawInstances, allTheDASiAlarms, allTheAASiAlarms,
allTheDAFsAlarms, allTheAAFsAlarms, allTheDATsAlarms, allTheAATsAlarms, allTheDAAIAlarms,
allTheAAAIAlarms, name):

```

"""

This function will write PLC code concerning the digital alarms and the analogAlarms. More particularly it will write the code concerning the interlock.

The arguments are:

@param thePlugin: object representing the java plug-in

@param theRawInstances: object which represents the specification file,

@param allTheDASiAlarms: vector containing the digital alarms of SI type which have to be treated

@param allTheAASiAlarms: vector containing the analog alarms of SI type which have to be treated

@param allTheDAFsAlarms: vector containing the digital alarms of FS type which have to be treated

@param allTheAAFsAlarms: vector containing the analog alarms of FS type which have to be treated

@param allTheDATsAlarms: vector containing the digital alarms of TS type which have to be treated

@param allTheAATsAlarms: vector containing the analog alarms of TS type which have to be treated

@param allTheDAAIAlarms: vector containing the digital alarms of AL type which have to be treated

@param allTheAAAIAlarms: vector containing the analog alarms of AL type which have to be treated

@param name: string containing the name of the master

This function returns:

nothing

"""

```

#thePlugin.writeDebugInUABLog("defaultAlarmsTemplate: executing interlockAlarmsMethod
function")

```

```

# Step 1.7: Interlock: Both for DA and AA. We fix the 2 kind of interlocks for Field Objects: SI and ST
thePlugin.writeSiemensLogic("

(*Interlock*****")

# Start Interlock (SI)

thePlugin.writeSiemensLogic("
$name$.StartI :=
// Start Interlock for DA")
allTheDASiAlarmsDB1 = [alarm for alarm in allTheDASiAlarms if
thePlugin.s7db_id(alarm.getAttributeData("DeviceIdentification:Name")).upper() ==
"DB_DA_ALL.DA_SET."]
generatedTextDA = theRawInstances.createSectionText(allTheDASiAlarmsDB1, 1, 1, "
DB_DA_All.DA_SET.#DeviceIdentification:Name#.ISt OR")
thePlugin.writeSiemensLogic(generatedTextDA)

allTheDASiAlarmsDB2 = [alarm for alarm in allTheDASiAlarms if
thePlugin.s7db_id(alarm.getAttributeData("DeviceIdentification:Name")).upper() ==
"DB_DA_ALL2.DA_SET."]
generatedTextDA = theRawInstances.createSectionText(allTheDASiAlarmsDB2, 1, 1, "
DB_DA_All2.DA_SET.#DeviceIdentification:Name#.ISt OR")
thePlugin.writeSiemensLogic(generatedTextDA)

allTheFIDASiAlarmsDB1 = [alarm for alarm in allTheDASiAlarms if
thePlugin.s7db_id(alarm.getAttributeData("DeviceIdentification:Name")).upper() ==
"DB_DA_FI.DA_SET."]
generatedTextDA = theRawInstances.createSectionText(allTheFIDASiAlarmsDB1, 1, 1, "
DB_DA_FI.DA_SET.#DeviceIdentification:Name#.ISt OR")
thePlugin.writeSiemensLogic(generatedTextDA)

thePlugin.writeSiemensLogic("
// Start Interlock for AA")
allTheAASiAlarmsDB1 = [alarm for alarm in allTheAASiAlarms if
thePlugin.s7db_id(alarm.getAttributeData("DeviceIdentification:Name")).upper() ==
"DB_AA_ALL.AA_SET."]
generatedTextAA = theRawInstances.createSectionText(allTheAASiAlarmsDB1, 1, 1, "
DB_AA_All.AA_SET.#DeviceIdentification:Name#.ISt OR")
thePlugin.writeSiemensLogic(generatedTextAA)

allTheAASiAlarmsDB2 = [alarm for alarm in allTheAASiAlarms if
thePlugin.s7db_id(alarm.getAttributeData("DeviceIdentification:Name")).upper() ==
"DB_AA_ALL2.AA_SET."]
generatedTextAA = theRawInstances.createSectionText(allTheAASiAlarmsDB2, 1, 1, "

```

```

DB_AA_All2.AA_SET.#DeviceIdentification:Name#.ISt OR")
thePlugin.writeSiemensLogic(generatedTextAA)
thePlugin.writeSiemensLogic("
0;")

# Full Stop Interlock (FS)
thePlugin.writeSiemensLogic("
$name$.FuStopI :=
// Full Stop Interlock for DA")
allTheDAFsAlarmsDB1 = [alarm for alarm in allTheDAFsAlarms if
thePlugin.s7db_id(alarm.getAttributeData("DeviceIdentification:Name")).upper() ==
"DB_DA_ALL.DA_SET."]
generatedTextDA = theRawInstances.createSectionText(allTheDAFsAlarmsDB1, 1, 1, "
DB_DA_All.DA_SET.#DeviceIdentification:Name#.ISt OR")
thePlugin.writeSiemensLogic(generatedTextDA)

allTheDAFsAlarmsDB2 = [alarm for alarm in allTheDAFsAlarms if
thePlugin.s7db_id(alarm.getAttributeData("DeviceIdentification:Name")).upper() ==
"DB_DA_All2.DA_SET."]
generatedTextDA = theRawInstances.createSectionText(allTheDAFsAlarmsDB2, 1, 1, "
DB_DA_All2.DA_SET.#DeviceIdentification:Name#.ISt OR")
thePlugin.writeSiemensLogic(generatedTextDA)

allTheFIDAFsAlarmsDB1 = [alarm for alarm in allTheDAFsAlarms if
thePlugin.s7db_id(alarm.getAttributeData("DeviceIdentification:Name")).upper() ==
"DB_DA_FI.DA_SET."]
generatedTextDA = theRawInstances.createSectionText(allTheFIDAFsAlarmsDB1, 1, 1, "
DB_DA_FI.DA_SET.#DeviceIdentification:Name#.ISt OR")
thePlugin.writeSiemensLogic(generatedTextDA)

thePlugin.writeSiemensLogic("
// Full Stop Interlock for AA")

allTheAAFsAlarmsDB1 = [alarm for alarm in allTheAAFsAlarms if
thePlugin.s7db_id(alarm.getAttributeData("DeviceIdentification:Name")).upper() ==
"DB_AA_ALL.AA_SET."]
generatedTextAA = theRawInstances.createSectionText(allTheAAFsAlarmsDB1, 1, 1, "
DB_AA_All.AA_SET.#DeviceIdentification:Name#.ISt OR")
thePlugin.writeSiemensLogic(generatedTextAA)

allTheAAFsAlarmsDB2 = [alarm for alarm in allTheAAFsAlarms if
thePlugin.s7db_id(alarm.getAttributeData("DeviceIdentification:Name")).upper() ==
"DB_AA_All2.AA_SET."]
generatedTextAA = theRawInstances.createSectionText(allTheAAFsAlarmsDB2, 1, 1, "

```

```

DB_AA_All2.AA_SET.#DeviceIdentification:Name#.ISt OR")
thePlugin.writeSiemensLogic(generatedTextAA)

thePlugin.writeSiemensLogic("
0;")

# Temporary Stop Interlock (TS)
thePlugin.writeSiemensLogic("
$name$.TStopl :=
// Temporary Stop Interlock for DA")

allTheDATsAlarmsDB1 = [alarm for alarm in allTheDATsAlarms if
thePlugin.s7db_id(alarm.getAttributeData("DeviceIdentification:Name")).upper() ==
"DB_DA_ALL.DA_SET."]
generatedTextDA = theRawInstances.createSectionText(allTheDATsAlarmsDB1, 1, 1, "
DB_DA_All.DA_SET.#DeviceIdentification:Name#.ISt OR")
thePlugin.writeSiemensLogic(generatedTextDA)

allTheDATsAlarmsDB2 = [alarm for alarm in allTheDATsAlarms if
thePlugin.s7db_id(alarm.getAttributeData("DeviceIdentification:Name")).upper() ==
"DB_DA_All2.DA_SET."]
generatedTextDA = theRawInstances.createSectionText(allTheDATsAlarmsDB2, 1, 1, "
DB_DA_All2.DA_SET.#DeviceIdentification:Name#.ISt OR")
thePlugin.writeSiemensLogic(generatedTextDA)

allTheFIDATsAlarmsDB1 = [alarm for alarm in allTheDATsAlarms if
thePlugin.s7db_id(alarm.getAttributeData("DeviceIdentification:Name")).upper() ==
"DB_DA_FI.DA_SET."]
generatedTextDA = theRawInstances.createSectionText(allTheFIDATsAlarmsDB1, 1, 1, "
DB_DA_FI.DA_SET.#DeviceIdentification:Name#.ISt OR")
thePlugin.writeSiemensLogic(generatedTextDA)

thePlugin.writeSiemensLogic("
// Temporary Stop Interlock for AA")

allTheAATsAlarmsDB1 = [alarm for alarm in allTheAATsAlarms if
thePlugin.s7db_id(alarm.getAttributeData("DeviceIdentification:Name")).upper() ==
"DB_AA_All.AA_SET."]
generatedTextAA = theRawInstances.createSectionText(allTheAATsAlarmsDB1, 1, 1, "
DB_AA_All.AA_SET.#DeviceIdentification:Name#.ISt OR")
thePlugin.writeSiemensLogic(generatedTextAA)

```

```

    allTheAATsAlarmsDB2 = [alarm for alarm in allTheAATsAlarms if
thePlugin.s7db_id(alarm.getAttributeData("DeviceIdentification:Name")).upper() ==
"DB_AA_ALL2.AA_SET."]
    generatedTextAA = theRawInstances.createSectionText(allTheAATsAlarmsDB2, 1, 1, ""
DB_AA_All2.AA_SET.#DeviceIdentification:Name#.ISt OR")
    thePlugin.writeSiemensLogic(generatedTextAA)

    thePlugin.writeSiemensLogic("")
0;")

# AI (AL)
    thePlugin.writeSiemensLogic("")
$name$.AI :=
// Alarm for DA")

    allTheDAAIAlarmsDB1 = [alarm for alarm in allTheDAAIAlarms if
thePlugin.s7db_id(alarm.getAttributeData("DeviceIdentification:Name")).upper() ==
"DB_DA_ALL.DA_SET."]
    generatedTextDA = theRawInstances.createSectionText(allTheDAAIAlarmsDB1, 1, 1, ""
DB_DA_All.DA_SET.#DeviceIdentification:Name#.ISt OR")
    thePlugin.writeSiemensLogic(generatedTextDA)

    allTheDAAIAlarmsDB2 = [alarm for alarm in allTheDAAIAlarms if
thePlugin.s7db_id(alarm.getAttributeData("DeviceIdentification:Name")).upper() ==
"DB_DA_ALL2.DA_SET."]
    generatedTextDA = theRawInstances.createSectionText(allTheDAAIAlarmsDB2, 1, 1, ""
DB_DA_All2.DA_SET.#DeviceIdentification:Name#.ISt OR")
    thePlugin.writeSiemensLogic(generatedTextDA)

    allTheFIDAAIAlarmsDB1 = [alarm for alarm in allTheDAAIAlarms if
thePlugin.s7db_id(alarm.getAttributeData("DeviceIdentification:Name")).upper() ==
"DB_DA_FI.DA_SET."]
    generatedTextDA = theRawInstances.createSectionText(allTheFIDAAIAlarmsDB1, 1, 1, ""
DB_DA_FI.DA_SET.#DeviceIdentification:Name#.ISt OR")
    thePlugin.writeSiemensLogic(generatedTextDA)

    thePlugin.writeSiemensLogic("")
// Alarm for AA")

    allTheAAAIAlarmsDB1 = [alarm for alarm in allTheAAAIAlarms if
thePlugin.s7db_id(alarm.getAttributeData("DeviceIdentification:Name")).upper() ==
"DB_AA_ALL.AA_SET."]
    generatedTextAA = theRawInstances.createSectionText(allTheAAAIAlarmsDB1, 1, 1, ""
DB_AA_All.AA_SET.#DeviceIdentification:Name#.ISt OR")

```



```
thePlugin.writeSiemensLogic(generatedTextAA)
```

```
allTheAAAlarmsDB2 = [alarm for alarm in allTheAAAlarms if  
thePlugin.s7db_id(alarm.getAttributeData("DeviceIdentification:Name")).upper() ==  
"DB_AA_ALL2.AA_SET."]  
generatedTextAA = theRawInstances.createSectionText(allTheAAAlarmsDB2, 1, 1, "  
DB_AA_All2.AA_SET.#DeviceIdentification:Name#.ISt OR")  
thePlugin.writeSiemensLogic(generatedTextAA)
```

```
thePlugin.writeSiemensLogic("  
0;")
```

```
def blockAlarmsMethod(thePlugin, theRawInstances, allTheDigitalAlarms, allTheAnalogAlarms,  
name):
```

```
"""
```

This function will write PLC code concerning the digital alarms and the analogAlarms. More particularly it will write the code concerning the blocked alarm. When an alarm is blocked the corresponding master have to know it that is why we create a link.

The arguments are:

@param thePlugin: object representing the java plug-in

@param theRawInstances: object which represents the specification file,

@param allTheDigitalAlarms: vector containing the digital alarms which have to be treated

@param allTheAnalogAlarms: vector containing the analog alarms which have to be treated

@param name: string containing the name of the master

This function returns:

nothing

```
"""
```

```
# Step 1.8: Blocked Alarm warning: both for DA and AA
```

```
thePlugin.writeSiemensLogic("  
(*Blocked Alarm warning *****)  
$name$.AIB := ")
```

```
allTheDigitalAlarmsDB1 = [alarm for alarm in allTheDigitalAlarms if  
thePlugin.s7db_id(alarm.getAttributeData("DeviceIdentification:Name")).upper() ==  
"DB_DA_ALL.DA_SET."]  
generatedText = theRawInstances.createSectionText(allTheDigitalAlarmsDB1, 1, 1, "  
DB_DA_All.DA_SET.#DeviceIdentification:Name#.MAIBRSt OR")  
thePlugin.writeSiemensLogic(generatedText)
```

```

    allTheDigitalAlarmsDB2 = [alarm for alarm in allTheDigitalAlarms if
thePlugin.s7db_id(alarm.getAttributeData("DeviceIdentification:Name")).upper() ==
"DB_DA_ALL2.DA_SET."]
    generatedText = theRawInstances.createSectionText(allTheDigitalAlarmsDB2, 1, 1, ""
DB_DA_All2.DA_SET.#DeviceIdentification:Name#.MAIBRSt OR""
thePlugin.writeSiemensLogic(generatedText)

    allTheFIDigitalAlarmsDB1 = [alarm for alarm in allTheDigitalAlarms if
thePlugin.s7db_id(alarm.getAttributeData("DeviceIdentification:Name")).upper() ==
"DB_DA_FI.DA_SET."]
    generatedTextDA = theRawInstances.createSectionText(allTheFIDigitalAlarmsDB1, 1, 1, ""
DB_DA_FI.DA_SET.#DeviceIdentification:Name#.MAIBRSt OR""
thePlugin.writeSiemensLogic(generatedTextDA)

    allTheAnalogAlarmsDB1 = [alarm for alarm in allTheAnalogAlarms if
thePlugin.s7db_id(alarm.getAttributeData("DeviceIdentification:Name")).upper() ==
"DB_AA_ALL.AA_SET."]
    generatedText = theRawInstances.createSectionText(allTheAnalogAlarmsDB1, 1, 1, ""
DB_AA_All.AA_SET.#DeviceIdentification:Name#.MAIBRSt OR""
thePlugin.writeSiemensLogic(generatedText)

    allTheAnalogAlarmsDB2 = [alarm for alarm in allTheAnalogAlarms if
thePlugin.s7db_id(alarm.getAttributeData("DeviceIdentification:Name")).upper() ==
"DB_AA_ALL2.AA_SET."]
    generatedText = theRawInstances.createSectionText(allTheAnalogAlarmsDB2, 1, 1, ""
DB_AA_All2.AA_SET.#DeviceIdentification:Name#.MAIBRSt OR""
thePlugin.writeSiemensLogic(generatedText)

thePlugin.writeSiemensLogic(""
0;""

```

```
def writeSingleNotConfiguredDAParameters(inst, thePlugin):
```

```
    """"
```

This function will write PLC code concerning one instance of the analog alarms. It will only write the code concerning the parameters of the analog alarm which are not configured in the specification file.

The arguments are:

@param inst: Instance of the Analog Alarm

@param thePlugin: object representing the java plug-in

This function returns:

```

code for given alarm
"""
DAName = inst.getAttributeData("DeviceIdentification:Name")
DAI = inst.getAttributeData("FEDeviceEnvironmentInputs:Input")
Delay = inst.getAttributeData("FEDeviceParameters:Alarm Delay (s)")
Description = inst.getAttributeData("DeviceDocumentation:Description")
#EnableCondition =
inst.getAttributeData("LogicDeviceDefinitions:CustomLogicParameters:Parameter6")

db_alarm = thePlugin.s7db_id(DAName)
bufferWriteLogic = ""
CRLF = System.getProperty("line.separator")

# Input conditions
if DAI == "" or DAI.strip().lower() == "logic":
    bufferWriteLogic += " $db_alarm$$DAName$.I := 0; // To complete
$db_alarm$$DAName$.IOError := 0; // To complete
$db_alarm$$DAName$.IOSimu := 0; // To complete" + CRLF

# Delay Alarm conditions
if Delay.strip().lower() == "logic":
    bufferWriteLogic += " $db_alarm$$DAName$.PAIDt := 0; // To complete" + CRLF

# Enable Alarm conditions
# if EnableCondition is empty: CONFIGURED TRUE
# if EnableCondition is "logic": NOT CONFIGURED TRUE
# if EnableCondition is sth else: CONFIGURED with CONDITION
# if EnableCondition.strip().lower() == "logic":
#   bufferWriteLogic += "\tDB_DA_All.DA_SET.$DAName$.AuEAI := TRUE;" + CRLF

# Description
if len(bufferWriteLogic) > 0:
    bufferWriteLogic = CRLF + " (* $Description$ *)" + CRLF + bufferWriteLogic

return bufferWriteLogic

```

```

def writeSingleNotConfiguredAAParameters(inst, thePlugin):
    """

```

This function will write PLC code concerning one instance of the analog alarms. It will only write the code concerning the parameters of the analog alarm which are not configured in the specification file.

The arguments are:

@param inst: Instance of the Analog Alarm

@param thePlugin: object representing the java plug-in

This function returns:

code for given alarm

""

```
AAName = inst.getAttributeData("DeviceIdentification:Name")
AAI = inst.getAttributeData("FEDeviceEnvironmentInputs:Input")
Delay = inst.getAttributeData("FEDeviceParameters:Alarm Delay (s)")
HHAA = inst.getAttributeData("FEDeviceManualRequests:HH Alarm")
HWAA = inst.getAttributeData("FEDeviceManualRequests:H Warning")
LWAA = inst.getAttributeData("FEDeviceManualRequests:L Warning")
LLAA = inst.getAttributeData("FEDeviceManualRequests:LL Alarm")
Description = inst.getAttributeData("DeviceDocumentation:Description")
EnableCondition = inst.getAttributeData("FEDeviceAlarm:Enable Condition")
```

```
db_alarm = thePlugin.s7db_id(AAName)
```

```
bufferWriteLogic = ""
```

```
CRLF = System.getProperty("line.separator")
```

```
# Input conditions
```

```
if AAI == "" or AAI.strip().lower() == "logic":
```

```
    bufferWriteLogic += " $db_alarm$$AAName$.I := 0.0; // To complete
```

```
$db_alarm$$AAName$.IOError := 0; // To complete
```

```
$db_alarm$$AAName$.IOSimu := 0; // To complete "" + CRLF
```

```
# Delay Alarm conditions
```

```
if Delay.strip().lower() == "logic":
```

```
    bufferWriteLogic += " $db_alarm$$AAName$.PAIDt := 0; // To complete"" + CRLF
```

```
# Alarm thresholds
```

```
# NOTE: regarding Enable Alarm conditions
```

```
# if Threshold is empty: CONFIGURED FALSE
```

```
# if Threshold not empty and EnableCondition empty NOT CONFIGURED TRUE
```

```
# if Threshold not empty and EnableCondition 'logic' NOT CONFIGURED TRUE
```

```
# if Threshold not empty and EnableCondition oth CONFIGURED with CONDITION
```

```
# HH conditions
```

```
if HHAA.strip().lower() == "logic":
```

```

    bufferWriteLogic += "' $db_alarm$$AAName$.HH := 0.0; // To complete'" + CRLF
if HHAA.strip() != "":
    if EnableCondition.strip() == "":
        bufferWriteLogic += "' $db_alarm$$AAName$.AuEHH := TRUE;'" + CRLF
    elif EnableCondition.strip().lower() == "logic":
        bufferWriteLogic += "' $db_alarm$$AAName$.AuEHH := TRUE; // To complete'" + CRLF

# HW conditions
if HWAA.strip().lower() == "logic":
    bufferWriteLogic += "' $db_alarm$$AAName$.H := 0.0; // To complete'" + CRLF
if HWAA.strip() != "":
    if EnableCondition.strip() == "":
        bufferWriteLogic += "' $db_alarm$$AAName$.AuEH := TRUE;'" + CRLF
    elif EnableCondition.strip().lower() == "logic":
        bufferWriteLogic += "' $db_alarm$$AAName$.AuEH := TRUE; // To complete'" + CRLF

# LW conditions
if LWAA.strip().lower() == "logic":
    bufferWriteLogic += "' $db_alarm$$AAName$.L := 0.0; // To complete'" + CRLF
if LWAA.strip() != "":
    if EnableCondition.strip() == "":
        bufferWriteLogic += "' $db_alarm$$AAName$.AuEL := TRUE;'" + CRLF
    elif EnableCondition.strip().lower() == "logic":
        bufferWriteLogic += "' $db_alarm$$AAName$.AuEL := TRUE; // To complete'" + CRLF

# LL conditions
if LLAA.strip().lower() == "logic":
    bufferWriteLogic += "' $db_alarm$$AAName$.LL := 0.0; // To complete'" + CRLF
if LLAA.strip() != "":
    if EnableCondition.strip() == "":
        bufferWriteLogic += "' $db_alarm$$AAName$.AuELL := TRUE;'" + CRLF
    elif EnableCondition.strip().lower() == "logic":
        bufferWriteLogic += "' $db_alarm$$AAName$.AuELL := TRUE; // To complete'" + CRLF

if len(bufferWriteLogic) > 0:
    bufferWriteLogic = CRLF + "' (* $Description$ *)'" + CRLF + bufferWriteLogic

return bufferWriteLogic

```

```

def writeNotConfiguredDAParameters(thePlugin, theDigitalAlarms, theDigitalAlarmsMultiple,
DAListPosition):

```

This function will write PLC code concerning the digital alarms. It will only write the code concerning the parameters of the digital alarms which are not configured in the specification file.

The arguments are:

@param thePlugin: object representing the java plug-in

@param theDigitalAlarms: vector containing the simple digital alarms which have to be treated

@param theDigitalAlarmsMultiple: vector containing the multiple digital alarms which have to be treated

@param DAListPosition: list containing the position of the master for each multiple alarm. The ith element of DAListPosition should corresponds to the ith element of theDigitalAlarmsMultiple

This function returns:

nothing

```
CRLF = System.getProperty("line.separator")
```

```
# Step 1.3: Interlock Conditions (both for analog and digital alarms) and IOError/IOSimu for the Alarms (both for analog and digital alarms)
```

```
thePlugin.writeSiemensLogic("""
```

```
(*Not configured alarm parameters: Interlock Conditions to fill in according to the logic spec *)
```

```
(*Digital Interlock Conditions to fill in according to the logic spec*)
```

```
// Simple Type DA conditions"" + CRLF)
```

```
for inst in theDigitalAlarms:
```

```
thePlugin.writeSiemensLogic(writeSingleNotConfiguredDAParameters(inst, thePlugin))
```

```
thePlugin.writeSiemensLogic(""" // Multiple Type DA conditions"" + CRLF)
```

```
i = 0
```

```
for inst in theDigitalAlarmsMultiple:
```

```
positionDAMaster = DAListPosition[i]
```

```
i = i + 1
```

```
if positionDAMaster == 0:
```

```
thePlugin.writeSiemensLogic(writeSingleNotConfiguredDAParameters(inst, thePlugin))
```

```
def writeNotConfiguredAAParameters(thePlugin, theAnalogAlarms, theAnalogAlarmsMultiple, AAListPosition):
```

This function will write PLC code concerning the analog alarms. It will only write the code concerning the parameters of the analog alarms which are not configured in the specification file.

The arguments are:

@param thePlugin: object representing the java plug-in

@param theAnalogAlarms: vector containing the simple analog alarms which have to be treated

@param theAnalogAlarmsMultiple: vector containing the multiple analog alarms which have to be treated

@param AAListPosition: list containing the position of the master for each multiple alarm. The ith element of AAListPosition should corresponds to the ith element of theAnalogAlarmsMultiple

This function returns:

nothing

""

```
CRLF = System.getProperty("line.separator")
```

```
thePlugin.writeSiemensLogic("""
```

```
(*Analog Interlock Conditions to fill in according to the logic spec*)"" + CRLF)
```

```
thePlugin.writeSiemensLogic(""" // Simple Type AA conditions"" + CRLF)
```

```
for inst in theAnalogAlarms:
```

```
    thePlugin.writeSiemensLogic(writeSingleNotConfiguredAAParameters(inst, thePlugin))
```

```
thePlugin.writeSiemensLogic(""" // Multiple Type AA conditions"" + CRLF)
```

```
i = 0
```

```
for inst in theAnalogAlarmsMultiple:
```

```
    positionAAMaster = AAListPosition[i]
```

```
    i = i + 1
```

```
    if positionAAMaster == 0:
```

```
        thePlugin.writeSiemensLogic(writeSingleNotConfiguredAAParameters(inst, thePlugin))
```

5.1.2. GlobalTemplates

5.1.2.1 S7Logic_FC_PCO_Logic_Template.py

```
# -*- coding: utf-8 -*-
# UNICOS
# (c) Copyright CERN 2013 all rights reserved
# Jython source file for Communication Objects.
from research.ch.cern.unicos.templateshandling import IUnicosTemplate # REQUIRED
from research.ch.cern.unicos.plugins.interfaces import APlugin # REQUIRED
from research.ch.cern.unicos.plugins.interfaces import IPlugin # REQUIRED
from time import strftime

import FI_Functions

class FC_PCO_Logic_Template(IUnicosTemplate):
    thePlugin = 0
    theUnicosProject = 0

    def initialize(self):
        self.thePlugin = APlugin.getPluginInterface()
        self.theUnicosProject = self.thePlugin.getUnicosProject()
        self.thePlugin.writeInUABLog("initialize in Jython for FC_PCO_Logic.")

    def check(self):
        self.thePlugin.writeInUABLog("check in Jython for FC_PCO_Logic.")

    def begin(self):
        self.thePlugin.writeInUABLog("begin in Jython for FC_PCO_Logic.")
        dateAndTime = strftime("%Y-%m-%d %H:%M:%S") # '2007-03-03 22:14:39'

    def process(self, *params):
        deviceVector = params[0]
        theXMLConfig = params[1]
        genGlobalFilesForAllSections = params[2].booleanValue() # Comes from "Global files scope"
        dropdown on Wizard. true = All sections. false = Selected sections.
        self.thePlugin.writeInUABLog("processInstances in Jython for Compilation_Logic.")

        DI_vector = self.theUnicosProject.getDeviceType("DigitalInput").getAllDeviceTypeInstances()
        FI_DI_vector = FI_Functions.get_FI_instance_list(DI_vector)
        fast_interlock_present = len(FI_DI_vector) != 0 # Fast interlock presence detected by any fast
        interlock digital input
        if fast_interlock_present:
```



```

        self.thePlugin.writeSiemensLogic("""FUNCTION FC_FI_LOGIC : VOID
TITLE = 'FC_FI_LOGIC'
//
// Call FI DL sections
//
AUTHOR: 'ICE/PLC'
NAME: 'Logic'
FAMILY: 'UNICOS'
BEGIN
// Calling the DL of the FI devices with no master""")

        for theCurrentPco in deviceVector:
            thePcoSections = theCurrentPco.getSections()
            thePcoDependentSections = theCurrentPco.getDependentSections()
            theDependentDevices = theCurrentPco.getDependentDevices()
            theCurrentPcoName = theCurrentPco.getDeviceName()
            self.get_device_logic(theCurrentPcoName, theDependentDevices, True)
            self.thePlugin.writeSiemensLogic("""END_FUNCTION\n\n""")
        self.thePlugin.writeSiemensLogic("""FUNCTION FC_PCO_LOGIC : VOID
TITLE = 'FC_PCO_LOGIC'
//
// Call all PCO sections
//
AUTHOR: 'ICE/PLC'
NAME: 'Logic'
FAMILY: 'UNICOS'
""")
        DA_FI_master_vector = []
        if fast_interlock_present:
            DA_vector = self.theUnicosProject.getDeviceType("DigitalAlarm").getAllDeviceTypeInstances()
            DA_FI_vector = FI_Functions.get_FI_instance_list(DA_vector)
            for instance_DA in DA_FI_vector:
                current_DA_FI_master_vector =
instance_DA.getAttributeData("LogicDeviceDefinitions:Master").replace(","," ").split()
                for mastername in current_DA_FI_master_vector:
                    DA_FI_master_vector.append(mastertype)
                self.thePlugin.writeSiemensLogic("""VAR_TEMP
NbOfDelayedInterrupts : INT;
NbOfQueuedInterrupts : INT;
END_VAR
""")
            self.thePlugin.writeSiemensLogic("""

```

BEGIN")

```
for theCurrentPco in deviceVector:
    thePcoSections = theCurrentPco.getSections()
    thePcoDependentSections = theCurrentPco.getDependentSections()
    theDependentDevices = theCurrentPco.getDependentDevices()
    theCurrentPcoName = theCurrentPco.getDeviceName()
    self.thePlugin.writeSiemensLogic("// Calling the PCO Sections for " + theCurrentPcoName)
    for theCurrentSection in thePcoSections:
        if theCurrentSection.getGenerateSection() or genGlobalFilesForAllSections:
            theCurrentSectionName = theCurrentSection.getFullSectionName()
            if theCurrentSectionName.endswith("IL") and theCurrentPcoName in
DA_FI_master_vector:
                self.thePlugin.writeSiemensLogic("//////////LOCK//////////")
NbOfDelayedInterrupts := DIS_AIRT();
                self.thePlugin.writeSiemensLogic(theCurrentSectionName + "();")
            if theCurrentSectionName.endswith("IL") and theCurrentPcoName in
DA_FI_master_vector:
                self.thePlugin.writeSiemensLogic("//////////UNLOCK//////////")
NbOfQueuedInterrupts := EN_AIRT();
                self.get_device_logic(theCurrentPcoName, theDependentDevices, False,
DA_FI_master_vector)

        if fast_interlock_present:
            self.thePlugin.writeSiemensLogic("// Calling the sections inside fast interlock logic
//////////LOCK//////////")
NbOfDelayedInterrupts := DIS_AIRT();
FC_FI_Logic();
//////////UNLOCK//////////")
NbOfQueuedInterrupts := EN_AIRT();

    self.thePlugin.writeSiemensLogic("END_FUNCTION")

def end(self):
    self.thePlugin.writeInUABLog("end in Jython for FC_PCO_Logic.")

def shutdown(self):
    self.thePlugin.writeInUABLog("shutdown in Jython for FC_PCO_Logic.")

def get_device_logic(self, theCurrentPcoName, theDependentDevices, Fldevice,
DA_FI_master_vector = None):
    self.thePlugin.writeSiemensLogic("// Calling the DL of the Dependent Devices for " +
theCurrentPcoName)
```

```

for theCurrentDependentDevice in theDependentDevices:
    currentInstance =
self.theUnicosProject.findInstanceByName(theCurrentDependentDevice.getDeviceName())
    FI_Dependent_Device_present =
currentInstance.getAttributeData("LogicDeviceDefinitions:Fast Interlock Type") != " if
currentInstance.doesSpecificationAttributeExist("LogicDeviceDefinitions:Fast Interlock Type") else
False
    if FI_Dependent_Device_present == FIdevice:
        if not FIdevice and theCurrentDependentDevice.getDeviceName() in DA_FI_master_vector
and currentInstance.getDeviceTypeName() != "ProcessControlObject":
            self.thePlugin.writeSiemensLogic("//////////LOCK//////////
NbOfDelayedInterrupts := DIS_AIRT();")
            theDependentSections = theCurrentDependentDevice.getDependentSections()
            for section in theDependentSections:
                if section.getGenerateSection() or genGlobalFilesForAllSections:
                    theCurrentSectionName = section.getFullSectionName()
                    self.thePlugin.writeSiemensLogic(theCurrentSectionName + "();")
                if not FIdevice and theCurrentDependentDevice.getDeviceName() in DA_FI_master_vector
and currentInstance.getDeviceTypeName() != "ProcessControlObject":
                    self.thePlugin.writeSiemensLogic("//////////UNLOCK//////////
NbOfQueuedInterrupts := EN_AIRT();")

```

6.SemanticCheckRules

6.1. GlobalTemplates

6.1.1. ApplicationGeneralCheckRules.py

```
# -*- coding: utf-8 -*-
# UNICOS
# (c) Copyright CERN 2013 all rights reserved
# Application general check rules
from research.ch.cern.unicos.templateshandling import IUnicosTemplate # REQUIRED
from research.ch.cern.unicos.utilities import SemanticVerifier
from research.ch.cern.unicos.utilities import XMLConfigMapper
from research.ch.cern.unicos.plugins.interfaces import APlugin

class ApplicationGeneral_Template(IUnicosTemplate):
    theSemanticVerifier = 0
    thePlugin = 0
    isDataValid = 1

    def initialize(self):
        self.theSemanticVerifier = SemanticVerifier.getUtilityInterface()
        self.thePlugin = APlugin.getPluginInterface()
        self.thePlugin.writeInUABLog("Application General check rules: initialize")

    def check(self):
        self.thePlugin.writeInUABLog("Application General check rules: check")

    def begin(self):
        self.thePlugin.writeInUABLog("Application General check rules: begin")

    def process(self, *params):
        theXMLConfig = params[0]
        self.thePlugin.writeInUABLog("Application General check rules: processApplicationData")
        theUnicosProject = self.thePlugin.getUnicosProject()

        # Specs version
        specsVersion = theUnicosProject.getProjectDocumentation().getSpecsVersion()
        if specsVersion is None:
            self.thePlugin.writeErrorInUABLog("The spec version is missing.")
            self.thePlugin.writeInUABLog("Please, add the spec version in the ProjectDocumentation worksheet.")
```

```

else:
    try:
        float(specsVersion.strip())
    except Exception:
        self.thePlugin.writeErrorInUABLog("The format of the spec version number ($specsVersion$)
is not correct. It must be a number, either integer or real (X.Y). Please correct it in the
ProjectDocumentation worksheet.")

# PLC instance number
thePlcInstanceNumber = int(0)

# PLC declarations
thePlcDeclarations = theXMLConfig.getPLCDeclarations()

# Checking all the permitted values
self.theSemanticVerifier.checkPermittedValues(theUnicosProject)

# check local ID connection number
thePLCName = thePlcDeclarations.get(0).getName()
PLCType = theXMLConfig.getPLCParameter(thePLCName + ":PLCType")

if PLCType.lower() == "s7-1500":
    LocalID = theXMLConfig.getPLCParameter(thePLCName +
":SiemensSpecificParameters:PLCS7Connection:LocalID")
    if len(LocalID) < 3:
        self.thePlugin.writeErrorInUABLog("Wrong Local ID value for S7-1500 PLC: " + LocalID + ". It
must be greater than or equal to 100.")

# Fast interlock rules
FIDeviceTypes = {'DigitalInput', 'DigitalOutput', 'DigitalAlarm', 'OnOff'}
FIType = None
FITypeError = False
for deviceType in FIDeviceTypes:
    deviceInstances = theUnicosProject.getDeviceType(deviceType).getAllDeviceTypeInstances()
    for deviceInstance in deviceInstances:
        currentFIType = deviceInstance.getAttributeData("LogicDeviceDefinitions:Fast Interlock
Type")
        if currentFIType != "":
            if FIType is None:
                FIType = currentFIType
            elif FIType != currentFIType:
                FITypeError = True
if FITypeError:

```

```
self.thePlugin.writeErrorInUABLog("Only one type of Fast Interlock can be selected. Choose either hardware interrupt or cyclic interrupt for all fast interlock objects.")
```

```
def end(self):
```

```
self.thePlugin.writeInUABLog("Application General check rules: end")
```

```
def shutdown(self):
```

```
self.thePlugin.writeInUABLog("Application General check rules: shutdown")
```

6.2. TypeTemplates

6.2.1. DigitalAlarm_SemanticCheckRules.py

```
# -*- coding: utf-8 -*-
# UNICOS
# (c) Copyright CERN 2013 all rights reserved
from research.ch.cern.unicos.templateshandling import IUnicosTemplate # REQUIRED
from research.ch.cern.unicos.utilities import SemanticVerifier
from research.ch.cern.unicos.utilities import DeviceTypeFactory
from research.ch.cern.unicos.plugins.interfaces import APlugin

import ucpc_library.shared_decorator
reload(ucpc_library.shared_decorator)

class DigitalAlarm_Template(IUnicosTemplate):
    theSemanticVerifier = 0
    thePlugin = 0
    isDataValid = 1
    theCurrentDeviceType = 0
    Decorator = None
    theUnicosProject = None

    def initialize(self):
        self.theSemanticVerifier = SemanticVerifier.getUtilityInterface()
        self.thePlugin = APlugin.getPluginInterface()
        self.thePlugin.writeInUABLog("check rules: initialize")
        self.Decorator = ucpc_library.shared_decorator.ExpressionDecorator()

    def check(self):
        self.thePlugin.writeInUABLog("check rules: check")

    def begin(self):
        self.thePlugin.writeInUABLog("check rules: begin")

    def process(self, *params):
        theCurrentDeviceTypeName = params[0]
        theCurrentDeviceTypeDefinition = params[1]
        self.theUnicosProject = self.thePlugin.getUnicosProject()
        theCurrentDeviceType = self.theUnicosProject.getDeviceType(theCurrentDeviceTypeName)
        instancesVector = theCurrentDeviceType.getAllDeviceTypeInstances()
        XMLConfig = self.thePlugin.getXMLConfig()
```

```

self.thePlugin.writeInUABLog("" + str(theCurrentDeviceTypeName) + " Specific Semantic Rules")
# Take the list with the differents types deffined in the DA deviceTypeDefinition
deviceInstance = DeviceTypeFactory.getInstance()
theDeviceTypeDefinition = deviceInstance.getDeviceType(theCurrentDeviceTypeName)
deviceTypeFamilies = theDeviceTypeDefinition.getAttributeFamily()
for deviceTypeFamily in deviceTypeFamilies:
    familyName = deviceTypeFamily.getAttributeFamilyName()
    if familyName == "FEDeviceAlarm":
        attributes = deviceTypeFamily.getAttribute()
        for attribute in attributes:
            attributeName = attribute.getAttributeName()
            if attributeName == None:
                self.thePlugin.writeErrorInUABLog("" + str(theCurrentDeviceTypeName) + " instance:
There is not an attribute in the attributeFamily " + familyName)
                return
            if attributeName == "Type":
                isSpecificationAttribute = attribute.getIsSpecificationAttribute()
                if isSpecificationAttribute == None:
                    self.thePlugin.writeErrorInUABLog("" + str(theCurrentDeviceTypeName) + " instance:
There is not isSpecificationAttribute in the attribute " + attributeName)
                    return
                permittedValueList = isSpecificationAttribute.getPermittedValue()

        break

# Specific semantic rules
for instance in instancesVector:
    Name = instance.getAttributeData("DeviceIdentification:Name")
    Input = instance.getAttributeData("FEDeviceEnvironmentInputs:Input")
    Delay = instance.getAttributeData("FEDeviceParameters:Alarm Delay (s)")
    Description = instance.getAttributeData("DeviceDocumentation:Description")
    Remarks = instance.getAttributeData("DeviceDocumentation:Remarks")
    # EnableCondition =
instance.getAttributeData("LogicDeviceDefinitions:CustomLogicParameters:Parameter6") # this
should be replaced with a new column in the spec
    FI_type = instance.getAttributeData("LogicDeviceDefinitions:Fast Interlock Type")
    nameSize = len(Name)
    # Checking the length of the names
    theManufacturer = self.thePlugin.getPlcManufacturer()
    if (theManufacturer.lower() == "siemens"):
        thePLCName = XMLConfig.getPLCDeclarations().get(0).getName()
        PLCType = XMLConfig.getPLCParameter(thePLCName + ":PLCType")
        if PLCType.lower() == "s7-1500":

```



```

        if nameSize > 125:
            self.thePlugin.writeErrorInUABLog("" + str(theCurrentDeviceTypeName) + " instance:
$Name$. Max number of letters exceeded in the device type Name: current length = " + str(nameSize)
+ ". Max length allowed = 125")
        elif nameSize > 24:
            self.thePlugin.writeErrorInUABLog("" + str(theCurrentDeviceTypeName) + " instance: " +
Name + ". Max number of letters exceeded in the device type Name: current length = " +
str(nameSize) + ". Max length allowed = 24")

        elif (theManufacturer.lower() == "schneider") and nameSize > 23:
            self.thePlugin.writeErrorInUABLog("" + str(theCurrentDeviceTypeName) + " instance: " +
Name + ". Max number of letters exceeded in the device type Name: current length = " +
str(nameSize) + ". Max length allowed = 23")

    # Delay Alarm verification
    if self.thePlugin.isString(Delay) and Delay.strip().lower() <> "logic" and Delay.strip().lower() <>
"":
        DelayParamExist = self.theSemanticVerifier.doesObjectExist(Delay, self.theUnicosProject)
        if DelayParamExist is not True:
            self.thePlugin.writeErrorInUABLog("" + str(theCurrentDeviceTypeName) + " instance: " +
Name + ". The Delay Alarm $Delay$, defined as an AnalogParameter or an AnalogStatus, doesn't
exist in the device " + str(theCurrentDeviceTypeName) + "")
        elif not self.thePlugin.isString(Delay):
            if (theManufacturer.lower() == "siemens") and (round(float(Delay)) != float(Delay)):
                self.thePlugin.writeWarningInUABLog("" + str(theCurrentDeviceTypeName) + " instance: "
+ Name + ". The Delay Alarm time $Delay$ sec, is not an integer. It will be rounded to " +
str(int(round(float(Delay)))) + " sec due to Siemens limitation of non integer delay times")

    # FEDevice inputs verification
    if self.thePlugin.isString(Input) and (Input.lower() != "logic") and (Input != ""):
        self.Decorator.plcExpressionSemanticCheck(self.theSemanticVerifier, self.theUnicosProject,
Input, theCurrentDeviceTypeName, Name, 'Input', True)

        # if self.thePlugin.isString(EnableCondition) and (EnableCondition.lower() != "logic") and
(EnableCondition!=""):
            # self.Decorator.plcExpressionSemanticCheck(self.theSemanticVerifier, self.theUnicosProject,
EnableCondition, theCurrentDeviceTypeName, Name)

    # Alarm Type verification. Now Multiple alarm definition is allowed
    typeAlarm = instance.getAttributeData("FEDeviceAlarm:Type").replace(", ", " ")
    alarmMaster = instance.getAttributeData("LogicDeviceDefinitions:Master").replace(", ", " ")
    MultipleTypesAlarm = instance.getAttributeData("FEDeviceAlarm:Multiple Types").replace(", ",
" ")

    # check if masters are not IO objects

```

```

for master in alarmMaster.split():
    masterInstance = self.theUnicosProject.findInstanceByName(master)
    masterDeviceTypeName = masterInstance.getDeviceTypeName()
    if masterDeviceTypeName in ["DigitalInput", "AnalogInput", "AnalogInputReal", "Encoder",
    "DigitalOutput", "AnalogOutput", "AnalogOutputReal", "DigitalParameter", "AnalogParameter",
    "WordParameter", "WordStatus", "AnalogStatus", "Local", "Controller", "AnalogAlarm",
    "DigitalAlarm"]:
        self.thePlugin.writeErrorInUABLog(str(theCurrentDeviceTypeName) + " instance: " + Name
        + ". Master cannot be of type: " + masterDeviceTypeName)

# Multiple Alarms
if (typeAlarm == "Multiple"):
    typeAlarmList = MultipleTypesAlarm.split()
    typeAlarmListLen = len(typeAlarmList)

    alarmMasterList = alarmMaster.split()
    alarmMasterListLen = len(alarmMasterList)

    # Checking if the numbers of Masters and Types are the same
    if ((typeAlarmListLen <> alarmMasterListLen) and (alarmMaster <> "")):
        self.thePlugin.writeErrorInUABLog("" + str(theCurrentDeviceTypeName) + " instance: " +
        Name + ". The numbers of Masters and Types are not the same.")

    # Checking if all the Alarm Types defined in the EXCEL file are defined in the
    deviceTypeDefinition
    for type in typeAlarmList:
        if type not in permittedValueList:
            self.thePlugin.writeErrorInUABLog("" + str(theCurrentDeviceTypeName) + " instance: " +
            Name + ". The Alarm type " + str(type) + " is not defined in the deviceType")
# Single Alarm
else:
    if typeAlarm == "" and alarmMaster <> "":
        self.thePlugin.writeErrorInUABLog("" + str(theCurrentDeviceTypeName) + " instance: " +
        Name + ". When the Alarm master is defined the alarm type is mandatory.")
    # Checking if a master is defined when the alarm is a FS, TS or SI
    if (typeAlarm == "FS" or typeAlarm == "TS" or typeAlarm == "SI") and alarmMaster == "":
        self.thePlugin.writeErrorInUABLog("" + str(theCurrentDeviceTypeName) + " instance: " +
        Name + ". When the Alarm is a FS, TS or SI the master definition is mandatory.")

    if (typeAlarm not in permittedValueList) and typeAlarm <> "":
        self.thePlugin.writeErrorInUABLog("" + str(theCurrentDeviceTypeName) + " instance: " +
        Name + ". The Alarm type $typeAlarm$ is not defined in the deviceType")
    if MultipleTypesAlarm <> "":

```

self.thePlugin.writeErrorInUABLog("'" + str(theCurrentDeviceTypeName) + " instance: " + Name + ". This Alarm has been defined as a simple alarm (\$typeAlarm\$). Then it's not allowed to add some information in the column: Multiple Types.")

```
# Fast Interlock
if FI_type != "":
    normal_input = False
    FI_input = False
    input_chain = instance.getAttributeData("FEDeviceEnvironmentInputs:Input").split()
    input_instance = [self.theUnicosProject.findInstanceByName(input_word) for input_word in
input_chain if input_word.upper() != "AND" and input_word.upper() != "OR" and input_word.upper()
!= "NOT"]
    for currentInputInstance in input_instance:
        if currentInputInstance.getAttributeData("LogicDeviceDefinitions:Fast Interlock Type") ==
":
            normal_input = True
            elif currentInputInstance.getAttributeData("LogicDeviceDefinitions:Fast Interlock Type")
!= "":
                FI_input = True
        if normal_input:
            self.thePlugin.writeErrorInUABLog("$theCurrentDeviceTypeName$ instance: $Name$. A
fast interlock DA object can't have not Fast Interlock DIs connected to the input")
            if not FI_input:
                self.thePlugin.writeErrorInUABLog("$theCurrentDeviceTypeName$ instance: $Name$. A
fast interlock DA object must have at least one Fast Interlock DI connected to the input")
            FIMaster = False
            for master in alarmMaster.split():
                masterInstance = self.theUnicosProject.findInstanceByName(master)
                if masterInstance.doesSpecificationAttributeExist("LogicDeviceDefinitions:Fast Interlock
Type"):
                    FIMaster = masterInstance.getAttributeData("LogicDeviceDefinitions:Fast Interlock
Type") != "
                if not FIMaster:
                    self.thePlugin.writeErrorInUABLog("$theCurrentDeviceTypeName$ instance: $Name$. A
fast interlock DA object must have at least one Fast Interlock master")

def end(self):
    self.thePlugin.writeInUABLog("check rules: end")

def shutdown(self):
    self.thePlugin.writeInUABLog("check rules: shutdown")
```

6.2.2. DigitalInput_SemanticCheckRules.py

```
# -*- coding: utf-8 -*-
# UNICOS
# (c) Copyright CERN 2013 all rights reserved
from research.ch.cern.unicos.templateshandling import IUnicosTemplate # REQUIRED
from research.ch.cern.unicos.utilities import SemanticVerifier
from research.ch.cern.unicos.plugins.interfaces import APlugin

class DigitalInput_Template(IUnicosTemplate):
    theSemanticVerifier = 0
    thePlugin = 0
    isValid = 1

    def initialize(self):
        self.theSemanticVerifier = SemanticVerifier.getUtilityInterface()
        self.thePlugin = APlugin.getPluginInterface()
        self.thePlugin.writeInUABLog("check rules: initialize")

    def check(self):
        self.thePlugin.writeInUABLog("check rules: check")

    def begin(self):
        self.thePlugin.writeInUABLog("check rules: begin")

    def process(self, *params):
        theCurrentDeviceTypeName = params[0]
        theCurrentDeviceTypeDefinition = params[1]
        theUnicosProject = self.thePlugin.getUnicosProject()
        theCurrentDeviceType = theUnicosProject.getDeviceType(theCurrentDeviceTypeName)
        instancesVector = theCurrentDeviceType.getAllDeviceTypeInstances()
        XMLConfig = self.thePlugin.getXMLConfig()
        self.thePlugin.writeInUABLog(" " + str(theCurrentDeviceTypeName) + " Specific Semantic Rules")

        for instance in instancesVector:
            Name = instance.getAttributeData("DeviceIdentification:Name")
            Description = instance.getAttributeData("DeviceDocumentation:Description")
            Remarks = instance.getAttributeData("DeviceDocumentation:Remarks")
            FEType = instance.getAttributeData("FEDeviceIOConfig:FE Encoding Type").strip()
            InterfaceParam1 =
            instance.getAttributeData("FEDeviceIOConfig:FEChannel:InterfaceParam1")
```

```

    InterfaceParam2 =
instance.getAttributeData("FEDeviceIOConfig:FEChannel:InterfaceParam2")
    InterfaceParam3 =
instance.getAttributeData("FEDeviceIOConfig:FEChannel:InterfaceParam3")
    InterfaceParam4 =
instance.getAttributeData("FEDeviceIOConfig:FEChannel:InterfaceParam4")
    InterfaceParam5 =
instance.getAttributeData("FEDeviceIOConfig:FEChannel:InterfaceParam5")
    InterfaceParam6 =
instance.getAttributeData("FEDeviceIOConfig:FEChannel:InterfaceParam6")
    S_InterfaceParam1 = InterfaceParam1.lower().strip()
    S_InterfaceParam2 = InterfaceParam2.lower().strip()
    S_InterfaceParam3 = InterfaceParam3.lower().strip()
    S_InterfaceParam4 = InterfaceParam4.lower().strip()
    S_InterfaceParam5 = InterfaceParam5.lower().strip()
    S_InterfaceParam6 = InterfaceParam6.lower().strip()
    FI_type = instance.getAttributeData("LogicDeviceDefinitions:Fast Interlock Type")
    nameSize = len(Name)
    theManufacturer = self.thePlugin.getPlcManufacturer()
    # 1. checking the length of the names
    if (theManufacturer.lower() == "siemens"):
        thePLCName = XMLConfig.getPLCDeclarations().get(0).getName()
        PLCType = XMLConfig.getPLCParameter(thePLCName + ":PLCType")
        if PLCType.lower() == "s7-1500":
            if nameSize > 125:
                self.thePlugin.writeErrorInUABLog(" " + str(theCurrentDeviceTypeName) + " instance:
$Name$. Max number of letters exceeded in the device type Name: current length = " + str(nameSize)
+ ". Max length allowed = 125")
            elif nameSize > 24:
                self.thePlugin.writeErrorInUABLog(" " + str(theCurrentDeviceTypeName) + " instance:
$Name$. Max number of letters exceeded in the device type Name: current length = " + str(nameSize)
+ ". Max length allowed = 24")

        elif (theManufacturer.lower() == "schneider") and nameSize > 23:
            self.thePlugin.writeErrorInUABLog(" " + str(theCurrentDeviceTypeName) + " instance:
$Name$. Max number of letters exceeded in the device type Name: current length = " + str(nameSize)
+ ". Max length allowed = 23")

    # 2. Checking the FE Encoding Type
    if (theManufacturer.lower() == "siemens"):
        if (FEType <> "") and (FEType <> "0") and (FEType <> "1") and (FEType <> "101") and (FEType
<> "102") and (FEType <> "103"):
            self.thePlugin.writeErrorInUABLog(" " + str(theCurrentDeviceTypeName) + " instance:
$Name$. The FE Encoding Type defined " + FEType + " is not allowed.")
            elif (FEType == "1"):

```

```

        if S_InterfaceParam1 == "":
            self.thePlugin.writeErrorInUABLog("" + str(theCurrentDeviceTypeName) + " instance:
$Name$. The InterfaceParam1 must be defined if the FE Encoding Type is $FEType$")
        else:
            pointIndex = S_InterfaceParam1.find('.')
            if S_InterfaceParam1[0] <> "i" or pointIndex == -1:
                self.thePlugin.writeErrorInUABLog("" + str(theCurrentDeviceTypeName) + " instance:
$Name$. The InterfaceParam1 ($InterfaceParam1$) is not well defined. The correct format is lxx.y,
where xx is the Byte and y is the Bit")
            else:
                Byte = S_InterfaceParam1[1:pointIndex]
                Bit = S_InterfaceParam1[pointIndex + 1:]
                if not Byte.isnumeric() or not Bit.isnumeric() or len(Bit) > 1 or int(Bit) < 0 or int(Bit) >
7:
                    self.thePlugin.writeErrorInUABLog("" + str(theCurrentDeviceTypeName) + "
instance: $Name$. The InterfaceParam1 ($InterfaceParam1$) is not well defined. The correct format
is lxx.y, where xx is the Byte and y is the Bit")

    elif (FEType == "101"):
        if S_InterfaceParam1 == "" or S_InterfaceParam2 == "" or S_InterfaceParam3 == "":
            self.thePlugin.writeErrorInUABLog("" + str(theCurrentDeviceTypeName) + " instance:
$Name$. InterfaceParam1, InterfaceParam2, and InterfaceParam3 must *all* be defined if the FE
Encoding Type is $FEType$")
        else:
            if len(S_InterfaceParam1) > 2 and S_InterfaceParam1[0:2] == "db":
                S_InterfaceParam1 = S_InterfaceParam1[2:]
            if len(S_InterfaceParam2) > 3 and S_InterfaceParam2[0:3] == "dbx":
                S_InterfaceParam2 = S_InterfaceParam2[3:]

            if not S_InterfaceParam1.isnumeric():
                self.thePlugin.writeErrorInUABLog("" + str(theCurrentDeviceTypeName) + " instance:
$Name$. The InterfaceParam1 ($InterfaceParam1$) is not well defined. The correct format is DBxx,
where xx is a number")
            if not S_InterfaceParam2.isnumeric():
                self.thePlugin.writeErrorInUABLog("" + str(theCurrentDeviceTypeName) + " instance:
$Name$. The InterfaceParam2 ($InterfaceParam2$) is not well defined. The correct format is DBXxx,
where xx is a number")
            if not S_InterfaceParam3.isnumeric():
                self.thePlugin.writeErrorInUABLog("" + str(theCurrentDeviceTypeName) + " instance:
$Name$. The InterfaceParam3 ($InterfaceParam3$) is not well defined. This value must be a
number")

    elif (FEType == "102") or (FEType == "103"):
        if S_InterfaceParam1 == "" or S_InterfaceParam2 == "" or S_InterfaceParam3 == "" or
S_InterfaceParam4 == "" or S_InterfaceParam5 == "" or S_InterfaceParam6 == "":

```

```

        self.thePlugin.writeErrorInUABLog("" + str(theCurrentDeviceTypeName) + " instance:
$Name$. InterfaceParam1 through InterfaceParam6 inclusive must *all* be defined if the FE
Encoding Type is $FEType$")
    else:
        if len(S_InterfaceParam1) > 2 and S_InterfaceParam1[0:2] == "db":
            S_InterfaceParam1 = S_InterfaceParam1[2:]
        if len(S_InterfaceParam2) > 3 and S_InterfaceParam2[0:3] == "dbx":
            S_InterfaceParam2 = S_InterfaceParam2[3:]
        if len(S_InterfaceParam4) > 2 and S_InterfaceParam4[0:2] == "db":
            S_InterfaceParam4 = S_InterfaceParam4[2:]
        if len(S_InterfaceParam5) > 3 and S_InterfaceParam5[0:3] == "dbx":
            S_InterfaceParam5 = S_InterfaceParam5[3:]

        if not S_InterfaceParam1.isnumeric():
            self.thePlugin.writeErrorInUABLog("" + str(theCurrentDeviceTypeName) + " instance:
$Name$. The InterfaceParam1 ($InterfaceParam1$) is not well defined. The correct format is DBxx,
where xx is a number")
        if not S_InterfaceParam2.isnumeric():
            self.thePlugin.writeErrorInUABLog("" + str(theCurrentDeviceTypeName) + " instance:
$Name$. The InterfaceParam2 ($InterfaceParam2$) is not well defined. The correct format is DBXxx,
where xx is a number")
        if not S_InterfaceParam3.isnumeric():
            self.thePlugin.writeErrorInUABLog("" + str(theCurrentDeviceTypeName) + " instance:
$Name$. The InterfaceParam3 ($InterfaceParam3$) is not well defined. This value must be a
number")
        if not S_InterfaceParam4.isnumeric():
            self.thePlugin.writeErrorInUABLog("" + str(theCurrentDeviceTypeName) + " instance:
$Name$. The InterfaceParam4 ($InterfaceParam4$) is not well defined. The correct format is DBxx,
where xx is a number")
        if not S_InterfaceParam5.isnumeric():
            self.thePlugin.writeErrorInUABLog("" + str(theCurrentDeviceTypeName) + " instance:
$Name$. The InterfaceParam5 ($InterfaceParam5$) is not well defined. The correct format is DBXxx,
where xx is a number")
        if not S_InterfaceParam6.isnumeric():
            self.thePlugin.writeErrorInUABLog("" + str(theCurrentDeviceTypeName) + " instance:
$Name$. The InterfaceParam6 ($InterfaceParam6$) is not well defined. This value must be a
number")

```

3. Fast Interlock

```

if FI_type != "":
    FIDigitalAlarm = False
    normalDigitalAlarm = False
    DigitalAlarmInstances =
theUnicosProject.getDeviceType("DigitalAlarm").getAllDeviceTypeInstances()
    for alarm_instance in DigitalAlarmInstances:

```

```

        input_chain =
alarm_instance.getAttributeData("FEDeviceEnvironmentInputs:Input").split()
        input_instance = [input_word for input_word in input_chain if input_word.upper() !=
"AND" and input_word.upper() != "OR" and input_word.upper() != "NOT"]
        for currentInputInstance in input_instance:
            if currentInputInstance == Name and
alarm_instance.getAttributeData("LogicDeviceDefinitions:Fast Interlock Type") != "":
                FIDigitalAlarm = True
            elif currentInputInstance == Name and
alarm_instance.getAttributeData("LogicDeviceDefinitions:Fast Interlock Type") == "":
                normalDigitalAlarm = True
            if not FIDigitalAlarm:
                self.thePlugin.writeErrorInUABLog("$theCurrentDeviceTypeName$ instance: $Name$. A
fast interlock digital input must be connected to at least one fast interlock digital alarm")
            if normalDigitalAlarm:
                self.thePlugin.writeErrorInUABLog("$theCurrentDeviceTypeName$ instance: $Name$. A
fast interlock digital input can't be connected to a not fast interlock digital alarm")

def end(self):
    self.thePlugin.writeInUABLog("check rules: end")

def shutdown(self):
    self.thePlugin.writeInUABLog("check rules: shutdown")

```


6.2.3. DigitalOutput_SemanticCheckRules.py

```
# -*- coding: utf-8 -*-
# UNICOS
# (c) Copyright CERN 2013 all rights reserved
from research.ch.cern.unicos.templateshandling import IUnicosTemplate # REQUIRED
from research.ch.cern.unicos.utilities import SemanticVerifier
from research.ch.cern.unicos.plugins.interfaces import APlugin

class DigitalOutput_Template(IUnicosTemplate):
    theSemanticVerifier = 0
    thePlugin = 0
    isDataValid = 1
    theCurrentDeviceType = 0

    def initialize(self):
        self.theSemanticVerifier = SemanticVerifier.getUtilityInterface()
        self.thePlugin = APlugin.getPluginInterface()
        self.thePlugin.writeInUABLog("check rules: initialize")

    def check(self):
        self.thePlugin.writeInUABLog("check rules: check")

    def begin(self):
        self.thePlugin.writeInUABLog("check rules: begin")

    def process(self, *params):
        theCurrentDeviceTypeName = params[0]
        theCurrentDeviceTypeDefinition = params[1]
        theUnicosProject = self.thePlugin.getUnicosProject()
        theCurrentDeviceType = theUnicosProject.getDeviceType(theCurrentDeviceTypeName)
        instancesVector = theCurrentDeviceType.getAllDeviceTypeInstances()
        XMLConfig = self.thePlugin.getXMLConfig()
        self.thePlugin.writeInUABLog("" + str(theCurrentDeviceTypeName) + " Specific Semantic Rules")

        for instance in instancesVector:
            Name = instance.getAttributeData("DeviceIdentification:Name")
            Description = instance.getAttributeData("DeviceDocumentation:Description")
            Remarks = instance.getAttributeData("DeviceDocumentation:Remarks")
            FEType = instance.getAttributeData("FEDeviceIOConfig:FE Encoding Type").strip()
            InterfaceParam1 =
instance.getAttributeData("FEDeviceIOConfig:FEChannel:InterfaceParam1")
```

```

    InterfaceParam2 =
instance.getAttributeData("FEDeviceIOConfig:FEChannel:InterfaceParam2")
    InterfaceParam3 =
instance.getAttributeData("FEDeviceIOConfig:FEChannel:InterfaceParam3")
    InterfaceParam4 =
instance.getAttributeData("FEDeviceIOConfig:FEChannel:InterfaceParam4")
    InterfaceParam5 =
instance.getAttributeData("FEDeviceIOConfig:FEChannel:InterfaceParam5")
    InterfaceParam6 =
instance.getAttributeData("FEDeviceIOConfig:FEChannel:InterfaceParam6")
    S_InterfaceParam1 = InterfaceParam1.lower().strip()
    S_InterfaceParam2 = InterfaceParam2.lower().strip()
    S_InterfaceParam3 = InterfaceParam3.lower().strip()
    S_InterfaceParam4 = InterfaceParam4.lower().strip()
    S_InterfaceParam5 = InterfaceParam5.lower().strip()
    S_InterfaceParam6 = InterfaceParam6.lower().strip()
    FI_type = instance.getAttributeData("LogicDeviceDefinitions:Fast Interlock Type")
    nameSize = len(Name)
    theManufacturer = self.thePlugin.getPlcManufacturer()
    # 1. checking the length of the names
    if (theManufacturer.lower() == "siemens"):
        thePLCName = XMLConfig.getPLCDeclarations().get(0).getName()
        PLCType = XMLConfig.getPLCParameter(thePLCName + ":PLCType")
        if PLCType.lower() == "s7-1500":
            if nameSize > 125:
                self.thePlugin.writeErrorInUABLog(" " + str(theCurrentDeviceTypeName) + " instance:
$Name$. Max number of letters exceeded in the device type Name: current length = " + str(nameSize)
+ ". Max length allowed = 125")
            elif nameSize > 24:
                self.thePlugin.writeErrorInUABLog(" " + str(theCurrentDeviceTypeName) + " instance:
$Name$. Max number of letters exceeded in the device type Name: current length = " + str(nameSize)
+ ". Max length allowed = 24")

        elif (theManufacturer.lower() == "schneider") and nameSize > 23:
            self.thePlugin.writeErrorInUABLog(" " + str(theCurrentDeviceTypeName) + " instance:
$Name$. Max number of letters exceeded in the device type Name: current length = " + str(nameSize)
+ ". Max length allowed = 23")

    # 2. Checking the FE Encoding Type
    if (theManufacturer.lower() == "siemens"):
        if (FEType <> "") and (FEType <> "0") and (FEType <> "1") and (FEType <> "101") and (FEType
<> "102") and (FEType <> "103"):
            self.thePlugin.writeErrorInUABLog(" " + str(theCurrentDeviceTypeName) + " instance:
$Name$. The FE Encoding Type defined " + FEType + " is not allowed.")
            elif (FEType == "1"):

```

```

    if S_InterfaceParam1 == "":
        self.thePlugin.writeErrorInUABLog("" + str(theCurrentDeviceTypeName) + " instance:
$Name$. The InterfaceParam1 must be defined if the FE Encoding Type is $FEType$")
    else:
        pointIndex = S_InterfaceParam1.find('.')
        if S_InterfaceParam1[0] <> "q" or pointIndex == -1:
            self.thePlugin.writeErrorInUABLog("" + str(theCurrentDeviceTypeName) + " instance:
$Name$. The InterfaceParam1 ($InterfaceParam1$) is not well defined. The correct format is Qxx.y,
where xx is the Byte and y is the Bit")
        else:
            Byte = S_InterfaceParam1[1:pointIndex]
            Bit = S_InterfaceParam1[pointIndex + 1:]
            if not Byte.isnumeric() or not Bit.isnumeric() or len(Bit) > 1 or int(Bit) < 0 or int(Bit) >
7:
                self.thePlugin.writeErrorInUABLog("" + str(theCurrentDeviceTypeName) + "
instance: $Name$. The InterfaceParam1 ($InterfaceParam1$) is not well defined. The correct format
is Qxx.y, where xx is the Byte and y is the Bit")

elif (FEType == "101"):
    if S_InterfaceParam1 == "" or S_InterfaceParam2 == "" or S_InterfaceParam3 == "":
        self.thePlugin.writeErrorInUABLog("" + str(theCurrentDeviceTypeName) + " instance:
$Name$. InterfaceParam1, InterfaceParam2, and InterfaceParam3 must *all* be defined if the FE
Encoding Type is $FEType$")
    else:
        if len(S_InterfaceParam1) > 2 and S_InterfaceParam1[0:2] == "db":
            S_InterfaceParam1 = S_InterfaceParam1[2:]
        if len(S_InterfaceParam2) > 3 and S_InterfaceParam2[0:3] == "dbx":
            S_InterfaceParam2 = S_InterfaceParam2[3:]

        if not S_InterfaceParam1.isnumeric():
            self.thePlugin.writeErrorInUABLog("" + str(theCurrentDeviceTypeName) + " instance:
$Name$. The InterfaceParam1 ($InterfaceParam1$) is not well defined. The correct format is DBxx,
where xx is a number")
        if not S_InterfaceParam2.isnumeric():
            self.thePlugin.writeErrorInUABLog("" + str(theCurrentDeviceTypeName) + " instance:
$Name$. The InterfaceParam2 ($InterfaceParam2$) is not well defined. The correct format is DBXxx,
where xx is a number")
        if not S_InterfaceParam3.isnumeric():
            self.thePlugin.writeErrorInUABLog("" + str(theCurrentDeviceTypeName) + " instance:
$Name$. The InterfaceParam3 ($InterfaceParam3$) is not well defined. This value must be a
number")

elif (FEType == "102") or (FEType == "103"):
    if S_InterfaceParam1 == "" or S_InterfaceParam2 == "" or S_InterfaceParam3 == "" or
S_InterfaceParam4 == "" or S_InterfaceParam5 == "" or S_InterfaceParam6 == "":

```

```

        self.thePlugin.writeErrorInUABLog("" + str(theCurrentDeviceTypeName) + " instance:
$Name$. InterfaceParam1 through InterfaceParam6 inclusive must *all* be defined if the FE
Encoding Type is $FEType$")
    else:
        if len(S_InterfaceParam1) > 2 and S_InterfaceParam1[0:2] == "db":
            S_InterfaceParam1 = S_InterfaceParam1[2:]
        if len(S_InterfaceParam2) > 3 and S_InterfaceParam2[0:3] == "dbx":
            S_InterfaceParam2 = S_InterfaceParam2[3:]
        if len(S_InterfaceParam4) > 2 and S_InterfaceParam4[0:2] == "db":
            S_InterfaceParam4 = S_InterfaceParam4[2:]
        if len(S_InterfaceParam5) > 3 and S_InterfaceParam5[0:3] == "dbx":
            S_InterfaceParam5 = S_InterfaceParam5[3:]

        if not S_InterfaceParam1.isnumeric():
            self.thePlugin.writeErrorInUABLog("" + str(theCurrentDeviceTypeName) + " instance:
$Name$. The InterfaceParam1 ($InterfaceParam1$) is not well defined. The correct format is DBxx,
where xx is a number")
        if not S_InterfaceParam2.isnumeric():
            self.thePlugin.writeErrorInUABLog("" + str(theCurrentDeviceTypeName) + " instance:
$Name$. The InterfaceParam2 ($InterfaceParam2$) is not well defined. The correct format is DBXxx,
where xx is a number")
        if not S_InterfaceParam3.isnumeric():
            self.thePlugin.writeErrorInUABLog("" + str(theCurrentDeviceTypeName) + " instance:
$Name$. The InterfaceParam3 ($InterfaceParam3$) is not well defined. This value must be a
number")
        if not S_InterfaceParam4.isnumeric():
            self.thePlugin.writeErrorInUABLog("" + str(theCurrentDeviceTypeName) + " instance:
$Name$. The InterfaceParam4 ($InterfaceParam4$) is not well defined. The correct format is DBxx,
where xx is a number")
        if not S_InterfaceParam5.isnumeric():
            self.thePlugin.writeErrorInUABLog("" + str(theCurrentDeviceTypeName) + " instance:
$Name$. The InterfaceParam5 ($InterfaceParam5$) is not well defined. The correct format is DBXxx,
where xx is a number")
        if not S_InterfaceParam6.isnumeric():
            self.thePlugin.writeErrorInUABLog("" + str(theCurrentDeviceTypeName) + " instance:
$Name$. The InterfaceParam6 ($InterfaceParam6$) is not well defined. This value must be a
number")

```

3. Fast Interlock

```

if FI_type != "":
    FIOnOff = False
    normalOnOff = False
    OnOffInstances = theUnicosProject.getDeviceType("OnOff").getAllDeviceTypeInstances()
    for OnOff_instance in OnOffInstances:

```

```

        if OnOff_instance.getAttributeData("FEDeviceOutputs:Process Output") == Name and
OnOff_instance.getAttributeData("LogicDeviceDefinitions:Fast Interlock Type") != "":
            FOnOff = True
        elif OnOff_instance.getAttributeData("FEDeviceOutputs:Process Output") == Name and
OnOff_instance.getAttributeData("LogicDeviceDefinitions:Fast Interlock Type") == "":
            normalOnOff = True
        if not FOnOff:
            self.thePlugin.writeErrorInUABLog("$theCurrentDeviceTypeName$ instance: $Name$. A
fast interlock OnOff must be connected to a fast interlock digital output")
        if normalOnOff:
            self.thePlugin.writeErrorInUABLog("$theCurrentDeviceTypeName$ instance: $Name$. A
not fast interlock OnOff can't be connected to a fast interlock digital output")

def end(self):
    self.thePlugin.writeInUABLog("check rules: end")

def shutdown(self):
    self.thePlugin.writeInUABLog("check rules: shutdown")

```

6.2.4. OnOff_SemanticCheckRules.py

```
# -*- coding: utf-8 -*-
# UNICOS
# (c) Copyright CERN 2013 all rights reserved
from research.ch.cern.unicos.templateshandling import IUnicosTemplate # REQUIRED
from research.ch.cern.unicos.utilities import SemanticVerifier
from research.ch.cern.unicos.plugins.interfaces import APlugin

import SemanticCheckRules_CommonMethods
reload(SemanticCheckRules_CommonMethods)

class OnOff_Template(IUnicosTemplate):
    theSemanticVerifier = 0
    thePlugin = 0
    isDataValid = 1
    theCurrentDeviceType = 0

    def initialize(self):
        self.theSemanticVerifier = SemanticVerifier.getUtilityInterface()
        self.thePlugin = APlugin.getPluginInterface()
        self.thePlugin.writeInUABLog("check rules: initialize")

    def check(self):
        self.thePlugin.writeInUABLog("check rules: check")

    def begin(self):
        self.thePlugin.writeInUABLog("check rules: begin")

    def process(self, *params):
        theCurrentDeviceTypeName = params[0]
        theCurrentDeviceTypeDefinition = params[1]
        theUnicosProject = self.thePlugin.getUnicosProject()
        theCurrentDeviceType = theUnicosProject.getDeviceType(theCurrentDeviceTypeName)
        instancesVector = theCurrentDeviceType.getAllDeviceTypeInstances()
        XMLConfig = self.thePlugin.getXMLConfig()
        self.thePlugin.writeInUABLog(" " + str(theCurrentDeviceTypeName) + " Specific Semantic Rules")

        # 1. checking the length of the names
        for instance in instancesVector:
            Name = instance.getAttributeData("DeviceIdentification:Name")
            Description = instance.getAttributeData("DeviceDocumentation:Description")
```

```

Remarks = instance.getAttributeData("DeviceDocumentation:Remarks")
nameSize = len(Name)
theManufacturer = self.thePlugin.getPlcManufacturer()
FI_type = instance.getAttributeData("LogicDeviceDefinitions:Fast Interlock Type")
if (theManufacturer.lower() == "siemens"):
    thePLCName = XMLConfig.getPLCDeclarations().get(0).getName()
    PLCType = XMLConfig.getPLCParameter(thePLCName + ":PLCType")
    if PLCType.lower() == "s7-1500":
        if nameSize > 120:
            self.thePlugin.writeErrorInUABLog(" " + str(theCurrentDeviceTypeName) + " instance:
$Name$. Max number of letters exceeded in the device type Name: current length = " + str(nameSize)
+ ". Max length allowed = 120")
        elif nameSize > 19:
            self.thePlugin.writeErrorInUABLog(" " + str(theCurrentDeviceTypeName) + " instance:
$Name$. Max number of letters exceeded in the device type Name: current length = " + str(nameSize)
+ ". Max length allowed = 19")

    elif (theManufacturer.lower() == "schneider") and nameSize > 23:
        self.thePlugin.writeErrorInUABLog(" " + str(theCurrentDeviceTypeName) + " instance:
$Name$. Max number of letters exceeded in the device type Name: current length = " + str(nameSize)
+ ". Max length allowed = 23")

# FEDeviceParameters verification
SemanticCheckRules_CommonMethods.checkIfSpecifiedObjectExists(self.thePlugin, instance,
"FEDeviceParameters:Warning Time Delay (s)", self.theSemanticVerifier, theUnicosProject,
theCurrentDeviceTypeName, Name)

# FEDevice inputs verification
FeedbackOn = instance.getAttributeData("FEDeviceEnvironmentInputs:Feedback On").strip()
FeedbackOff = instance.getAttributeData("FEDeviceEnvironmentInputs:Feedback Off").strip()
LocalDrive = instance.getAttributeData("FEDeviceEnvironmentInputs:Local Drive").strip()
LocalON = instance.getAttributeData("FEDeviceEnvironmentInputs:Local On").strip()
LocalOFF = instance.getAttributeData("FEDeviceEnvironmentInputs:Local Off").strip()
FailSafeOpen = instance.getAttributeData("FEDeviceParameters:ParReg:Fail-Safe").strip()
ProcessOutput = instance.getAttributeData("FEDeviceOutputs:Process Output").strip()
ProcessOutputOff = instance.getAttributeData("FEDeviceOutputs:Process Output Off").strip()
PulseDuration = instance.getAttributeData("FEDeviceParameters:Pulse Duration (s)").strip()
LabelOn = instance.getAttributeData("SCADADeviceGraphics:Label On").strip()
LabelOff = instance.getAttributeData("SCADADeviceGraphics:Label Off").strip()

if PulseDuration <> "":
    Pulse = True
else:
    Pulse = False

```

```

if LocalDrive <> "":
    subString = LocalDrive[0:4].lower()
    if subString == "not ":
        LocalDrive = LocalDrive[4:]
    else:
        LocalDrive = LocalDrive

if LocalON <> "":
    subString = LocalON[0:4].lower()
    if subString == "not ":
        LocalON = LocalON[4:]

if LocalOFF <> "":
    subString = LocalOFF[0:4].lower()
    if subString == "not ":
        LocalOFF = LocalOFF[4:]

if FeedbackOn <> "":
    FeedbackOnExist = self.theSemanticVerifier.doesObjectExist(FeedbackOn, theUnicosProject)
    if FeedbackOnExist is not True:
        self.thePlugin.writeErrorInUABLog("" + str(theCurrentDeviceTypeName) + " instance:
$Name$. The FeedbackOn $FeedbackOn$ doesn't exist in the device " +
str(theCurrentDeviceTypeName) + ".")
    if FeedbackOff <> "":
        FeedbackOffExist = self.theSemanticVerifier.doesObjectExist(FeedbackOff, theUnicosProject)
        if FeedbackOffExist is not True:
            self.thePlugin.writeErrorInUABLog("" + str(theCurrentDeviceTypeName) + " instance:
$Name$. The FeedbackOff $FeedbackOff$ doesn't exist in the device " +
str(theCurrentDeviceTypeName) + ".")
    if LocalDrive <> "":
        LocalDriveExist = self.theSemanticVerifier.doesObjectExist(LocalDrive, theUnicosProject)
        if LocalDriveExist is not True:
            self.thePlugin.writeErrorInUABLog("" + str(theCurrentDeviceTypeName) + " instance:
$Name$. The LocalDrive $LocalDrive$ doesn't exist in the device " + str(theCurrentDeviceTypeName)
+ ".")
    if LocalON <> "":
        LocalONExist = self.theSemanticVerifier.doesObjectExist(LocalON, theUnicosProject)
        if LocalONExist is not True:
            self.thePlugin.writeErrorInUABLog("" + str(theCurrentDeviceTypeName) + " instance:
$Name$. The LocalON $LocalON$ doesn't exist in the device " + str(theCurrentDeviceTypeName) +
".")
    if LocalOFF <> "":
        LocalOFFExist = self.theSemanticVerifier.doesObjectExist(LocalOFF, theUnicosProject)

```



```

    if LocalOFFExist is not True:
        self.thePlugin.writeErrorInUABLog("" + str(theCurrentDeviceTypeName) + " instance:
$Name$. The LocalOFF $LocalOFF$ doesn't exist in the device " + str(theCurrentDeviceTypeName) +
".")

    # Fail Safe Warning
    if FailSafeOpen.lower() == "2 do on" or (FailSafeOpen.lower() == "on/open" and Pulse and
ProcessOutputOff == "") or (FailSafeOpen.lower() == "2 do off" and not Pulse and ProcessOutputOff
<> ""):
        self.thePlugin.writeWarningInUABLog("ONOFF instance: $Name$. The Fail Safe Position
'$FailSafeOpen$' is ambiguous because Start Interlock cannot be applied ")

    # Fail Safe Error
    if (FailSafeOpen.lower() == "2 do off" or FailSafeOpen.lower() == "2 do on") and
ProcessOutputOff == "":
        self.thePlugin.writeErrorInUABLog("ONOFF instance: $Name$. The Fail Safe Position
'$FailSafeOpen$' cannot be selected when there is no Process Output Off")

    # FEDevice outputs verification
    if ProcessOutput <> "":
        ProcessOutputExist = self.theSemanticVerifier.doesObjectExist(ProcessOutput,
theUnicosProject)
        if ProcessOutputExist is not True:
            self.thePlugin.writeErrorInUABLog("" + str(theCurrentDeviceTypeName) + " instance:
$Name$. The ProcessOutput $ProcessOutput$ doesn't exist in the device " +
str(theCurrentDeviceTypeName) + ".")
        if ProcessOutputOff <> "":
            ProcessOutputOffExist = self.theSemanticVerifier.doesObjectExist(ProcessOutputOff,
theUnicosProject)
            if ProcessOutputOffExist is not True:
                self.thePlugin.writeErrorInUABLog("" + str(theCurrentDeviceTypeName) + " instance:
$Name$. The ProcessOutputOff $ProcessOutputOff$ doesn't exist in the device " +
str(theCurrentDeviceTypeName) + ".")

    # Labels
    if len(LabelOn) > 13:
        self.thePlugin.writeWarningInUABLog("" + str(theCurrentDeviceTypeName) + " instance:
$Name$. The LabelOn field's length ($LabelOn$) is > 13 characters. Text may wrap around on the
faceplate. ")
    if len(LabelOff) > 13:
        self.thePlugin.writeWarningInUABLog("" + str(theCurrentDeviceTypeName) + " instance:
$Name$. The LabelOff field's length ($LabelOff$) is > 13 characters. Text may wrap around on the
faceplate. ")

    # Fast Interlocks
    if FI_type != "":

```

```

        master_instance =
theUnicosProject.findInstanceByName(instance.getAttributeData("LogicDeviceDefinitions:Master"))
        output_instance =
theUnicosProject.findInstanceByName(instance.getAttributeData("FEDeviceOutputs:Process
Output"))
        if master_instance != None:
            self.thePlugin.writeErrorInUABLog("ONOFF instance: $Name$. A fast interlock OnOff
object can't have a master")
            if output_instance.getAttributeData("LogicDeviceDefinitions:Fast Interlock Type") == "":
                self.thePlugin.writeErrorInUABLog("ONOFF instance: $Name$. A fast interlock OnOff
object must have a Fast Interlock DO connected to the output")
                FIAAlarm = False
                normalAlarm = False
                DigitalAlarmInstances =
theUnicosProject.getDeviceType("DigitalAlarm").getAllDeviceTypeInstances()
                for alarm_instance in DigitalAlarmInstances:
                    alarm_master =
alarm_instance.getAttributeData("LogicDeviceDefinitions:Master").replace(",","").split()
                    for currentAlarmMaster in alarm_master:
                        if currentAlarmMaster == Name and
alarm_instance.getAttributeData("LogicDeviceDefinitions:Fast Interlock Type") != "":
                            FIAAlarm = True
                            elif currentAlarmMaster == Name and
alarm_instance.getAttributeData("LogicDeviceDefinitions:Fast Interlock Type") == "":
                                normalAlarm = True
                        if not FIAAlarm:
                            self.thePlugin.writeErrorInUABLog("ONOFF instance: $Name$. A fast interlock OnOff
object must have at least one Fast Interlock DA connected to it")
                        if normalAlarm:
                            self.thePlugin.writeErrorInUABLog("ONOFF instance: $Name$. A fast interlock OnOff
object can't have not Fast Interlock DAs connected to it")

def end(self):
    self.thePlugin.writeInUABLog("check rules: end")

def shutdown(self):
    self.thePlugin.writeInUABLog("check rules: shutdown")

```

7. Shared Templates

7.1. FI_Functions.py

```
def get_normal_instance_list(instance_list):
    normal_instance_list = []
    for instance in instance_list:
        if instance.doesSpecificationAttributeExist("LogicDeviceDefinitions:Fast Interlock Type"):
            if instance.getAttributeData("LogicDeviceDefinitions:Fast Interlock Type") == "":
                normal_instance_list.append(instance)
        else:
            normal_instance_list.append(instance)
    return normal_instance_list

def get_FI_instance_list(instance_list):
    FI_instance_list = []
    for instance in instance_list:
        if instance.doesSpecificationAttributeExist("LogicDeviceDefinitions:Fast Interlock Type"):
            if instance.getAttributeData("LogicDeviceDefinitions:Fast Interlock Type") != "":
                FI_instance_list.append(instance)
    return FI_instance_list
```

8. WinCCOAInstanceGenerator

8.1. Rules

8.1.1. TypeTemplates

8.1.1.1 WinCCOA_DigitalAlarm_Template.py

```
# -*- coding: utf-8 -*-
# UNICOS
# (c) Copyright CERN 2013 all rights reserved
# Jython source file for DigitalAlarm Objects.
from research.ch.cern.unicos.templateshandling import IUnicosTemplate # REQUIRED
from research.ch.cern.unicos.plugins.interfaces import APlugin # REQUIRED
from research.ch.cern.unicos.plugins.interfaces import IPlugin # REQUIRED
from research.ch.cern.unicos.cpc.interfaces import ISCADAPPlugin # REQUIRED
from research.ch.cern.unicos.core import CoreManager # REQUIRED
from java.lang import System
import WinCCOA_CommonMethods
from research.ch.cern.unicos.plugins.interfaces import AGenerationPlugin
import ucpc_library.shared_decorator
reload(ucpc_library.shared_decorator)

try:
    # Try to import the user privileges file
    import WinCCOA_Privileges
except:
    # If the previous import failed, try to import the privileges template file
    import WinCCOA_Privileges_Template

class DigitalAlarm_Template(IUnicosTemplate):
    thePlugin = 0
    theDeviceType = "DigitalAlarm"
    # Default name for the privileges file
    privilegesFileName = "WinCCOA_Privileges"

    def deviceFormat(self):
        return ["deviceType", "deviceNumber", "aliasDeviceLinkList", "description", "diagnostics",
"wwwLink", "synoptic", "domain", "nature", "widgetType", "archiveMode",
            "smsCategory", "alarmMessage", "alarmAck", "level", "normalPosition", "addressStsReg01",
"addressEvStsReg01", "addressManReg01", "booleanArchive",
            "analogArchive", "eventArchive", "maskEvent", "parameters", "master", "parents",
"children", "type", "secondAlias"]
```

```

def initialize(self):
    self.thePlugin = APlugin.getPluginInterface()
    self.thePlugin.writeInUABLog("initialize in Jython $self.theDeviceType$ template")
    reload(WinCCOA_CommonMethods)
    self.decorator = ucpc_library.shared_decorator.ExpressionDecorator()
    try:
        # Try to reload the user privileges file
        reload(WinCCOA_Privileges)
    except:
        # If the reload failed, reload the privileges template file
        self.privilegesFileName = "WinCCOA_Privileges_Template"
        reload(WinCCOA_Privileges_Template)

def check(self):
    self.thePlugin.writeInUABLog("check in Jython $self.theDeviceType$ template")

def begin(self):
    self.thePlugin.writeInUABLog("begin in Jython $self.theDeviceType$ template")

def process(self, *params):
    self.thePlugin.writeInUABLog("processInstances in Jython $self.theDeviceType$ template")
    theCurrentDeviceType = params[0]
    self.theUnicosProject = theRawInstances = self.thePlugin.getUnicosProject()
    strAllDeviceTypes = theRawInstances.getAllDeviceTypesString()
    theApplicationName = self.thePlugin.getApplicationParameter("ApplicationName")
    instancesVector = theCurrentDeviceType.getAllDeviceTypeInstances()
    instancesNumber = str(len(instancesVector))
    DeviceTypeName = theCurrentDeviceType.getDeviceTypeName()
    deviceNumber = 0
    CRLF = System.getProperty("line.separator")

    # Get the config (UnicosApplication.xml)
    config = CoreManager.getITechnicalParameters().getXMLConfigMapper()
    # Query a PLC parameter
    PLCType = config.getPLCDeclarations().get(0).getPLCType().getValue()
    theManufacturer = self.thePlugin.getPlcManufacturer()

    self.thePlugin.writeDBHeader("#$self.theDeviceType$: $instancesNumber$")
    DeviceTypeFormat = "CPC_" + DeviceTypeName +
";deviceNumber;Alias[,DeviceLinkList];Description;Diagnostics;WWWLink;Synoptic;Domain;Nature;W
idgetType;ArchiveMode;SMSCat;AlarmMessage;AlarmAck;Level;NormalPosition;addr_StsReg01;addr

```

```

_EvStsReg01;addr_ManReg01;BooleanArchive;AnalogArchive;EventArchive;MaskEvent;Parameters;
Master;Parents;children;Type;SecondAlias;"
    self.thePlugin.writeComment("#$CRLF$# Object: " + DeviceTypeName + "$CRLF$#$CRLF$#Config
Line : " + DeviceTypeFormat + "$CRLF$#")

# Set Privileges
Privileges = eval(self.privilegesFileName).getPrivileges(DeviceTypeName)

for instance in instancesVector:
    if (instance is not None):

        # Check if user pressed 'cancel' button:
        if AGenerationPlugin.isGenerationInterrupted():
            return

        deviceNumber = int(int(deviceNumber) + 1)
        deviceNumber = str(deviceNumber)

        # 1. Common Unicos fields
        # 2. Specific fields
        # 3. SCADA Device Data Archiving
        # 4. Data Treatment
        # 5. Addresses computation
        # 6. New relationship information in all objects
        # 7. Parameters field
        # 8. write the instance information in the database file

        # 1. Common Unicos fields
        name = Name = Alias = instance.getAttributeData("DeviceIdentification:Name")
        master = MasterDevice = instance.getAttributeData("LogicDeviceDefinitions:Master")
        expertName = instance.getAttributeData("DeviceIdentification:Expert Name")
        Description = instance.getAttributeData("DeviceDocumentation:Description")
        Diagnostics = instance.getAttributeData("SCADADeviceGraphics:Diagnostic")
        WWWLink = instance.getAttributeData("SCADADeviceGraphics:WWW Link")
        Synoptic = instance.getAttributeData("SCADADeviceGraphics:Synoptic")
        WidgetType = instance.getAttributeData("SCADADeviceGraphics:Widget Type")
        Domain =
instance.getAttributeData("SCADADeviceFunctionals:SCADADeviceClassificationTags:Domain")
        AccessControlDomain = instance.getAttributeData("SCADADeviceFunctionals:Access Control
Domain").replace(" ", "")
        Nature =
instance.getAttributeData("SCADADeviceFunctionals:SCADADeviceClassificationTags:Nature")

```

```

DeviceLinkListSpec =
instance.getAttributeData("SCADADeviceFunctionals:SCADADeviceClassificationTags:Device
Links").replace(" ", "")
Input = I = instance.getAttributeData("FEDeviceEnvironmentInputs:Input").strip()
Delay = instance.getAttributeData("FEDeviceParameters:Alarm Delay (s)").strip()

# 2. Specific fields
SMSCat = instance.getAttributeData("SCADADeviceAlarms:Alarm Config:SMS Category")
AlarmAck = instance.getAttributeData("FEDeviceAlarm:Auto Acknowledge")
AlarmMasked = instance.getAttributeData("SCADADeviceAlarms:Alarm Config:Masked")
AlarmMessage = instance.getAttributeData("SCADADeviceAlarms:Message")
MaskEvent = instance.getAttributeData("SCADADeviceFunctionals:Mask Event")

# 3. SCADA Device Data Archiving
ArchiveMode = instance.getAttributeData("SCADADeviceDataArchiving:Archive Mode")
BooleanArchive = instance.getAttributeData("SCADADeviceDataArchiving:Boolean Archive")
AnalogArchive = instance.getAttributeData("SCADADeviceDataArchiving:Analog Archive")
EventArchive = instance.getAttributeData("SCADADeviceDataArchiving:Event Archive")

# 4. Data Treatment
S_MaskEvent = MaskEvent.lower()
S_AlarmMasked = AlarmMasked.lower()
S_AlarmAck = AlarmAck.lower()
S_SMSCat = SMSCat.replace(" ", "")
S_I = I.lower().strip()
S_Delay = Delay.lower().strip()

# Build DeviceLinkList and children from related objects
DeviceLinkList = ""
# MasterDevice
if (MasterDevice != ""):
    MasterList = []
    MasterDevice = MasterDevice.strip().replace(", ", " ")
    MasterList = MasterDevice.split()
    MasterListExpert = MasterList
    i = 0
    for Master in MasterList:
        MasterDeviceWinCCOAName = self.thePlugin.getLinkedExpertName(Master,
"ProcessControlObject, OnOff, Analog, AnalogDigital, AnaDO, MassFlowController")
        MasterListExpert[i] = (MasterDeviceWinCCOAName)
        DeviceLinkList = self.thePlugin.appendLinkedDevice(DeviceLinkList,
MasterDeviceWinCCOAName)
        i = i + 1

```

```

    children = []
    if (S_I != ""):
        DeviceLinkList, children =
WinCCOA_CommonMethods.updateDeviceLinksAndChildren(Input, DeviceLinkList, children,
self.thePlugin, self.decorator)

    # Delay
    if self.thePlugin.isString(S_Delay) and S_Delay <> "logic":
        if (S_Delay != ""):
            DelayWinCCOAName = self.thePlugin.getLinkedExpertName(Delay, "AnalogParameter,
AnalogStatus")
            DeviceLinkList = self.thePlugin.appendLinkedDevice(DeviceLinkList,
DelayWinCCOAName)
            children.append(DelayWinCCOAName)

    # Append Device Link list from Spec
    DeviceLinkList =
WinCCOA_CommonMethods.appendDeviceLinkListFromSpec(DeviceLinkListSpec, DeviceLinkList,
self.thePlugin, strAllDeviceTypes)

    # Avoid duplications on the deviceLinks
    DeviceLinkList =
WinCCOA_CommonMethods.removeDuplicatesAndGivenObjects(DeviceLinkList, [Name,
expertName])

    # Default values if domain or nature empty
    if Domain == "":
        Domain = theApplicationName

    if AccessControlDomain != "":
        AccessControlDomain = AccessControlDomain + "|"

    if Nature == "":
        Nature = "DA"

    # Mask Value
    if S_MaskEvent == "true":
        MaskEvent = "0"
    else:
        MaskEvent = "1"

    # AlarmMasked
    if S_AlarmMasked == "":

```



```

    AlarmMasked = "false"

# AlarmAck
if S_AlarmAck == "":
    AlarmAck = "true"
elif S_AlarmAck.strip() == "false":
    AlarmAck = "true"
elif S_AlarmAck.strip() == "true":
    AlarmAck = "false"

# Alarm Message
if S_SMSCat != "":
    if AlarmMessage == "":
        AlarmMessage = Description
    if AlarmMessage == "":
        # Alarm Message and Description field are
empty.
        AlarmMessage = "No message"
        self.thePlugin.writeWarningInUABLog("$self.theDeviceType$ instance: $Alias$. An
Alarm message or a description are required: forced it to ($AlarmMessage$).")
# Boolean Normal Position
if AlarmMasked.lower() == "false":
    normalPosition = "0"
elif AlarmMasked.lower() == "true":
    normalPosition = "3"
else:
    normalPosition = "0" # normalPosition = "2"
    self.thePlugin.writeWarningInUABLog("$self.theDeviceType$ instance: $Alias$.
AlarmMasked is in an unexpected configuration: force normalPosition to 0")

# Archive Mode
if (ArchiveMode.lower() == "no"):
    ArchiveMode = str("N")
elif (ArchiveMode.lower() == "old/new comparison"):
    ArchiveMode = str("Y")
else:
    ArchiveMode = str("N")

if WidgetType.lower() == "digitalalarm":
    WidgetType = "DigitalAlarm"

# 5. Addresses computation
if instance.getAttributeData("LogicDeviceDefinitions:Fast Interlock Type") != "":
    addr_StsReg01 = self.getAddressSCADA("$Alias$_StsReg01_FI", PLCType)

```

```

    addr_EvStsReg01 = self.getAddressSCADA("$Alias$_EvStsReg01_FI", PLCType)
    addr_ManReg01 = self.getAddressSCADA("$Alias$_ManReg01_FI", PLCType)
else:
    addr_StsReg01 = self.getAddressSCADA("$Alias$_StsReg01", PLCType)
    addr_EvStsReg01 = self.getAddressSCADA("$Alias$_EvStsReg01", PLCType)
    addr_ManReg01 = self.getAddressSCADA("$Alias$_ManReg01", PLCType)

# 6. New relationship information in all objects:
parents = instance.getAttributeData("LogicDeviceDefinitions:Master")
master = ""
type = instance.getAttributeData("FEDeviceAlarm:Type")
if type == "Multiple":
    type = ""
    typeList = instance.getAttributeData("FEDeviceAlarm:Multiple Types").strip().replace(", ", "
").split()
    i = 0
    for typeInst in typeList:
        type = type + ", " + typeInst + ":" + MasterListExpert[i]
        i = i + 1
    type = type[1:]
    parentsList = []
    parentDevice = parents.strip().replace(", ", " ")
    parentList = parentDevice.split()
    parentListExpert = []
    for parent in parentList:
        parentDeviceWinCCOAName = self.thePlugin.getLinkedExpertName(parent,
"ProcessControlObject, OnOff, Analog, AnalogDigital, AnaDO, MassFlowController")
        parentListExpert.append(parentDeviceWinCCOAName)

    stringparents = ", ".join(parentListExpert)

elif type <> "" and MasterDevice <> "":
    type = type + ":" + MasterListExpert[0]
    stringparents = self.thePlugin.getLinkedExpertName(parents, "ProcessControlObject,
OnOff, Analog, AnalogDigital, AnaDO, MassFlowController")

elif type <> "" and MasterDevice == "":
    stringparents = ""

else:
    type = ""
    stringparents = ""

```

```

uniqueList = []
for child in children:
    if child not in uniqueList:
        uniqueList.append(child)
children = uniqueList
stringchildren = ",".join(children)

# Expert Name Logic
S_Name = name.strip()
S_ExpertName = expertName.strip()
if S_ExpertName == "":
    secondAlias = Alias
else:
    secondAlias = Alias
    Alias = S_ExpertName

# Level logic
LevelAlarm = instance.getAttributeData("SCADADeviceAlarms:Alarm Config:Level")
if LevelAlarm.strip() == "":
    LevelAlarm = "Alarm"
if LevelAlarm.lower() == "information":
    Level = "0"
elif LevelAlarm.lower() == "warning":
    Level = "1"
elif LevelAlarm.lower() == "alarm":
    Level = "2"
elif LevelAlarm.lower() == "safety alarm":
    Level = "3"

# 7. Parameters field
ParametersArray = []
if Delay == "":
    Delay = "0"
elif not self.thePlugin.isString(Delay) and (theManufacturer.lower() == "siemens"): #
Delay.isnumeric():
    Delay = int(round(float(Delay)))
elif not self.thePlugin.isString(Delay):
    Delay = Delay # do not round delay for Schneider and Codesys (UCPC-1387)
elif Delay.lower() == "logic":
    Delay = "logic"
else:
    Delay = self.thePlugin.getLinkedExpertName(Delay, "AnalogParameter, AnalogStatus")

```

```

ParametersArray.append("PAIDt=" + str(Delay))
# only create SOURCE parameters if single UNICOS object is linked to the field
ParametersArray.append("INPUT_SOURCE=" +
str(self.thePlugin.getLinkedExpertName(self.decorator.extractSingleUnicosObjectFromPLCExpression(
Input, True))))

Parameters = ",".join(ParametersArray)

# 8. write the instance information in the database file

self.thePlugin.writeInstanceInfo("CPC_${DeviceTypeName};${deviceNumber};${Alias}${DeviceLinkList};
${Description};${Diagnostics};$WWWLink;${Synoptic};${AccessControlDomain}${Domain};${Privileges
}${Nature};${WidgetType};${ArchiveMode};${SMSCat};${AlarmMessage};${AlarmAck};${Level};${norma
lPosition};${addr_StsReg01};${addr_EvStsReg01};${addr_ManReg01};${BooleanArchive};${AnalogArch
ive};${EventArchive};${MaskEvent};${Parameters};${master};${stringparents};${stringchildren};${type};
${secondAlias};")

def end(self):
    self.thePlugin.writeInUABLog("end in Jython ${self.theDeviceType} template")

def shutdown(self):
    self.thePlugin.writeInUABLog("shutdown in Jython ${self.theDeviceType} template")

def getAddressSCADA(self, DPName, PLCTYPE):
    if PLCTYPE.lower() == "quantum":
        address = str(int(self.thePlugin.computeAddress(DPName)) - 1)
    else:
        address = str(self.thePlugin.computeAddress(DPName))

    return address

```

8.1.1.2 WinCCOA_DigitalInput_Template.py

```
# -*- coding: utf-8 -*-
# UNICOS
# (c) Copyright CERN 2013 all rights reserved
# Jython source file for DigitalInput Objects.
from research.ch.cern.unicos.templateshandling import IUnicosTemplate # REQUIRED
from research.ch.cern.unicos.plugins.interfaces import APlugin # REQUIRED
from research.ch.cern.unicos.plugins.interfaces import IPlugin # REQUIRED
from research.ch.cern.unicos.cpc.interfaces import ISCADAPPlugin # REQUIRED
from research.ch.cern.unicos.core import CoreManager # REQUIRED
from java.lang import System
import WinCCOA_CommonMethods
from research.ch.cern.unicos.plugins.interfaces import AGenerationPlugin
import ucpc_library.shared_decorator
reload(ucpc_library.shared_decorator)
try:
    # Try to import the user privileges file
    import WinCCOA_Privileges
except:
    # If the previous import failed, try to import the privileges template file
    import WinCCOA_Privileges_Template

class DigitalInput_Template(IUnicosTemplate):
    thePlugin = 0
    theDeviceType = "DigitalInput"
    # Default name for the privileges file
    privilegesFileName = "WinCCOA_Privileges"

    def deviceFormat(self):
        return ["deviceType", "deviceNumber", "aliasDeviceLinkList", "description", "diagnostics",
"wwwLink", "synoptic", "domain", "nature", "widgetType",
        "archiveMode", "smsCategory", "alarmMessage", "alarmAck", "normalPosition",
"addressStsReg01", "addressEvStsReg01", "addressManReg01", "booleanArchive",
        "analogArchive", "eventArchive", "maskEvent", "parameters", "master", "parents",
"children", "type", "secondAlias"]

    def initialize(self):
        self.thePlugin = APlugin.getPluginInterface()
        self.thePlugin.writeInUABLog("initialize in Jython $self.theDeviceType$ template")
        reload(WinCCOA_CommonMethods)
        self.decorator = ucpc_library.shared_decorator.ExpressionDecorator()
```

```

try:
    # Try to reload the user privileges file
    reload(WinCCOA_Privileges)
except:
    # If the reload failed, reload the privileges template file
    self.privilegesFileName = "WinCCOA_Privileges_Template"
    reload(WinCCOA_Privileges_Template)

def check(self):
    self.thePlugin.writeInUABLog("check in Jython $self.theDeviceType$ template")

def begin(self):
    self.thePlugin.writeInUABLog("begin in Jython $self.theDeviceType$ template")

def process(self, *params):
    self.thePlugin.writeInUABLog("processInstances in Jython $self.theDeviceType$ template")
    theCurrentDeviceType = params[0]
    self.theUnicosProject = theRawInstances = self.thePlugin.getUnicosProject()
    strAllDeviceTypes = theRawInstances.getAllDeviceTypesString()
    theApplicationName = self.thePlugin.getApplicationParameter("ApplicationName")
    instancesVector = theCurrentDeviceType.getAllDeviceTypeInstances()
    instancesNumber = str(len(instancesVector))
    DeviceTypeName = theCurrentDeviceType.getDeviceTypeName()
    deviceNumber = 0
    CRLF = System.getProperty("line.separator")

    # Get the config (UnicosApplication.xml)
    config = CoreManager.getITechnicalParameters().getXMLConfigMapper()
    # Query a PLC parameter
    PLCType = config.getPLCDeclarations().get(0).getPLCType().getValue()

    self.thePlugin.writeDBHeader("#$self.theDeviceType$: $instancesNumber$")
    DeviceTypeFormat = "CPC_" + DeviceTypeName +
";deviceNumber;Alias[,DeviceLinkList];Description -
ElectricalDiagram;Diagnostics;WWWLink;Synoptic;Domain;Nature;WidgetType;ArchiveMode;SMSCa
t;AlarmMessage;AlarmAck;NormalPosition;addr_StsReg01;addr_EvStsReg01;addr_ManReg01;Boole
anArchive;AnalogArchive;EventArchive;MaskEvent;Parameters;Master;Parents;children;Type;Second
Alias;"

    self.thePlugin.writeComment("#$CRLF$# Object: " + DeviceTypeName + "$CRLF$#$CRLF$#Config
Line : " + DeviceTypeFormat + "$CRLF$#")

    # Set Privileges
    Privileges = eval(self.privilegesFileName).getPrivileges(DeviceTypeName)

```

```

for instance in instancesVector:
    if (instance is not None):

        # Check if user pressed 'cancel' button:
        if AGenerationPlugin.isGenerationInterrupted():
            return

        deviceNumber = int(int(deviceNumber) + 1)
        deviceNumber = str(deviceNumber)

        # 1. Common Unicos fields
        # 2. Specific fields
        # 3. SCADA Device Data Archiving
        # 4. Data Treatment
        # 5. Addresses computation
        # 6. write the instance information in the database file

        # 1. Common Unicos fields
        name = Name = Alias = instance.getAttributeData("DeviceIdentification:Name")
        expertName = instance.getAttributeData("DeviceIdentification:Expert Name")
        Description = instance.getAttributeData("DeviceDocumentation:Description")
        Diagnostics = instance.getAttributeData("SCADADeviceGraphics:Diagnostic")
        WWWLink = instance.getAttributeData("SCADADeviceGraphics:WWW Link")
        Synoptic = instance.getAttributeData("SCADADeviceGraphics:Synoptic")
        WidgetType = instance.getAttributeData("SCADADeviceGraphics:Widget Type")
        Domain =
instance.getAttributeData("SCADADeviceFunctionals:SCADADeviceClassificationTags:Domain")
        AccessControlDomain = instance.getAttributeData("SCADADeviceFunctionals:Access Control
Domain").replace(" ", "")
        Nature =
instance.getAttributeData("SCADADeviceFunctionals:SCADADeviceClassificationTags:Nature")
        DeviceLinkListSpec =
instance.getAttributeData("SCADADeviceFunctionals:SCADADeviceClassificationTags:Device
Links").replace(" ", "")

        # 2. Specific fields
        ElectricalDiagram = instance.getAttributeData("DeviceDocumentation:Electrical Diagram")
        SMSCat = instance.getAttributeData("SCADADeviceAlarms:Alarm Config:SMS Category")
        AlarmAck = instance.getAttributeData("SCADADeviceAlarms:Alarm Config:Auto
Acknowledge")
        alarmMasked = instance.getAttributeData("SCADADeviceAlarms:Alarm
Config:Masked").lower()

```

```

    alarmOnState = instance.getAttributeData("SCADADeviceAlarms:Binary State:Alarm On
State").lower()
    AlarmMessage = instance.getAttributeData("SCADADeviceAlarms:Message")
    MaskEvent = instance.getAttributeData("SCADADeviceFunctionals:Mask Event")

# 3. SCADA Device Data Archiving
ArchiveMode = instance.getAttributeData("SCADADeviceDataArchiving:Archive Mode")
BooleanArchive = instance.getAttributeData("SCADADeviceDataArchiving:Boolean Archive")
AnalogArchive = instance.getAttributeData("SCADADeviceDataArchiving:Analog Archive")
EventArchive = instance.getAttributeData("SCADADeviceDataArchiving:Event Archive")

# 4. Data Treatment
S_MaskEvent = MaskEvent.lower()
S_AlarmAck = AlarmAck.lower()

S_Domain = Domain.replace(" ", "")
S_Nature = Nature.replace(" ", "")
S_SMSCat = SMSCat.replace(" ", "")

# Build DeviceLinkList and children from related objects
DeviceLinkList = ""

# Append Device Link list from Spec
DeviceLinkList =
WinCCOA_CommonMethods.appendDeviceLinkListFromSpec(DeviceLinkListSpec, DeviceLinkList,
self.thePlugin, strAllDeviceTypes)

# Avoid duplications on the deviceLinks
DeviceLinkList =
WinCCOA_CommonMethods.removeDuplicatesAndGivenObjects(DeviceLinkList, [Name,
expertName])

# Default values if domain or nature empty
if S_Domain == "":
    Domain = theApplicationName

if AccessControlDomain != "":
    AccessControlDomain = AccessControlDomain + "/"

if S_Nature == "":
    Nature = "DI"

# Mask Value

```



```

if S_MaskEvent == "true":
    MaskEvent = "0"
else:
    MaskEvent = "1"

# AlarmMasked
if alarmMasked == "":
    alarmMasked = "false"

# AlarmAck
AlarmAck = WinCCOA_CommonMethods.getPvssAlarmAckDigital(S_AlarmAck,
alarmOnState)

# Alarm Message
if S_SMSCat != "" and AlarmMessage == "":
    AlarmMessage = "No message"
    self.thePlugin.writeWarningInUABLog("$self.theDeviceType$ instance: $Alias$. An Alarm
message is required: forced it to ($AlarmMessage$).")

# Boolean Normal Position
if alarmOnState == "":
    normalPosition = "2"
elif alarmOnState == "true" and alarmMasked == "false":
    normalPosition = "0"
elif alarmOnState == "false" and alarmMasked == "false":
    normalPosition = "1"
elif alarmOnState == "true" and alarmMasked == "true":
    normalPosition = "3"
elif alarmOnState == "false" and alarmMasked == "true":
    normalPosition = "4"
else:
    normalPosition = "2"

# Archive Mode
if (ArchiveMode.lower() == "no"):
    ArchiveMode = str("N")
elif (ArchiveMode.lower() == "old/new comparison"):
    ArchiveMode = str("Y")
else:
    ArchiveMode = str("N")

# 5. Addresses computation
if instance.getAttributeData("LogicDeviceDefinitions:Fast Interlock Type") != "":

```

```

    addr_StsReg01 = self.getAddressSCADA("$Alias$_StsReg01_FI", PLCType)
    addr_EvStsReg01 = self.getAddressSCADA("$Alias$_EvStsReg01_FI", PLCType)
    addr_ManReg01 = self.getAddressSCADA("$Alias$_ManReg01_FI", PLCType)
else:
    addr_StsReg01 = self.getAddressSCADA("$Alias$_StsReg01", PLCType)
    addr_EvStsReg01 = self.getAddressSCADA("$Alias$_EvStsReg01", PLCType)
    addr_ManReg01 = self.getAddressSCADA("$Alias$_ManReg01", PLCType)

```

6. New relationship information in all objects:

```

parents = []
parents.append(self.thePlugin.getRIndex().get(Name, "OnOff",
    ["FEDeviceEnvironmentInputs:Feedback On",
    "FEDeviceEnvironmentInputs:Feedback Off",
    "FEDeviceEnvironmentInputs:Local Drive",
    "FEDeviceEnvironmentInputs:Local On",
    "FEDeviceEnvironmentInputs:Local Off"]))

parents.append(self.thePlugin.getRIndex().get(Name, "Analog",
    ["FEDeviceEnvironmentInputs:Feedback On",
    "FEDeviceEnvironmentInputs:Feedback Off",
    "FEDeviceEnvironmentInputs:Local Drive"]))

parents.append(self.thePlugin.getRIndex().get(Name, "AnaDO",
    ["FEDeviceEnvironmentInputs:Feedback On",
    "FEDeviceEnvironmentInputs:Local Drive",
    "FEDeviceEnvironmentInputs:Local On",
    "FEDeviceEnvironmentInputs:Local Off"]))

parents.append(self.thePlugin.getRIndex().get(Name, "AnalogDigital",
    ["FEDeviceEnvironmentInputs:Feedback On",
    "FEDeviceEnvironmentInputs:Feedback Off",
    "FEDeviceEnvironmentInputs:Local Drive"]))

parents.append(self.thePlugin.getRIndex().get(Name, "Local",
    ["FEDeviceEnvironmentInputs:Feedback On",
    "FEDeviceEnvironmentInputs:Feedback Off"]))

parents.append(self.thePlugin.getRIndex().get(Name, "DigitalAlarm",
"FEDeviceEnvironmentInputs:Input"))

parents.append(self.thePlugin.getRIndex().get(Name, "AnalogAlarm",
"FEDeviceAlarm:Enable Condition"))

```

```

parents = [x for x in parents if x] # remove empty strings

uniqueList = []
for parent in parents:
    if parent not in uniqueList:
        uniqueList.append(parent)
parents = uniqueList
stringParents = ",".join(parents)
type = instance.getAttributeData("FEDeviceIOConfig:FE Encoding Type")
children = ""
master = ""

# Expert Name Logic
S_Name = name.strip()
S_ExpertName = expertName.strip()
if S_ExpertName == "":
    secondAlias = Alias
else:
    secondAlias = Alias
    Alias = S_ExpertName

# 7. Parameters field for all objects
Parameters = ""

# 8. write the instance information in the database file

self.thePlugin.writeInstanceInfo("CPC_ $DeviceTypeName$;$deviceNumber$;$Alias$$DeviceLinkList$;
$Description$ -
$ElectricalDiagram$;$Diagnostics$;$WWWLink$;$Synoptic$;$AccessControlDomain$$Domain$;$Priv
ileges$$Nature$;$WidgetType$;$ArchiveMode$;$SMSCat$;$AlarmMessage$;$AlarmAck$;$normalP
osition$;$addr_StsReg01$;$addr_EvStsReg01$;$addr_ManReg01$;$BooleanArchive$;$AnalogArchiv
e$;$EventArchive$;$MaskEvent$;$Parameters$;$master$;$stringParents$;$children$;$type$;$secon
dAlias$;")

def end(self):
    self.thePlugin.writeInUABLog("end in Jython $self.theDeviceType$ template")

def shutdown(self):
    self.thePlugin.writeInUABLog("shutdown in Jython $self.theDeviceType$ template")

def getAddressSCADA(self, DPName, PLCType):
    if PLCType.lower() == "quantum":
        address = str(int(self.thePlugin.computeAddress(DPName)) - 1)

```

```
else:  
    address = str(self.thePlugin.computeAddress(DPName))  
  
return address
```

8.1.1.3 WinCCOA_DigitalOutput_Template.py

```
# -*- coding: utf-8 -*-
# UNICOS
# (c) Copyright CERN 2013 all rights reserved
# Jython source file for DigitalOutput Objects.
from research.ch.cern.unicos.templateshandling import IUnicosTemplate # REQUIRED
from research.ch.cern.unicos.plugins.interfaces import APlugin # REQUIRED
from research.ch.cern.unicos.plugins.interfaces import IPlugin # REQUIRED
from research.ch.cern.unicos.cpc.interfaces import ISCADAPPlugin # REQUIRED
from research.ch.cern.unicos.core import CoreManager # REQUIRED
from java.lang import System
import WinCCOA_CommonMethods
from research.ch.cern.unicos.plugins.interfaces import AGenerationPlugin
import ucpc_library.shared_decorator
reload(ucpc_library.shared_decorator)
try:
    # Try to import the user privileges file
    import WinCCOA_Privileges
except:
    # If the previous import failed, try to import the privileges template file
    import WinCCOA_Privileges_Template

class DigitalOutput_Template(IUnicosTemplate):
    thePlugin = 0
    theDeviceType = "DigitalOutput"
    # Default name for the privileges file
    privilegesFileName = "WinCCOA_Privileges"

    def deviceFormat(self):
        return ["deviceType", "deviceNumber", "aliasDeviceLinkList", "description", "diagnostics",
"wwwLink", "synoptic", "domain", "nature", "widgetType",
        "archiveMode", "smsCategory", "alarmMessage", "alarmAck", "normalPosition",
"addressStsReg01", "addressEvStsReg01", "addressManReg01", "booleanArchive",
        "analogArchive", "eventArchive", "maskEvent", "parameters", "master", "parents",
"children", "type", "secondAlias"]

    def initialize(self):
        self.thePlugin = APlugin.getPluginInterface()
        self.thePlugin.writeInUABLog("initialize in Jython $self.theDeviceType$ template")
        reload(WinCCOA_CommonMethods)
        self.decorator = ucpc_library.shared_decorator.ExpressionDecorator()
```

```

try:
    # Try to reload the user privileges file
    reload(WinCCOA_Privileges)
except:
    # If the reload failed, reload the privileges template file
    self.privilegesFileName = "WinCCOA_Privileges_Template"
    reload(WinCCOA_Privileges_Template)

def check(self):
    self.thePlugin.writeInUABLog("check in Jython $self.theDeviceType$ template")

def begin(self):
    self.thePlugin.writeInUABLog("begin in Jython $self.theDeviceType$ template")

def process(self, *params):
    self.thePlugin.writeInUABLog("processInstances in Jython $self.theDeviceType$ template")
    theCurrentDeviceType = params[0]
    self.theUnicosProject = theRawInstances = self.thePlugin.getUnicosProject()
    strAllDeviceTypes = theRawInstances.getAllDeviceTypesString()
    theApplicationName = self.thePlugin.getApplicationParameter("ApplicationName")
    instancesVector = theCurrentDeviceType.getAllDeviceTypeInstances()
    instancesNumber = str(len(instancesVector))
    DeviceTypeName = theCurrentDeviceType.getDeviceTypeName()
    deviceNumber = 0
    CRLF = System.getProperty("line.separator")

    # Get the config (UnicosApplication.xml)
    config = CoreManager.getITechnicalParameters().getXMLConfigMapper()
    # Query a PLC parameter
    PLCType = config.getPLCDeclarations().get(0).getPLCType().getValue()

    self.thePlugin.writeDBHeader("#$self.theDeviceType$: $instancesNumber$")
    DeviceTypeFormat = "CPC_" + DeviceTypeName +
";deviceNumber;Alias[,DeviceLinkList];Description -
ElectricalDiagram;Diagnostics;WWWLink;Synoptic;Domain;Nature;WidgetType;ArchiveMode;SMSCa
t;AlarmMessage;AlarmAck;NormalPosition;addr_StsReg01;addr_EvStsReg01;addr_ManReg01;Boole
anArchive;AnalogArchive;EventArchive;MaskEvent;Parameters;Master;Parents;children;Type;Second
Alias"

    self.thePlugin.writeComment("#$CRLF$# Object: " + DeviceTypeName + "$CRLF$#$CRLF$#Config
Line : " + DeviceTypeFormat + "$CRLF$#")

    # Set Privileges
    Privileges = eval(self.privilegesFileName).getPrivileges(DeviceTypeName)

```

```

for instance in instancesVector:
    if (instance is not None):

        # Check if user pressed 'cancel' button:
        if AGenerationPlugin.isGenerationInterrupted():
            return

        deviceNumber = int(int(deviceNumber) + 1)
        deviceNumber = str(deviceNumber)

        # 1. Common Unicos fields
        # 2. Specific fields
        # 3. SCADA Device Data Archiving
        # 4. Data Treatment
        # 5. Addresses computation
        # 6. write the instance information in the database file

        # 1. Common Unicos fields
        name = Name = Alias = instance.getAttributeData("DeviceIdentification:Name")
        expertName = instance.getAttributeData("DeviceIdentification:Expert Name")
        Description = instance.getAttributeData("DeviceDocumentation:Description")
        Diagnostics = instance.getAttributeData("SCADADeviceGraphics:Diagnostic")
        WWWLink = instance.getAttributeData("SCADADeviceGraphics:WWW Link")
        Synoptic = instance.getAttributeData("SCADADeviceGraphics:Synoptic")
        WidgetType = instance.getAttributeData("SCADADeviceGraphics:Widget Type")
        Domain =
instance.getAttributeData("SCADADeviceFunctionals:SCADADeviceClassificationTags:Domain")
        AccessControlDomain = instance.getAttributeData("SCADADeviceFunctionals:Access Control
Domain").replace(" ", "")
        Nature =
instance.getAttributeData("SCADADeviceFunctionals:SCADADeviceClassificationTags:Nature")
        DeviceLinkListSpec =
instance.getAttributeData("SCADADeviceFunctionals:SCADADeviceClassificationTags:Device
Links").replace(" ", "")

        # 2. Specific fields
        ElectricalDiagram = instance.getAttributeData("DeviceDocumentation:Electrical Diagram")
        SMSCat = instance.getAttributeData("SCADADeviceAlarms:Alarm Config:SMS Category")
        AlarmAck = instance.getAttributeData("SCADADeviceAlarms:Alarm Config:Auto
Acknowledge")
        alarmMasked = instance.getAttributeData("SCADADeviceAlarms:Alarm
Config:Masked").lower()

```

```

    alarmOnState = instance.getAttributeData("SCADADeviceAlarms:Binary State:Alarm On
State").lower()
    AlarmMessage = instance.getAttributeData("SCADADeviceAlarms:Message")
    MaskEvent = instance.getAttributeData("SCADADeviceFunctionals:Mask Event")

# 3. SCADA Device Data Archiving
ArchiveMode = instance.getAttributeData("SCADADeviceDataArchiving:Archive Mode")
BooleanArchive = instance.getAttributeData("SCADADeviceDataArchiving:Boolean Archive")
AnalogArchive = instance.getAttributeData("SCADADeviceDataArchiving:Analog Archive")
EventArchive = instance.getAttributeData("SCADADeviceDataArchiving:Event Archive")

# 4. Data Treatment
S_ArchiveMode = ArchiveMode.lower()
S_MaskEvent = MaskEvent.lower()
S_AlarmAck = AlarmAck.lower()

S_Domain = Domain.replace(" ", "")
S_Nature = Nature.replace(" ", "")
S_SMSCat = SMSCat.replace(" ", "")

# Build DeviceLinkList and children from related objects
DeviceLinkList = ""

# Append Device Link list from Spec
DeviceLinkList =
WinCCOA_CommonMethods.appendDeviceLinkListFromSpec(DeviceLinkListSpec, DeviceLinkList,
self.thePlugin, strAllDeviceTypes)

# Avoid duplications on the deviceLinks
DeviceLinkList =
WinCCOA_CommonMethods.removeDuplicatesAndGivenObjects(DeviceLinkList, [Name,
expertName])

# Default values if domain or nature empty
if S_Domain == "":
    Domain = theApplicationName

if AccessControlDomain != "":
    AccessControlDomain = AccessControlDomain + "|"

if S_Nature == "":
    Nature = "DO"

```



```

# Mask Value
if S_MaskEvent == "true":
    MaskEvent = "0"
else:
    MaskEvent = "1"

# AlarmMasked
if alarmMasked == "":
    alarmMasked = "false"

# AlarmAck
AlarmAck = WinCCOA_CommonMethods.getPvssAlarmAckDigital(AlarmAck, alarmOnState)

# Alarm Message
if S_SMSCat != "" and AlarmMessage == "":
    AlarmMessage = "No message"
    self.thePlugin.writeWarningInUABLog("$self.theDeviceType$ instance: $Alias$. An Alarm
message is required: forced it to ($AlarmMessage$).")

# Boolean Normal Position
if alarmOnState == "":
    normalPosition = "2"
elif alarmOnState == "true" and alarmMasked == "false":
    normalPosition = "0"
elif alarmOnState == "false" and alarmMasked == "false":
    normalPosition = "1"
elif alarmOnState == "true" and alarmMasked == "true":
    normalPosition = "3"
elif alarmOnState == "false" and alarmMasked == "true":
    normalPosition = "4"
else:
    normalPosition = "2"

# Archive Mode
if (ArchiveMode.lower() == "no"):
    ArchiveMode = str("N")
elif (ArchiveMode.lower() == "old/new comparison"):
    ArchiveMode = str("Y")
else:
    ArchiveMode = str("N")

# 5. Addresses computation

```

```

if instance.getAttributeData("LogicDeviceDefinitions:Fast Interlock Type") != "":
    addr_StsReg01 = self.getAddressSCADA("$Alias$_StsReg01_FI", PLCType)
    addr_EvStsReg01 = self.getAddressSCADA("$Alias$_EvStsReg01_FI", PLCType)
    addr_ManReg01 = self.getAddressSCADA("$Alias$_ManReg01_FI", PLCType)
else:
    addr_StsReg01 = self.getAddressSCADA("$Alias$_StsReg01", PLCType)
    addr_EvStsReg01 = self.getAddressSCADA("$Alias$_EvStsReg01", PLCType)
    addr_ManReg01 = self.getAddressSCADA("$Alias$_ManReg01", PLCType)

# 6. New relationship information in all objects:
parents = []
# OnOff parents
parents.append(self.thePlugin.getRIndex().get(Name, "OnOff", "FEDeviceOutputs:Process
Output"))
parents.append(self.thePlugin.getRIndex().get(Name, "OnOff", "FEDeviceOutputs:Process
Output Off"))

# AnaDO parents
parents.append(self.thePlugin.getRIndex().get(Name, "AnaDO", "FEDeviceOutputs:Digital
Process Output"))

# AnalogDigital parents
parents.append(self.thePlugin.getRIndex().get(Name, "AnalogDigital",
"FEDeviceOutputs:Output On"))
parents.append(self.thePlugin.getRIndex().get(Name, "AnalogDigital",
"FEDeviceOutputs:Output Off"))

# Digital Alarm parents
parents.append(self.thePlugin.getRIndex().get(Name, "DigitalAlarm",
"FEDeviceEnvironmentInputs:Input"))
# Analog Alarm parents
parents.append(self.thePlugin.getRIndex().get(Name, "AnalogAlarm",
"FEDeviceAlarm:Enable Condition"))
parents = [x for x in parents if x] # remove empty strings

uniqueList = []
for parent in parents:
    if parent not in uniqueList:
        uniqueList.append(parent)
parents = uniqueList
stringParents = ",".join(parents)
type = instance.getAttributeData("FEDeviceIOConfig:FE Encoding Type")
children = ""

```

```

master = ""

# Expert Name Logic
S_Name = name.strip()
S_ExpertName = expertName.strip()
if S_ExpertName == "":
    secondAlias = Alias
else:
    secondAlias = Alias
    Alias = S_ExpertName

# 7. Parameters field for all objects
Parameters = ""

# 8. write the instance information in the database file

self.thePlugin.writeInstanceInfo("CPC_${DeviceTypeName};${deviceNumber};${Alias}${DeviceLinkList};
${Description} -
${ElectricalDiagram};${Diagnostics};${WWWLink};${Synoptic};${AccessControlDomain}${Domain};${Priv
ileges}${Nature};${WidgetType};${ArchiveMode};${SMSCat};${AlarmMessage};${AlarmAck};${normalP
osition};${addr_StsReg01};${addr_EvStsReg01};${addr_ManReg01};${BooleanArchive};${AnalogArchiv
e};${EventArchive};${MaskEvent};${Parameters};${master};${stringParents};${children};${type};${secon
dAlias};")

def end(self):
    self.thePlugin.writeInUABLog("end in Jython ${self.theDeviceType} template")

def shutdown(self):
    self.thePlugin.writeInUABLog("shutdown in Jython ${self.theDeviceType} template")

def getAddressSCADA(self, DPName, PLCType):
    if PLCType.lower() == "quantum":
        address = str(int(self.thePlugin.computeAddress(DPName)) - 1)
    else:
        address = str(self.thePlugin.computeAddress(DPName))

    return address

```

8.1.1.4 WinCCOA_OnOff_Template.py

```
# -*- coding: utf-8 -*-
# UNICOS
# (c) Copyright CERN 2013 all rights reserved
# Jython source file for OnOff Objects.
from research.ch.cern.unicos.templateshandling import IUnicosTemplate # REQUIRED
from research.ch.cern.unicos.plugins.interfaces import APlugin # REQUIRED
from research.ch.cern.unicos.plugins.interfaces import IPlugin # REQUIRED
from research.ch.cern.unicos.cpc.interfaces import ISCADAPPlugin # REQUIRED
from research.ch.cern.unicos.core import CoreManager # REQUIRED
from java.lang import System
import WinCCOA_CommonMethods
from research.ch.cern.unicos.plugins.interfaces import AGenerationPlugin
import ucpc_library.shared_decorator
reload(ucpc_library.shared_decorator)
try:
    # Try to import the user privileges file
    import WinCCOA_Privileges
except:
    # If the previous import failed, try to import the privileges template file
    import WinCCOA_Privileges_Template

class OnOff_Template(IUnicosTemplate):
    thePlugin = 0
    theDeviceType = "OnOff"
    # Default name for the privileges file
    privilegesFileName = "WinCCOA_Privileges"

    def deviceFormat(self):
        return ["deviceType", "deviceNumber", "aliasDeviceLinkList", "description", "diagnostics",
"wwwLink", "synoptic", "domain", "nature", "widgetType",
"normalPosition", "addressStsReg01", "addressStsReg02", "addressEvStsReg01",
"addressEvStsReg02", "addressManReg01", "booleanArchive", "analogArchive",
"eventArchive", "maskEvent", "labelOn", "labelOff", "parameters", "master", "parents",
"children", "type", "secondAlias"]

    def initialize(self):
        self.thePlugin = APlugin.getPluginInterface()
        self.thePlugin.writeInUABLog("initialize in Jython $self.theDeviceType$ template")
        reload(WinCCOA_CommonMethods)
        self.decorator = ucpc_library.shared_decorator.ExpressionDecorator()
```

```

try:
    # Try to reload the user privileges file
    reload(WinCCOA_Privileges)
except:
    # If the reload failed, reload the privileges template file
    self.privilegesFileName = "WinCCOA_Privileges_Template"
    reload(WinCCOA_Privileges_Template)

def check(self):
    self.thePlugin.writeInUABLog("check in Jython $self.theDeviceType$ template")

def begin(self):
    self.thePlugin.writeInUABLog("begin in Jython $self.theDeviceType$ template")

def process(self, *params):
    self.thePlugin.writeInUABLog("processInstances in Jython $self.theDeviceType$ template")
    theCurrentDeviceType = params[0]
    self.theUnicosProject = theRawInstances = self.thePlugin.getUnicosProject()
    strAllDeviceTypes = theRawInstances.getAllDeviceTypesString()
    theApplicationName = self.thePlugin.getApplicationParameter("ApplicationName")
    instancesVector = theCurrentDeviceType.getAllDeviceTypeInstances()
    instancesNumber = str(len(instancesVector))
    DeviceTypeName = theCurrentDeviceType.getDeviceTypeName()
    deviceNumber = 0
    CRLF = System.getProperty("line.separator")

    # Get the config (UnicosApplication.xml)
    config = CoreManager.getITechnicalParameters().getXMLConfigMapper()
    # Query a PLC parameter
    PLCType = config.getPLCDeclarations().get(0).getPLCType().getValue()

    self.thePlugin.writeDBHeader("#$self.theDeviceType$: $instancesNumber$")
    DeviceTypeFormat = "CPC_" + DeviceTypeName +
";deviceNumber;Alias[,DeviceLinkList];Description;Diagnostics;WWWLink;Synoptic;Domain;Nature;W
idgetType;NormalPosition;addr_StsReg01;addr_StsReg02;addr_EvStsReg01;addr_EvStsReg02;addr_
ManReg01;BooleanArchive;AnalogArchive;EventArchive;MaskEvent;LabelOn;LabelOff;Parameters;M
aster;Parents;children;Type;SecondAlias;"
    self.thePlugin.writeComment("#$CRLF$# Object: " + DeviceTypeName + "$CRLF$#$CRLF$#Config
Line : " + DeviceTypeFormat + "$CRLF$#")

    # Set Privileges
    Privileges = eval(self.privilegesFileName).getPrivileges(DeviceTypeName)

```

```

for instance in instancesVector:
    if (instance is not None):

        # Check if user pressed 'cancel' button:
        if AGenerationPlugin.isGenerationInterrupted():
            return

        deviceNumber = int(int(deviceNumber) + 1)
        deviceNumber = str(deviceNumber)

        # 1. Common Unicos fields
        # 2. Specific fields
        # 3. SCADA Device Data Archiving
        # 4. Data Treatment
        # 5. Addresses computation
        # 6. write the instance information in the database file
        # 7. fill the parameters field

        # 1. Common Unicos fields
        name = Name = Alias = instance.getAttributeData("DeviceIdentification:Name")
        expertName = instance.getAttributeData("DeviceIdentification:Expert Name")
        Description = instance.getAttributeData("DeviceDocumentation:Description")
        Diagnostics = instance.getAttributeData("SCADADeviceGraphics:Diagnostic")
        WWWLink = instance.getAttributeData("SCADADeviceGraphics:WWW Link")
        Synoptic = instance.getAttributeData("SCADADeviceGraphics:Synoptic")
        WidgetType = instance.getAttributeData("SCADADeviceGraphics:Widget Type")
        Domain =
instance.getAttributeData("SCADADeviceFunctionals:SCADADeviceClassificationTags:Domain")
        AccessControlDomain = instance.getAttributeData("SCADADeviceFunctionals:Access Control
Domain").replace(" ", "")
        Nature =
instance.getAttributeData("SCADADeviceFunctionals:SCADADeviceClassificationTags:Nature")
        DeviceLinkListSpec =
instance.getAttributeData("SCADADeviceFunctionals:SCADADeviceClassificationTags:Device
Links").replace(" ", "")

        # 2. Specific fields
        PFSPosOn = FailSafe = instance.getAttributeData("FEDeviceParameters:ParReg:Fail-Safe")
        PHFOn = FeedbackOn = instance.getAttributeData("FEDeviceEnvironmentInputs:Feedback
On")
        PHFOff = FeedbackOff = instance.getAttributeData("FEDeviceEnvironmentInputs:Feedback
Off")
        LocalDrive = instance.getAttributeData("FEDeviceEnvironmentInputs:Local Drive").strip()

```

```

if LocalDrive <> "":
    if LocalDrive[0:4].lower() == "not ":
        LocalDrive = LocalDrive[4:]
LocalOn = instance.getAttributeData("FEDeviceEnvironmentInputs:Local On")
if LocalOn <> "":
    if LabelOn[0:4].lower() == "not ":
        LocalOn = LocalOn[4:]
LocalOff = instance.getAttributeData("FEDeviceEnvironmentInputs:Local Off")
if LocalOff <> "":
    if LocalOff[0:4].lower() == "not ":
        LocalOff = LocalOff[4:]
ProcessOutput = instance.getAttributeData("FEDeviceOutputs:Process Output")
ProcessOutputOff = instance.getAttributeData("FEDeviceOutputs:Process Output Off")
MasterDevice = instance.getAttributeData("LogicDeviceDefinitions:Master")
ExternalMasterDevice = instance.getAttributeData("LogicDeviceDefinitions:External
Master")
MaskEvent = instance.getAttributeData("SCADADeviceFunctionals:Mask Event")
NormalPosition = "0"
WarningDelay =
self.thePlugin.formatNumberPLC(instance.getAttributeData("FEDeviceParameters:Warning Time
Delay (s)"))

```

3. SCADA Device Data Archiving

```

BooleanArchive = instance.getAttributeData("SCADADeviceDataArchiving:Boolean Archive")
AnalogArchive = instance.getAttributeData("SCADADeviceDataArchiving:Analog Archive")
EventArchive = instance.getAttributeData("SCADADeviceDataArchiving:Event Archive")

```

4. Data Treatment

Build DeviceLinkList and children from related objects

```

DeviceLinkList = ""
# MasterDevice
if (MasterDevice != ""):
    MasterDevice = MasterDeviceWinCCOAName =
self.thePlugin.getLinkedExpertName(MasterDevice, "ProcessControlObject")
    DeviceLinkList = self.thePlugin.appendLinkedDevice(DeviceLinkList,
MasterDeviceWinCCOAName)
elif (ExternalMasterDevice != ""):
    MasterDevice = MasterDeviceWinCCOAName = ExternalMasterDevice
    DeviceLinkList = self.thePlugin.appendLinkedDevice(DeviceLinkList,
MasterDeviceWinCCOAName)

```

children = []

feedback On

```

    if (FeedbackOn != ""):
        FeedbackOnWinCCOAName = self.thePlugin.getLinkedExpertName(FeedbackOn,
"DigitalInput")
        DeviceLinkList = self.thePlugin.appendLinkedDevice(DeviceLinkList,
FeedbackOnWinCCOAName)
        children.append(FeedbackOnWinCCOAName)

# feedback Off
    if (FeedbackOff != ""):
        FeedbackOffWinCCOAName = self.thePlugin.getLinkedExpertName(FeedbackOff,
"DigitalInput")
        DeviceLinkList = self.thePlugin.appendLinkedDevice(DeviceLinkList,
FeedbackOffWinCCOAName)
        children.append(FeedbackOffWinCCOAName)

# Local Drive
    if (LocalDrive != ""):
        LocalDriveWinCCOAName = self.thePlugin.getLinkedExpertName(LocalDrive,
"DigitalInput")
        DeviceLinkList = self.thePlugin.appendLinkedDevice(DeviceLinkList,
LocalDriveWinCCOAName)
        children.append(LocalDriveWinCCOAName)

# Local On
    if (LocalOn != ""):
        LocalOnWinCCOAName = self.thePlugin.getLinkedExpertName(LocalOn, "DigitalInput")
        DeviceLinkList = self.thePlugin.appendLinkedDevice(DeviceLinkList,
LocalOnWinCCOAName)
        children.append(LocalOnWinCCOAName)

# Local Off
    if (LocalOff != ""):
        LocalOffWinCCOAName = self.thePlugin.getLinkedExpertName(LocalOff, "DigitalInput")
        DeviceLinkList = self.thePlugin.appendLinkedDevice(DeviceLinkList,
LocalOffWinCCOAName)
        children.append(LocalOffWinCCOAName)

# Process Output
    if (ProcessOutput != ""):
        ProcessOutputWinCCOAName = self.thePlugin.getLinkedExpertName(ProcessOutput,
"DigitalOutput")
        DeviceLinkList = self.thePlugin.appendLinkedDevice(DeviceLinkList,
ProcessOutputWinCCOAName)
        children.append(ProcessOutputWinCCOAName)

```



```

# Process Output Off
if (ProcessOutputOff != ""):
    ProcessOutputOffWinCCOAName =
self.thePlugin.getLinkedExpertName(ProcessOutputOff, "DigitalOutput")
    DeviceLinkList = self.thePlugin.appendLinkedDevice(DeviceLinkList,
ProcessOutputOffWinCCOAName)
    children.append(ProcessOutputOffWinCCOAName)

# UCPC-1400 Add DeviceLink list and children for new object links
if self.thePlugin.isString(WarningDelay) and WarningDelay <> "":
    DeviceLinkList, children =
WinCCOA_CommonMethods.updateDeviceLinksAndChildren(WarningDelay, DeviceLinkList, children,
self.thePlugin, self.decorator)

# Append Device Link list from Spec
DeviceLinkList =
WinCCOA_CommonMethods.appendDeviceLinkListFromSpec(DeviceLinkListSpec, DeviceLinkList,
self.thePlugin, strAllDeviceTypes)

# Avoid duplications on the deviceLinks
DeviceLinkList =
WinCCOA_CommonMethods.removeDuplicatesAndGivenObjects(DeviceLinkList, [Name,
expertName])

# Default values if domain or nature empty
if Domain == "":
    Domain = theApplicationName

if AccessControlDomain != "":
    AccessControlDomain = AccessControlDomain + "|"

if Nature == "":
    Nature = DeviceTypeName

# Mask Value
if (MaskEvent.lower() == "true"):
    MaskEvent = "0"
else:
    MaskEvent = "1"

# 5. Addresses computation
if instance.getAttributeData("LogicDeviceDefinitions:Fast Interlock Type") != "":
    addr_StsReg01 = self.getAddressSCADA("$Alias$_StsReg01_FI", PLCType)

```

```

    addr_StsReg02 = self.getAddressSCADA("$Alias$_StsReg02_FI", PLCType)
    addr_EvStsReg01 = self.getAddressSCADA("$Alias$_EvStsReg01_FI", PLCType)
    addr_EvStsReg02 = self.getAddressSCADA("$Alias$_EvStsReg02_FI", PLCType)
    addr_ManReg01 = self.getAddressSCADA("$Alias$_ManReg01_FI", PLCType)
else:
    addr_StsReg01 = self.getAddressSCADA("$Alias$_StsReg01", PLCType)
    addr_StsReg02 = self.getAddressSCADA("$Alias$_StsReg02", PLCType)
    addr_EvStsReg01 = self.getAddressSCADA("$Alias$_EvStsReg01", PLCType)
    addr_EvStsReg02 = self.getAddressSCADA("$Alias$_EvStsReg02", PLCType)
    addr_ManReg01 = self.getAddressSCADA("$Alias$_ManReg01", PLCType)

# Labels
LabelOn = instance.getAttributeData("SCADADeviceGraphics:Label On").strip()
LabelOff = instance.getAttributeData("SCADADeviceGraphics:Label Off").strip()

# 6. New relationship information in all objects:
PEnrStart = instance.getAttributeData("FEDeviceParameters:ParReg:Manual Restart after
Full Stop").strip()
parents = ""
type = ""

# AA, DA Children
AlarmChildren = self.theUnicosProject.findMatchingInstances("AnalogAlarm, DigitalAlarm",
"$Name$", "")
for AlarmChild in AlarmChildren:
    AlarmChild_Name = WinCCOA_CommonMethods.getExpertName(AlarmChild)
    children.append(AlarmChild_Name)

uniqueList = []
for child in children:
    if child not in uniqueList:
        uniqueList.append(child)
children = uniqueList
stringchildren = ",".join(children)

# Expert Name Logic
S_Name = name.strip()
S_ExpertName = expertName.strip()
if S_ExpertName == "":
    secondAlias = Alias
else:
    secondAlias = Alias
Alias = S_ExpertName

```

7. Parameters field

```
PPulseSt = instance.getAttributeData("FEDeviceParameters:Pulse Duration (s)")
PAnimSt = instance.getAttributeData("FEDeviceParameters:ParReg:Full/Empty Animation")
ProcessOutputOff = instance.getAttributeData("FEDeviceOutputs:Process Output Off")
```

```
ParamPFSPosOn = "PFSPosOn=TRUE"
Parameters = ""
if PFSPosOn.lower() == "on/open":
    ParamPFSPosOn = "PFSPosOn=TRUE"
elif PFSPosOn.lower() == "off/close":
    ParamPFSPosOn = "PFSPosOn=FALSE"
elif PFSPosOn.lower() == "2 do off":
    ParamPFSPosOn = "PFSPosOn=2DOOFF"
elif PFSPosOn.lower() == "2 do on":
    ParamPFSPosOn = "PFSPosOn=2DOON"
if PHFOn.strip() == "":
    ParamPHFOn = "PHFOnSt=FALSE"
else:
    ParamPHFOn = "PHFOnSt=TRUE"
if PHFOff.strip() == "":
    ParamPHFOff = "PHFOffSt=FALSE"
else:
    ParamPHFOff = "PHFOffSt=TRUE"
if PPulseSt.strip() == "" or PPulseSt == "0":
    ParamPPulseSt = "PPulseSt=FALSE"
else:
    ParamPPulseSt = "PPulseSt=TRUE"
if PEnRstart.lower() == "false":
    ParamPEnRstart = "PEnRstart=FALSE"
    ParamPRstartFS = "PRstartFS=FALSE"
elif (PEnRstart.lower() == "true only if full stop disappeared"):
    ParamPEnRstart = "PEnRstart=TRUE"
    ParamPRstartFS = "PRstartFS=FALSE"
else:
    ParamPEnRstart = "PEnRstart=TRUE"
    ParamPRstartFS = "PRstartFS=TRUE"
if ProcessOutputOff.strip() == "":
    ParamProcessOutputOff = "POutOff=FALSE"
else:
    ParamProcessOutputOff = "POutOff=TRUE"
if (LocalDrive.strip() != ""):
```

```

        ParamPHLDrive = "PHLDrive=TRUE"
    else:
        ParamPHLDrive = "PHLDrive=FALSE"
    if self.thePlugin.isString(WarningDelay) and WarningDelay <> "":
        ParamWarningDelay = ",WARNING_DELAY_TIME=" +
self.thePlugin.getLinkedExpertName(WarningDelay)
    else:
        ParamWarningDelay = ""

    Parameters = ParamPFSPosOn + "," + ParamPHFOn + "," + ParamPHFOff + "," +
ParamPPulseSt + "," + ParamPENrstart + "," + ParamPRstartFS + "," + ParamProcessOutputOff + "," +
ParamPHLDrive + ParamWarningDelay

```

8. write the instance information in the database file

```

self.thePlugin.writeInstanceInfo("CPC_ $DeviceTypeName$; $deviceNumber$; $Alias$ $DeviceLinkList$;
$Description$; $Diagnostics$; $WWWLink$; $Synoptic$; $AccessControlDomain$ $Domain$; $Privileges
$ $Nature$; $WidgetType$; $NormalPosition$; $addr_StsReg01$; $addr_StsReg02$; $addr_EvStsReg01
$; $addr_EvStsReg02$; $addr_ManReg01$; $BooleanArchive$; $AnalogArchive$; $EventArchive$; $Mas
kEvent$; $LabelOn$; $LabelOff$; $Parameters$; $MasterDevice$; $parents$; $stringchildren$; $type$; $s
econdAlias$;")

```

```

def end(self):

```

```

    self.thePlugin.writeInUABLog("end in Jython $self.theDeviceType$ template")

```

```

def shutdown(self):

```

```

    self.thePlugin.writeInUABLog("shutdown in Jython $self.theDeviceType$ template")

```

```

def getAddressSCADA(self, DPName, PLCType):

```

```

    if PLCType.lower() == "quantum":

```

```

        address = str(int(self.thePlugin.computeAddress(DPName)) - 1)

```

```

    else:

```

```

        address = str(self.thePlugin.computeAddress(DPName))

```

```

    return address

```

9. Plugin – Siemens

9.1. S7Functions.java

```
/**
 * UNICOS
 *
 * Copyright (C) CERN 2015 All rights reserved
 */
package research.ch.cern.unicos.cpc.utilities.siemens;

import research.ch.cern.unicos.plugins.interfaces.AGenerationPlugin;
import research.ch.cern.unicos.plugins.interfaces.APlugin;
import research.ch.cern.unicos.plugins.interfaces.GenerationException;
import research.ch.cern.unicos.userreport.UABLogger;
import research.ch.cern.unicos.utilities.*;

import java.util.Arrays;
import java.util.HashSet;
import java.util.Set;
import java.util.logging.Level;

/**
 * Class containing functions for Siemens Step 7
 *
 * @author Ivan Prieto Barreiro
 */
public class S7Functions {
    /** Flag to know if the current application is a large application. */
    private static boolean isLargeApplication = false;

    /** XPath expression to get the representation name of a device */
    private final static String xpathRepName =
"/attributeFamily[attributeFamilyName='TargetDeviceInformation']/"
+ "attribute[attributeName='Target' and
defaultValue='Siemens']/attribute[attributeName='RepresentationName']/defaultValue";

    /** XPath expression to get the limit size of a device */
    private final static String xpathLimitSize =
"/attributeFamily[attributeFamilyName='TargetDeviceInformation']/"
+ "attribute[attributeName='Target' and
defaultValue='Siemens']/attribute[attributeName='LimitSize']/defaultValue";
```



```

*      <li>If the specified instance is an AnalogInputReal or a DigitalInput device</li>
* </ul>
* Then, the returned String will be
"DB_&lt;RepresentationName&gt;_All_S.&lt;RepresentationName&gt;_SET." <br/>
* <br/>
* @param instance The device instance.
* @param isDBSimpleRequested TRUE if the DB Simple is requested.
* @throws Exception
*/
public static String s7db_id(IDeviceInstance instance, boolean isDBSimpleRequested) throws
Exception {
    if (instance==null)
        return "";

    IDeviceTypeFactory deviceTypeFactory = DeviceTypeFactory.getInstance();

    try {
        IUNICOSMetaModel theDeviceTypeDefinition =
deviceTypeFactory.getDeviceType(instance.getDeviceTypeName());
        String nameRepresentation =
theDeviceTypeDefinition.getContext().getValue(xpathRepName).toString();
        int limitSize =
Integer.parseInt(theDeviceTypeDefinition.getContext().getValue(xpathLimitSize).toString());
        String deviceTypeName = instance.getDeviceTypeName();

        if (instance.doesSpecificationAttributeExist("LogicDeviceDefinitions:Fast
Interlock Type") &&
!instance.getAttributeData("LogicDeviceDefinitions:Fast
Interlock Type").equals("")) { // Fast Interlock
            return "DB_" + nameRepresentation + "_FI." + nameRepresentation
+ "_SET.";
        } else { // Normal processing
            if (shouldReturnSimple(isDBSimpleRequested, deviceTypeName)) {
                // Returns the DB simple for the device type
                return "DB_" + nameRepresentation + "_All_S." +
nameRepresentation + "_SET.";
            }
            if (instance.getInstanceNumber() <= limitSize) {
                return "DB_" + nameRepresentation + "_All." +
nameRepresentation + "_SET.";
            } else {
                return "DB_" + nameRepresentation + "_All2." +
nameRepresentation + "_SET.";
            }
        }
    }
}

```

```

        }
    } catch (Exception e) {
        e.printStackTrace();
    }

    return "";
}

private static boolean shouldReturnSimple(boolean isDBSimpleRequested, String
deviceTypeName) {
    Set<String> simpleDevices = new HashSet<>(Arrays.asList("AnalogInputReal",
"DigitalInput", "AnalogInput"));
    return isLargeApplication && isDBSimpleRequested &&
simpleDevices.contains(deviceTypeName);
}

/**
 * Get the value of the class member isLargeApplication @see {@link #initialize()}
 * @return The value of the class member 'isLargeApplication' obtained in the method {@link
#initialize()}.
 */
public static boolean isLargeApplication() throws GenerationException {
    return isLargeApplication;
}

/**
 * Get the value of an attribute defined in the TargetDeviceInformation family from the
Device type definition.
 * @param parameterName Name of the parameter in the TargetDeviceInformation family.
 * @param typeName Device type name.
 */
public static String getTargetDeviceInformationParam(String parameterName, String
typeName) {
    String value = "";

    try {
        IDeviceTypeFactory deviceTypeFactory = DeviceTypeFactory.getInstance();
        IUNICOSMetaModel theDeviceTypeDefinition =
deviceTypeFactory.getDeviceType(typeName);
        String xpath =
"/attributeFamily[attributeFamilyName='TargetDeviceInformation']/"

```

```

        + "attribute[attributeName='Target' and
defaultValue='Siemens']/attribute[attributeName='" + parameterName + "']/defaultValue";
        value = theDeviceTypeDefinition.getContext().getValue(xpath).toString();
    } catch (Exception e) {
        UABLogger.getLogger("UABLogger").log(Level.SEVERE, "Exception getting
the target device information '" +
        parameterName + "' for the device '" + typeName + "': " +
e.getMessage());
    }
    return value;
}
}
}

```

9.2. SiemensPLCMemoryMapper.java

```
/**
 * UNICOS
 *
 * Copyright (C) CERN 2015 All rights reserved
 */
package research.ch.cern.unicos.cpc.utilities.siemens;

import java.util.*;
import java.util.logging.Level;

import org.apache.commons.jxpath.ri.model.NodePointer;
import org.springframework.context.ApplicationContext;

import research.ch.cern.unicos.core.CoreManager;
import research.ch.cern.unicos.parametershandling.ITechnicalParameters;
import research.ch.cern.unicos.parametershandling.SiemensPLC;
import research.ch.cern.unicos.plugins.interfaces.GenerationException;
import research.ch.cern.unicos.plugins.pvssicg.unicosmetamodel.AttributeFamilyType;
import research.ch.cern.unicos.plugins.pvssicg.unicosmetamodel.AttributeType;
import research.ch.cern.unicos.resources.ResourcesPackageConfig;
import research.ch.cern.unicos.resourcespackage.DeviceType;
import research.ch.cern.unicos.userreport.UABLogger;
import research.ch.cern.unicos.utilities.AbsolutePathBuilder;
import research.ch.cern.unicos.utilities.BaseDeviceTypeFactory;
import research.ch.cern.unicos.utilities.CouldNotGetPLCAddressException;
import research.ch.cern.unicos.utilities.DeviceTypeFactory;
import research.ch.cern.unicos.utilities.IDeviceInstance;
import research.ch.cern.unicos.utilities.IDeviceType;
import research.ch.cern.unicos.utilities.IDeviceTypeFactory;
import research.ch.cern.unicos.utilities.IInstancesFacade;
import research.ch.cern.unicos.utilities.IPLCAddressFormatter;
import research.ch.cern.unicos.utilities.IPLCMemoryMapper;
import research.ch.cern.unicos.utilities.ISpecFile;
import research.ch.cern.unicos.utilities.IUNICOSMetaModel;
import research.ch.cern.unicos.utilities.SpecFactory;
import research.ch.cern.unicos.utilities.XMLConfigMapper;
import research.ch.cern.unicos.utilities.specs.CouldNotOpenSpecsException;

/**
 * Implementation of the memory mapper for Siemens PLCs.
 */
```



```

* @author Borja Fernandez Adiego
* @author Alexey Merezhin
* @author Marcin Bes
*/
public class SiemensPLCMemoryMapper implements IPLCMemoryMapper {
    // TODO M memory type is missed

    private static UABLogger UABLOGGER;
    XMLConfigMapper config;
    protected IInstancesFacade specFile;
    String plcName;
    private IPLCAddressFormatter addressFormatter;
    IDeviceTypeFactory deviceTypeFactory;
    /** Dedicated buffer to store the table with all the calculated Address */
    Map<String, S7SymbolResource> symbolResources = new LinkedHashMap<>();
    protected Map<String, String> fullAddresses = new HashMap();

    /**
     * Class constructor
     *
     * @param specFile Java representation of the specs file.
     * @throws Exception
     */
    public SiemensPLCMemoryMapper(IInstancesFacade specFile, String pluginId) throws Exception {
        ApplicationContext context = CoreManager.getCoreBeansFactory();
        UABLOGGER = context.getBean(UABLogger.class);
        ITechnicalParameters technicalParameters = context.getBean(ITechnicalParameters.class);
        this.config = technicalParameters.getXMLConfigMapper();
        this.specFile = specFile;
        this.deviceTypeFactory = DeviceTypeFactory.getInstance();
        List<SiemensPLC> siemensDeclarations = config.getSiemensPLCDeclarations();
        this.plcName = siemensDeclarations.get(0).getName();

        UABLOGGER.fine("SiemensPLCMemoryMapper init");
        createAddressMapping();

        boolean computeFullAddress = Boolean.valueOf(config.getTechnicalParameter(pluginId
            + ":GeneralData:ComputeFullAddress"));
        if (computeFullAddress) {
            createFullAddressMap();
        }
    }
}

```

```

        UABLOGGER.fine("createAddressMapping is done");
    }

    public SiemensPLCMemoryMapper() throws
BaseDeviceTypeFactory.CouldNotGetDeviceTypeFactoryException {
    }

    /**
     * Function. it's used for the computeAdrres to know what is the equivalence in bytes of the
PrimitiveType of each
     * PIN of the UNICOSTypeDefinition.xml it takes this information from UNICOSAPPLICATION
     */
    public String getTypeMemorySize(String attributePrimitiveType) {
        // TODO: remove duplication in S7CodeGenerator
        List<SiemensPLC> siemensDeclarations = config.getSiemensPLCDeclarations();
        String thePLCName = siemensDeclarations.get(0).getName();
        return config.getApplicationParameter(thePLCName +
        "::SiemensSpecificParameters:TypeMemorySize:"
        + attributePrimitiveType);
    }

    @SuppressWarnings("unchecked")
    private void createFullAddressMap() throws Exception {
        String xpath = "/attributeFamily[attributeFamilyName='FEDeviceOutputs' or
attributeFamilyName='FEDeviceManualRequests' "
        + "or attributeFamilyName='FEDeviceParameters']/attribute[isCommunicated='true']";
        for (IDeviceType deviceType : specFile.getAllDeviceTypes()) {
            String representationName =
S7Functions.getTargetDeviceInformationParam("RepresentationName",
            deviceType.getDeviceTypeName());

            IUNICOSMetaModel dtd =
deviceTypeFactory.getDeviceType(deviceType.getDeviceTypeName());
            Iterator<NodePointer> iterator = dtd.getContext().iteratePointers(xpath);

            Boolean fast_interlock_device_present = false; //Checking Fast interlock presence
            List<IDeviceInstance> instance_devices = deviceType.getAllDeviceTypeInstances();
            List<IDeviceInstance> FI_instance_list = new ArrayList<IDeviceInstance>();
            for (IDeviceInstance instance : instance_devices){
                if (instance.doesSpecificationAttributeExist("LogicDeviceDefinitions:Fast Interlock Type")){
                    if (!instance.getAttributeData("LogicDeviceDefinitions:Fast Interlock Type").equals("")){

```

```

        FI_instance_list.add(instance);
    }
}
}
fast_interlock_device_present = !FI_instance_list.isEmpty();

Map<String, FullAddressCounter> pins = new LinkedHashMap();
Map<String, Integer> counters = new HashMap<>();
while (iterator.hasNext()) {
    NodePointer node = iterator.next();
    AttributeType attribute = (AttributeType) node.getNode();
    String attributeName = attribute.getAttributeName();
    String parentNodeName = ((AttributeFamilyType)
node.getParent().getNode()).getAttributeFamilyName();

    if ("FEDeviceManualRequests".equals(parentNodeName) ||
"FEDeviceParameters".equals(parentNodeName)) {
        if (fast_interlock_device_present) {
            pins.put(attributeName + "_FI", new FullAddressCounter("DB_" + representationName
+ "_FI_ManRequest",
                attribute.getPrimitiveType(), this));
            counters.put(pins.get(attributeName + "_FI").getDbName(), 0);
        }
        pins.put(attributeName, new FullAddressCounter("DB_" + representationName +
"_ManRequest",
            attribute.getPrimitiveType(), this));
        counters.put(pins.get(attributeName).getDbName(), 0);
    } else if ("FEDeviceOutputs".equals(parentNodeName)) {
        if (attribute.getIsEventAttribute() != null && attribute.getIsEventAttribute()) {
            if (fast_interlock_device_present) {
                pins.put(
                    attributeName + "_FI",
                    new FullAddressCounter("DB_bin_Status_" + representationName + "_FI",
                        attribute.getPrimitiveType(), this));
                counters.put(pins.get(attributeName + "_FI").getDbName(), 0);

                pins.put("Ev" + attributeName + "_FI", new FullAddressCounter("DB_Event_" +
representationName + "_FI",
                    "INT32", this));
                counters.put(pins.get("Ev" + (attributeName) + "_FI").getDbName(), 2);
            }
            pins.put(
                attributeName,

```

```

        new FullAddressCounter("DB_bin_Status_" + representationName,
            attribute.getPrimitiveType(), this));
counters.put(pins.get(attributeName).getDbName(), 0);

pins.put("Ev" + attributeName, new FullAddressCounter("DB_Event_" +
representationName,
    "INT32", this));
counters.put(pins.get("Ev" + (attributeName)).getDbName(), 2); // TODO: Check with
Ivan this

// line and condition below (to
// be deleted?)
// if (attributeName.equals("StsReg01")) {
// counters.put(pins.get("Ev" + attributeName).getDbName(), 2);
// System.out.println("HERE!! !! !! !!");
// }
} else {
    if (fast_interlock_device_present) {
        pins.put(
            attributeName + "_FI",
            new FullAddressCounter("DB_ana_Status_" + representationName + "_FI",
                attribute.getPrimitiveType(), this));
        counters.put(pins.get(attributeName + "_FI").getDbName(), 0);
    }
    pins.put(
        attributeName,
        new FullAddressCounter("DB_ana_Status_" + representationName,
            attribute.getPrimitiveType(), this));
    counters.put(pins.get(attributeName).getDbName(), 0);
}
} else {
    throw new GenerationException("unknown attribute's family name: " +
parentNodeName);
}
}

for (IDeviceInstance instance : deviceType.getAllDeviceTypeInstances()) {
    String name = instance.getAttributeData("DeviceIdentification:Name");
    Boolean instance_FI = false;
    if (instance.doesSpecificationAttributeExist("LogicDeviceDefinitions:Fast Interlock Type")) {
        instance_FI = !instance.getAttributeData("LogicDeviceDefinitions:Fast Interlock
Type").equals("");
    }
}

```

```

for (String pin : pins.keySet()) {
    // if instance is NOT FI and pin !endsWith _FI
    if (!instance_FI && !pin.endsWith("_FI")) {
        FullAddressCounter addrCounter = pins.get(pin);
        fullAddresses.put(name + "_" + pin, addrCounter.getFullAddress(counters));
        addrCounter.increment(counters);
    }
    // ELSE if instance IS FI and pin endsWith _FI
    if (instance_FI && pin.endsWith("_FI")){
        FullAddressCounter addrCounter = pins.get(pin);
        fullAddresses.put(name + "_" + pin, addrCounter.getFullAddress(counters));
        addrCounter.increment(counters);
    }
}
}
}
}
}

```

```

public Collection<S7SymbolResource> getResources() {
    return symbolResources.values();
}

```

```

/**
 * createAddressMapping function It returns a table with all the resources and its address.
 *
 * @throws Exception
 */
protected void createAddressMapping() throws Exception {
    int firstFB = Integer.parseInt(config.getApplicationParameter(this.plcName
        + ":SiemensSpecificParameters:PLCMemory:1stFB"));
    int firstFC = Integer.parseInt(config.getApplicationParameter(this.plcName
        + ":SiemensSpecificParameters:PLCMemory:1stFC"));
    int firstDB = Integer.parseInt(config.getApplicationParameter(this.plcName
        + ":SiemensSpecificParameters:PLCMemory:1stDB"));
    int firstUDT = Integer.parseInt(config.getApplicationParameter(this.plcName
        + ":SiemensSpecificParameters:PLCMemory:1stUDT"));
    int lastIndex = Integer.parseInt(config.getApplicationParameter(this.plcName
        + ":SiemensSpecificParameters:PLCMemory:LastUNICODEExtended"));

    createReservedResources();
}

```

```

// Create an instance of S7SymbolResource and assign the location in memory
AddressCounter addressCounter = new AddressCounter(firstFB, firstFC, firstDB, firstUDT, 1);
createResources("BaselineResources", addressCounter);

// Create the S7SymbolResource for the new UNICOSExtended resources
addressCounter = new AddressCounter(lastIndex, lastIndex, lastIndex, lastIndex, -1);
createResources("UNICOSExtended", addressCounter);

createSubpackageResources();

addressCounter = new AddressCounter(firstFB + 40, firstFC + 40, firstDB + 40, firstUDT + 40, 1);
createUserResources("UserResourcesFile", addressCounter);
createDeviceInstanceResources(addressCounter);

createUserResources("FixUserResourcesFile");

checkMemoryOverlap();
}

public void addResource(S7SymbolResource resource) {
    resource.setMapper(this);
    symbolResources.put(resource.getName(), resource);
}

protected void createSubpackageResources() throws Exception {
    // iterate subpackages
    List<String> subpackages = config.getApplicationParameterStringList(this.plcName
        + ":SiemensSpecificParameters:SubPackageResources");

    for (String subpackageName : subpackages) {
        int subpackageLastIndex = Integer.parseInt(config.getApplicationParameter(this.plcName
            + ":SiemensSpecificParameters:PLCMemory:" + subpackageName));
        AddressCounter addressCounter = new AddressCounter(subpackageLastIndex,
            subpackageLastIndex, subpackageLastIndex, subpackageLastIndex, -1);
        createResources("SubPackageResources:" + subpackageName, addressCounter);
    }
}

protected void createReservedResources() {
    List<String> theMemoryResources = config.getApplicationParameterStringList(this.plcName

```

```

        + ":SiemensSpecificParameters:PLCReservedMemory");

    for (String memoryResourceName : theMemoryResources) {
        Map<String, Object> map = config.getApplicationParametersMap(this.plcName
            + ":SiemensSpecificParameters:PLCReservedMemory:" + memoryResourceName);
        S7SymbolResource resource = new S7SymbolResource(map.get("Name").toString());
        resource.setAddressRef(map.get("Address").toString());
        resource.setAssociatedAddressRef(map.get("Type").toString());
        resource.setComment(map.get("Description").toString());
        addResource(resource);
    }

    String plcType = config.getPLCParameter(this.plcName + ":PLCType");
    if ("S7-400".equalsIgnoreCase(plcType) || "S7-400H".equalsIgnoreCase(plcType)) {
        S7SymbolResource resource = new S7SymbolResource("BSEND
            ");
        resource.setAddressRef("SFB 12 ");
        resource.setAssociatedAddressRef("SFB 12 ");
        resource.setComment("");
        addResource(resource);
    }
}

/**
 * Create the baseline resources and assign them an address.
 *
 * @param resourcesParameter Location of the baseline resources in the
SiemensSpecificParameters.
 * @param addressCounter address counters for all resources
 */
protected void createResources(String resourcesParameter, AddressCounter addressCounter)
throws Exception {
    List<String> theBaselineResources = config.getApplicationParameterStringList(this.plcName
        + ":SiemensSpecificParameters:" + resourcesParameter);
    for (String resourceName : theBaselineResources) {
        Map<String, Object> map = config.getApplicationParametersMap(this.plcName +
            ":SiemensSpecificParameters:"
                + resourcesParameter + ":" + resourceName);
        S7SymbolResource resource = new S7SymbolResource(map.get("Name").toString(),
            map.get("Nature").toString(),
                map.get("Description").toString(), map.get("Associated").toString());

        resource.setAddress(addressCounter.getAddress(resource.getNature()));
    }
}

```

```

        addResource(resource);
    }
}

protected void createUserResources(String specKey) throws Exception {
    createUserResources(specKey, null);
}

/**
 * Create the user resources and assign them an address.
 *
 * @param addressCounter address counters for all resources
 */
protected void createUserResources(String specKey, AddressCounter addressCounter) throws
Exception {
    String theUserResourcesRelativePath = config.getApplicationParameter(this.plcName
        + ":SiemensSpecificParameters:UserResources:" + specKey);
    if (theUserResourcesRelativePath.equals("")) {
        return;
    }
    String theUserResourcesPath =
AbsolutePathBuilder.getApplicationPathParameter("SiemensSpecificParameters:UserResources:"
        + specKey);
    ISpecFile theUserResources = SpecFactory.getSpec(theUserResourcesPath);
    List<IDeviceInstance> theUserResourcesVector =
theUserResources.getDeviceType("UserResources")
        .getAllDeviceTypeInstances();
    for (IDeviceInstance userResource : theUserResourcesVector) {
        S7SymbolResource resource = new
S7SymbolResource(userResource.getAttributeData("UserResources:Symbol"),
            userResource.getAttributeData("UserResources:Nature"),
            userResource.getAttributeData("UserResources:Comments"),
            userResource.getAttributeData("UserResources:Associated"));

        if (addressCounter == null) {
            resource.parseAddress(userResource.getAttributeData("UserResources:Address"));
        } else {
            resource.setAddress(addressCounter.getAddress(resource.getNature()));
        }
        addResource(resource);
    }
}

```



```

    }
}

/**
 * Create the resources for all the device type instances.
 */
protected void createDeviceInstanceResources(AddressCounter addressCounter) throws Exception {
    // Get the correct order of the device types for the address computation
    String deviceOrderFilePath =
config.getPLCParameter("SiemensSpecificParameters:AddressConfig:DeviceOrderFilePath");

    ResourcesPackageConfig deviceOrderConfig =
ResourcesPackageConfig.getInstanceFromFile(AbsolutePathBuilder.getAbsolutePath(deviceOrderFile
Path));

    String logicSections = config.getApplicationParameter("FieldsDefinition:CustomLogicSections");
    String dependentLogicField =
config.getApplicationParameter("FieldsDefinition:DependentLogicSubField");

    // Look into the specs
    for (DeviceType deviceType : deviceOrderConfig.getDeviceTypesList()) {
        // creating resources for the device instances
        String typeName = deviceType.getName();
        IDeviceType currentType = specFile.getDeviceType(typeName);
        if (currentType == null) {
            continue;
        }

        IUNICOSMetaModel theDeviceTypeDefinition = deviceTypeFactory.getDeviceType(typeName);
        String family = theDeviceTypeDefinition.getInformation().getObjectTypeFamily();
        String xpathBinary =
"count(/attributeFamily[attributeFamilyName='FEDeviceOutputs']/attribute[isCommunicated='true'
and isEventAttribute='true'])>0";
        String xpathAnalog =
"count(/attributeFamily[attributeFamilyName='FEDeviceOutputs']/attribute[isCommunicated='true'
and isEventAttribute!='true'])>0";
        boolean hasBinCommunication = Boolean.parseBoolean(theDeviceTypeDefinition.getContext()
.getValue(xpathBinary)
.toString());
        boolean hasAnaCommunication =
Boolean.parseBoolean(theDeviceTypeDefinition.getContext()
.getValue(xpathAnalog)
.toString());

```

```

    boolean isOptimized =
Boolean.parseBoolean(S7Functions.getTargetDeviceInformationParam("Optimized",
    typeName));
    boolean isFastInterlock =
Boolean.parseBoolean(S7Functions.getTargetDeviceInformationParam("FastInterlock", typeName));
    String representationName =
S7Functions.getTargetDeviceInformationParam("RepresentationName", typeName);

    String resourceKey = this.plcName + ":SiemensSpecificParameters:";
    resourceKey += isOptimized ? "OptimizedTypeResources" : "NoOptimizedTypeResources";
    List<String> resources = config.getApplicationParameterStringList(resourceKey);
    for (String resourceName : resources) {
        Map<String, Object> map = config.getApplicationParametersMap(resourceKey + ":" +
resourceName);

        if (resourceName.equals("Master_Equipment_Location_Name")) {
            if (("FieldObjectFamily".equalsIgnoreCase(family) ||
"ControlObjectFamily".equalsIgnoreCase(family))) {
                // check if the device type has the DL attribute
                // (LogicDeviceDefinitions:CustomLogicSections:DL)
                if (theDeviceTypeDefinition.doesSpecificationAttributeExist(logicSections + ":"
+ dependentLogicField)) {
                    for (IDeviceInstance instance : currentType.getAllDeviceTypeInstances()) {
                        S7SymbolResource resource = new S7SymbolResource(
                            instance.getAttributeData("DeviceIdentification:Name") + "_DL", map.get(
                                "Nature").toString(), map.get("Description").toString(), map.get(
                                    "Associated")
                                .toString()
                                .replace("Type", representationName));
                        resource.setAddress(addressCounter.getAddress(resource.getNature()));
                        addResource(resource);
                    }
                }
            }
        } else if (resourceName.equals("DB_Equipment_Location_Name")) {
            for (IDeviceInstance instance : currentType.getAllDeviceTypeInstances()) {
                S7SymbolResource resource = new S7SymbolResource(
                    instance.getAttributeData("DeviceIdentification:Name"),
                    map.get("Nature").toString(),
                    map.get("Description").toString(), map.get("Associated")
                        .toString()
                        .replace("Type", representationName));
                resource.setAddress(addressCounter.getAddress(resource.getNature()));
            }
        }
    }
}

```

```

        addResource(resource);
    }
} else {
    if (!hasBinCommunication
        && (resourceName.equals("DB_bin_Status_Type") ||
resourceName.equals("DB_bin_Status_Type_old"))) {
        continue;
    }
    if (!hasAnaCommunication
        && (resourceName.equals("DB_ana_Status_Type") ||
resourceName.equals("DB_ana_Status_Type_old"))) {
        continue;
    }
    if (!isOptimized) {
        if (!hasBinCommunication && resourceName.equals("Type_bin_Status")) {
            continue;
        }
        if (!hasAnaCommunication && resourceName.equals("Type_ana_Status")) {
            continue;
        }
    }
}

S7SymbolResource resource = new S7SymbolResource(map.get("Name")
    .toString()
    .replace("Type", representationName), map.get("Nature").toString(),
map.get("Description")
    .toString(), map.get("Associated").toString().replace("Type", representationName));
resource.setAddress(addressCounter.getAddress(resource.getNature()));
addResource(resource);
}
}

// Fast Interlock Resources
if (isFastInterlock){
    resourceKey = this.plcName + ":SiemensSpecificParameters:FastInterlockResources";
    resources = config.getApplicationParameterStringList(resourceKey);

    for (String resourceName : resources) {
        Map<String, Object> map = config.getApplicationParametersMap(resourceKey + ":" +
resourceName);

        if (representationName.equals("ONOFF")) {
            if (resourceName.equals("FB_Type_FI") || resourceName.equals("DB_Type_FI")) {

```



```

protected void checkMemoryOverlap() throws Exception {
    checkMemoryOverlap("FB");
    checkMemoryOverlap("FC");
    checkMemoryOverlap("DB");
    checkMemoryOverlap("UDT");
}

```

```

protected void checkMemoryOverlap(String nature) throws Exception {
    Set<Integer> existingAddresses = new HashSet<Integer>();
    for (S7SymbolResource resource : getResources()) {
        if (resource.getNature() != null && resource.getNature().equalsIgnoreCase(nature)) {
            Integer resourceAddress = resource.getAddress();
            if (existingAddresses.contains(resourceAddress)) {
                throw new Exception("Duplicated address for resource: " + resource.getName());
            } else {
                existingAddresses.add(resourceAddress);
            }
        }
    }
}

```

```

/**
 * Write the memory mapping status in the UAB Log.
 *
 * @param level The logging level for the messages.
 */
public void writeMappingStatus(Level level) {
    // TODO: What to write here??
}

```

```

// //////////// GETTING THE ADDRESS SECTION
/**
 * Get the resource address.
 *
 * @param name Resource name.
 * @return The resource address if it exists, otherwise null.
 */

```

```

public String getResourceAddress(String name) {
    try {
        return getResource(name).getAddress().toString();
    } catch (Exception e) {
        return "";
    }
}

```

```

public S7SymbolResource getResource(String name) throws Exception {
    if (symbolResources.containsKey(name)) {
        return symbolResources.get(name);
    }
    throw new Exception("There's no address registered for: " + name + ".");
}

```

```

/**
 * Get the address of a resource located in a vector.
 *
 * @param resourcesVector The resources vector where to look.
 * @param resourceName The name of the resource to look.
 * @return The requested address if it exists, otherwise null.
 */
Integer getResourceAddress(List<S7SymbolResource> resourcesVector, String resourceName) {
    S7SymbolResource resource = findResource(resourcesVector, resourceName);
    if (resource == null) {
        return null;
    }

    return resource.getAddress();
}

```

```

/**
 * Find a resource in the specified vector.
 *
 * @param resourcesVector The resources vector where to look.
 * @param resourceName The name of the resource to look.
 * @return The requested resource if it exists, otherwise null.
 */

```

```

protected S7SymbolResource findResource(List<S7SymbolResource> resourcesVector, String
resourceName) {
    if (resourcesVector == null || resourceName == null || "".equals(resourceName)) {
        return null;
    }

    for (S7SymbolResource resource : resourcesVector) {
        if (resource.getName().equals(resourceName)) {
            return resource;
        }
    }
    return null;
}

/**
 * This method retrieves the PLC memory addresses as from the provided information.
 *
 * @param resourceName Name of the calculated address to retrieve.
 * @return The DB Address.
 * @throws Exception
 */
public Integer getDBAddress(String resourceName) throws Exception {
    return getResource(resourceName).getAddress();
}

// TODO: remove me
public String getAddress(String instanceInfoName) throws CouldNotGetPLCAddressException {
    return null;
}

private String formatAddress(String address) {
    if (addressFormatter != null) {
        return addressFormatter.format(address);
    }
    return address;
}

// //////////////////////////////////// END OF THE SECTION

```

```

// TODO remove me
public Set<String> getAllKeys() {
    return null;
}

@Override
public String computeAddress(String instanceInfoName) throws CouldNotGetPLCAddressException
{
    if (fullAddresses.containsKey(instanceInfoName)) {
        return formatAddress(fullAddresses.get(instanceInfoName));
    } else {
        return formatAddress("");
    }
}

@Override
public void setAddressFormatter(IPLCAddressFormatter formatter) {
    addressFormatter = formatter;
}
}

```


10. Acronyms

CERN	European Organization for Nuclear Research
UNICOS	Unified Industrial Control Systems
UAB	UNICOS Application Builder
CPC	Continuous Process Control
BE-ICS-PCS	Beams department, Industrial Controls and Safety group, Process Control Systems Section
FI	Fast Interlock
TSPP	Time Stamp Push Protocol
PLC	Programmable Logic Controller
ST	Structured Text
SCL	Structured Control Language
OB	Organization Block
FB	Function Block
FC	Function
SFB	Standard Function Block
SFC	Standard Function
PII	Peripheral Image of Inputs
PIO/PIQ	Peripheral Image of Outputs
IEC	International Electrotechnical Commission
SCADA	Supervisory Control And Data Acquisition
WINCC OA	WinCC Open Architecture
DI	Digital Input
DA	Digital Alarm
DO	Digital Output
PCO	Process Control Object

11. Documents of the project

The current project has been elaborated in multiple documents that describe a certain part of the project.

1. Report: General description of the project. Objectives and conditions for its test. Conclusion from the realization of the project and future works.
2. Planning and budget: Schedule of the different tasks that compound the project and price of the resources used.
3. Step 7 programmer manual: Modifications to the code of the UNICOS applications to support the fast interlock capability. Results obtained from these modifications.
4. Templates programmer manual: Modifications to the code of the templates and of the plugin used to generate the SCL files used in the PLC.
5. User manual: Steps to create a fast interlock UNICOS application.
6. Templates code: Modified template files inside the resources folder of an application and of the UAB plugin.
7. Datasheets: Datasheets of the devices used to research and test the solution for the fast interlocks issue.

Attachments.

1. Attachment 1: Fast interlock application example.