



Modicon Libraries - General Purpose for AVEVA™ System Platform (OMI)

Supervision Services

User Guide

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Safety Information

Important Information

Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, service, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of this symbol to a “Danger” or “Warning” safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

DANGER

DANGER indicates a hazardous situation which, if not avoided, **will result in** death or serious injury.

WARNING

WARNING indicates a hazardous situation which, if not avoided, **could result in** death or serious injury.

CAUTION

CAUTION indicates a hazardous situation which, if not avoided, **could result in** minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to physical injury.

Please Note

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction and operation of electrical equipment and its installation, and has received safety training to recognize and avoid the hazards involved.

Before You Begin

Do not use this product on machinery lacking effective point-of-operation guarding. Lack of effective point-of-operation guarding on a machine can result in serious injury to the operator of that machine.

⚠ WARNING**UNGUARDED EQUIPMENT**

- Do not use this software and related automation equipment on equipment which does not have point-of-operation protection.
- Do not reach into machinery during operation.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

This automation equipment and related software is used to control a variety of industrial processes. The type or model of automation equipment suitable for each application will vary depending on factors such as the control function required, degree of protection required, production methods, unusual conditions, government regulations, etc. In some applications, more than one processor may be required, as when backup redundancy is needed.

Only you, the user, machine builder or system integrator can be aware of all the conditions and factors present during setup, operation, and maintenance of the machine and, therefore, can determine the automation equipment and the related safeties and interlocks which can be properly used. When selecting automation and control equipment and related software for a particular application, you should refer to the applicable local and national standards and regulations. The National Safety Council's Accident Prevention Manual (nationally recognized in the United States of America) also provides much useful information.

In some applications, such as packaging machinery, additional operator protection such as point-of-operation guarding must be provided. This is necessary if the operator's hands and other parts of the body are free to enter the pinch points or other hazardous areas and serious injury can occur. Software products alone cannot protect an operator from injury. For this reason the software cannot be substituted for or take the place of point-of-operation protection.

Ensure that appropriate safeties and mechanical/electrical interlocks related to point-of-operation protection have been installed and are operational before placing the equipment into service. All interlocks and safeties related to point-of-operation protection must be coordinated with the related automation equipment and software programming.

NOTE: Coordination of safeties and mechanical/electrical interlocks for point-of-operation protection is outside the scope of the Function Block Library, System User Guide, or other implementation referenced in this documentation.

Start-up and Test

Before using electrical control and automation equipment for regular operation after installation, the system should be given a start-up test by qualified personnel to verify correct operation of the equipment. It is important that arrangements for such a check are made and that enough time is allowed to perform complete and satisfactory testing.

⚠ WARNING**EQUIPMENT OPERATION HAZARD**

- Verify that all installation and set up procedures have been completed.
- Before operational tests are performed, remove all blocks or other temporary holding means used for shipment from all component devices.
- Remove tools, meters, and debris from equipment.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Follow all start-up tests recommended in the equipment documentation. Store all equipment documentation for future references.

Software testing must be done in both simulated and real environments.

Verify that the completed system is free from all short circuits and temporary grounds that are not installed according to local regulations (according to the National Electrical Code in the U.S.A, for instance). If high-potential voltage testing is necessary, follow recommendations in equipment documentation to prevent accidental equipment damage.

Before energizing equipment:

- Remove tools, meters, and debris from equipment.
- Close the equipment enclosure door.
- Remove all temporary grounds from incoming power lines.
- Perform all start-up tests recommended by the manufacturer.

Operation and Adjustments

The following precautions are from the NEMA Standards Publication ICS 7.1-1995 (English version prevails):

- Regardless of the care exercised in the design and manufacture of equipment or in the selection and ratings of components, there are hazards that can be encountered if such equipment is improperly operated.
- It is sometimes possible to misadjust the equipment and thus produce unsatisfactory or unsafe operation. Always use the manufacturer's instructions as a guide for functional adjustments. Personnel who have access to these adjustments should be familiar with the equipment manufacturer's instructions and the machinery used with the electrical equipment.
- Only those operational adjustments actually required by the operator should be accessible to the operator. Access to other controls should be restricted to prevent unauthorized changes in operating characteristics.

About the Book

Document Scope

This document describes the master templates of the Modicon Libraries - General Purpose for AVEVA™ System Platform.

It describes their default configuration, the dynamic objects that are included in these master templates, and other functional aspects managed from ArchestrA IDE. This document does not cover any operational aspects, nor does it provide information on how to use supervision services to monitor and operate control systems.

This document is written for users with experience in the engineering of control systems and with a working knowledge of ASP and Control Expert.

NOTE: The terms *circuit breaker* and *motor starter* that are used in this manual refer to specific Schneider Electric devices for which templates are provided in this library. Refer to the product documentation of these devices for information on the applicable standards, which define these terms.

NOTE: ASP is abbreviation for AVEVA™ System Platform.

Validity Note

This document is valid for Aveva System Platform 2020 or later.

Related Documents

Title of documentation	Reference number
Modicon Libraries General Purpose Process Components User Guide	EIO0000002093 (eng)
Modicon Libraries General Purpose Devices Components User Guide	EIO0000002092 (eng)
Modicon Libraries General Purpose Diagnostics Components User Guide	EIO0000002090 (eng)
Modicon Libraries General Purpose for Wonderware System Platform Equipment Module Components User Guide	EIO0000003013 (eng)

Product Related Information

The application of this library, which is referred to as the *product*, requires expertise in the design and operation of control systems.

⚠ WARNING
UNINTENDED EQUIPMENT OPERATION <ul style="list-style-type: none">• Allow only authorized personnel with expertise in the design and operation of control systems to program, install, alter, and apply this product.• Follow local and national safety codes and standards. Failure to follow these instructions can result in death, serious injury, or equipment damage.

Examples described in this manual and the demonstration project are provided for information only.

⚠ WARNING**UNINTENDED EQUIPMENT OPERATION**

Adapt examples that are given in this manual to the specific functions and requirements of your industrial application before you implement them.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Getting Started

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Environment Preparation

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Library Installation

Software Compatibility

The Modicon Libraries - General Purpose for AVEVA System Platform has been tested and validated with Aveva System Platform 2020

The control resources that are mentioned in this manual are from the Modicon Libraries - General Purpose for AVEVA System Platform.

Use OPC Factory Server 3.40.2808.0, 3.50.2908.0 (SP3), or later, page 25.

Installation Methods

You can install the Modicon Libraries - General Purpose for AVEVA System Platform in ArchedrA IDE in two different ways:

- Recommended way to use the library with existing Galaxies: By importing the library installation files, which consist of:
 - The Galaxy package file.
 - Script function libraries.
 - The Galaxy style library.
 - A text (.txt) file with spanish translation of alarm messages.
- Recommended way to use the library with a new Galaxy: By creating a new Galaxy from the GPLBlank yymmdd.cab Galaxy backup provided. The backup contains the necessary resources, page 26, including alarm messages in English and Spanish.

NOTE: Use this method to install the demonstration project.

Installing the Library by Using Installation Files

The installation files are composed of:

- Three script function libraries:
 - *PSxLocalize.aaSLIB*
 - *ww.nasc.btl.modeling.aaSLIB*
 - *PSxMessaging.aaSLIB* (for attributes used by Control Expert runtime navigation services)
 - *System.Windows.Forms.aaSLIB*
- A Galaxy style library:
 - *GalaxyStyles-yyyymmdd.xml*
- Two packages containing the objects:
 - *GPLMasterTemplates.aaPKG*
 - *GPLApplicationTemplates.aaPKG* (also contains master templates), page 26

- A file with spanish translation of alarm messages used in master templates:
 - *Galaxy_GPLDemoProcess yyyyymmdd_3082_Alarm_Comments.txt*

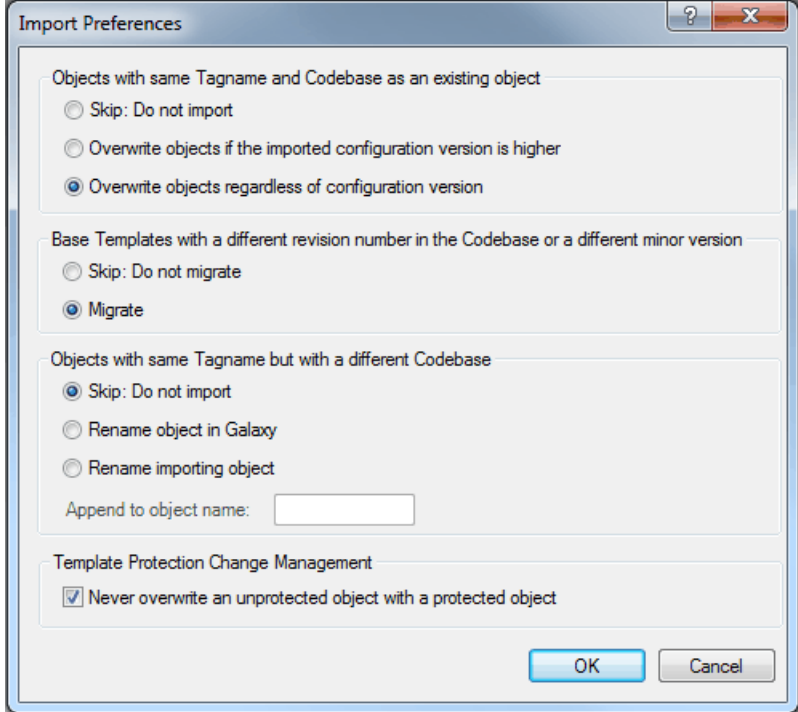
NOTE: This file is for user reference for spanish translation.
- SQL database related files to manage parameter sets:
 - *ParameterSets.bak*, which is a backup file of the blank ParameterSets database. It contains the tables that are required to manage parameter sets by using the parameter set management template.

NOTE: To use the backup file, Microsoft SQL Server, page 22 needs to be installed on the PC. Open Microsoft SQL Server Management Studio and select **Restore Database** from the context menu of the **Databases** folder. Select **Device** in the **Source** section of the **Restore Database** dialog box and browse to the backup file.
 - GPL for WSP PS schema *yyymmdd.sql*, which is an SQL query file that creates a blank *ParameterSets* database without needing to restore the backup file provided in the setup.
 - PS Schema Migration *yyyyymmdd.sql*, which is an SQL query file for existing users to migrate their *ParameterSets* database.

NOTE: To use the SQL query file, Microsoft SQL Server, page 22 needs to be installed on the PC. Open Microsoft SQL Server Management Studio, select **File** → **Open** → **File**, browse to the required query and open it, then select **Query** → **Execute**.

Proceed as follows to install the library by using the installation files.

Step	Action
1	Open ArchestrA IDE.
2	Click Galaxy > Import > Galaxy Style Library .
3	Select the <i>GalaxyStyles-yyyyymmdd.xml</i> file from the Installation Files > Galaxy Styles folder and then click Open .
4	Click Galaxy > Import > Script Function Library .
5	Select the <i>PSxLocalize.aaSLIB</i> file from the Installation Files > Script Function Libraries folder and then click Open .
6	Click Galaxy > Import > Script Function Library .
7	Select the <i>PSxMessaging.aaSLIB</i> file from the Installation Files > Script Function Libraries folder and then click Open .
8	Click Galaxy > Import > Script Function Library .
9	Select the <i>ww.nasc.btl.modeling.aaSLIB</i> file from the Installation Files > Script Function Libraries folder and then click Open .
10	Click Galaxy > Import > Script Function Library .
11	Select the <i>System.Windows.Forms.aaSLIB</i> file from the Installation Files > Script Function Libraries folder and then click Open .
12	Click Galaxy > Import > Object(s) .
13	Select the <i>PSxTab.aaPKG</i> file from the Installation Files > Graphic Objects folder and then click Open .
14	Click Galaxy > Import > Object(s) .
15	Select the <i>LayoutGP.aaPKG</i> file from the Installation Files > Graphic Objects folder and then click Open .
16	Click Galaxy > Import > Object(s) .
17	Select the <i>\$ViewAppGP.aaPKG</i> file from the Installation Files > Graphic Objects folder and then click Open .
18	Click Galaxy > Import > Object(s) .
19	Select the <i>GPLMasterTemplates.aaPKG</i> file from the Installation Files > Master Templates folder and then click Open .
20	Click Galaxy > Import > Object(s) .

Step	Action
21	Select the <i>GPLApplicationTemplates.aaPKG</i> file from the Installation Files > Application Templates folder and then click Open .
22	<p>Select your import preferences according to your needs and click OK.</p> <p>NOTE:</p> <p>To update library objects that already exist in your Galaxy, select the following import preferences.</p>  <p>Result: The import of the library objects begins.</p>
23	Wait until the import ends.
24	Verify the import log in the Import Automation Object(s) window.

Installing the Library by Using the Galaxy Backup

Proceed as follows to install the library by using the Galaxy backup of the Modicon Libraries - General Purpose for AVEVA System Platform.

Step	Action
1	Copy the Galaxy backup file (.cab) to the BackupGalaxies folder at the path C:\Program Files(x86)\ArcheStrA\Framework\Bin\BackupGalaxies.
2	Open ArcheStrA IDE.
3	Click New Galaxy .
4	Select the Galaxy backup file from the Galaxy type list.
5	Enter your Galaxy name in the Galaxy name field.
6	Click Create .
	<p>Result: Your Galaxy is created from the Galaxy backup of the Modicon Libraries - General Purpose for AVEVA System Platform.</p>

Content of the Modicon Libraries - General Purpose for AVEVA System Platform

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List of Master Templates	27
Acronym	29

Overview

This chapter describes the contents and features of the Modicon Libraries - General Purpose for AVEVA System Platform.

Modicon Libraries General Purpose Library for ASP Overview

Library Scope

The Modicon Libraries - General Purpose for AVEVA System Platform provides a supervision function for each control function of the Modicon Libraries - General Purpose for Control Expert.

Modularity is provided by the object-oriented design with ready-to-use templates, which reduces engineering time.

The Modicon Libraries - General Purpose for AVEVA System Platform includes templates for the following categories of control modules:

- Process
- Devices
- Diagnosis
- Parameter Set

The library is engineered with ArchestrA IDE, page 22.

Key Features

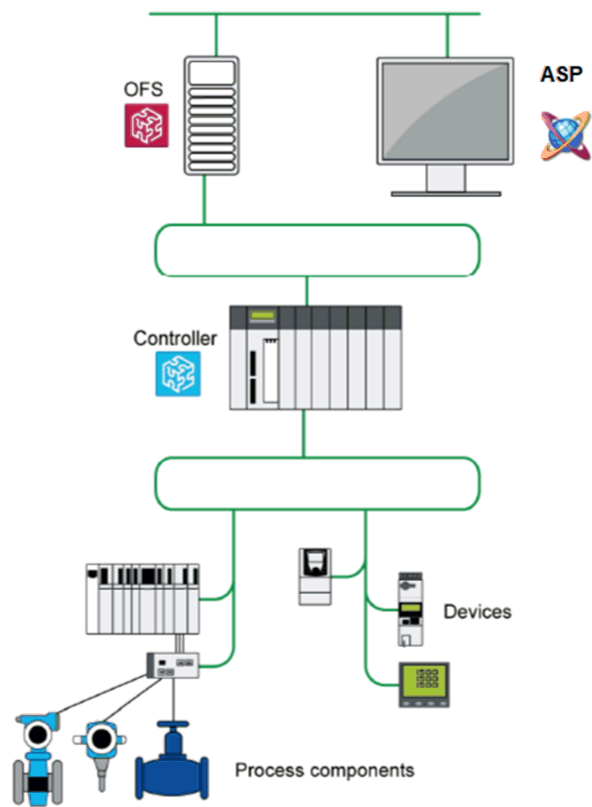
The Modicon Libraries - General Purpose for AVEVA System Platform delivers the following features:

- Situational Awareness (SA): The library look and feel has been designed according to SA principles. You can quickly identify abnormal situations, which are deviations compared to what is expected and to what is considered to be the normal operating mode. (For example, level bars and trends allow you to compare current process values to the configured thresholds, or if the configuration of a function considers the normal operating mode to be *program*, setting it to *operator* is indicated as an abnormal situation.).
- AVEVA Situational Awareness Library (SAL) look and feel.
- Device diagnosis and status reporting according to Namur NE-107 recommendation.
- Communication between the control and supervision layers by using OPC Factory Server (OPC UA and OPC DA).
- Auto references to controller variables.
- Various process, device, and diagnostic master templates.

- Consistent look and feel.
- Static text of symbols and faceplates, as well as alarm descriptions available in English (default) and Spanish.
- Library style management, which allows you to change the appearance of the library components by modifying the global configuration.

Architecture

The figure illustrates a typical system architecture.



Resource Description

The Modicon Libraries - General Purpose for AVEVA System Platform contains the following templates and resources:

Templates:	<p>A template is an entity that represents a common functional requirement of a device, family of devices, or function. It only exists in the development environment. There are four types of templates:</p> <ul style="list-style-type: none">• Base templates. These are core objects used to create master templates. (For example, <code>\$SPBoolCE</code>.)• Master templates. Their name starts with the suffix <code>CE</code>. (For example, <code>\$MotorCE</code>). These control module templates are derived from base templates or other parent templates of the <i>Services</i> category. You can copy these templates if you want to modify the default configuration at the template level and then create instances. <p>NOTE: Some attributes of these master templates may be locked at the template level and/or parent level.</p> <ul style="list-style-type: none">• Application templates. Each one is directly derived from a master template for your convenience. Their name starts with the prefix <code>\$a</code> and suffix <code>CE</code>. (For example, <code>\$AnalogInputCE</code>). You can modify these templates and/or create instances from them.
ArchestrA Symbols:	<p>ArchestrA symbols are included with master and application templates. They contain graphic objects and faceplates used to visualize data in runtime. A graphic object includes multiple configurations in a single symbol wizard (for example, motor or pump symbols).</p>

List of Master Templates

Overview

The master templates described in this document are grouped by category and family.

When the library is installed, templates are located at the following path in the **Template Toolbox**:

- Master templates: **EcoStruxure Plant\Master Templates**.
- Application templates: **EcoStruxure Plant\Application Templates**.

For example, the *\$MotorCE* master template is located at the path **EcoStruxure Plant\Master Templates\GPL\Process\Control Modules\On/Off Device Control**.

For other master templates and base templates, their location in the **Template Toolbox** is indicated in the table listing them.

NOTE: For each category, the families are the same as those used to group the control resources that are referenced in this manual.

NOTE: Templates located in the **Services** folders in each category are intermediate derived templates, which are common to several master templates of a category. You can derive from these templates but Schneider Electric recommends using only master templates located under the **Control Modules** folders in the **Template Toolbox**.

Process Category

The table lists the master templates which belong to the **Process** category.

Family	Template name	Purpose
Signal processing	<i>\$AnalogInputCE</i>	Analog inputs with configurable range, page 112
	<i>\$AnalogOutputCE</i>	Analog outputs, page 118
	<i>\$DigitalInputCE</i>	Digital inputs, page 124
	<i>\$DigitalOutputCE</i>	Digital outputs, page 129
	<i>\$AnalogInMultiCE</i>	Multiple analog inputs with configurable range, page 133
	<i>\$TotalCE</i>	Totalizing function, page 138
On/Off device control	<i>\$HandValveCE</i>	Hand valves, page 160
	<i>\$MotorCE</i>	On/off motors, page 164
	<i>\$Motor2DirCE</i>	2-speed/2-rotation-direction motors, page 171
	<i>\$MValveCE</i>	Discrete motorized valves, page 177
	<i>\$DualOPValveCE</i>	Dual Output Valve, page 183
	<i>\$ValveCE</i>	On/off valves, page 190
Analog device control	<i>\$ControlValveCE</i>	Control valves, page 197
	<i>\$MValvewithPosCE</i>	Motorized valves with position feedback, page 204
	<i>\$MotorVSCE</i>	Motors with variable speed drive, page 210
Process control	<i>\$IMCTLCE</i>	Internal model controllers, page 219
	<i>\$LeadLagCE</i>	Lead-Lag controllers, page 226
	<i>\$PIDCE</i>	PID controllers, page 231
	<i>\$PWMCtlCE</i>	Pulse-width modulation controllers, page 235
	<i>\$RampCE</i>	Ramps, page 239

Family	Template name	Purpose
	<i>\$RatioCtrlCE</i>	Ratio controllers, page 243
	<i>\$SplitRangeCE</i>	Split-range controllers, page 248
	<i>\$Step3CtlCE</i>	Three-step controllers, page 252
Sequential control	<i>\$SequenceCE</i>	Sequential control, page 259
Batch Phase Manager	<i>\$PhaseCE</i>	Batch phase functions, page 278
Equipment module	<i>\$EMPatternCE</i>	Equipment module functions, page 304
Pump Set	<i>\$PumpSetCtrlCE</i>	Pump Set functions, page 324
Flow Control	<i>\$PumpFlowCtrlCE</i>	Flow Control functions, page 330
Auxiliary functions	<i>\$AlarmSummaryCE</i>	Alarm summary, page 337
	<i>\$AnalogSelectCE</i>	Analog signal selection, page 344
	<i>\$SPBoolCE</i>	Discrete setpoints, page 352
	<i>\$SPRealCE</i>	Real setpoints, page 354
	<i>\$SPIntCE</i>	Integer setpoints, page 356
	<i>\$SPDurationCE</i>	Duration setpoints, page 358
	<i>\$MessageBoxCE</i>	Messages to the operator, page 348
	<i>\$SchedulerCE</i>	Scheduler function, page 361

Devices Category

The table lists the master templates which belong to the **Devices** category.

Family	Template name	Purpose
Circuit breakers	<i>\$CompactNSXMBUCE</i>	Compact NSX circuit breakers, page 367
	<i>\$MasterpactMTZCMBUCE</i>	Masterpact MTZ Circuit Breakers with Drawout/Chasis, page 371
	<i>\$MasterpactMTZMBUCE</i>	Masterpact MTZ Circuit Breakers without Drawout/Chasis, page 376
	<i>\$MasterpactNxMBUCE</i>	Masterpact Nx Circuit Breakers without Drawout/Chasis, page 380
	<i>\$MasterpactNxCMBUCE</i>	Masterpact Nx Circuit Breakers with Drawout/Chasis, page 383
	<i>\$MasterpactHWCE</i>	Hardwired Circuit Breaker, page 387
	<i>\$CompactHWCE</i>	Hardwired Compact Circuit Breaker, page 390
Digital protection relays	<i>\$Sepam80ECE</i>	Sepam 80 protection relays, page 395
	<i>\$Sepam80MBCE</i>	
	<i>\$EasergyP3EMCE</i>	\$EasergyP3EMCE, page 399
	<i>\$EasergyP3EMCE</i>	\$EasergyP3EMCE, page 403
Motor controllers and starters	<i>\$TesysTAIIDataCE</i>	TeSys T, page 408 communicating by using either: <ul style="list-style-type: none"> Ethernet Modbus TCP implicit messaging (normal I/O scanning) Ethernet Modbus TCP explicit messaging Modbus serial
	<i>\$TesysTEFastCE</i>	TeSys T, page 408 communicating by using either: <ul style="list-style-type: none"> Ethernet Modbus TCP implicit messaging (fast I/O scanning) CANopen (device connected to an STB island)
	<i>\$TesysTPBCE</i>	TeSys T, page 408 communicating by using <i>Profibus</i> .
	<i>\$TesysUIOCE</i>	TeSys U, page 413 communicating by using either of: <ul style="list-style-type: none"> Modbus serial. CANopen.

Family	Template name	Purpose
	<i>\$TsysUMainDataCE</i>	TeSys U, page 413 communicating by using either of: <ul style="list-style-type: none">Modbus serial.CANopen.
	<i>\$TsysUMECCE</i>	TeSys U, page 413 communicating by using Modbus serial.
Power meters	<i>\$PM5350MBCE</i>	PM5350 power meters, page 418
	<i>\$PM53xxEMCE</i>	PM53xx power meters, page 418
	<i>\$PM82xxEMCE</i>	PM82xx power meters, page 422
Soft starters	<i>\$ATS22MBCE</i>	Altistart 22 soft starters, page 426
	<i>\$ATS48MBCE</i>	Altistart 48 soft starters, page 430
	<i>\$ATS480MBTCPCE</i>	Altistart488 soft starters, page 435
	<i>\$ATS480EIPCE</i>	
Speed drives	<i>\$ATV6xxECE</i>	Altivar 6xx series variable speed drives, page 440
	<i>\$ATV9xxECE</i>	Altivar 9xx series variable speed drives, page 445
	<i>\$ATV6xxxECE</i>	Altivar, page 449 6xxx series variable speed drives
	<i>\$ATV320EMCE</i>	Altivar, page 453 320 series variable speed drives
	<i>\$ATV340CE</i>	Altivar, page 458 340 series variable speed drives

Diagnosis Category

The table lists the master templates which belong to the **Diagnosis** category.

Template name	Purpose
<i>\$M340DiagCE</i>	Modicon M340 diagnosis, page 464
<i>\$M580DiagCE</i>	Modicon M580 diagnosis, page 464

Acronym

Acronyms and Definitions

The following table lists the acronyms used in this manual:

Acronym	Definition
ASP	AVEVA system platform
WSP	Wonderware system platform
IDE	–
OPC	–
OPS	–
SQL	–
IDE	–
PID	–
SA	Situational Awareness
OP	Output command
LOP	Local output command
PV	Present value

Acronym	Definition
SP	Setpoint
LSP	Local setpoint
RSP	Remote setpoint
NAN	–
DIO	–
ZSH	–
ZSL	–
PIDFF	–
PWM	–

Example to Create Control Block Instance and Generate the Corresponding ASP Instance

What's in This Chapter

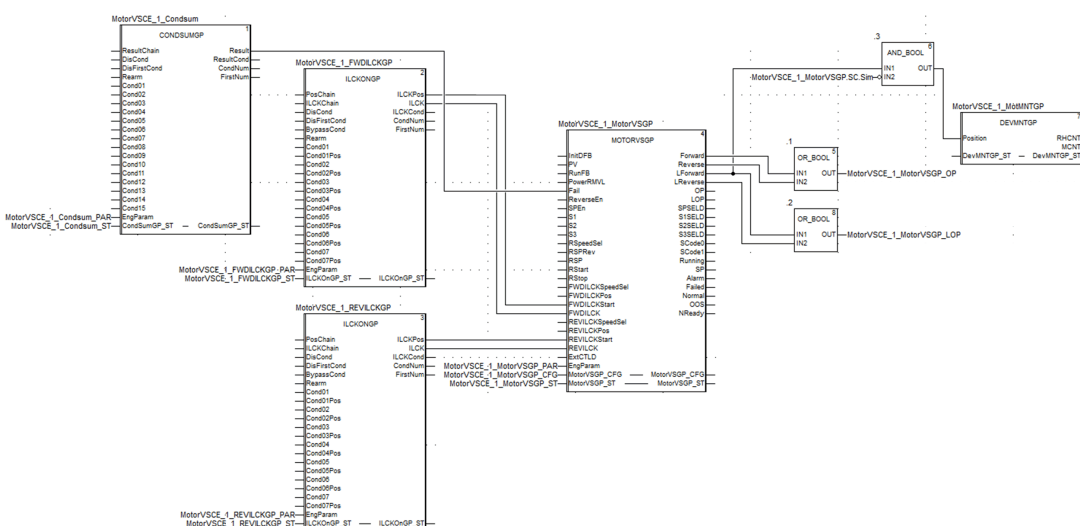
Overview31

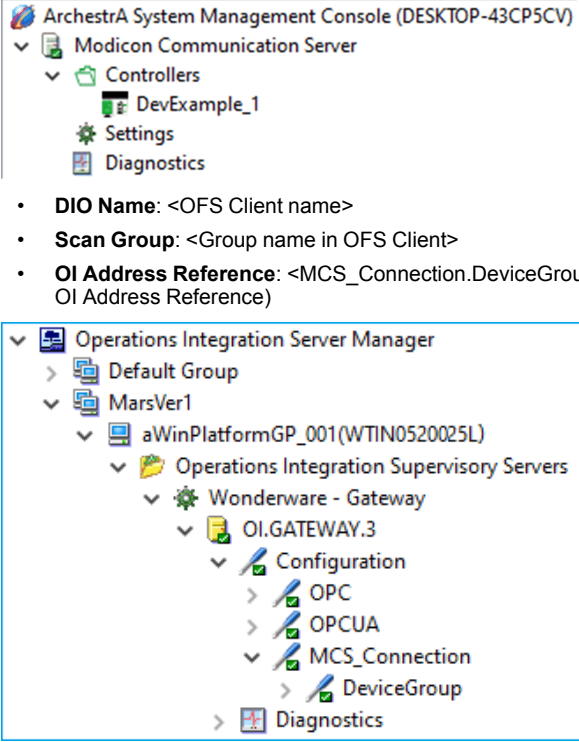
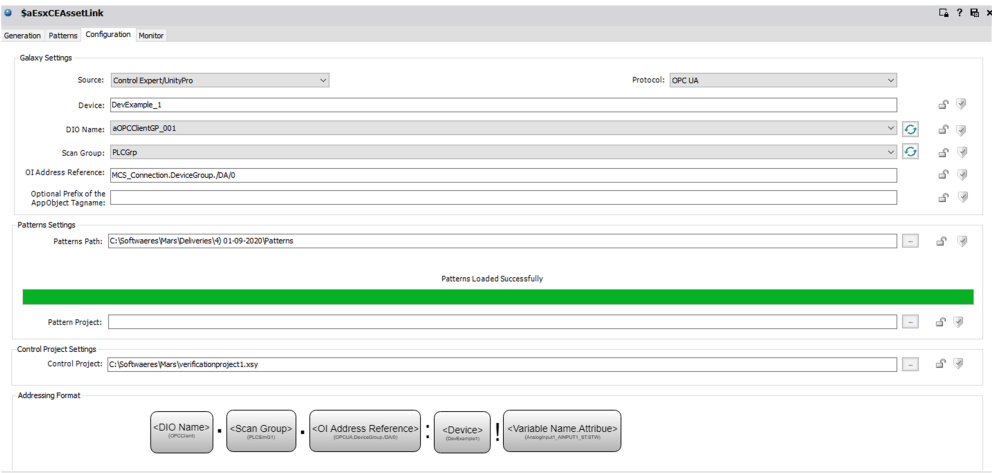
Overview

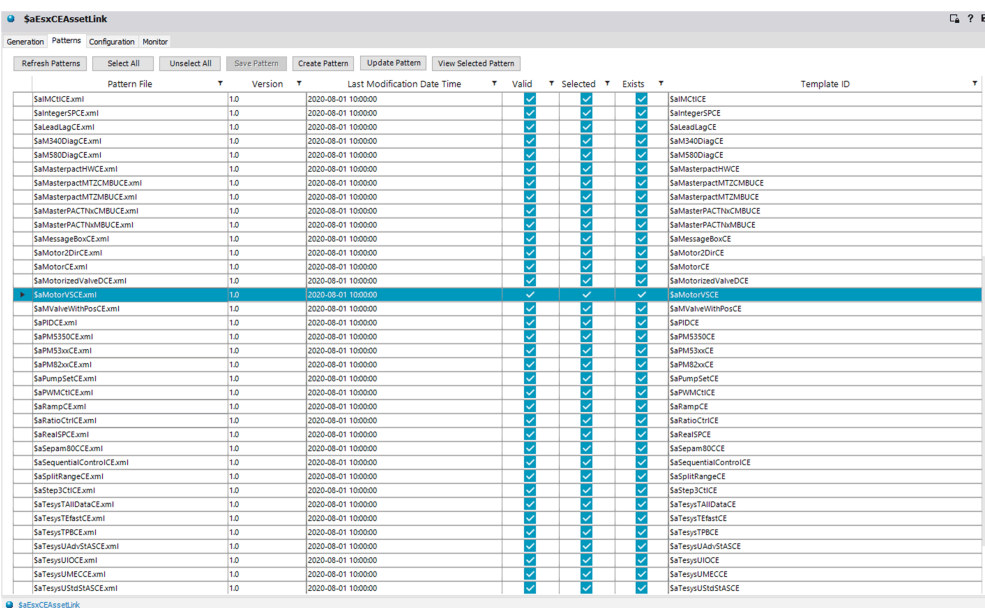
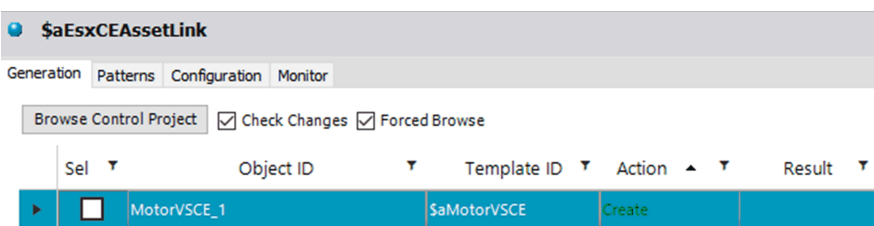
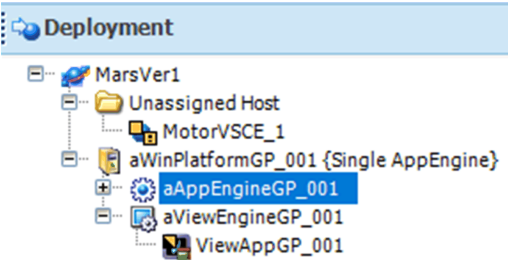
This section describes the steps to create control block instance and generate the corresponding ASP instance

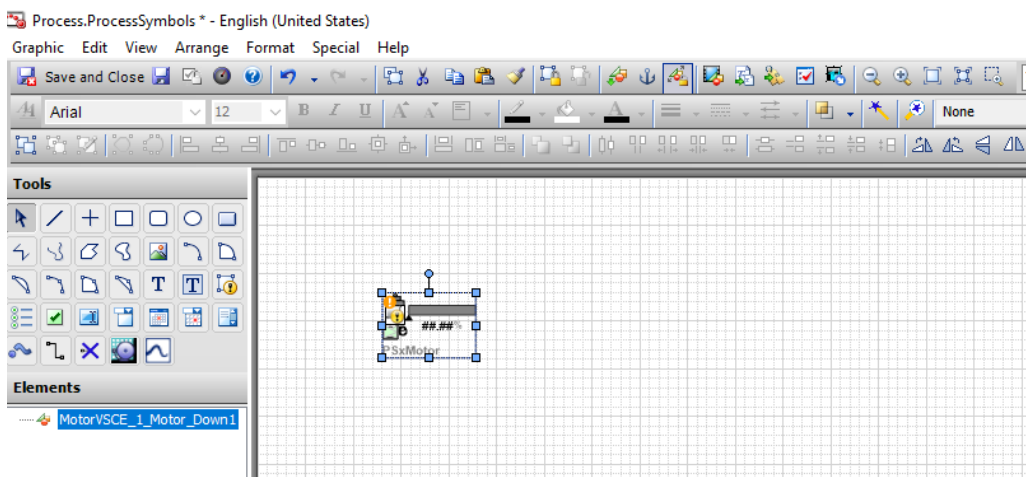
Note: This library has to be used with the AssetLink tool.

Step	Action
1	<p>Example to create a Control Expert DFB instances for MOTORVSGP along with its auxiliary blocks:</p> <ul style="list-style-type: none"> Instantiate the MOTORVSGP DFB with the name having suffix "_MotorVSGP" (example: <InstanceName>_MotorVSGP). Create the variables for MotorVSGP_CFG and MotorVSGP_ST inout pins with the names having suffix "_MotorVSGP_CFG" and "_MotorVSGP_ST" respectively (example: <InstanceName>_MotorVSGP_CFG, <InstanceName>_MotorVSGP_ST). Instantiate the auxiliary block CONDSUMGP with the name having suffix "_Condsun" (example: <InstanceName>_Condsun) and connect Result to Fail of MotorVSGP. Create the variable for CondSumGP_ST inout pin with the name having suffix "_Condsum_ST" (example: <InstanceName>_Condsum_ST). Instantiate the auxiliary block ILOCKONGP with the name having suffix "_FWDILCKGP" (example: <InstanceName>_FWDILCKGP) and connect ILCK to FWDILCK of MotorVSGP. Create the variable for ILOCKONGP_ST inout pins with the name having suffix "_FWDILCKGP_ST" (example: <InstanceName>_FWDILCKGP_ST). Instantiate the auxiliary block ILOCKONGP with the name having suffix "_REVILCKGP" (example: <InstanceName>_REVILCKGP) and connect ILCK to REVILCK of MotorVSGP. Create the variable for ILOCKONGP_ST inout pins with the name having suffix "_REVILCKGP_ST" (example: <InstanceName>_REVILCKGP_ST). Instantiate the auxiliary block DEVMTNGP with the name having suffix "_MotMNTGP" (example: <InstanceName>_MotMNTGP) and connect Position to LForward of MotorVSGP. Create the variable for DevMNTGP_ST inout pins with the name having suffix "_MotMNTGP_ST" (example: <InstanceName>_MotMNTGP_ST). Once the project is build successfully, export the control project .xsf file for instance generation in ASP using the AssetLink tool. <p>NOTE:</p> <ul style="list-style-type: none"> Suffix details is provided in the Control/Supervision relationship section of respective template chapters. Enter the respective conditions descriptions for Cond01 ... Cond15/Cond01 ... Cond07 in the comment field of the DFB respective pins. These conditions descriptions will be configured in the ASP instance by the AssetLink.



Step	Action
2	<p>Creating the instance for <code>MotorVS</code> in the AVEVA System Platform:</p> <p>a</p> <p>Open the AssetLink and go to configuration tab (example: Settings for MCS (Modicon Communication Server) connection or can also be used for OPC UA/OPC DA).</p> <p>(For configuration details of AssetLink tool, refer to the user guide (see EcoStruxure™ Control Expert AssetLink, User Guide)).</p> <p>In the Galaxy Settings:</p> <ul style="list-style-type: none"> Select Source: <code>Control Expert/UnityPro</code> Select Protocol: <code><OPC UA></code> Select Device Name: <code><DevExample_1></code> (refer the below figure of SMC)  <ul style="list-style-type: none"> DIO Name: <code><OFS Client name></code> Scan Group: <code><Group name in OFS Client></code> OI Address Reference: <code><MCS_Connection.DeviceGroup./DA/0></code> (refer the below figure of SMC showing the path of OI Address Reference) <p>In the Patterns Settings:</p> <ul style="list-style-type: none"> Patterns Path: <code><Browse for the patterns folder></code> <p>...</p> <p>In the Control Project Settings:</p> <ul style="list-style-type: none"> Control Project: <code><Browse for the Control project .xxy file, exported from the control expert></code> <p>The following illustration is an example of Configuration tab:</p>  <p>...</p> <p>b</p> <p>In the Patterns tab, check for the availability of applicable patterns as shown below (here, <code>\$MotorVSCE.xml</code> is available):</p>

Step	Action
	 <p>The screenshot shows the \$aEsxCeAssetLink tool interface. It has tabs for Generation, Patterns, Configuration, and Monitor. The Patterns tab is active, displaying a table of patterns. The table has columns: Pattern File, Version, Last Modification Date Time, Valid, Selected, Exists, and Template ID. The 'MotorVSCe.xmi' pattern is highlighted in blue.</p>
c	<p>In the Generation tab:</p> <ul style="list-style-type: none"> Click Browse Control Project Check for the instances are populated. Check for the action as Create (refer the below figure).  <p>The screenshot shows the \$aEsxCeAssetLink tool interface with the Generation tab active. It has buttons for 'Browse Control Project', 'Check Changes', and 'Forced Browse'. Below these buttons is a table with columns: Sel, Object ID, Template ID, Action, and Result. The 'MotorVSCe_1' instance is selected, and the Action is 'Create'.</p> <ul style="list-style-type: none"> Click Generate Objects button at the bottom right of AssetLink tool.
...	<p>d</p> <p>New instance is generated and is found in the Unassigned Host. Assign it to the required area.</p>  <p>The screenshot shows the Deployment tool interface. It has a tree view with the following structure: MarsVer1 (root), Unassigned Host (child), MotorVSCe_1 (child of Unassigned Host), aWinPlatformGP_001 {Single AppEngine} (child of MarsVer1), aAppEngineGP_001 (child of aWinPlatformGP_001), and aViewEngineGP_001 (child of aAppEngineGP_001).</p>

Step	Action
e	<p>Add the L3 symbol of MotorVS on to the graphic page as shown below:</p> 
f	<p>Deploy the Control Expert and the ASP project. Check for the communication and control.</p>

Supervision Features

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Overview

This part describes the supervision features that apply to the Modicon Libraries - General Purpose for AVEVA System Platform.

Access Control

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Access Control..... 36

Access Control

Overview

Attributes of master templates of the Modicon Libraries - General Purpose for AVEVA System Platform use the object security classification of Archestra IDE for access control.

The settings are identical in the corresponding application templates, page 26 and are propagated to derived templates and instances.

You can modify the configuration of the security classification of attributes in application templates.

For information on the object security classification, refer to the Archestra IDE help.

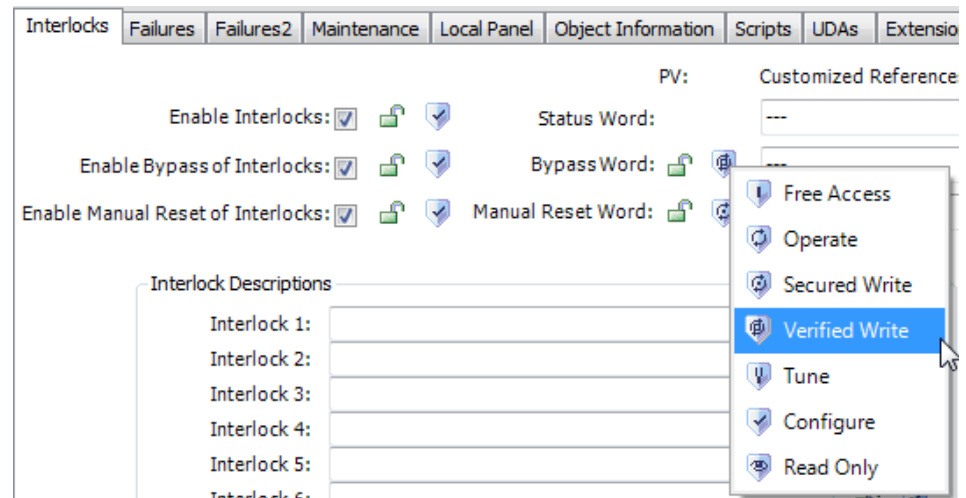
Default Object Security Classification of Attributes

This table describes the object security classification that is defined by default for attributes of master templates

Classification	Description
Operate	This level is used for regular operation activities (for example, setting of setpoints, operating modes, alarm setpoints) Manual reset of a specific abnormal condition is also available for users with operate rights
Secured write	This level is used for manual resetting of interlock conditions and global reset of the control module (for example, motor reset).
Verified write	This level is used for bypassing interlock conditions, global bypass of interlocks and bypass of an abnormal condition
Tune	This level is used for engineering parameters (for example, alarm priorities, PID sensitivity, ramp adjustments).
Configure	This level is used for UDAs configuration (for example, range, engineering units, format, normal operating modes). NOTE: This level is only used for attribute modification during engineering time.

Configuration of Object Security Classification

To configure the security classification of an attribute of an application template, click the shield icon next to the attribute in the configuration page and select a level.



NOTE: If the icon is shown in gray, the access control modification is locked in its parent object. For more information about attribute locking and unlocking, refer to the Archestra IDE help.

Security Group Configuration

When you create derived templates or instances, they are added to the **Default** security group.

For information on assigning them to a different security group, refer to the Archestra IDE help.

Alarm Functions

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Overview

This chapter describes alarm functions of master templates of the Modicon Libraries - General Purpose for AVEVA System Platform.

Alarm Priority

Overview

Default alarm priorities are configured in master templates for attributes to which an alarm is associated. The priorities are identical in the corresponding application templates, page 26. They are propagated to derived templates and instances that you create.

The security classification of alarm priorities for state alarms is *Tune*.

The priority value range is 0...999.

You can modify the configuration in the application templates.

NOTE: The alarm priority value associates an alarm severity, page 38 to the alarm.

Alarm Priority Configuration

Proceed as follows to configure or modify an alarm priority.

Step	Action
1	Double-click the object (application template, derived template, or instance).
2	Select the Attributes page.
3	Click the filter icon and select State alarm from the list of filters.
4	From the results, select an attribute (for example <code>DevCtl.St.Failed</code>).
5	The alarm configuration appears in the State alarm section of the features area.
6	Set the Priority value, page 38. NOTE: You can also modify the Alarm message and the alarm Category .
7	Check in the object.

SA Alarm Severity

Overview

Four Situational Awareness (SA) alarm severities are configured in the global configuration of the Galaxy.

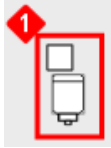
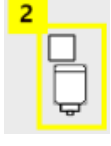
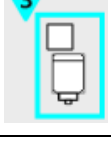
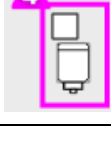
Each alarm signal is assigned an alarm severity, which is related to its alarm priority. For example, if an alarm has an alarm priority of 200, it is assigned an alarm severity of 1 by default.

You can change the priority range that is associated to each alarm severity to adapt the behavior to the specific requirements of your project.

To access the alarm configuration screen, click **Galaxy > Configure > Alarms and Events Configuration**.

Default Alarm Severity Configuration

The table describes the alarm severities and their default properties.

Alarm severity	Alarm historization	Priority range	Representation
1	Yes	1...250	
2	Yes	251...500	
3	Yes	501...750	
4	Yes	751...999	

Alarm Shelving

Alarm Shelving Configuration

When you install the Modicon Libraries - General Purpose for AVEVA System Platform by using the supplied Galaxy backup, alarm shelving is enabled for alarms of severity 3 and 4 by default.

You can modify the configuration in the alarm configuration screen if your role has the required permission.

Shelving Alarms

During operation, shelving or unshelving an alarm by using the **Shelve** check box in the **alarms** tab, page 75 of the faceplate of the instance sets the corresponding *<reference>.AlarmShelve** attributes.

An alarm does not need to be active to be shelved. The shelving period starts when you shelve the alarm.

To shelve an alarm during runtime, your role needs to have the required operational permission.

For more information, refer to the topic describing how to shelve alarms in the ArchestrA IDE help.

NOTE: Shelving an alarm is considered as an abnormal situation, page 46.

Representation of Shelved Alarms During Operation

At the faceplate level, the alarms tab allows you to view the shelved status of alarms by displaying a timer icon, page 48. If the alarm is disabled or silenced while shelved, the timer icon is hidden but the shelving period count-down continues.

At the symbol level, the timer icon is displayed to indicate that an alarm is shelved. However, if for an instance, an alarm is shelved and, at the same time, another alarm is active, the timer icon is not displayed. This is because active alarms are displayed over shelved alarms independently of their respective severity and priority.

Namur NE-107 Status Management

Overview

The Namur NE-107 recommendation defines that detailed device diagnostic information be summarized as four simple status signals. This allows the operator to view device statuses in a simple and uniform way regardless of the source device.

Device master templates of the Modicon Libraries - General Purpose for AVEVA System Platform are preconfigured to manage Namur statuses.





Namur statuses are mapped to the device diagnostic bits of the Control resource, page 96 that is monitored by the template. These bits are associated to state alarms by using scripts so that the detection of a Namur status raises an alarm.

This illustration shows a device with two Namur icons displayed to the right.



Description



The table describes the Namur statuses as defined in the Namur NE-107 recommendation and their default configuration



Namur status	Description	Alarm priority	Associated alarm severity	Icon
Failure	Output signal invalid due to error detected in the field device or its peripherals.	500	2	
Function check	Output signal temporarily invalid (for example, frozen) due to ongoing work on the device.	750	3	
Out of specification	The device is operating outside its specified range (for example, measuring or temperature range). Internal diagnosis indicates deviations from measured or set values due to errors detected in the device or process characteristics.	999	4	
Maintenance required	Although the output signal is valid, the wear reserve is nearly exhausted or a function will soon be restricted due to operational conditions (for example, aging of a pH-electrode).	999	4	

Namur Status Mapping



The mapping of Namur statuses is accessible in the **Discrete 1** to **Discrete n** tabs of the device object. In this example, Namur statuses are mapped to bits 3, 7, and 10 of the `ATV_CFG.DataStatus` word, which is monitored by the template.

Main
Discrete 1
Discrete 2
Discrete 3
Discrete 4
Analog 1
Analog 2
Analog 3
Analog 4
Analog 5
Analog 6

BitDescriptions:



Namur Icon:



0	Ready to Switch ON;[3082]Listo para arrancar	None
1	Switched ON;[3082]Arrancado	None
2	Operation Enabled;[3082]Operación habilitada	None
3	Malfunction;[3082]Mal funcionamiento	Failure
4	Voltage Enabled;[3082]Tensión habilitada	None
5	Quick Stop;[3082]Parada rápida	None
6	Switch ON disabled;[3082]Arranque deshabilitado	None
7	Alarm;[3082]Alarma	Failure
8	Forced Local Mode;[3082]Modo local forzado	None
9	Speed set point reached;[3082]Velocidad de consigna alcar	None
10	Speed set point is outside the limit;[3082]Consigna de veloci	Out Of Specs
11	Stop is done by remote control STOP button;[3082]parado	None
12	Direction of motion 1=forward, 0=backward;[3082]Direcció	None
13		None
14		None
15		None

Customized References (only if Suffix is left on blank):



Suffix for Auto References:

NOTE: Bit descriptions and Namur statuses are locked attributes.

Namur Alarm Priority Configuration

You can modify the alarm priority of the associated state alarm in the application template or its instance by configuring the corresponding attribute (for example, *AO.Namur.OutOfSpecs*).

For information on modifying state alarm priorities, refer to the topic describing alarm priority configuration, page 38.

Multilanguage Support

What's in This Chapter

Multilanguage Support.....43

Multilanguage Support

Overview

The engineering environment is in English.

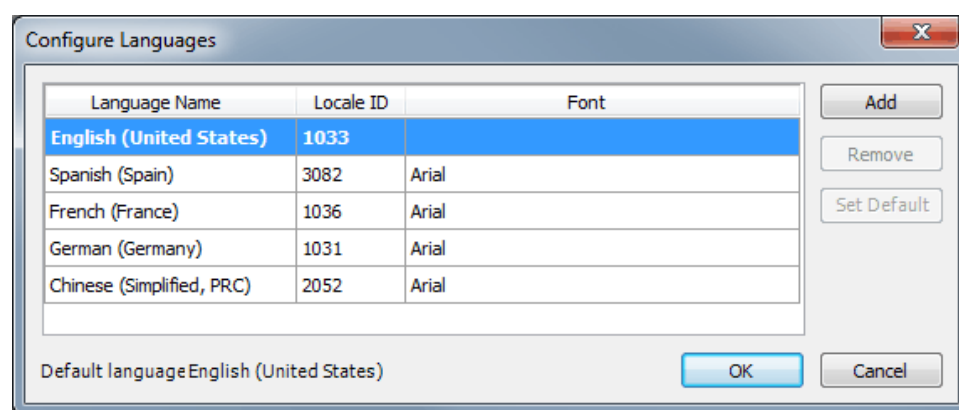
The operation environment supports the following languages:

- English
- Spanish

The default and native language is English.

You have the possibility to add other languages to your application.

Click **Galaxy > Configure > Languages** to access to the **Configure Languages** window:



You can add or remove language or change the default language.

For information on how to use other languages, refer to the ArchestrA IDE online help.

Alarm Description Localization

The alarm description can be localized with the export/import function of alarm messages.

Proceed as follows to localize alarm messages:

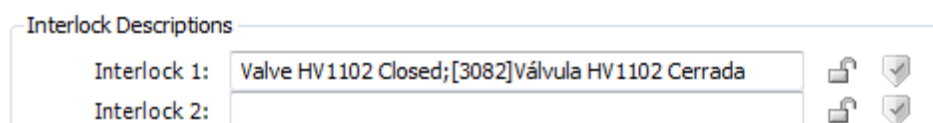
Step	Action
1	Click Galaxy > Export > Localization > All Alarm Messages . Result: The Export Alarm Messages window opens.
2	Select the language to export and click Export . Result: A text file is generated with all alarm messages.
3	Insert the translation of the alarm messages in this text file. (A file with spanish translation of alarm messages used in master templates are available in the installation files, page 22).
4	Click Galaxy > Import > Localization > Alarm Message(s) .

Step	Action
	Result: The Import Alarm Messages window opens.
5	Select the language and the text file to import and click Import . Result: The localizations of alarm messages are imported in the galaxy.
6	The text file has to be imported in the InTouch window maker also. Click Special > Language > Import Alarm Fields . Result: The localizations of alarm messages are imported in the InTouch window maker.

UDA Values Localization

The UDA values (for example interlock and detected failure condition descriptions) can be entered with a multilingual format.

This illustration presents an example of multilingual format:



Use the following syntax to enter the value:

`<text in default language>;[Language ID]<localized text>;[Language ID]<localized text>...`

This table presents the language ID:

Language	Language ID
English	1033
Spanish	3082
French	1036
German	1031
Chinese	2052

In this example the interlock description is localized in Spanish and French:

Valve HV1102 Closed;[3082]Válvula HV1102 Cerrada;[1036]Vanne HV1102 fermée

NOTE: If you operate with a non-listed language, the text in default language is used.

ArchestrA Symbol Localization

The static text of the library symbols can be localized with the export/import function of symbol localizations.

Proceed as follows to localize the static text of the library symbols:

Step	Action
1	Select the graphic toolset to export in the Graphic Toolbox .
2	Click Galaxy > Export > Localization > Selected Symbol(s) . Result: The Export Locale Data window opens.
3	Select the language to export and click Export . Result: An XML file is generated with all symbol texts of the toolset.

Step	Action
4	Edit the XML file and insert the text translation between the tags <Translation> and </Translation>.
5	Click Galaxy > Import > Localization > Symbol(s) . Result: The Import Locale Data window opens.
6	Select the language and the XML file to import and click Import . Result: The Import Locale Preferences window opens.
7	Select the import preferences and click Import . Result: The text localizations of the symbols are imported.

Representation of Supervision Data

What's in This Chapter

Situational Awareness (SA)	46
Element Styles	47
Icons	48
Faceplate Tab Icons	51
Optional Label Text	52

Overview

Graphic symbols and faceplates use icons, animations, and other graphic elements to convey information related to control modules, such as values, setpoints, statuses, or conditions. In particular, styles are used to distinguish between types of information or to highlight changes or situations that require action.

This chapter describes the icons used in supervision components and the styles that are used to represent supervision data. You can modify the definitions of the listed styles as needed, without having to redesign the ArchestrA symbols.

Situational Awareness (SA)

Overview



The Modicon Libraries - General Purpose for AVEVA System Platform uses SA principles. These help you identify states that are different from the expected state and from the normal operating mode that is configured for an object. Such states are considered abnormal states.

Bars and trends allow you to compare current process values with expected thresholds.

Symbol Animation

An abnormal state is represented by an exclamation mark on orange background, which is displayed next to the symbol.



Icon	Description
 Static	<p>The control module is in an abnormal configuration or operating mode, for example:</p> <ul style="list-style-type: none">Simulation mode.The current owner mode is different from the normal mode (as configured by default in the corresponding attribute) or the initial value is different from the possible values normally used for the attribute. In such case, the current owner mode is indicated on the symbol (for example, O for <i>operator</i>).Bypassed interlocks or abnormal conditions.Disabled, silenced, inhibited, or shelved alarm.
 Flashing	<p>The control module is waiting for an operator action (for example, a motor needs to be reset manually to start again).</p> <p>NOTE: If at the same time an operator action is requested and an abnormal configuration is detected, which are represented by a flashing and a static icon respectively, the flashing icon prevails.</p>

NOTE: The symbol uses the User_Defined_01 element style, page 47.

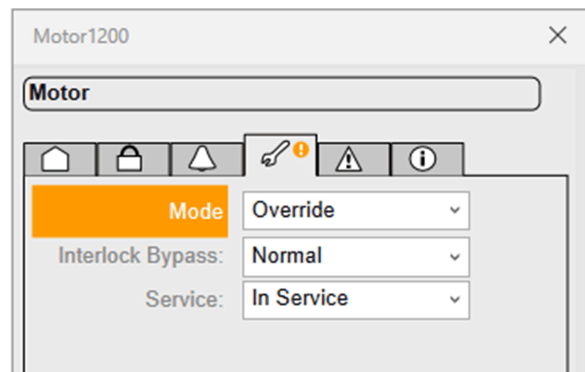
Faceplate Animation

An abnormal configuration is represented by an exclamation mark on orange background, which is displayed next to the icon of the faceplate tab.



NOTE: If the tab icon is flashing, an action is required from this tab.

In addition, the item that is in an abnormal configuration or that requires an operator action is displayed with an orange background. In this example, the simulation mode is enabled whereas the normal operating mode has simulation disabled.



Element Styles

Introduction

The **Element Styles** of the library are configured in the **Galaxy Style Library** (click **Galaxy > Configure > Galaxy Style Library**). You can change the look and feel of the entire library by modifying the global configuration for the Galaxy.






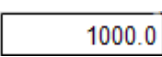
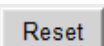
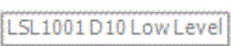

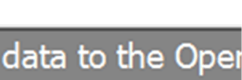
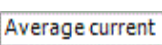


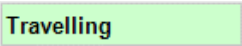







You can modify for each element style:

- Color and text font.
- Fill color override.
- Line style.
- Outline style.

Description

This table describes the default element styles that are used to represent supervision data.
















Element	State	Galaxy style	Representation
Static legend	-	Label	Security Group:
Animated legend	Normal state	Label	Interlock Bypass:
	Abnormal state	User_Defined_01	Interlock Bypass:

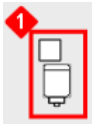
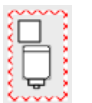
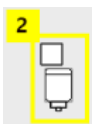

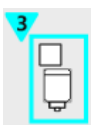
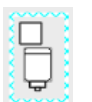
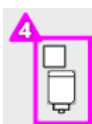
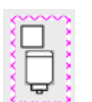









Element	State	Galaxy style	Representation
Configurable legend	-	User_Defined_17	
Present value	-	Actual_Value	
Setpoint value	-	Setpoint	
Output value	-	User_Defined_13	
Other non-editable value	-	User_Defined_04	
Editable value	-	User_Defined_05	
Button and drop-down list	-	User_Defined_08	
Animated text in tables	Value OFF	User_Defined_07	
	Value ON	User_Defined_06	
	Value ON	User_Defined_02	
Non-animated text in tables	-	User_Defined_03	
Dynamic value	Value OFF	Passive	
	Value ON	Active	
	Transitioning	Transitioning	
	Stopped state	Not_Running	
Line separator in faceplates	-	User_Defined_11	
Faceplate and selected tab background	-	User_Defined_09	
Unselected tab background	-	User_Defined_10	
Over range (for example, open and closed at same time or in case of motorised valve, if valve positioner feedback crosses the threshold limit and is not matching with its limit switch indication.)	-	Over-range	
Outputs in trends	-	Control_line	
Bars representing signals not confirmed from field	-	Active_NotAvailable	











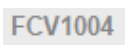

Icons

Description

The table describes the icons that may be displayed during operation.

Function	Icon	Meaning	Examples of use	Comment
Displaying owner selection	O	Operator	Valve in operator mode (the operator sets the setpoint).	The icon is displayed only if it is not the normal mode.
	P	Program	Valve in program mode (the program sets the setpoint).	
	C	Cascade	Closed-loop PID controller with an externally set setpoint	
Displaying operating mode	A	Auto	Closed-loop PID controller.	The icon is displayed only if it is not the normal mode.
	M	Manual		
Interlocking		Active	A motor is interlocked because of an interlock condition.	–
Displaying service information		Out of service	A motor is declared out of service in its faceplate.	–
Transitioning		Transitioning state	–	–
				
Informing of abnormal configuration		The control module is in abnormal configuration.	The control module is in simulation. Global bypass is activated. Partial bypass.	Represented on the element that is in abnormal configuration, page 46.
Requesting operator action	 Flashing	The control module is waiting for an operator action.	A motor needs a reset to start again.	–
Resetting required		Awaiting a reset	Motor waiting to be reset after thermal trip.	Displayed if mandatory manual resetting is enabled in the resource controlling the device.
Displaying Namur statuses		Out of specification	Speed setpoint is outside the limit.	Namur NE-107 Management, page 40
		Maintenance required	Replace the pH electrode.	
		Failure detected	Inoperable device.	
		Check function	Substitute value entered.	
Displaying operator messages		Information	A message is shown to the operator.	See <i>\$MessageBoxCE</i>
		Question	A value or confirmation is requested from the operator.	
		Exclamation	The operator is informed of an abnormal condition.	
		Stop	An abnormal condition that is equivalent to the Namur <i>Failure</i> status	

Function	Icon	Meaning	Examples of use	Comment
			is shown to the operator.	
Displaying alarms		Alarm of severity 1	Very high temperature alarm.	Defined by the style <i>AlarmBorder_Critical_UNACK</i>
		Alarm of severity 1 returns to normal	–	Defined by the style <i>AlarmBorder_Critical_RTN</i>
		Alarm of severity 2	High temperature alarm.	Defined by the style <i>AlarmBorder_High_UNACK</i>
		Alarm of severity 2 returns to normal	–	Defined by the style <i>AlarmBorder_High_RTN</i>
		Alarm of severity 3	Function check (Namur status).	Defined by the style <i>AlarmBorder_Medium_UNACK</i>
		Alarm of severity 3 returns to normal	–	Defined by the style <i>AlarmBorder_Medium_RTN</i>
		Alarm of severity 4	–	Defined by the style <i>AlarmBorder_Low_UNACK</i>
		Alarm of severity 4 returns to normal	–	Defined by the style <i>AlarmBorder_Low_RTN</i>
Displaying alarms		Alarm silenced	–	–
		Alarm disabled or inhibited	–	–
		The alarm is shelved, page 39.	–	–
Indicating alarm level setpoints		Very high	Very high temperature.	–
		High	High temperature.	–
		Setpoint	Temperature outside of setpoint.	–
		Deviation	Temperature outside of deviation.	–
		Low	Low temperature.	–
		Very low	Very low temperature.	–

Function	Icon	Meaning	Examples of use	Comment
Indicating Setpoints (bars)		Setpoint	Position setpoint of a control valve.	–
Displaying trend pens		Present value	–	–
		Output value	–	–
		Very high limit	–	–
		High limit	–	–
		Setpoint	–	–
		Deviation	–	–
		Low limit	–	–
		Very low limit	–	–
Opening the trend faceplate		Click the icon to open the trend faceplate.	–	–
Displaying labels		Label of symbols	–	Only if labels are made visible.
Extended interlock/ Initial condition		Click to open extended interlock faceplate, page 342.	–	Displayed if the interlocks/initial conditions are extended using \$IckCE template.

NOTE: User has to use **PSxLabels** symbol to enable label on the graphic (click **Graphic Toolbox** → **PSx Symbol Library** → **Support** → **PSxLabels**).

Faceplate Tab Icons

Overview

You can access a faceplate, page 63 by clicking a symbol during operation.

Faceplates consist of tabs which group by category, the representation of functionalities that are provided by the associated control resource during operation.

Each category is represented by a tab icon.

Click a tab to access its functionalities.










To access the trend faceplate, click the wave icon that is displayed next to a symbol.

NOTE: Some tabs are optional or object-specific and are displayed only if the control module features the corresponding service and the service is enabled for the instance.

NOTE: If the tab icon is flashing, an action is required from this tab.

Description

The table describes the tabs and the functionalities they feature.

Tab/category	Icon	Functionalities	Examples of use
Operation		<ul style="list-style-type: none"> Current status (present value, setpoint, output value) Owner change Operating mode change Setpoint (SP) change Resetting Configuration of alarms at control level Local panel monitoring 	<ul style="list-style-type: none"> Operator/ program Manual/automatic PID controller setpoint (SP) change in auto mode and output change in manual mode
Interlocks / initial conditions		<ul style="list-style-type: none"> Interlock condition statuses Bypassing and/or manual resetting of interlock conditions 	Interlocks associated with an on-off valve
Failures		<ul style="list-style-type: none"> Status of detected failure conditions Bypassing of detected failure conditions Manual resetting condition 	Thermal overload of a motor
Maintenance		<ul style="list-style-type: none"> Access to accumulated data regarding the control module operation Counter resetting 	<ul style="list-style-type: none"> Hours of operation Number of operations
Engineering		Changing settings or parameters	<ul style="list-style-type: none"> Adjustment of PID control parameters Activating the simulation mode
Warning		Status of detected warning conditions	To monitor the extended warning conditions from ATV6xx/ATV9xx device
Alarms		<ul style="list-style-type: none"> Acknowledgment of alarms Configuration of alarms at supervision level 	<ul style="list-style-type: none"> Disable alarm Mute alarm
Analog data		<ul style="list-style-type: none"> Analog data of a device Input and output parameters of a sequence 	Motor speed
Discrete data		Discrete data of a device	Information ready to switch on of an ATV61

Optional Label Text

Description

Label of graphical symbols is optional for user to use as it can be show/hide in the runtime page.

The below table explains the steps to disable the label:

Step	Action
1	Open the Application Template derived from the \$MotorCE master template, from which the application instances are created.
2	Add the new local graphic symbol (for example, MyBlower_Left).
3	Open the Blower_Left symbol and also open the MyBlower_Left symbol.
4	Open Blower_Left symbol, copy the entire content of this symbol and paste into MyBlower_Left symbol that is newly created.

Step	Action
5	Select the MyBlower_Left symbol and change the LabelVisibility custom property value to False.
6	Save and Close MyBlower_Left symbol.
7	Instantiate MyBlower_Left symbol on process page and check the runtime.

LabelVisibility custom property of **MyBlower_Left** symbol on process page can be disabled (double click on the **MyBlower_Left** symbol then edit symbol properties will appear, change **LabelVisibility** default value to false). The label custom property will appear in runtime window as per the modification.

Optional label text is available in graphical symbol of below templates:

Sl. No.	Template Name
1	\$DigitalInputCE
2	\$AnalogInputCE
3	\$AnalogInMultiCE
4	\$DigitalOutputCE
5	\$AnalogOutputCE
6	\$TotalCE
7	\$MotorCE
8	\$Motor2DirCE
9	\$ValveCE
10	\$HandValveCE
11	\$MValveCE
12	\$ControlValveCE
13	\$MValvewithPosCE
14	\$MotorVSCE
15	\$IMCTLCE
16	\$LeadLagCE
17	\$PIDCE
19	\$PWMCtlCE
20	\$RampCE
21	\$RatioCtrlCE
22	\$SplitRangeCE
23	\$Step3CtlCE

Screen Profile and Layout

What's in This Chapter

Screen Profile and Layout 54

Screen Profile and Layout

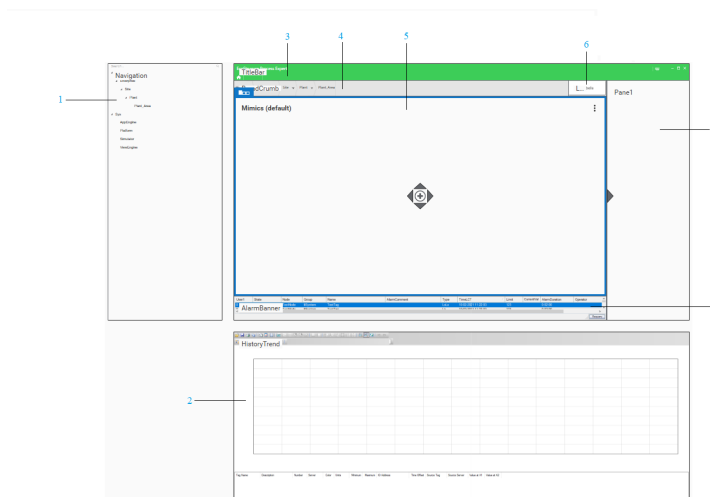
Screen Profile

A Screen Profile defines the display assigned to a client. Screen Profile definitions include all the aspects defined for a Screen (size, orientation, resolution, density, touch), but adds the ability to define how many screens are used for the display and how they fit together. For example, the Screen Profile for a control room might include the definitions for three screens, two in landscape orientation and one in portrait orientation, each with a different size and resolution. This library offers one sample screen (`$ScreenProfileGP`) profile for a single monitor with HD resolution.

Layout

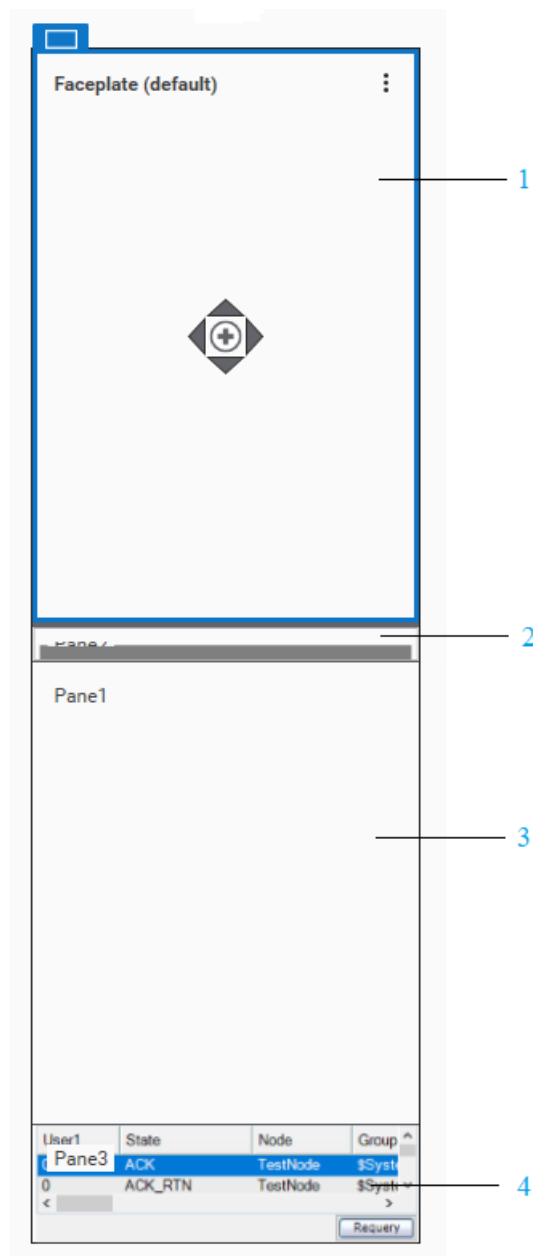
A Layout consists of one more rectangular areas of content (panes) for a screen and is used to define how run-time information is displayed. The Layout determines the type of content to be displayed in each pane, and how the panes are positioned on the screen. A pane can encompass the entire screen, or only a portion of it. This library provides a layout sample (`$LayoutGP`) for the user, the details of which are explained below.

1. LayoutGP



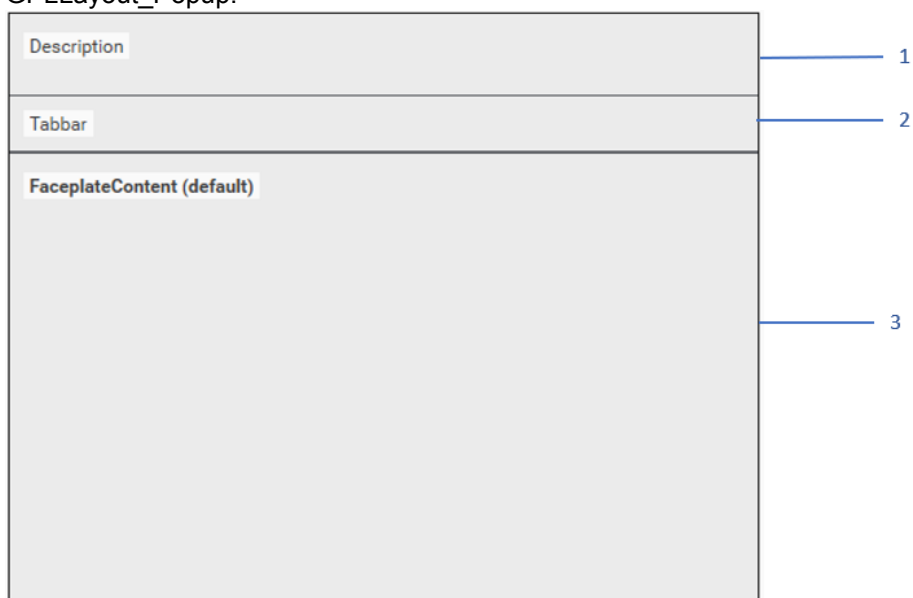
Item	Description
1	This slide-in pane is configured with the <i>Navigationtreecontrol</i> app provided by AVEVA system platform.
2	This slide-in pane is configured with the <i>Historicaltrendcontrol</i> app provided by AVEVA system platform.
3	This pane is configured with the <i>Titlebarcontrol</i> app provided by AVEVA system platform.
4	This pane is configured with the <i>Navigationbreadcrumbcontrol</i> app provided by AVEVA system platform.
5	This pane is configured to show level 3 symbols. The graphic must be configured with content type as L3, so that it appears in this pane.
6	This pane is configured to hold the label enable button for the L3 symbols.
7	This area in the layout is reserved to host the faceplate when faceplate is configured as fixed style.
8	This pane is configured with the <i>Alarmcontrol</i> app provided by AVEVA system platform. This app helps to manage the alarms.

2. GPLLayout_Content:



Item	Description
1	This pane will host the operator tab/ information of the faceplate.
2	This pane will display the tab icons of the services that are configured.
3	This pane will host all the tab contents of the services that are configured.
4	This pane is configured with the Asset Specific Alarmcontrol app provided by AVEVA system platform. This app helps to manage the asset specific alarms.

3. GPLLayout_Popup:



Item	Description
1	This pane will host the Name and Description of the instance.
2	This pane will display the tab icons of operator tab and the services that are configured.
3	This pane will host all the tab contents of the tabs selected.

NOTE: The element style **User_Defined_04** is used for the Popup TabBars.

Please refer to AVEVA help for more details on the apps which are used in the layout.

This Library also delivers a viewapp (\$viewappGP), which uses the screenprofile and layout samples delivered in the library.

Faceplate as a Popup

What’s in This Chapter

Faceplate as a Popup58

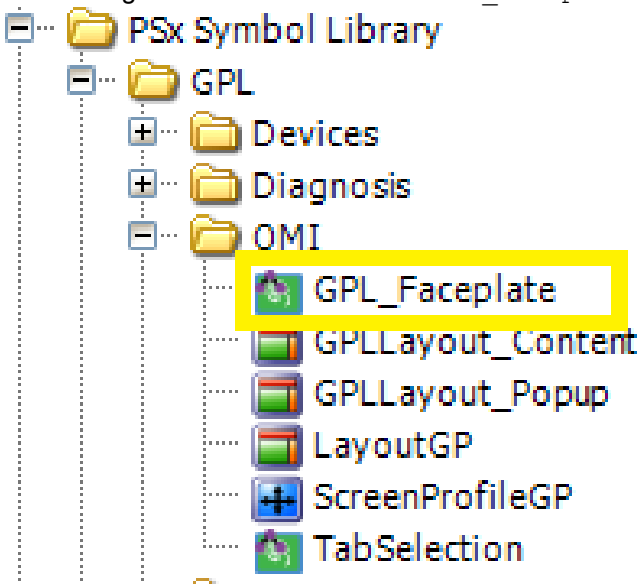
Faceplate as a Popup

Overview

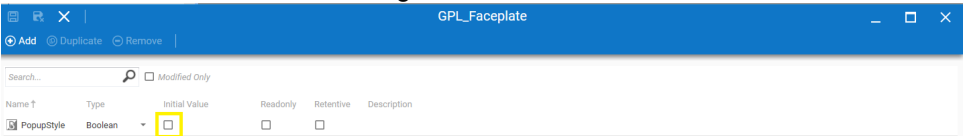
The faceplates of this Library can be opened in fixed style (default style) or as a popup.

You can select the type of faceplate from the **Graphic Toolbox > OMI > PSxSymbol Library > GPL_Faceplate > Popupstyle**.

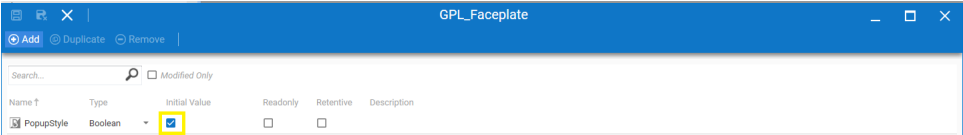
The below figure shows the location of GPL_Faceplate Namespace:



Faceplate will open in fixed style if the Initial Value of `PopupStyle` is set to `false` as shown in the below image:

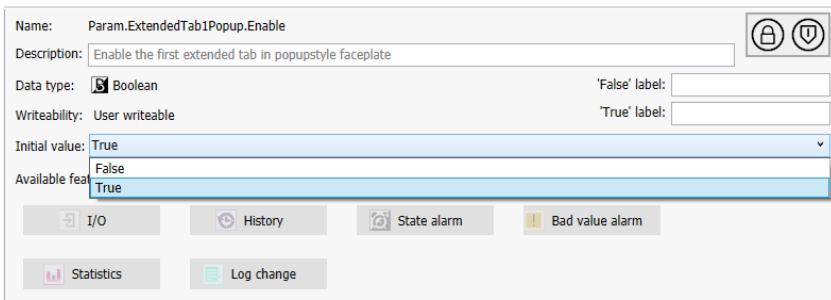
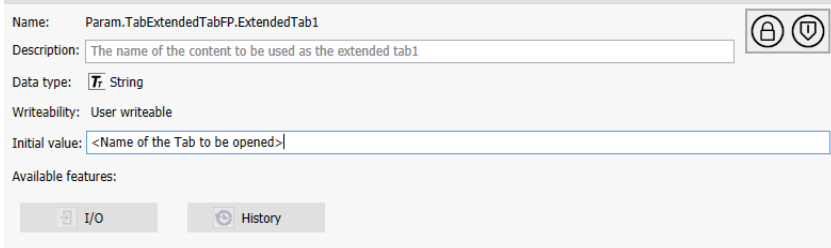


Faceplate will open in fixed style if the Initial Value of `PopupStyle` is set to `true` as shown in the below image:

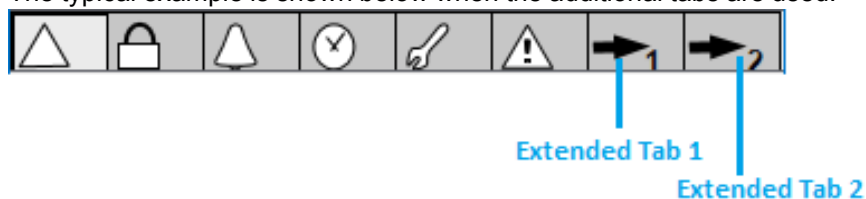


Additional Tabs

You can add two additional tabs if required when using faceplate as a popup.
Perform the following steps to enable the two tabs in the faceplate:

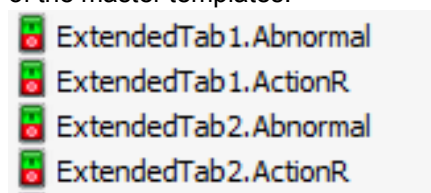
Step	Action
1	<p>Set the Initial value of the Attributes Param.ExtendedTab1Popup.Enable and or Param.ExtendedTab2Popup.Enable to true as required.</p> 
2	<p>Enter the name of the tab to be opened in the attributes Param.TabExtendedTabFP.ExtendedTab1 and or Param.TabExtendedTabFP.ExtendedTab2.</p> 

The typical example is shown below when the additional tabs are used:



NOTE: The extended tabs would be available only when the faceplate is configured as popup. To add extra tabs in fixed style, refer to the topic Faceplate Customization, page 77.

The Abnormal and Action Required can be configured in the extended tabs by using the custom properties `ExtendedTab1.Abnormal`, `ExtendedTab1.ActionR`, `ExtendedTab2.Abnormal`, `ExtendedTab2.ActionR` in the `TabBar` of the master templates.



Multi Monitor

What's in This Chapter

Multi Monitor 60

Multi Monitor

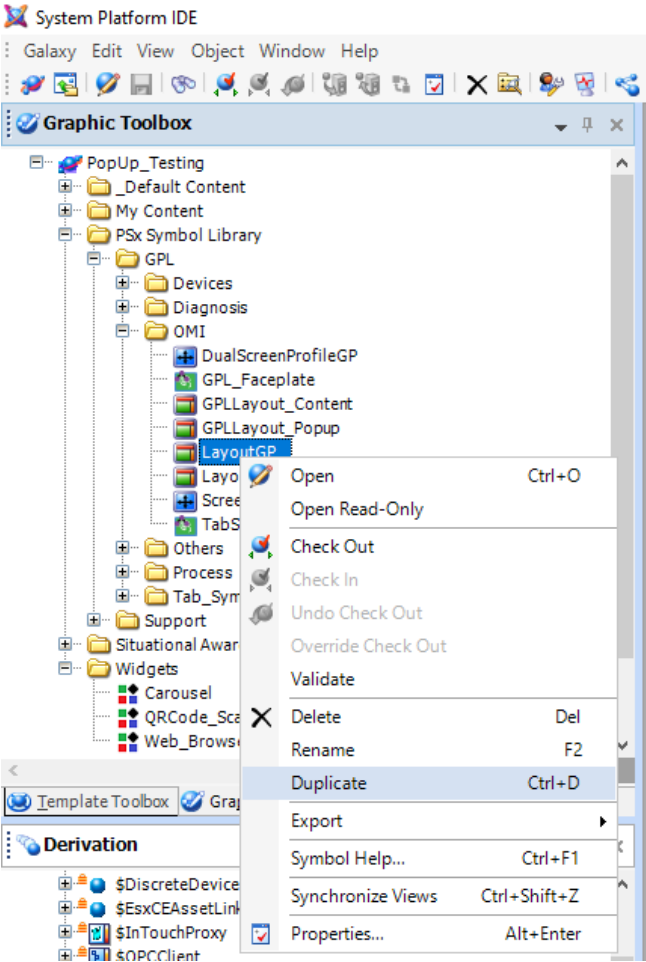
If Faceplate is configured as Fixed Style

The navigation in multi monitor will be based on the asset and all screens will show the same page.

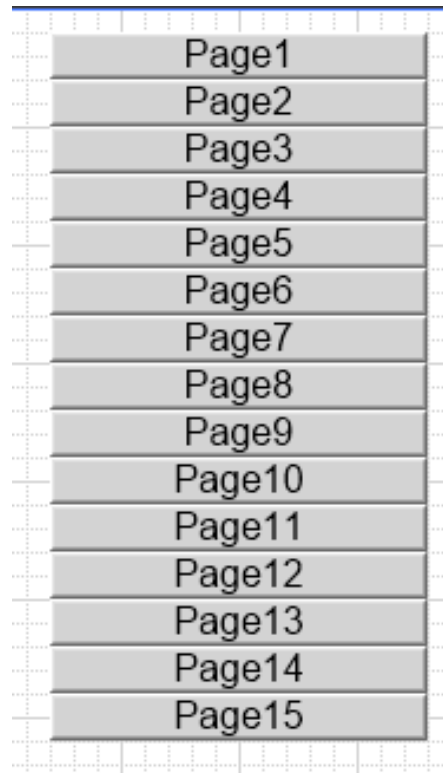
If Faceplate is configured as Popup Style

You can modify the `LayoutGP` delivered as a part of GPL Templates to modify the navigation to support independent navigation in multi monitor.

It is recommended that you duplicate the `LayoutGP`.



Create a custom navigation symbol in the Graphic tool as per the requirement as shown in the below example:

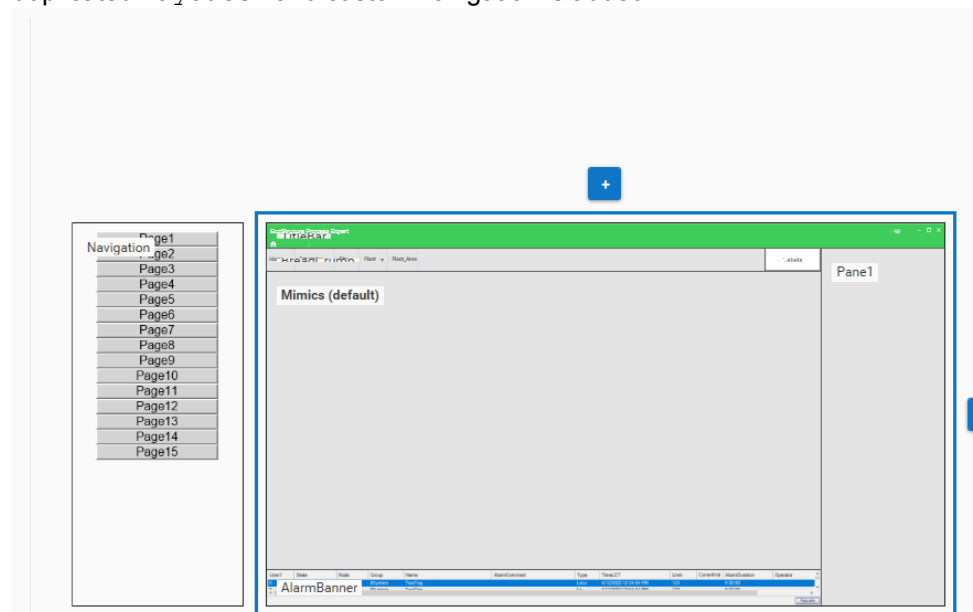


In the Action Script for each navigation symbol write the code as shown below:

```
dim contentinfo as aaContent.ContentInfo;
contentinfo.Name = "<Name of the duplicated layout>";
contentinfo.PaneName = "Mimics";
contentinfo.Content = "<Name of the symbol to be opened>";
ShowContent (contentinfo);
```

Place the symbol in the duplicated LayoutGP as per requirement.

For example, the built-in navigation is removed from the slide in pane in the duplicated LayoutGP and custom navigation is added.



Replace the layout in the ViewAPP.

Screen Profile

✓

DualScreenProfileGP

⋮

Layout:

LayoutGP_Custom

⌵⋮

Screens

✓

Primary
LayoutGP_Custom

Screen1
LayoutGP_Custom

Faceplates

What's in This Part

Optional Faceplate Tabs for Process Objects	64
Optional Faceplate Tabs for Smart Device Objects.....	72
Common Faceplate Tabs	75
Faceplate Customization	77

Overview

This part describes the [faceplates](#) and [faceplate tabs](#), [page 51](#) that are common to various object categories of the Modicon Libraries - General Purpose for AVEVA System Platform.

Optional Faceplate Tabs for Process Objects

What's in This Chapter

Local Panel Section.....	64
Interlocks Tab.....	65
Failures Tab.....	68
Maintenance Tab.....	70

Overview

This chapter describes the various optional faceplate tabs, page 51 that are common to objects of the process category.

Their use and functionalities are configured from the corresponding optional pages, page 88 of the master template.

NOTE: Template-specific faceplate tabs are described in the chapters documenting the master template.

Local Panel Section

Overview

The operation tab may feature the optional local panel section.

The local panel is enabled from the **Local Panel** page of the process master template.

Local Panel Representation

The figure shows the local panel section only when *ModeSignalsEN* input signal is high.



The figure shows the local panel section only when *VirtualLPEN* input signal is high.



Function Description

The local panel section features a Local Panel mode indication, Local Panel mode selection from the Faceplate and status lights.

For a detailed description of the local panel function, refer to the corresponding control resource (see Modicon Libraries General Purpose, Process Components User Guide).

This table describes the different operating modes of the local panel when enabled:

Item	State	Description
Local Panel (Modes)	Control System	User have the choice to control the device through the PROGRAM or the OPERATOR (OWNER) section of the operation tab).
	Zero	User cannot operate the device neither from the faceplate controls nor from the field (Local Panel).
	Local Panel	User can operate the control module from the field (Local Panel) only. The Local Panel provides status information of the device on the faceplate (status lights) that is operated from the field (Local Panel).
Status lights	Passive style, page 47	The status that is indicated by the label is not activated.
	Active style, page 47	The status that is indicated by the label is activated.
Local Panel	Local Panel mode operation can be enabled from the drop-down list on the faceplate. NOTE: <ul style="list-style-type: none"> When <i>VirtualLPEN</i> input pin signal is high in DFB, Local Panel mode drop-down list appears on the faceplate for operation. In runtime, when the user is not logged-in or if the Owner is in program mode, then the Local Panel mode drop-down list is disabled for operation. 	
	Enable	<i>LPMode</i> operation is enabled in DFB, so the user can operate devices from the field (Local Panel).
	Disable	<i>LPMode</i> is disabled in DFB. Hence, user cannot operate the devices from the field (Local Panel).

Interlocks Tab

Overview

The optional interlocks tab is available on certain faceplates, allowing you to view and interact with conditions that are configured to interlock a control module.

Depending on the configuration of the corresponding control resource and the process object, the tab allows bypassing each condition. You can also make manual resetting of each input of the corresponding control resource mandatory after the interlock condition is cleared.

When configured, a dialog box is displayed when you click a reset button, which is used to confirm the reset.

The interlocks tab is enabled from the **Interlocks** page of the process master template.

NOTE: This tab is also used to display initial conditions for sequential control, page 271 and equipment module, page 318.

Interlocks Tab Representation

The figure shows an example of the interlocks tab.

The screenshot shows a software interface for interlocks. At the top is a title bar with five icons: a padlock, a bell, a clock, a pencil, and a warning triangle. Below the title bar are three buttons: 'Bypass', 'Apply', and 'Reset'. To the left of a text input field is a small square checkbox. The text input field contains the text 'LSL1001 # LSL1001 D10 Low Level'. Below the text input field are five empty rows. At the bottom right of the interface, the text 'Not interlocked' is displayed.

NOTE: When no interlock conditions are present or when all present interlock conditions are bypassed, the message **Not Interlocked** is displayed at the bottom of the tab; otherwise, the message is **Interlocked**.

⚠ WARNING

LOSS OF CONTROL AND UNINTENDED EQUIPMENT OPERATION

- Perform a Failure Mode and Effects Analysis (FMEA) of your application, and apply preventive and detective controls before implementation.
- Provide a fallback state for undesired control events or sequences.
- Do not manually bypass or reset an interlock condition without confirming the impact on subsequent process events.
- Provide separate or redundant control paths wherever required.
- Provide independent paths for control functions (for example, emergency stop, over-limit conditions, and fault conditions) according to the safety analysis and applicable codes, and regulations.
- Apply local accident prevention and safety regulations and guidelines.¹
- Test each implementation of this library for proper operation before placing it into service.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

¹ For additional information, refer to NEMA ICS 1.1 (latest edition), *Safety Guidelines for the Application, Installation, and Maintenance of Solid State Control* and to NEMA ICS 7.1 (latest edition), *Safety Standards for Construction and Guide for Selection, Installation and Operation of Adjustable-Speed Drive Systems* or their equivalent governing your particular location.

Interlock Condition Descriptions

The tab displays the interlock conditions configured in the **Interlocks** page, page 89 of the process object.

When a configured condition arises, its description is displayed in the tab.

Bypassing an Interlock Condition

After you have selected one or more interlock conditions in the tab, bypassing the selected conditions underlies a security classification, page 89 when you click **Apply**. The default configuration is *verified write*.

Bypassing an interlock condition is configured by default as an abnormal state and is indicated by an orange rectangle, page 46.

NOTE: For interlock conditions starting by an asterisk (*), the **Bypass** check box is not displayed because they are associated to control data that cannot be written to.

Manual Resetting of an Interlock Condition

When the reset is effective, the command that is shown in the **SetPoint** menu in the operation tab of the faceplate is initiated.

The reset button is available only if the interlock condition has disappeared and depending on the configuration made in the controller.

Resetting an interlock conditions underlies a security classification, page 89. The default configuration is *secured write*.

NOTE: When the tab is used as part of the *\$SequenceCE* master template, after performing a reset, you need to restart the process sequence from the operation tab of the faceplate.

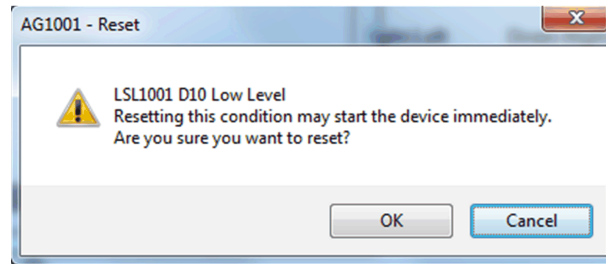
Reset Confirmation

For the following master templates of the process category, the *Param.InterlockRearmConfirmation* parameter allows you to display a dialog box that requires a confirmation for the reset of an interlock to take effect. The dialog box appears when you click **Apply**:


- *\$MotorCE*
- *\$MValvewithPosCE*
- *\$MValveCE*
- *\$MotorVSCE*
- *\$Motor2DirCE*
- *\$ValveCE*

Refer to *Parameters* in the chapter documenting each master template for a description of the *Param.InterlockRearmConfirmation* parameter.

The figure shows the confirmation dialog box which is model in nature.



Resetting an interlock condition by clicking **OK** underlies a security classification, page 89. The default configuration is *secured write*.

NOTE: When the reset confirmation is enabled, the security classification that normally applies when you click a reset button  is not effective.

Failures Tab

Overview

The optional failures tab is available on certain faceplates, allowing you to view and interact with abnormal conditions at the control module level.

Depending on the configuration of the monitored control logic and the process object, the tab allows bypassing each condition. You can also make manual resetting of each input of the corresponding control resource mandatory after the abnormal condition is cleared.

The tab is enabled from the **Failures** page, page 89 of the process master template.

NOTE: This tab is also used to display:

- Alarm conditions for alarm summary management, page 337.
- Detected failure conditions for sequential control, page 272 and equipment module, page 319.

Failures Tab Representation

The figure shows an example of the **Failures** tab.

NOTE: When no abnormal conditions are present or when all present abnormal conditions are bypassed, the message **Not Failed** is displayed at the bottom of the tab; otherwise, the message is **Failed**.

⚠ WARNING

LOSS OF CONTROL AND UNINTENDED EQUIPMENT OPERATION

- Perform a Failure Mode and Effects Analysis (FMEA) of your application, and apply preventive and detective controls before implementation.
- Provide a fallback state for undesired control events or sequences.
- Do not manually bypass or reset a failure condition without confirming the impact on subsequent process events.
- Provide separate or redundant control paths wherever required.
- Provide independent paths for control functions (for example, emergency stop, over-limit conditions, and fault conditions) according to the safety analysis and applicable codes, and regulations.
- Apply local accident prevention and safety regulations and guidelines.¹
- Test each implementation of this library for proper operation before placing it into service.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

¹ For additional information, refer to NEMA ICS 1.1 (latest edition), *Safety Guidelines for the Application, Installation, and Maintenance of Solid State Control* and to NEMA ICS 7.1 (latest edition), *Safety Standards for Construction and Guide for Selection, Installation and Operation of Adjustable-Speed Drive Systems* or their equivalent governing your particular location.

Abnormal Condition Descriptions

The tab displays the abnormal conditions configured in the **Failures** and/or **Failures2** pages, page 89 of the process object.

When a configured condition arises, its description is displayed in the tab.

Bypassing an Abnormal Condition

After you have selected one or more abnormal conditions in the tab, bypassing the selected interlock conditions underlies a *security classification*, page 91 when you click **Apply**. The default configuration is *verified write*.

Bypassing an abnormal condition is configured by default as an abnormal state and is indicated by an orange rectangle, page 46.

NOTE: When the tab is used as part of the *\$SequenceCE* master template, resetting a detected failure condition requires a *secured write*.

NOTE: For abnormal conditions starting by an asterisk (*), the **Bypass** check box is not displayed because they are associated to control data that cannot be written to.

Manual Resetting of Abnormal Conditions

The reset button is available only if the abnormal condition has disappeared and depending on the configuration made in the controller.

By default, resetting an abnormal condition underlies a *secured write security classification*, page 91.

Depending on the configuration of the monitored control logic, to reset the control module, you may need to click the **Reset** button on the operation faceplate. Refer to the description of the operation faceplate in the chapter describing the corresponding master template.

NOTE: When the tab is used as part of the *\$AlarmSummaryCE* master template, to reset an abnormal condition, your role needs to have permission to modify attributes with *operate* security classification.

NOTE: When the tab is used as part of the *\$SequenceCE* master template, after performing a reset, you need to restart the process sequence from the operation tab of the faceplate.

Maintenance Tab

Overview

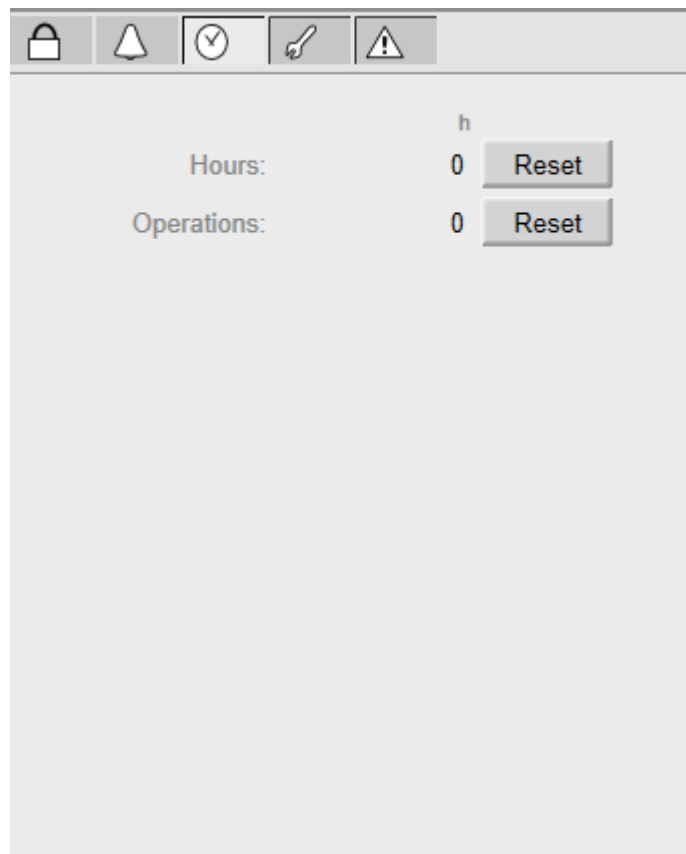
The maintenance tab is an optional tab that:

- Displays accumulated data related to the operation of the control module.
- Allows resetting the corresponding counters.

The tab is enabled and configured from the **Maintenance** page of the process master template.

Maintenance Tab Representation

The figure shows an example of the maintenance tab.



Resetting of Counters

Resetting a counter underlies a security classification, page 92.

Optional Faceplate Tabs for Smart Device Objects

What's in This Chapter

Analog Data Tab.....72

Discrete Data Tab.....73

Overview

This chapter describes the various optional faceplate tabs, page 51 that are common to templates of the device category.

Their use and functionalities are configured from the corresponding optional pages, page 95 of the master template.

NOTE: Template-specific faceplate tabs are described in the chapters documenting the master template.

Analog Data Tab

Overview

The analog data tab contains up to six subtabs displaying the analog data of the device. A subtab is displayed once the corresponding analog group is enabled from the **Main** page of the master template.

The analog data is configured in the **Analog 1...Analog 6** pages, page 98 of the device object .

Analog Data Tab Representation

The figure shows an example of the analog data tab.

1 2 3 4	
Motor current speed	0.00 EU
Speed setpoint	0.00 EU
Motor present current	0.00 A
Current motor torque	0.00 %
Current motor power	0.00 kW
Torque setpoint	0.00 %

NOTE:

- **Analog Data** tab - if the value from the Unity is **NAN** then the data displayed on the faceplate will be as per the OS language set on the local System.
- **Analog Data** tab > **Diagnostic codes** tab displays the information of diagnostic code of the device. The value displayed is in decimal, user has to manually convert this decimal value to hexadecimal value and refer (see Modicon Libraries General Purpose, Devices Components User Guide) for Diagnostic codes/ Failcode description.

Discrete Data Tab

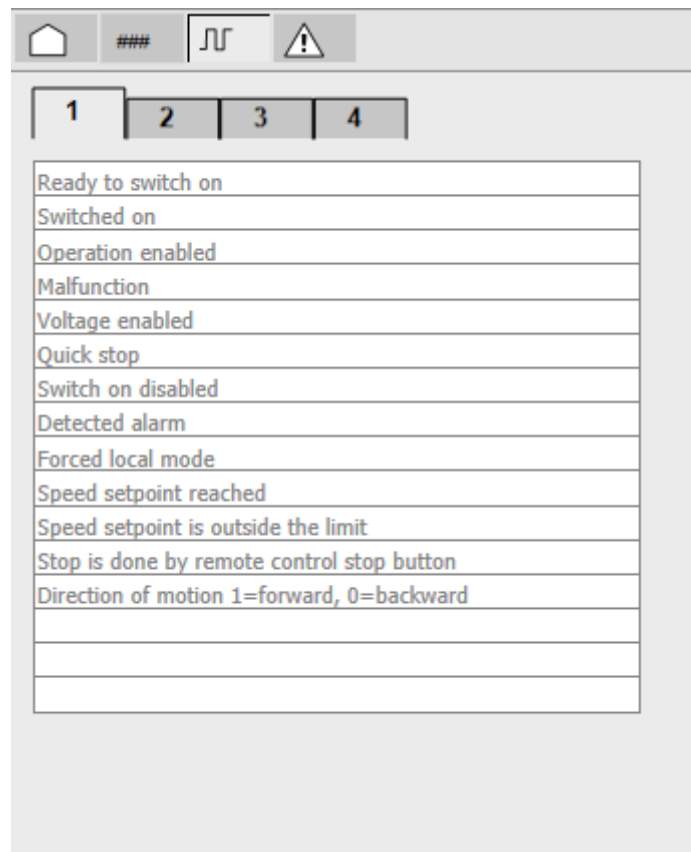
Overview

The discrete data tab contains up to four subtabs displaying the discrete data of the device. A subtab is displayed once the corresponding word is enabled from the **Main** page of the master template.

The discrete data is configured in the **Discrete 1...Discrete 4** pages, page 96 of the device object.

Discrete Data Tab Representation

The figure shows an example of the discrete data tab.



NOTE: Namur icons are displayed in the tab to the right of the description when configured, page 41.

Common Faceplate Tabs

What's in This Chapter

Alarms Tab75

Overview

This chapter describes the various tabs that are common to the faceplates of master templates of the library.

Alarms Tab

Overview

The alarms tab is available in each faceplate. It allows you to acknowledge alarm notifications that are associated to the control module and to manage the way these notifications are reported at the supervision level.

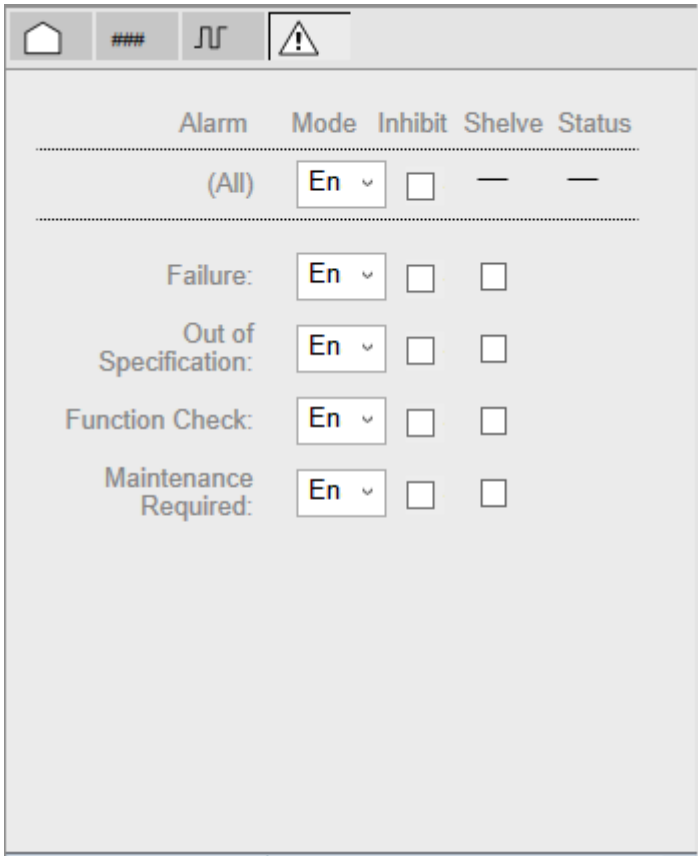
You can acknowledge and configure alarm notifications either:

- Globally for the alarms that are associated to the control module.
- Individually for each alarm.

NOTE: The evaluation of the corresponding signals at the control level is not impacted by the configuration of alarm notifications in this tab.

Alarms Tab Representation

The figure shows an example of the alarms tab.



Header	Description
Alarm	<p>Displays the string that is configured in the Alarm message of the alarm feature of the attribute.</p> <p>The row (All) applies the configuration globally to alarms of the control module.</p> <p>NOTE: The state alarms that are configured by default are described in the chapter documenting each master template.</p>
Mode	<p>Available alarm modes:</p> <ul style="list-style-type: none">• Enable• Disable• Silence
Inhibit	<p>When selected, the alarm is inhibited.</p> <p>NOTE: It also inhibits any alarm in contained instances of the object.</p>
Shelve	<p>When selected, the alarm is <i>shelved</i>, page 39.</p> <p>NOTE: It does not shelve alarms in contained instances of the object.</p>
Status	<p>Shows:</p> <ul style="list-style-type: none">• The status of the alarm by using the corresponding icon, page 48.• The Namur icon (when applicable).• The alarm severity, page 38. <p>NOTE: The tab allows you to see the alarms that are active, whereas the symbol displays only the alarm with the highest priority out of the active alarms.</p>

NOTE: Your role needs to have the required operational permission to modify alarm modes.

Faceplate Customization

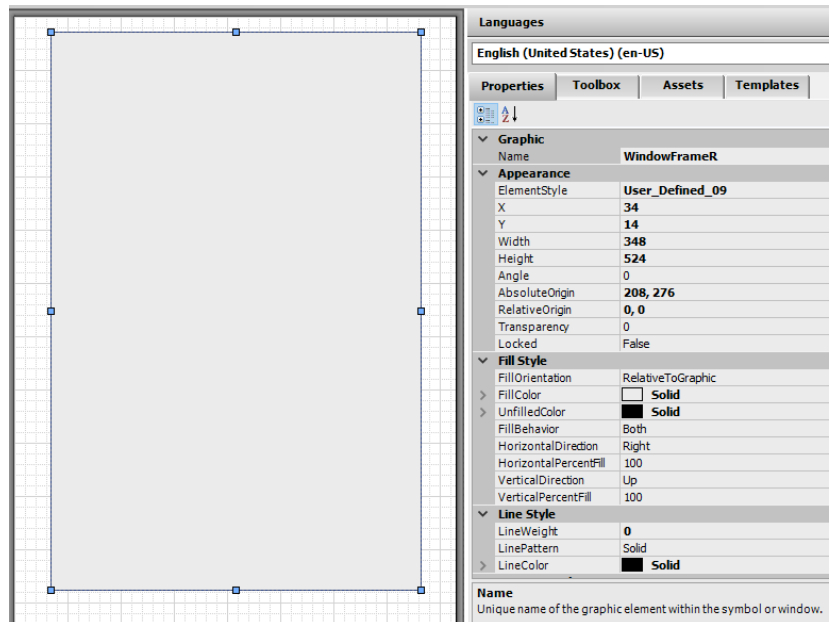
With the Ecostruxure Process Expert – General Purpose for Aveva System Platform R2 release you will be able to change the standard library pages and use custom pages instead of standard tabs. Also you will be able to extend the faceplate by adding new tabs.

Follow the below mentioned steps to add new tabs.

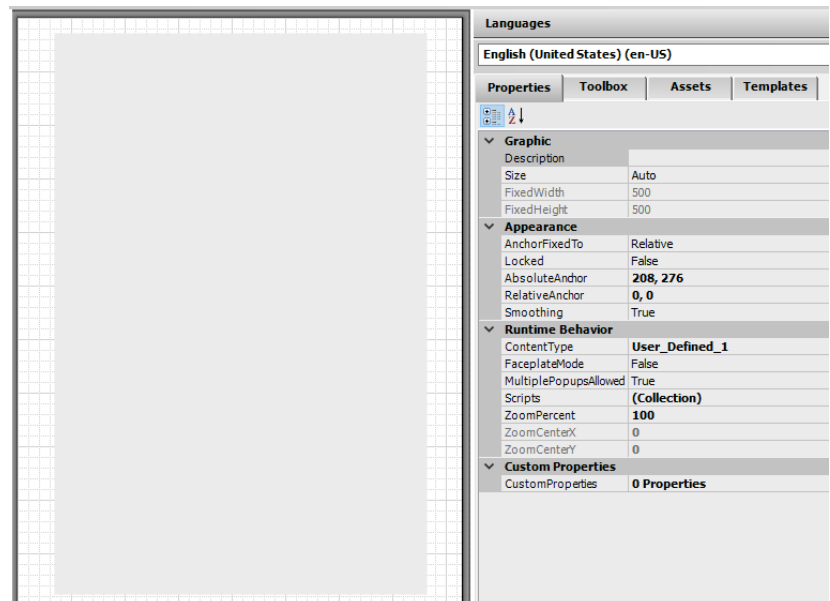
1. Creation of new tabs in L4 (Faceplates).

There are two methods which can be followed to create new tabs for the existing templates.

- Duplicate the existing faceplate and add the required objects.
- Create new content and set the following properties.
 - Create a frame of width: 348 and height: 524



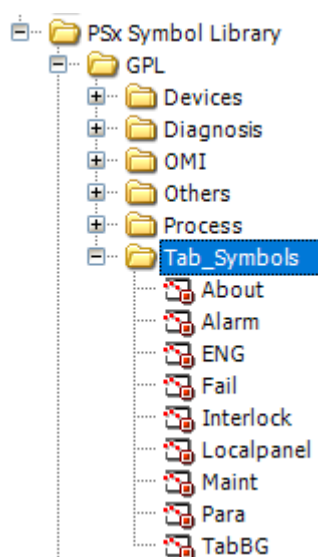
- Set the symbol (TabxxxxFP) ContentType : **User_Defined_1**



- Add the required Objects / Scripts / Custom Properties are to the frame to complete the L4 symbol (Faceplate).
- Then an attribute (parameter) is created in the Master template to store the name of the content that represents the new tab (Faceplate).
Ex: Attribute name: Param.TabOperatorFP.
Operator Attribute Initial Value of: Me.TabOperatorFP

2. Creation of Tab Icon.

- You can either use the existing the Standard Tab Icons available in path shown below



or can design/create new icon with abnormal if required in same location depending on the requirements.

- Create new content in Master Template with the below mentioned syntax:
"TabIconxx_yyyy"

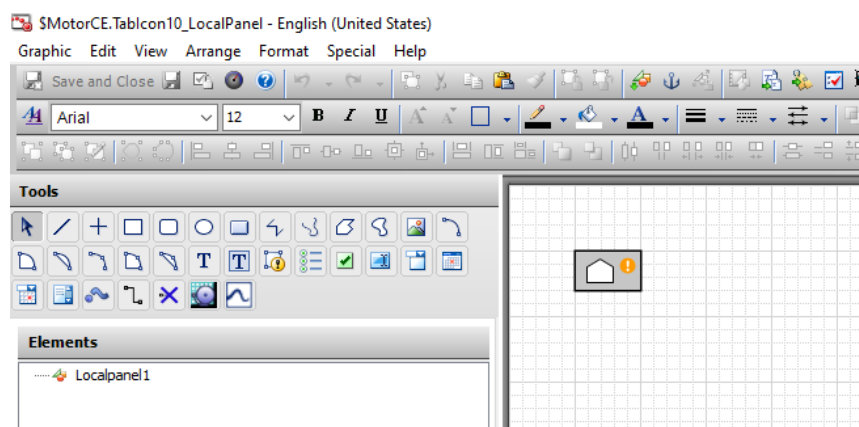
where "xx" is a numeric value defining the order where tab appears in runtime and "yyyy" is any suffix.

Example: TabIcon10_LocalPanel where "10" in the name describes the order of the tab from left to right in the ascending order.



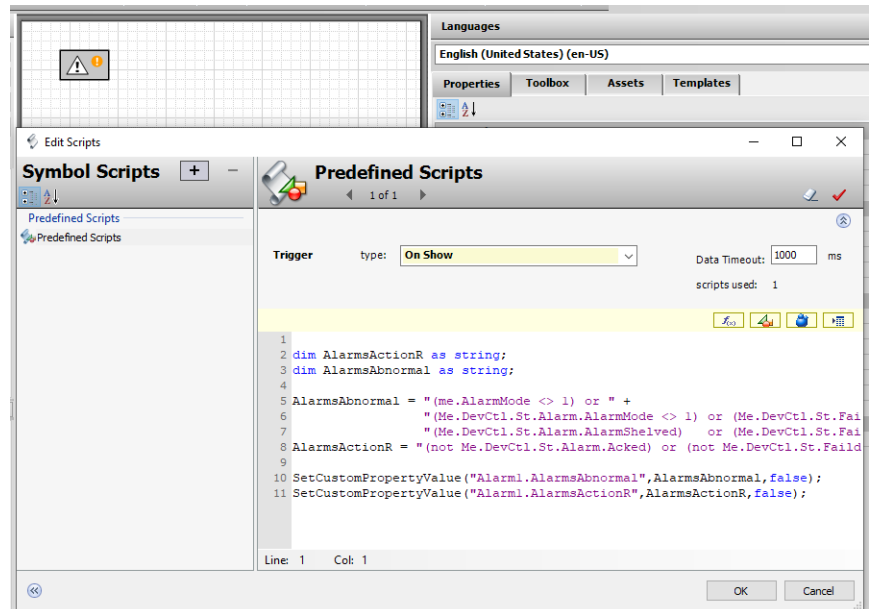
- Instantiate the Tab Symbol in the new content which is created.

Example: In TabIcon10_LocalPanel, Tabsymbol "Localpanel" is instantiated

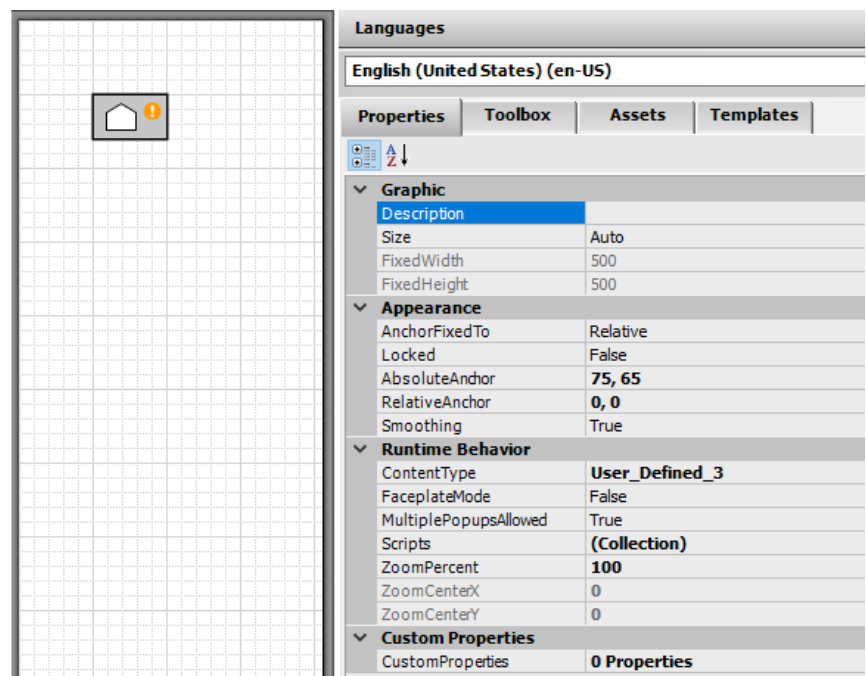


- Write the Abnormal animation conditions in the script (if any of them are applicable).

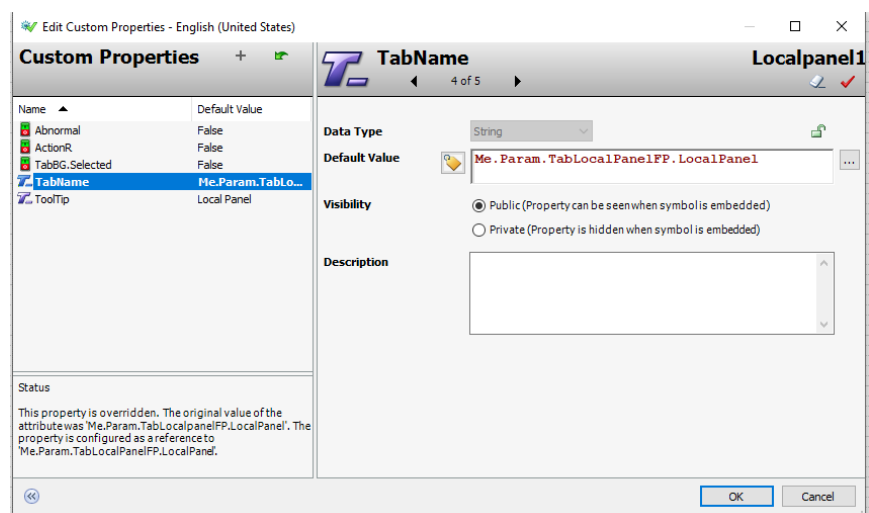
The image below illustrates an example for Alarms Tab abnormal symbol.



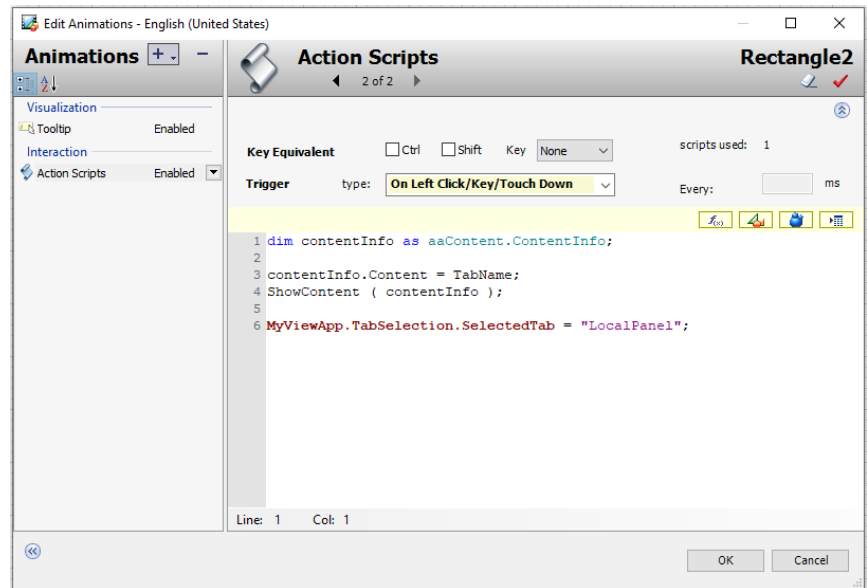
- Set the Content Type of Tab symbol to "User_Defined_3" as illustrated below.



- A custom property **TabName** is created to read the name of the faceplate through the attribute (parameter).



- This custom property **TabName** will be referred in the action script shown below. This action script will set focus to the faceplate.



NOTE: The recommended number of tabs are 8, however you can add more tabs. Once the tab count exceeds 8, scroll bar will appear to navigate beyond 8 tabs.

Implementing the Library

What's in This Part

Implementing the Library83

Overview

This part describes how to implement the Modicon Libraries - General Purpose for Wonderware System Platform to create an application.

It does not describe how to deploy objects nor the Galaxy. Refer to the ArchedrA IDE help.

Implementing the Library

What's in This Chapter

Implementation Overview.....	83
Creating the Model View	83
aOPCCClientGP Configuration	84
Template or Instance Configuration (Object Editor)	85
Graphic Symbol Integration	85

Overview

This chapter describes how to implement the Modicon Libraries - General Purpose for AVEVA System Platform to create an application.

It does not describe how to deploy objects nor the Galaxy. Refer to the ArchestrA IDE help.

Implementation Overview

Quick Reference

The table indicates the steps to follow and the topic describing each step.

Step	Action	Refer to
1	Import library objects in your Galaxy.	Library Installation, page 22.
2	Create the Model view hierarchy.	Creating the Model View.
3	Create application object instances.	Instance Creation.
4	Configure application object instances.	Template or Instance Configuration, page 85.
5	Deploy the Galaxy.	ArchestrA IDE help.
6	Create your supervision application in ArchestrA Graphic Editor.	Graphic Symbol Integration, page 85.

Creating the Model View

Introduction

The **Model** view shows objects in terms of their physical or containment relationships and allows you to create your system architecture.

An area represents a physical section of a plant or automation process or a logical part of an automation application.

The area instances are created from the *\$aAreaRootGP* and *\$aAreaGP* application templates.

The *\$aAreaRootGP* template is used to create the top-level areas of the **Model** view.

Model View Creation

This procedure describes the creation of a typical model view by using instances of application templates.

Step	Action
1	Select Model view.
2	Create instances of the <i>\$aAreaRootGP</i> application template.
3	Create instances of the <i>\$aAreaGP</i> application template.
4	Drag each area instance from the UnassignedArea folder to the required area instances to create your Model view hierarchy (up to 10 levels). NOTE: The <i>\$aAreaGP</i> instances must not be placed at the top of the model view hierarchy. They need to have <i>\$aAreaRootGP</i> instances as parent.
5	Configure each <i>\$aAreaRootGP</i> and <i>\$aAreaGP</i> instances.
6	Create system object instances by using the <i>\$aWinplatformGP</i> , <i>\$aAppEngineGP</i> , and <i>\$aViewEngineGP</i> application templates.
7	Configure the system objects.
8	Create instances of the <i>\$aOPCCClientGP</i> application template.
9	Drag the <i>\$aOPCCClientGP</i> instance from the UnassignedArea folder to the <i>\$aAreaRootGP</i> instance.
10	Configure the <i>aOPCCClientGP</i> instance (refer to <i>aOPCCClient Configuration</i> , page 84).
11	Create your application object instances by using the appropriate application templates.
12	Drag the application object instances from the UnassignedArea folder to the areas corresponding to your system architecture.

aOPCCClientGP Configuration

Overview

OPC client instances are created from the *\$aOPCCClientGP* template.

They are used to communicate with Modicon controllers through OPC Factory Server (OFS).

Configuring aOPCCClientGP

Proceed as follows to configure an OPC DA and OPC UA client instance.

Step	Action
1	Create an instance of the <i>\$aOPCCClientGP</i> template.
2	Double-click the instance to open it in the object editor
3	In the General page, configure the Server node with the name or IP address of the PC that hosts the OFS server.
4	To set the Server name , you can use the OFS server program ID (<i>Schneider-Aut.OFS</i>) or select the instance of the OFS server from the menu. NOTE: For OPC UA Configuration OFS Program ID is <i>OI.GATEWAY.3</i> .
5	In the Scan Group page, you need to configure at least one scan group. A scan group is a collection of OPC items with a common update interval. NOTE: By default, Scan Mode is set to <i>ActiveOnDemand</i> . In this mode, the items that are not actively being referenced by any client or object are not scanned. For more information about Scan Mode , refer to the Archestra IDE help.
6	Check in the object.

Template or Instance Configuration (Object Editor)

Overview

The object editor features native configuration pages but also pages that are specific to the objects of *Modicon Libraries - General Purpose for AVEVA System Platform*, page 87. Typically, the library-specific pages are used to configure optional supervision functions provided by templates.

Use the **Attributes** page to:

- List the attributes associated with the template or instance.
- Add attributes to a template or instance.
- Configure parameters of core supervision functions (attributes with the `Param.` prefix)
- Configure state alarms.
- Configure the aliases if needed (attributes with the `.Alias` suffix).

Diagnostic Messages When Saving Changes to Unassigned Instances

If you edit an instance that is not assigned to an area or host yet and save your changes, ArchestrA IDE may display a message about unresolved references in attributes.

Indeed, most templates of the *Modicon Libraries - General Purpose for AVEVA System Platform* have attributes with references, which require that their instances be assigned to an area or host so that the reference can be resolved.

This is the case, for example, for instances that have attributes with references to *MyEngine*. The reference can be resolved only once the instance is assigned to a host, which is an instance of any template derived from the *\$aAppEngineGP* template, page 103.

Similarly, instances of templates derived from *\$aAreaGP* trigger a message about unresolved references to *MyArea*. These references are resolved when the instances are assigned to another area. This other area is an instance of any template derived from the *\$aAreaGP* or *\$aAreaRootGP* templates, page 105.

Edit instances after you have assigned them to the appropriate area or host to avoid these references from being reported as unresolved.

NOTE: This type of message can also be triggered if ArchestrA IDE cannot resolve a reference as a result of an incorrect modification in a derived template or its instances. Verify that your configuration allows references in attributes to be resolved.

Graphic Symbol Integration

Introduction



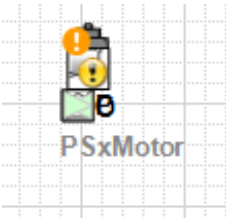
The graphic symbols are associated with the automation objects (object instances).

The ArchestrA Graphic Editor allows you to embed graphic symbols into another symbol.

You can create part of your supervision application in a symbol and integrate this symbol in an InTouch window and use it at runtime.

Integrating Graphic Symbols

Proceed as follows to insert a graphic symbol into another symbol.

Step	Action
1	In the Graphic Toolbox view, double-click the symbol in which you want to insert a symbol. Result: The ArchestrA Graphic Editor opens.
2	Click Edit > Embed Graphic or click the following icon in the toolbar.  Result: The Galaxy Browser opens.
3	Display the instances by clicking the following icon in the toolbar 
4	Select an instance from the list.
5	Select one of the graphic symbols associated with this instance. NOTE: Faceplate symbols also appear in the list but they do not open dynamically when you click them at runtime. You do not need to embed them. Faceplates open when you click a symbol at runtime.
6	Click Ok .
7	Click the area where you want to position the symbol. Result: The symbol is added. 

Object Configuration Pages (Object Editor)

What's in This Part

Optional Process Object Configuration Pages	88
Optional Device Object Configuration Pages	95
Common Configuration Pages.....	100

Overview

This part describes the configuration pages that are common to various object categories of the Modicon Libraries - General Purpose for AVEVA System Platform.

Optional Process Object Configuration Pages

What's in This Chapter

Interlocks Page Default Configuration	88
Failures Page Default Configuration	89
Maintenance Page Default Configuration	92
Local Panel Page Default Configuration	93
Alarms Page Default Configuration	93

Overview

This chapter describes the configuration pages that are common to master templates of the process category and specific to the Modicon Libraries - General Purpose for AVEVA System Platform.

They allow you to configure optional supervision functions of process application templates and their instances.

Data that you configure from these pages affects the corresponding *optional tabs*, *page 64* and *common tabs*, *page 75* of process object faceplates. If a page contains no data, the corresponding faceplate tab is not displayed.

The default security classification to modify references is *Configure*.

NOTE: Depending on the master template, some of these pages may not be available and/or not configured.

Interlocks Page Default Configuration

Overview

Depending on the configuration of the corresponding control resource, the **Interlocks** page is used to:



- Enable or disable monitoring of interlocks and define the interlock condition descriptions. When enabled, it allows you to:
 - Enable or disable the bypass of interlocks.
 - Enable or disable the manual resetting of interlocks.



The references to control resources that are described use specific control resources of the Modicon Libraries - General Purpose for AVEVA System Platform.



For a description of the default template-specific configuration of interlocks management, refer to the chapter documenting each master template of the process category.

Interlocks Page Description















Interlocks	Interlocks2	Failures	Failures2	Maintenance	Local Panel	Attributes	Scripts	Object Information
------------	-------------	----------	-----------	-------------	-------------	------------	---------	--------------------

Enable Interlocks: ☒  

Enable Bypass of Interlocks: ☒  

Enable Manual Reset of Interlocks: ☒  

Interlock Descriptions

Interlock 1:		 
Interlock 2:		 
Interlock 3:		 
Interlock 4:		 
Interlock 5:		 
Interlock 6:		 
Interlock 7:		 

Element	Description
Enable Interlocks	Select this check box to enable monitoring of interlock conditions. The default security classification is <i>Configure</i> .
Enable Bypass of Interlocks	Select this check box to enable bypassing of interlock conditions. The default security classification is <i>Configure</i> to enable the bypassing function and <i>Verified Write</i> to bypass interlocks during operation.
Enable Manual Reset of Interlocks	Select this check box to enable manual resetting of interlocks. The default security classification is <i>Configure</i> to enable the reset function and <i>Secured Write</i> to reset interlocks during operation.
Interlock Descriptions	Enter the interlock condition descriptions (up to 7). Interlock descriptions starting with an asterisk (*) are associated to control data that cannot be written to; they cannot be bypassed. For these, the Bypass check box is therefore not displayed in the faceplate tab. The default security classification is <i>Configure</i> . NOTE: The descriptions can be entered in multiple languages, page 43.
Customized References	Specify a variable reference if the automatic referencing mechanism is not used.

Failures Page Default Configuration

Overview

Depending on the configuration of the corresponding control resource, the **Failures** page is used to:

- Enable or disable monitoring of abnormal conditions and define the descriptions. When enabled, it allows you to:
 - Enable or disable the bypass of abnormal conditions.
 - Enable or disable the manual resetting of abnormal conditions.

The references to control resources that are described use specific control resources of the Modicon Libraries - General Purpose for AVEVA System Platform.

For a description of the default template-specific configuration of abnormal condition management, refer to the chapter documenting each master template of the process category.

NOTE: Two identical pages are available to configure abnormal condition management, **Failures** and **Failures2**. Only the suffixes that are configured by default vary.

Management of Abnormal Conditions for Direction and Speed

Two identical pages are available to configure abnormal condition management, **Failures** and **Failures2**. Only the suffixes that are configured by default vary:



- The **Failures** page references the CONDSUM_ST datatype.
- The **Failures2** page references the RC_CONDSUM_ST datatype.



The table describes the possible scenarios to manage abnormal conditions for control resources with two motor directions and two speeds that feature these functions by using either or both pages.



Monitoring of abnormal conditions for	Use Failures page	Use Failures2 page
None	No	No
Forward direction/speed 1 and reverse direction/speed 2	Yes	No
Forward direction/speed 1 and reverse direction/speed 2	Yes Forward direction/speed 1	Yes Reverse direction/speed 2

Failures and Failures2 Page Description































Interlocks Interlocks2 Failures Failures2 Maintenance Local Panel Attributes Scripts Object Information

Enable Failures: ☒  

Enable Bypass of Failures: ☒  

Enable Manual Reset of Failures: ☒  

Failure Descriptions

Failure 1:			
Failure 2:			
Failure 3:			
Failure 4:			
Failure 5:			
Failure 6:			
Failure 7:			
Failure 8:			
Failure 9:			
Failure 10:			
Failure 11:			
Failure 12:			
Failure 13:			
Failure 14:			
Failure 15:			

Element	Description
Enable Failures	Select this check box to enable monitoring of abnormal conditions. The default security classification is <i>Configure</i> .
Enable Bypass of Failures	Select this check box to enable bypassing of abnormal conditions. The default security classification is <i>Configure</i> to enable the bypassing function and <i>Verified Write</i> to bypass abnormal conditions during operation.
Enable Manual Reset of Failures	Select this check box to enable manual resetting of abnormal conditions. The default security classification is <i>Configure</i> to enable the reset function and <i>Secured Write</i> to reset abnormal conditions during operation.
Failure Descriptions	Enter the description of the detected failure conditions (up to 15). Descriptions starting with an asterisk (*) are associated to control data that cannot be written to; they cannot be bypassed. For these, the Bypass check box is therefore not displayed in the faceplate tab. The default security classification is <i>Configure</i> . NOTE: The descriptions can be entered in multiple languages, page 43.
Customized References	Specify a variable reference if the automatic referencing mechanism is not used.

Maintenance Page Default Configuration

Overview

Depending on the configuration of the corresponding control resource, the **Maintenance** page is used to enable monitoring of maintenance data. When enabled, it allows you to count and reset:

- Operation hours.
- Number of switches.

The references to control resources that are described use specific control resources of the Modicon Libraries - General Purpose for AVEVA System Platform.

For a description of the default template-specific configuration of maintenance data management, refer to the chapter documenting each master template of the process category.

Maintenance Page Description

Element	Description
Enable Maintenance	Select this check box to enable supervision for maintenance data. The default security classification is <i>Configure</i> .
Status Word	Status word
Configuration Word	Configuration word The default security classification is <i>Verified Write</i> to reset counters during operation.
Running Hours	Counter of operation hours The default security classification is <i>Configure</i> .
Number of Operations	Counter of number of operations; by default the variable reference with suffix for auto-referencing is <code><Instance name>_DEVMT_ST.MCNT</code> . The default security classification is <i>Configure</i> .
Customized References	Specify a variable reference if the automatic referencing mechanism is not used.

Local Panel Page Default Configuration

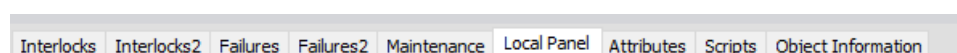
Overview

Depending on the configuration of the corresponding control resource, the **Local Panel** page is used to enable the local panel.

The references to control resources that are described use specific control resources of the Modicon Libraries - General Purpose for AVEVA System Platform.

For a description of the default template-specific configuration of the local panel function, refer to the chapter documenting each master template of the process category.

Local Panel Page Description



Enable Local Panel: ☒  

Element	Description
Enable Local Panel	Select this check box to enable the local panel function at the supervision level. The default security classification is <i>Configure</i> .
Status Word	Status word; the variable reference is specific to the type of control module associated with the local panel. For example, for <i>\$Motor2DirCE</i> master template, the default variable reference is <i>_Motor2LP_ST.STW</i> . The default security classification is <i>Configure</i> .
Configuration Word	Configuration Word; the variable reference is specific to the type of control module associated with the local panel. For example, for <i>\$Motor2DirCE</i> master template, the default variable reference is <i>_Motor2LP_ST.CFGW</i> . The default security classification is <i>Configure</i> .
Customized References	Specify a variable reference if the automatic referencing mechanism is not used.

NOTE: User has to match **Suffix for Auto References** with the DDT structure of the control resource (DFB) of the instance.

Alarms Page Default Configuration

Overview

Depending on the configuration of the corresponding control resource, the **Alarms** page is used to enable level alarm functions for analog signals. When enabled, it allows you to manage individually the following alarm level signals:

- Very high level
- High level
- Deviation
- Low level

- Very low level

The references to control resources that are described use specific control resources of the Modicon Libraries - General Purpose for AVEVA System Platform.

For a description of the default template-specific configuration of the level alarm function, refer to the chapter documenting each master template of the process category.

Alarms Page Description

Alarms Interlocks LocalPanel Attributes Scripts Object Information

Enable Alarms: ☒

Enable High High Set Point: ☐

Enable High Set Point: ☐

Enable Deviation Set Point: ☐

Enable Low SetPoint: ☐

Enable Low Low Set Point: ☐

Element	Description
Enable Alarms	Select this check box to enable supervision for analog alarms. The default security classification is <i>Configure</i> to enable the alarm function and <i>Tune</i> to during operation.
Enable High High Setpoint	Select this check box to enable supervision for very high-level alarms.
Enable High Setpoint	Select this check box to enable supervision for high-level alarms.
Enable Deviation Setpoint	Select this check box to enable supervision for deviation alarms.
Enable Low Setpoint	Select this check box to enable supervision for low-level alarms.
Enable Low Low Setpoint	Select this check box to enable supervision for very low-level alarms.
Customized References	Specify a variable reference if the automatic referencing mechanism is not used.

NOTE: For setpoints, the default security classification is *Configure* to enable setpoint supervision and *Tune* to modify it during operation.

Optional Device Object Configuration Pages

What's in This Chapter

Main Page Default Configuration	95
Discrete Page Default Configuration	96
Analog Page Default Configuration	98

Overview

This chapter describes the configuration pages that are common to master templates of the device category and specific to the Modicon Libraries - General Purpose for AVEVA System Platform.

They are used to configure optional supervision functions of device application templates and their instances.

Data that you configure from these pages affects the corresponding **optional tabs and subtabs**, page 72 and **common tabs**, page 75 of device object faceplates. If a page contains no data, the corresponding faceplate tab is not displayed.

The default security classification to modify references is *Configure*.

NOTE: Depending on the master template, some of these pages may not be available and/or not configured.

Main Page Default Configuration

Overview

Depending on the configuration of the corresponding control resource, the **Main** page is used to:

- Enable or disable discrete words related to the device (displayed in the discrete data tab of the device faceplate).
- Enable or disable analog groups related to the device (displayed in the analog data tab of the device faceplate).

When enabled, it allows you to configure the corresponding discrete and analog configuration pages.

The references to control resources that are described use specific control resources of the Modicon Libraries - General Purpose for AVEVA System Platform.

For a description of the default template-specific configuration of device data management, refer to the chapter documenting each master template of the process category.

Main Page Description

Main | Discrete 1 | Discrete 2 | Discrete 3 | Discrete 4 | Analog 1 | Analog 2 | Analog 3 | Analog 4 | Analog 5 | Analog 6 | Attributes | Scripts | Object Information

PV: Customized References (only if Suffix is left on blank): Suffix for Auto References:

Status Word: STW

Configuration Word: CFGW

Enable Discrete Words: ☐ Word 1 ☐ Word 2 ☐ Word 3 ☐ Word 4 Purpose:

Enable Analog Group: ☐ Group 1 ☐ Group 2 ☐ Group 3 ☐ Group 4 ☐ Group 5 ☐ Group 6 Purpose:

Element	Description
Status Word	Reference variable of the status word of the device.
Configuration Word	Reference variable of the configuration word of the device. The default security classification is <i>Operate</i> .
Enable Discrete Words	<p>Select the check box to enable monitoring of the corresponding discrete word.</p> <p>Enabling Word 1 to Word 4 enables Discrete 1 to Discrete 4 pages, page 96 respectively.</p> <p>The text that you enter in the Purpose field is displayed in the tooltip of the corresponding subtabs (1 to 4) of the discrete data tab of faceplates, page 73.</p> <p>The default security classification is <i>Configure</i>.</p> <p>NOTE: Text can be entered in multiple languages, page 43.</p>
Enable Discrete Group	<p>Select the check box to enable monitoring of the analog group.</p> <p>Enabling Group 1 to Group 6 enables Analog 1 to Analog 6 pages, page 98 respectively.</p> <p>The text that you enter in the Purpose field is displayed in the tooltip of the corresponding subtabs (1 to 6) of the analog data tab of faceplates, page 72.</p> <p>NOTE: Text can be entered in multiple languages, page 43.</p>
Customized References	Specify a variable reference if the automatic referencing mechanism is not used.

Discrete Page Default Configuration

Overview

The **Discrete 1** to **Discrete 4** pages are used to:

- Define the bit descriptions of the discrete words.
- Define the Namur status associated with each bit.

- Define the variable references associated with each discrete word.

The references to control resources that are described use specific control resources of the Modicon Libraries - General Purpose for AVEVA System Platform.

For a description of the default template-specific configuration of device data management, refer to the chapter documenting each master template of the process category.

NOTE: First, you need to enable the corresponding discrete word in the **Main** page, page 95.

Discrete 1 to Discrete 4 Page Description

Main	Discrete 1	Discrete 2	Discrete 3	Discrete 4	Analog 1	Analog 2	Analog 3	Analog 4	Analog 5	Analog 6
<div> <div> BitDescriptions: <div> <div>0</div> <div>Fault;[3082]Fallo</div> </div> <div> <div>1</div> <div>Opened;[3082]Abierto</div> </div> <div> <div>2</div> <div>Closed;[3082]Cerrado</div> </div> <div> <div>3</div> <div>Trip;[3082]Disparo</div> </div> <div> <div>4</div> <div>Sepam in remote mode;[3082]Sepam en modo remoto</div> </div> <div> <div>5</div> <div>Adjustment A is in service;[3082]Juego de ajustes A en ser</div> </div> <div> <div>6</div> <div>Adjustment B is in service;[3082]Juego de ajustes B en ser</div> </div> <div> <div>7</div> <div>Sepam is not on time;[3082]Sepam no está en hora</div> </div> <div> <div>8</div> <div>Sepam in local adjustment mode;[3082]Sepam modo de aju</div> </div> <div> <div>9</div> <div>Loss of synchron;[3082]Pérdida de sincronismo</div> </div> <div> <div>10</div> <div>Loss of event 1 data;[3082]Pérdida de datos evento 1</div> </div> <div> <div>11</div> <div>Event Zone 1;[3082]Evento zona 1</div> </div> <div> <div>12</div> <div>Partial fault;[3082]Fallo parcial</div> </div> <div> <div>13</div> <div>Major fault;[3082]Fallo mayor</div> </div> <div> <div>14</div> <div>Loss of event 2 data;[3082]Pérdida de datos evento 2</div> </div> <div> <div>15</div> <div>Digital output O3 status;[3082]Digital output O3 status</div> </div> </div> <div> Namur Icon: <div> <div>Failure</div> <div>None</div> <div>None</div> <div>None</div> <div>None</div> <div>None</div> <div>None</div> <div>None</div> <div>None</div> <div>Failure</div> <div>Failure</div> <div>None</div> <div>Failure</div> <div>Failure</div> <div>Failure</div> <div>None</div> </div> </div> <div> <div> Customized References (only if Suffix is left on blank): <div>---</div> </div> <div> Suffix for Auto References: <div>_SEPAM_CFG.DataStatus</div> </div> </div> </div>										

Element	Description
Bit Descriptions	Description of the bits. The text is displayed in the subtabs (1 to 4) of the corresponding discrete data tab of device faceplates, page 73. NOTE: Descriptions can be entered in multiple languages, page 43.
Namur Icon	Select a Namur, page 40 status from the menu: <ul style="list-style-type: none"> • None • Failure • Function check • Out of specs • Maintenance required
Suffix for Auto References	Variable reference of the configuration word of the control resource controlling the device. By default, the variable reference is <Instance name>_<device-specific DFB_DDT>.<Configuration word>.
Customized References	Specify a variable reference if the automatic referencing mechanism is not used.

Analog Page Default Configuration

Overview

The **Analog 1** to **Analog 6** pages are used to:

- Define descriptions of data of the analog groups.
- Define the numerical format, engineering unit, and style, page 47 of the analog values that are displayed in the faceplate of devices.
- Define the variable references associated with each analog data.

The references to control resources that are described use specific control resources of the Modicon Libraries - General Purpose for AVEVA System Platform.

For a description of the default template-specific configuration of device data management, refer to the chapter documenting each master template of the process category.

NOTE: First, you need to enable the corresponding analog group in the **Main** page, page 95.

Analog 1 to Analog 6 Page Description

The screenshot shows the 'Analog 1' configuration page. It includes a tabbed interface with tabs for 'Main', 'Discrete 1', 'Discrete 2', 'Discrete 3', 'Discrete 4', 'Analog 1', 'Analog 2', 'Analog 3', 'Analog 4', 'Analog 5', 'Analog 6', 'Object Information', 'Scripts', 'UDAs', and 'Extension'. The 'Analog 1' tab is active. It contains a list of 12 data points, each with a checkbox and a description. Below the list, there are sections for 'Customized References' and 'Suffix for Auto References'.

Enable Analog Data:	Descriptions:	Format:	EU:	Style:
<input checked="" type="checkbox"/> Data 1	Device information;[3082]Información Dispositivo			PV
<input checked="" type="checkbox"/> Data 2	Remote indications 0;[3082]Teleserialización 0	0		PV
<input checked="" type="checkbox"/> Data 3	Remote indications 1;[3082]Teleserialización 1	0		PV
<input checked="" type="checkbox"/> Data 4	Remote indications 2;[3082]Teleserialización 2	0		PV
<input checked="" type="checkbox"/> Data 5	Remote indications 3;[3082]Teleserialización 3	0		PV
<input checked="" type="checkbox"/> Data 6	Intensity phase 1;[3082]Intensidad fase 1	0	A	PV
<input checked="" type="checkbox"/> Data 7	Intensity phase 2;[3082]Intensidad fase 2	0	A	PV
<input checked="" type="checkbox"/> Data 8	Intensity phase 3;[3082]Intensidad fase 3	0	A	PV
<input checked="" type="checkbox"/> Data 9	Amount of residual intensity;[3082]Cantidad de Intensidad	0	A	PV
<input checked="" type="checkbox"/> Data 10	Intensity phase 1;[3082]Intensidad fase 1	0	A	PV
<input type="checkbox"/> Data 11				No Data
<input type="checkbox"/> Data 12				No Data

Customized References (only if Suffix is left on blank):

1: ---
2: ---
3: ---
4: ---
5: ---
6: ---
7: ---
8: ---
9: ---
10: ---

Suffix for Auto References:

_SEPAM_CFG.Info
_SEPAM_IO80.TS0
_SEPAM_IO80.TS1
_SEPAM_IO80.TS2
_SEPAM_IO80.TS3
_SEPAM_MEA.CurrentI1
_SEPAM_MEA.CurrentI2
_SEPAM_MEA.CurrentI3
_SEPAM_MEA.ResidualCurrentSum
_SEPAM_MEA.ResidualCurrentMeasured

Element	Description
Descriptions	Description of the analog data. The text is displayed in the subtabs (1 to 6) of the corresponding analog data tab of device faceplates, page 72. NOTE: The descriptions can be entered in multiple languages, page 43.
Format	Specify the number format of analog data to be displayed in faceplate tabs. NOTE: For configuration purposes, the decimal separator must be Dot (.) and not any other type of separator, for example, Comma (,) . The run-time will use the configured language settings of the local system.
EU	Specify the engineering unit of analog data to be displayed in faceplate tabs.
Format	Select the style from the menu:

Element	Description
	<ul style="list-style-type: none">• PV: Present value style• SP: Setpoint style• OP: Output style• Alarm Code: Alarm style• No Data: The analog data is not displayed in the faceplate
Customized References	Specify a variable reference if the automatic referencing mechanism is not used.
Suffix for Auto References	Variable reference of the control resource for each analog data.

Common Configuration Pages

What’s in This Chapter

Attributes Page 100

Scripts Page 101

Object Information Page 101

Overview

This chapter provides an overview of the standard ArcestrA IDE configuration pages that are common to master templates of the library.

Attributes Page

Overview

Use the **Attributes** page to:

- List the attributes associated with a template or instance.
- Add attributes to a template or instance.
- Configure the parameters of core functions of the object (attributes with the `Param.` prefix). The object-specific parameters are described in the chapter documenting each master template.
- Configure the aliases, if needed (attributes with the `.Alias` suffix). The control/supervision relationship that is configured by default in master templates is described in the chapter documenting each master template.
- Configure extendable attributes.
- Configure features such as state alarms.

NOTE:

- The necessary **I/O** features are already preconfigured in the master templates.
- By default, non of the attributes are historized in the trend.

For more information about attribute configuration, refer to the ArcestrA IDE help.

Me Suffix of Attributes

The *Me* suffix in an attribute means that the attribute is owned by the object. That is, the attribute does not come from the field.

Such attributes may point to another attribute of the same object; otherwise, they are calculated based on various information coming from the field, operators, and so on.

AO Attributes

The *AO* element in the syntax of an attribute means that the attribute is calculated.

Such attributes may be calculated by using scripts or by pointing to another attribute of the same object for clarity and flexibility.

Scripts Page

Description

The **Scripts** page contains scripts associated with the object, for example:

- Script to summarize statuses.
- Script to calculate attributes.
- Script to evaluate abnormal conditions.
- Script to calculate references.

For more information about scripts, refer to the Archedra IDE help.

NOTE: This page does not require further configuration but you can add your own scripts.

Object Information Page

Overview

The **Object Information** page provides general information about an object, its configuration, and dependencies.

Object Description

The description that you enter in the **Description** field is displayed on the faceplate of the object.

NOTE: You can enter descriptions in multiple languages, page 43.

System and Device Integration Objects


What's in This Part

`$aAppEngineGP`: Application Engine 103
`$aAreaGP` and `$aAreaRootGP`: Areas 105
`$aOPCClientGP`: OPC Client 107
`$aRedundantDIObjectGP`: Redundant Communication Object
Diagnosis 109

Overview

This part describes system and device integration objects, and the diagnostic functions that they provide.

Schneider Electric provides the templates described in this document. These templates can be used in various applications to minimize engineering efforts but the use, integration, configuration, and validation of the system is the sole responsibility of the user. Said user must ensure the safety of the system as a whole by performing a safety analysis, including the resources provided by Schneider Electric through procedures that the user deems appropriate.

 **WARNING**

LOSS OF CONTROL

- Perform a Failure Mode and Effects Analysis (FMEA) of your application, and apply preventive and detective controls before implementation.
- Provide a fallback state for undesired control events or sequences.
- Provide separate or redundant control paths wherever required.
- Supply appropriate parameters, particularly for limits.
- Review the implications of transmission delays and take actions to mitigate.
- Review the implications of communication link interruptions and take actions to mitigate.
- Provide independent paths for control functions (for example, emergency stop, over-limit conditions, and fault conditions) according to the safety analysis and applicable codes, and regulations.
- Apply local accident prevention and safety regulations and guidelines. ¹
- Test each implementation of this library for proper operation before placing it into service.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

¹ For additional information, refer to NEMA ICS 1.1 (latest edition), *Safety Guidelines for the Application, Installation, and Maintenance of Solid State Control* and to NEMA ICS 7.1 (latest edition), *Safety Standards for Construction and Guide for Selection, Installation and Operation of Adjustable-Speed Drive Systems* or their equivalent governing your particular location.

\$aAppEngineGP: Application Engine

What's in This Chapter

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Supervision Functions

Description

The *\$aAppEngineGP* master template provides the following functions:

- Viewing and setting the scan state of the application engine.
- Viewing the application engine status.
- Viewing redundancy information and status.
- Alarm management.

During operation, these functions are implemented by instances through symbols and their associated faceplate.

NOTE: You can modify the default configuration in the corresponding configuration pages, page 87.

Parameters

Parameter Configuration

The default values of parameters of the *\$aAppEngineGP* master template are the same as those of the *\$aAppEngineGP* template.

However, the *\$aAppEngineGP* master template contains attributes and scripts, which are configured to allow monitoring data related to the application engine.

The configurable parameters associated to attributes are described in this topic.

Default State Alarms

State Alarms for Application Engines

The table indicates for which attributes a state alarm is configured in the *\$aAppEngineGP* master template and provides the default values.

Attribute	Alarm message	Priority
<i>Redundancy.AO.StandbyUnavailable.Condition</i>	<i>Standby Unavailable</i>	250
<i>Redundancy.AO.StandbyNotReady.Condition</i>	<i>Standby Not Ready</i>	250

NOTE: You can modify the configuration from the **Attributes** page.

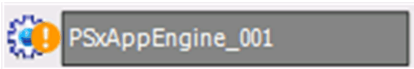
Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in symbols.

Symbol Description

The table describes the symbols that are included in the *\$aAppEngineGP* master template to display data related to the application engine during operation.

Name	Graphic symbol	Description
Symbol		<p>Displays the application engine icon and to the right, the instance name by using:</p> <ul style="list-style-type: none">• Element style <i>User_Defined_06</i> if Scan State is set to <i>On</i>.• Element style <i>User_Defined_07</i> if Scan State is set to <i>Off</i>.

\$aAreaGP and \$aAreaRootGP: Areas

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Graphic Representation	106

Supervision Functions

Description

The *\$aAreaGP* and *\$aAreaRootGP* master templates provide the following functions:

- Viewing and setting the scan state for instances assigned to the area.
- Viewing the status of alarms for instances assigned to the area.

During operation, these functions are implemented by instances through symbols and their associated faceplate.

NOTE: You can modify the default configuration in the corresponding configuration pages, page 87.

Parameters

Parameter Configuration

The default values of parameters of the *\$aAreaGP* and *\$aAreaRootGP* master templates are the same as those of the *\$aAreaGP* template.

However, the *\$aAreaGP* and *\$aAreaRootGP* master templates contain attributes and scripts, which are configured to allow monitoring data related to the area.

The configurable parameters associated to attributes are described in this topic.

You can modify the parameter values in the derived application template or in its instances.

Parameter Description

The table describes the parameters that are defined as part of the *\$aAreaGP* and *\$aAreaRootGP* master template attributes.

Name	Data type	Initial value	Description
Param.EnablePESLink	Boolean	False	NOTE: The feature that you can configure by using this parameter is not supported in this version of the library. This Control Expert feature is only available when the object is used.

Default State Alarms

State Alarms for Areas

No state alarms are configured for attributes of the *\$aAreaGP* and *\$aAreaRootGP* master templates.

NOTE: You can modify the configuration from the **Attributes** page.


Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in symbols.

Symbol Description

The table describes the symbols that are included in the *\$aAreaGP* and *\$aAreaRootGP* master templates to display data related to areas during operation.

Name	Graphic symbol	Description
Symbol		<p>Displays the area icon and to the right, the instance name by using:</p> <ul style="list-style-type: none">• Element style <i>User_Defined_06</i> if Scan State is set to <i>On</i>.• Element style <i>User_Defined_07</i> if Scan State is set to <i>Off</i>.

\$aOPCClientGP: OPC Client

What's in This Chapter

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Default State Alarms and Additional Alarm Conditions	107
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Supervision Functions

Description

The *\$aOPCClientGP* master template provides the following functions:

- Viewing and setting the scan state of the OPC client.
- Viewing the connection and related alarm status.
- Viewing scan group information.
- Alarm management.

During operation, these functions are implemented by instances through symbols and their associated faceplate.

NOTE: You can modify the default configuration in the corresponding configuration pages, page 87.

Parameters

Parameter Configuration

The default values of parameters of the *\$aOPCClientGP* master template are the same as those of the *\$OPCClientGP* template.

However, the *\$aOPCClientGP* master template contains attributes and scripts, which are configured to allow monitoring data related to the OPC client.

You can modify the configuration in the derived application template or in its instances.

NOTE: No configurable parameters (attributes with the *Param.* prefix) are associated to attributes of the *\$aOPCClientGP* master template.

Default State Alarms and Additional Alarm Conditions

Overview

In the *\$aOPCClientGP* master template, alarms related to core supervision functions are managed in the following ways:

- Certain attributes have associated state alarms. When the condition that is defined in the *script*, page 101 is satisfied, the alarm becomes active.
- Certain parameters of the **General** page are associated to alarms.

You can manage the alarms from the alarms tab of the faceplate during operation.

State Alarms for OPC Clients

The table indicates for which attributes a state alarm is configured in the \$aOPCClientGP master template and provides the default values.

Attribute	Alarm message	Priority
AO.ScanGroupAlarm	Off Scan Alarm	500

NOTE: You can modify the configuration from the **Attributes** page.

Additional Alarm Conditions for OPC Clients

The table indicates the parameters to which an alarm is associated by default in the \$aOPCClientGP master template.

Parameter	Alarm message	Priority
Detect connection alarm	OPC Server Connection	250

NOTE: You can modify the configuration from the **General** page.

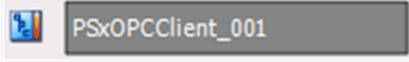
Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in symbols.

Symbol Description

The table describes the symbols that are included in the \$aOPCClientGP master template to display data related to OPC clients during operation.

Name	Graphic symbol	Description
aOPCClientGP		<p>Displays the OPC client icon and to the right, the instance name by using:</p> <ul style="list-style-type: none"> Element style <i>User_Defined_06</i> if Scan State is set to <i>On</i>. Element style <i>User_Defined_07</i> if Scan State is set to <i>Off</i>.

\$aRedundantDIObjectGP: Redundant Communication Object Diagnosis

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Supervision Functions

Description

The *\$aRedundantDIObjectGP* master template provides the following functions:

- Viewing the status of redundant communication objects (sources).
- Switching between primary and backup communication objects.
- Viewing the connection and related alarm status.
- Viewing scan group information.
- Alarm management.

During operation, these functions are implemented by instances through symbols and their associated faceplate.

NOTE: You can modify the default configuration in the corresponding configuration pages, page 87.

Parameters

Parameter Configuration

The default values of parameters of the *\$aRedundantDIObjectGP* master template are the same as those of the *\$aRedundantDIObjectGP* template.

However, the *\$aRedundantDIObjectGP* master template contains attributes and scripts, which are configured to allow monitoring data related to redundant communication objects.

You can modify the configuration in the derived application template or in its instances.

NOTE: No configurable parameters (attributes with the *Param.* prefix) are associated to attributes of the *\$aRedundantDIObjectGP* master template.

Default State Alarms and Additional Alarm Conditions

Overview

In the *\$aRedundantDIObjectGP* master template, alarms related to core supervision functions are managed in the following ways:

- Certain attributes have associated state alarms. When the condition that is defined in the script, page 101 is satisfied, the alarm becomes active.
- Certain parameters of the **General** page are associated to alarms.

You can manage the alarms from the alarms tab of the faceplate during operation.

State Alarms for Redundant Communication Object Diagnosis

The table indicates for which attributes a state alarm is configured in the \$aRedundantDIOBJECTGP master template and provides the default values.

Attribute	Alarm message	Priority
AO.ConnectionAlarm	OPC Server Connection	250
AO.ScanGroupAlarm	Off Scan Alarm	500
AO.SwitchoverAlarm	Switchover Alarm	500

NOTE: You can modify the configuration from the **Attributes** page.

Additional Alarm Conditions

By default, no additional alarm conditions are configured for the \$aRedundantDIOBJECTGP master template.

NOTE: You can modify the configuration from the **General** page.

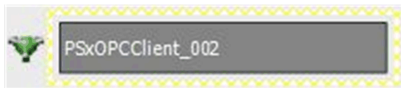
Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in symbols.

Symbol Description

The table describes the symbols that are included in the \$aRedundantDIOBJECTGP master template to display data related to redundant communication objects during operation.

Name	Graphic symbol	Description
symbol		<p>Displays the redundant communication icon and to the right, the name of the redundant communication object being monitored (active source) by using:</p> <ul style="list-style-type: none">• Element style <i>User_Defined_06</i> if Scan State is set to <i>On</i>.• Element style <i>User_Defined_07</i> if Scan State is set to <i>Off</i>.

Signal Processing

What's in This Part

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\$LoadCellENOD4TCE - Scaime Weighing Module	144
\$LoadCellPMESWTCE - Scaime weighing module	152

Overview

This part describes the master templates that provide the supervision functions for the signal processing family.

Schneider Electric provides the templates described in this document. These templates can be used in various applications to minimize engineering efforts but the use, integration, configuration, and validation of the system is the sole responsibility of the user. Said user must ensure the safety of the system as a whole by performing a safety analysis, including the resources provided by Schneider Electric through procedures that the user deems appropriate.

WARNING

LOSS OF CONTROL

- Perform a Failure Mode and Effects Analysis (FMEA) of your application, and apply preventive and detective controls before implementation.
- Provide a fallback state for undesired control events or sequences.
- Provide separate or redundant control paths wherever required.
- Supply appropriate parameters, particularly for limits.
- Review the implications of transmission delays and take actions to mitigate.
- Review the implications of communication link interruptions and take actions to mitigate.
- Provide independent paths for control functions (for example, emergency stop, over-limit conditions, and fault conditions) according to the safety analysis and applicable codes, and regulations.
- Apply local accident prevention and safety regulations and guidelines.¹
- Test each implementation of this library for proper operation before placing it into service.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

¹ For additional information, refer to NEMA ICS 1.1 (latest edition), *Safety Guidelines for the Application, Installation, and Maintenance of Solid State Control* and to NEMA ICS 7.1 (latest edition), *Safety Standards for Construction and Guide for Selection, Installation and Operation of Adjustable-Speed Drive Systems* or their equivalent governing your particular location.

\$AnalogInputCE: Analog Inputs with Configurable Range

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Overview

This chapter describes the supervision resources and runtime services that are available for the management of analog inputs with configurable range.

Supervision Functions

Description

Core and optional resources provide the following monitoring and operation functions:

- Main core functions encompass input monitoring, Override, Maintenance mode, and the configuration of range-related parameters (in engineering units).
- Optional alarm function allows you to monitor level setpoints (very-high, high, low, and very-low) in engineering units, a setpoint used as a reference for deviation alarm evaluation, and a setpoint indicating the maximum deviation allowed (in engineering units).

You can activate/deactivate the detection of each alarm during operation.

These functions are implemented in runtime through symbols and their associated faceplate.

Control/Supervision Relationship

Control Resources

To provide core and optional supervision functions, the *\$PSxAnalogInput* master template is configured to exchange data with the following control resources of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
AINPUTGP	Analog input with configurable range logic	AInputGP_ST_DDT	<instance name>_AInputGP_ST	Core supervision functions.
		AInputGP_CFG_DDT	<instance name>_AInputGP_CFG	
AALARMGP	Analog alarm logic	AAalarmGP_CFG_DDT	<instance name>_AAalarmGP_CFG	Optional supervision functions.
		AAalarmGP_ST_DDT	<instance name>_AAalarmGP_ST	
** Mandatory variables to be defined.				

For description of these control resources, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the [object editor](#), page 100.

These parameters allow you to configure core functions.

Parameter Description

The table describes the parameters that are defined as part of the *\$AnalogInputCE* master template attributes.

Name	Type	Initial value	Description
Param.ContainerDesc	Bool	False	<i>True</i> = The description of the master template that contains a derivation of this template is used. NOTE: The parameter is only used when the template is contained in another template. For example, the <i>\$MValvewithPosCE</i> master template contains a derivation of <i>\$AnalogInputCE</i> .
Param.EngUnits	String	%	Unit of the output value.
Param.NumFormat	String	0.00	Specifies the display format of values. For example, enter 0.00 to display 2 decimals.
Param.TrendPeriodMin	Integer	15	Refer to the description of this parameter that is documented for <i>\$AnalogInputCE</i> .

NOTE: Param.EngUnits and Param.NumFormat will be generated by Assetlins.

Default State Alarms

State Alarms for Analog Inputs With Configurable Range

The table indicates for which attributes a state alarm is configured in the *\$AnalogInputCE* master template and provides the default values.

Attribute	Alarm message	Priority
<i>Alnput1.St.AD</i>	<i>Deviation</i>	500
<i>Alnput1.St.AHH</i>	<i>High High</i>	250
<i>Alnput1.St.AH</i>	<i>High</i>	500
<i>Alnput1.St.AL</i>	<i>Low</i>	500
<i>Alnput1.St.ALL</i>	<i>Low Low</i>	250
<i>Alnput1.St.BadSt</i>	<i>Bad Quality</i>	250

NOTE: You can modify the configuration from the **Attributes** page.




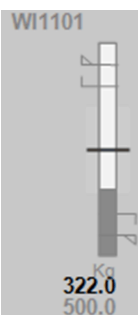
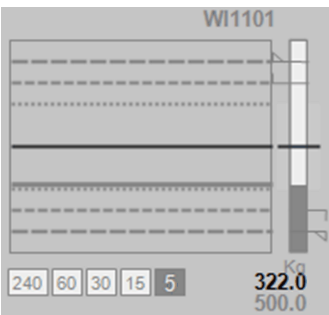
Graphic Representation

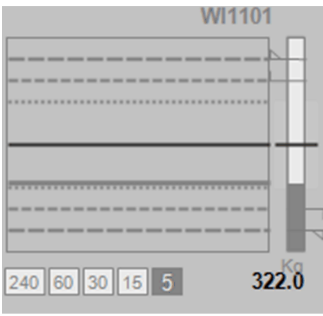
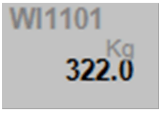

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in symbols.

Symbol Description

The table describes the symbols that are included in the *\$AnalogInputCE* master template to display data of analog inputs with configurable range during operation.

Name	Graphic symbol	Description
<i>Bar_Horiz_PV</i>	 The symbol shows a horizontal bar with a scale from 0 to 500.0. The present value (PV) is 322.0. The unit is Kg. The label 'WI1101' is at the top left.	Displays the label, a horizontal bar with engineering units, and present value (PV).
<i>Bar_Horiz_PV_SP</i>	 The symbol shows a horizontal bar with a scale from 0 to 500.0. The present value (PV) is 322.0 and the setpoint (SP) is 500.0. The unit is Kg. The label 'WI1101' is at the top left.	Displays the label, a horizontal bar with engineering units, present value (PV), and setpoint (SP).
<i>Bar_Vert_PV</i>	 The symbol shows a vertical bar with a scale from 0 to 500.0. The present value (PV) is 322.0. The unit is Kg. The label 'WI1101' is at the top left.	Displays the label, a vertical bar with engineering units, and present value (PV).
<i>Bar_Vert_PV_SP</i>	 The symbol shows a vertical bar with a scale from 0 to 500.0. The present value (PV) is 322.0 and the setpoint (SP) is 500.0. The unit is Kg. The label 'WI1101' is at the top left.	Displays the label, a vertical bar with engineering units, present value (PV), and setpoint (SP).
<i>Bar_Vert_PV_SP_Trend</i>	 The symbol shows a vertical bar with a scale from 0 to 500.0. The present value (PV) is 322.0 and the setpoint (SP) is 500.0. The unit is Kg. The label 'WI1101' is at the top left. Below the bar is a trend display with a scale from 0 to 240. The trend period is set to 5 minutes. The label 'Trend' is at the bottom left.	Displays the label, a vertical bar with engineering units, present value (PV), and setpoint (SP). In addition, the symbol displays trends and allows you to select the trend period in minutes. Refer to the description of the <i>Param.TrendPeriodMin</i> parameter of the master template.

Name	Graphic symbol	Description
<i>Bar_Vert_PV_Trend</i>		Displays the label, a vertical bar with engineering units, and present value (PV). In addition, the symbol displays trends and allows you to select the trend period in minutes. Refer to the description of the <i>Param.TrendPeriodMin</i> parameter of the master template.
<i>Indicator_PV</i>		Displays the label, engineering units, and present value (PV).
<i>Indicator_PV_SP</i>		Displays the label, engineering units, present value (PV), and setpoint (SP).
<i>Label</i>	<i>PSxLabel</i>	Displays the ObjectTagName , StaticText and CustomPropertyLabel .

NOTE: The optional alarm, setpoint, and deviation levels appear in bar graphs only when enabled in the operation tab of the faceplate. At the same time, the corresponding trends are also displayed in symbols, which feature a trend panel.

Faceplates

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in faceplates.

Available Tabs

During operation, clicking an analog input symbol opens a faceplate with the following tabs:

- Operation with optional analog alarm management section.
- Engineering
- Alarms, page 75

NOTE: The master template also features the trends faceplate.

Operation Tab

The figure shows an example of the **Operation** tab.

WI1101

Reactive weight in T11

Kg

0.00

400.00

	Alarm	En	Setpoint
High High:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	900.00
High:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	800.00
SP:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	400.00
Deviation:			120.00
Low:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	200.00
Low Low:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	100.00

Apply

The **En** check boxes allow you to enable or disable the evaluation of level alarms at the controller level. Select or unselect the corresponding check box and click **Apply**.

Engineering Tab

The figure shows an example of the **Engineering** tab.

High Range:

0.0

Kg

Low Range:

0.0

Kg

Bad PV:

0.0

Kg

Cut Off:

0.0

Kg

Mode:

Normal

Override Value:

0.0

Kg

Input Value:

0.0

Kg

NOTE: This tab features the **Simulation** menu, which allows setting the control module to simulation mode.

In addition, the tab may feature another menu or text field, which allows you to configure the state or value to be simulated.

Enabling the simulation mode underlies a security classification, page 89. The default configuration is *tune*. It also triggers the display of an abnormal state, page 46 on the tab and on the symbol.

NOTE: Input Value: If external PV is enable from the control, then input value is equal to external PV . If external PV is disable from the control, then input value is equal to channel value.

\$AnalogOutputCE: Analog Outputs

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Overview

This chapter describes the supervision resources and runtime services that are available for the management of analog outputs.

Supervision Functions

Description

Core and optional resources provide the following monitoring and operation functions:

- Main core functions encompass setpoint management, owner selection, simulation mode, resetting, and global bypassing of interlock conditions.
- Optional functions encompass a local panel and individual interlock condition management.

These functions are implemented in runtime through symbols and their associated faceplate.

Control/Supervision Relationship

Control Resources

To provide core and optional supervision functions, the *\$PSxAnalogOutput* master template is configured to exchange data with the following control resources of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
AOUTPUTGP	Analog output logic	AOutputGP_ST_DDT	<instance name>_AOGP_ST	Core supervision functions.
		AOutputGP_CFG_DDT	<instance name>_AOGP_CFG	
AOUTPUTLPGP	Local panel for analog outputs	AOutputLPGP_ST_DDT	<instance name>_AOLPGP_ST	Optional supervision functions.
ILCKONGP	Interlock condition summary	ILCKGP_ST_DDT	<instance name>ILockOn_ST	
** Mandatory variables to be defined.				

For description of these control resources, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the [object editor](#), [page 100](#).

These parameters allow you to configure core functions.

Parameter Description

The table describes the parameters that are defined as part of the *\$AnalogOutputCE* master template attributes.

Parameter	Type	Default	Description
Param.EngUnits	String	%	Engineering unit of attributes.
Param.HiOP	Float	100.0	High limit for the output value.
Param.LoOP	Float	0.0	Low limit for the output value.
Param.ModeNormal	String	O, P, C	Specifies the normal owner modes (separated by a comma): <ul style="list-style-type: none"> O: Operator P: Program C: Cascade For example P, C.
Param.NumFormat	String	0.0	Specifies the displaying format of values. For example, enter 0.00 for 2 decimals.
Param.TrendPeriodMin	Integer	0	Refer to the description of this parameter that is documented for <i>\$AnalogOutputCE</i> .

Default State Alarms

State Alarms for Analog Outputs

The table indicates for which attributes a state alarm is configured in the *\$AnalogOutputCE* master template and provides the default values.

Attribute	Alarm message	Priority
AOutput.St.BadSt	Channel Failure	500

NOTE: You can modify the configuration from the **Attributes** page.

Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), [page 46](#) of the graphic elements and element styles that are used in symbols.

Three-Way Valve Symbol Naming Convention

For analog outputs represented as three-way valve symbols, the naming convention is as follows:

Valve type_Valve orientation_Inlet position_Port normally open.

For example, *V3V_Horiz_Down_Left* means:

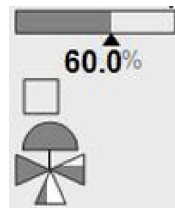
- Three-way valve.
- Shown horizontally.
- Inlet positioned downwards.
- The left-hand port is normally open.

Three-Way Valve Symbol Graphic Convention

For operator convenience, the graphic convention for analog outputs represented as three-way valve symbols is as follows:

- The inlet is shown fully filled independently of the position of the valve.
- The area of the outlets that is shown filled gives an indication of the position of the valve. The filled area shows approximately how much each port is open.

The example shows a *V3V_Horiz_Left_Down* symbol representing a three-way valve 60% open. The normally open *Down* port is shown 40% filled (40% open) and the normally closed *Right* port 60% filled (60% open).

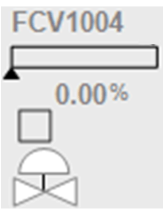
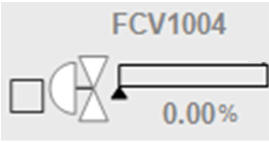
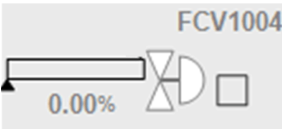


Representation

In addition to icons, the symbols display:

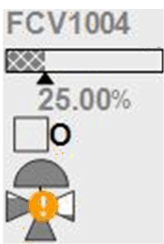
- The label.
- The trend client icon to open the trends faceplate.
- A bar graph showing the setpoint and the present valve position.
- The setpoint value with engineering units.
- States, shown in a square, [page 48](#).
- The owner mode if it is detected as an abnormal situation, [page 46](#).

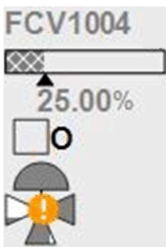
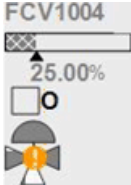
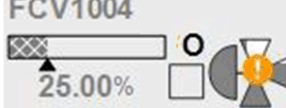
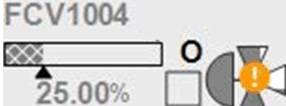
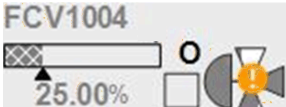
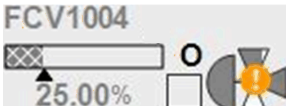
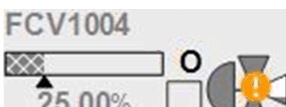
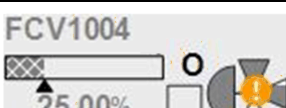
The table describes the symbols that are included in the *\$AnalogOutputCE* master template to display data of analog outputs as two-way valves during operation.

Name	Graphic symbol	Description
V2V_Horiz		Two-way control valve shown horizontally
V2V_Vert_Left		Two-way control valve shown vertically
V2V_Vert_Right		Two-way control valve shown vertically
Label	PSxLabel	Displays the ObjectTagName , StaticText and CustomPropertyLabel .

NOTE: For two-way valve symbols, both ports are shown fully filled as soon as the setpoint > 0.

The table describes the symbols that are included in the \$AnalogOutputCE master template to display data of analog outputs as three-way valves during operation.

Name	Graphic symbol
V3V_Horiz_Down_Left	
V3V_Horiz_Down_Right	
V3V_Horiz_Left_Down	
V3V_Horiz_Left_Right	

Name	Graphic symbol
<i>V3V_Horiz_Right_Down</i>	
<i>V3V_Horiz_Right_Left</i>	
<i>V3V_Vert_Down_Right</i>	
<i>V3V_Vert_Down_Up</i>	
<i>V3V_Vert_Right_Down</i>	
<i>V3V_Vert_Right_Up</i>	
<i>V3V_Vert_Up_Down</i>	
<i>V3V_Vert_Up_Right</i>	

Faceplates

Overview

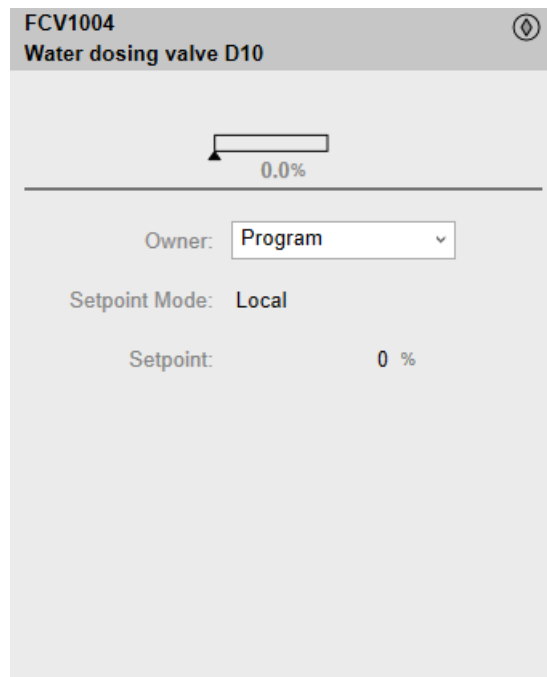
During operation, clicking the graphic symbol allows you to display a faceplate with the following tabs:

- Standard tabs:
 - Operation with optional local panel, page 64
 - Engineering
 - Alarms, page 75
- Optional tab:
 - Interlocks, page 65

NOTE: The master template also features the trends faceplate.

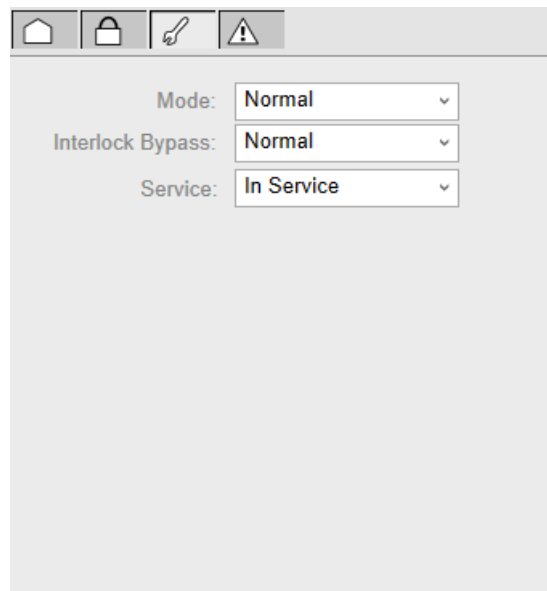
Operation Tab

The figure shows an example of the **Operation** tab.



Engineering Tab

The figure shows an example of the **Engineering** tab.



NOTE: This tab features the **Interlock Bypass** menu, which allows bypassing interlocks globally.

When the control module is reset, the current setpoint that is shown in the operation tab of the faceplate is effective.

Bypassing interlocks by selecting **Bypass** underlies a security classification, page 89. The default configuration is *verified write*. It also triggers the display of an abnormal state, page 46 on the tab and on the symbol.

\$DigitalInputCE: Digital Inputs

What’s in This Chapter

Supervision Functions 124

Control/Supervision Relationship 124

Parameters 125

Default State Alarms 125

Graphic Representation 126

Faceplates 127

Overview

This chapter describes the supervision resources and runtime services that are available for the management of digital inputs.

Supervision Functions

Description

- Core and optional resources provide the following monitoring and operation functions:
- Main core functions encompass setpoint management, alarm configuration, enabling/disabling of alarm, and simulation mode.
 - Optional functions allow you to track operating hours and switching operations.
- These functions are implemented in runtime through symbols and their associated faceplate.

Control/Supervision Relationship

Control Resources

To provide core and optional supervision functions, the \$PSxDigitalInput master template is configured to exchange data with the following control resources of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
DINPUTGP	Digital input	DInputGP_ST_DDT	<instance name>_ DInputGP_ST	Core supervision functions.
** Mandatory variables to be defined.				

For description of these control resources, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the [object editor](#), page 100.

These parameters allow you to configure core functions.

Parameter Description

The table describes the parameters that are defined as part of the *\$DigitalInputCE* master template attributes.

Parameter	Type	Initial value	Description
Param. AlarmEnable	Bool	True	<p>If true, the alarm evaluation at the supervision level is enabled.</p> <p>If false, the alarm evaluation at the supervision level is disabled.</p> <p>NOTE: The alarm signal is not interpreted as an alarm at the supervision level but it continues being evaluated at the controller level. It is useful for signals to be monitored but not associated to an alarm.</p>
Param. BadStEnable	Bool	True	<p>If true, the diagnostic status of the channel, indicated by the Channel Failure alarm, is enabled.</p> <p>If false, the diagnostic status of the channel is disabled.</p>
Param. ContainerDesc	Bool	False	<p><i>True</i> = The description of the master template that contains a derivation of this template is used.</p> <p>NOTE: The parameter is only used when the template is contained in another template. For example, the <i>\$MValveCE</i> master template contains a derivation of <i>\$DigitalInputCE</i>.</p>

Default State Alarms

State Alarms for Digital Inputs

The table indicates for which attributes a state alarm is configured in the *\$DigitalInputCE* master template and provides the default values.

Attribute	Alarm message	Priority
<i>AO.Alarm</i>	<i>Digital Alarm</i>	999
<i>AO.BadSt</i>	<i>Channel Failure</i>	500

NOTE: You can modify the configuration from the **Attributes** page.

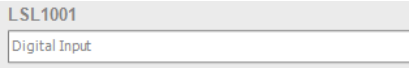

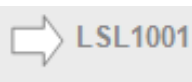

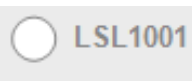



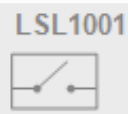
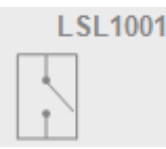
Graphic Representation


Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in symbols.

Description

This table describes the symbols available for representing the digital inputs:

Name	Graphic symbol	Description
<i>AlarmText</i>		Alarm text
<i>Arrow_H</i>		Arrow with the label above
<i>Arrow_V</i>		Arrow with the label on the right
<i>Bullet_H</i>		Bullet with the label above
<i>Bullet_V</i>		Bullet with the label on the right
<i>EmergencyStop_H</i>		Stop button with the label above
<i>EmergencyStop_V</i>		Stop button with the label on the right
<i>PressureLimit</i>		Pressure limit switch
<i>ElectricalSwitch_H_Thin</i>		Electrical switch represented horizontally
<i>ElectricalSwitch_V_Thin</i>		Electrical switch represented vertically

Name	Graphic symbol	Description
<i>TemperatureLimit</i>		Temperature limit switch
<i>Label</i>	PSxLabel	Displays the ObjectTagName , StaticText and CustomPropertyLabel .

Faceplates

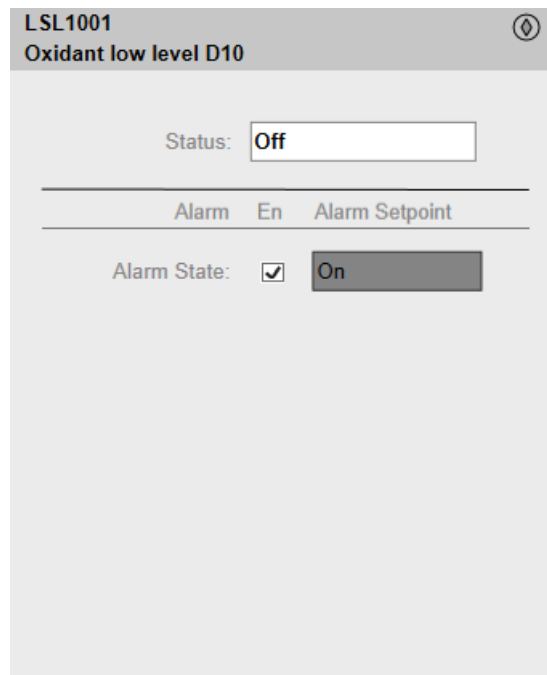
Overview

During operation, clicking the graphic symbol allows you to display a faceplate with the following tabs:

- Standard tabs:
 - Operation
 - Engineering
 - Alarms, page 75
- Optional tab:
 - Maintenance, page 70

Operation Tab

The figure shows an example of the **Operation** tab.

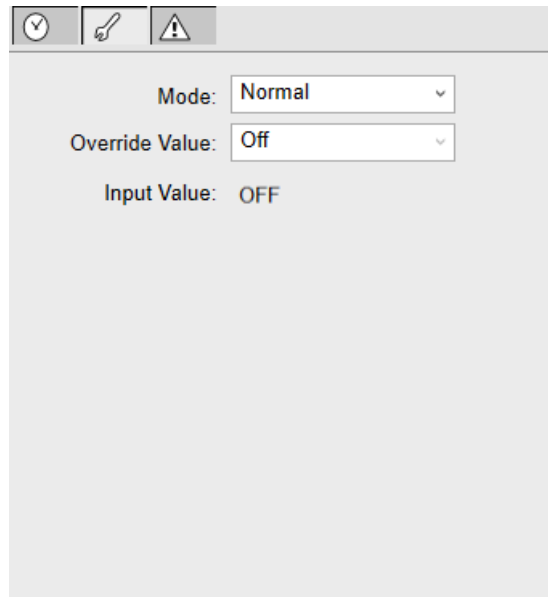


Alarm	En	Alarm Setpoint
<input checked="" type="checkbox"/>	On	

The **En** check box allows you to enable/disable the evaluation of the alarm at the controller level.

Engineering Tab

The figure shows an example of the **Engineering** tab.



The screenshot displays the Engineering tab interface. At the top, there is a header bar with three icons: a clock, a pencil, and a warning triangle. Below the header, the interface contains three controls: a 'Mode' dropdown menu set to 'Normal', an 'Override Value' dropdown menu set to 'Off', and an 'Input Value' label showing 'OFF'.

NOTE: This tab features the **Simulation** menu, which allows setting the control module to simulation mode.

In addition, the tab may feature another menu or text field, which allows you to configure the state or value to be simulated.

Enabling the simulation mode underlies a [security classification](#), [page 89](#). The default configuration is *tune*. It also triggers the display of an abnormal state, [page 46](#) on the tab and on the symbol.

NOTE: Input Value: Indicates the channel value.

\$DigitalOutputCE: Digital Outputs

What's in This Chapter

Supervision Functions	129
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Default State Alarms	130
Graphic Representation	130
Faceplates	131

Overview

This chapter describes the supervision resources and runtime services that are available for the management of digital outputs.

Supervision Functions

Description

Core and optional resources provide the following monitoring and operation functions:

- Main core functions encompass owner selection, setpoint management, global bypassing of interlock conditions.
- Optional functions encompass individual interlock condition management, tracking of operating hours and switching operations.

These functions are implemented in runtime through symbols and their associated faceplate.

Control/Supervision Relationship

Control Resources

To provide core and optional supervision functions, the *\$PSxDigitalOutput* master template is configured to exchange data with the following control resources of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
DOUTPUTGP	Digital output	DOutputGP_ST_DDT	<instance name>_DOGP_ST	Core supervision functions.
DEVMNTGP	Maintenance.	DevMNTGP_ST_DDT	<instance name>_MNTGP_ST	Optional supervision functions.
ILCKONGP	Interlock condition summary	ILCKGP_ST_DDT	<instance name>ILCKGP_ST	
** Mandatory variables to be defined.				

For description of these control resources, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the [object editor](#), [page 100](#).

These parameters allow you to configure core functions.

Parameter Description

This table describes the parameters of the automation object:

Parameter	Type	Default	Description
Param. ModeNormal	String	O, P, C	Specifies the normal owner modes (separated by a comma): <ul style="list-style-type: none"> O: Operator P: Program C: Cascade For example P, C.

Default State Alarms

State Alarms for Digital Outputs

The table indicates for which attributes a state alarm is configured in the *\$DigitalOutputCE* master template and provides the default values.

Attribute	Alarm message	Priority
DOutput.St.BadSt	Channel Failure	500

NOTE: You can modify the configuration from the **Attributes** page.

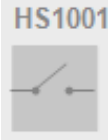
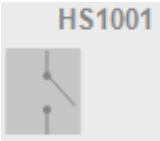

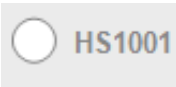
Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), [page 46](#) of the graphic elements and element styles that are used in symbols.

Description

This table describes the symbols available for representing the digital outputs:

Name	Graphic symbol	Description
<i>Electrical_Switch_H_Thin</i>		Electrical switch represented horizontally
<i>Electrical_Switch_V_Thin</i>		Electrical switch represented vertically
<i>StatusIndicator_H</i>		Status indicator with the label above
<i>StatusIndicator_V</i>		Status indicator with the label on the right
<i>Label</i>	PSxLabel	Displays the ObjectTagName , StaticText and CustomPropertyLabel .

Faceplates

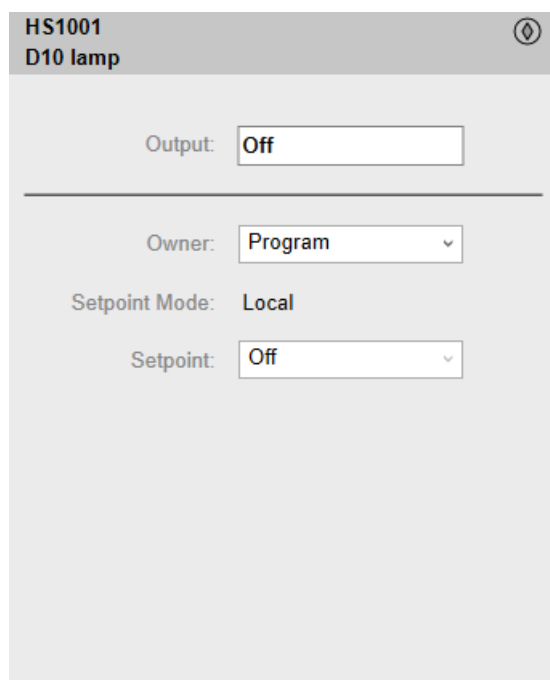
Overview

During operation, clicking the graphic symbol allows you to display a faceplate with the following tabs:

- Standard tabs:
 - Operation
 - Engineering
 - Alarms, page 75
- Optional tab:
 - Interlocks, page 65
 - Maintenance, page 70

Operation Tab

The figure shows an example of the **Operation** tab.



HS1001
D10 lamp

Output:

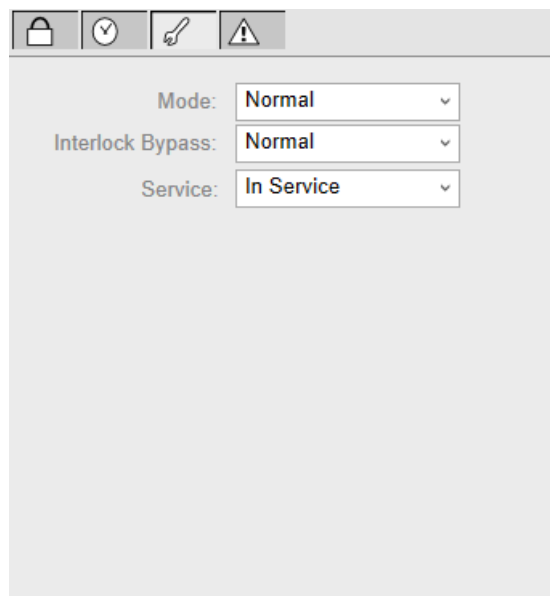
Owner:

Setpoint Mode: Local

Setpoint:

Engineering Tab

The figure shows an example of the **Engineering** tab.



☐ ☒ ☐ ☐

Mode:

Interlock Bypass:

Service:

NOTE: This tab features the **Interlock Bypass** menu, which allows bypassing interlocks globally.

When the control module is reset, the current setpoint that is shown in the operation tab of the faceplate is effective.

Bypassing interlocks by selecting **Bypass** underlies a security classification, page 89. The default configuration is *verified write*. It also triggers the display of an abnormal state, page 46 on the tab and on the symbol.

\$AnalogInMultiCE: Multiple Analog Inputs

What's in This Chapter

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Overview

This chapter describes the supervision resources and runtime services that are available for the management of multiple analog inputs (up to 4) with configurable range.

Supervision Functions

Description

Core resources provide the following monitoring and operation functions:

- Monitoring of up to four analog inputs
- Owner selection
- Simulation mode
- Configuration of parameters: *High/Low Range*, *Bad PV*, *Cut Off* values
- Selection of one input signal based on one of these predefined criteria:
 - First present value
 - Direct selection of input signal
 - Median
 - Average
 - Minimum
 - Maximum

These functions are implemented in runtime through symbols and their associated faceplate.

Control/Supervision Relationship

Control Resources

To provide core and optional supervision functions, the *\$PSxMAnalogInput1* master template is configured to exchange data with the following control resource of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
MAInputGP	Multiple analog inputs	MAInputGP_ST	<instance name>_ MAInGP_ST	Core supervision functions.
		MAInputGP_CFG	<instance name>_ MAInGP_CFG	

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
AALARMGP	Analog alarm	AAalarmGP_CFG_DDT	<instance name>_ AAalarmGP_CFG	Optional supervision functions.
		AAalarmGP_ST_DDT	<instance name>_ AAalarmGP_ST	
** Mandatory variables to be defined.				

For description of the control resource, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the object editor, page 100.

These parameters allow you to configure core functions.

Parameter Description

The table describes the parameters that are defined as part of the \$AnalogInMultiCE master template attributes.

Parameter	Type	Default	Description
Param.EngUnits	String	%	Defines the engineering unit of attributes.
Param.ModeNormal	String	O, P	Specifies the normal owner modes (separated by a comma): <ul style="list-style-type: none"> O: Operator P: Program C: Cascade For example P, C.
Param.NumFormat	String	0.00	Specifies the display format of values. For example, enter 0.00 to display 2 decimals.
Param.TrendPeriodMin	Integer	15	Refer to the description of this parameter that is documented for \$AnalogInputCE.

Default State Alarms

State Alarms for Multiple Analog Inputs

The table indicates for which attributes a state alarm is configured in the \$AnalogInMultiCE master template and provides the default values.

Attribute	Alarm message	Priority
MAInput1.Cfg.PV1Fail	PV1 Channel Failure	250
MAInput1.Cfg.PV2Fail	PV2 Channel Failure	250
MAInput1.Cfg.PV3Fail	PV3 Channel Failure	250

Attribute	Alarm message	Priority
<i>MAInput1.Cfg.PV4Fail</i>	<i>PV4 Channel Failure</i>	250
<i>MAInput1.St.BadSt</i>	<i>Selected Channel Failure</i>	250
<i>MAInput1.St.DevAlm</i>	<i>Deviation Fail</i>	500

NOTE: You can modify the configuration from the **Attributes** page.

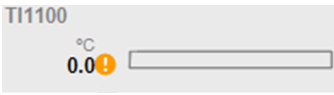

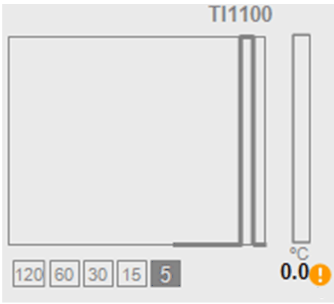
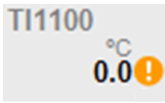
Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in symbols.

Representation

The table describes the symbols that are included in the *\$AnalogInMultiCE* master template to display data of multiple analog inputs during operation.

Name	Graphic symbol	Description
Bar_Horiz_PV		Displays the label, a horizontal bar with engineering units, and present value (PV).
Bar_Vert_PV		Displays the label, a vertical bar with engineering units, and present value (PV).
Bar_Vert_PV_Trend		Displays the label, a vertical bar with engineering units, and present value (PV). In addition, the symbol displays trends and allows you to select the trend period in minutes. Refer to the description of the <i>Param.TrendPeriodMin</i> parameter of the master template.
Indicator_PV		Displays the label, engineering units, and present value (PV).
Label	PSxLabel	Displays the ObjectTagName , StaticText and CustomPropertyLabel .

Faceplates

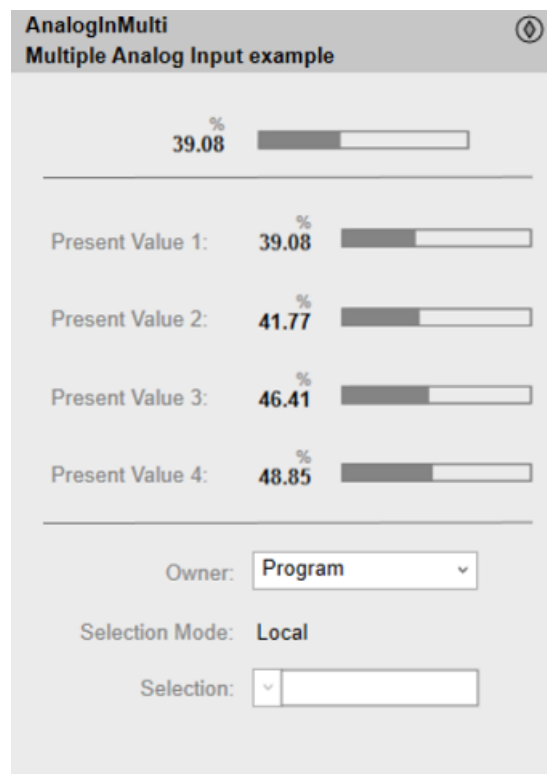
Overview

During operation, clicking the graphic symbol allows you to display a faceplate with the following tabs:

- Standard tabs:
 - Operation
 - Engineering
 - Alarms, page 75

NOTE: The master template also features the trends faceplate.

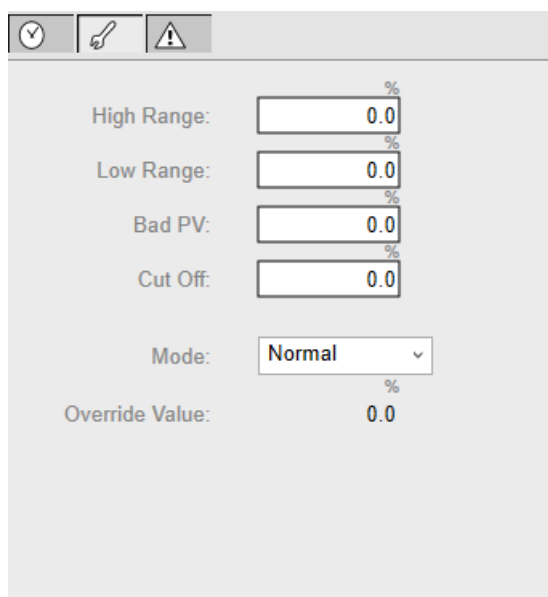
Operation Tab



The **Selection** drop-down list allows you to select the following input signal:

- First present value
- Present value 1
- Present value 2
- Present value 3
- Present value 4
- Median
- Average
- Minimum
- Maximum

Engineering Tab



The screenshot shows a software interface for the Engineering Tab. At the top, there is a toolbar with three icons: a checkmark, a pencil, and a warning triangle. Below the toolbar, the interface contains several configuration fields:

- High Range: A text box with the value 0.0 and a percentage symbol (%) to its right.
- Low Range: A text box with the value 0.0 and a percentage symbol (%) to its right.
- Bad PV: A text box with the value 0.0 and a percentage symbol (%) to its right.
- Cut Off: A text box with the value 0.0 and a percentage symbol (%) to its right.
- Mode: A dropdown menu currently showing 'Normal' with a downward arrow.
- Override Value: A text box with the value 0.0 and a percentage symbol (%) to its right.

NOTE: This tab features the **Simulation** menu, which allows setting the control module to simulation mode.

In addition, the tab may feature another menu or text field, which allows you to configure the state or value to be simulated.

Enabling the simulation mode underlies a [security classification](#), [page 89](#). The default configuration is *tune*. It also triggers the display of an abnormal state, [page 46](#) on the tab and on the symbol.

\$TotalCE: Totalizing Function

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Overview

This chapter describes the supervision resources and runtime services that are available for the management of totalizing function.

Supervision Functions

Description

The \$TotalCE master template provides the following monitoring and operation functions:

- Core functions:
 - Command management.
 - Owner selection.
 - Totalizing.
 - Monitoring.
 - State Management
- Optional functions:
 - Viewing, bypassing, and resetting of abnormal conditions.

During operation, these functions are implemented by instances through symbols and their associated faceplate.

NOTE: You can modify the default configuration in the corresponding configuration pages, page 87.

Control/Supervision Relationship

Control Resources

To provide core and optional supervision functions, the \$PSxTotal master template is configured to exchange data with the following control resources of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
TotalGP	Totalizer.	TotalGP_ST_DDT	<instance name>_TotalGP_ST	Core supervision functions.
		TotalGP_CFG_DDT	<instance name>_TotalGP_CFG	
CONDSUMGP	Detected failure condition summary.	CondsunGP_ST_DDT	<instance name>_CondsunOnGP_ST	Optional supervision functions.
** Mandatory variables to be defined.				

For description of these control resources, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the [object editor](#), page 100.

These parameters allow you to configure core functions.

Parameter Description

The table describes the parameters that are defined as part of the *\$TotalCE* master template attributes.

Name	Data type	Initial value	Description
Param.EngUnits	String	EU	Defines the engineering unit of attributes.
Param.HiPV	Double	999999-999.0	Defines the high limit of the present value to scale the Y axis for trending.
Param.HideHoldButton	Bool	False	If true, the Hold button is not displayed. If false, the Hold button is displayed.
Param.HideResetButton	Bool	False	If true, the Reset button is not displayed. If false, the Reset button is displayed.
Param.HideRestartButton	Bool	False	If true, the Restart button is not displayed. If false, the Restart button is displayed.
Param.HideStartButton	Bool	False	If true, the Start button is not displayed. If false, the Start button is displayed.
Param.HideStopButton	Bool	False	If true, the Stop button is not displayed. If false, the Stop button is displayed.
Param.LoPV	Double	0	Defines the low limit of the present value to scale the Y axis for trending.
Param.ModeNormal	String	O, P, C	Specifies the normal owner modes (separated by a comma): <ul style="list-style-type: none"> O: Operator P: Program C: Cascade

Name	Data type	Initial value	Description
			For example P, C.
Param. TotalModeNormal	String	I, R, H, S	Specifies the normal operating states (separated by a comma): <ul style="list-style-type: none"> I: Idle R: Running H: Held S: Stopped For example I, R, S.
Param.NumFormat	String	0.0	Specifies the display format of values. For example, enter 0.00 to display 2 decimals.
Param. TrendPeriodMin	Integer	15	The parameter has two functions: <ul style="list-style-type: none"> It defines the trend period in minutes that is used by default. When you enter a value that is different from one of the five predefined values (5, 15, 30, 60, 120, which are displayed below the trend graph), your value replaces the 120 value. For example, if you enter 45, the values that are displayed below symbols featuring a trend panel, page 114 are (from left to right) 45, 60, 30, 15, and 5. Range: 1...10080. (10080 = 1 week) NOTE: If the initial value is 0, the trend period that is used becomes 15 minutes but the predefined values that are displayed are unchanged.
Param. EnablePESLink	Boolean	False	NOTE: The features that you can configure by using these parameters are not supported in this version of the library. These Control Expert features are only available when the object is used.
Param. PESExecutionDo-mainId	String	Blank	
Param. PESProjectId	String	Blank	
Param. PESSystemId	String	Blank	

Default State Alarms

State Alarms for *TOTAL*

The table indicates an attribute for which a state alarm is configured in the \$Total/CE master template and provides the default values.

Attribute	Alarm message	Priority
Total.St.Alarm	Failure detected while totalizing	999

NOTE: You can modify the configuration from the **Attributes** page.

Graphic Representation

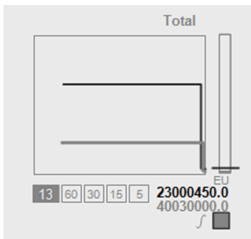

Representation of Supervision Data

At the beginning of this document, you can find a general description, page 46 of the graphic elements and element styles that are used in symbols.

Symbol Description

The table describes the symbols that are included in the *\$Total/CE* master template to display data of analog inputs during operation.

Name	Graphic symbol	Description
<i>PanelWithButtons_PV_SP</i>		Graphic symbol displays(from top to bottom): <ul style="list-style-type: none"> The label. Engineering units. To the right, a horizontal bar showing the present value and the setpoint. The present value. The setpoint value. The current state of the totalizer. Control buttons
<i>PanelWithButtons_PV</i>		Graphic symbol displays(from top to bottom): <ul style="list-style-type: none"> The label. Engineering units. To the right, a horizontal bar showing the present value. The present value. The current state of the totalizer. Control buttons
<i>Numeric_PV_SP</i>		Graphic symbol displays(from top to bottom): <ul style="list-style-type: none"> The label. Engineering units. The present value. The setpoint value.
<i>Numeric_PV</i>		Graphic symbol displays(from top to bottom): <ul style="list-style-type: none"> The label. Engineering units. The present value.
<i>Bar_Vert_PV_SP</i>		Graphic symbol displays(from top to bottom): <ul style="list-style-type: none"> The label. Engineering units. A vertical bar showing the setpoint and the present value. The present value. The setpoint value.

Name	Graphic symbol	Description
<i>Bar_Vert_PV_SP_Trend</i>		Displays in addition to data of <i>Bar_Vert_PV_SP</i> , a trend panel with configurable trend period in minutes. Refer to the description of the <i>Param.TrendPeriodMin</i> parameter.
<i>Bar_Horz_PV_SP</i>		Graphic symbol displays(from top to bottom): <ul style="list-style-type: none"> • The label. • Engineering units. • To the right, a horizontal bar showing the setpoint and the present value. • The present value. • The setpoint value.
<i>Label</i>	PSxLabel	Displays the ObjectTagName , StaticText and CustomPropertyLabel .

NOTE:

- The trends are displayed in the *Bar_Vert_PV_SP_Trend* symbol which feature a trend panel.
- When *AUTOSTART* input pin is high in unity, the start button disappears.This is applicable for Operator selection in faceplate also.
- When *AUTORESET* input pin is high in unity, the reset button disappears.This is applicable for Operator selection in faceplate also.

Faceplates

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in faceplates.

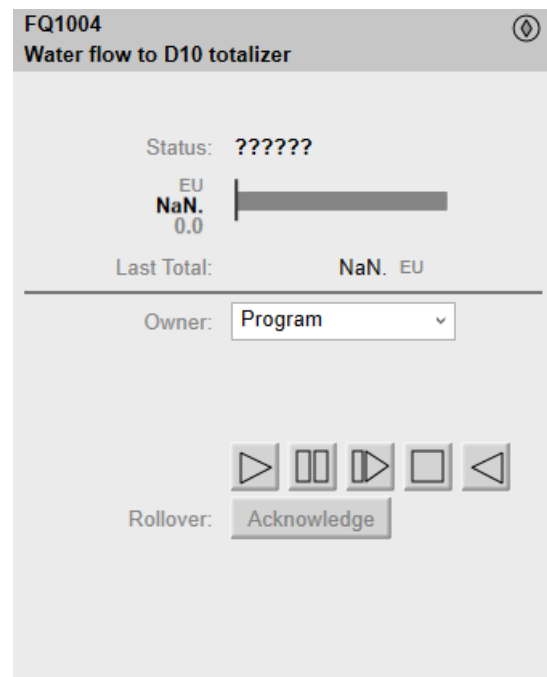
Available Tabs

During operation, clicking the graphic symbol opens a faceplate with the following tabs:

- Tabs for core functions:
 - Operation
 - Alarms, page 75
- Tabs for optional functions, which appear only if configured:
 - Detected failures, page 68

Operator Tab

The figure shows an example of the **Operation** tab.



NOTE: The **Operator** tab features the control module **Acknowledge** button. This button is used to acknowledge the rollover indication (Rollover flag) in the control module.

\$LoadCellENOD4TCE - Scaime Weighing Module

What's in This Chapter

Supervision Function	144
Control/Supervision Relationship	144
Default State Alarms	144
Graphic Representation	145
Faceplate	145

This chapter describes the supervision resources and runtime services that are available for the management of \$LoadCellENOD4TCE - Scaime Weighing Module.

Supervision Function

Core resources provide monitoring and operation functions. Weighing functions like Zero, Tare, Preset tare, cancel tare, Device reset, Factory reset, diagnostic information management, resetting, owner selection.

These functions are implemented in runtime through a symbol and its associated faceplate.

Control/Supervision Relationship

Control Resources

To provide core and optional supervision functions, the \$LoadCellENOD4TCE master template is configured to exchange data with the following control resources of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
ENOD4TEIPGP	Scaime Enod4T LoadCell	ENOD4TEIPGP_ST_DDT	<instance name>_ ENOD4TGP_ST	Core supervision functions.
		ENOD4TEIPGP_CFG_DDT	<instance name>_ ENOD4TGP_CFG	
** Mandatory variables to be defined.				

For description of these control resources, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Default State Alarms


The table indicates for which attributes a state alarm is configured in the \$LoadCellENOD4TCE template and provides the default values:

Attribute	Alarm message	Priority
AO.Namur.CheckFunction	Function check	750
AO.Namur.Failure	Failure	500
AO.Namur.MaintenanceR	Maintenance Required	999
AO.Namur.OutOfSpecs	Out Of Specs	999

Graphic Representation

Graphical Representation

The various types of symbols available in this template are illustrated in the table:

Sr No.	Name	Graphic Symbol	Description
1	Enod4T		Device Status: Namur Alarms

Faceplate

During operation, clicking the graphic symbol allows you to display a faceplate with the following tabs:

- Operation
- Analog Data
- Discrete Data
- Alarms

Operator Tab

The figure shows the operator tab.

This tab provides information about the operator actions and the device information:

Item	Description
1	This section provides information about the device Communication and device status.
2	This section provides information about the latest alarms and alerts generated.

Item	Description
3	This section allows the operator to change the mode from Program mode to Operator mode or vice versa.
4	This section allows the operator to execute various weighing commands like Zero, Tare, Device Reset. This section also provides the current Device status. NOTE: Command combo becomes active only when it is in Operator mode.
5	This section displays the major weighing measurements like Gross, Net and Flow measurements.

NOTE: Command combo becomes active only when it is in Operator mode.

Analog Tab

This tab provides information about the analog data of the device:

Analog Tab 1: Provides information of Weighing measurements like Gross & Net measurements.

[illegible]

Analog Tab 2: Provides information of detected Failure and Alerts codes.

###

1

2

Fail Code	1
Warning Code	16

TimeLCT

AlarmComment

<

>

Discrete Tab


This tab provides information about the digital data of the device:


Digital Tab 1: Provides information about the current device status

[illegible]

Digital Tab 2: Provide the Input channel status of eNod4T Module

###





123

Digital Input I0 Status

Digital Input I1 Status

TimeLCT

AlarmComment

<

>

Digital Tab 3: Provide the Output channel status of eNod4T Module

###

1

2

3

Output S0 Status

Output S1 Status

Output S2 Status

Output S3 Status

TimeLCT

AlarmComment

<

>

Alarm Tab

Refer to Alarms Tab, page 75.

\$LoadCellPMESWTCE - Scaime weighing module

What's in This Chapter

Supervision Function	152
Control/Supervision Relationship	152
Default State Alarms	152
Graphic Representation	153
Faceplate	153

Overview

This chapter describes the supervision resources and runtime services that are available for the management of \$LoadCellPMESWTCE - Scaime Weighing Module.

Supervision Function

Core resources provide monitoring and operation functions. Weighing functions like Zero, Tare, Preset tare, cancel tare, Device reset, Factory reset, diagnostic information management, resetting, owner selection.

These functions are implemented in runtime through a symbol and its associated faceplate.

Control/Supervision Relationship

Control Resources

To provide core and optional supervision functions, the \$LoadCellPMESWTCE master template is configured to exchange data with the following control resources of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
PMESWTGP	Scaime PMEWTSWT Weighing Module	PMESWTGP_ST_DDT	<instance name>_PMESWTGP_ST	Core supervision functions.
		PMESWTGP_CFG_DDT	<instance name>_PMESWTGP_CFG	
		T_WEIGHING_PMESWT_ST	<instance name>_ModuleConfig	
** Mandatory variables to be defined.				

For description of these control resources, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Default State Alarms


The table indicates for which attributes a state alarm is configured in the \$LoadCellPMESWTCE template and provides the default values:

Attribute	Alarm message	Priority
AO.Namur.CheckFunction	Function check	750
AO.Namur.Failure	Failure	500
AO.Namur.MaintenanceR	Maintenance Required	999
AO.Namur.OutOfSpecs	Out Of Specs	999

Graphic Representation

Graphical Representation

The various types of symbols available in this template are illustrated in the table:

Sr No.	Name	Graphic Symbol	Description
1	Genie		Device Status: Namur Alarms

Faceplate

During operation, clicking the graphic symbol allows you to display a faceplate with the following tabs:

- Operation
- Analog Data
- Discrete Data
- Alarms

Operator Tab

The figure shows the operator tab.

PMESWT1100 ⓘ
Scaime PMEWSWT Weighing Module

On

Communications Disabled 1

Communications Failure

Unknown status

Not Ready

Failure Device not Healthy. 2

Warning Measurement is not stable.

Owner: Program Reset 3

Command: 4

Preset Tare: 0 g

Device Status: None

Gross Measurement: 0 g 5

Net Measurement: 0 g

Flow Measurement: 0 g/s

This tab provides information about the operator actions and the device information:

Item	Description
1	This section provides information about the device Communication and operation status.
2	This section provides information about the latest alarms and alerts generated.
3	This section allows the operator to change the mode from Program mode to Operator mode or vice versa.
4	This section allows the operator to execute various weighing commands like Zero, Tare, Preset Tare and also allows the operator to specify the Preset tare value in prior to executing Preset Tare command. This section also provides the current Device status
5	This section displays the major weighing measurements like Gross, Net and Flow measurements.

The figure shows the extended operator tab

Item	Description
6	This section allows the user to perform Dosing functions

NOTE: Command combo becomes active only when it is in Operator mode.

Analog Tab

This tab provides information about the analog data of the device:

Analog Tab 1: Provides information about

- Weighing measurements like Gross, Net, Flow
- Set points of Preset Tare Value
- Dosing set points like Coarse feed cut-off point and Fine feed cut-off points and
- Few Monitoring timers.

###

1

2

Gross Measurement	0 g
Net Measurement	0 g
Flow Value	0 g/s
Preset Tare Value	0 g
Inputs Holding time	0 ms
Coarse feed cutoff point	0 g
Fine feed cutoff point	0 g
Fine feed mask time	0 ms

TimeLCT

/

AlarmComment

<

>

Analog Tab 2: Provides information of Detected Failure and Alerts codes.

###

1

2

Fail Code	32
Warning Code	0

TimeLCT

/

AlarmComment

<

>

Discrete Tab

This tab provides information about the digital data of the device:

Digital Tab 1: Provides information about the current device status

The screenshot shows the 'Digital Tab 1' interface. At the top, there is a navigation bar with icons for Home, Settings, Waveform, and Alarm. Below this is a tab bar with three tabs labeled 1, 2, and 3. Tab 1 is selected. The main area contains a list of status items: 'Module Running', 'Measurement is Stable', 'Measurement ok', 'Atleast one Tare is processed', 'Atleast one Tare/Zero is processed', 'Atleast one Preset Tare is processed', and 'EEPROM Ok'. Below the list is a section with two columns: 'TimeLCT' and 'AlarmComment'. The 'AlarmComment' column is currently empty. At the bottom, there is a scroll bar.

Digital Tab 2: Provide the digital Input channel status of PMESWT0100 Module

The screenshot shows the 'Digital Tab 2' interface. At the top, there is a navigation bar with icons for Home, Settings, Waveform, and Alarm. Below this is a tab bar with three tabs labeled 1, 2, and 3. Tab 2 is selected. The main area contains a list of status items: 'Digital Input I0 Status' and 'Digital Input I1 Status'. Below the list is a section with two columns: 'TimeLCT' and 'AlarmComment'. The 'AlarmComment' column is currently empty. At the bottom, there is a scroll bar.

Digital Tab 3: Provide the digital Output channel status of PMESWT0100 Module

###

1

2

3

Output S0 Status

Output S1 Status

Output S2 Status

Output S3 Status

TimeLCT

/

AlarmComment

Alarm Tab

Refer to Alarms Tab, page 75.

On/Off Device Control

What's in This Part

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\$MValveCE: Discrete Motorized Valves	177
\$DualOPValveCE: Dual Output Valves.....	183
\$ValveCE: On/Off Valves	190

Overview

This part describes the master templates that provide the supervision functions for the on/off device control family.

Schneider Electric provides the templates described in this document. These templates can be used in various applications to minimize engineering efforts but the use, integration, configuration, and validation of the system is the sole responsibility of the user. Said user must ensure the safety of the system as a whole by performing a safety analysis, including the resources provided by Schneider Electric through procedures that the user deems appropriate.

⚠ WARNING

LOSS OF CONTROL

- Perform a Failure Mode and Effects Analysis (FMEA) of your application, and apply preventive and detective controls before implementation.
- Provide a fallback state for undesired control events or sequences.
- Provide separate or redundant control paths wherever required.
- Supply appropriate parameters, particularly for limits.
- Review the implications of transmission delays and take actions to mitigate.
- Review the implications of communication link interruptions and take actions to mitigate.
- Provide independent paths for control functions (for example, emergency stop, over-limit conditions, and fault conditions) according to the safety analysis and applicable codes, and regulations.
- Apply local accident prevention and safety regulations and guidelines. ¹
- Test each implementation of this library for proper operation before placing it into service.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

¹ For additional information, refer to NEMA ICS 1.1 (latest edition), *Safety Guidelines for the Application, Installation, and Maintenance of Solid State Control* and to NEMA ICS 7.1 (latest edition), *Safety Standards for Construction and Guide for Selection, Installation and Operation of Adjustable-Speed Drive Systems* or their equivalent governing your particular location.

\$HandValveCE: Hand Valves

What’s in This Chapter

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Control/Supervision Relationship 160

Parameters 160

Default State Alarms 161

Graphic Representation 161

Faceplates 162

Overview

This chapter describes the supervision resources and runtime services that are available for the management of hand valves.

Supervision Functions

Description

Core resources provide the following monitoring and operation functions:
Simulation mode and setpoint management.

These functions are implemented in runtime through symbols and their associated faceplate.

Control/Supervision Relationship

Control Resources

To provide core and optional supervision functions, the *\$PSxHandValve* master template is configured to exchange data with the following control resource of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
HVALVEGP	Hand valve logic	HValveGP_ST_DDT	<instance name>_ HValveGP_ST	Core supervision functions.
** Mandatory variables to be defined.				

For description of the control resource, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

There are no configurable parameters for hand valves.

Default State Alarms

State Alarms for Hand Valves

The table indicates for which attributes a state alarm is configured in the *\$HandValveCE* master template and provides the default values.

Attribute	Alarm message	Priority
<i>HValve.AO.PosFail</i>	<i>Unknown Position</i>	750

NOTE: You can modify the configuration from the **Attributes** page.









Graphic Representation








Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in symbols.

Representation

This table describes the symbols available for representing the hand valve:

Name	Graphic symbol	Description
V2V_Horiz		Horizontal two-way valve
V2V_Vert		Vertical two-way valve
V3V_Horiz_Down_Left		Horizontal three-way valve (down to left way when closed, down to right way when open)
V3V_Horiz_Down_Right		Horizontal three-way valve (down to right way when closed, down to left way when open)
V3V_Horiz_Left_Down		Horizontal three-way valve (left to down way when closed, left to right way when open)
V3V_Horiz_Left_Right		Horizontal three-way valve (left to right way when closed, left to down way when open)
V3V_Horiz_Right_Down		Horizontal three-way valve (right to down way when closed, right to left way when open)
V3V_Horiz_Right_Left		Horizontal three-way valve (right to left way when closed, right to down way when open)

Name	Graphic symbol	Description
V3V_Vert_Down_Right		Vertical three-way valve (down to right way when closed, down to up way when open)
V3V_Vert_Down_Up		Vertical three-way valve (down to up way when closed, down to right way when open)
V3V_Vert_Right_Down		Vertical three-way valve (right to down way when closed, right to up way when open)
V3V_Vert_Right_Up		Vertical three-way valve (right to up way when closed, right to down way when open)
V3V_Vert_Up_Down		Vertical three-way valve (up to down way when closed, up to right way when open)
V3V_Vert_Up_Right		Vertical three-way valve (up to right way when closed, up to down way when open)
Label		Displays the ObjectTagName , StaticText and CustomPropertyLabel .

Faceplates

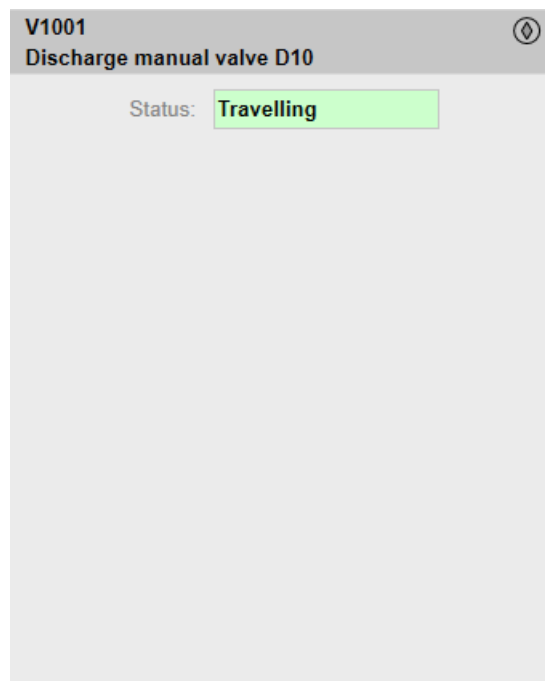
Overview

During operation, clicking the graphic symbol opens a faceplate with the following tabs:

- Standard tabs:
 - Operation
 - Engineering
 - Alarms, page 75

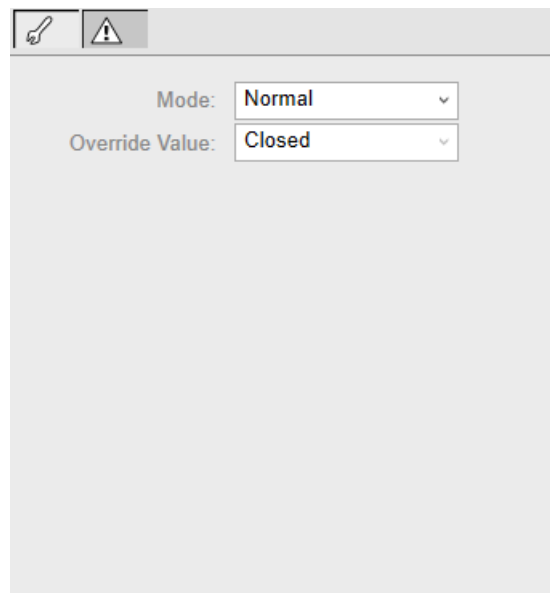
Operation Tab

The figure shows an example of the **Operation** tab.



Engineering Tab

The figure shows an example of the **Engineering** tab.



NOTE: This tab features the **Simulation** menu, which allows setting the control module to simulation mode.

In addition, the tab may feature another menu or text field, which allows you to configure the state or value to be simulated.

Enabling the simulation mode underlies a [security classification](#), [page 89](#). The default configuration is *tune*. It also triggers the display of an abnormal state, [page 46](#) on the tab and on the symbol.

\$MotorCE: On/Off Motor

What's in This Chapter

Supervision Functions	164
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Overview

This chapter describes the \$MotorCE master template, which contains supervision resources to monitor and operate 1-speed/1-rotation-direction on/off motors.

Supervision Functions

Description

The \$MotorCE master template provides the following monitoring and operation functions:

- Core functions:
 - Status monitoring.
 - Owner selection.
 - Simulation mode.
 - Resetting.
 - Global bypassing of interlock conditions.
- Optional functions:
 - Operation from a local panel.
 - Viewing, bypassing, and resetting of individual interlock conditions and abnormal conditions.
 - Tracking of operating hours and switching operations.

During operation, these functions are implemented by instances through symbols and their associated faceplate.

NOTE: You can modify the default configuration in the corresponding configuration pages, page 87.

Control/Supervision Relationship

Control Resources

To provide core and optional supervision functions, the \$PSxMotor master template is configured to exchange data with the following control resources of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
MOTORGP	On/off device logic.	MotorGP_ST_DDT	<instance name>_ MotorGP_ST	Core supervision functions.
DEVMNTGP	On/off device maintenance.	DevMNTGP_ST_DDT	<instance name>_ MotMNTGP_ST	Optional supervision functions.
MOTORLPGP	Local panel for on/off devices.	MotorLPGP_ST_DDT	<instance name>_ MotLPGP_ST	
CONDSUMGP	Detected failure condition summary.	CondsunGP_ST_DDT	<instance name>_ CondsunGP_ST	
ILCKONGP	Interlock condition summary.	ILCKGP_ST_DDT	<instance name>_ ILockOn1_ST	
** Mandatory variables to be defined.				

For description of these control resources, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the object editor, page 100.

These parameters allow you to configure core functions.

Parameter Description

The tables describe the parameters that are defined as part of the *\$MotorCE* master template attributes.

Name	Data type	Initial value	Description
Param.ModeNormal	String	O, P, C	Specifies the normal owner modes (separated by a comma): <ul style="list-style-type: none"> O: Operator P: Program C: Cascade For example P, C.

Name	Data type	Initial value	Description
Param. FailureRearmCon- firmation	Boolean	True	<p><i>False</i> = After you click the Reset button on the faceplate during operation and have successfully validated the command according to the configured security classification, resets the control logic with no additional confirmation being required.</p> <p><i>True</i> = After you click the Reset button on the faceplate during operation, displays a dialog box, which requires that you confirm the reset command. The control logic is reset only by clicking OK and validating the command according to the configured security classification. By default, the security classification is <i>secured write</i>.</p>
Param. IlckRearmConfir- mation	Boolean	False	<p>When manual resetting of interlock conditions is enabled:</p> <ul style="list-style-type: none"> <i>False</i> = After you click the Reset button on the faceplate during operation and have successfully validated the command according to the configured security classification, resets the control logic with no additional confirmation being required. <i>True</i> = After you click the Reset button on the faceplate during operation, displays a dialog box, which requires that you confirm the reset command. The control logic is reset only by clicking OK and validating the command according to the configured security classification. By default, the security classification is <i>secured write</i>.

Default State Alarms

State Alarms for On/Off Motor

The table indicates for which attributes a state alarm is configured in the \$MotorCE master template and provides the default values.

Attribute	Alarm message	Priority
Devctl.AO.Alarm	Confirmation Failure	999
Devctl.AO.PosFail	Unknown Position	750
Devctl.St.Failed	Device Failure	500

NOTE: You can modify the configuration from the **Attributes** page.










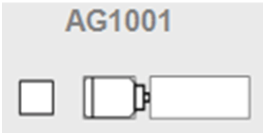
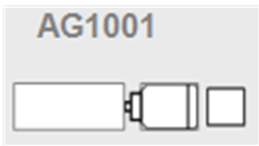
Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in symbols.

Symbol Description

The table describes the symbols that are included in the \$MotorCE master template to display data of 1-speed/1-rotation direction on/off motors during operation.

Name	Graphic symbol	Description
Blower_Left		Left blower
Blower_Right		Right blower
Motor_Down		Motor down
Motor_Left		Motor left
Motor_Right		Motor right
Motor_Up		Motor up
Pump_Left		Left pump
Pump_Right		Right pump
RotaryValve		Rotary valve
ScrewPump_Left		Screw pump left
ScrewPump_Right		Screw pump right
Label	PSxLabel	Displays the ObjectTagName , StaticText and CustomPropertyLabel .

Faceplates

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in faceplates.

Available Tabs

During operation, clicking an on/off motor symbol opens a faceplate with the following tabs:

- Tabs for core functions:
 - Operation with optional local panel, page 64
 - Engineering
 - Alarms, page 75
- Tabs for optional functions, which appear only if configured:
 - Interlocks, page 65
 - Failures, page 68
 - Maintenance, page 70

Operation Tab

The figure shows an example of the **Operation** tab.

The screenshot displays the 'Operation' tab for a motor identified as 'A2F1_P1102 Discharge pump'. The interface includes a status indicator 'Travelling' in a green box, and input fields for 'Current Setpoint' and 'Output', both currently set to 'Off'. Below these, there is a horizontal separator line. Under the line, the 'Owner' is set to 'Program' via a dropdown menu, and the 'Setpoint Mode' is set to 'Local'. Another 'Setpoint' dropdown menu is also set to 'Off'. At the bottom of the panel is a 'Reset' button.

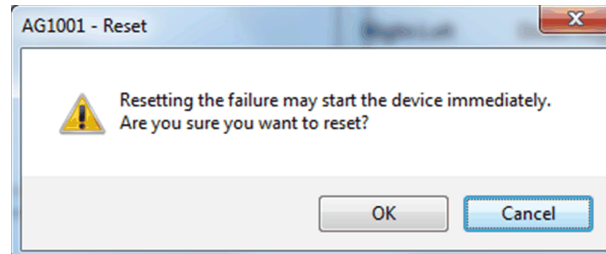
NOTE: This tab features the control module **Reset** button.

When the control module is reset, the current setpoint that is shown in this tab is effective.

By default, when you click **Reset**, a dialog box opens, which requires that you confirm the command for the reset of the control module to take effect.

Refer to *Parameters* in this chapter for a description of the *Param.FailureRearmConfirmation* parameter, which allows you to configure the reset confirmation.

The figure shows the confirmation dialog box which is model in nature.

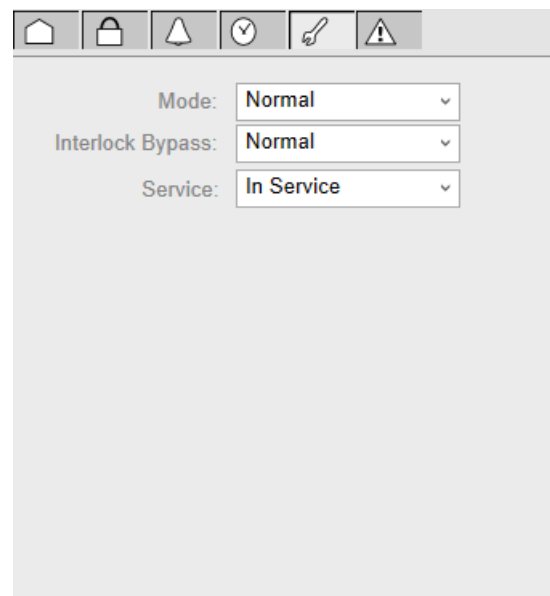


Resetting the control module by clicking **OK** underlies a security classification, page 89. The default configuration is *secured write*.

When the reset confirmation dialog box is enabled, the security classification that normally applies when you click **Reset** is not effective.

Engineering Tab

The figure shows an example of the **Engineering** tab.



⚠ WARNING

LOSS OF CONTROL AND UNINTENDED EQUIPMENT OPERATION

Before switching the monitored device back into service:

- Verify the current setpoint of the monitored device.
- Confirm the current status of the process.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

NOTE: This tab features the **Simulation** menu, which allows setting the control module to simulation mode.

In addition, the tab may feature another menu or text field, which allows you to configure the state or value to be simulated.

Enabling the simulation mode underlies a *security classification*, page 89. The default configuration is *tune*. It also triggers the display of an abnormal state, page 46 on the tab and on the symbol.

NOTE: This tab features the **Interlock Bypass** menu, which allows bypassing interlocks globally.

When the control module is reset, the current setpoint that is shown in the operation tab of the faceplate is effective.

Bypassing interlocks by selecting **Bypass** underlies a *security classification*, page 89. The default configuration is *verified write*. It also triggers the display of an abnormal state, page 46 on the tab and on the symbol.

NOTE: This tab features the **Service** menu, which allows setting the control module out of service.

When the control menu is set back into service by selecting **In Service** in the **Service** menu, the current setpoint that is shown in the operation tab of the faceplate is effective.

Setting the control module out of service underlies a *security classification*, page 89. The default configuration is *tune*. It also triggers the display of an abnormal state, page 46 on the tab and on the symbol.

\$Motor2DirCE: 2-Speed/2-Rotation-Direction Motors

What's in This Chapter

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Overview

This chapter describes the supervision resources and runtime services that are available for the management of 2-speed/2-rotation-direction motors.

Supervision Functions

Description

Core and optional resources provide the following monitoring and operation functions:

- Main core functions encompass status monitoring, owner selection, simulation mode, resetting, rotation direction, and global bypassing of interlock conditions.
- Optional functions encompass a local panel, individual interlock condition and diagnostic information management, tracking of operating hours and switching operations.

These functions are implemented in runtime through symbols and their associated faceplate.

Control/Supervision Relationship

Control Resources

To provide core and optional supervision functions, the *\$PSxMotor2* master template is configured to exchange data with the following control resources of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
MOTOR2GP	2 speed/2 rotation direction motor logic	Motor2GP_ST_DDT	<instance name>_ Motor2GP_ST	Core supervision functions.
DEVMTGTP	On/off device maintenance	DevMNTGP_ST_DDT	<instance name>_ MotMNTGP_ST	Optional supervision functions.
MOTOR2LPGP	Local panel for controlling 2-speed/2-rotation direction motors	Motor2LPGP_ST_DDT	<instance name>_ MTR2LPGP_ST	
CONDSUMGP	Detected failure condition summary, there are 3 cases: <ul style="list-style-type: none"> • No detected failure condition summary • One for both speed and direction (naming convention <...>_CONDSUM_<...>) 	CondsuGP_ST_DDT	<instance name>_ Condsu_ST	

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
	<ul style="list-style-type: none">One for Speed1/Direct (naming convention <...>_CONDSUM_<...>) and one for Speed2/Reverse (naming convention <...>_RC_CONDSUM_<...>)			
ILCKONGP	Forward interlock condition	ILCKGP_ST_DDT	<instance name>_FWDILCKGP_ST	
	Reverse interlock condition		<instance name>_REVILCKGP_ST	
** Mandatory variables to be defined.				

For description of these control resources, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the object editor, page 100.

These parameters allow you to configure core functions.

Parameter Description

The tables describe the parameters that are defined as part of the \$Motor2DirCE master template attributes.

Parameter	Data type	Initial value	Description
Param.ContainerDesc	Bool	False	<p>If true, the container description is used.</p> <p>If false, the container description is not used.</p> <p>NOTE: This parameter is used for object contained by another object, for example \$MValveCE.M2.</p>
Param.ModeNormal	String	O, P, C	<p>Specifies the normal owner modes (separated by a comma):</p> <ul style="list-style-type: none"> O: Operator P: Program C: Cascade <p>For example P, C.</p>

Name	Data type	Initial value	Description
Param. FailureRearmConfirmation	Boolean	True	<p><i>False</i> = After you click the Reset button on the faceplate during operation and have successfully validated the command according to the configured security classification, resets the control logic with no additional confirmation being required.</p> <p><i>True</i> = After you click the Reset button on the faceplate during operation, displays a dialog box, which requires that you confirm the reset command. The control logic is reset only by clicking OK and validating the command according to the configured security classification. By default, the security classification is <i>secured write</i>.</p>
Param. IlckRearmConfirmation	Boolean	False	<p>When manual resetting of interlock conditions is enabled:</p> <ul style="list-style-type: none"> <i>False</i> = After you click the Reset button on the faceplate during operation and have successfully validated the command according to the configured security classification, resets the control logic with no additional confirmation being required. <i>True</i> = After you click the Reset button on the faceplate during operation, displays a dialog box, which requires that you confirm the reset command. The control logic is reset only by clicking OK and validating the command according to the configured security classification. By default, the security classification is <i>secured write</i>.

Default State Alarms

State Alarms for 2-Speed/2-Rotation-Direction Motors

The table indicates for which attributes a state alarm is configured in the \$Motor2DirCE master template and provides the default values.

Attribute	Alarm message	Priority
Motor2.St.Alarm1	Confirmation Failure 1	999
Motor2.St.Alarm2	Confirmation Failure 2	999
Motor2.AO.PosFail	Unknown Position	750
Motor2.St.Faild1	Device Failure 1	500
Motor2.St.Faild2	Device Failure 2	500

NOTE: You can modify the configuration from the **Attributes** page.









Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a general description, page 46 of the graphic elements and element styles that are used in symbols.

Representation

This table describes the symbols available for representing the 2-speed/2-rotation direction motors:

Name	Graphic symbol	Description
Motor_Direction_Down		Down vertical motor with 2 rotation directions
Motor_Direction_Left		Left horizontal motor with 2 rotation directions
Motor_Direction_Right		Right horizontal motor with 2 rotation directions
Motor_Direction_Up		Up vertical motor with 2 rotation directions
Motor_Speed_Down		Down vertical motor with 2 speeds
Motor_Speed_Left		Left horizontal motor with 2 speeds
Motor_Speed_Right		Right horizontal motor with 2 speeds
Motor_Speed_Up		Up vertical motor with 2 speeds
Label	PSxLabel	Displays the ObjectTagName , StaticText and CustomPropertyLabel .

Faceplates

Overview

During operation, clicking the graphic symbol opens a faceplate with the following tabs:

- Standard tabs:
 - Operation with optional local panel, page 64
 - Engineering
 - Alarms, page 75
- Optional tabs:
 - Interlocks, page 65
 - Failures , page 68
 - Maintenance, page 70

Operation Tab

The figure shows an example of the **Operation** tab.

M1102
Reactive dosing screw

Status:

Current Setpoint:

Output 1:

Output 2:

Owner:

Setpoint Mode:

Setpoint:

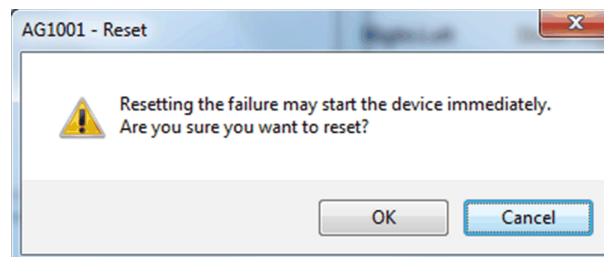
NOTE: This tab features the control module **Reset** button.

When the control module is reset, the current setpoint that is shown in this tab is effective.

By default, when you click **Reset**, a dialog box opens, which requires that you confirm the command for the reset of the control module to take effect.

Refer to *Parameters* in this chapter for a description of the *Param.FailureRearmConfirmation* parameter, which allows you to configure the reset confirmation.

The figure shows the confirmation dialog box which is model in nature.

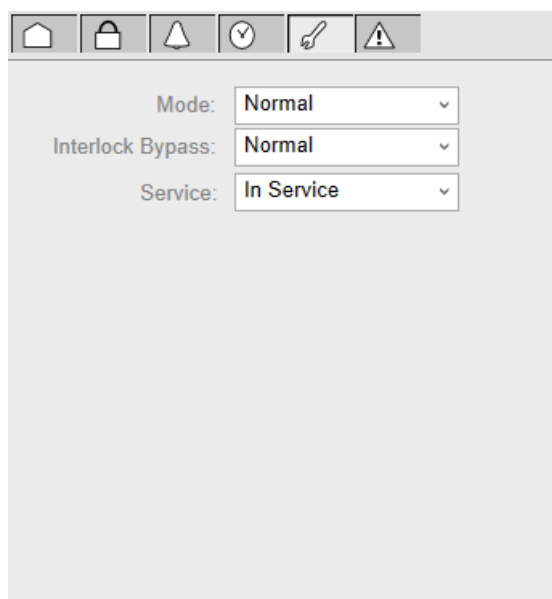


Resetting the control module by clicking **OK** underlies a security classification, page 89. The default configuration is *secured write*.

When the reset confirmation dialog box is enabled, the security classification that normally applies when you click **Reset** is not effective.

Engineering Tab

The figure shows an example of the **Engineering** tab.



⚠ WARNING

LOSS OF CONTROL AND UNINTENDED EQUIPMENT OPERATION

Before switching the monitored device back into service:

- Verify the current setpoint of the monitored device.
- Confirm the current status of the process.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

NOTE: This tab features the **Simulation** menu, which allows setting the control module to simulation mode.

In addition, the tab may feature another menu or text field, which allows you to configure the state or value to be simulated.

Enabling the simulation mode underlies a [security classification, page 89](#). The default configuration is *tune*. It also triggers the display of an abnormal state, [page 46](#) on the tab and on the symbol.

NOTE: This tab features the **Interlock Bypass** menu, which allows bypassing interlocks globally.

When the control module is reset, the current setpoint that is shown in the operation tab of the faceplate is effective.

Bypassing interlocks by selecting **Bypass** underlies a [security classification, page 89](#). The default configuration is *verified write*. It also triggers the display of an abnormal state, [page 46](#) on the tab and on the symbol.

NOTE: This tab features the **Service** menu, which allows setting the control module out of service.

When the control menu is set back into service by selecting **In Service** in the **Service** menu, the current setpoint that is shown in the operation tab of the faceplate is effective.

Setting the control module out of service underlies a [security classification, page 89](#). The default configuration is *tune*. It also triggers the display of an abnormal state, [page 46](#) on the tab and on the symbol.

\$MValveCE: Discrete Motorized Valves

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Overview

This chapter describes the supervision resources and runtime services that are available for the management of discrete motorized valves.

Supervision Functions

Description

Core and optional resources provide the following monitoring and operation functions:

- Main core functions encompass status monitoring, owner selection, resetting, setpoint management, and global bypassing of interlock conditions.
- Optional functions encompass a local panel, and individual interlock condition and diagnostic information management.

These functions are implemented in runtime through symbols and their associated faceplate.

NOTE: The discrete motorized valve template includes three contained objects:

- *\$MValveCE.M2*: motor management (a derived template of *\$Motor2DirCE*, page 171 with interlock and detected failure conditions enabled by default, and the parameter `Param.ContainerDesc` enabled)
- *\$MValveCE.ZSH*: high limit switch management (a derived template of *\$DigitalInputCE*, page 124 with the parameter `Param.ContainerDesc` enabled)
- *\$MValveCE.ZSL*: low limit switch management (a derived template of *\$DigitalInputCE*, page 124 with the parameter `Param.ContainerDesc` enabled)

Control/Supervision Relationship

Control Resources

To provide core and optional supervision functions, the *\$PSxMotorizedValveD* master template is configured to exchange data with the following control resources of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
MVALVEDGP	Discrete motorized valve logic.	MValveDGP_ST_DDT	<instance name>_ MVDGP_ST	Core supervision functions.
CONDSUMGP	Detected failure condition summary.	CondsumGP_ST_DDT	<instance name>_ Condsum_ST	Optional supervision functions.
DEVMNTGP	On/off device maintenance.	DevMNTGP_ST_DDT	<instance name>_ VLVMNTGP_ST	
MVALVEDLPGP	Local panel for controlling discrete motorized valves.	MValveDLPGP_ST_DDT	<instance name>_ MVDLPGP_ST	
ILCKONGP	Open interlock condition.	ILCKGP_ST_DDT	<instance name>_ OPNILCKGP_ST	
	Close interlock condition	ILCKGP_ST_DDT	<instance name>_ CLSILCKGP_ST	
** Mandatory variables to be defined.				

For description of these control resources, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the *object editor*, page 100.

These parameters allow you to configure core functions.

Parameter Description

The tables describe the parameters that are defined as part of the \$MValveCE master template attributes.

Parameter	Data type	Initial value	Description
Param.ModeNormal	String	O, P, C	Specifies the normal owner modes (separated by a comma): <ul style="list-style-type: none"> O: Operator P: Program C: Cascade For example P, C.

Name	Data type	Initial value	Description
Param. FailureRearmCon- firmation	Boolean	True	<p><i>False</i> = After you click the Reset button on the faceplate during operation and have successfully validated the command according to the configured security classification, resets the control logic with no additional confirmation being required.</p> <p><i>True</i> = After you click the Reset button on the faceplate during operation, displays a dialog box, which requires that you confirm the reset command. The control logic is reset only by clicking OK and validating the command according to the configured security classification. By default, the security classification is <i>secured write</i>.</p>
Param. IlckRearmConfir- mation	Boolean	False	<p>When manual resetting of interlock conditions is enabled:</p> <ul style="list-style-type: none"> <i>False</i> = After you click the Reset button on the faceplate during operation and have successfully validated the command according to the configured security classification, resets the control logic with no additional confirmation being required. <i>True</i> = After you click the Reset button on the faceplate during operation, displays a dialog box, which requires that you confirm the reset command. The control logic is reset only by clicking OK and validating the command according to the configured security classification. By default, the security classification is <i>secured write</i>.

Default State Alarms

State Alarms for Discrete Motorized Valves

The table indicates for which attributes a state alarm is configured in the \$MValveCE master template and provides the default values.

Attribute	Alarm message	Priority
MValveD.St.Alarm1	Open Confirmation Fail	999
MValveD.St.Alarm2	Closed Confirmation Fail	999
MValveD.AO.PosFail	Unknown Position	750
MValveD.St.FaiId	Device Failure	500

NOTE: You can modify the configuration from the **Attributes** page.


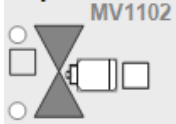
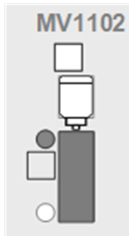
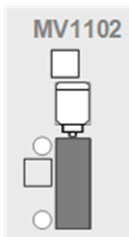
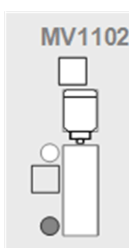
Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a general description, page 46 of the graphic elements and element styles that are used in symbols.

Representation

This table describes the symbols available for representing the discrete motorized valves:

Name	Graphic symbol	Description
V2V_Horiz		Horizontal valve
V2V_Vert		Vertical valve
PenStockV		Penstock valve (Open position)
PenStockV		Penstock valve (Intermediate position)
PenStockV		Penstock valve (Closed position)
Label	PSxLabel	Displays the ObjectTagName , StaticText and CustomPropertyLabel .

NOTE: The discrete motorized valve symbol is composed of four symbols:

- Valve
- Motor
- High limit switch
- Low limit switch

Navigation to display the related faceplate of contained objects motor and limit switches are provided on main faceplate of discrete motorised valves.

Faceplates

Overview

During operation, clicking the graphic symbol opens a faceplate with the following tabs:

- Standard tabs:
 - Operation with optional local panel, page 64
 - Engineering
 - Alarms, page 75
- Optional tabs:
 - Interlocks, page 65

NOTE: Navigation to display the related faceplate of contained objects motor and limit switches are provided on main faceplate of discrete motorised valves.

Operation Tab

The figure shows an example of the **Operation** tab.

The screenshot displays the 'Operation' tab for a motorized valve identified as 'MV1102'. The title bar at the top shows 'MV1102' and 'Motorized valve' with a close button on the right. The main content area is divided into sections. The first section, 'Valve State', shows a button labeled 'Stop'. Below this, a horizontal line separates the settings section. The 'Owner' is set to 'Operator' via a dropdown menu. The 'Setpoint Mode' is set to 'Local'. The 'Setpoint' is also set to 'Stop' via a dropdown menu. At the bottom of the settings section is a 'Reset' button.

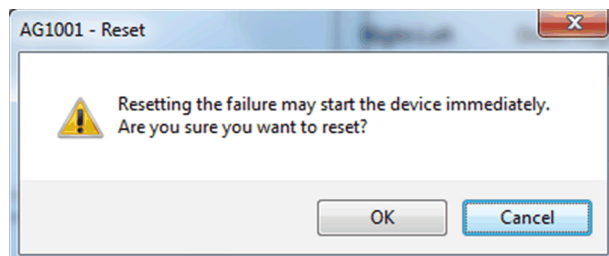
NOTE: This tab features the control module **Reset** button.

When the control module is reset, the current setpoint that is shown in this tab is effective.

By default, when you click **Reset**, a dialog box opens, which requires that you confirm the command for the reset of the control module to take effect.

Refer to *Parameters* in this chapter for a description of the *Param.FailureRearmConfirmation* parameter, which allows you to configure the reset confirmation.

The figure shows the confirmation dialog box which is model in nature.

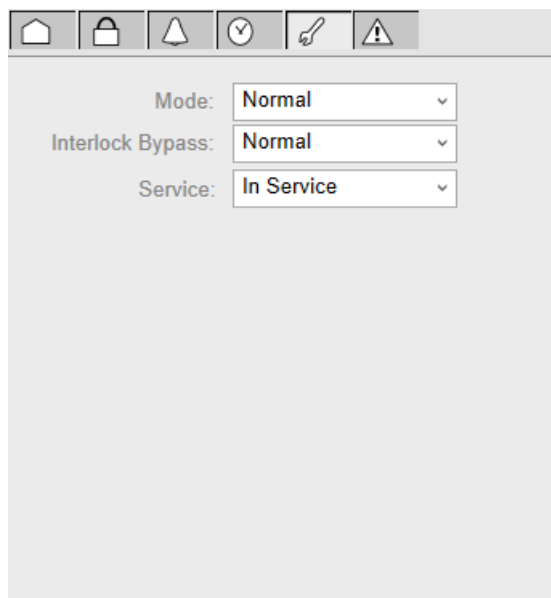


Resetting the control module by clicking **OK** underlies a security classification, page 89. The default configuration is *secured write*.

When the reset confirmation dialog box is enabled, the security classification that normally applies when you click **Reset** is not effective.

Engineering Tab

The figure shows an example of the **Engineering** tab.



NOTE: This tab features the **Interlock Bypass** menu, which allows bypassing interlocks globally.

When the control module is reset, the current setpoint that is shown in the operation tab of the faceplate is effective.

Bypassing interlocks by selecting **Bypass** underlies a security classification, page 89. The default configuration is *verified write*. It also triggers the display of an abnormal state, page 46 on the tab and on the symbol.

\$DualOPValveCE: Dual Output Valves

What's in This Chapter

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Overview

This chapter describes the supervision resources and runtime services that are available for the management of dual output valves.

Supervision Functions

Description

Core and optional resources provide the following monitoring and operation functions:

- Main core functions encompass status monitoring, owner selection, resetting, setpoint management, simulation mode, and global bypassing of interlock conditions.
- Optional functions encompass tracking of operating hours and switching operations, individual interlock condition and diagnostic information management.

These functions are implemented in runtime through symbols and their associated faceplate.

Control/Supervision Relationship

Control Resources

To provide core and optional supervision functions, the *\$PSxDualOutputValve* master template is configured to exchange data with the following control resources of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
DVALVEGP	Dual ouput valve logic.	DValveGP_ST_DDT	<instance name>_ DValveGP_ST	Core supervision functions.
CONDSUMGP	Detected failure condition summary.	CondsumGP_ST_DDT	<instance name>_ Condsum_ST	Optional supervision functions.
DEVMTGTP	On/off device maintenance.	DevMNTGP_ST_DDT	<instance name>_ VLVMNTGP_ST	
DVALVELPGP	Local panel for controlling dual output valves.	DValveLPGP_ST_DDT	<instance name>_ DVLVLPGP_ST	
ILCKONGP	Open interlock condition.	ILCKGP_ST_DDT	<instance name>_ OPNILCKGP_ST	
	Close interlock condition	ILCKGP_ST_DDT	<instance name>_ CLSILCKGP_ST	
** Mandatory variables to be defined.				

For description of these control resources, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template prefix or in its instances. You can access the parameters from the **Attributes** page of the *object editor*, page 100.

These parameters allow you to configure core functions.

Parameter Description

The tables describe the parameters that are defined as part of the *\$DualOPValveCE* master template attributes.

Parameter	Data type	Initial value	Description
Param.ModeNormal	String	O, P, C	Specifies the normal owner modes (separated by a comma): <ul style="list-style-type: none"> O: Operator P: Program C: Cascade For example P, C.

Name	Data type	Initial value	Description
Param. FailureRearmConfirmation	Boolean	True	<p><i>False</i> = After you click the Reset button on the faceplate during operation and have successfully validated the command according to the configured security classification, resets the control logic with no additional confirmation being required.</p> <p><i>True</i> = After you click the Reset button on the faceplate during operation, displays a dialog box, which requires that you confirm the reset command. The control logic is reset only by clicking OK and validating the command according to the configured security classification. By default, the security classification is <i>secured write</i>.</p>
Param. IlckRearmConfirmation	Boolean	False	<p>When manual resetting of interlock conditions is enabled:</p> <ul style="list-style-type: none"> <i>False</i> = After you click the Reset button on the faceplate during operation and have successfully validated the command according to the configured security classification, resets the control logic with no additional confirmation being required. <i>True</i> = After you click the Reset button on the faceplate during operation, displays a dialog box, which requires that you confirm the reset command. The control logic is reset only by clicking OK and validating the command according to the configured security classification. By default, the security classification is <i>secured write</i>.

Default State Alarms

State Alarms for Dual Output Valves

The table indicates for which attributes a state alarm is configured in the \$DualOPValveCE master template and provides the default values.

Attribute	Alarm message	Priority
DVALVE.ST.AlarmH	Open Confirmation Fail	999
DVALVE.ST.AlarmL	Close Confirmation Fail	999
DVALVE.ST.FAILED	Device failure	500

NOTE: You can modify the configuration from the **Attributes** page.


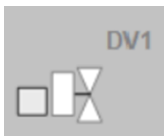









Graphic Representation

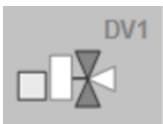

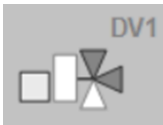
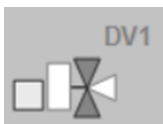

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in symbols.

Representation

This table describes the symbols available for representing the dual output valves:

Name	Graphic symbol	Description
V2V_Horiz		Horizontal two-way valve
V2V_Vert		Vertical two-way valve
V2V_Butterfly_Vert_Left		Vertical butterfly with control on the left
V2V_Butterfly_Vert_Right		Vertical butterfly with control on the right
V3V_Horiz_Down_Left		Horizontal three-way valve (down to left way when closed, down to right way when open)
V3V_Horiz_Down_Right		Horizontal three-way valve (down to right way when closed, down to left way when open)
V3V_Horiz_Left_Down		Horizontal three-way valve (left to down way when closed, left to right way when open)
V3V_Horiz_Left_Right		Horizontal three-way valve (left to right way when closed, left to down way when open)
V3V_Horiz_Right_Down		Horizontal three-way valve (right to down way when closed, right to left way when open)
V3V_Horiz_Right_Left		Horizontal three-way valve (right to left way when closed, right to down way when open)
V3V_Vert_Down_Right		Vertical three-way valve (down to right way when closed, down to up way when open)

Name	Graphic symbol	Description
V3V_Vert_Down_Up		Vertical three-way valve (down to up way when closed, down to right way when open)
V3V_Vert_Right_Down		Vertical three-way valve (right to down way when closed, right to up way when open)
V3V_Vert_Right_Up		Vertical three-way valve (right to up way when closed, right to down way when open)
V3V_Vert_Up_Down		Vertical three-way valve (up to down way when closed, up to right way when open)
V3V_Vert_Up_Right		Vertical three-way valve (up to right way when closed, up to down way when open)
Label	PSxLabel	Displays the ObjectTagName , StaticText and CustomPropertyLabel .

Faceplates

Overview

During operation, clicking the graphic symbol opens a faceplate with the following tabs:

- Standard tabs:
 - Operation
 - Engineering
 - Alarms, page 75
- Optional tabs:
 - Interlocks, page 65
 - Failures, page 68
 - Maintenance, page 70

Operation Tab

The figure shows an example of the **Operation** tab.

HV1002
Heating valve D10

Status: **Travelling**

Current Setpoint: **Off**

Output: **Off**

Owner: **Program**

Setpoint Mode: **Local**

Setpoint: **Off**

Reset

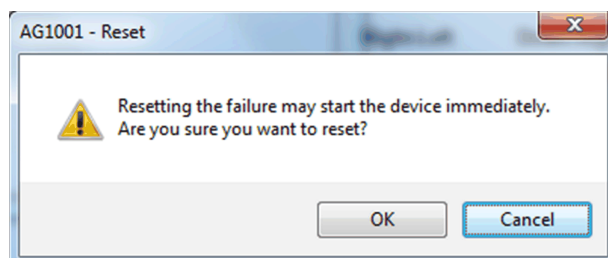
NOTE: This tab features the control module **Reset** button.

When the control module is reset, the current setpoint that is shown in this tab is effective.

By default, when you click **Reset**, a dialog box opens, which requires that you confirm the command for the reset of the control module to take effect.

Refer to *Parameters* in this chapter for a description of the *Param.FailureRearmConfirmation* parameter, which allows you to configure the reset confirmation.

The figure shows the confirmation dialog box which is model in nature.

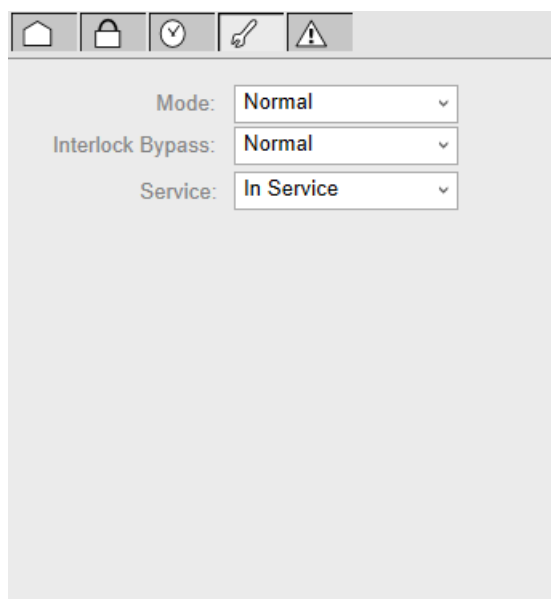


Resetting the control module by clicking **OK** underlies a security classification, page 89. The default configuration is *secured write*.

When the reset confirmation dialog box is enabled, the security classification that normally applies when you click **Reset** is not effective.

Engineering Tab

The figure shows an example of the **Engineering** tab.



⚠ WARNING

LOSS OF CONTROL AND UNINTENDED EQUIPMENT OPERATION

Before switching the monitored device back into service:

- Verify the current setpoint of the monitored device.
- Confirm the current status of the process.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

NOTE: This tab features the **Simulation** menu, which allows setting the control module to simulation mode.

In addition, the tab may feature another menu or text field, which allows you to configure the state or value to be simulated.

Enabling the simulation mode underlies a [security classification](#), [page 89](#). The default configuration is *tune*. It also triggers the display of an abnormal state, [page 46](#) on the tab and on the symbol.

NOTE: This tab features the **Interlock Bypass** menu, which allows bypassing interlocks globally.

When the control module is reset, the current setpoint that is shown in the operation tab of the faceplate is effective.

Bypassing interlocks by selecting **Bypass** underlies a [security classification](#), [page 89](#). The default configuration is *verified write*. It also triggers the display of an abnormal state, [page 46](#) on the tab and on the symbol.

NOTE: This tab features the **Service** menu, which allows setting the control module out of service.

When the control menu is set back into service by selecting **In Service** in the **Service** menu, the current setpoint that is shown in the operation tab of the faceplate is effective.

Setting the control module out of service underlies a [security classification](#), [page 89](#). The default configuration is *tune*. It also triggers the display of an abnormal state, [page 46](#) on the tab and on the symbol.

\$ValveCE: On/Off Valves

What's in This Chapter

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Default State Alarms	191
Graphic Representation	191
Faceplates	193

Overview

This chapter describes the supervision resources and runtime services that are available for the management of on/off valves.

Supervision Functions

Description

Core and optional resources provide the following monitoring and operation functions:

- Main core functions encompass status monitoring, owner selection, simulation mode, resetting, and global bypassing of interlock conditions.
- Optional functions encompass a local panel, individual interlock condition management, tracking of operating hours and switching operations.

These functions are implemented in runtime through symbols and their associated faceplate.

Control/Supervision Relationship

Control Resources

To provide core and optional supervision functions, the \$PSxValve master template is configured to exchange data with the following control resources of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
VALVEGP	On/off device logic	ValveGP_ST_DDT	<instance name>_ValveGP_ST	Core supervision functions.
DEVMNT	On/off device maintenance	DevMNTGP_ST_DDT	<instance name>_VlvMNTGP_ST	Optional supervision functions.
VALVELPGP	Local panel for on/off valves	ValveLPGP_ST_DDT	<instance name>_VlvLPGP_ST	
ILCKONGP	Interlock condition summary	ILCKGP_ST_DDT	<instance name>_ILockOn_ST	
** Mandatory variables to be defined.				

For description of these control resources, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the [object editor](#), page 100.

These parameters allow you to configure core functions.

Parameter Description

This table describes the parameters of the automation object:

Parameter	Type	Default	Description
Param.ModeNormal	String	O, P, C	Specifies the normal owner modes (separated by a comma): <ul style="list-style-type: none"> O: Operator P: Program C: Cascade For example P, C.

Default State Alarms

State Alarms for On/Off Valves

The attributes for which a state alarm is configured in the *\$ValveCE* master template are the same as for *\$MotorCE*.

NOTE: You can modify the configuration from the **Attributes** page.


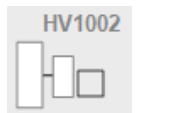
Graphic Representation










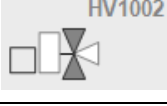

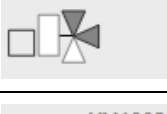
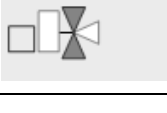
Representation of Supervision Data


At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in symbols.

Representation

This table describes the symbols available for representing the on/off valves:

Name	Graphic symbol	Description
V2V_Butterfly_Vert_Left		Vertical butterfly with control on the left
V2V_Butterfly_Vert_Right		Vertical butterfly with control on the right

Name	Graphic symbol	Description
V2V_Horiz		Horizontal two-way valve
V2V_Vert		Vertical two-way valve
V3V_Horiz_Down_Left		Horizontal three-way valve (down to left way when closed, down to right way when open)
V3V_Horiz_Down_Right		Horizontal three-way valve (down to right way when closed, down to left way when open)
V3V_Horiz_Left_Down		Horizontal three-way valve (left to down way when closed, left to right way when open)
V3V_Horiz_Left_Right		Horizontal three-way valve (left to right way when closed, left to down way when open)
V3V_Horiz_Right_Down		Horizontal three-way valve (right to down way when closed, right to left way when open)
V3V_Horiz_Right_Left		Horizontal three-way valve (right to left way when closed, right to down way when open)
V3V_Vert_Down_Right		Vertical three-way valve (down to right way when closed, down to up way when open)
V3V_Vert_Down_Up		Vertical three-way valve (down to up way when closed, down to right way when open)
V3V_Vert_Right_Down		Vertical three-way valve (right to down way when closed, right to up way when open)
V3V_Vert_Right_Up		Vertical three-way valve (right to up way when closed, right to down way when open)
V3V_Vert_Up_Down		Vertical three-way valve (up to down way when closed, up to right way when open)

Name	Graphic symbol	Description
V3V_Vert_Up_Right		Vertical three-way valve (up to right way when closed, up to down way when open)
Label	PSxLabel	Displays the ObjectTagName , StaticText and CustomPropertyLabel .

Faceplates

Overview

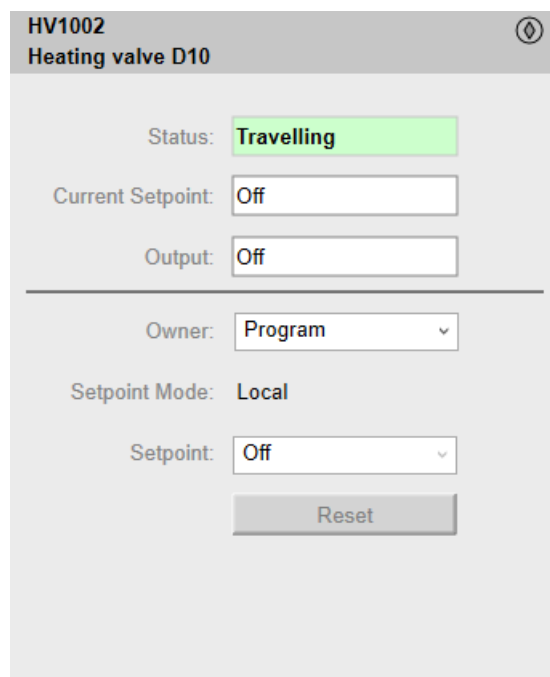
During operation, clicking the graphic symbol opens a faceplate with the following tabs:

- Standard tabs:
 - Operation with optional local panel, page 64
 - Engineering
 - Alarms, page 75
- Optional tabs:
 - Interlocks, page 65
 - Failures, page 68
 - Maintenance, page 70

NOTE: The same faceplate is used for on/off motor and on/off valve.

Operation Tab

The figure shows an example of the **Operation** tab.



HV1002
Heating valve D10

Status: **Travelling**

Current Setpoint:

Output:

Owner:

Setpoint Mode: **Local**

Setpoint:

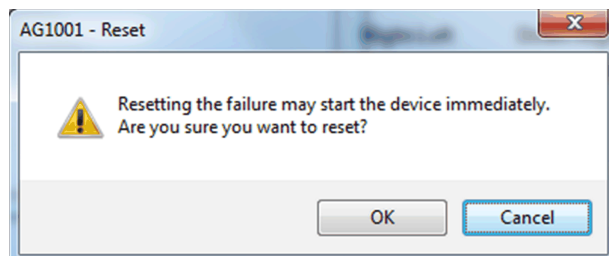
NOTE: This tab features the control module **Reset** button.

When the control module is reset, the current setpoint that is shown in this tab is effective.

By default, when you click **Reset**, a dialog box opens, which requires that you confirm the command for the reset of the control module to take effect.

Refer to *Parameters* in this chapter for a description of the *Param.FailureRearmConfirmation* parameter, which allows you to configure the reset confirmation.

The figure shows the confirmation dialog box which is model in nature.

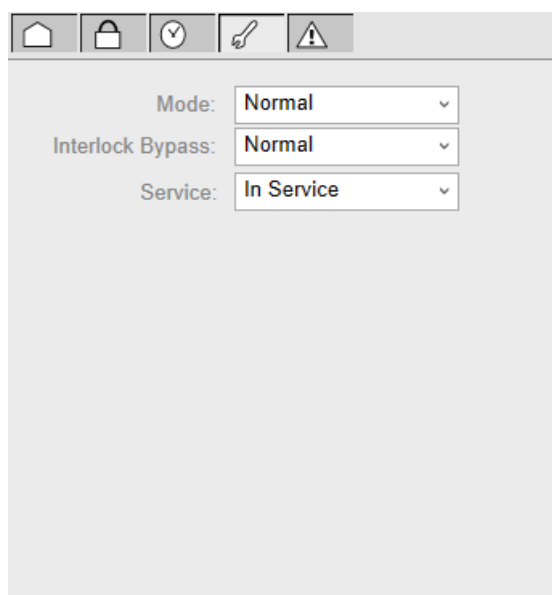


Resetting the control module by clicking **OK** underlies a security classification, page 89. The default configuration is *secured write*.

When the reset confirmation dialog box is enabled, the security classification that normally applies when you click **Reset** is not effective.

Engineering Tab

The figure shows an example of the **Engineering** tab.



⚠ WARNING

LOSS OF CONTROL AND UNINTENDED EQUIPMENT OPERATION

Before switching the monitored device back into service:

- Verify the current setpoint of the monitored device.
- Confirm the current status of the process.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

NOTE: This tab features the **Simulation** menu, which allows setting the control module to simulation mode.

In addition, the tab may feature another menu or text field, which allows you to configure the state or value to be simulated.

Enabling the simulation mode underlies a [security classification](#), [page 89](#). The default configuration is *tune*. It also triggers the display of an abnormal state, [page 46](#) on the tab and on the symbol.

NOTE: This tab features the **Interlock Bypass** menu, which allows bypassing interlocks globally.

When the control module is reset, the current setpoint that is shown in the operation tab of the faceplate is effective.

Bypassing interlocks by selecting **Bypass** underlies a [security classification](#), [page 89](#). The default configuration is *verified write*. It also triggers the display of an abnormal state, [page 46](#) on the tab and on the symbol.

NOTE: This tab features the **Service** menu, which allows setting the control module out of service.

When the control menu is set back into service by selecting **In Service** in the **Service** menu, the current setpoint that is shown in the operation tab of the faceplate is effective.

Setting the control module out of service underlies a [security classification](#), [page 89](#). The default configuration is *tune*. It also triggers the display of an abnormal state, [page 46](#) on the tab and on the symbol.

Analog Device Control

What's in This Part

\$ControlValveCE: Control Valves 197


\$MValvewithPosCE: Motorized Valve With Feedback..... 204

\$MotorVSCE: Devices with Variable Speed Drive 210

Overview

This part describes the master templates that provide the supervision functions for the analog device control family.

Schneider Electric provides the templates described in this document. These templates can be used in various applications to minimize engineering efforts but the use, integration, configuration, and validation of the system is the sole responsibility of the user. Said user must ensure the safety of the system as a whole by performing a safety analysis, including the resources provided by Schneider Electric through procedures that the user deems appropriate.

 **WARNING**

LOSS OF CONTROL

- Perform a Failure Mode and Effects Analysis (FMEA) of your application, and apply preventive and detective controls before implementation.
- Provide a fallback state for undesired control events or sequences.
- Provide separate or redundant control paths wherever required.
- Supply appropriate parameters, particularly for limits.
- Review the implications of transmission delays and take actions to mitigate.
- Review the implications of communication link interruptions and take actions to mitigate.
- Provide independent paths for control functions (for example, emergency stop, over-limit conditions, and fault conditions) according to the safety analysis and applicable codes, and regulations.
- Apply local accident prevention and safety regulations and guidelines. ¹
- Test each implementation of this library for proper operation before placing it into service.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

¹ For additional information, refer to NEMA ICS 1.1 (latest edition), *Safety Guidelines for the Application, Installation, and Maintenance of Solid State Control* and to NEMA ICS 7.1 (latest edition), *Safety Standards for Construction and Guide for Selection, Installation and Operation of Adjustable-Speed Drive Systems* or their equivalent governing your particular location.

\$ControlValveCE: Control Valves

What's in This Chapter

Supervision Functions	197
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Overview

This chapter describes the supervision resources and runtime services that are available for the management of control valves.

Supervision Functions

Description

Core and optional resources provide the following monitoring and operation functions:

- Main core functions encompass status monitoring, owner selection, simulation mode, position indication (current setpoint, position output, current valve position, in engineering units), and global bypassing of interlock conditions.
- Optional functions encompass a local panel and individual interlock condition management.

These functions are implemented in runtime through symbols and their associated faceplate.

Control/Supervision Relationship

Control Resources

To provide core and optional supervision functions, the *\$PSxControlValve* master template is configured to exchange data with the following control resources of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
CVALVEGP	Control valve	CValveGP_ST_DDT	<instance name>_ CValveGP_ST	Core supervision functions.
		CValveGP_CFG_DDT	<instance name>_ CValveGP_CFG	
CVALVELPGP	Local panel for controlling control valves	CValveLPGP_ST_DDT	<instance name>_ CVlvLPGP_ST	Optional supervision functions.
ILCKONGP	Interlock condition summary	ILCKGP_ST_DDT	<instance name>_ ILockOn_ST	
** Mandatory variables to be defined.				

For description of these control resources, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template prefix or in its instances. You can access the parameters from the **Attributes** page of the [object editor](#), [page 100](#).

These parameters allow you to configure core functions.

Parameter Description

This table describes the parameters of the automation object:

Parameter	Type	Default	Description
Param.EngUnits	String	%	Unit of the present value
Param.HiPV	Float	100.0	High limit for the present value
Param.LoPV	Float	0.0	Low limit for the present value
Param.ModeNormal	String	O, P, C	Specifies the normal owner modes (separated by a comma): <ul style="list-style-type: none"> O: Operator P: Program C: Cascade For example P, C.
Param.NumFormat	String	0.0	Specifies the displaying format of setpoint. For example, enter 0.00 for 2 decimal.
Param.TrendPeriodMin	Integer	0	Specifies the default trend period in minutes.

Default State Alarms

State Alarms for Control Valves

The table indicates for which attributes a state alarm is configured in the \$ControlValveCE master template and provides the default values.

Attribute	Alarm message	Priority
CValve.St.Alarm	Position Failure	500
CValve.St.ChinFailure	Input Channel Failure	500
CValve.St.ChoutFailure	Output Channel Failure	500
CValve.St.Fail	Device Failure	500

NOTE: You can modify the configuration from the **Attributes** page.

Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a general description, page 46 of the graphic elements and element styles that are used in symbols.

Three-Way Valve Symbol Naming Convention

For three-way control valve symbols, the naming convention is as follows:

Valve type_Valve orientation_Inlet position_Port normally open.

For example, *V3V_Horiz_Left_Down* means:

- Three-way valve.
- Shown horizontally.
- Inlet positioned left-hand side.
- The down port is normally open.

Using Limit Switches with Control Valves

You can configure the control valve object to monitor limit switches. By default, bits 11 and 12 of the CVALVE_ST.STW status word are used. These are parameters *ZSLPOS* and *ZSHPOS* respectively.

In such case, the symbol:

- Uses the *over-range* element style to show both outlet ports fully filled (open) if both limit switch signals are true.
- Shows either outlet port fully filled (open) when the corresponding limit switch signal is true, independently of the actual valve position. For example, if *ZSLPOS* for a *V3V_Horiz_Left_Down* symbol is true, the down port (normally open) is shown fully filled (open) even if *PV* indicates 25%. In this case, the down port would normally be shown 75% filled.

Two-Way Valve Symbol Graphic Convention

For operator convenience, the graphic convention for two-way control valve symbols indicates the limit switch signals.

Both valve ports are filled depending on the signals transmitted by the limit switches:

- If *ZSLPOS* is true (closed state), the valve ports are shown not filled (white).
- If *ZSHPOS* is true (open state), both valve ports are shown fully filled.
- If there is no limit switch signal or if both signals are true, both valve ports are shown fully filled (open state).

NOTE: The valve position is indicated by the bar graph and the numerical value.

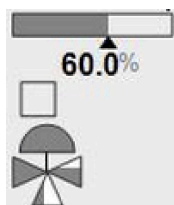
Three-Way Valve Symbol Graphic Convention

For operator convenience, the graphic convention for three-way control valve symbols is as follows:

- The inlet is shown fully filled independently of the position of the valve.

- The area of the outlets that is shown filled gives an indication of the position of the valve. The filled area shows approximately how much each port is open.

The example shows a *V3V_Horiz_Left_Down* symbol representing a three-way valve with a position 60% open. The normally open *Down* port is shown 40% filled (40% open) and the normally closed *Right* port 60% filled (60% open).



Representation

In addition to icons, symbols display:

- The label.
- The trend client icon to open the trends faceplate.
- A bar graph showing the present valve position.
- The value of the present valve position with engineering units.
- States, shown in a square, page 48.
- The owner mode if it is detected as an abnormal situation, page 46.

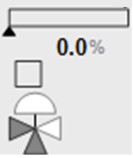
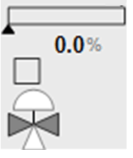
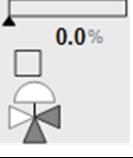
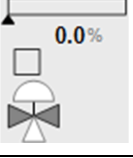
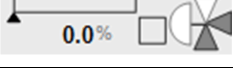
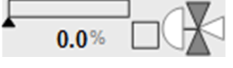
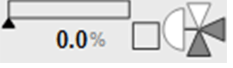
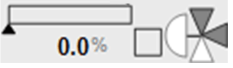
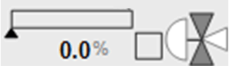
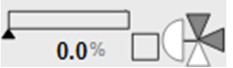
The table describes the symbols that are included in the *\$Control/ValveCE* master template to display data of two-way control valves during operation.

Name	Graphic symbol	Description
V2V_Horiz		Horizontal two-way valve
V2V_Vert_Left		Vertical two-way valve
V2V_Vert_Right		Vertical two-way valve
Label	PSxLabel	Displays the ObjectTagName , StaticText and CustomPropertyLabel .

NOTE:

The table describes the symbols that are included in the *\$Control/ValveCE* master template to display data of three-way control valves during operation.

Name	Graphic symbol
V3V_Horiz_Down_Left	
V3V_Horiz_Down_Right	

Name	Graphic symbol
V3V_Horiz_Left_Down	
V3V_Horiz_Left_Right	
V3V_Horiz_Right_Down	
V3V_Horiz_Right_Left	
V3V_Vert_Down_Right	
V3V_Vert_Down_Up	
V3V_Vert_Right_Down	
V3V_Vert_Right_Up	
V3V_Vert_Up_Down	
V3V_Vert_Up_Right	

Faceplates

Overview

During operation, clicking the graphic symbol opens a faceplate with the following tabs:

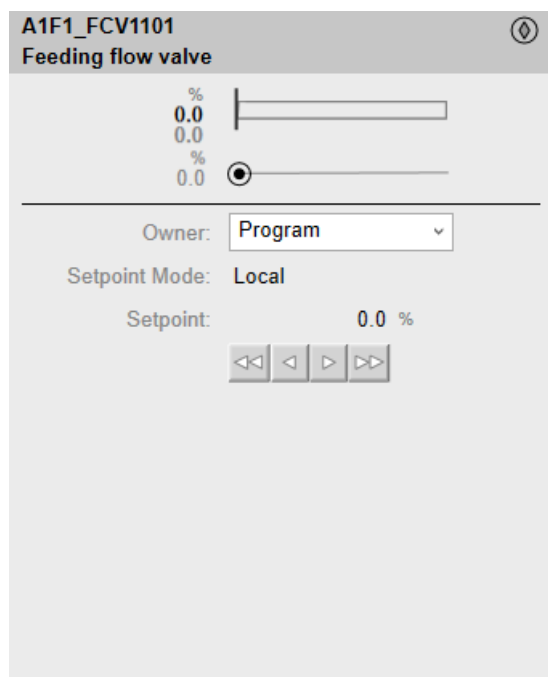
- Standard tabs:
 - Operation with optional local panel, page 64
 - Engineering
 - Alarms, page 75

- Optional tabs:
 - Interlocks, page 65
 - Failures, page 68
 - Maintenance, page 70





NOTE: The master template also features the trends faceplate.

Operation Tab

The figure shows an example of the **Operation** tab.

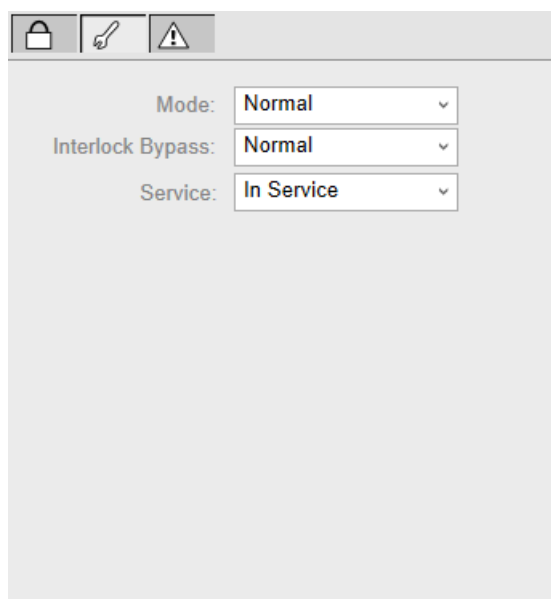


This table describes the **SetPoint** button functions in **Operator** owner mode:

Button	Description
	Large decrement of the setpoint value (-5)
	Small decrement of the setpoint value (-1)
	Small increment of the setpoint value (+1)
	Large increment of the setpoint value (+5)

Engineering Tab

The figure shows an example of the **Engineering** tab.



NOTE: This tab features the **Interlock Bypass** menu, which allows bypassing interlocks globally.

When the control module is reset, the current setpoint that is shown in the operation tab of the faceplate is effective.

Bypassing interlocks by selecting **Bypass** underlies a security classification, page 89. The default configuration is *verified write*. It also triggers the display of an abnormal state, page 46 on the tab and on the symbol.

\$MValvewithPosCE: Motorized Valve With Feedback

What's in This Chapter

Supervision Functions	204
Control/Supervision Relationship	204
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Faceplates	207

Overview

This chapter describes the supervision resources and runtime services that are available for the management of motorized valves with feedback.

Supervision Functions

Description

Core and optional resources provide the following monitoring and operation functions:

- Main core functions encompass status monitoring, owner selection, three-step controller functions, resetting, and global bypassing of interlock conditions.
- Optional functions encompass a local panel, individual interlock condition and diagnostic information management, tracking of operating hours and switching operations.

These functions are implemented in runtime through symbols and their associated faceplate.

NOTE: The motorized valve template includes four contained objects:

- *\$MValvewithPosCE.AI*: analog input management (a derived template of *\$AnalogInputCE*, page 112 with alarms disabled and the parameter *Param.ContainerDesc* enabled)
- *\$MValveCE.M2*: motor management (a derived template of *\$Motor2DirCE*, page 171 with interlock and detected failure conditions enabled by default, and the parameter *Param.ContainerDesc* enabled)
- *\$MValveCE.ZSH*: high limit switch management (a derived template of *\$DigitalInputCE*, page 124 with the parameter *Param.ContainerDesc* enabled)
- *\$MValveCE.ZSL*: low limit switch management (a derived template of *\$DigitalInputCE*, page 124 with the parameter *Param.ContainerDesc* enabled)

Control/Supervision Relationship

Control Resources

To provide core and optional supervision functions, the *\$PSxMotorizedValve* master template is configured to exchange data with the following control resources of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
MVALVEGP	Motorized valve without feedback logic	MValveGP_ST_DDT	<instance name>_MValveGP_ST	Core supervision functions.
		MValveGP_CFG_DDT	<instance name>_MValveGP_CFG	
MVALVELPGP	Local panel for controlling motorized valves	MValveLPGP_ST_DDT	<instance name>_MVlvLPGP_ST	Optional supervision functions.
DEVMTGTP	On/off device maintenance	DevMNTGP_ST_DDT	<instance name>_VLVMNTGP_ST	
ILCKONGP	Interlock condition summary	ILCKGP_ST_DDT	<instance name>_ILockOn_ST	
CONDSUMGP	Detected failure condition summary.	CondsumGP_ST_DDT	<instance name>_Condsum_ST	
** Mandatory variables to be defined.				

For description of these control resources, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the *object editor*, page 100.

These parameters allow you to configure core functions.

Parameter Description

The tables describe the parameters that are defined as part of the *\$MValvewithPosCE* master template attributes.

Parameter	Data type	Initial value	Description
Param.EngUnits	String	%	Unit of the present value
Param.HiPV	Float	100.0	High limit for the present value.
Param.LoPV	Float	0.0	Low limit for the present value.
Param.ModeNormal	String	O, P, C	Specifies the normal owner modes (separated by a comma): <ul style="list-style-type: none"> O: Operator P: Program C: Cascade For example P, C.
Param.NumFormat	String	0.0	Specifies the displaying format of setpoint. For example, enter 0.00 for 2 decimal.

Name	Data type	Initial value	Description
Param. FailureRearmCon- firmation	Boolean	True	<p><i>False</i> = After you click the Reset button on the faceplate during operation and have successfully validated the command according to the configured security classification, resets the control logic with no additional confirmation being required.</p> <p><i>True</i> = After you click the Reset button on the faceplate during operation, displays a dialog box, which requires that you confirm the reset command. The control logic is reset only by clicking OK and validating the command according to the configured security classification. By default, the security classification is <i>secured write</i>.</p>
Param. IlckRearmConfir- mation	Boolean	False	<p>When manual resetting of interlock conditions is enabled:</p> <ul style="list-style-type: none"> <i>False</i> = After you click the Reset button on the faceplate during operation and have successfully validated the command according to the configured security classification, resets the control logic with no additional confirmation being required. <i>True</i> = After you click the Reset button on the faceplate during operation, displays a dialog box, which requires that you confirm the reset command. The control logic is reset only by clicking OK and validating the command according to the configured security classification. By default, the security classification is <i>secured write</i>.

Default State Alarms

State Alarms for Motorized Valves

The table indicates for which attributes a state alarm is configured in the \$MValvewithPosCE master template and provides the default values.

Attribute	Alarm message	Priority
MValve.St.Alarm	Auxiliary Device Fail	999
MValve.St.PMIS	Position Mismatch	999
MValve.AO.PosFail	Unknown Position	750
MValve.St.FaiId	Switching Operation Fault	500

NOTE: You can modify the configuration from the **Attributes** page.


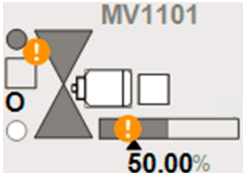
Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in symbols.

Representation

This table describes the symbols available for representing the motorized valves with feedback

Name	Graphic symbol	Description
V2V_Horiz		Horizontal bar with current value of the valve position Horizontal two-way valve
V2V_Vert		Vertical bar with current value of the valve position Vertical two-way valve
Label	PSxLabel	Displays the ObjectTagName , StaticText and CustomPropertyLabel .

NOTE: The motorized valve symbol is composed of five symbols:

- Valve
- Analog input
- Motor
- High limit switch
- Low limit switch

Navigation to display the related faceplate of contained objects analog input, motor and limit switches are provided on main faceplate of motorised valves with feedback.

Faceplates

Overview

During operation, clicking the graphic symbol opens a faceplate with the following tabs:

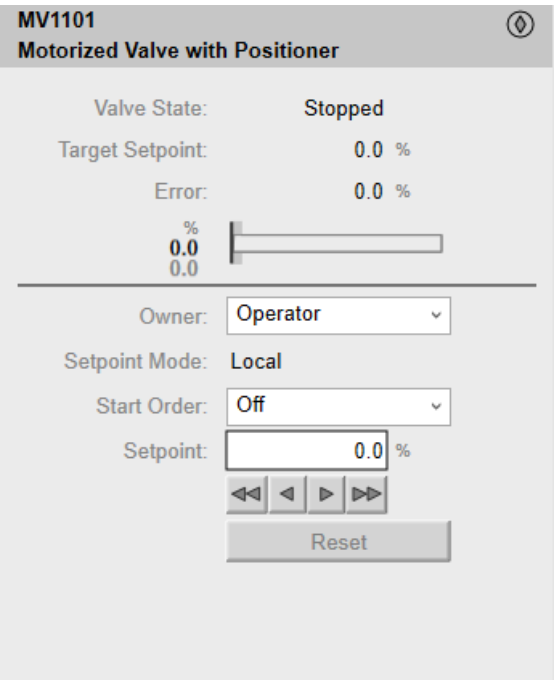
- Standard tabs:
 - Operation with optional local panel, page 64
 - Engineering
 - Alarms, page 75
- Optional tabs:
 - Failures, page 68
 - Maintenance, page 70

NOTE: Navigation to display the related faceplate of contained objects analog input, motor and limit switches are provided on main faceplate of motorised valves with feedback.

NOTE: The master template also features the trends faceplate.

Operation Tab

The figure shows an example of the **Operation** tab.



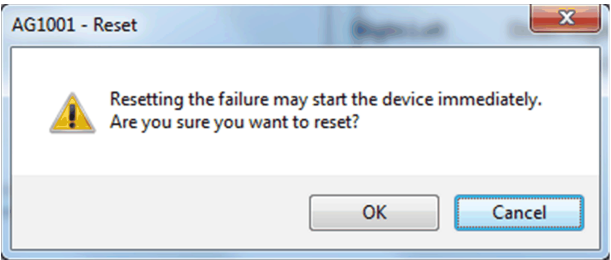
NOTE: This tab features the control module **Reset** button.

When the control module is reset, the current setpoint that is shown in this tab is effective.

By default, when you click **Reset**, a dialog box opens, which requires that you confirm the command for the reset of the control module to take effect.

Refer to *Parameters* in this chapter for a description of the *Param. FailureRearmConfirmation* parameter, which allows you to configure the reset confirmation.



The figure shows the confirmation dialog box which is model in nature.





Resetting the control module by clicking **OK** underlies a security classification, page 89. The default configuration is *secured write*.

When the reset confirmation dialog box is enabled, the security classification that normally applies when you click **Reset** is not effective.

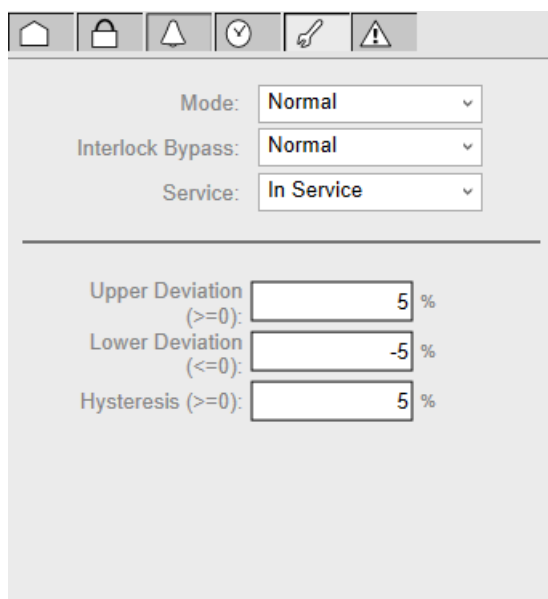
This table describes the **SetPoint** button functions in **Operator** owner mode:

Button	Description
	Large decrement of the setpoint value (-5)
	Small decrement of the setpoint value (-1)

Button	Description
	Small increment of the setpoint value (+1)
	Large increment of the setpoint value (+5)

Engineering Tab

The figure shows an example of the **Engineering** tab.



NOTE: This tab features the **Simulation** menu, which allows setting the control module to simulation mode.

In addition, the tab may feature another menu or text field, which allows you to configure the state or value to be simulated.

Enabling the simulation mode underlies a [security classification](#), [page 89](#). The default configuration is *tune*. It also triggers the display of an abnormal state, [page 46](#) on the tab and on the symbol.

NOTE: This tab features the **Interlock Bypass** menu, which allows bypassing interlocks globally.

When the control module is reset, the current setpoint that is shown in the operation tab of the faceplate is effective.

Bypassing interlocks by selecting **Bypass** underlies a [security classification](#), [page 89](#). The default configuration is *verified write*. It also triggers the display of an abnormal state, [page 46](#) on the tab and on the symbol.

NOTE: This tab features the **Service** menu, which allows setting the control module out of service.

When the control menu is set back into service by selecting **In Service** in the **Service** menu, the current setpoint that is shown in the operation tab of the faceplate is effective.

Setting the control module out of service underlies a [security classification](#), [page 89](#). The default configuration is *tune*. It also triggers the display of an abnormal state, [page 46](#) on the tab and on the symbol.

\$MotorVSCE: Devices with Variable Speed Drive

What's in This Chapter

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Overview

This chapter describes the supervision resources and runtime services that are available for the management of devices with variable speed drive.

Supervision Functions

Description

Core and optional resources provide the following monitoring and operation functions:

- Main core functions encompass status monitoring, owner selection, simulation mode, motor operation indication, multispeed setpoints, resetting, and global bypassing of interlock conditions.
- Optional functions encompass a local panel, individual interlock condition and diagnostic information management, tracking of operating hours, and switching operations.

These functions are implemented in runtime through symbols and their associated faceplate.

Control/Supervision Relationship

Control Resources

To provide core and optional supervision functions, the *\$PSxMotorVS* master template is configured to exchange data with the following control resources of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
MOTORVSGP	Device with variable speed drive logic	MotorVSGP_ST_DDT	<instance name>_ MotorVSGP_ST	Core supervision functions.
		MotorVSGP_ST_CFG	<instance name>_ MotorVSGP_CFG	
MOTORVSLPGP	Local panel for controlling devices with variable speed drive	MotorVSLPGP_ST_DDT	<instance name>_ MVSLPGP_ST	Optional supervision functions.
ILCKONGP	Forward interlock condition.	ILCKGP_ST_DDT	<instance name>_ FWDILCKGP_ST	
	Reverse interlock condition.		<instance name>_ REVILCKGP_ST	
DEVMNTGP	On/off device maintenance.	DevMNTGP_ST_DDT	<instance name>_ MotMNTGP_ST	

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
CONDSUMGP	Detected failure condition summary.	CondsuGP_ST_DDT	<instance name>_ Condsu_ST	
** Mandatory variables to be defined.				

For description of these control resources, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the *object editor*, page 100.

These parameters allow you to configure core functions.

Parameter Description

The tables describe the parameters that are defined as part of the *\$MotorVSCE* master template attributes.

Parameter	Data type	Initial value	Description
Param.EngUnits	String	%	Unit of present value (PV) and setpoint (SP)
Param.EngUnitsOP	String	%	Unit of output value (OP)
Param.HiOP	Float	100.0	High limit for output value (OP)
Param.HiPV	Float	100.0	High limit for present value (PV)
Param.LoOP	Float	0.0	Low limit for output value (OP)
Param.LoPV	Float	0.0	Low limit for present value (PV)
Param.ModeNormal	String	O, P, C	Specifies the normal owner modes (separated by a comma): <ul style="list-style-type: none"> O: Operator P: Program C: Cascade For example P, C.
Param.NumFormat	String	0.0	Specifies the displaying format of present value (PV). For example, enter 0.00 for 2 decimal.
Param.NumFormatOP	String	0.0	Specifies the displaying format of output value (OP). For example, enter 0.00 for 2 decimal.

Name	Data type	Initial value	Description
Param. FailureRearmCon- firmation	Boolean	True	<p><i>False</i> = After you click the Reset button on the faceplate during operation and have successfully validated the command according to the configured security classification, resets the control logic with no additional confirmation being required.</p> <p><i>True</i> = After you click the Reset button on the faceplate during operation, displays a dialog box, which requires that you confirm the reset command. The control logic is reset only by clicking OK and validating the command according to the configured security classification. By default, the security classification is <i>secured write</i>.</p>
Param. IlckRearmConfir- mation	Boolean	False	<p>When manual resetting of interlock conditions is enabled:</p> <ul style="list-style-type: none"> <i>False</i> = After you click the Reset button on the faceplate during operation and have successfully validated the command according to the configured security classification, resets the control logic with no additional confirmation being required. <i>True</i> = After you click the Reset button on the faceplate during operation, displays a dialog box, which requires that you confirm the reset command. The control logic is reset only by clicking OK and validating the command according to the configured security classification. By default, the security classification is <i>secured write</i>.

Default State Alarms

State Alarms for Variable Speed Drives

The table indicates for which attributes a state alarm is configured in the \$MotorVSCE master template and provides the default values.

Attribute	Alarm message	Priority
<i>SDDevctl.St.Alarm</i>	<i>Confirmation Failure</i>	500
<i>SDDevctl.St.FaiId</i>	<i>Device Failure</i>	500

NOTE: You can modify the configuration from the **Attributes** page.



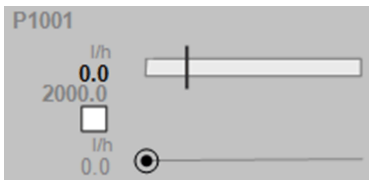


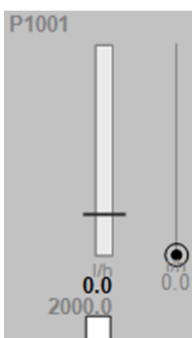
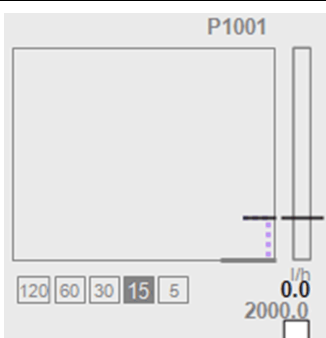
Graphic Representation

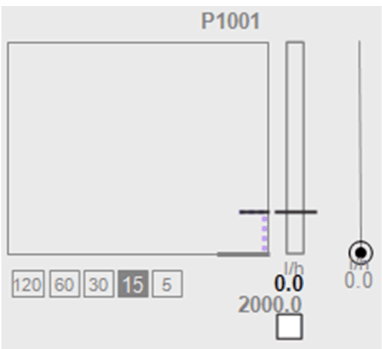
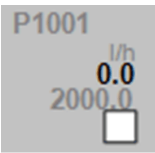
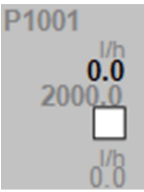
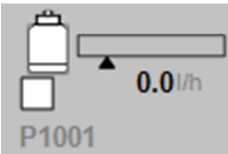


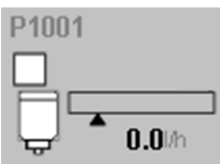

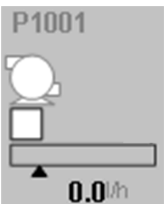
Representation of Supervision Data

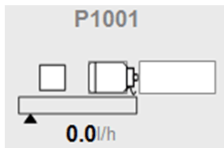
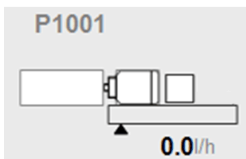
At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in symbols.

Representation

This table describes the symbols available for representing the devices with variable speed drive:

Name	Graphic symbol	Description
Bar_Horz_OP		Horizontal bar with output (OP) of motor with speed driver
Bar_Horz_PV_SP		Horizontal bar with present value (PV) and setpoint (SP) of motor with speed driver
Bar_Horz_PV_SP_OP		Horizontal bar with present value (PV), setpoint (SP), and output (OP) of motor with speed driver
Bar_Vert_OP		Vertical bar with output (OP) of motor with speed driver
Bar_Vert_PV_SP		Vertical bar with present value (PV) and setpoint (SP) of motor with speed driver
Bar_Vert_PV_SP_OP		Vertical bar with present value (PV), setpoint (SP), and output (OP) of motor with speed driver
Bar_Vert_PV_SP_Trend		Vertical bar and trend with present value (PV) and setpoint (SP) of motor with speed driver

Name	Graphic symbol	Description
Bar_Vert_PV_SP_OP_Trend		Vertical bar and trend with present value (PV), setpoint (SP), and output (OP) of motor with speed driver
Display_PV_SP		Display with present value (PV) and setpoint (SP) of motor with speed driver
Display_PV_SP_OP		Display with present value (PV), setpoint (SP), and output (OP) of motor with speed driver
Motor_Down		Down vertical motor and horizontal bar with present value (PV)
Motor_Left		Left horizontal motor and horizontal bar with present value (PV)
Motor_Right		Right horizontal motor and horizontal bar with present value (PV)
Motor_Up		Up vertical motor and horizontal bar with present value (PV)
Pump_Left		Left pump and horizontal bar with present value (PV)
Pump_Right		Right pump and horizontal bar with present value (PV)

Name	Graphic symbol	Description
<i>ScrewPump_Left</i>		Screw pump left
<i>ScrewPump_Right</i>		Screw pump right
<i>Label</i>	PSxLabel	Displays the ObjectTagName , StaticText and CustomPropertyLabel .

NOTE: Based on screw pump application, its symbol is available only for forward direction.

Faceplates

Overview

During operation, clicking the graphic symbol opens a faceplate with the following tabs:

- Standard tabs:
 - Operation with optional local panel, page 64
 - Engineering
 - Alarms, page 75
- Optional tabs:
 - Interlocks, page 65
 - Failures, page 68
 - Maintenance, page 70

NOTE: The master template also features the trends faceplate.

Operation Tab

The figure shows an example of the **Operation** tab.

MV1101
Motorized Valve with Positioner

Valve State: Stopped

Target Setpoint: 0.0 %

Error: 0.0 %

%
0.0
0.0

Owner: Operator

Setpoint Mode: Local

Start Order: Off

Setpoint: 0.0 %

Navigation buttons: << < > >>

Reset

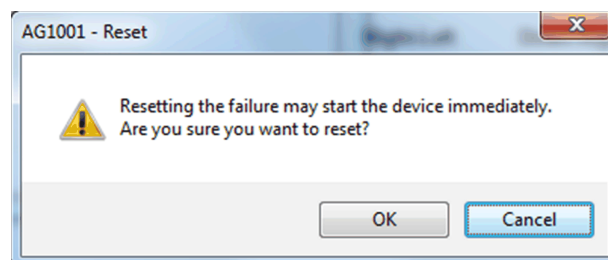
NOTE: This tab features the control module **Reset** button.

When the control module is reset, the current setpoint that is shown in this tab is effective.

By default, when you click **Reset**, a dialog box opens, which requires that you confirm the command for the reset of the control module to take effect.

Refer to *Parameters* in this chapter for a description of the *Param. FailureRearmConfirmation* parameter, which allows you to configure the reset confirmation.

The figure shows the confirmation dialog box which is model in nature.



Resetting the control module by clicking **OK** underlies a security classification, page 89. The default configuration is *secured write*.

When the reset confirmation dialog box is enabled, the security classification that normally applies when you click **Reset** is not effective.

Engineering Tab

The figure shows an example of the **Engineering** tab.

Mode: Normal

Interlock Bypass: Normal

Service: In Service

Upper Deviation (≥ 0): 5 %

Lower Deviation (≤ 0): -5 %

Hysteresis (≥ 0): 5 %

⚠ WARNING

LOSS OF CONTROL AND UNINTENDED EQUIPMENT OPERATION

Before switching the monitored device back into service:

- Verify the current setpoint of the monitored device.
- Confirm the current status of the process.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

NOTE: This tab features the **Simulation** menu, which allows setting the control module to simulation mode.

In addition, the tab may feature another menu or text field, which allows you to configure the state or value to be simulated.

Enabling the simulation mode underlies a [security classification](#), [page 89](#). The default configuration is *tune*. It also triggers the display of an abnormal state, [page 46](#) on the tab and on the symbol.

NOTE: This tab features the **Interlock Bypass** menu, which allows bypassing interlocks globally.

When the control module is reset, the current setpoint that is shown in the operation tab of the faceplate is effective.

Bypassing interlocks by selecting **Bypass** underlies a [security classification](#), [page 89](#). The default configuration is *verified write*. It also triggers the display of an abnormal state, [page 46](#) on the tab and on the symbol.

NOTE: This tab features the **Service** menu, which allows setting the control module out of service.

When the control menu is set back into service by selecting **In Service** in the **Service** menu, the current setpoint that is shown in the operation tab of the faceplate is effective.

Setting the control module out of service underlies a [security classification](#), [page 89](#). The default configuration is *tune*. It also triggers the display of an abnormal state, [page 46](#) on the tab and on the symbol.

Process Control


What's in This Part

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\$LeadLagCE: Lead Lag Controllers	226
\$PIDCE: PID Controllers	231
\$PWMCtlCE: Pulse-Width Modulation Controllers	235
\$RampCE: Ramps	239
\$RatioCtrlCE: Ratio Controllers	243
\$SplitRangeCE: Split Range Controllers	248
\$Step3CtlCE: Three-Step Controllers/Positioners	252

Overview

This part describes the master templates that provide the supervision functions for the process control family.

Schneider Electric provides the templates described in this document. These templates can be used in various applications to minimize engineering efforts but the use, integration, configuration, and validation of the system is the sole responsibility of the user. Said user must ensure the safety of the system as a whole by performing a safety analysis, including the resources provided by Schneider Electric through procedures that the user deems appropriate.

 **WARNING**

LOSS OF CONTROL

- Perform a Failure Mode and Effects Analysis (FMEA) of your application, and apply preventive and detective controls before implementation.
- Provide a fallback state for undesired control events or sequences.
- Provide separate or redundant control paths wherever required.
- Supply appropriate parameters, particularly for limits.
- Review the implications of transmission delays and take actions to mitigate.
- Review the implications of communication link interruptions and take actions to mitigate.
- Provide independent paths for control functions (for example, emergency stop, over-limit conditions, and fault conditions) according to the safety analysis and applicable codes, and regulations.
- Apply local accident prevention and safety regulations and guidelines. ¹
- Test each implementation of this library for proper operation before placing it into service.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

¹ For additional information, refer to NEMA ICS 1.1 (latest edition), *Safety Guidelines for the Application, Installation, and Maintenance of Solid State Control* and to NEMA ICS 7.1 (latest edition), *Safety Standards for Construction and Guide for Selection, Installation and Operation of Adjustable-Speed Drive Systems* or their equivalent governing your particular location.

\$IMCTLCE: Internal Model Controllers

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Overview

This chapter describes the *\$IMCTLCE* master template, which contains supervision resources to monitor and operate internal model controllers (IMCs).

Supervision Functions

Description

The *\$IMCTLCE* master template provides the following monitoring and operation functions:

- Core functions:
 - Status monitoring.
 - Owner selection.
 - Setpoint management: IMC tuning and action.
 - IMC operation indication.
 - Global bypassing of interlock conditions.
- Optional functions:
 - Viewing, bypassing, and resetting of individual interlock conditions.

During operation, these functions are implemented by instances through symbols and their associated faceplate.

NOTE: You can modify the default configuration in the corresponding configuration pages, page 87.

Control/Supervision Relationship

Control Resources

To provide core and optional supervision functions, the *\$PSx/MCtI* master template is configured to exchange data with the following control resources of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
IMCTLGP	IMC logic.	IMCTLGP_ST	<instance name>_ IMCTL_ST	Core supervision functions.
		IMCTLGP_CFG	<instance name>_ IMCTL_CFG	
ILCKONGP	Interlock condition summary.	ILCKGP_ST_DDT	<instance name>_ ILlockOn_ST	Optional supervision functions.
** Mandatory variables to be defined.				

For description of these control resources, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the [object editor](#), page 100.

These parameters allow you to configure core functions.

Parameter Description

The table describes the parameters that are defined as part of the \$IMCTLCE master template attributes.

Name	Data type	Initial value	Description
Param.EngUnits	String	%	Defines the unit of inputs and parameters.
Param.EngUnitsOP	String	%	Defines the unit of outputs.
Param.HiOP	Float	100.0	Highest value that the controller can output.
Param.HiPV	Float	100.0	Highest value that the controller accepts as setpoint.
Param.LoOP	Float	0.0	Lowest value that the controller can output.
Param.LoPV	Float	0.0	Lowest value that the controller accepts as setpoint.
Param. LoopModeNormal	String	A, M	Specifies the operating mode of the IMC (separated by a comma): <ul style="list-style-type: none"> A: Automatic M: Manual
Param.ModeNormal	String	O, P, C	Specifies the normal owner modes (separated by a comma): <ul style="list-style-type: none"> O: Operator P: Program C: Cascade For example P, C.
Param.NumFormat	String	0.0	Specifies the display format of values. For example, enter 0.00 to display 2 decimals.

Name	Data type	Initial value	Description
Param. NumFormatOP	String	0.0	Specifies the display format of the <i>OP</i> variable. For example, enter <i>0.00</i> to display 2 decimals.
Param. TrendPeriodMin	Integer	0	Refer to the description of this parameter that is documented for <i>\$AnalogInputCE</i> .

Default State Alarms

State Alarms for IMC

No state alarm is configured by default for the *\$IMCTLCE* master template.

NOTE: You can modify the configuration from the **Attributes** page.



Graphic Representation

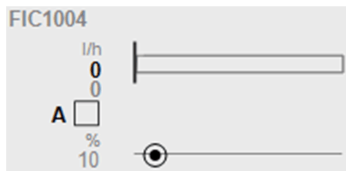


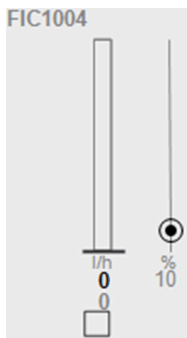
Representation of Supervision Data

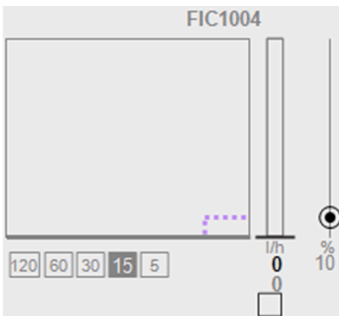
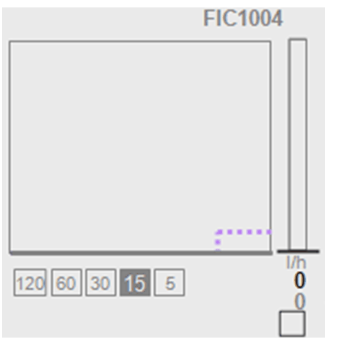

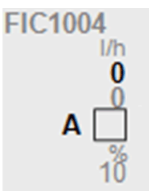
At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in symbols.

Representation

The table describes the symbols that are included in the *\$IMCTLCE* master template to display data of IMCs during operation.

Name	Graphic symbol	Description
Bar_Horz_OP		In addition to icons, displays: <ul style="list-style-type: none"> The label. Engineering units. The output value. A horizontal line with configured high and low limits showing the relative position of the output.
Bar_Horz_PV_SP		In addition to icons, displays (from top to bottom): <ul style="list-style-type: none"> The label. Engineering units. The present value. The setpoint value. States. To the right, a horizontal bar showing the setpoint and the present value.

Name	Graphic symbol	Description
Bar_Hor_PV_SP_OP	 <p>The graphic symbol for FIC1004 displays a horizontal bar chart. On the left, the label 'FIC1004' is shown. Below it, the units 'l/h' are displayed above the number '0'. To the left of the bar, a square box contains the letter 'A'. Below the bar, the percentage '%' is displayed above the number '10'. The bar itself has a vertical line indicating the setpoint (SP) and a dot indicating the present value (PV). Below the bar, a horizontal line with vertical end-caps represents the high and low limits, with a dot indicating the relative position of the output (OP).</p>	<p>In addition to icons, displays (from top to bottom):</p> <ul style="list-style-type: none"> The label. Engineering units. The present value. The setpoint value. States. To the right, a horizontal bar showing the setpoint and the present value. Below the bar, a horizontal line with configured high and low limits showing the relative position of the output. <p>Engineering units and value of the output are displayed to the left of the line.</p>
Bar_Vert_OP	 <p>The graphic symbol for FIC1004 displays a vertical bar chart. On the left, the label 'FIC1004' is shown. Below it, the units 'l/h' are displayed above the number '0'. To the left of the bar, a square box contains the letter 'A'. Below the bar, the percentage '%' is displayed above the number '10'. The bar itself has a vertical line indicating the setpoint (SP) and a dot indicating the present value (PV). Below the bar, a horizontal line with vertical end-caps represents the high and low limits, with a dot indicating the relative position of the output (OP).</p>	<p>In addition to icons, displays:</p> <ul style="list-style-type: none"> The label. A vertical line with configured high and low limits showing the relative position of the output. Engineering units. The output value.
Bar_Vert_PV_SP	 <p>The graphic symbol for FIC1004 displays a vertical bar chart. On the left, the label 'FIC1004' is shown. Below it, the units 'l/h' are displayed above the number '0'. To the left of the bar, a square box contains the letter 'A'. Below the bar, the percentage '%' is displayed above the number '10'. The bar itself has a vertical line indicating the setpoint (SP) and a dot indicating the present value (PV). Below the bar, a horizontal line with vertical end-caps represents the high and low limits, with a dot indicating the relative position of the output (OP).</p>	<p>In addition to icons, displays (from top to bottom):</p> <ul style="list-style-type: none"> The label. A vertical bar showing the setpoint and the present value. Engineering units. The present value. The setpoint value.
Bar_Vert_PV_SP_OP	 <p>The graphic symbol for FIC1004 displays a vertical bar chart. On the left, the label 'FIC1004' is shown. Below it, the units 'l/h' are displayed above the number '0'. To the left of the bar, a square box contains the letter 'A'. Below the bar, the percentage '%' is displayed above the number '10'. The bar itself has a vertical line indicating the setpoint (SP) and a dot indicating the present value (PV). Below the bar, a horizontal line with vertical end-caps represents the high and low limits, with a dot indicating the relative position of the output (OP).</p>	<p>In addition to icons, displays (from top to bottom):</p> <ul style="list-style-type: none"> The label. A vertical bar showing the setpoint and the present value. Engineering units. The present value. The setpoint value. States. To the right of the bar, a vertical line with configured high and low limits showing the relative position of the output. <p>Engineering units and value of the output are displayed below the line.</p>

Name	Graphic symbol	Description
Bar_Vert_PV_SP_OP_Trend		Displays in addition to data of <i>Bar_Vert_PV_SP_OP</i> , a trend panel with configurable trend period in minutes. Refer to the description of the <i>Param.TrendPeriodMin</i> parameter.
Bar_Vert_PV_SP_Trend		Displays in addition to data of <i>Bar_Vert_PV_SP</i> , a trend panel with configurable trend period in minutes. Refer to the description of the <i>Param.TrendPeriodMin</i> parameter.
Display_PV_SP		In addition to icons, displays (from top to bottom): <ul style="list-style-type: none"> The label. Engineering units. The present value.
Display_PV_SP_OP		In addition to icons, displays (from top to bottom): <ul style="list-style-type: none"> The label. Engineering units. The present value. The setpoint value. States. Engineering units and value of the output.
Label	PSxLabel	Displays the ObjectTagName , StaticText and CustomPropertyLabel .

Faceplates

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in faceplates.

Available Tabs

During operation, clicking an IMC symbol opens a faceplate with the following tabs:

- Tabs for core functions:
 - Operation
 - Engineering
 - Alarms, page 75
- Tabs for optional functions, which appear only if configured:
 - Interlocks, page 65

NOTE: The master template also features the trends faceplate.

Operation Tab

The figure shows an example of the **Operation** tab.

The screenshot shows the 'IMC' (Internal Model Controller) interface. At the top, it displays 'Current Mode: Manual'. Below this, there are three horizontal bars representing different modes, each with a value of 0.0 and a percentage sign. The first bar is for 'Manual', the second for 'Setpoint', and the third for 'Output'. The 'Manual' bar is currently selected. Below the bars, there are several settings: 'Owner: Program' (a dropdown menu), 'Setpoint Mode: Local', 'Mode: Manual' (a dropdown menu), 'Setpoint: 0.0 %', and 'Output: 0.0 %'. At the bottom, there are two limit settings: 'OP High Limit: 100.0 %' and 'OP Low Limit: 0.0 %'.

Engineering Tab

The figure shows an example of the **Engineering** tab.

The screenshot shows the 'Engineering' tab of the IMC interface. At the top, there are two icons: a lock and a pencil. Below the icons, there are several settings: 'Interlock Bypass: Normal' (a dropdown menu), 'Action: Reverse' (a dropdown menu), 'Static Gain (1/K): 10.000' (a text input field), 'Open Loop Time (Integral): 0.010 s' (a text input field), 'Integral Gain: 1.000' (a text input field), and 'Pure Delay Time: 0.010 s' (a text input field).

NOTE: This tab features the **Interlock Bypass** menu, which allows bypassing interlocks globally.

When the control module is reset, the current setpoint that is shown in the operation tab of the faceplate is effective.

Bypassing interlocks by selecting **Bypass** underlies a security classification, page 89. The default configuration is *verified write*. It also triggers the display of an abnormal state, page 46 on the tab and on the symbol.

\$LeadLagCE: Lead Lag Controllers

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Overview

This chapter describes the *\$LeadLagCE* master template, which contains supervision resources to monitor and operate lead lag controllers.

Supervision Functions

Description

The *\$LeadLagCE* master template provides the following monitoring and operation functions:

- Core functions:
 - Status monitoring.
 - Owner selection.
 - Operating mode.
 - Setpoint management: Lead-lag configuration tuning, lead-lag operation indication.
 - Global bypassing of interlock conditions.
- Optional functions:
 - Viewing, bypassing, and resetting of individual interlock conditions.

During operation, these functions are implemented by instances through symbols and their associated faceplate.

NOTE: You can modify the default configuration in the corresponding configuration pages, page 87.

Control/Supervision Relationship

Control Resources

To provide core and optional supervision functions, the *\$PSxLeadLagCtl* master template is configured to exchange data with the following control resources of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
LDLGCTLGP	lead lag controller logic.	LDLGCTLGP_ST_DDT	<instance name>_ LDLGCTLGP_ST	Core supervision functions.
		LDLGCTLGP_CFG_DDT	<instance name>_ LDLGCTLGP_CFG	
ILCKONGP	Interlock condition summary.	ILCKGP_ST_DDT	<instance name>_ ILockOn_ST	Optional supervision functions.
** Mandatory variables to be defined.				

For description of these control resources, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the [object editor](#), page 100.

These parameters allow you to configure core functions.

Parameter Description

The table describes the parameters that are defined as part of the *\$LeadLagCE* master template attributes.

Name	Data type	Initial value	Description
Param.EngUnits	String	%	Indicates the unit of inputs and parameters.
Param.EngUnitsOP	String	%	Indicates the unit of outputs.
Param.HiOP	Float	100.0	Highest value that the controller can output.
Param.HiSP	Float	100.0	Highest value that the controller accepts as setpoint.
Param.LoOP	Float	0.0	Lowest value that the controller can output.
Param.LoSP	Float	0.0	Lowest value that the controller accepts as setpoint.
Param. LoopModeNormal	String	A,M	Specifies the normal loop operating mode of the lead lag controller (separated by a comma): <ul style="list-style-type: none"> A: Automatic M: Manual
Param.ModeNormal	String	O,P,C	Specifies the normal owner modes (separated by a comma): <ul style="list-style-type: none"> O: Operator P: Program C: Cascade For example P,C.
Param.NumFormat	String	0.0	Specifies the display format of values. For example, enter 0.00 to display 2 decimals.

Name	Data type	Initial value	Description
Param. NumFormatOP	String	0.0	Specifies the display format of the <i>OP</i> variable. For example, enter <i>0.00</i> to display 2 decimals.
Param. TrendPeriodMin	Integer	0	Refer to the description of this parameter that is documented for <i>\$AnalogInputCE</i> .

Default State Alarms

State Alarms for Split Range Controllers

No state alarm is configured by default for the *\$LeadLagCE* master template.

NOTE: You can modify the configuration from the **Attributes** page.

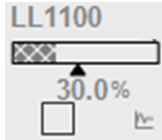
Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in symbols.

Symbol Description

The table describes the symbols that are included in the *\$LeadLagCE* master template to display data of lead lag controllers during operation.

Name	Graphic symbol	Description
Bar_Hor_SP_OP		In addition to icons, displays (from top to bottom): <ul style="list-style-type: none"> The label. A horizontal bar graph showing the setpoint and the output. The output value with engineering units.
Label	PSxLabel	Displays the ObjectTagName , StaticText and CustomPropertyLabel .

Faceplates

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in faceplates.

Available Tabs

During operation, clicking a lead lag controller symbol opens a faceplate with the following tabs:

- Tabs for core functions:
 - Operation
 - Engineering
 - Alarms, page 75
- Tabs for optional functions, which appear only if configured:
 - Interlocks, page 65

NOTE: The master template also features the trends faceplate.

Operation Tab

The figure shows an example of the **Operation** tab.

The screenshot shows the 'LeadLag' interface for a 'Leadlag Controller example'. At the top, it displays 'Current Mode: Manual' with a slider bar set to '0.0%'. Below this, there are several controls: 'Owner' is set to 'Operator' (dropdown), 'Setpoint Mode' is 'Local', 'Mode' is 'Manual' (dropdown), 'Setpoint' is '0.0 %', and 'Output' is '0.0 %'.

Engineering Tab

The figure shows an example of the **Engineering** tab.

The screenshot shows the 'Engineering' tab of the 'LeadLag' interface. It features a lock icon and an edit icon at the top. The 'Interlock Bypass' is set to 'Normal' (dropdown). Below a horizontal line, there are three input fields: 'Gain Factor' is '0.000', 'Lead/Derivative Time' is '0.000 s', and 'Lag/Delayed Time' is '0.000 s'.

NOTE: This tab features the **Interlock Bypass** menu, which allows bypassing interlocks globally.

When the control module is reset, the current setpoint that is shown in the operation tab of the faceplate is effective.

Bypassing interlocks by selecting **Bypass** underlies a security classification, page 89. The default configuration is *verified write*. It also triggers the display of an abnormal state, page 46 on the tab and on the symbol.

\$PIDCE: PID Controllers

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Overview

This chapter describes the *\$PIDCE* master template, which contains supervision resources to monitor and operate PIDFF regulators with monitoring interface.

Supervision Functions

Description

The PID controller supervision functions help you to monitor and control a PIDFF-type controller by providing the operating modes used in the other resources for process control.

The *\$PIDCE* master template provides the following monitoring and operation functions:

- Core functions:
 - Owner selection
 - PID operation monitoring
 - PID mode selection
 - Tuning
 - Forward/reverse action
 - Formula management
 - Global bypassing of interlock conditions
- Optional functions:
 - Individual interlock condition management

These functions are implemented in runtime through symbols and their associated faceplate.

Control/Supervision Relationship

Control Resources

To provide core and optional supervision functions, the *\$PSxPID* master template is configured to exchange data with the following control resources of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
PIDCTLGP	PID controller logic	PIDCTLGP_ST_DDT	<instance name>_ PIDCTLGP_ST	Core supervision functions.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
		PIDCTLGP_CFG_DDT	<instance name>_ PIDCTLGP_CFG	
ILCKONGP	Interlock condition summary.	ILCKGP_ST_DDT	<instance name>_ ILCKGP_ST	Optional supervision functions.
** Mandatory variables to be defined.				

For description of these control resources, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the object editor, page 100.

These parameters allow you to configure core functions.

Parameter Description

The table describes the parameters that are defined as part of the \$PIDCE master template attributes.

Parameter	Type	Initial value	Description
Param.EngUnits	String	%	Unit of present value (PV) and setpoint (SP)
Param.EngUnitsOP	String	%	Unit of output value (OP)
Param.HiOP	Float	100.0	High limit for output value (OP)
Param.HiPV	Float	100.0	High limit for present value (PV)
Param.LoOP	Float	0.0	Low limit for output value (OP)
Param.LoPV	Float	0.0	Low limit for present value (PV)
Param. LoopModeNormal	String	A, M	Specifies the loop normal modes (separated by a comma): <ul style="list-style-type: none"> A: Auto, regardless it is in Override mode (external output) or not M: Manual
Param.ModeNormal	String	O, P, C	Specifies the normal owner modes (separated by a comma): <ul style="list-style-type: none"> O: Operator P: Program C: Cascade For example P, C.
Param.NumFormat	String	0.0	Specifies the displaying format of present value (PV). For example, enter 0.00 for 2 decimals.

Parameter	Type	Initial value	Description
Param. NumFormatOP	String	0.0	Specifies the displaying format of output value (OP). For example, enter 0.00 for 2 decimals.
Param. TrendPeriodMin	Integer	0	Refer to the description of this parameter that is documented for <i>\$AnalogInputCE</i> .

Default State Alarms

State Alarms for PIDs

No state alarm is configured by default for the *\$PIDCE* master template.

NOTE: You can modify the configuration from the **Attributes** page.

Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a general description, page 46 of the graphic elements and element styles that are used in symbols.

Symbol Description

The symbols that are included in the *\$PIDCE* master template to display data of PIDFF regulators with monitoring interface during operation are the same as those of the *\$IMCTLCE* master template, page 221.

Faceplates

Overview

During operation, clicking the graphic symbol allows you to display a faceplate with the following tabs:

- Standard tabs:
 - Operation
 - Engineering
 - Alarms, page 75
- Optional tabs:
 - Interlocks, page 65

NOTE: The master template also features the trends faceplate.

Operation Tab

The figure shows an example of the **Operation** tab.

FIC1004
Water flow to D10 regulator - PID Control

Current Mode: **Manual**

0.0 %
0.0 %
0.0 %

Owner: **Program**

Setpoint Mode: **Local**

Mode: **Manual**

Setpoint: **0.0 %**

Output: **0.0 %**

OP High Limit: **100.0 %**

OP Low Limit: **0.0 %**

Engineering Tab

The figure shows an example of the **Engineering** tab.

Interlock Bypass: **Normal**

Action: **Reverse**

Proportional Gain: **0.050**

Integral Time: **0.000 s**

Derivative Time: **0.000 s**

Derivative Gain: **0.000**

Derivative Applied To: **Present Value**

Gain Applied To: **All Terms**

SP High Limit: **10000.0 %**

SP Low Limit: **0.0 %**

NOTE: This tab features the **Interlock Bypass** menu, which allows bypassing interlocks globally.

When the control module is reset, the current setpoint that is shown in the operation tab of the faceplate is effective.

Bypassing interlocks by selecting **Bypass** underlies a security classification, page 89. The default configuration is *verified write*. It also triggers the display of an abnormal state, page 46 on the tab and on the symbol.

\$PWMCtlCE: Pulse-Width Modulation Controllers

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Overview

This chapter describes the supervision resources and runtime services that are available for the management of pulse-width modulation controllers.

Supervision Functions

Description

Core and optional resources provide the following monitoring and operation functions:

- Main core functions encompass status monitoring, owner selection, PWM activation, setpoint management (PWM configuration), and global bypassing of interlock conditions.
- Optional functions encompass individual interlock condition management.

These functions are implemented in runtime through symbols and their associated faceplate.

Control/Supervision Relationship

Control Resources

To provide core and optional supervision functions, the *\$PSxPWM* master template is configured to exchange data with the following control resources of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
PWMCTLGP	Pulse-width modulation controller logic	PWMCTLGP_ST_DDT	<instance name>_ PWMCTLGP_ST	Core supervision functions.
		PWMCTLGP_CFG_DDT	<instance name>_ PWMCTLGP_CFG	
ILCKONGP	Interlock condition summary.	ILCKGP_ST_DDT	<instance name>_ ILockOn_ST	Optional supervision functions.
** Mandatory variables to be defined.				

For description of these control resources, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the object editor, page 100.

These parameters allow you to configure core functions.

Parameter Description

This table describes the parameters of the automation object:

Parameter	Type	Default	Description
Param.EngUnits	String	%	Unit of the setpoint value
Param.HiSP	Float	100.0	High limit for the setpoint value
Param.LoSP	Float	0.0	Low limit for the setpoint value
Param.ModeNormal	String	O, P, C	Specifies the normal owner modes (separated by a comma): <ul style="list-style-type: none"> • O: Operator • P: Program • C: Cascade For example P, C.
Param.NumFormat	String	0.0	Specifies the displaying format of values. For example, enter 0.00 for 2 decimal.

Default State Alarms

State Alarms for Pulse-Width Modulation Controllers

No state alarm is configured by default for the \$PWMCI\$CE

NOTE: You can modify the configuration from the **Attributes** page.

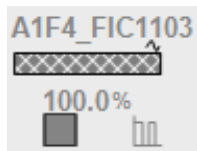

Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in symbols.

Representation

This table describes the symbols available for representing the pulse-width modulation controllers:

Name	Graphic symbol	Description
Bar_Horiz_SP		Horizontal bar with setpoint value (SP)
Label		Displays the ObjectTagName , StaticText and CustomPropertyLabel .

Faceplates

Overview

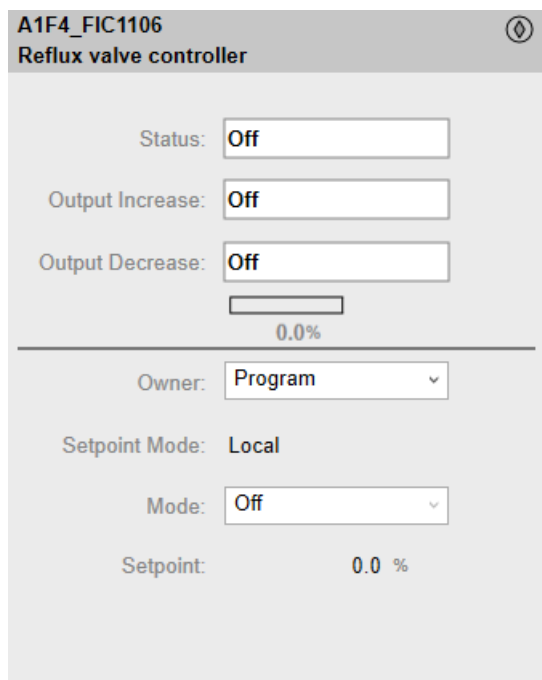
During operation, clicking the graphic symbol opens a faceplate with the following tabs:

- Standard tabs:
 - Operation
 - Engineering
 - Alarms, page 75
- Optional tabs:
 - Interlocks, page 65

NOTE: The master template also features the trends faceplate.

Operation Tab

The figure shows an example of the **Operation** tab.



A1F4_FIC1106
Reflux valve controller

Status:

Output Increase:

Output Decrease:

Owner:

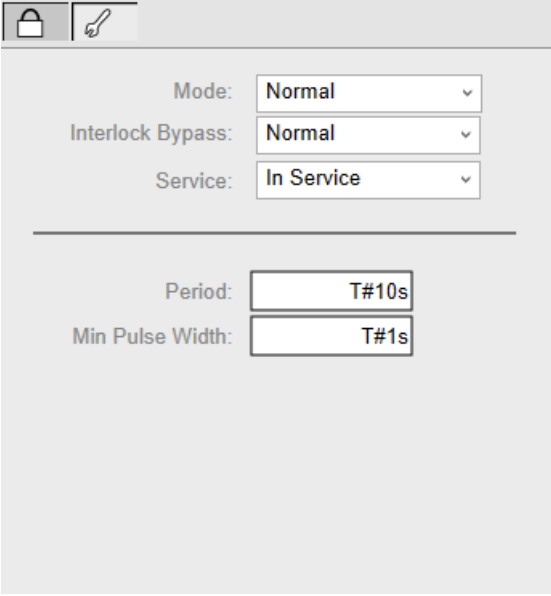
Setpoint Mode:

Mode:

Setpoint:

Engineering Tab

The figure shows an example of the **Engineering** tab.



The screenshot displays the Engineering tab interface. At the top, there are two icons: a padlock and a pencil. Below these, there are three dropdown menus: Mode (set to Normal), Interlock Bypass (set to Normal), and Service (set to In Service). A horizontal line separates these from the bottom section, which contains two input fields: Period (set to T#10s) and Min Pulse Width (set to T#1s).

NOTE: This tab features the PWM configuration data:

- Period in seconds.
- Minimum pulse width in seconds.

\$RampCE: Ramps

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Overview

This chapter describes the supervision resources and runtime services that are available for the management of ramps.

Supervision Functions

Description

Core resources provide the following monitoring and operation functions: Status monitoring, owner selection, and setpoint management (ramp activation and configuration).

These functions are implemented in runtime through symbols and their associated faceplate.

Control/Supervision Relationship

Control Resources

To provide core supervision functions, the *\$PSxRamp* master template is configured to exchange data with the following control resource of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
ARAMPGP	Ramp logic	ARampGP_ST_DDT	<instance name>_ ARampGP_ST	Core supervision functions.
		ARampGP_CFG_DDT	<instance name>_ ARampGP_CFG	
** Mandatory variables to be defined.				

For description of the control resource, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived

application template or in its instances. You can access the parameters from the **Attributes** page of the object editor, page 100.

These parameters allow you to configure core functions.

Parameter Description

This table describes the parameters of the automation object:

Parameter	Type	Default	Description
Param.EngUnits	String	%	Unit of the setpoint value
Param.HiSP	Float	100.0	High limit for the setpoint value
Param.LoSP	Float	0.0	Low limit for the setpoint value
Param.ModeNormal	String	O, P, C	Specifies the normal owner modes (separated by a comma): <ul style="list-style-type: none"> O: Operator P: Program C: Cascade For example P, C.
Param.NumFormat	String	0.0	Specifies the displaying format of values. For example, enter 0.00 for 2 decimal.

Default State Alarms

State Alarms for Ramp Management

No state alarm is configured by default for the \$RampCE master template.

NOTE: You can modify the configuration from the **Attributes** page.

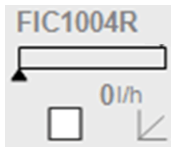

Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in symbols.

Representation

This table describes the symbols available for representing the ramps:

Name	Graphic symbol	Description
Bar_Horiz_SP_Target		Horizontal bar with setpoint (SP)
Label		Displays ObjectTagName , StaticText and CustomPropertyLabel .

Faceplates

Overview

During operation, clicking the graphic symbol allows you to display a faceplate with the following tabs:

- Standard tabs:
 - Operation
 - Engineering
 - Alarms, page 75


NOTE: The master template also features the trends faceplate.

Operation Tab

The screenshot displays the 'FIS1001 Water Dosing ramp to D10' faceplate in the 'Operation' tab. The interface includes a status indicator set to 'Inactive', a progress bar at 0.0%, and control parameters: 'Owner' set to 'Program', 'Setpoint Mode' set to 'Local', and 'Mode' set to 'Off'. The 'Target Setpoint' is displayed as 0.0 %.

Parameter	Value
Status	Inactive
Progress	0.0%
Owner	Program
Setpoint Mode	Local
Mode	Off
Target Setpoint	0.0 %

Engineering Tab



Raising Gradient:	<input type="text" value="250.000"/>	1/s
Falling Gradient:	<input type="text" value="1000.000"/>	1/s
Maximum Deviation:	<input type="text" value="20.0"/>	%

\$RatioCtrlCE: Ratio Controllers

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Overview

This chapter describes the *\$RatioCtrlCE* master template, which contains supervision resources to monitor and operate ratio controllers.

Supervision Functions

Description

The *\$RatioCtrlCE* master template provides the following monitoring and operation core functions:

- Status monitoring.
- Owner selection.
- Setpoint management: Ratio configuration.
- Ratio operation indication.

During operation, these functions are implemented by instances through symbols and their associated faceplate.

NOTE: You can modify the default configuration in the corresponding configuration pages, page 87.

Control/Supervision Relationship

Control Resources

To provide core supervision functions, the *\$PSxRatioCtl* master template is configured to exchange data with the following control resource of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
RATIOCTLGP	Ratio controller logic.	RatioCTLGP_ST_DDT	<instance name>_RatioGP_ST	Core supervision functions.
		RatioCTLGP_CFG_DDT	<instance name>_RatioGP_CFG	
** Mandatory variables to be defined.				

For description of the control resource, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the object editor, page 100.

These parameters allow you to configure core functions.

Parameter Description

The table describes the parameters that are defined as part of the *\$RatioCtrlCE* master template attributes.

Name	Data type	Initial value	Description
Param.EngUnits	String	%	Defines the unit of attributes.
Param.HiPV	Float	100.0	Highest value that the controller accepts as setpoint.
Param.LoPV	Float	0.0	Lowest value that the controller accepts as setpoint.
Param.ModeNormal	String	O, P, C	Specifies the normal owner modes (separated by a comma): <ul style="list-style-type: none"> O: Operator P: Program C: Cascade For example P, C.
Param.NumFormat	String	0.00	Specifies the display format of values. For example, enter 0.00 to display 2 decimals.
Param.TrendPeriodMin	Integer	0	Refer to the description of this parameter that is documented for <i>\$AnalogInputCE</i> .

Default State Alarms

State Alarms for Ratio Controller

No state alarm is configured by default for the *\$RatioCtrlCE* master template.

NOTE: You can modify the configuration from the **Attributes** page.

Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a general description, page 46 of the graphic elements and element styles that are used in symbols.




Present and Output Value Description

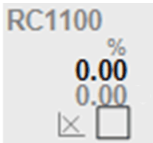
Ratio controller symbols display the following values:

- Present value: Current value of the variable that is controlled by the ration controller.
- Output value: Output *OP* generated by the controller based on the measurement and the configured ratio, page 246. $OP = (K) * PV_TRACK + BIAS$ where (K) is the local ratio.

Symbol Description

The table describes the symbols that are included in the *\$RatioCtrlCE* master template to display data of ratio controllers during operation.

Name	Graphic symbol	Description
Bar_Hor_PV_SP		In addition to icons, displays (from top to bottom): <ul style="list-style-type: none"> • The label. • Engineering units. • The present value. • The output value. • The trend client icon. • States, shown in a square, page 48. • To the right, a horizontal bar showing the setpoint and the present value.
Bar_Vert_PV_SP		In addition to icons, displays (from top to bottom): <ul style="list-style-type: none"> • The label. • A vertical bar showing the setpoint and the present value. • Engineering units. • The present value. • The output value. • The trend client icon. • States, shown in a square, page 48.
Bar_Vert_PV_SP_Trend		Displays in addition to data of <i>Bar_Vert_PV_SP</i> , a trend panel with configurable trend period in minutes. Refer to the description of the <i>Param.TrendPeriodMin</i> parameter.

Name	Graphic symbol	Description
Display_PV_SP		In addition to icons, displays (from top to bottom): <ul style="list-style-type: none"> The label. Engineering units. The present value. The output value. The trend client icon. States, shown in a square, page 48.
Label	PSxLabel	Displays ObjectTagName , StaticText and CustomPropertyLabel .

Faceplates

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in faceplates.

Available Tabs

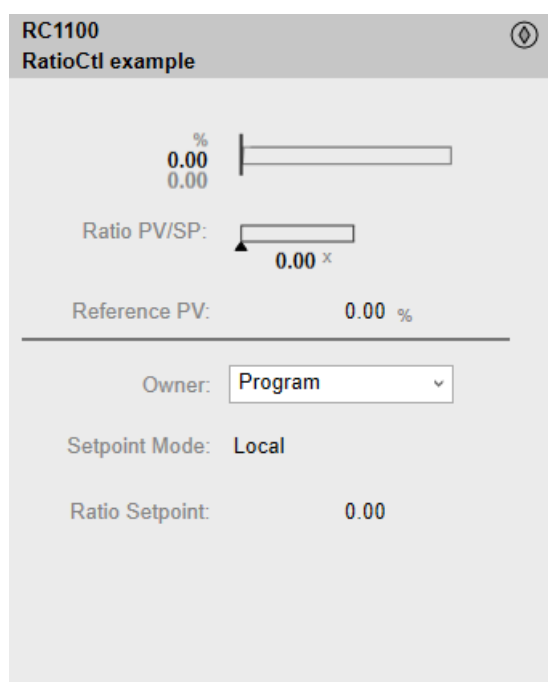
During operation, clicking a ratio controller symbol opens a faceplate with the following tabs:

- Operation
- Engineering
- Alarms, page 75

NOTE: The master template also features the trends faceplate.

Operation Tab

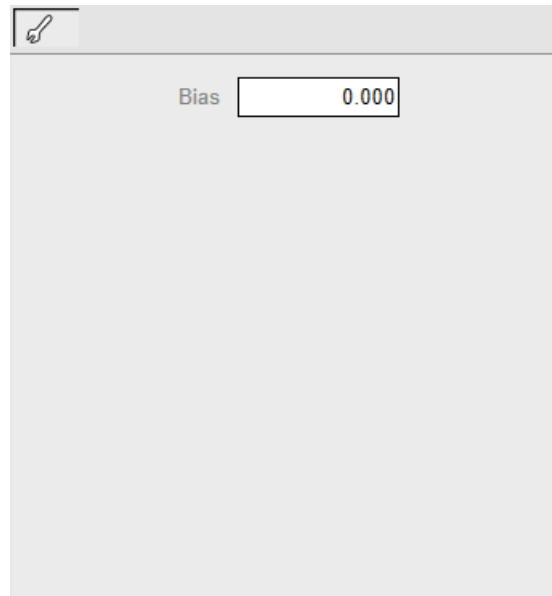
The figure shows an example of the **Operation** tab.



1	Ratio setpoint value: Ratio coefficient for the ration between the generated output and the measurement that is being applied according to the current operating mode.
2	Present value ratio: Actual ration coefficient generated by the ratio controller. Actual ratio $K_{Act} = (PV - BIAS)/PV_TRACK$.

Engineering Tab

The figure shows an example of the **Engineering** tab.



\$SplitRangeCE: Split Range Controllers

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Overview

This chapter describes the \$SplitRangeCE master template, which contains supervision resources to monitor and operate split range controllers.

Supervision Functions

Description

The \$SplitRangeCE master template provides the following monitoring and operation functions:

- Core functions:
 - Status monitoring.
 - Owner selection.
 - Operating mode.
 - Setpoint management: Split range configuration.
 - Global bypassing of interlock conditions.
- Optional functions:
 - Viewing, bypassing, and resetting of individual interlock conditions.

During operation, these functions are implemented by instances through symbols and their associated faceplate.

NOTE: You can modify the default configuration in the corresponding configuration pages, page 87.

Control/Supervision Relationship

Control Resources

To provide core and optional supervision functions, the \$PSxSplitRangeCtl master template is configured to exchange data with the following control resources of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
SPLRGCTLGP	Split range controller logic.	SPLRGCTLGP_ST_DDT	<instance name>_ SPLRGCTLGP_ST	Core supervision functions.
		SPLRGCTLGP_CFG_DDT	<instance name>_ SPLRGCTLGP_CFG	
ILCKONGP	Interlock condition summary.	ILCKGP_ST_DDT	<instance name>_ ILockOn_ST	Optional supervision functions.
** Mandatory variables to be defined.				

For description of these control resources, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the *object editor*, page 100.

These parameters allow you to configure core functions.

Parameter Description

The table describes the parameters that are defined as part of the *\$SplitRangeCE* master template attributes.

Name	Data type	Initial value	Description
Param.EngUnits	String	%	Defines the unit of inputs and parameters.
Param.HiOP	Float	100.0	Highest value that the controller can output.
Param.HiSP	Float	100.0	Highest value that the controller accepts as setpoint.
Param.LoOP	Float	0.0	Lowest value that the controller can output.
Param.LoSP	Float	0.0	Lowest value that the controller accepts as setpoint.
Param.ModeNormal	String	O, P, C	Specifies the normal owner modes (separated by a comma): <ul style="list-style-type: none"> O: Operator P: Program C: Cascade For example P, C.
Param.NumFormat	String	0.0	Specifies the display format of values. For example, enter 0.00 to display 2 decimals.
Param.TrendPeriodMin	Integer	0	Refer to the description of this parameter that is documented for <i>\$AnalogInputCE</i> .

Default State Alarms

State Alarms for Split Range Controllers

No state alarm is configured by default for the *\$SplitRangeCE* master template.

NOTE: You can modify the configuration from the **Attributes** page.

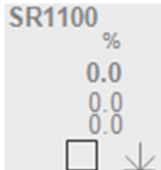
Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in symbols.

Symbol Description

The table describes the symbols that are included in the *\$SplitRangeCE* master template to display data of split range controllers during operation.

Name	Graphic symbol	Description
Numeric_SP_OP1_OP2_Sates		The symbol displays (from top to bottom): <ul style="list-style-type: none"> The label. Engineering units. The setpoint. Output 1. Output 2. States.
Label	PSxLabel	Displays ObjectTagName , StaticText and CustomPropertyLabel .

Faceplates

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in faceplates.

Available Tabs

During operation, clicking a split range controller symbol opens a faceplate with the following tabs:

- Tabs for core functions:
 - Operation
 - Engineering
 - Alarms, page 75
- Tabs for optional functions, which appear only if configured:
 - Interlocks, page 65

NOTE: The master template also features the trends faceplate.

Operation Tab

The figure shows an example of the **Operation** tab.

SplitRange
SplitRange example

Output1: 0.0 %

Output2: 0.0 %

Owner: Program

Setpoint Mode: Local

Setpoint: 0.0 %

Engineering Tab

The figure shows an example of the **Engineering** tab.

Interlock Bypass: Normal

Output 1	Setpoint	Output
Point 1:	0 %	0 %
Point 2:	0 %	0 %

Output 2	Setpoint	Output
Point 1:	0 %	0 %
Point 2:	0 %	0 %

NOTE: This tab features the **Interlock Bypass** menu, which allows bypassing interlocks globally.

When the control module is reset, the current setpoint that is shown in the operation tab of the faceplate is effective.

Bypassing interlocks by selecting **Bypass** underlies a security classification, page 89. The default configuration is *verified write*. It also triggers the display of an abnormal state, page 46 on the tab and on the symbol.

\$Step3CtlCE: Three-Step Controllers/Positioners

What's in This Chapter

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Overview

This chapter describes the \$Step3CtlCE master template, which contains supervision resources to monitor and operate three-step controllers/positioners.

Supervision Functions

Description

The \$Step3CtlCE master template provides the following monitoring and operation functions:

- Core functions:
 - Status monitoring.
 - Owner selection.
 - Setpoint mode selection.
 - Controller operation indication.
 - Global bypassing of interlock conditions.
- Optional functions:
 - Viewing, bypassing, and resetting of individual interlock conditions.

During operation, these functions are implemented by instances through symbols and their associated faceplate.

NOTE: You can modify the default configuration in the corresponding configuration pages, page 87.

Control/Supervision Relationship

Control Resources

To provide core and optional supervision functions, the \$PSxStep3Ctl master template is configured to exchange data with the following control resources of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
STEP3CTLGP	Three-step controller/positioner logic.	Step3CTLGP_ST_DDT	<instance name>_Step3CTLGP_ST	Core supervision functions.
		Step3CTLGP_CFG_DDT	<instance name>_Step3CTLGP_CFG	
ILCKONGP	Interlock condition summary.	ILCKGP_ST_DDT	<instance name>_ILockOn_ST	Optional supervision functions.
** Mandatory variables to be defined.				

For description of these control resources, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the [object editor](#), page 100.

These parameters allow you to configure core functions.

Parameter Description

The table describes the parameters that are defined as part of the \$Step3CtlCE master template attributes.

Name	Data type	Initial value	Description
Param.EngUnits	String	%	Indicates the unit of attributes
Param.HiPV	Float	100.0	Highest value that the controller accepts as setpoint.
Param.LoPV	Float	0.0	Lowest value that the controller accepts as setpoint.
Param.ModeNormal	String	O, P, C	Specifies the normal owner modes (separated by a comma): <ul style="list-style-type: none"> O: Operator P: Program C: Cascade For example P, C.
Param.NumFormat	String	0.0	Specifies the display format of values. For example, enter 0.00 to display 2 decimals.
Param.TrendPeriodMin	Integer	0	Refer to the description of this parameter that is documented for <i>\$AnalogInputCE</i> .

Default State Alarms

State Alarms for Three-Step Controller

No state alarm is configured by default for the \$Step3CtlCE master template.

NOTE: You can modify the configuration from the **Attributes** page.


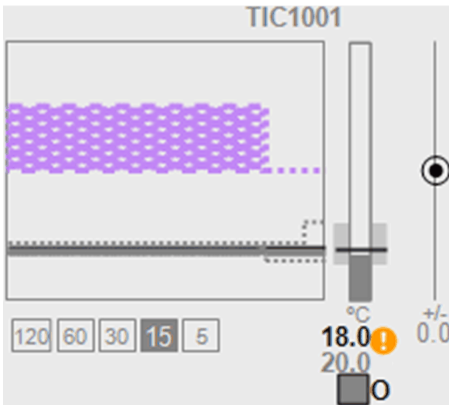
Graphic Representation

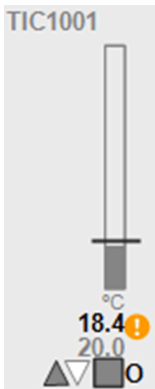
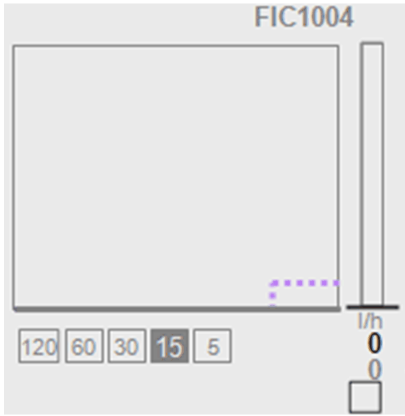


Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in symbols.

Symbol Description

The table describes the symbols that are included in the \$Step3CtlCE master template to display data of three-step controllers/positioners during operation.

Name	Graphic symbol	Description
Bar_Horiz_PV_SP_States	 <p>The graphic symbol for Bar_Horiz_PV_SP_States displays the label 'TIC1001' at the top. Below the label, the present value '18.9' is shown with a yellow warning icon, and the setpoint value '20.0' is shown below it. To the right of these values is a horizontal bar with a vertical line indicating the setpoint. At the bottom left, there are three small icons: a triangle, a square, and a circle, each with a letter 'O' next to it.</p>	<p>In addition to icons, displays (from top to bottom):</p> <ul style="list-style-type: none"> • The label. • Engineering units. • The present value. • The setpoint value. • States. • To the right, a horizontal bar showing the setpoint and the present value.
Bar_Vert_PV_SP_OP_States_Trend	 <p>The graphic symbol for Bar_Vert_PV_SP_OP_States_Trend displays the label 'TIC1001' at the top. Below the label, there is a large area with a purple grid pattern. To the right of this area is a vertical bar with a horizontal line indicating the setpoint. Below the vertical bar, the present value '18.0' is shown with a yellow warning icon, and the setpoint value '20.0' is shown below it. At the bottom left, there are five small boxes containing the values '120', '60', '30', '15', and '5'. At the bottom right, there is a vertical line with a circle at the top and a label '+/- 0.0'.</p>	<p>Displays in addition to data of Bar_Vert_PV_SP_States_Trend, a vertical line showing the output.</p>

Name	Graphic symbol	Description
Bar_Vert_PV_SP_States		In addition to icons, displays (from top to bottom): <ul style="list-style-type: none"> The label. A vertical bar showing the setpoint and the present value. Engineering units. The present value. The setpoint value. States.
Bar_Vert_PV_SP_States_Trend		Displays in addition to data of <i>Bar_Vert_PV_SP_States</i> , a trend panel with configurable trend period in minutes. Refer to the description of the <i>Param.TrendPeriodMin</i> parameter.
Numeric_PV_SP_States		In addition to icons, displays (from top to bottom): <ul style="list-style-type: none"> The label. Engineering units. The present value. The setpoint value. States.
Numeric_PV_States		In addition to icons, displays (from top to bottom): <ul style="list-style-type: none"> The label. Engineering units. The present value. States.
Label	P SxLabel	Displays ObjectTagName , StaticText and CustomPropertyLabel .

Faceplates

Representation of Supervision Data

At the beginning of this document, you can find a general description, page 46 of the graphic elements and element styles that are used in faceplates.

Available Tabs

During operation, clicking a three-step controller/positioner symbol opens a faceplate with the following tabs:

- Tabs for core functions:
 - Operation
 - Engineering
 - Alarms, page 75
- Tabs for optional functions, which appear only if configured:
 - Interlocks, page 65

NOTE: The master template also features the trends faceplate.

Operation Tab

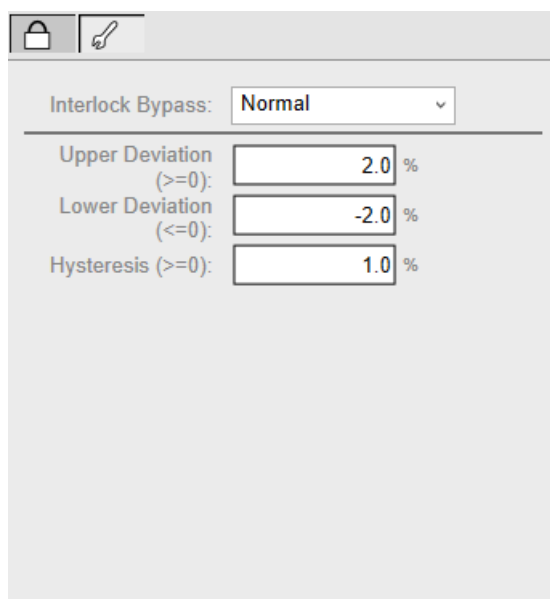
The figure shows an example of the **Operation** tab.

The screenshot displays the 'Operation' tab for a 'TIC1001 Temperature Controller D10'. The interface includes several controls and status indicators:

- Status:** A button labeled 'On'.
- Output Increase:** A button labeled 'Off'.
- Output Decrease:** A button labeled 'Off'.
- Process Value:** A horizontal bar graph showing a current value of 38.0% and a setpoint of 20.0%.
- Error:** A text label showing '18.0 %'.
- Owner:** A dropdown menu currently set to 'Operator'.
- Setpoint Mode:** A text label set to 'Local'.
- Start Order:** A dropdown menu currently set to 'On'.
- Setpoint:** A text input field containing '20.0 %'.

Engineering Tab

The figure shows an example of the **Engineering** tab.



The screenshot displays the Engineering tab interface. At the top, there are two icons: a padlock and a pencil. Below these is a section titled "Interlock Bypass:" with a dropdown menu set to "Normal". A horizontal line separates this from the settings below. There are three rows of settings, each with a label and a text input field followed by a percentage sign:

Upper Deviation (≥ 0):	2.0	%
Lower Deviation (≤ 0):	-2.0	%
Hysteresis (≥ 0):	1.0	%

NOTE: This tab features the **Interlock Bypass** menu, which allows bypassing interlocks globally.

When the control module is reset, the current setpoint that is shown in the operation tab of the faceplate is effective.

Bypassing interlocks by selecting **Bypass** underlies a security classification, page 89. The default configuration is *verified write*. It also triggers the display of an abnormal state, page 46 on the tab and on the symbol.

Sequential Control

What's in This Part

\$SequenceCE: Sequential Control Functions 259
Sequential Control Object Configuration Pages 270

Overview

This part describes the master templates that provide the supervision functions for sequential control. It also describes the template-specific configuration pages of the ArchestrA IDE object editor.

\$SequenceCE: Sequential Control Functions

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Overview

This chapter describes the master templates that provide the supervision functions for Sequential Control.

Schneider Electric provides the templates described in this document. These templates can be used in various applications to minimize engineering efforts but the use, integration, configuration, and validation of the system is the sole responsibility of the user. Said user must ensure the safety of the system as a whole by performing a safety analysis, including the resources provided by Schneider Electric through procedures that the user deems appropriate.

⚠ WARNING

LOSS OF CONTROL

- Perform a Failure Mode and Effects Analysis (FMEA) of your application, and apply preventive and detective controls before implementation.
- Provide a fallback state for undesired control events or sequences.
- Provide separate or redundant control paths wherever required.
- Supply appropriate parameters, particularly for limits.
- Review the implications of transmission delays and take actions to mitigate.
- Review the implications of communication link interruptions and take actions to mitigate.
- Provide independent paths for control functions (for example, emergency stop, over-limit conditions, and fault conditions) according to the safety analysis and applicable codes, and regulations.
- Apply local accident prevention and safety regulations and guidelines.¹
- Test each implementation of this library for proper operation before placing it into service.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

¹ For additional information, refer to NEMA ICS 1.1 (latest edition), *Safety Guidelines for the Application, Installation, and Maintenance of Solid State Control* and to NEMA ICS 7.1 (latest edition), *Safety Standards for Construction and Guide for Selection, Installation and Operation of Adjustable-Speed Drive Systems* or their equivalent governing your particular location.

Description

Introduction

This object is used for monitoring sequences based on the ISA-S88.01-1995 standard for batch control.

Supervision Functions

The table describes the main functions for sequential control management:

Function	Description
State management	Shows the status of the sequence.
Owner selection	Allows you to configure whether the sequence commands come from the program or the operator.
Operating mode	Allows you to operate the sequence in automatic/semi-automatic or manual mode.
Command management	Allows you to send commands (such as <i>Start</i> and <i>Stop</i>) to the sequence.
Parameter management	Allows you to select a strategy, enter input parameter values, and monitor output values.
Initial condition management	Optional function that allows you to manage initial conditions that are not satisfied and that block the start of the sequence.
Diagnostic information management	Optional function that allows you to manage abnormal conditions detected by the sequence.

These functions are implemented in runtime through symbols and their associated faceplate.

Control/Supervision Relationship

Control Resources

To provide core and optional supervision functions, the *\$PSxSequentialControl* master template is configured to exchange data with the following control resources of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
SEQCTLGP	Sequential control logic	SEQCTLGP_ST_DDT	<instance name>_ SEQCTLGP_ST	Core supervision functions.
		SEQCTLGP_CFG_DDT	<instance name>_ SEQCTLGP_CFG	
SEQPAR05GP	Sequence parameters	SEQPAR05GP_ST_DDT	<instance name>_ SEQPAR05GP_ST	Optional supervision functions.
SEQPAR10GP		SEQPAR010GP_ST_DDT	<instance name>_ SEQPAR10GP_ST	
SEQPAR16GP		SEQPAR016GP_ST_DDT	<instance name>_ SEQPAR16GP_ST	
CONDSUMGP	Detected failure condition summary (default variable naming convention <...>_FC_CONDSUM_<...>)	CondsunGP_ST_DDT	<instance name>_ CONDSUM_ST	
	Initial conditions (default variable naming convention <...>_IC_CONDSUM_<...>)		<instance name>_ INITCOND_ST	
** Mandatory variables to be defined.				

For description of these control resources, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. User can modify the values in the derived application template or in its instances. User can access the parameters from the **Attributes** page of the object editor, page 100.

These parameters allows user to configure core functions.

NOTE: You can configure optional functions from the template-specific configuration pages, page 270.

Parameter Description

This table describes the parameters of the automation object:

Parameter	Type	Default	Description
Param.Data1.Desc	String		Data1 description (only displayed in the PanelAll symbol).
Param.Data1.Format	String	0.00	Specifies the displaying format of the Data1 value. For example, enter 0.00 for 2 decimal NOTE: For configuration purposes, the decimal separator must be Dot (.) and not any other type of separator, for example, Comma (,). The run-time will use the configured language settings of the local system.
Param.Data1.PV	Float	0.0	Data1 value attribute. NOTE: To display the Data1 variable, you need to define it in the Extensions tab as an input extension of the attribute Param.Data1.PV (for example Me.SeqPar.OP01.OP.PV for displaying the output parameter 1).
Param.Data2.Desc	String		Data2 description (only displayed in the PanelAll symbol).
Param.Data2.Format	String	0.00	Specifies the displaying format of the Data2 value. For example, enter 0.00 for 2 decimal NOTE: For configuration purposes, the decimal separator must be Dot (.) and not any other type of separator, for example, Comma (,). The run-time will use the configured language settings of the local system.
Param.Data2.PV	Float	0.0	Data2 value attribute. NOTE: To display the Data2 variable, you need to define it in the Extensions tab as an input extension of the attribute Param.Data2.PV (for example Me.SeqPar.OP02.OP.PV for displaying the output parameter 2).
Param.HideAbortButton	Bool	False	If true, the Abort button is not displayed. If false, the Abort button is displayed.
Param.HideHoldButton	Bool	False	If true, the Hold button is not displayed. If false, the Hold button is displayed.
Param.HidePauseButton	Bool	False	If true, the Pause button is not displayed. If false, the Pause button is displayed.

Parameter	Type	Default	Description
Param.HideResetButton	Bool	False	If true, the Reset button is not displayed. If false, the Reset button is displayed.
Param.HideRestartButton	Bool	False	If true, the Restart button is not displayed. If false, the Restart button is displayed.
Param.HideStartButton	Bool	False	If true, the Start button is not displayed. If false, the Start button is displayed.
Param.HideStopButton	Bool	False	If true, the Stop button is not displayed. If false, the Stop button is displayed.
Param.ModeNormal	String	O, P	Specifies the normal owner modes (separated by a comma): <ul style="list-style-type: none"> O: Operator P: Program

Default State Alarms

State Alarms for Sequential Control

The table indicates for which attributes a state alarm is configured in the \$SequenceCE master template and provides the default values.

Attribute	Alarm message	Priority
AO.Failure	Failure condition triggered during execution	999

NOTE: You can modify the configuration from the **Attributes** page.

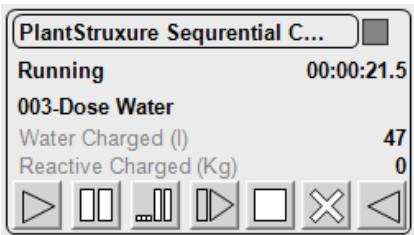
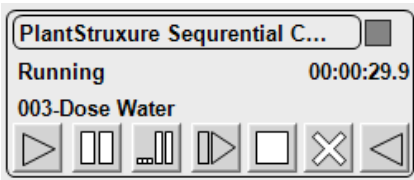
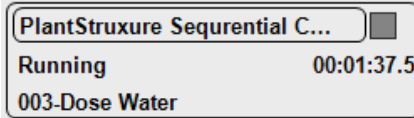
Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in symbols.

Representation

This table describes the symbols available for representing the sequential control:

Name	Graphic symbol	Description
PanelAll		<p>The symbol displays:</p> <ul style="list-style-type: none"> • The current state of the sequence. • The step being executed. • The strategy that is applied (if configured and selected). • The time elapsed for the current step. • Control buttons. • Two configurable data (<i>Data1</i> and <i>Data2</i>).
PanelWithButtons		<p>The symbol displays:</p> <ul style="list-style-type: none"> • The current state of the sequence. • The step being executed. • The strategy that is applied (if configured and selected). • The time elapsed for the current step. • Control buttons
PanelState		<p>The symbol displays:</p> <ul style="list-style-type: none"> • The current state of the sequence. • The step being executed. • The strategy that is applied (if configured and selected). • The time elapsed for the current step.

Faceplates

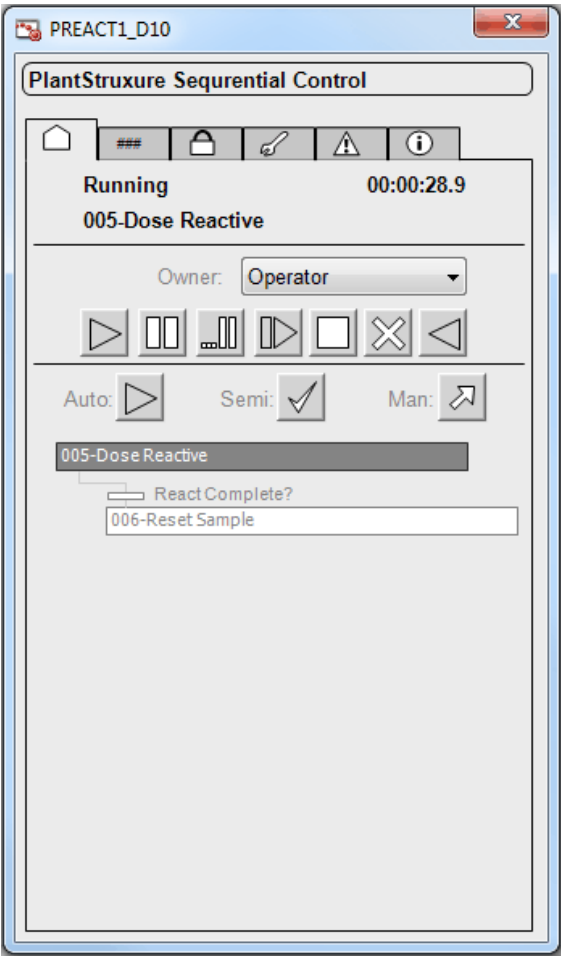
Overview

During operation, clicking a sequential control graphic symbol opens a faceplate with the following tabs:

- Standard tabs:
 - Operation
 - Parameters (input and output parameters)
 - State machine
 - Alarms, page 75
- Optional tabs:
 - Initial Conditions, page 65
 - Failures, page 68

Operation Tab in Automatic Mode

This figure shows the **Operation** tab when **Operator** and the **Auto** mode are selected.






The sequence runs in automatic mode after clicking the **Start** button, and the bottom section of the faceplate displays:

- The step that is being executed and its number.
- The transition to the next step:
 - *Passive Galaxy style*, page 47: The condition is not yet fulfilled.
 - *Active Galaxy style*: The condition is true.
- The next step to be executed when the current step is completed and the transition is true.




This table describes the command that corresponds to each button on the **Operation** tab.

Button	Command
	Start
	Hold
	Pause
	Restart/resume

Button	Command
	Stop
	Abort
	Reset

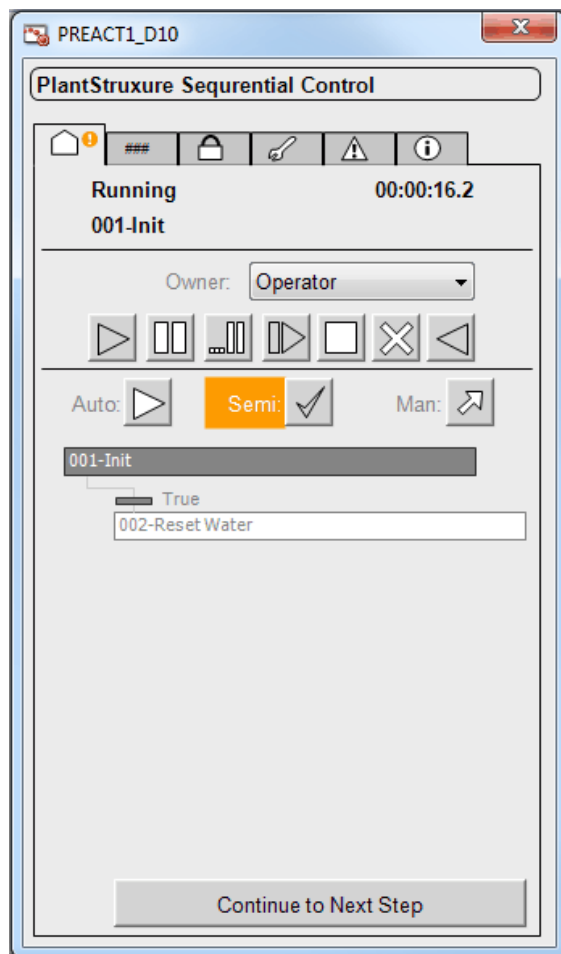
NOTE: Only buttons that correspond to available commands are active (*Active Galaxy style*, page 47). Unavailable commands are displayed with the *Passive Galaxy style*.

This table describes the mode that corresponds to each button on the **Operation** tab.

Button	Mode	Description
	Auto	Normal execution
	Semi	Asks for confirmation before transitioning
	Man	Allows you to select the step to execute

Operation Tab in Semi-Automatic Mode

This figure shows the **Operation** tab when **Operator** and the **Semi** mode are selected.

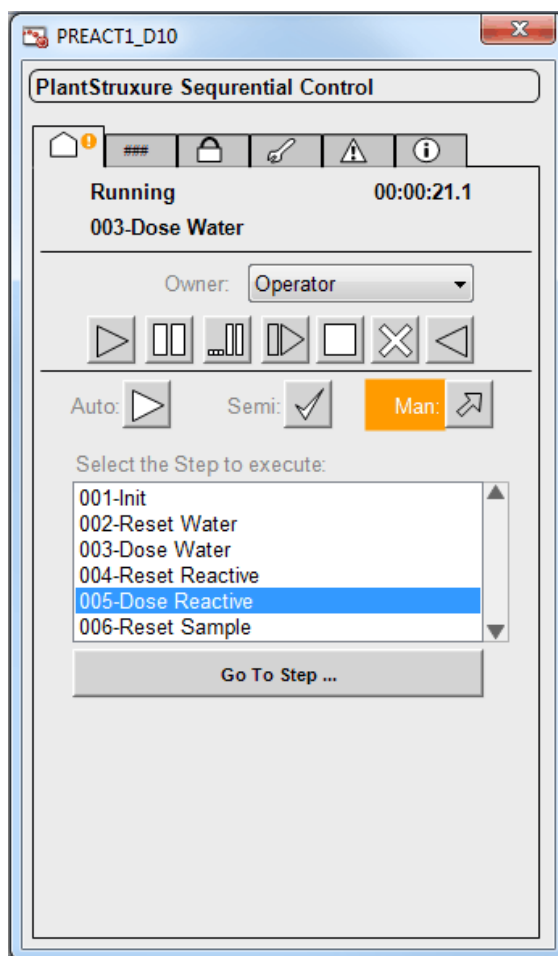


The sequence starts in semi-automatic mode after clicking the **Start** button, and the bottom section of the faceplate displays:

- The step that is being executed and its number.
- The transition to the next step:
 - Passive style: The condition is not yet fulfilled
 - Active style: The condition is true.
- The next step to be executed.
- A **Continue to Next Step** button requiring the operator to confirm the execution of the next step when the transition is true.

Operation Tab in Manual Mode

This figure shows the **Operation** tab when **Operator** and the **Man** mode are selected.



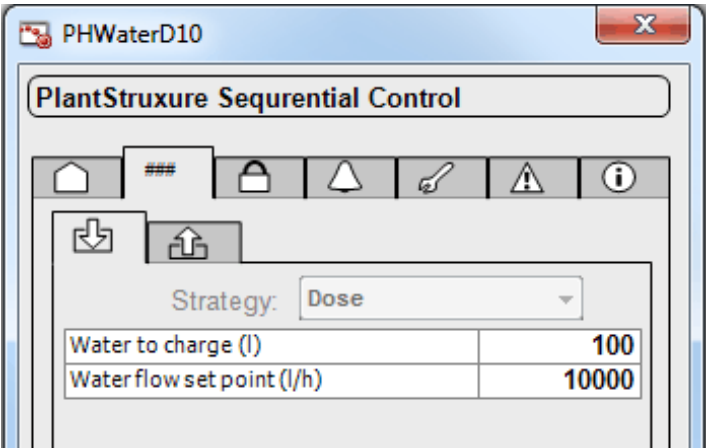
The sequence starts in manual mode after clicking the **Start** button. The bottom section of the faceplate displays:

- The steps of the sequence that are programmed in the **Running** state.
- A **Go To Step** button allowing to execute the step selected in the **Select the Step to execute** list.

You can scroll up and down (in six-step increments) through the list of steps by using the two arrow buttons.

Input/Ouput Parameters Tab

This figure shows the **Parameters** tab when the **Input Parameters** subtab is selected

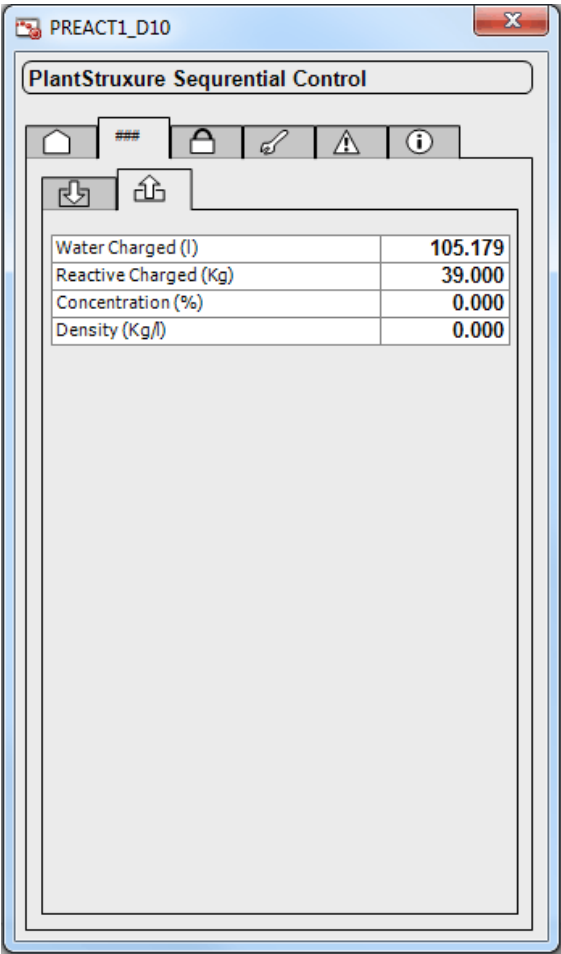


You can select a strategy from the ones that have been defined and enter the corresponding values for enabled parameters.

Parameters that do not pertain to the selected strategy are disabled.

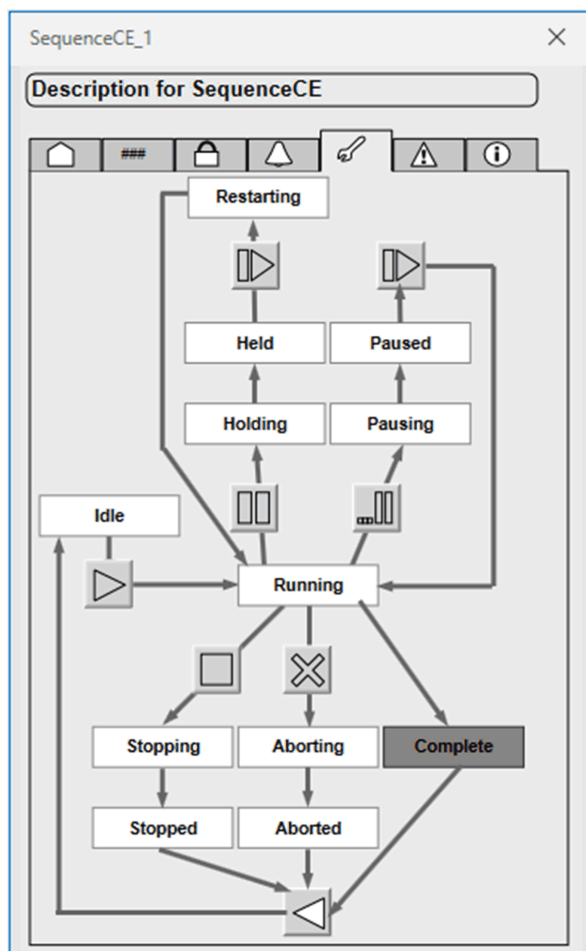
NOTE: The parameters can be only modified when the sequence is in **Idle** state.

This figure shows the **Parameters** tab when the **Output Parameters** subtab is selected.



Displays the values of output parameters, which are calculated while the sequence is executed.

State Machine Tab



The state diagram allows the operator to execute available commands by using the buttons.

Names of states appear in *Passive* style while the current state appears in *Active* style.

NOTE: Only buttons that correspond to available commands are active (*Active* style). Unavailable commands are displayed with the *Passive* style.

Sequential Control Object Configuration Pages

What's in This Chapter

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Failure Conditions Page Default Configuration.....	272
Parameters Page Default Configuration	273
Input Parameters Page Default Configuration	274
Output Parameters Page Default Configuration	275

Overview

This chapter describes the default configuration of pages for sequential control objects.

They allow you to configure optional supervision functions of process application templates and their instances.

The default security classification to modify references is *Configure*.

Main Page Default Configuration

Overview

The **Main** page is used to modify the variable references used by the sequential control object.

The references to control resources that are described use specific control resources of the Modicon Libraries - General Purpose for AVEVA System Platform.

For a description of the default template-specific configuration of sequential control management, refer to the chapter documenting master template of the sequential control.

Main Page Description

Main

Initial ConditionsFailure ConditionsParametersInput ParametersOutput ParametersObject InformationScriptsUDAsExtensionsGraphics

PV:

Customized References (only if Suffix is left on blank):

Suffix for Auto References:

State:---

Command:---

Status Word:---

Configuration Word:---

Elapsed Time:---

Current Step Description:---

Next Step (Manual):---

Step Descriptions:---

Transition Descriptions:---

..._SEQCTL1_ST.STATE

..._SEQCTL1_ST.COMMAND

..._SEQCTL1_ST.STW

..._SEQCTL1_ST.CFGW

..._SEQCTL1_ST.ETIME

..._SEQCTL1_ST.CSTEPD;C

..._SEQCTL1_CFG.NSTEP

..._SEQCTL1_CFG.STEPD;C

..._SEQCTL1_CFG.TRANSD;C

Element	Default variable reference with suffix for auto-referencing
State	<Instance name>_SEQCTL1_ST.STATE.
Command	<Instance name>_SEQCTL1_ST.COMMAND.

Element	Default variable reference with suffix for auto-referencing
	The default security classification is <i>Operate</i> .
Status Word	<Instance name>_SEQCTL1_ST.STW.
Configuration Word	<Instance name>_SEQCTL1_ST.CFGW. The default security classification is <i>Operate</i> .
Elapsed Time	<Instance name>_SEQCTL1_ST.ETIME.
Current Step Description	<Instance name>_SEQCTL1_ST.CSTEPD;C.
Next Step (Manual)	<Instance name>_SEQCTL1_CFG.NSTEP. The default security classification is <i>Secured Write</i> .
Step Descriptions	<Instance name>_SEQCTL1_CFG.STEPD;C.
Transition Descriptions	<Instance name>_SEQCTL1_CFG.TRANS;C.
Customized References	Specify a variable reference if the automatic referencing mechanism is not used.

Initial Conditions Page Default Configuration

Overview

Depending on the configuration of the corresponding control resource, the **Initial Conditions** page is used to:

- Enable or disable initial conditions and define the initial condition descriptions. When enabled, it allows you to:
 - Enable or disable the bypass of initial conditions.
 - Enable or disable the manual resetting of initial conditions.

The references to control resources that are described use specific control resources of the Modicon Libraries - General Purpose for AVEVA System Platform.

For a description of the default template-specific configuration of initial conditions, refer to the chapter documenting master template of the Sequential control.

Initial Conditions Page Description

Initial Conditions Page Configuration:

Enable Initial Conditions: ☒ ☐

Enable Bypass of Conditions: ☒ ☐

Enable Manual Reset of Conditions: ☐ ☐

Initial Condition Descriptions:

Condition	Description	Enable	Disable
Condition 1:	Water dosing process in OPERATOR Mode;[3082]Dosifica	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Condition 2:	Missing Water dosing Initial Conditions;[3082]No se cumpl	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Condition 3:	Water dosing process not yet completed;[3082]Dosificaci	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Condition 4:	Reactive dosing process in OPERATOR Mode;[3082]Dosifi	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Condition 5:	Missing Reactive dosing Initial Conditions;[3082]No se cun	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Condition 6:	Reactive dosing process not yet completed;[3082]Dosific	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Condition 7:	Take Sample in Operator Mode;[3082]Toma de Muestras	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Condition 8:	Take Sample not yet completed;[3082]Toma de Muestras	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Condition 9:		<input type="checkbox"/>	<input type="checkbox"/>
Condition 10:		<input type="checkbox"/>	<input type="checkbox"/>
Condition 11:		<input type="checkbox"/>	<input type="checkbox"/>
Condition 12:		<input type="checkbox"/>	<input type="checkbox"/>
Condition 13:		<input type="checkbox"/>	<input type="checkbox"/>
Condition 14:		<input type="checkbox"/>	<input type="checkbox"/>
Condition 15:		<input type="checkbox"/>	<input type="checkbox"/>

Element	Description
Enable Initial Conditions	<p>Select this check box to enable initial condition management.</p> <p>By default the variable reference with suffix for auto-referencing is <code><Instance name>_IC_CONDSUM_ST.CONDW</code>.</p> <p>The default security classification is <i>Free Access</i>.</p>
Enable Bypass of Conditions	<p>Select this check box to enable bypass of conditions.</p> <p>By default the variable reference with suffix for auto-referencing is <code><Instance name>_IC_CONDSUM_ST.BYPASSW</code>.</p> <p>The default security classification is <i>Free Access</i> to enable the bypassing function and <i>Secured Write</i> to bypass conditions during operation.</p>
Enable Manual Reset of Conditions	<p>Select this check box to enable the manual resetting of conditions.</p> <p>By default the variable reference with suffix for auto-referencing is <code><Instance name>_IC_CONDSUM_ST.REARMREQW</code>.</p> <p>The default security classification is <i>Free Access</i> to enable the manual reset function and <i>Secured Write</i> to reset conditions during operation.</p>
Initial Condition Description	<p>Enter the initial condition descriptions (up to 15).</p> <p>The default security classification is <i>Configure</i>.</p> <p>NOTE: The descriptions can be entered in multiple languages, page 43.</p>
Customized References	<p>Specify a variable reference if the automatic referencing mechanism is not used.</p>

Failure Conditions Page Default Configuration

Overview

Depending on the configuration of the corresponding control resource, the **Failure Conditions** page is used to:

- Enable or disable monitoring of detected failure conditions and define the detected failure condition descriptions. When enabled, it allows you to:
 - Enable or disable the bypass of detected failure conditions.
 - Enable or disable the manual resetting of detected failure conditions.

The references to control resources that are described use specific control resources of the Modicon Libraries - General Purpose for AVEVA System Platform.

For a description of the default template-specific configuration of detected failure condition management, refer to the chapter documenting master template of the sequential control.

Failure Conditions Page Description

Element	Description
Enable Failure Conditions	<p>Select this check box to enable the management of detected failure conditions.</p> <p>By default the variable reference with suffix for auto-referencing is <code><Instance name>_FC_CONDSUM_ST.CONDW</code>.</p> <p>The default security classification is <i>Free Access</i>.</p>
Enable Bypass of Conditions	<p>Select this check box to enable bypass of detected failure conditions.</p> <p>By default the variable reference with suffix for auto-referencing is <code><Instance name>_FC_CONDSUM_ST.BYPASSW</code>.</p> <p>The default security classification is <i>Free Access</i> to enable the bypassing function and <i>Secured Write</i> to bypass conditions during operation.</p>
Enable Manual Reset of Conditions	<p>Select this check box to enable the manual resetting of detected failure conditions.</p> <p>By default the variable reference with suffix for auto-referencing is <code><Instance name>_FC_CONDSUM_ST.REARMREQW</code>.</p> <p>The default security classification is <i>Free Access</i> to enable the manual reset function and <i>Secured Write</i> to reset conditions during operation.</p>
Failure Condition Descriptions	<p>Enter the condition descriptions (up to 15).</p> <p>The default security classification is <i>Free Access</i>.</p> <p>NOTE: The descriptions can be entered in multiple languages, page 43.</p>
Customized References	<p>Specify a variable reference if the automatic referencing mechanism is not used.</p>

Parameters Page Default Configuration

Overview

Depending on the configuration of the corresponding control resource, the **Parameters** page is used to:

- Define the number of input parameters.
- Define the number of output parameters.

The references to control resources that are described use specific control resources of the Modicon Libraries - General Purpose for AVEVA System Platform.

For a description of the default template-specific configuration of parameters for sequential control, refer to the chapter documenting master template of the sequential control.

Parameters Page Description

MainInitial ConditionsFailure ConditionsParametersInput ParametersOutput ParametersObject InformationScriptsUDAsExtensionsGraphics

Input Parameters: 3

Output/Report Parameters: 4

PV: Customized References (only if Suffix is left on blank): Suffix for Auto References:

Status Word: ---_SEQPAR05_ST.STW

ConfigurationWord: ---_SEQPAR05_ST.CFGW

Element	Description
# Input Parameters	Select the number of input parameters from the drop-down list (up to 16). The default security classification is <i>Free Access</i> .
# Output/Report Parameters	Select the number of output and report parameters from the drop-down list (up to 16). The default security classification is <i>Free Access</i> .
Status Word	Status word; by default the variable reference with suffix for auto-referencing is <Instance name>_SEQPARxx_ST.STW ⁽¹⁾ .
Configuration Word	Status word; by default the variable reference with suffix for auto-referencing is <Instance name>_SEQPARxx_ST.CFGW ⁽¹⁾ . The default security classification is <i>Operate</i> .
Customized References	Specify a variable reference if the automatic referencing mechanism is not used.

(1)	xx = 05, 10, or 16 according to the number of parameters.
-----	---

By combining the number of input and output parameters (the higher one), the object automatically selects the control block for the parameters being used at the control level (no parameters, *SEQPAR05*, *SEQPAR10*, or *SEQPAR16*).

Input Parameters Page Default Configuration

Overview

- Depending on the configuration of the corresponding control resource, the **Input Parameters** page is used to:
- Define input parameter descriptions.
 - Enable or disable strategies for the input parameters.
 - Configure the strategies when enabled.

The references to control resources that are described use specific control resources of the Modicon Libraries - General Purpose for AVEVA System Platform.

For a description of the default template-specific configuration of input parameters for sequential control, refer to the chapter documenting master template of the sequential control.

Input Parameters Page Description

Main	Initial Conditions	Failure Conditions	Parameters	Input Parameters	Output Parameters	Object Information	Scripts	UDAs	Extens																																																																																																																																
<div> <div>Input Parameter Descriptions:</div> <table> <tr><td>01:</td><td>Strategy</td><td></td><td></td></tr> <tr><td>02:</td><td>Water to charge (l);[3082]Agua a cargar (l)</td><td></td><td></td></tr> <tr><td>03:</td><td>Water flow set point (l/h);[3082]Consigna caudal Agua</td><td></td><td></td></tr> <tr><td>04:</td><td></td><td></td><td></td></tr> <tr><td>05:</td><td></td><td></td><td></td></tr> <tr><td>06:</td><td></td><td></td><td></td></tr> <tr><td>07:</td><td></td><td></td><td></td></tr> <tr><td>08:</td><td></td><td></td><td></td></tr> <tr><td>09:</td><td></td><td></td><td></td></tr> <tr><td>10:</td><td></td><td></td><td></td></tr> <tr><td>11:</td><td></td><td></td><td></td></tr> <tr><td>12:</td><td></td><td></td><td></td></tr> <tr><td>13:</td><td></td><td></td><td></td></tr> <tr><td>14:</td><td></td><td></td><td></td></tr> <tr><td>15:</td><td></td><td></td><td></td></tr> <tr><td>16:</td><td></td><td></td><td></td></tr> </table> </div> <div> <div>Alias:</div> <table> <tr><td></td><td>_SEQPAR05_ST.IP01</td><td></td><td></td></tr> <tr><td></td><td>_SEQPAR05_ST.IP02</td><td></td><td></td></tr> <tr><td></td><td>_SEQPAR05_ST.IP03</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td></tr> </table> </div>										01:	Strategy			02:	Water to charge (l);[3082]Agua a cargar (l)			03:	Water flow set point (l/h);[3082]Consigna caudal Agua			04:				05:				06:				07:				08:				09:				10:				11:				12:				13:				14:				15:				16:					_SEQPAR05_ST.IP01				_SEQPAR05_ST.IP02				_SEQPAR05_ST.IP03																																																						
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	_SEQPAR05_ST.IP03																																																																																																																																								

Enable Strategies (Parameter 1): ☒

Strategy Descriptions:

01:	Charge;[3082]Cargar
02:	Dose;[3082]Dosificar
03:	

List of applicable Input Parameters (separated by comma):

2
2,3

Element	Description
Input Parameter Descriptions	<p>Enter the input parameter descriptions. The number of parameters depends of the configuration made in the parameter tab, page 273.</p> <p>The default variable reference (Alias) is <Instance name>_SEQPAR16_ST.IP01...<Instance name>_SEQPAR16_ST.IP16.</p> <p>NOTE: Descriptions can be entered in multiple languages, page 43.</p>
Enable Strategies (Parameter 1)	<p>Select this check box to enable strategy management.</p> <p>NOTE: If the strategies are enabled, the parameter 1 is reserved for strategy management.</p>
Strategy Descriptions	<p>Enter the description of strategies (up to 8).</p> <p>NOTE: Descriptions can be entered in multiple languages, page 43.</p>
List of applicable Input Parameters	<p>Enter the input parameters applicable in each strategy separated by a comma.</p> <p>For example, if parameters 02 and 03 are applicable for the strategy, enter 2 , 3.</p>

NOTE: The default security classification of attributes of this page is *Operate*.

Output Parameters Page Default Configuration

Overview

Depending on the configuration of the corresponding control resource, the **Output Parameters** page is used to define output and report parameter descriptions.

The references to control resources that are described use specific control resources of the Modicon Libraries - General Purpose for AVEVA System Platform.

For a description of the default template-specific configuration of parameters for sequential control, refer to the chapter documenting master template of the sequential control.

Output Parameters Page Description

MainInitial ConditionsFailure ConditionsParametersInput ParametersOutput ParametersObject InformationScriptsUDAsExtensionsGraphics

Output/Report Parameter Descriptions:

01:Water Charged (l);[3082]Agua Cargada (l)

02:Reactive Charged (Kg);[3082]Reactivo Cargado (Kg)

03:Concentration (%);[3082]Concentración (%)

04:Density (Kg/l);[3082]Densidad (Kg/l)

05:

06:

07:

08:

09:

10:

11:

12:

13:

14:

15:

16:

Alias Output:

_SEQPAR05_ST.OP01

_SEQPAR05_ST.OP02

_SEQPAR05_ST.OP03

_SEQPAR05_ST.OP04

Alias Report:

_SEQPAR05_ST.RPT01

_SEQPAR05_ST.RPT02

_SEQPAR05_ST.RPT03

_SEQPAR05_ST.RPT04

Element	Description
Output/Report Parameter Descriptions	Enter the output/report parameter descriptions. The number of parameters depends of the configuration made in the parameter tab, page 273. NOTE: Descriptions can be entered in multiple languages, page 43.
Alias Output	The default variable reference is <Instance name>_SEQPAR16_ST.OP01...<Instance name>_SEQPAR16_ST.OP16.
Alias Report	The default variable reference is <Instance name>_SEQPAR16_ST.RPT01...<Instance name>_SEQPAR16_ST.RPT16.

NOTE: The default security classification of attributes of this page is *Operate*.

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Batch Phase Manager

What's in This Part

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Communication Configuration in InBatch Tool	295

Overview

This part describes the master templates that provide the supervision functions for Batch phase manager. It also describes the template-specific configuration pages of the ArchestrA IDE object editor.

\$PhaseCE: Batch Phase Functions


What’s in This Chapter

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Graphic Representation	281
Faceplates	282

Overview

This chapter describes the master templates that provide the supervision functions for Batch phase.

Schneider Electric provides the templates described in this document. These templates can be used in various applications to minimize engineering efforts but the use, integration, configuration, and validation of the system is the sole responsibility of the user. Said user must ensure the safety of the system as a whole by performing a safety analysis, including the resources provided by Schneider Electric through procedures that the user deems appropriate.

 **WARNING**

LOSS OF CONTROL

- Perform a Failure Mode and Effects Analysis (FMEA) of your application, and apply preventive and detective controls before implementation.
- Provide a fallback state for undesired control events or sequences.
- Provide separate or redundant control paths wherever required.
- Supply appropriate parameters, particularly for limits.
- Review the implications of transmission delays and take actions to mitigate.
- Review the implications of communication link interruptions and take actions to mitigate.
- Provide independent paths for control functions (for example, emergency stop, over-limit conditions, and fault conditions) according to the safety analysis and applicable codes, and regulations.
- Apply local accident prevention and safety regulations and guidelines. ¹
- Test each implementation of this library for proper operation before placing it into service.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

¹ For additional information, refer to NEMA ICS 1.1 (latest edition), *Safety Guidelines for the Application, Installation, and Maintenance of Solid State Control* and to NEMA ICS 7.1 (latest edition), *Safety Standards for Construction and Guide for Selection, Installation and Operation of Adjustable-Speed Drive Systems* or their equivalent governing your particular location.

Description

Introduction

This object is used for monitoring phases based on the ISA-S88.01-1995 standard for batch control.

Supervision Functions

The table describes the main functions for Batch phase management:

Function	Description
State management	Shows the status of the phase.
Owner selection	Allows user to configure whether the phase commands come from the program or the operator.
Operating mode	Allows user to operate the phase in automatic/semi-automatic or manual mode.
Command management	Allows user to send commands (such as <i>Start</i> and <i>Stop</i>) to the phase.
Parameter management	Allows user to select a strategy, enter input parameter values, and monitor output values.
Initial condition management	Optional function that allows user to manage initial conditions that are not satisfied and that block the start of the phase.
Diagnostic information management	Optional function that allows user to manage abnormal conditions detected by the phase.

These functions are implemented in runtime through symbols and their associated faceplate.

Control/Supervision Relationship

Control Resources

To provide core and optional supervision functions, the *\$PSxInBatchPhase* master template is configured to exchange data with the following control resources of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
PHASEGP	Batch phase logic	PhaseGP_ST_DDT	<instance name>_Phase_ST	Core supervision functions.
		PhaseGP_CFG_DDT	<instance name>_Phase_CFG	
PHPAR05GP	Batch phase parameters	PhPar05GP_ST_DDT	<instance name>_PhPar05_ST	Optional supervision functions.
PHPAR10GP		PhPar10GP_ST_DDT	<instance name>_PhPar10_ST	
PHPAR16GP		PhPar16GP_ST_DDT	<instance name>_PhPar16_ST	
CONDSUMGP	Detected failure condition summary (default variable naming convention <...>_FC_CONDSUM_<...>)	CondsuGP_ST_DDT	<instance name>_FC_CONDSUM_ST	
	Initial conditions (default variable naming convention <...>_IC_CONDSUM_<...>)		<instance name>_IC_CONDSUM_ST	
** Mandatory variables to be defined.				

For description of these control resources, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. User can modify the values in the derived application template or in its instances. User can access the parameters from the **Attributes** page of the object editor, page 100.

These parameters allows user to configure core functions.

NOTE: User can configure optional functions from the **template-specific** configuration pages, page 270.

Parameter Description

This table describes the parameters of the automation object:

Parameter	Type	Default	Description
Param.Data1.Desc	String		Data1 description (only displayed in the PanelAll symbol).
Param.Data1.Format	String	0.00	Specifies the displaying format of the Data1 value. For example, enter 0.00 for 2 decimal NOTE: For configuration purposes, the decimal separator must be Dot (.) and not any other type of separator, for example, Comma (,). The run-time will use the configured language settings of the local system.
Param.Data1.PV	Float	0.0	Data1 value attribute. NOTE: To display the Data1 variable, you need to define it in the Extensions tab as an input extension of the attribute Param.Data1.PV (for example Me.IBPar.OP01.OP.PV for displaying the output parameter 1).
Param.Data2.Desc	String		Data2 description (only displayed in the PanelAll symbol).
Param.Data2.Format	String	0.00	Specifies the displaying format of the Data2 value. For example, enter 0.00 for 2 decimal NOTE: For configuration purposes, the decimal separator must be Dot (.) and not any other type of separator, for example, Comma (,). The run-time will use the configured language settings of the local system.
Param.Data2.PV	Float	0.0	Data2 value attribute. NOTE: To display the Data2 variable, you need to define it in the Extensions tab as an input extension of the attribute Param.Data2.PV (for example Me.IBPar.OP02.OP.PV for displaying the output parameter 2).
Param.HideAbortButton	Bool	False	If true, the Abort button is not displayed. If false, the Abort button is displayed.
Param.HideHoldButton	Bool	False	If true, the Hold button is not displayed. If false, the Hold button is displayed.
Param.HidePauseButton	Bool	False	If true, the Pause button is not displayed. If false, the Pause button is displayed.

Parameter	Type	Default	Description
Param.HideResetButton	Bool	False	If true, the Reset button is not displayed. If false, the Reset button is displayed.
Param.HideRestartButton	Bool	False	If true, the Restart button is not displayed. If false, the Restart button is displayed.
Param.HideStartButton	Bool	False	If true, the Start button is not displayed. If false, the Start button is displayed.
Param.HideStopButton	Bool	False	If true, the Stop button is not displayed. If false, the Stop button is displayed.
Param.ModeNormal	String	O, P	Specifies the normal owner modes (separated by a comma): <ul style="list-style-type: none"> O: Operator P: Program

Default State Alarms

State Alarms for Batch Phase

The table indicates for which attributes a state alarm is configured in the \$PhaseCE master template and provides the default values.

Attribute	Alarm message	Priority
AO.Failure	Failure condition triggered during execution	999

NOTE: User can modify the configuration from the **Attributes** page.

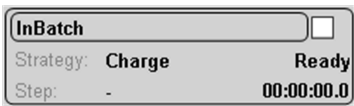

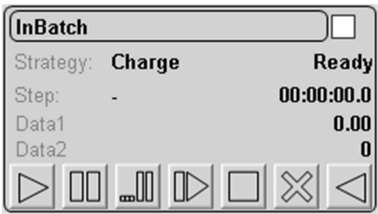

Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in symbols.

Representation

This table describes the symbols available for representing the InBatch:

Name	Graphic symbol	Description
PanelState		<p>The symbol displays:</p> <ul style="list-style-type: none"> • The current state of the phase. • The step being executed. • The strategy that is applied (if configured and selected). • The time elapsed for the current step.
PanelWithButtons		<p>The symbol displays:</p> <ul style="list-style-type: none"> • The current state of the phase. • The step being executed. • The strategy that is applied (if configured and selected). • The time elapsed for the current step. • Control buttons
PanelAll		<p>The symbol displays:</p> <ul style="list-style-type: none"> • The current state of the phase. • The step being executed. • The strategy that is applied (if configured and selected). • The time elapsed for the current step. • Control buttons. • Two configurable data (<i>Data1</i> and <i>Data2</i>).
ControlButtons		<p>User configurable control buttons.</p> <p>NOTE: Control buttons will be enabled only if the phase is started in operator owner (during program owner operation, control buttons are disabled). Control buttons will be disabled if phase state is <i>READY</i> or <i>INTERLOCKED</i>.</p>

NOTE:

- The display area for the descriptions of State, Strategy and Step is limited, however, since they are user configurable, tooltips are available for these descriptions in the graphical symbols as well as in the **Operator** tab of the faceplate.
- Current state will be shown as: State related to InBatch (Intermediate state of phase). For example, *RUN(HOLDING)*

Faceplates

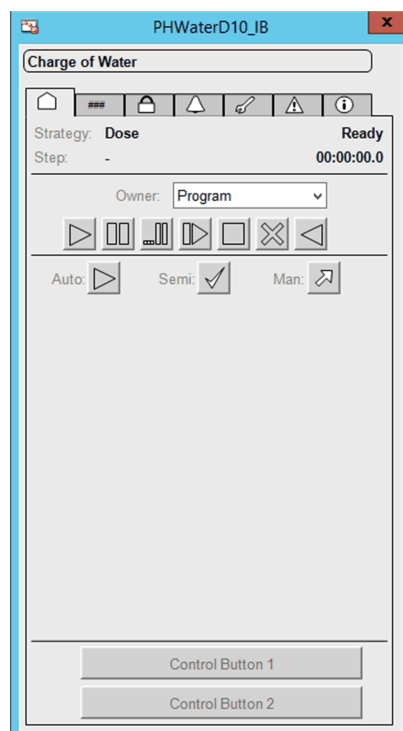
Overview

During operation, clicking a Batch phase graphic symbol opens a faceplate with the following tabs:

- Standard tabs:
 - Operation
 - Parameters (input and output parameters)
 - State machine
 - Alarms, page 75
- Optional tabs:
 - Initial Conditions, page 65
 - Detected Failures, page 68

Operation Tab in Automatic Mode

This figure shows the Operation tab when Operator and the Auto mode are selected.





NOTE: Control buttons will be enabled only if the phase is started in operator owner (during program owner operation, control buttons are disabled). Control buttons will be disabled if phase state is *READY* or *INTERLOCKED*.

The phase runs in automatic mode after clicking the **Start** button, and the bottom section of the faceplate displays:

- The step that is being executed and its number.
- The transition to the next step:
 - *Passive Galaxy style*, page 47: The condition is not yet fulfilled.
 - *Active Galaxy style*, page 47: The condition is true.
- The next step to be executed when the current step is completed and the transition is true.




This table describes the command that corresponds to each button on the **Operation** tab.

Button	Command
	Start
	Hold
	Pause
	Restart/resume
	Stop

Button	Command
	Abort
	Reset

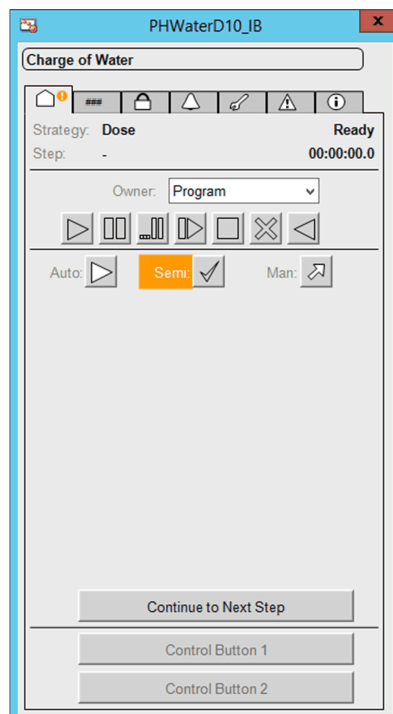
NOTE: Only buttons that correspond to available commands are active (*Active Galaxy style*, page 47). Unavailable commands are displayed with the *Passive Galaxy style*.

This table describes the mode that corresponds to each button on the **Operation** tab.

Button	Mode	Description
	Auto	Normal execution
	Semi	Asks for confirmation before transitioning
	Man	Allows you to select the step to execute

Operation Tab in Semi-Automatic Mode

This figure shows the **Operation** tab when **Operator** and the **Semi** mode are selected.



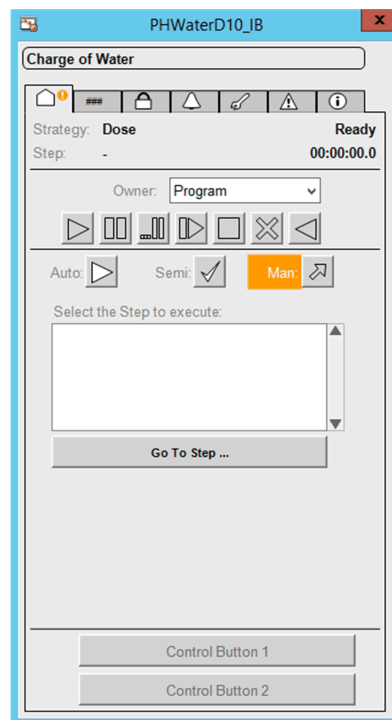
The phase starts in semi-automatic mode after clicking the **Start** button, and the bottom section of the faceplate displays:

- The step that is being executed and its number.
- The transition to the next step:
 - Passive style: The condition is not yet fulfilled
 - Active style: The condition is true.

- The next step to be executed.
- A **Continue to Next Step** button requiring the operator to confirm the execution of the next step when the transition is true.

Operation Tab in Manual Mode

This figure shows the **Operation** tab when **Operator** and the **Man** mode are selected.



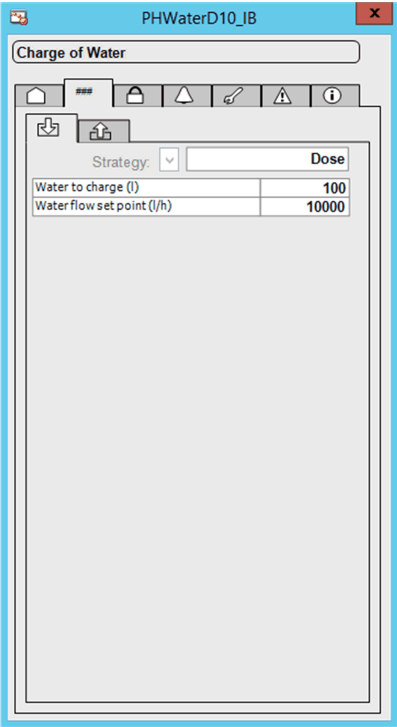
The phase starts in manual mode after clicking the **Start** button. The bottom section of the faceplate displays:

- The steps of the sequence that are programmed in the **Running** state.
- A **Go To Step** button allowing to execute the step selected in the **Select the Step to execute** list.

User can scroll up and down (in six-step increments) through the list of steps by using the two arrow buttons.

Input/Ouput Parameters Tab

This figure shows the **Parameters** tab when the **Input Parameters** subtab is selected

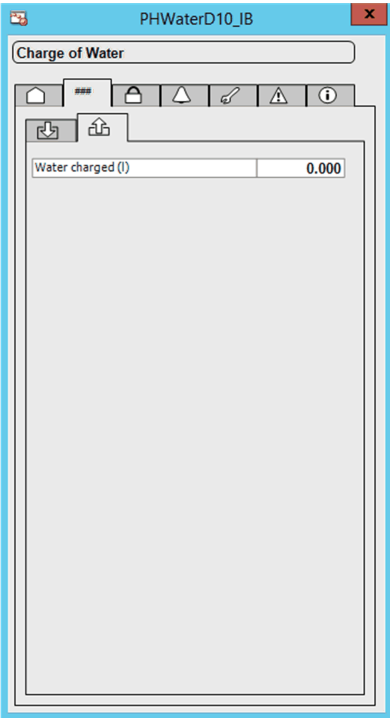


User can select a strategy from the ones that have been defined and enter the corresponding values for enabled parameters.

Parameters that do not pertain to the selected strategy are disabled.

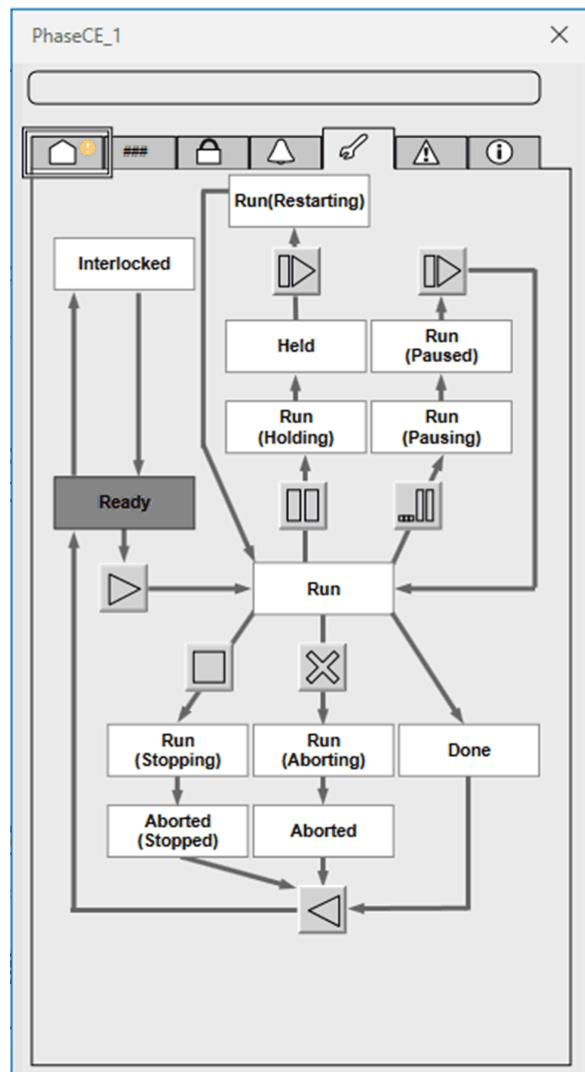
NOTE: The parameters can be only modified when the sequence is in **READY** state.

This figure shows the **Parameters** tab when the **Output Parameters** subtab is selected.



Displays the values of output parameters, which are calculated while the phase is executed.

State Machine Tab



The state diagram allows the operator to execute available commands by using the buttons.

Names of states appear in *Passive* style while the current state appears in *Active* style.

NOTE: Only buttons that correspond to available commands are active (*Active* style). Unavailable commands are displayed with the *Passive* style.

Batch Phase Object Configuration Pages

What's in This Chapter

Main Page Default Configuration	288
Initial Conditions Page Default Configuration	289
Failure Conditions Page Default Configuration	290
Parameters Page Default Configuration	291
Input Parameters Page Default Configuration	292
Output Parameters Page Default Configuration	293

Overview

This chapter describes the default configuration of pages for Batch phase objects.

They allow you to configure optional supervision functions of process application templates and their instances.

The default security classification to modify references is *Configure*.

Main Page Default Configuration

Overview

The **Main** page is used to modify the variable references used by the InBatch object.

The references to control resources that are described use specific control resources of the Modicon Libraries - General Purpose for AVEVA System Platform.

For a description of the default template-specific configuration of Batch phase management, refer to the chapter documenting each master template of the Batch phase.

Main Page Description

Main

Initial Conditions

Failure Conditions

Parameters

Input Parameters

Output Parameters

Attributes

Scripts

Graphics

Object Information

PV:

Customized References (only if Suffix is left on blank):

Suffix for Auto References:

InBatch State:

InBatch Command:

Sequence State:

Sequence Command:

Status Word:

Configuration Word:

Elapsed Time:

Current Step Description:

...

...

...

...

...

...

...

...

_IBPHASE_ST.IBSTATE

_IBPHASE_ST.IBCOMMAND

_IBPHASE_ST.STATE

_IBPHASE_ST.COMMAND

_IBPHASE_ST.STW

_IBPHASE_ST.CFGW

_IBPHASE_ST.ETIME

_IBPHASE_ST.CSTEPD;C

Next Step (Manual):

Step Descriptions:

Transition Descriptions:

...

...

...

_IBPHASE_CFG.NSTEP

_IBPHASE_CFG.STEPD;C

_IBPHASE_CFG.TRANSD;C

Labels (If left blank, Buttons will be hidden during operation):

Control Button 1:

Control Button 2:

Element	Default variable reference with suffix for auto-referencing
InBatch State	<Instance name>_IBPHASE_ST.IBSTATE.
InBatch Command	<Instance name>_IBPHASE_ST.IBCOMMAND.
Sequence State	<Instance name>_IBPHASE_ST.STATE.
Sequence Command	<Instance name>_IBPHASE_ST.COMMAND. The default security classification is <i>Operate</i> .
Status Word	<Instance name>_IBPHASE_ST.STW.
Configuration Word	<Instance name>_IBPHASE_ST.CFGW. The default security classification is <i>Operate</i> .
Elapsed Time	<Instance name>_IBPHASE_ST.ETIME.
Current Step Description	<Instance name>_IBPHASE_ST.CSTEPD;C.
Next Step (Manual)	<Instance name>_IBPHASE_CFG.NSTEP. The default security classification is <i>Secured Write</i> .
Step Descriptions	<Instance name>_IBPHASE_CFG.STEPD;C.
Transition Descriptions	<Instance name>_IBPHASE_CFG.TRANS;C.
Customized References	Specify a variable reference if the automatic referencing mechanism is not used.
Control Button 1	Label for Control button 1. Control Button will be available only if the label is defined.
Control Button 2	Label for Control button 2. Control Button will be available only if the label is defined.

NOTE: For control button commands, access control is provided on **Main** tab with labels.

Initial Conditions Page Default Configuration

Overview

Depending on the configuration of the corresponding control resource, the **Initial Conditions** page is used to:

- Enable or disable initial conditions and define the initial condition descriptions. When enabled, it allows you to:
 - Enable or disable the bypass of initial conditions.
 - Enable or disable the manual resetting of initial conditions.

The references to control resources that are described use specific control resources of the Modicon Libraries - General Purpose for AVEVA System Platform.

For a description of the default template-specific configuration of initial conditions, refer to the chapter documenting each master template of the Batch phase.

Initial Conditions Page Description

Element	Description
Enable Initial Conditions	<p>Select this check box to enable initial condition management.</p> <p>By default the variable reference with suffix for auto-referencing is <code><Instance name>_IC_CONDSUM_ST.CONDW</code>.</p> <p>The default security classification is <i>Free Access</i>.</p>
Enable Bypass of Conditions	<p>Select this check box to enable bypass of conditions.</p> <p>By default the variable reference with suffix for auto-referencing is <code><Instance name>_IC_CONDSUM_ST.BYPASSW</code>.</p> <p>The default security classification is <i>Free Access</i> to enable the bypassing function and <i>Secured Write</i> to bypass conditions during operation.</p>
Enable Manual Reset of Conditions	<p>Select this check box to enable the manual resetting of conditions.</p> <p>By default the variable reference with suffix for auto-referencing is <code><Instance name>_IC_CONDSUM_ST.REARMREQW</code>.</p> <p>The default security classification is <i>Free Access</i> to enable the manual reset function and <i>Secured Write</i> to reset conditions during operation.</p>
Initial Condition Description	<p>Enter the initial condition descriptions (up to 15).</p> <p>The default security classification is <i>Configure</i>.</p> <p>NOTE: The descriptions can be entered in multiple languages, page 43.</p>
Customized References	<p>Specify a variable reference if the automatic referencing mechanism is not used.</p>

Failure Conditions Page Default Configuration

Overview

Depending on the configuration of the corresponding control resource, the **Failure Conditions** page is used to:

- Enable or disable monitoring of detected failure conditions and define the detected failure condition descriptions. When enabled, it allows you to:
 - Enable or disable the bypass of detected failure conditions.
 - Enable or disable the manual resetting of detected failure conditions.

The references to control resources that are described use specific control resources of the Modicon Libraries - General Purpose for AVEVA System Platform.

For a description of the default template-specific configuration of detected failure condition management, refer to the chapter documenting each master template of the InBatch.

Failure Conditions Page Description

Element	Description
Enable Failure Conditions	<p>Select this check box to enable the management of detected failure conditions.</p> <p>By default the variable reference with suffix for auto-referencing is <Instance name>_FC_CONDSUM_ST.CONDW.</p> <p>The default security classification is <i>Free Access</i>.</p>
Enable Bypass of Conditions	<p>Select this check box to enable bypass of detected failure conditions.</p> <p>By default the variable reference with suffix for auto-referencing is <Instance name>_FC_CONDSUM_ST.BYPASSW.</p> <p>The default security classification is <i>Free Access</i> to enable the bypassing function and <i>Secured Write</i> to bypass conditions during operation.</p>
Enable Manual Reset of Conditions	<p>Select this check box to enable the manual resetting of detected failure conditions.</p> <p>By default the variable reference with suffix for auto-referencing is <Instance name>_FC_CONDSUM_ST.REARMREQW.</p> <p>The default security classification is <i>Free Access</i> to enable the manual reset function and <i>Secured Write</i> to reset conditions during operation.</p>
Failure Condition Descriptions	<p>Enter the condition descriptions (up to 15).</p> <p>The default security classification is <i>Free Access</i>.</p> <p>NOTE: The descriptions can be entered in multiple languages, page 43.</p>
Customized References	<p>Specify a variable reference if the automatic referencing mechanism is not used.</p>

Parameters Page Default Configuration

Overview

Depending on the configuration of the corresponding control resource, the **Parameters** page is used to:

- Define the number of input parameters.

- Define the number of output parameters.

The references to control resources that are described use specific control resources of the Modicon Libraries - General Purpose for AVEVA System Platform.

For a description of the default template-specific configuration of parameters for sequential control, refer to the chapter documenting each master template of the Batch phase.

Parameters Page Description

Element	Description
# Input Parameters	Select the number of input parameters from the drop-down list (up to 16). The default security classification is <i>Free Access</i> .
# Output Parameters	Select the number of output parameters from the drop-down list (up to 16). The default security classification is <i>Free Access</i> .
Status Word	Status word; by default the variable reference with suffix for auto-referencing is <Instance name>_IBPARxx_ST.STW ⁽¹⁾ .
Configuration Word	Status word; by default the variable reference with suffix for auto-referencing is <Instance name>_IBPARxx_ST.CFGW ⁽¹⁾ . The default security classification is <i>Operate</i> .
Customized References	Specify a variable reference if the automatic referencing mechanism is not used.
(1)	xx = 05, 10, or 16 according to the number of parameters.

By combining the number of input and output parameters (the higher one), the object automatically selects the control block for the parameters being used at the control level (no parameters, *IBPAR05*, *IBPAR10*, or *IBPAR16*).

Input Parameters Page Default Configuration

Overview

Depending on the configuration of the corresponding control resource, the **Input Parameters** page is used to:

- Define input parameter descriptions.
- Enable or disable strategies for the input parameters.
- Configure the strategies when enabled.

The references to control resources that are described use specific control resources of the Modicon Libraries - General Purpose for AVEVA System Platform.

For a description of the default template-specific configuration of input parameters for InBatch to the chapter documenting each master template of the Batch phase.

Input Parameters Page Description

Element	Description
Input Parameter Descriptions	<p>Enter the input parameter descriptions. The number of parameters depends of the configuration made in the parameter tab, page 273.</p> <p>The default variable reference (Alias) is <Instance name>_IBPAR16_ST.IP01...<Instance name>_IBPAR16_ST.IP16.</p> <p>NOTE: Descriptions can be entered in multiple languages, page 43.</p>
Enable Strategies (Parameter 1)	<p>Select this check box to enable strategy management.</p> <p>NOTE: If the strategies are enabled, the parameter 1 is reserved for strategy management.</p>
Strategy Descriptions	<p>Enter the description of strategies (up to 8).</p> <p>NOTE: Descriptions can be entered in multiple languages, page 43.</p>
List of applicable Input Parameters	<p>Enter the input parameters applicable in each strategy separated by a comma.</p> <p>For example, if parameters 02 and 03 are applicable for the strategy, enter 2, 3.</p>

NOTE: The default security classification of attributes of this page is *Operate*.

Output Parameters Page Default Configuration

Overview

Depending on the configuration of the corresponding control resource, the **Output Parameters** page is used to define output parameter descriptions.

The references to control resources that are described use specific control resources of the Modicon Libraries - General Purpose for AVEVA System Platform.

For a description of the default template-specific configuration of parameters for InBatch, refer to the chapter documenting each master template of the Batch phase.

Output Parameters Page Description

\$PSxIB_001 *

Main | Initial Conditions | Failure Conditions | Parameters | Input Parameters | **Output Parameters** | Attributes | Scripts | Graphics | Object Information

Output Parameter Descriptions:

01:		
02:		
03:		
04:		
05:		
06:		
07:		
08:		
09:		
10:		
11:		
12:		
13:		
14:		
15:		
16:		

Customized References (only if Suffix is left on blank):

...	
...	
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Alias:

_IBPAR16_ST.OP01
_IBPAR16_ST.OP02
_IBPAR16_ST.OP03
_IBPAR16_ST.OP04
_IBPAR16_ST.OP05
_IBPAR16_ST.OP06
_IBPAR16_ST.OP07
_IBPAR16_ST.OP08
_IBPAR16_ST.OP09
_IBPAR16_ST.OP10
_IBPAR16_ST.OP11
_IBPAR16_ST.OP12
_IBPAR16_ST.OP13
_IBPAR16_ST.OP14
_IBPAR16_ST.OP15
_IBPAR16_ST.OP16

Element	Description
Output Parameter Descriptions	Enter the output parameter descriptions. The number of parameters depends of the configuration made in the parameter tab, page 273. NOTE: Descriptions can be entered in multiple languages, page 43.
Alias Output	The default variable reference is <Instance name>_IBPAR16_ST.OP01...<Instance name>_IBPAR16_ST.OP16.

NOTE: The default security classification of attributes of this page is *Operate*.

Communication Configuration in InBatch Tool

What's in This Chapter

Description 295

Overview

This chapter describes the configuration examples that can be implemented to establish the communication between InBatch tool and Batch Phase Manager.

Description

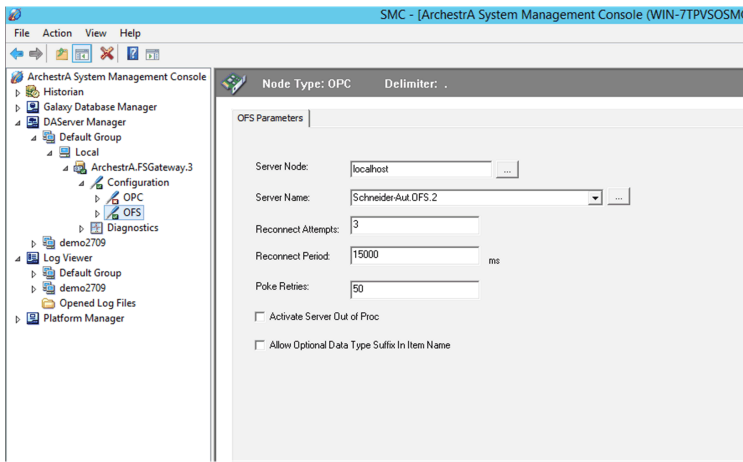
InBatch tool can be configured to communicate with Batch Phase Manager by two approaches:

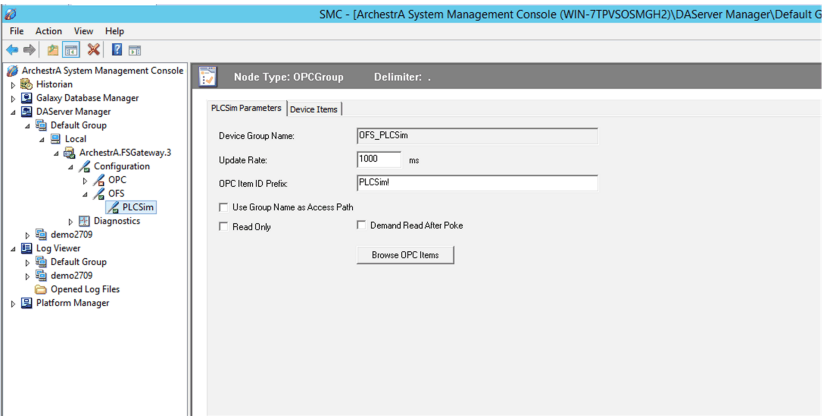
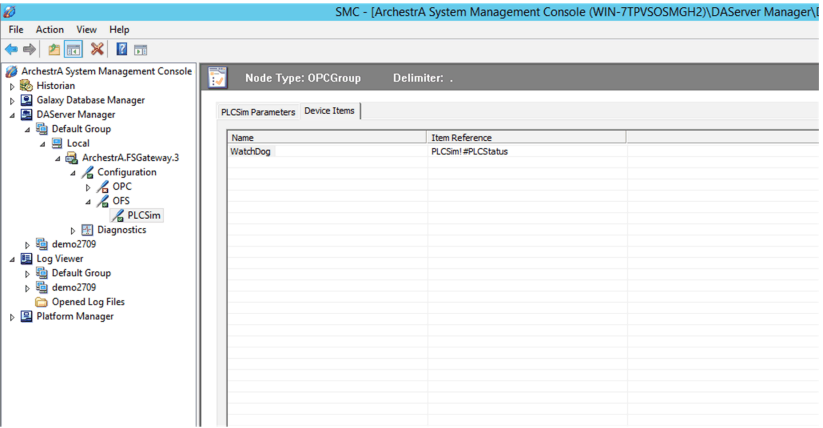
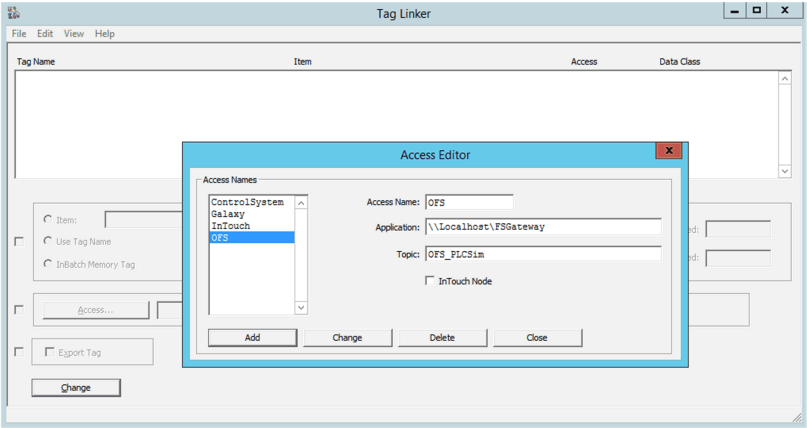
- InBatch tool on top of the OFS layer - InBatch tool will communicate with OFS directly in parallel with Supervisory layer (ASP) and OFS is communicating with Batch Phase Manager.
- InBatch tool on top of the Supervisory layer (ASP) - In this approach InBatch tool will communicate with ASP and ASP is communicating with OFS.

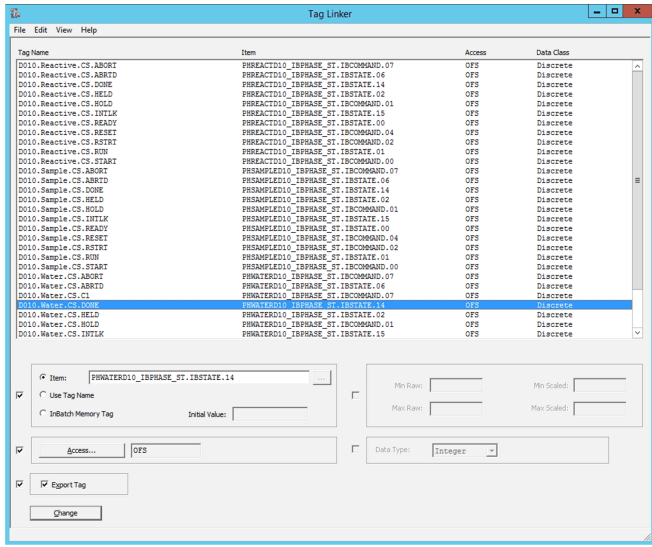
InBatch Tool on Top of the OFS Layer

To configure the InBatch tool to communicate with OFS user has to verify that *IBC/i* service is added in the runtime services and all the runtime services are stopped.

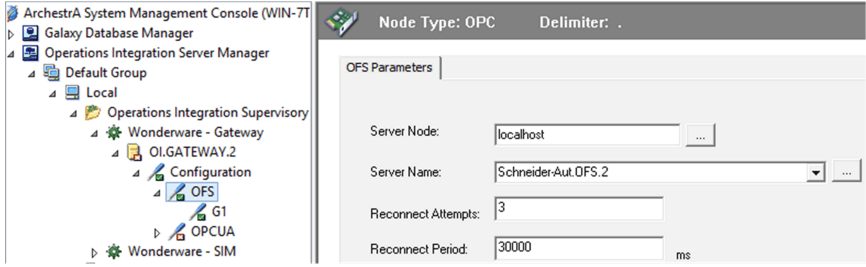
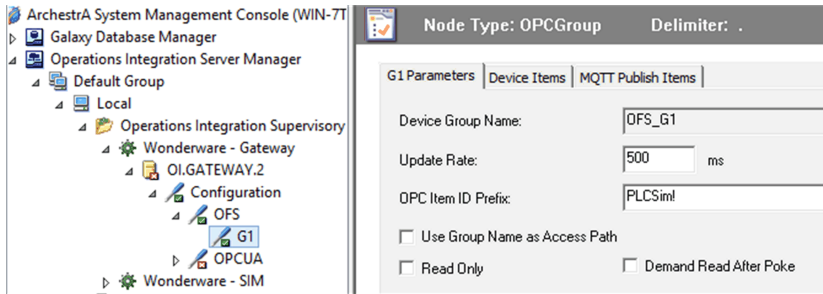
The below table shows the steps to configure InBatch tool to communicate with OFS layer for the AVEVA™ System Platform 2014 R2 SP1.

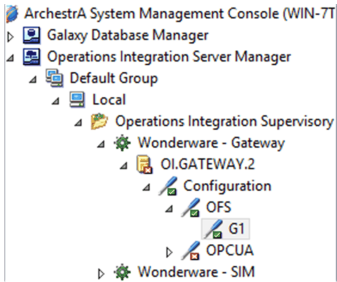
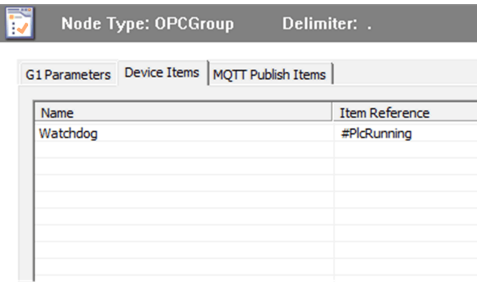
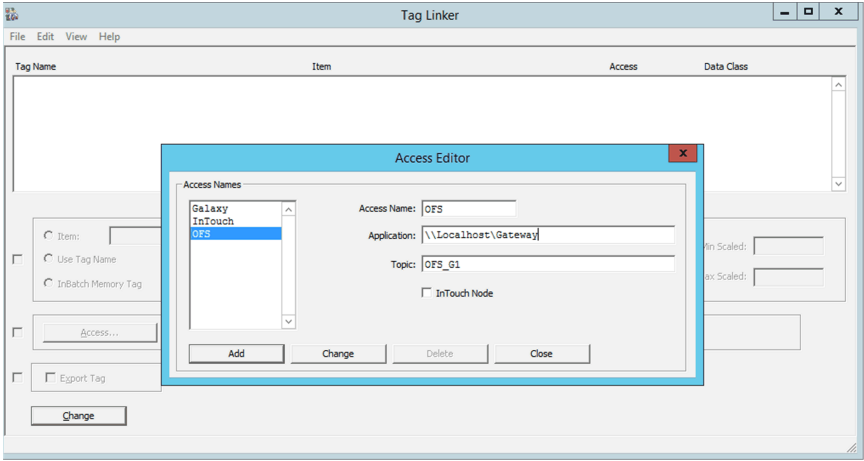
Step	Action
1	Go to the Archestra System Management Console .
2	Go to the DAServer Manager in the left side navigation hierarchy.
3	Create and configure the OPC object as shown in the figure (for example, OFS).
	
4	Add and configure OPC group object as shown in the figure (for example, PLCSim).

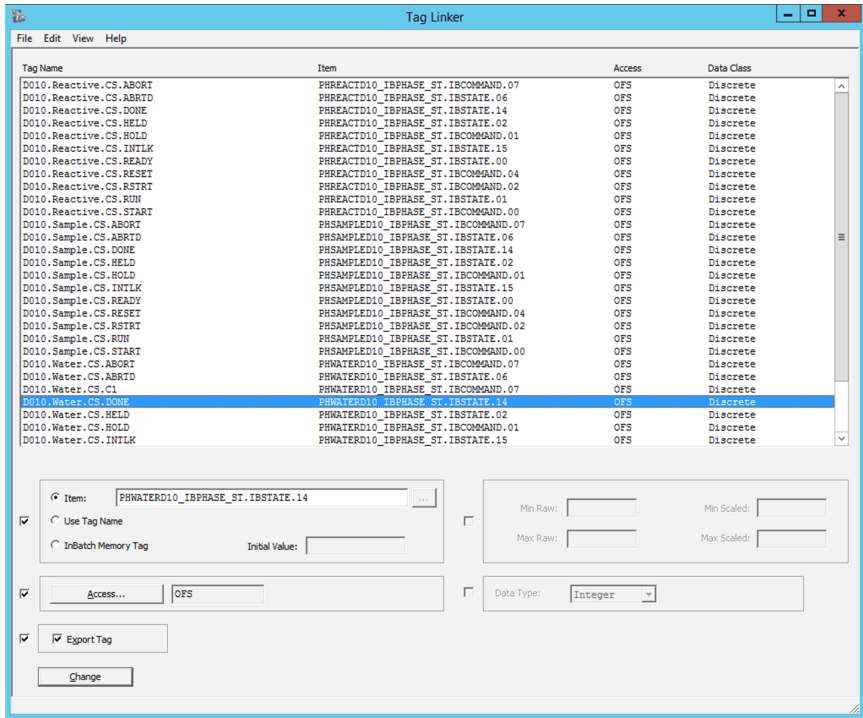
Step	Action
	<div> </div>
5	<p>Go to the InBatch tool, Environment Display.</p> <p>Open the TagLinker. Create a new access name.</p> <p>Provide the computer path location where the FSGateway is configured. In this case FSGateway is on the local host.</p> <p>Provide the topic name same as Device Group Name mentioned in the FSGateway server.</p> <div></div>
6	<p>Now Go to View in TagLinker, click on Filter, select the Units and Tag type to create the link.</p> <p>In the below figure, Tag Name column shows the tags created by the InBatch and items are <i>IBCommand</i> and <i>IBState</i> variables from Batch Phase Manager.</p> <p>User will have to configure every tag with the respective bit in the <i>IBCommand</i> and <i>IBState</i> as shown in the below figure.</p> <p>User will have to change the access to the OFS which is created in step 5.</p>

Step	Action
	
7	After linking all the required tags, update the Environment, Runtime and Configuration in Environment Display .
8	Now activate the FSGateway server in Archestra System Management Console .
9	Start all the services from Runtime in Environment Display . Now the user will be able to communicate InBatch tool with Batch Phase Manager.

The below table shows the steps to configure InBatch tool to communicate with OFS layer for the AVEVA™ System Platform 2017 Update 2.

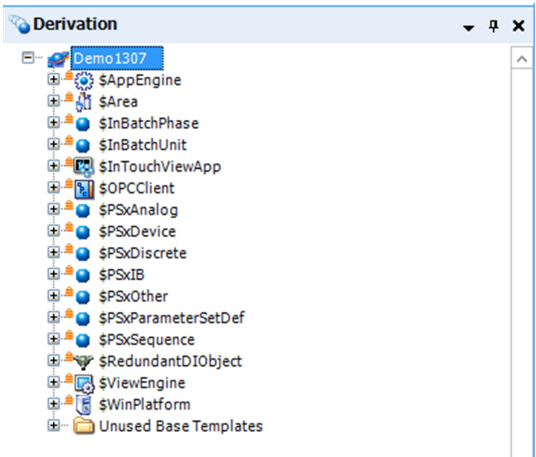
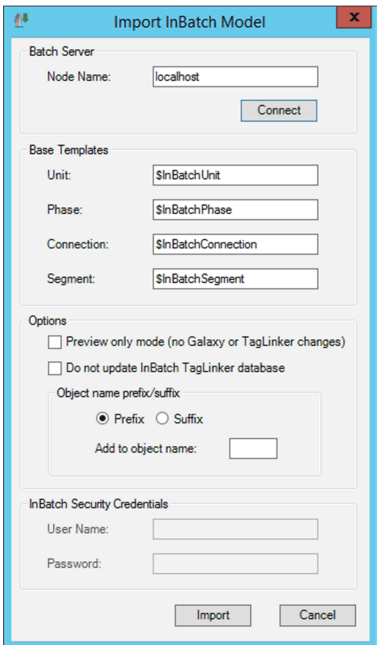
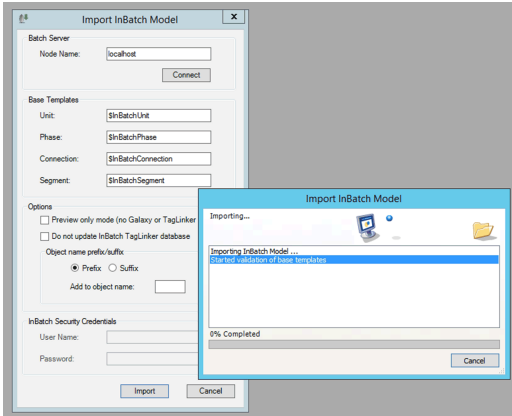
Step	Action
1	Go to the Archestra System Management Console .
2	Go to the OI.GATEWAY.2 in the left side navigation hierarchy.
3	Create and configure the OPC object as shown in the figure (for example, OFS).
	
4	Add and configure OFS group object as shown in the figure (for example, G1).
	

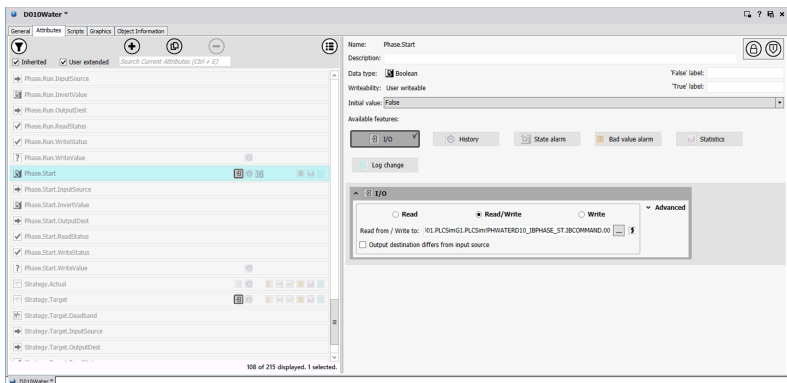
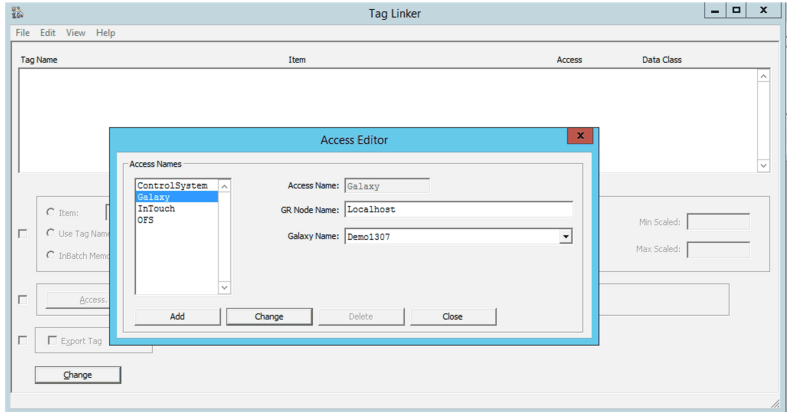
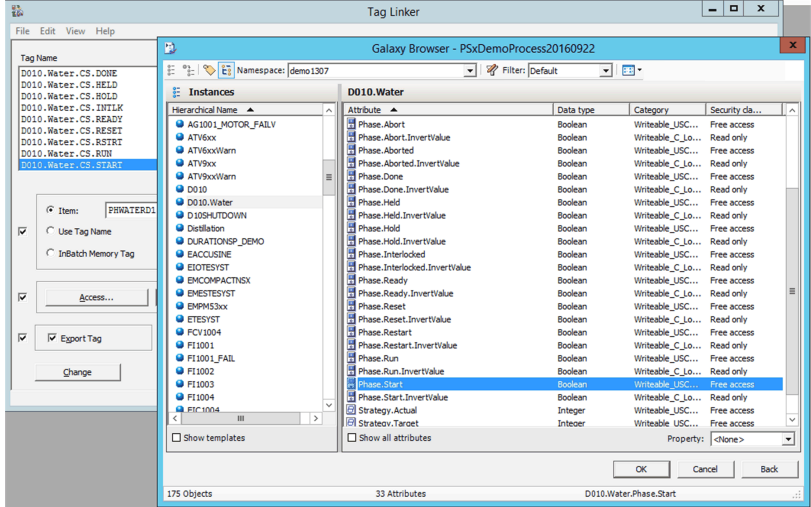
Step	Action
	<div><div></div><div></div></div>
5	<p>Go to the InBatch tool, Environment Display.</p> <p>Open the TagLinker. Create a new access name.</p> <p>Provide the computer path location where the OI.GATEWAY.2 is configured. The service name for the OI.GATEWAY.2 is GATEWAY. In this case Gateway is on the local host.</p> <p>Provide the topic name same as Device Group Name mentioned in the OI.GATEWAY.2 server.</p> <div></div>
6	<p>Now Go to View in TagLinker, click on Filter, select the Units and Tag type to create the link.</p> <p>In the below figure, Tag Name column shows the tags created by the InBatch and items are <i>IBCommand</i> and <i>IBState</i> variables from Batch Phase Manager.</p> <p>User will have to configure every tag with the respective bit in the <i>IBCommand</i> and <i>IBState</i> as shown in the below figure.</p> <p>User will have to change the access to the OFS which is created in step 5.</p>

Step	Action
	
7	After linking all the required tags, update the Environment, Runtime and Configuration in Environment Display .
8	Now activate the OI.GATEWAY.2 server in Archestra System Management Console .
9	Start all the services from Runtime in Environment Display . Now the user will be able to communicate InBatch tool with Batch Phase Manager.

InBatch tool on Top of the Supervisory Layer (ASP)

To configure the InBatch tool to communicate with the Batch Phase Manager through the ASP user has to verify that *IBMX* service is added in the runtime services and all the runtime services are stopped. The below table shows the steps to configure InBatch tool to communicate with Batch Phase Manager through the ASP.

Step	Action
1	<p>Go to the Archestra IDE platform, import the InBatch base templates from the below path C:\Program Files (x86)\Wonderware\InBatch\AppObjects. Here the drive C is the root drive for the installables.</p>  <p>Galaxy will have <i>\$InBatchPhase</i> and <i>\$BatchUnit</i> base templates.</p>
2	<p>Go to the Archestra IDE Platform, click InBatch tab → Import InBatch Model.</p> <p>A dialog box will appear select the Node Name, click on Connect and after successful connection click on Import.</p>  <p>The import operation will start importing InBatch application phase as an instance in ASP.</p> 
3	<p>Now open the InBatch phase instance under <i>\$InBatchPhase</i> template. The instance will have phase commands and phase states from InBatch.</p>

Step	Action
	<p>Enable the IO type of the phase commands and phase states. Connect the respective <i>IBCommand</i> and <i>IBState</i> variable from Batch Phase Manager as shown in figure.</p> <p>For example, Phase.Start - EPEASP.OPCUA_DeviceGroup.OPCUA.DeviceGroup./DA/0:PLCSim!PHASE1100_Phase_ST.PhState</p> 
4	<p>Go to the InBatch tool, Environment Display.</p> <p>Open the TagLinker → Access Editor, click Galaxy → enter GR Node Name and then select the Galaxy Name from the drop-down list and click on Change button.</p> 
5	<p>Now Go to View in TagLinker, click on Filter, select the Units and Tag type to create the link.</p> <p>Select the tag name, click on Access, select the Galaxy as Access Name and click on Change button.</p> <p>A dialog box appears when user clicks the browse button of Item and select the attribute from corresponding phase instance and click OK as shown in the below figure.</p>  <p>Link all the required attributes of the phase instance.</p>

Step	Action
6	Update the Environment , Runtime and Configuration in Environment Display .
7	Start all the services from Runtime in Environment Display . Now the user will be able to communicate InBatch tool with Batch Phase Manager through ASP.

Equipment Module

What's in This Part

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Overview

This part describes the master templates that provide the supervision functions for equipment module. It also describes the template-specific configuration pages of the ArchestrA IDE object editor.

\$EMPatternCE: Equipment Module Functions


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Overview

This chapter describes the master templates that provide the supervision functions for equipment module.

Schneider Electric provides the templates described in this document. These templates can be used in various applications to minimize engineering efforts but the use, integration, configuration, and validation of the system is the sole responsibility of the user. Said user must ensure the safety of the system as a whole by performing a safety analysis, including the resources provided by Schneider Electric through procedures that the user deems appropriate.

 **WARNING**

LOSS OF CONTROL

- Perform a Failure Mode and Effects Analysis (FMEA) of your application, and apply preventive and detective controls before implementation.
- Provide a fallback state for undesired control events or sequences.
- Provide separate or redundant control paths wherever required.
- Supply appropriate parameters, particularly for limits.
- Review the implications of transmission delays and take actions to mitigate.
- Review the implications of communication link interruptions and take actions to mitigate.
- Provide independent paths for control functions (for example, emergency stop, over-limit conditions, and fault conditions) according to the safety analysis and applicable codes, and regulations.
- Apply local accident prevention and safety regulations and guidelines. ¹
- Test each implementation of this library for proper operation before placing it into service.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

¹ For additional information, refer to NEMA ICS 1.1 (latest edition), *Safety Guidelines for the Application, Installation, and Maintenance of Solid State Control* and to NEMA ICS 7.1 (latest edition), *Safety Standards for Construction and Guide for Selection, Installation and Operation of Adjustable-Speed Drive Systems* or their equivalent governing your particular location.

Description

Introduction

This object is used for monitoring sequences based on the ISA-NS88 standard for continuous control.

Supervision Functions

The table describes the main functions for equipment module management:

Function	Description
Equipment state management	Shows the state of the sequence.
Owner selection	Allows you to configure whether the sequence commands come from the program or the operator.
Operating mode	Allows you to operate the sequence in automatic/semi-automatic or manual mode.
Command management	Allows you to send commands (such as <i>Start</i> and <i>Stop</i>) to the sequence.
Parameter management	Allows you to select a strategy, enter input parameter values, and monitor output values.
Initial condition management	Optional function that allows you to manage initial conditions that are not satisfied and that block the start of the sequence.
Diagnostic information management	Optional function that allows you to manage abnormal conditions detected by the sequence.

These functions are implemented in runtime through symbols and their associated faceplate.

Control/Supervision Relationship

Control Resources

To provide core and optional supervision functions, the *\$PSxEquipmentModule* master template is configured to exchange data with the following control resources of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
EMCTLGP	Equipment module logic	EMCTLGP_ST_DDT	<instance name>_EMCTL_ST	Core supervision functions.
		EMCTLGP_DDT_DDT	<instance name>_EMCTL_CFG	
		EMCTLGP_IOPar_DDT	<instance name>_IOPar NOTE: The IOPar pin is not available in the DFB, user is expected to create the variable separately.	
CONDSUMGP	Detected failure condition summary (default variable naming convention <...>_FC_CONDSUM_<...>)	CondsunGP_ST_DDT	<instance name>_CONDSUM_ST	Optional supervision functions.
	Initial conditions (default variable naming convention <...>_IC_CONDSUM_<...>)		<instance name>_INITCOND_ST	
** Mandatory variables to be defined.				

For description of these control resources, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the object editor, page 100.

These parameters allow you to configure core functions.

NOTE: You can configure optional functions from the template-specific configuration pages, page 270.

Parameter Description

This table describes the parameters of the automation object:

Parameter	Type	Initial Value	Description
Param.Data1.Desc	String		Data1 description (only displayed in the PanelWithButtons_2Data and PanelWithButtons_4Data symbols).
Param.Data1.Format	String	0.00	Specifies the displaying format of the Data1 value. The valid format entries are D (Duration), T (Date Time) and numeric formats (for example: 0, 0.0, 00000) NOTE: For configuration purposes, the decimal separator must be Dot (.) and not any other type of separator, for example, Comma (.). The run-time will use the configured language settings of the local system.
Param.Data1.PV	Double	0.0	Data1 value attribute. NOTE: To display the Data1 variable, you need to define it in the Extensions tab as an input extension of the attribute Param.Data1.PV (for example Me.EMPar.OP01.OP.PV for displaying the output parameter 1).
Param.Data1.EU	String		Engineering unit for Data1.
Param.Data2.Desc	String		Data2 description (only displayed in the PanelWithButtons_2Data and PanelWithButtons_4Data symbols).
Param.Data2.Format	String	0.00	Specifies the displaying format of the Data2 value. The valid format entries are D (Duration), T (Date Time) and numeric formats (for example: 0, 0.0, 00000) NOTE: For configuration purposes, the decimal separator must be Dot (.) and not any other type of separator, for example, Comma (.). The run-time will use the configured language settings of the local system.
Param.Data2.PV	Double	0.0	Data2 value attribute. NOTE: To display the Data2 variable, you need to define it in the Extensions tab as an input extension of the attribute Param.Data2.PV (for example Me.EMPar.OP02.OP.PV for displaying the output parameter 2).
Param.Data2.EU	String		Engineering unit for Data2.

Parameter	Type	Initial Value	Description
Param.HideAbortButton	Bool	False	If true, the Abort button is not displayed. If false, the Abort button is displayed.
Param.HideHoldButton	Bool	False	If true, the Hold button is not displayed. If false, the Hold button is displayed.
Param.HidePauseButton	Bool	False	If true, the Pause button is not displayed. If false, the Pause button is displayed.
Param.HideResetButton	Bool	False	If true, the Reset button is not displayed. If false, the Reset button is displayed.
Param.HideRestartButton	Bool	False	If true, the Restart button is not displayed. If false, the Restart button is displayed.
Param.HideStartButton	Bool	False	If true, the Start button is not displayed. If false, the Start button is displayed.
Param.HideStopButton	Bool	False	If true, the Stop button is not displayed. If false, the Stop button is displayed.
Param.ModeNormal	String	O, P	Specifies the normal owner modes (separated by a comma): <ul style="list-style-type: none"> O: Operator P: Program
Param.Data3.Desc	String		Data3 description (only displayed in the PanelWithButtons_4Data symbol).
Param.Data3.Format	String	0.00	Specifies the displaying format of the Data3 value. The valid format entries are D (Duration), T (Date Time) and numeric formats (for example: 0, 0.0, 00000) NOTE: For configuration purposes, the decimal separator must be Dot (.) and not any other type of separator, for example, Comma (,). The run-time will use the configured language settings of the local system.
Param.Data3.PV	Double	0.0	Data3 value attribute. NOTE: To display the Data3 variable, you need to define it in the Extensions tab as an input extension of the attribute Param.Data3.PV (for example Me.EMPar.OP01.OP.PV for displaying the output parameter 1).
Param.Data3.EU	String		Engineering unit for Data3.
Param.Data4.Desc	String		Data4 description (only displayed in the PanelWithButtons_4Data symbol).
Param.Data4.Format	String	0.00	Specifies the displaying format of the Data4 value. The valid format entries are D (Duration), T (Date Time) and numeric formats (for example: 0, 0.0, 00000) NOTE: For configuration purposes, the decimal separator must be Dot (.) and not any other type of separator, for example, Comma (,). The run-time will use the configured language settings of the local system.

Parameter	Type	Initial Value	Description
Param.Data4.PV	Double	0.0	Data4 value attribute. NOTE: To display the Data4 variable, you need to define it in the Extensions tab as an input extension of the attribute Param.Data4.PV (for example Me.EMPar.OP01.OP.PV for displaying the output parameter 1).
Param.Data4.EU	String		Engineering units for Data4.

Default State Alarms

State Alarms for Equipment Module

The table indicates for which attributes a state alarm is configured in the \$EMPatternCE master template and provides the default values.

Attribute	Alarm message	Priority
AO.Failure	Failure condition triggered during execution	999

NOTE: You can modify the configuration from the **Attributes** page.

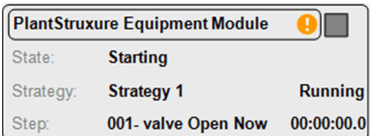
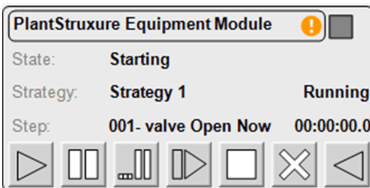
Graphic Representation

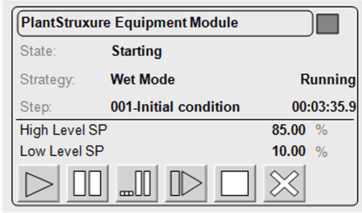
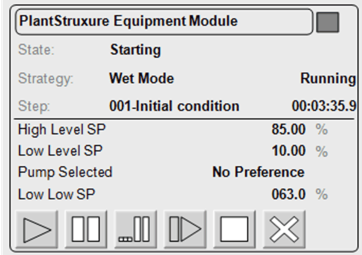
Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in symbols.

Representation

This table describes the symbols available for representing the equipment module:

Name	Graphic symbol	Description
PanelState		<p>The symbol displays:</p> <ul style="list-style-type: none"> The current equipment state. The current state of the sequence. The step being executed. The strategy that is applied (if configured and selected). The time elapsed for the current step.
PanelWithButtons		<p>The symbol displays:</p> <ul style="list-style-type: none"> The current equipment state. The current state of the sequence. The step being executed. The strategy that is applied (if configured and selected). The time elapsed for the current step. Control buttons

Name	Graphic symbol	Description
PanelWithButton_2Data		<p>The symbol displays:</p> <ul style="list-style-type: none"> • The current equipment state. • The current state of the sequence. • The step being executed. • The strategy that is applied (if configured and selected). • The time elapsed for the current step. • Control buttons. • Two configurable data (<i>Data1</i> and <i>Data2</i>).
PanelWithButton_4Data		<p>The symbol displays:</p> <ul style="list-style-type: none"> • The current equipment state. • The current state of the sequence. • The step being executed. • The strategy that is applied (if configured and selected). • The time elapsed for the current step. • Control buttons. • Four configurable data (<i>Data1</i>, <i>Data2</i>, <i>Data3</i> and <i>Data4</i>).

NOTE: The display area for the descriptions of State, Strategy, Strategy State and Step is limited, however, since they are user configurable, tooltips are available for these descriptions in the graphical symbols as well as in the **Operator** tab of the faceplate.

Faceplates

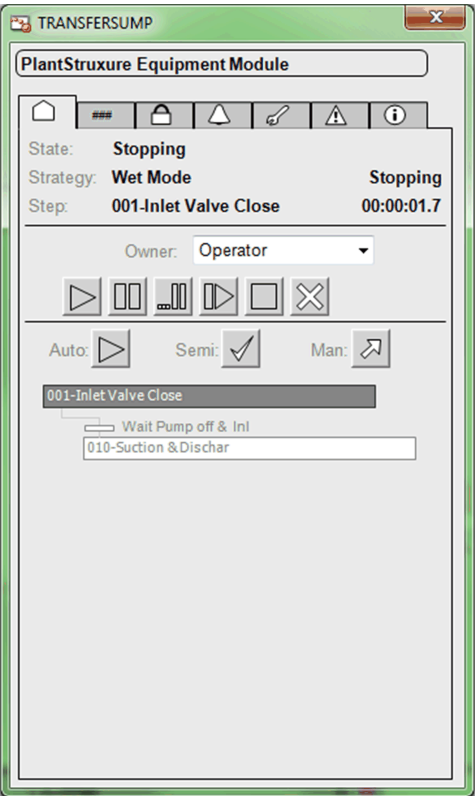
Overview

During operation, clicking a equipment module graphic symbol opens a faceplate with the following tabs:

- Standard tabs:
 - Operation
 - Parameters (input and output parameters)
 - State machine
 - Alarms, page 75
- Optional tabs:
 - Initial Conditions, page 65
 - Failures , page 68

Operation Tab in Automatic Mode

This figure shows the **Operation** tab when **Operator** and the **Auto** mode are selected.





The sequence runs in automatic mode. Once user clicks on **Start** button when Owner is Operator, it is navigated to **Parameter** → **Input Parameter** tab, and from **Input Parameter** tab user can select **Strategy** and start the sequence. After clicking the **Start** button, that is placed at the bottom of **Input Parameter** tab, and bottom section of the operator tab on faceplate displays:

- The step that is being executed and its number.
- The transition to the next step:
 - *Passive Galaxy* style, page 47: The condition is not yet fulfilled.
 - *Active Galaxy* style: The condition is true.
- The next step to be executed when the current step is completed and the transition is true.




This table describes the command that corresponds to each button on the **Operation** tab.

Button	Command
	Start
	Hold
	Pause
	Restart/resume
	Stop

Button	Command
	Abort
	Reset

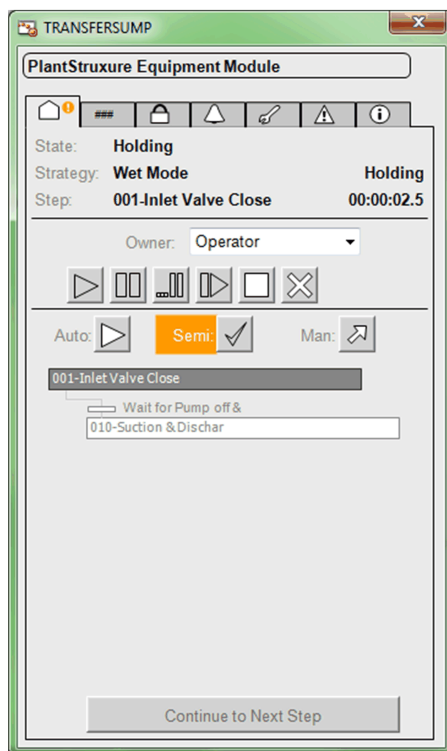
NOTE: Only buttons that correspond to available commands are active (*Active Galaxy* style, page 47). Unavailable commands are displayed with the *Passive Galaxy* style.

This table describes the mode that corresponds to each button on the **Operation** tab.

Button	Mode	Description
	Auto	Normal execution
	Semi	Asks for confirmation before transitioning
	Man	Allows you to select the step to execute

Operation Tab in Semi-Automatic Mode

This figure shows the **Operation** tab when **Operator** and the **Semi** mode are selected.



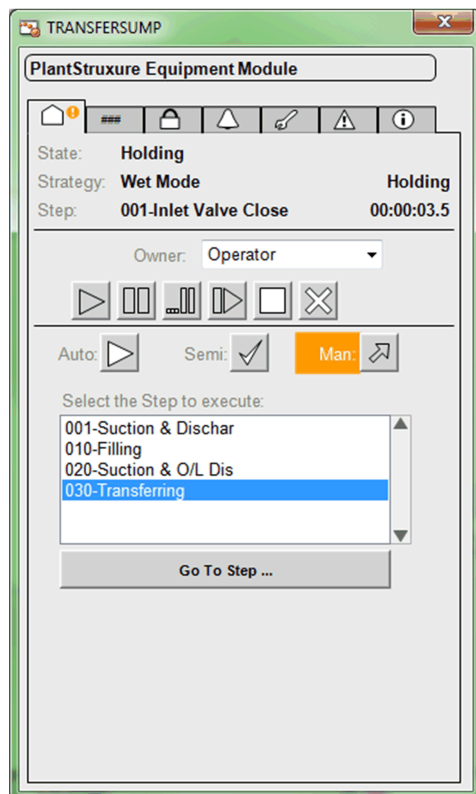
The sequence starts in semi-automatic mode after clicking the **Start** button, that is placed at the bottom of **Input Parameter** tab, and bottom section of the **Operator** tab faceplate displays:

- The step that is being executed and its number.

- The transition to the next step:
 - Passive style: The condition is not yet fulfilled
 - Active style: The condition is true.
- The next step to be executed.
- A **Continue to Next Step** button requiring the operator to confirm the execution of the next step when the transition is true.

Operation Tab in Manual Mode

This figure shows the **Operation** tab when **Operator** and the **Man** mode are selected.



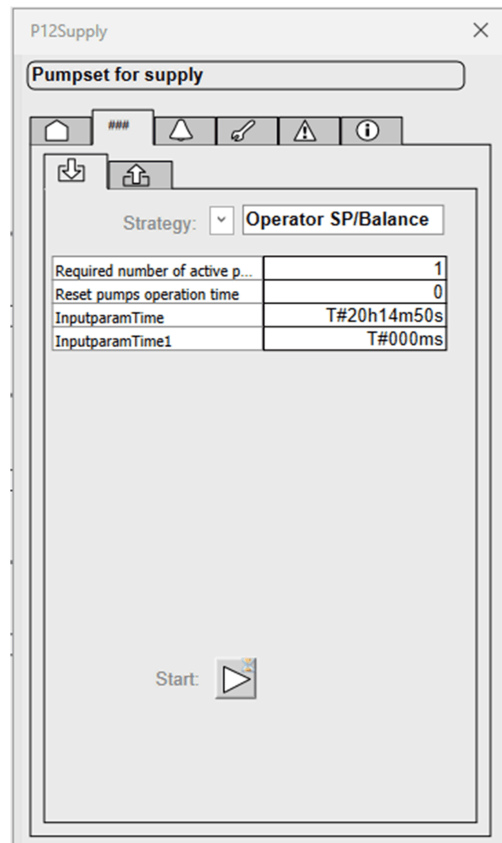
The sequence starts in manual mode after clicking the **Start** button placed at bottom of the **Input Parameter** tab, and the bottom section of the **Operator** tab faceplate displays:

- The steps of the sequence that are programmed in the **Running** state.
- A **Go To Step** button allowing to execute the step selected in the **Select the Step to execute** list.

You can scroll up and down (in six-step increments) through the list of steps by using the two arrow buttons.

Input/Ouput Parameters Tab

This figure shows the **Parameters** tab when the **Input Parameters** subtab is selected.



You can select a strategy from the ones that have been defined and enter the corresponding values for enabled parameters.

- Filter the Strategies shown from the drop-down list based on the currently disabled strategies as determined from the logics in the controller. The drop-down list is only editable while the Strategy status is **Idle** and Owner is in Operator mode.

The **Input Parameter** tab consists of three columns:

- Description** (read only): Description of input parameter.
- Value** (read/write): The value is to be formatted as configured. Only editable while the Strategy Status is **Idle**. Formatted as:
 - Duration: Format of duration is T#DDdHHhMMSSsMSSms
 - Date/Time: Date/Time as per regional settings.
 - Numeric: Numeric value formatted as per the configured **Format** (for example, 0, 0.0, 00000).
- EU** (read only): EU is configured for the following specific data types:
 - Duration, Date/Time: NA
 - Numeric: Localized text as per the configured **EU**.

Sequence **Start** button is located at the bottom of the **Input Parameter** tab, that is to be enabled only in case of the current equipment module Strategy that is in **Idle** state and Owner is in Operator mode.

Parameters that do not pertain to the selected strategy are disabled.

NOTE: The parameters can be only modified when the sequence is in **Idle** state.

This figure shows the **Parameters** tab when the **Output Parameters** subtab is selected.

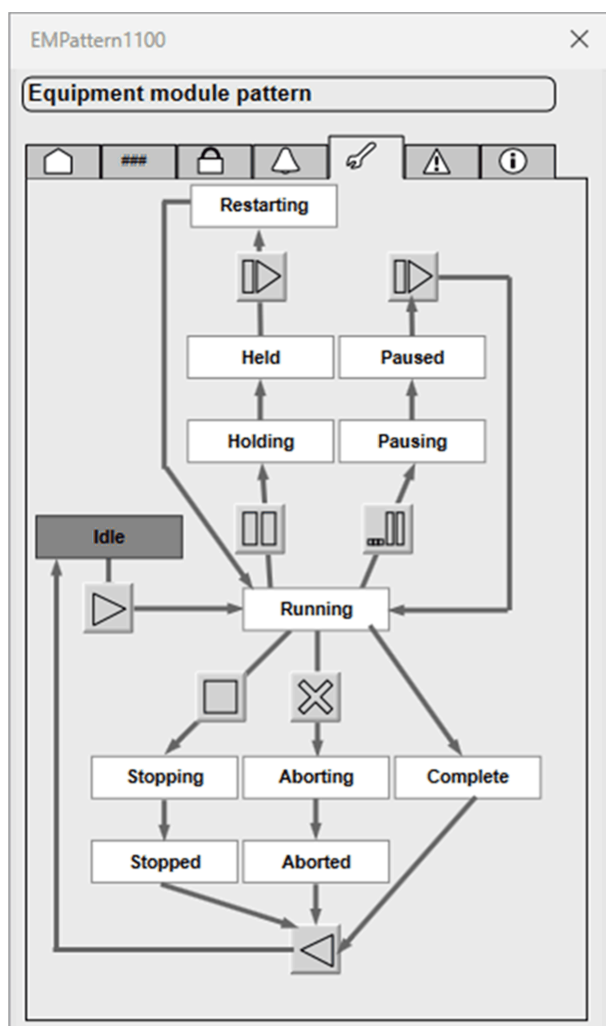
[illegible]

Displays the values of output parameters, which are calculated while the sequence is executed.

NOTE:

- Display cell area for column **Value** and **EU** of Input/Output parameter is limited. However, if **Value** or **EU** is exceeding the optimal space available, then it can be seen in tool tip.
- In Input/Output parameters, **Value** column will display **NaN** in case of non-numeric variable or if the variable is not available in the controller.

State Machine Tab



The above faceplate shows a simplified diagram of state machine.

Names of states appear in *Passive* style while the current state appears in *Active* style.

NOTE: All the buttons are displayed with *Passive* style and cannot be used for sending commands.

Equipment Module Object Configuration Pages

What's in This Chapter

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Input Parameters Page Default Configuration	320
Output Parameters Page Default Configuration	321
Input/Output Parameter Configuration for Equipment module	322

Overview

This chapter describes the default configuration of pages for equipment module objects.

They allow you to configure optional supervision functions of process application templates and their instances.

The default security classification to modify references is *Configure*.

Main Page Default Configuration

Overview

The **Main** page is used to modify the variable references used by the equipment module object.

The references to control resources that are described use specific control resources of the Modicon Libraries - General Purpose for AVEVA System Platform.

For a description of the default template-specific configuration of sequential control management, refer to chapter documenting the master template of the equipment module.

Main Page Description

Main **Initial Conditions** Failure Conditions Input Parameters Output Parameters Attributes Scripts Graphics Object Information

PV: Customized References (only if Suffix is left on blank): Suffix for Auto References:

Equipment State:	---	...	...	_EMCTL_ST.EMSTATE	...
Strategy:	---	...	...	_EMCTL_ST.STRATEGY	...
Strategy Execution State:	---	...	...	_EMCTL_ST.STATE	...
Command:	---	...	...	_EMCTL_ST.COMMAND	...
Status Word:	---	...	...	_EMCTL_ST.STW	...
Configuration Word:	---	...	...	_EMCTL_ST.CFGW	...
Elapsed Time:	---	...	...	_EMCTL_ST.ETIME	...
Current Step Description:	---	...	...	_EMCTL_ST.CSTEPD;C	...
Disable Strategy:	---	...	...	_EMCTL_ST.DISSTRATEGY	...
Next Step (Manual):	---	...	...	_EMCTL_CFG.NSTEP	...
Step Descriptions:	---	...	...	_EMCTL_CFG.STEPD;C	...
Transition Descriptions:	---	...	...	_EMCTL_CFG.TRANSD;C	...

Default Equipment State and Descriptions:

0:	
1:	
2:	
3:	
4:	
5:	
6:	
7:	
8:	
9:	
10:	
11:	
12:	
13:	
14:	
15:	

User Defined Equipment State and Descriptions:

16:	
17:	
18:	
19:	
20:	
21:	
22:	
23:	
24:	
25:	
26:	
27:	
28:	
29:	
30:	
31:	

Element	Default variable reference with suffix for auto-referencing
Equipment State	<Instance name>_EMCTL_ST.EMSTATE
Strategy	<Instance name>_EMCTL_ST.STRATEGY
Strategy Execution State	<Instance name>_EMCTL_ST.STATE
Command	<Instance name>_EMCTL1_ST.COMMAND. The default security classification is <i>Operate</i> .
Status Word	<Instance name>_EMCTL1_ST.STW.
Configuration Word	<Instance name>_EMCTL1_ST.CFGW. The default security classification is <i>Operate</i> .
Elapsed Time	<Instance name>_EMCTL1_ST.ETIME.
Current Step Description	<Instance name>_EMCTL1_ST.CSTEPD;C.
Disable Strategy	<Instance name>_EMCTL_ST.DISSTRATEGY.
Next Step (Manual)	<Instance name>_EMCTL1_CFG.NSTEP. The default security classification is <i>Secured Write</i> .
Step Descriptions	<Instance name>_EMCTL1_CFG.STEPD;C.
Transition Descriptions	<Instance name>_EMCTL1_CFG.TRANSD;C.
Customized References	Specify a variable reference if the automatic referencing mechanism is not used.

There are sixteen default equipment states (0 to 15) available, and user can add sixteen more equipment states (17 to 31) as per requirement.

EMSTATE	Equipment Module Default State Description
0	Off
1	Stopped
2	Starting

EMSTATE	Equipment Module Default State Description
3	Ready
4	Standby
5	Producing
6	Switching
7	Clearing
8	Holding
9	Held
10	Stopping
11	Aborting
12	Aborted
13	Reserved
14	Reserved
15	Reserved

Initial Conditions Page Default Configuration

Overview

Depending on the configuration of the corresponding control resource, the **Initial Conditions** page is used to:

- Enable or disable initial conditions and define the initial condition descriptions. When enabled, it allows you to:
 - Enable or disable the bypass of initial conditions.
 - Enable or disable the manual resetting of initial conditions.

The references to control resources that are described use specific control resources of the Modicon Libraries - General Purpose for AVEVA System Platform.

For a description of the default template-specific configuration of initial conditions, refer to chapter documenting the master template of the equipment module.

Initial Conditions Page Description

The screenshot shows the 'Initial Conditions' configuration page. At the top, there are tabs: Main, Initial Conditions, Failure Conditions, Input Parameters, Output Parameters, Attributes, Scripts, Graphics, and Object Information. The 'Initial Conditions' tab is selected.

Below the tabs, there are several configuration options:

- Enable Initial Conditions:** A checkbox that is checked.
- Enable Bypass of Conditions:** A checkbox that is checked.
- Enable Manual Reset of Conditions:** A checkbox that is checked.
- Status Word:** A text field with a dropdown arrow.
- Bypass Word:** A text field with a dropdown arrow.
- Manual Reset Word:** A text field with a dropdown arrow.
- Customized References (only if Suffix is left on blank):** A text field with a dropdown arrow.
- Suffix for Auto References:** Three text fields with dropdown arrows, containing the following values:
 - _JC_CONDSUM_ST.CONDW
 - _JC_CONDSUM_ST.BYPASSW
 - _JC_CONDSUM_ST.REARMREQW

Below these options is a section titled 'Initial Condition Descriptions' with a list of 15 conditions. Each condition has a text input field and a dropdown menu. The conditions are:

- Condition 1: Init 1
- Condition 2: Init 2
- Condition 3: Init 3
- Condition 4: Init 4
- Condition 5: Init 5
- Condition 6: Init 6
- Condition 7: Init 7
- Condition 8:
- Condition 9:
- Condition 10:
- Condition 11:
- Condition 12:
- Condition 13:
- Condition 14:
- Condition 15:

Element	Description
Enable Initial Conditions	<p>Select this check box to enable initial condition management.</p> <p>By default the variable reference with suffix for auto-referencing is <Instance name>_IC_CONDSUM_ST.CONDW.</p> <p>The default security classification is <i>Free Access</i>.</p>
Enable Bypass of Conditions	<p>Select this check box to enable bypass of conditions.</p> <p>By default the variable reference with suffix for auto-referencing is <Instance name>_IC_CONDSUM_ST.BYPASSW.</p> <p>The default security classification is <i>Free Access</i> to enable the bypassing function and <i>Secured Write</i> to bypass conditions during operation.</p>
Enable Manual Reset of Conditions	<p>Select this check box to enable the manual resetting of conditions.</p> <p>By default the variable reference with suffix for auto-referencing is <Instance name>_IC_CONDSUM_ST.REARMREQW.</p> <p>The default security classification is <i>Free Access</i> to enable the manual reset function and <i>Secured Write</i> to reset conditions during operation.</p>
Initial Condition Description	<p>Enter the initial condition descriptions (up to 15).</p> <p>The default security classification is <i>Configure</i>.</p> <p>NOTE: The descriptions can be entered in multiple languages, page 43.</p>
Customized References	<p>Specify a variable reference if the automatic referencing mechanism is not used.</p>

Failure Conditions Page Default Configuration

Overview

Depending on the configuration of the corresponding control resource, the **Failure Conditions** page is used to:

- Enable or disable monitoring of detected failure conditions and define the detected failure condition descriptions. When enabled, it allows you to:
 - Enable or disable the bypass of detected failure conditions.
 - Enable or disable the manual resetting of detected failure conditions.

The references to control resources that are described use specific control resources of the Modicon Libraries - General Purpose for AVEVA System Platform.

For a description of the default template-specific configuration of detected failure condition management, refer to chapter documenting the master template of the equipment module.

Failure Conditions Page Description

MainInitial ConditionsFailure ConditionsInput ParametersOutput ParametersAttributesScriptsGraphicsObject Information

Enable Failure Conditions:☒

Enable Bypass of Conditions:☒

Enable Manual Reset of Conditions:☒

Status Word:

Bypass Word:

Manual Reset Word:

PV:

Customized References (only if Suffix is left on blank):

Suffix for Auto References:

_FC_CONDSUM_ST.CONDW

_FC_CONDSUM_ST.BYPASSW

_FC_CONDSUM_ST.REARMREQW

Failure Condition Descriptions

Condition 1:	Fail 1		
Condition 2:	Fail 2		
Condition 3:	Fail 3		
Condition 4:	Fail 4		
Condition 5:	Fail 5		
Condition 6:	Fail 6		
Condition 7:			
Condition 8:			
Condition 9:			
Condition 10:			
Condition 11:			
Condition 12:			
Condition 13:			
Condition 14:			
Condition 15:			

Element	Description
Enable Failure Conditions	<p>Select this check box to enable the management of detected failure conditions.</p> <p>By default the variable reference with suffix for auto-referencing is <Instance name>_FC_CONDSUM_ST.CONDW.</p> <p>The default security classification is <i>Free Access</i>.</p>
Enable Bypass of Conditions	<p>Select this check box to enable bypass of detected failure conditions.</p> <p>By default the variable reference with suffix for auto-referencing is <Instance name>_FC_CONDSUM_ST.BYPASSW.</p> <p>The default security classification is <i>Free Access</i> to enable the bypassing function and <i>Secured Write</i> to bypass conditions during operation.</p>
Enable Manual Reset of Conditions	<p>Select this check box to enable the manual resetting of detected failure conditions.</p> <p>By default the variable reference with suffix for auto-referencing is <Instance name>_FC_CONDSUM_ST.REARMREQW.</p> <p>The default security classification is <i>Free Access</i> to enable the manual reset function and <i>Secured Write</i> to reset conditions during operation.</p>
Failure Condition Descriptions	<p>Enter the condition descriptions (up to 15).</p> <p>The default security classification is <i>Free Access</i>.</p> <p>NOTE: The descriptions can be entered in multiple languages, page 43.</p>
Customized References	<p>Specify a variable reference if the automatic referencing mechanism is not used.</p>

Input Parameters Page Default Configuration

Overview

Depending on the configuration of the corresponding control resource, the **Input Parameters** page is used to:

- Define input parameter descriptions.
- Configure the strategies.

The references to control resources that are described use specific control resources of the Modicon Libraries - General Purpose for AVEVA System Platform.

For a description of the default template-specific configuration of input parameters for sequential control, refer to chapter documenting the master template of the equipment module.

Input Parameters Page Description

Element	Description
Input Parameter Descriptions	Enter the input parameter descriptions. The number of parameters depends of the configuration made. Customized (Alias) reference for input parameters. NOTE: Descriptions can be entered in multiple languages, page 43.
Format	The valid format entries are D (Duration), T (Date Time) and numeric formats (for example: 0, 0.0, 0000). NOTE: For configuration purposes, the decimal separator must be Dot (.) and not any other type of separator, for example, Comma (,). The run-time will use the configured language settings of the local system.
Engineering Unit	EU is configured for the following specific data types: <ul style="list-style-type: none"> Duration, Date/Time: NA Numeric: Localized text as per the configured EU.
Customized reference	Customized reference for the input parameters.
Alias	Alias for the input parameters.
Strategy Descriptions	Enter the description of strategies (up to 16). NOTE: Descriptions can be entered in multiple languages, page 43.
List of applicable Input Parameters	Enter the input parameters applicable in each strategy separated by a comma. For example, if parameters 02 and 03 are applicable for the strategy, enter 2 , 3.

NOTE: The default security classification of attributes of this page is *Operate*.

Output Parameters Page Default Configuration

Overview

Depending on the configuration of the corresponding control resource, the **Output Parameters** page is used to define output parameter descriptions.

The references to control resources that are described use specific control resources of the Modicon Libraries - General Purpose for AVEVA System Platform.

For a description of the default template-specific configuration of parameters for sequential control, refer to chapter documenting the master template of the equipment module.

Output Parameters Page Description

Element	Description
Output Parameter Descriptions	Enter the output parameter descriptions. The number of parameters depends of the configuration made. NOTE: Descriptions can be entered in multiple languages, page 43.
Format	The valid format entries are D (Duration), T (Date Time) and numeric formats (for example: 0, 0.0, 0000). NOTE: For configuration purposes, the decimal separator must be Dot (.) and not any other type of separator, for example, Comma (,) . The run-time will use the configured language settings of the local system.
Engineering Unit	EU is configured for the following specific data types: <ul style="list-style-type: none"> Duration, Date/Time: NA Numeric: Localized text as per the configured EU.
Customized reference	Customized reference for the output parameters.
Alias	Alias for the output parameters.

NOTE: The default security classification of attributes of this page is *Operate*.

Input/Output Parameter Configuration for Equipment module

Description

To configure the Input/Output parameters, you can create the variable tag and use these variables for configuring the customized data type as per the requirement.

Below table show the various data types supported by the Equipment Module input and output parameters.

Data Type (user)	Unity Pro Data Type	Valid format entries
Boolean	BOOL	<B>
Duration	DINT	<D>
Date/ Time	DINT	<T>
Numeric (Real)	Real	ASP format (for example, 0.00)
Numeric (Signed integer)	INT	ASP format (for example, 0)
Numeric (Double signed integer)	DINT	ASP format (for example, 00000)

NOTE: By default template EMCTL.xml is configured with six input parameters and four Output parameters with each data type. You can create duplicate of EMCTL by deriving it.

Pump Set

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Pump Set Pattern Object Configuration pages 329

\$PumpSetCtrlCE: Pump Set Pattern Functions

What's in This Chapter

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Overview

This chapter describes the master templates that provide the supervision functions for Pump Set.

Schneider Electric provides the templates described in this document. These templates can be used in various applications to minimize engineering efforts but the use, integration, configuration, and validation of the system is the sole responsibility of the user. Said user must ensure the safety of the system as a whole by performing a safety analysis, including the resources provided by Schneider Electric through procedures that the user deems appropriate.

⚠ WARNING

LOSS OF CONTROL

- Perform a Failure Mode and Effects Analysis (FMEA) of your application, and apply preventive and detective controls before implementation.
- Provide a fallback state for undesired control events or sequences.
- Provide separate or redundant control paths wherever required.
- Supply appropriate parameters, particularly for limits.
- Review the implications of transmission delays and take actions to mitigate.
- Review the implications of communication link interruptions and take actions to mitigate.
- Provide independent paths for control functions (for example, emergency stop, over-limit conditions, and fault conditions) according to the safety analysis and applicable codes, and regulations.
- Apply local accident prevention and safety regulations and guidelines.¹
- Test each implementation of this library for proper operation before placing it into service.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

¹ For additional information, refer to NEMA ICS 1.1 (latest edition), *Safety Guidelines for the Application, Installation, and Maintenance of Solid State Control* and to NEMA ICS 7.1 (latest edition), *Safety Standards for Construction and Guide for Selection, Installation and Operation of Adjustable-Speed Drive Systems* or their equivalent governing your particular location.

Description

Introduction

This object is used for controlling 10 pumping assets. A pump, an inlet valve, an outlet valve, and a drain valve are collectively referred to as a pumping asset.

Supervision Functions

For details about the main functions for Pump Set Equipment module management,, page 305.

Control/Supervision Relationship

Control Resources

To provide core and optional supervision functions, the *\$PSxPumpSet* master template is configured to exchange data with the following control resources of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
EMCTLGP	Equipment module logic	EMCTLGP_ST_DDT	<instance name>_EMCTL_ST	Core supervision functions.
		EMCTLGP_DDT_DDT	<instance name>_EMCTL_CFG	
PUMPSETPAT-TERNGP	Pump Set Pattern user logic DFB	PumpSetGP_IOPar_DDT	<instance name>_IOPAR	User defined logic for pump sets.
CONDSUMGP	Detected failure condition summary (default variable naming convention <...>_FC_CONDSUM_<...>)	CondsunGP_ST_DDT	<instance name>_CONDSUM_ST	Optional supervision functions.
	Initial conditions (default variable naming convention <...>_IC_CONDSUM_<...>)		<instance name>_INITCOND_ST	
** Mandatory variables to be defined.				

For description of these control resources, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the object editor, page 100.

These parameters allow you to configure core functions.

NOTE: You can configure optional functions from the template-specific configuration pages, page 329.

Parameter Description

This table describes the parameters of the automation object:

Parameter	Type	Initial Value	Description
Param.Data1.Desc	String	Pump Set Diagnosis State	Refer to Equipment module,, page 306.

Parameter	Type	Initial Value	Description
Param.Data1.Format	String	E	
Param.Data1.PV	Double	Me.EMPar.OP01.OP.PV	
Param.Data1.EU	String	Normal, 0: Warning, 1: Failure, 2	
Param.Data2.Desc	String	Requested Pumps	
Param.Data2.Format	String	0	
Param.Data2.PV	Double	Me.EMPar.OP02.OP.PV	
Param.Data2.EU	String		
Param.Data3.Desc	String	Active Pumps	
Param.Data3.Format	String	0	
Param.Data3.PV	Double	Me.EMPar.OP03.OP.PV	
Param.Data3.EU	String		
Param.Data4.Desc	String	Pump 01 Operation Time	
Param.Data4.Format	String	D	
Param.Data4.PV	Double	Me.EMPar.OP04.OP.PV	
Param.Data4.EU	String		
Param.HideAbortButton	Bool	False	Refer to Equipment module,, page 306.
Param.HideHoldButton	Bool	False	
Param.HidePauseButton	Bool	False	
Param.HideResetButton	Bool	False	
Param.HideRestartButton	Bool	False	
Param.HideStartButton	Bool	False	
Param.HideStopButton	Bool	False	
Param.ModeNormal	String	O, P	
Param.NumInputParam		0	Number of input parameters.
Param.NumOutputParam		0	Number of output parameters.
Param.DisplaySelection	Integer	0	0: Pump Operation time, 1: Pump Operation Count, 2: Pump Idle time, 3: Pump Run Time
Param.NumberofAssets	Integer	2	Number of assets connected.

Default State Alarms

State Alarms for Pump Set Module

The table indicates for which attributes a state alarm is configured in the \$PumpSetCtrlCE master template and provides the default values.

Attribute	Alarm message	Priority
AO.Failure	Failure condition triggered during execution	999
AO.Diagnosis.PumpSet.Alarm ¹	At least one Pumping Asset is in failure	999
AO.Diagnosis.PumpSet.Fail ¹	Unable to run requested pumps	500
AO.Diagnosis.PumpingAsset{x}.Alarm ¹	Asset {y} alarm description	999
AO.Diagnosis.PumpingAsset{x}.Fail ¹	Asset {y} failure description	500

Attribute	Alarm message	Priority
¹ indicates that the User should acknowledge these alarms from the alarm banner.		
NOTE: {x} represents from 01 to 10 and {y} represents from 1 to 10.		

NOTE: You can modify the configuration from the Attributes page.

For details about the default `Strategy` and its applicable input parameters, `EMState` configured for `$PumpSetCtrlCE` template refer to, (see Modicon Libraries General Purpose, Equipment Module Components User Guide) .

For details about the default configuration for DATA1 to DATA4,, page 326.

Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in symbols.

Representation

The symbols available for representing the Pump Set equipment module, refer, [page 308](#).

Faceplates

Overview

During operation, clicking a equipment module graphic symbol opens a faceplate with the following tabs:

- Standard tabs:
 - Operation, [page 310](#)
 - Parameters (input and output parameters), [page 313](#)
 - State machine, [page 315](#)
 - Alarms, [page 75](#)
- Optional tabs:
 - Initial Conditions, [page 65](#)
 - Failures , [page 68](#)

Pump Set Pattern Object Configuration pages

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Default Configuration Pages

The Object configuration pages for pump set pattern are as follows:

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- Initial Conditions Page Default Configuration, page 318
- Failure Conditions Page Default Configuration, page 319
- Input Parameters Page Default Configuration, page 320
- Output Parameters Page Default Configuration, page 321

Flow Control

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\$PumpFlowCtrlCE: Flow Control Pattern Functions

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Overview

This chapter describes the master templates that provide the supervision functions for Flow Control.

Schneider Electric provides the templates described in this document. These templates can be used in various applications to minimize engineering efforts but the use, integration, configuration, and validation of the system is the sole responsibility of the user. Said user must ensure the safety of the system as a whole by performing a safety analysis, including the resources provided by Schneider Electric through procedures that the user deems appropriate.

⚠ WARNING

LOSS OF CONTROL

- Perform a Failure Mode and Effects Analysis (FMEA) of your application, and apply preventive and detective controls before implementation.
- Provide a fallback state for undesired control events or sequences.
- Provide separate or redundant control paths wherever required.
- Supply appropriate parameters, particularly for limits.
- Review the implications of transmission delays and take actions to mitigate.
- Review the implications of communication link interruptions and take actions to mitigate.
- Provide independent paths for control functions (for example, emergency stop, over-limit conditions, and fault conditions) according to the safety analysis and applicable codes, and regulations.
- Apply local accident prevention and safety regulations and guidelines.¹
- Test each implementation of this library for proper operation before placing it into service.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

¹ For additional information, refer to NEMA ICS 1.1 (latest edition), *Safety Guidelines for the Application, Installation, and Maintenance of Solid State Control* and to NEMA ICS 7.1 (latest edition), *Safety Standards for Construction and Guide for Selection, Installation and Operation of Adjustable-Speed Drive Systems* or their equivalent governing your particular location.

Description

Introduction

This object is used for controlling 10 pumping assets. A variable speed pump, an inlet valve, an outlet valve, and a drain valve are collectively referred to as a pumping asset.

Supervision Functions

For details about the Supervision functions for Flow Control Equipment Module, page 305.

Control/Supervision Relationship

Control Resources

To provide core and optional supervision functions, the *\$PSxFlowCtrl* master template is configured to exchange data with the following control resources of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
EMCTLGP	Equipment module logic	EMCTLGP_ST_DDT	<instance name>_EMCTL_ST	Core supervision functions.
		EMCTLGP_DDT_DDT	<instance name>_EMCTL_CFG	
FLOWCTLPAT-TERNGP	Flow Control Pattern user logic DFB	FlowCTLGP_IOPar_DDT	<instance name>_IOPAR	User defined logic for flow control.
CONDSUMGP	Detected failure condition summary (default variable naming convention <...>_FC_CONDSUM_<...>)	CondsuGP_ST_DDT	<instance name>_CONDSUM_ST	Optional supervision functions.
	Initial conditions (default variable naming convention <...>_IC_CONDSUM_<...>)		<instance name>_INITCOND_ST	
** Mandatory variables to be defined.				

For description of these control resources, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the object editor, page 100.

These parameters allow you to configure core functions.

NOTE: You can configure optional functions from the template-specific configuration pages, page 329.

Parameter Description

This table describes the parameters of the automation object:

Parameter	Type	Initial Value	Description
Param.Data1.Desc	String	Equipment module diagnosis state	Refer to Equipment module,, page 306.

Parameter	Type	Initial Value	Description
Param.Data1.Format	String	E	
Param.Data1.PV	Double	Me.EMPar.OP01.OP.PV	
Param.Data1.EU	String	Normal, 0: Warning, 1: Failure, 2	
Param.Data2.Desc	String	Current Flow SP	
Param.Data2.Format	REAL	0.0	
Param.Data2.PV	Double	Me.EMPar.OP02.OP.PV	
Param.Data2.EU	String	-	
Param.Data3.Desc	String	Flow PV	
Param.Data3.Format	REAL	0.0	
Param.Data3.PV	Double	Me.EMPar.OP03.OP.PV	
Param.Data3.EU	String	-	
Param.Data4.Desc	String	Pumps required to achieve Flow SP	
Param.Data4.Format	String	0	
Param.Data4.PV	Double	Me.EMPar.OP04.OP.PV	
Param.Data4.EU	String	-	
Param.HideAbortButton	Bool	False	Refer to Equipment module,, page 306.
Param.HideHoldButton	Bool	False	
Param.HidePauseButton	Bool	False	
Param.HideResetButton	Bool	False	
Param.HideRestartButton	Bool	False	
Param.HideStartButton	Bool	False	
Param.HideStopButton	Bool	False	
Param.ModeNormal	String	O, P	
Param.NumInputParam		0	Number of input parameters.
Param.NumOutputParam		0	Number of output parameters.
Param.DisplaySelection	Integer	0	0: Pump Operation time, 1: Pump Operation Count, 2: Pump Idle time, 3: Pump Run Time
Param.NumberofAssets	Integer	2	Number of assets connected.

Default State Alarms

State Alarms for Flow Control Equipment Module

The table indicates for which attributes a state alarm is configured in the \$PumpFlowCtrlCE master template and provides the default values.

Attribute	Alarm message	Priority
AO.Failure	Failure condition triggered during execution	999
AO.Diagnosis.FlowCtl.Alarm ¹	At least one Pumping Asset is in failure	999
AO.Diagnosis.FlowCtl.Fail ¹	Unable to run requested pumps	500
AO.Diagnosis.PumpingAsset{x}.Alarm ¹	Asset {y} alarm description	999
AO.Diagnosis.PumpingAsset{x}.Fail ¹	Asset {y} failure description	500

Attribute	Alarm message	Priority
¹ indicates that the User should acknowledge these alarms from the alarm banner.		
NOTE: {x} represents from 01 to 15 and {y} represents from 1 to 15		

NOTE: You can modify the configuration from the Attributes page.

For details about the applicable input parameters, `EMState` configured for `$PumpFlowCtrlCE` template refer to, (see Modicon Libraries General Purpose, Equipment Module Components User Guide).

For details about the default configuration for DATA1 to DATA4,, page 326.

Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in symbols.

Representation

The symbols available for representing the Flow Control Equipment Module, refer, [page 308](#).

Faceplates

Overview

During operation, clicking a equipment module graphic symbol opens a faceplate with the following tabs:

- Standard tabs:
 - Operation, [page 310](#)
 - Parameters (input and output parameters), [page 313](#)
 - State machine, [page 315](#)
 - Alarms, [page 75](#)
- Optional tabs:
 - Initial Conditions, [page 65](#)
 - Failures , [page 68](#)

Flow Control Pattern Object Configuration pages

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Default Configuration Pages

The Object configuration pages for Flow Control Equipment Module pattern are as follows:

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- Initial Conditions Page Default Configuration, page 318
- Failure Conditions Page Default Configuration, page 319
- Input Parameters Page Default Configuration, page 320
- Output Parameters Page Default Configuration, page 321

Auxiliary Functions

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<code>\$SPBoolCE</code> : Discrete Setpoints.....	352
<code>\$SPRealCE</code> : Real Setpoints	354
<code>\$SPIntCE</code> : Integer Setpoints	356
<code>\$SPDurationCE</code> : Duration Setpoints	358
<code>\$SchedulerCE</code> : Scheduler function	361

Overview

This part describes the master templates that provide the supervision functions for the auxiliary function family.

You can use these templates with those of other families to provide additional services, data, symbols, and/or faceplates.

Schneider Electric provides the templates described in this document. These templates can be used in various applications to minimize engineering efforts but the use, integration, configuration, and validation of the system is the sole responsibility of the user. Said user must ensure the safety of the system as a whole by performing a safety analysis, including the resources provided by Schneider Electric through procedures that the user deems appropriate.

 **WARNING**

LOSS OF CONTROL

- Perform a Failure Mode and Effects Analysis (FMEA) of your application, and apply preventive and detective controls before implementation.
- Provide a fallback state for undesired control events or sequences.
- Provide separate or redundant control paths wherever required.
- Supply appropriate parameters, particularly for limits.
- Review the implications of transmission delays and take actions to mitigate.
- Review the implications of communication link interruptions and take actions to mitigate.
- Provide independent paths for control functions (for example, emergency stop, over-limit conditions, and fault conditions) according to the safety analysis and applicable codes, and regulations.
- Apply local accident prevention and safety regulations and guidelines. ¹
- Test each implementation of this library for proper operation before placing it into service.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

¹ For additional information, refer to NEMA ICS 1.1 (latest edition), *Safety Guidelines for the Application, Installation, and Maintenance of Solid State Control* and to NEMA ICS 7.1 (latest edition), *Safety Standards for Construction and Guide for Selection, Installation and Operation of Adjustable-Speed Drive Systems* or their equivalent governing your particular location.

\$AlarmSummaryCE: Alarm Summary

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Overview

This chapter describes the supervision resources and runtime services that are available for the management of alarms based on up to 15 conditions.

Supervision Functions

Description

Core resources provide the following monitoring and operation functions: Alarm configuration, enabling/disabling of alarms, simulation mode, management of individual alarm conditions.

These functions are implemented in runtime through symbols and their associated faceplate.

Control/Supervision Relationship

Control Resources

To provide core supervision functions, the *\$PSxAlarmSummary* master template is configured to exchange data with the following control resources of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
DINPUTGP	Logic	DInputGP_ST_DDT	<instance name>_ DIGP_ST	Core supervision functions.
CONDSUMGP	Summary of conditions.	CondsunGP_S_DDTT	<instance name>_ Condsun_ST	Optional supervision functions.
** Mandatory variables to be defined.				

For description of these control resources, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the [object editor](#), [page 100](#).

These parameters allow you to configure core functions.

Parameter Description

This table describes the parameters of the automation object:

Parameter	Type	Default	Description
Param. AlarmEnable	Bool	True	<p>If true, the alarm evaluation at the supervision level is enabled.</p> <p>If false, the alarm evaluation at the supervision level is disabled.</p> <p>NOTE: The alarm signal is not interpreted as an alarm at the supervision level but it continues being evaluated at the controller level. It is useful for signals to be monitored but not associated to an alarm.</p>

Default State Alarms

State Alarms for Alarm Summary

The table indicates for which attributes a state alarm is configured in the *\$AlarmSummaryCE* master template and provides the default values.

Attribute	Alarm message	Priority
AO.Alarm	Digital Alarm	500

NOTE: You can modify the configuration from the **Attributes** page.

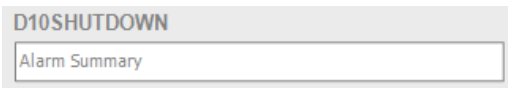
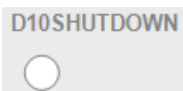

Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), [page 46](#) of the graphic elements and element styles that are used in symbols.

Representation

This table describes the symbols available for representing the alarm summary:

Name	Graphic symbol	Description
<i>AlarmText</i>		Alarm text
<i>StatusIndicator_H</i>		Bullet with the label above
<i>StatusIndicator_V</i>		Bullet with the label on the right

Faceplates

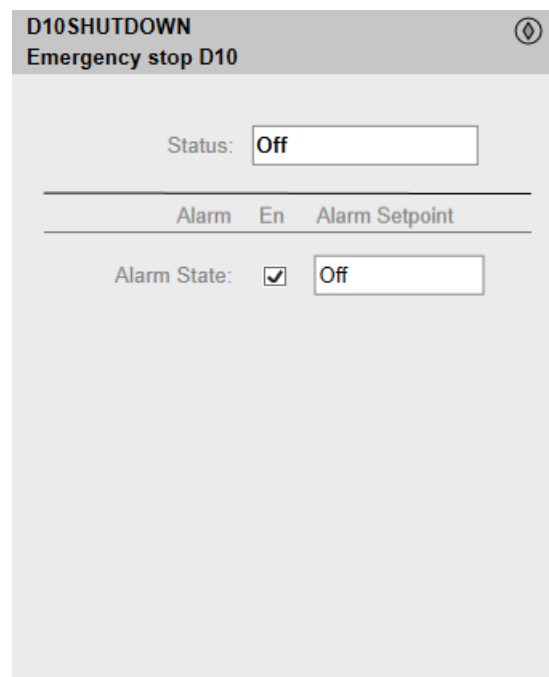
Overview

During operation, clicking the graphic symbol opens a faceplate with the following tabs:

- Standard tabs:
 - Operation
 - Engineering
 - Alarms, page 75
- Optional tabs:
 - Failures, page 68

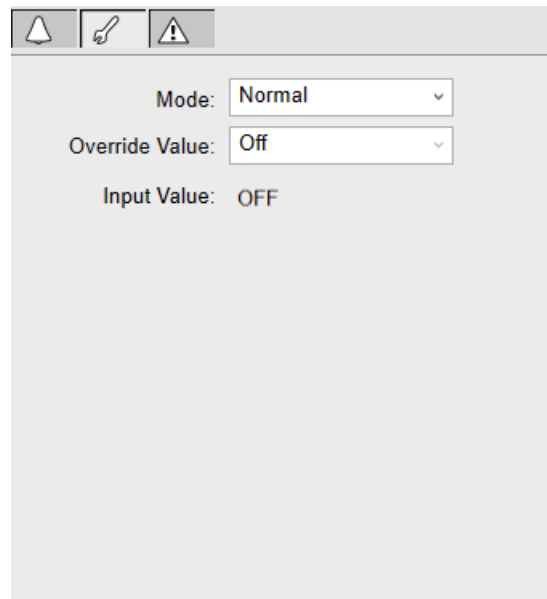
Operation Tab

The figure shows an example of the **Operation** tab.



Engineering Tab

The figure shows an example of the **Engineering** tab.



The screenshot displays the Engineering tab interface. At the top, there is a header bar with three icons: a triangle, a pencil, and a warning triangle. Below the header, the interface contains three settings:

- Mode:** A dropdown menu currently set to "Normal".
- Override Value:** A dropdown menu currently set to "Off".
- Input Value:** A text field displaying "OFF".

NOTE: This tab features the **Simulation** menu, which allows setting the control module to simulation mode.

In addition, the tab may feature another menu or text field, which allows you to configure the state or value to be simulated.

Enabling the simulation mode underlies a [security classification](#), [page 89](#). The default configuration is *tune*. It also triggers the display of an abnormal state, [page 46](#) on the tab and on the symbol.

\$IckCE/\$ICCE: Extended Interlocks/Initial Conditions

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Overview

This chapter describes the supervision resources and runtime services that are available for extended interlocks/initial conditions functionality.

Supervision Functions

Description

The *\$IckCE* allows the extension of interlocks and *\$ICCE* allows the extension of initial conditions. Each interlock/initial condition of a process function object can be extended to fifteen sub conditions.

NOTE: For configuration of the *\$IckCE/\$ICCE* template refer.

Control/Supervision Relationship

Control Resources

To provide core and optional supervision functions, the *\$PSxIck/\$PSxIC* master template is configured to exchange data with the following control resource of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
CONDSUMGP	Summary of conditions.	CondsunGP_S_DDTT	<instance name>_ Condsun_ST	Optional supervision functions.
** Mandatory variables to be defined.				

For description of the control resource, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

There are no parameters to be configured.

Default State Alarms

State Alarms for Extended Interlocks

No state alarm is configured by default for the *\$IckCE/\$ICCE* master template.

NOTE: You can modify the configuration from the attributes page.

Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a general description, page 46 of the graphic elements and element styles that are used in symbols.

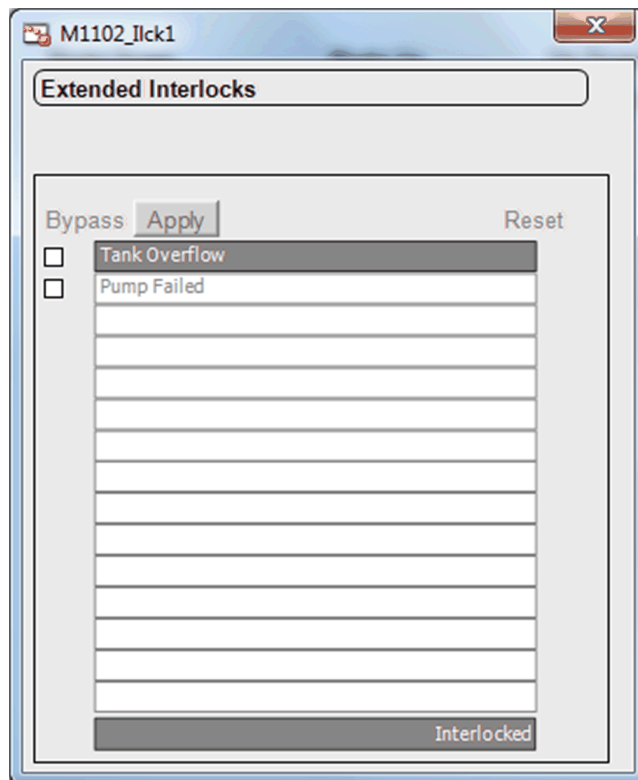
Representation

There is no representation available.

Faceplates

Overview

During operation, clicking the extended interlock/initial condition symbol opens a faceplate with the extended interlock/initial condition tab:



For standard features of the faceplate refer, page 65.

NOTE: The functionality and configuration of *\$IlckCE* and *\$ICCE* are exactly same, except for the security configuration of the bypass function. The security configured for the bypass is *VerifiedWrite* in *\$IlckCE* and *SecuredWrite* in *\$ICCE*.

\$AnalogSelectCE: Analog Signal Selection

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Overview

This chapter describes the *\$AnalogSelectCE* master template, which contains supervision resources to monitor and select analog signals.

Supervision Functions

Description

The *\$AnalogSelectCE* master template provides the following core monitoring and operation functions:

- Monitoring of values of up to four analog signals.
- Selecting one signal out of the monitored signals, either directly or by selecting the one with the highest or lowest value.
- Owner selection.
- Alarm management.

During operation, these functions are implemented by instances through symbols and their associated faceplate.

NOTE: You can modify the default configuration in the corresponding configuration pages, page 87.

Control/Supervision Relationship

Control Resources

To provide core supervision functions, the *\$PSxASelect1* master template is configured to exchange data with the following control resource of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
ASELECTGP	Analog selector logic.	ASelectGP_ST_DDT	<instance name>_ ASelectGP_ST	Core supervision functions.
		ASelectGP_CFG_DDT	<instance name>_ ASelectGP_CFG	
** Mandatory variables to be defined.				

For description of this control resource, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the [object editor](#), page 100.

These parameters allow you to configure core functions.

Parameter Description

The table describes the parameters that are defined as part of the *\$AnalogSelectCE* master template attributes.

Name	Data type	Initial value	Description
Param.EngUnits	String	%	Indicates the unit of attributes.
Param.HiSP	Integer	100	High limit for the setpoint.
Param.LoSP	Integer	0	Low limit for the setpoint.
Param.ModeNormal	String	O, P	Specifies the normal owner modes (separated by a comma): <ul style="list-style-type: none"> O: Operator P: Program For example, O, P.
Param.NumFormat	String	0.0	Specifies the display format of values. For example, enter 0.00 to display 2 decimals.
Param.ShortDescSP1... Param.ShortDescSP4	String	SetPoint x where x corresponds to the number of the parameter.	4 parameters, each one describing an analog signal, which is monitored. NOTE: The initial value is also available in Spanish.

Default State Alarms

State Alarms for Analog Signal Selection

The table indicates for which attributes a state alarm is configured in the *\$AnalogSelectCE* master template and provides the default values.

Attribute	Description	Priority
<i>ASelect11.St.Error</i>	<i>Signal Error</i>	500

NOTE: You can modify the configuration from the **Attributes** page.

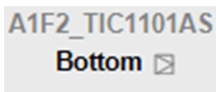
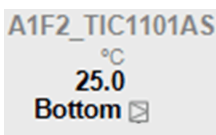
Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in symbols.

Symbol Description

The table describes the symbols that are included in the *\$AnalogSelectCE* master template to display data for monitoring and selecting analog signals during operation.

Name	Graphic symbol	Description
Desc_SP		In addition to icons, the symbol displays (from top to bottom): <ul style="list-style-type: none"> The label. The short description of the selected signal.
Indicator_SP		In addition to icons, the symbol displays (from top to bottom): <ul style="list-style-type: none"> The label. Engineering units. The value of the selected signal. The short description of the selected signal.

Faceplates

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in faceplates.

Available Tabs

During operation, clicking an analog signal selection symbol opens a faceplate with the following tabs:

- Operation
- Alarms, page 75

NOTE: The master template also features the trends faceplate.

Operation Tab

The figure shows an example of the operation tab. The description and value of the selected signal is shown at the top of the tab. The 2 available signals and their value are shown below.

The screenshot shows a software interface for an 'Operation Tab'. At the top, the title 'A1F2_TIC1101AS' is displayed in a dark header bar, with a circular icon containing a diamond symbol to its right. Below the header, the text 'TIC1101 PV Selector' is visible. The main area of the tab is light gray and contains a horizontal line. Above this line, the text ': 0.0 %' is displayed. Below the line, there are two dropdown menus. The first is labeled 'Owner:' and has 'Program' selected. The second is labeled 'Selection:' and has a small downward arrow next to it, indicating it is a dropdown menu.

\$MessageBoxCE: Operator Messages

What's in This Chapter

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Default State Alarms	349
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Overview

This chapter describes the *\$MessageBoxCE* master template, which contains supervision resources to manage messages to operators.

Supervision Functions

Description

- The *\$MessageBoxCE* master template provides the following core functions:
- Display of 1 message in the symbol and, in addition, in the faceplate:
 - Display and capture of up to 2 data items, which are associated with the message.
 - For each data item, display of up to 1 additional message.
 - Configuration of the message mode with 4 different icons, which are displayed next to the symbol.
 - Message treatment.
 - Alarm management associated to the icons, which are displayed.

During operation, these functions are implemented by instances through symbols and their associated faceplate.

NOTE: You can modify the default configuration in the corresponding configuration pages, page 87.

Control/Supervision Relationship

Control Resources

To provide core supervision functions, the *\$PSxMessageBox* master template is configured to exchange data with the following control resource of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
MSGBOXGP	Logic for messages to operators.	MSGBoxGP_ST_DDT	<instance name>_ MSGBoxGP_ST	Core supervision functions.
		MSGBoxGP_CFG_DDT	<instance name>_ MSGBoxGP_CFG	
** Mandatory variables to be defined.				

For description of the control resource, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the [object editor](#), page 100.

These parameters allow you to configure core functions.

Parameter Description

The table describes the parameters that are defined as part of the *\$MessageBoxCE* master template attributes.

Name	Data type	Initial value	Description
Param.NumFormat	String	0.0	Specifies the display format of values. For example, enter <i>0.00</i> to display 2 decimals.

Default State Alarms

State Alarms for Operator Messages

The table indicates for which attributes a state alarm is configured in the *\$MessageBoxCE* master template and provides the default values.

Attribute	Description	Priority
<i>MsgBox.AO.Stop</i>	<i>MsgBox Error</i>	999
<i>MsgBox.AO.Exclamation</i>	<i>MsgBox Warning</i>	750

NOTE: You can modify the configuration from the **Attributes** page.

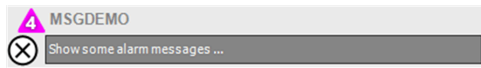


Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in symbols.

Symbol Description

The table describes the symbols that are included in the *\$MessageBoxCE* master template to display messages to the operator during operation.

Name	Graphic symbol	Description
MsgBoxTypeNormal- WithIcon		Displays the message by using element style <i>User_Defined_06</i> . It also displays the following icons, page 48 on the left-hand side of the message box: <ul style="list-style-type: none"> • Stop • Exclamation mark • Question mark • Information The icons blink when the OK or OK and Cancel buttons are enabled.
MsgBoxTypeNormal- WithoutIcon		Displays the message by using element style <i>User_Defined_07</i> , no icons.
MsgBoxTypeLargeWi- thIcon		Displays icons in the same position and with the same behavior as symbol <i>MsgBoxTypeNormalWithIcon</i> but uses element style <i>User_Defined_02</i> , which has large-size text to display the message.

Faceplates

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in faceplates.

Available Tabs

During operation, clicking an operator message box symbol opens a faceplate with the following tabs:

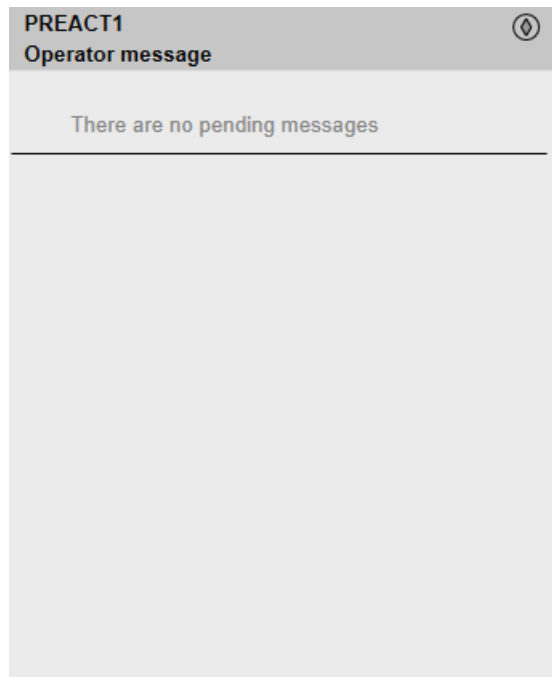
- Operation
- Alarms

Operation Tab

The items that are displayed depend on the configuration of the `sc` public variable (`MSGBOX_SC_DDT`) of the associated control resource:

- Icon and message.
- Up to 2 additional messages.
- A data item associated to each message. Entering data underlies the *Operate* security classification, page 36.
- **OK** or **OK** and **Cancel** buttons. Using these buttons underlies the *Operate* security classification, page 36

The figure shows an example of the operation tab featuring the icon, the message, as well as 2 additional messages with their associated data item. It also shows a button.



Alarms Tab

The *\$MessageBoxCE* master template allows managing two alarms, page 38, which are associated to message modes that display the following icons:

- Exclamation mark icon: Alarm severity 3 (attribute *MsgBox.AO.Exclamation*).
- Stop icon: Alarm severity 4 (attribute *MsgBox.AO.Stop*).

For a description of the tab, refer to the topic documenting the alarms tab, page 75.

\$SPBoolCE: Discrete Setpoints

What’s in This Chapter

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Parameters 352

Default State Alarms 353

Graphic Representation 353

Overview

This chapter describes the supervision resources and runtime services that are available for the management of setpoints of discrete data type.

Supervision Functions

Description

The *\$SPBoolCE* template is used to enter a boolean setpoint/value from the supervision runtime. The value can be set by using various types of symbols that are referenced by the template.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the *object editor*, page 100.

These parameters allow you to configure core functions.

Parameter Description

This table describes the parameters of the automation object:

Parameter	Type	Default	Description
Param.HideLegend	Bool	False	If true, the legend (object description) is not displayed. If false, the legend is displayed.
Param.PulseDuration	Elapsed Time	00:00:0-5.0000-000	Period during which the output remains true when the button is clicked. Only applicable if the symbol is <i>pushbutton</i> , page 353 style.

Default State Alarms

State Alarms for Discrete Setpoints

No state alarm is configured by default for the \$SPBoolCE master template.

NOTE: You can modify the configuration from the **Attributes** page.

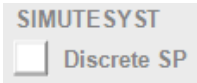
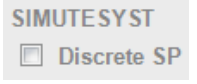
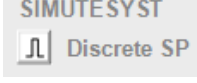
Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in symbols.

Representation

This table describes the symbols available to represent discrete setpoints:

Name	Graphic symbol	Description
<i>LatchButton</i>		The output is set (1) when the symbol is latched and remains 1, until unlatched.
<i>CheckBox</i>		The output is set (1) when the check box is selected and remains 1, until unselected.
<i>PulseButton</i>		When clicked, the output is set (1) for a period that you can configure. Refer to Parameters, page 352

Faceplate

No faceplate is available.

\$SPRealCE: Real Setpoints

What's in This Chapter

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Overview

This chapter describes the supervision resources and runtime services that are available for the management of setpoints of REAL data type.

Supervision Functions

Description

The \$SPRealCE template is used to enter a real setpoint/value from the supervision runtime.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the object editor, page 100.

These parameters allow you to configure core functions.

Parameter Description

This table describes the parameters of the automation object:

Parameter	Type	Default	Description
Param.EngUnits	String	-	Unit of the setpoint (SP)
Param.HideLegend	Bool	False	If true, the legend (object description) is not displayed. If false, the legend is displayed.
Param.HiPV	Float	100.0	High limit for the setpoint value
Param.LoPV	Float	0.0	Low limit for the setpoint value
Param.NumFormat	String	0.0	Specifies the displaying format of the setpoint. For example, enter 0.00 for 2 decimal.

Default State Alarms

State Alarms for Setpoints of Real Data Type

No state alarm is configured by default for the \$SPReal/CE master template.

NOTE: You can modify the configuration from the **Attributes** page.

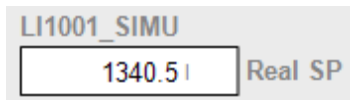
Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a general description, page 46 of the graphic elements and element styles that are used in symbols.

Representation

This table describes the symbols available to represent REAL setpoints:

Name	Graphic symbol	Description
<i>RealSetPoint</i>	 The graphic symbol shows the text 'LI1001_SIMU' in a light blue font. Below it, the value '1340.5' is displayed in a larger, bold black font, followed by the text 'Real SP' in a light blue font. The entire symbol is enclosed in a thin black rectangular border.	Setpoint value

Faceplate

No faceplate is available.

\$SPIntCE: Integer Setpoints

What’s in This Chapter

Supervision Functions 356

Parameters 356

Default State Alarms 357

Graphic Representation 357

Overview

This chapter describes the supervision resources and runtime services that are available for the management of setpoints of INT data type.

Supervision Functions

Description

The *\$SPIntCE* template is used to enter an integer setpoint/value from the supervision runtime.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the object editor, page 100.

These parameters allow you to configure core functions.

Parameter Description

This table describes the parameters of the automation object:

Parameter	Type	Default	Description
Param.EngUnits	String	%	Unit of the setpoint
Param.HideLegend	Bool	False	If true, the legend (object description) is not displayed. If false, the legend is displayed.
Param.HiPV	Integer	100	High limit for the setpoint (SP)
Param.LoPV	Integer	0	Low limit for the setpoint
Param.NumFormat	String	0.0	Specifies the displaying format of setpoint. For example, enter 0.00 for 2 decimal.

Default State Alarms

State Alarms for Setpoints of Integer Data Type

No state alarm is configured by default for the \$SPIntCE master template.

NOTE: You can modify the configuration from the **Attributes** page.

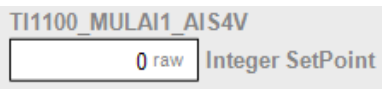
Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a general description, page 46 of the graphic elements and element styles that are used in symbols.

Representation

This table describes the symbols available to represent integer setpoints:

Name	Graphic symbol	Description
<i>IntegerSetPoint</i>		Setpoint value

Faceplates

No faceplate is available.

\$SPDurationCE: Duration Setpoints

What’s in This Chapter

Supervision Functions 358

Parameters 359

Default State Alarms 359

Graphic Representation 359

Overview

This chapter describes the supervision resources and runtime services that are available for the management of setpoints of Duration data type.

Supervision Functions

Description

The *SPDurationCE* template allows you to set a Control Expert variable of type TIME representing a time duration in milliseconds.


During operation, the symbol allows you to enter a duration in various ways, based on the format *T#DDdHHhMMmSSsMSSms*.

The duration is displayed by using 5 time components:

Time component	Description	Maximum value ⁽¹⁾						
DD	Days component	24						
HH	Hours component	99 ⁽²⁾						
MM	Minutes component	59						
SS	Seconds component	59						
MSS	Milliseconds component	999						
<table><tr><td>(1)</td><td colspan="2">You need to configure the high end of the setpoint range accordingly.</td></tr><tr><td>(2)</td><td colspan="2">Values equal to or higher than 24 are converted to days and hours.</td></tr></table>			(1)	You need to configure the high end of the setpoint range accordingly.		(2)	Values equal to or higher than 24 are converted to days and hours.	
(1)	You need to configure the high end of the setpoint range accordingly.							
(2)	Values equal to or higher than 24 are converted to days and hours.							

Rules Applicable to Durations

The table describes the rules that apply when you enter durations in the symbol during operation:

Object of the rule	Description	Example
Conversion of entries	The symbol converts hour values that you enter and that are equal to or higher than 24 to days and hours.	Entering T#50h20m10s displays  displays T#2d2h20m10s
Durations starting with minutes components	To enter a duration in minutes and seconds or milliseconds, enter the value in the format T#DDdHHhMMmSSsMSSms...	Entering T#20m10s displays T#20m10s

Object of the rule	Description	Example
Durations expressed in seconds	The symbol accepts the entry of durations expressed in seconds in the format <i>T#SSs</i> and converts the value to the <i>T#DDdHHhMMmSSsMSSms</i> format.	Entering <i>T#119s</i> displays <i>T#1m59s</i>
		Entering <i>T#3s</i> displays <i>T#3s</i>
Durations expressed in milliseconds	The symbol accepts the entry of durations expressed in milliseconds in the format <i>T#MSSms</i> .	Entering <i>T#2ms</i> displays <i>T#2ms</i>

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the [object editor](#), page 100.

These parameters allow you to configure core functions.

Parameter Description

This table describes the parameters of the automation object:

Parameter	Type	Default	Description
<code>Param.HideLegend</code>	Bool	False	If true, the legend (object description) is not displayed. If false, the legend is displayed.

Default State Alarms

State Alarms for Setpoints of Duration Data Type

No state alarm is configured by default for the *\$SPDurationCE* master template.

NOTE: You can modify the configuration from the **Attributes** page.

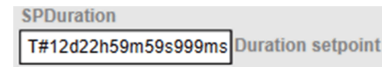
Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in symbols.

Representation

This table describes the symbols available to represent duration setpoints:

Name	Graphic symbol	Description
<i>DurationSetPoint</i>		Shows the time value and legend. Default display: T#12d22h59m59s999ms

Display Format

The table describes the rules that apply to display the duration values that you enter:

Description	Data entry example	Display
<p>The symbol displays only the time components that you enter (or that is the result of the conversion), if different from 0, in the format <i>T#DDdHHhMMmSSsMSSms..</i></p> <p>NOTE:</p> <ul style="list-style-type: none"> The leading 0 of the highest time component is not displayed. The millisecond component is displayed with 3 digits. The day component is displayed only if you enter a value for this component. 	T#320ms	T#320ms
	T#3s5ms	T#3s5ms
	T#2h10m5s	T#2h10m5s000ms
	T#50d20h10m	T#2d2h20m10s000ms

Faceplates

No faceplate is available.

\$SchedulerCE: Scheduler function

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Overview

This chapter describes the *\$SchedulerCE* master template, which contains supervision resources to schedules based on events or time driven schedules.

Supervision Functions

General Description

The *\$SchedulerCE* template is used to schedules based on events or time driven schedules. The template allows user to select up to 10 different schedules which can be configured either event or time schedule

Functional Description

The main functions of motor template are described in the following table:

Function	Description
Time scheduling	The template compares the current PLC time with configured event times in the Schedule data. After comparison, the function block releases the outputs.
Event scheduling	The template compares the status of the event as per the event configured in template and if the event is active, then function block releases the outputs.
Scheduler status	Active or Inactive The scheduler module is in operation when scheduler status is set to active on faceplate.
Mode selection	The object can be switched to different modes of operation like On, Off, and Pulse.
Pulse timing	If user selects the mode as Pulse, then user can select the Pulse On time and Off time either in seconds, minutes, or hours based on the selection in Pulse Time In on the faceplate.

Control/Supervision Relationship

Control Resources

To provide core supervision functions, the *\$PSxScheduler* master template is configured to exchange data with the following control resource of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
SchedulerGP	Scheduler logic	SchedulerGP_ST_DDT	<instance name>_ SCHDLRGP_ST	Core supervision functions.
		SchedulerGP_ST_DDT	<instance name>_ SCHDL0{x}GP_ST NOTE: {x} represents from 1 to 10.	Optional - based on number of schedule selection.
NOTE: ** Mandatory variables to be defined.				

For description of this control resource, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the [object editor](#), page 100.

These parameters allow you to configure core functions.

Parameter Description

The table describes the parameters that are defined as part of the \$SchedulerCE master template attributes.

Name	Data type	Initial value	Description
Param.NumFormat	String	0.0	Specifies the display format of values. For example, enter 0.00 to display 2 decimals.

Default State Alarms

State Alarms for Scheduler function

No state alarms are configured for attributes of the \$SchedulerCE master templates.

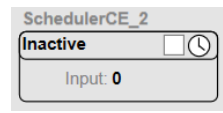
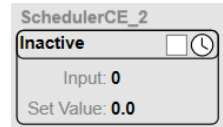
Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in symbols.

Symbol Description

The table describes the symbols that are included in the *\$SchedulerCE* master template to display data for monitoring and selecting analog signals during operation.

Name	Graphic symbol	Description
Scheduler		Active scheduler with input value
Scheduler_SV		Inactive scheduler with input value

Faceplates

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in faceplates.

Available Tabs

During operation, clicking an analog signal selection symbol opens a faceplate with the following tabs:

- Operation

Operation Tab

SchedulerCE_2
Scheduler test 2

Current Set Value: 0.0

Scheduler Status Inactive

Schedule Details	Mode	Set Value
▶ 1. Inactive	00:00 Off	0.0
▶ 2. T1001 Tank level High	On	0.0
▶ 3. Inactive	00:00 Off	0.0
▶ 4. AG1001 Motor Stopped	On	0.0
▶ 5. Inactive	00:00 Off	0.0
▶ 6. Inactive	00:00 Off	0.0
▶ 7. Inactive	00:00 Off	0.0
▶ 8. Inactive	00:00 Off	0.0
▶ 9. Inactive	00:00 Off	0.0
▶ 10. Time Schedule 10	On	0.0

SchedulerCE_2
Scheduler test 2

Current Set Value: 0.0

Scheduler Status Inactive

T1001 Tank level High

Status: Inactive

Mode: Pulse

Pulse Time In: Seconds

Pulse On Time: 0 Sec

Pulse Off Time: 0 Sec

Set Value: 0.0

SchedulerCE_2
Scheduler test 2

Current Set Value: 0.0

Scheduler Status Inactive

Time Schedule 1

Day Sunday

Start Time: 13:25 hh:mm

Mode: Pulse

Pulse Time In: Seconds

Pulse On Time: 0 Sec

Pulse Off Time: 0 Sec

Set Value: 0.0

Smart Device Control

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Overview

This part describes the master templates that provide the supervision functions for families of the device category.

Schneider Electric provides the templates described in this document. These templates can be used in various applications to minimize engineering efforts but the use, integration, configuration, and validation of the system is the sole responsibility of the user. Said user must ensure the safety of the system as a whole by performing a safety analysis, including the resources provided by Schneider Electric through procedures that the user deems appropriate.

▲ WARNING

LOSS OF CONTROL

- Perform a Failure Mode and Effects Analysis (FMEA) of your application, and apply preventive and detective controls before implementation.
- Provide a fallback state for undesired control events or sequences.
- Provide separate or redundant control paths wherever required.
- Supply appropriate parameters, particularly for limits.
- Review the implications of transmission delays and take actions to mitigate.
- Review the implications of communication link interruptions and take actions to mitigate.
- Provide independent paths for control functions (for example, emergency stop, over-limit conditions, and fault conditions) according to the safety analysis and applicable codes, and regulations.
- Apply local accident prevention and safety regulations and guidelines.¹
- Test each implementation of this library for proper operation before placing it into service.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

¹ For additional information, refer to NEMA ICS 1.1 (latest edition), *Safety Guidelines for the Application, Installation, and Maintenance of Solid State Control* and to NEMA ICS 7.1 (latest edition), *Safety Standards for Construction and Guide for Selection, Installation and Operation of Adjustable-Speed Drive Systems* or their equivalent governing your particular location.

Default State Alarms for Devices

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Default State Alarms for Devices 366

Default State Alarms for Devices

Description

The table indicates for which attributes a state alarm is configured in master templates of the device category, page 27 and provides the default values.

Attribute	Alarm message	Priority
AO.Namur.OutOfSpecs	Out of Specs	999
AO.Namur.MaintenanceR	Maintenance Required	999
AO.Namur.CheckFunction	Check Function	750
AO.Namur.Failure	Failure	500

NOTE: You can modify the configuration from the **Attributes** page.

Circuit Breakers

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Overview

This chapter describes the master templates that provide the supervision functions for the circuit breaker family.

\$CompactNSXMBUCE: Compact NSX Circuit Breakers

Overview

This section describes the *\$CompactNSXMBUCE* master template, which contains supervision resources to monitor and operate Compact NSX circuit breakers.

Supervision Functions

Description

The *\$CompactNSXMBUCE* master template provides the following monitoring and operation functions:

- Device status and data monitoring.
- Monitoring of abnormal conditions.
- Device logic resetting.
- Owner selection.
- Alarm signal management.

During operation, these functions are implemented by instances through symbols and their associated faceplate.

NOTE: You can modify the default configuration in the corresponding configuration pages, page 87.

Control/Supervision Relationship

Control Resources

To provide core supervision functions, the *\$PSxCompact* master template is configured to exchange data with the following control resources of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
MBUCOMPACTNSX	Logic for Compact NSX circuit breaker management Modbus over ULP.	COMPACT_ST_DDT	<instance name>_Compact_ST	Core supervision functions.
		COMPACT_CFG_DDT	<instance name>_Compact_CFG	
		COMPACT_MEA_DDT	<instance name>_Compact_Mea	
		COMPACT_MEAEExt_DDT	<instance name>_Compact_MeEx	
		COMPACT_MEAEExt1_DDT	<instance name>_Compact_MeEx1	
NOTE: <ul style="list-style-type: none">• ** Mandatory variables to be defined.• The syntax of the Instance name must be same as the Variable name excluding the variable specific suffixes like _ST, _CFG etc.				

For description of these control resources, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the object editor, page 100.

These parameters allow you to configure core functions.

Parameter Description

The tables describe the parameters that are defined as part of the *\$CompactNSXMBUCE* master template attributes.

Name	Data type	Initial value	Description
Param.ModeNormal	String	P	Specifies the normal owner modes (separated by a comma): <ul style="list-style-type: none"> O: Operator P: Program For example, P, O.

Name	Data type	Initial value	Description
Param.FailureRearmConfirmation	Boolean	True	<p>False = After you click the Reset button on the faceplate during operation and have successfully validated the command according to the configured security classification, resets the control logic with no additional confirmation being required.</p> <p>True = After you click the Reset button on the faceplate during operation, displays a dialog box, which requires that you confirm the reset command. The control logic is reset only by clicking OK and validating the command according to the configured security classification. By default, the security classification is <i>secured write</i>.</p>

Default State Alarms and Additional Alarm Conditions

Overview

In the *\$CompactNSXMBUCE* master template, alarms related to core supervision functions are managed in the following ways:

- Certain attributes have associated state alarms. When the condition that is defined in the *script*, [page 101](#) is satisfied, the alarm becomes active.
- Certain bits of the word structure that the master template manages have associated *Namur statuses*, [page 40](#). When the bit is set, an alarm with the default priority that is associated to the status becomes active.

You can manage the alarms from the alarms tab of the faceplate during operation.

State Alarms for Compact NSX Circuit Breakers

For a description of the attributes for which a state alarm is configured by default, refer to the topic describing *default state alarms for devices*, [page 366](#).

Additional Namur Alarm Conditions for Compact NSX Circuit Breakers

The table indicates for which bits an alarm is configured in the *\$CompactNSXMBUCE* master template and provides the associated Namur status.

Word structure	Bit	Description	Namur status
COMPACT_CFG.DataStatus	2	SD electrical trip	Failure
	3	SDE electrical trip	Failure
	4	Status Not available	Failure
COMPACT_CFG.WarningCode	0	User defined flag 201	Failure
	1	User defined flag 202	Failure
	2	User defined flag 203	Failure
	3	User defined flag 204	Failure
	4	User defined flag 205	Failure
	5	User defined flag 206	Failure
	6	User defined flag 207	Failure
	7	User defined flag 208	Failure
	8	User defined flag 209	Failure
	9	User defined flag 210	Failure
	10	Long time protection	Failure
	11	Earth leakage	Failure
	12	Ground fault	Failure
	13	Long time pickup	Failure
COMPACT_CFG.WarningOrderCode	1	Wrong password	Check Function
	2	Modbus pad locked	Check Function
	3	Detected internal alarm	Failure
	4	Out of order	Check Function
	5	Need reset	Check Function
	10	Not present	Failure

NOTE: You can modify the configuration from the **Discrete 1**, **Discrete 2**, and **Discrete 3** pages.

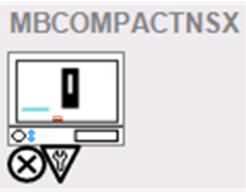
Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in symbols.

Symbol Description

The table describes the symbols that are included in the *\$CompactNSXMBUCE* master template to display data of Compact NSX circuit breakers during operation.

Name	Graphic symbol	Description
CompactNSX		Compact NSX circuit breaker symbol and icons.

Faceplates

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in faceplates.

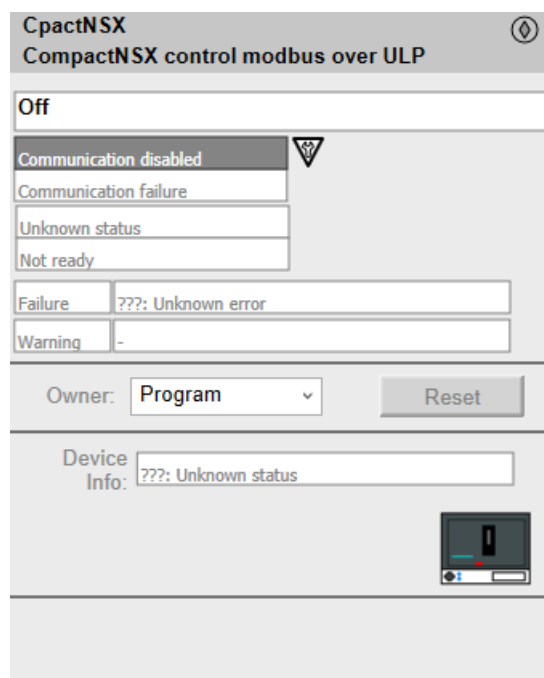
Available Tabs

During operation, clicking a Compact NSX circuit breaker symbol opens a faceplate with the following tabs:

- Operation
- Analog data, page 72
- Discrete data, page 73
- Alarms, page 75

Operation Tab

The figure shows an example of the operation tab.



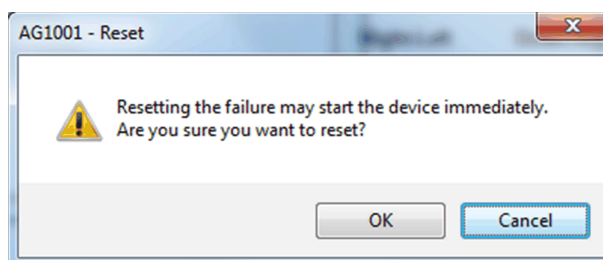
NOTE: This tab features the control module **Reset** button.

When the control module is reset, the current setpoint that is shown in this tab is effective.

By default, when you click **Reset**, a dialog box opens, which requires that you confirm the command for the reset of the control module to take effect.

Refer to *Parameters* in this chapter for a description of the *Param.FailureRearmConfirmation* parameter, which allows you to configure the reset confirmation.

The figure shows the confirmation dialog box which is model in nature.



Resetting the control module by clicking **OK** underlies a security classification, page 89. The default configuration is *secured write*.

When the reset confirmation dialog box is enabled, the security classification that normally applies when you click **Reset** is not effective.

\$MasterpactMTZCMBUCE: Masterpact MTZ Circuit Breakers with Chassis

Overview

This section describes the \$MasterpactMTZCMBUCE master template, which contains supervision resources to monitor and operate Masterpact MTZ circuit breakers.

Supervision Functions

Description

The *\$MasterpactMTZCMBUCE* master template provides the following monitoring and operation functions:

- Device status and data monitoring.
- Monitoring of abnormal conditions.
- Device logic resetting.
- Owner selection.
- Alarm management.

During operation, these functions are implemented by instances through symbols and their associated faceplate.

NOTE: You can modify the default configuration in the corresponding configuration pages, page 87.

Control/Supervision Relationship

Control Resources

To provide core supervision functions, the *\$PSxMasterpactMTZC* master template is configured to exchange data with the following control resources of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
MBUMASTERPACTMTZC	Logic for Masterpact MTZ circuit breakers with chassis.	MASTERPACT_ST_DDT	<instance name>_MPact_ST	Core supervision functions.
		MASTERPACT_CFG_DDT	<instance name>_MPact_CFG	
		MASTERPACT_MEA_DDT	<instance name>_MPact_Mea	
		MASTERPACT_MEAEExt_DDT	<instance name>_MPact_MeEx	
		MASTERPACT_MEAEExt1_DDT	<instance name>_MPact_MeEx1	
NOTE: <ul style="list-style-type: none">• ** Mandatory variables to be defined.• The syntax of the Instance name must be same as the Variable name excluding the variable specific suffixes like _ST, _CFG etc.				

For description of these control resources, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the object editor, page 100.

These parameters allow you to configure core functions.

Parameter Description

The table describes the parameters that are defined as part of the *\$MasterpactMTZCMBUCE* master template attributes.

Name	Data type	Initial value	Description
Param.ModeNormal	String	P	Specifies the normal owner modes (separated by a comma): <ul style="list-style-type: none"> • O: Operator • P: Program For example, P, O.

Name	Data type	Initial value	Description
Param.FailureRearmConfirmation	Boolean	True	<p>False = After you click the Reset button on the faceplate during operation and have successfully validated the command according to the configured security classification, resets the control logic with no additional confirmation being required.</p> <p>True = After you click the Reset button on the faceplate during operation, displays a dialog box, which requires that you confirm the reset command. The control logic is reset only by clicking OK and validating the command according to the configured security classification. By default, the security classification is <i>secured write</i>.</p>

Default State Alarms and Additional Alarm Conditions

Overview

In the *\$MasterpactMTZCMBUCE* master template, alarms related to supervision functions are managed in the following ways:

- Certain attributes have associated state alarms. When the condition that is defined in the [script, page 101](#) is satisfied, the alarm becomes active.
- Certain bits of the word structure that the master template manages have associated [Namur statuses, page 40](#). When the bit is set, an alarm with the default priority that is associated to the status becomes active.

You can manage the alarms from the alarms tab of the faceplate during operation.

State Alarms for Masterpact Circuit Breakers

For a description of the attributes for which a state alarm is configured by default, refer to the topic describing [default state alarms for devices, page 366](#).

Additional Namur Alarm Conditions for Masterpact Circuit Breakers

The table indicates for which bits an alarm is configured in the *\$MasterpactMTZCMBUCE* master template and provides the associated Namur status.

Word structure	Bit	Description	Namur status
Masterpact_CFG.DataStatus	2	SD Electrical trip	Failure
	3	SDE Electrical trip	Failure
	4	Discharged	Check function

Word structure	Bit	Description	Namur status
	6	Not ready to close	Check function
	10	Chassis disconnected position	Check function
	11	Chassis test position	Check function
Masterpact_CFG.WarningCodeExt	0	Ground fault	Failure
	1	Earth leakage	Failure
	2	Chassis status discordance	Check function
	3	Unknown IO configuration	Check function
Masterpact_CFG.WarningOrderCode	1	Wrong password	Check function
	2	IFE locking pad/EIFE intrusive command is locked	Check function
	3	IFM locking pad locked	Check function
	4	Resource/Module does not exist	Check function
	5	Timeout during command	Failure
	6	Circuit breaker tripped, reset before commands	Failure
	7	Circuit breaker already closed	Check function
	8	Circuit breaker already open	Check function
	9	Circuit breaker already reset	Check function
	10	Actuator in manual mode	Check function
	11	Actuator not present	Check function
	12	Inhibit mode on	Check function

NOTE: You can modify the configuration from the **Discrete 1**, **Discrete 3** and **Discrete 4** application template tabs.

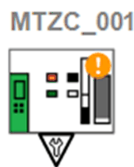
Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in symbols.

Symbol Description

The table describes the symbols that are included in the *\$MasterpactMTZCMBUCE* master template to display data of Masterpact circuit breakers during operation.

Name	Graphic symbol	Description
MasterpactMTZC		Symbol and icons for Masterpact MTZ circuit breakers with chassis.

Faceplates

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in faceplates.

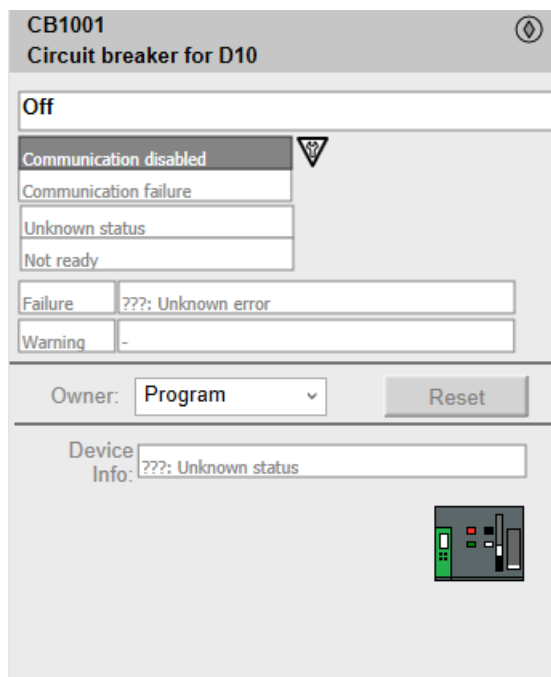
Available Tabs

During operation, clicking a Masterpact circuit breaker symbol opens a faceplate with the following tabs:

- Operation
- Analog data, page 72
- Discrete data, page 73
- Alarms, page 75

Operation Tab

The figure shows an example of the operation tab.



NOTE: This tab features the control module **Reset** button. By default, when you click **Reset**, a dialog box opens, which requires that you confirm the command for the reset of the control module to take effect. Refer to [Parameters](#), page 372 in this chapter for description of the `Param.FailureRearmConfirmation` parameter, which allows you to configure the reset confirmation. For Reset Confirmation refer, page 67.

\$MasterpactMTZMBUCE: Masterpact MTZ Circuit Breaker without Chassis

Overview

This section describes the *\$MasterpactMTZMBUCE* master template, which contains supervision resources to monitor and operate Masterpact MTZ circuit breakers.

Supervision Functions

Description

The *\$MasterpactMTZMBUCE* master template provides the following monitoring and operation functions:

- Device status and data monitoring.
- Monitoring of abnormal conditions.
- Device logic resetting.
- Owner selection.
- Alarm management.

During operation, these functions are implemented by instances through symbols and their associated faceplate.

NOTE: You can modify the default configuration in the corresponding configuration pages, page 87.

Control/Supervision Relationship

Control Resources

To provide core supervision functions, the *\$PSxMasterpactMTZwoC* master template is configured to exchange data with the following control resources of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
MBUMASTERPACTMTZ	Logic for Masterpact MTZ circuit breakers without chassis.	MASTERPACT_ST_DDT	<instance name>_MPact_ST	Core supervision functions.
		MASTERPACT_CFG_DDT	<instance name>_MPact_CFG	
		MASTERPACT_MEA_DDT	<instance name>_MPact_Me	
		MASTERPACT_MEAEExt_DDT	<instance name>_MPact_MeEx	
		MASTERPACT_MEAEExt1_DDT	<instance name>_MPact_MeEx1	

NOTE:

- ** Mandatory variables to be defined.
- The syntax of the **Instance name** must be same as the **Variable name** excluding the variable specific suffixes like _ST, _CFG etc.

For description of these control resources, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the [object editor](#), page 100.

These parameters allow you to configure core functions.

Parameter Description

The table describes the parameters that are defined as part of the *\$MasterpactMTZMBUCE* master template attributes.

Name	Data type	Initial value	Description
Param.ModeNormal	String	P	Specifies the normal owner modes (separated by a comma): <ul style="list-style-type: none">• O: Operator• P: Program For example, P, O.

Name	Data type	Initial value	Description
Param.FailureRearmConfirmation	Boolean	True	<i>False</i> = After you click the Reset button on the faceplate during operation and have successfully validated the command according to the configured security classification, resets the control logic with no additional confirmation being required. <i>True</i> = After you click the Reset button on the faceplate during operation, displays a dialog box, which requires that you confirm the reset command. The control logic is reset only by clicking OK and validating the command according to the configured security classification. By default, the security classification is <i>secured write</i> .

Default State Alarms and Additional Alarm Conditions

Overview

In the *\$MasterpactMTZMBUCE* master template, alarms related to supervision functions are managed in the following ways:

- Certain attributes have associated state alarms. When the condition that is defined in the [script](#), page 101 is satisfied, the alarm becomes active.
- Certain bits of the word structure that the master template manages have associated [Namur statuses](#), page 40. When the bit is set, an alarm with the default priority that is associated to the status becomes active.

You can manage the alarms from the alarms tab of the faceplate during operation.

State Alarms for Masterpact Circuit Breakers

For a description of the attributes for which a state alarm is configured by default, refer to the topic describing [default state alarms for devices](#), page 366.

Additional Namur Alarm Conditions for Masterpact Circuit Breakers

The table indicates for which bits an alarm is configured in the *\$MasterpactMTZMBUCE* master template and provides the associated Namur status.

Word structure	Bit	Description	Namur status
Masterpact_CFG.DataStatus	2	<i>SD Electrical trip</i>	<i>Failure</i>
	3	<i>SDE Electrical trip</i>	<i>Failure</i>
	4	<i>Discharged</i>	<i>Check function</i>
	6	<i>Not ready to close</i>	<i>Check function</i>
Masterpact_CFG.WarningCodeExt	0	<i>Ground fault</i>	<i>Failure</i>
	1	<i>Earth leakage</i>	<i>Failure</i>
Masterpact_CFG.WarningOrderCode	1	<i>Wrong password</i>	<i>Check function</i>
	2	<i>IFE locking pad/EIFE intrusive command is locked</i>	<i>Check function</i>
	3	<i>IFM locking pad locked</i>	<i>Check function</i>
	4	<i>Resource/Module does not exist</i>	<i>Check function</i>
	5	<i>Timeout during command</i>	<i>Failure</i>
	6	<i>Circuit breaker tripped, reset before commands</i>	<i>Failure</i>
	7	<i>Circuit breaker already closed</i>	<i>Check function</i>
	8	<i>Circuit breaker already open</i>	<i>Check function</i>
	9	<i>Circuit breaker already reset</i>	<i>Check function</i>
	10	<i>Actuator in manual mode</i>	<i>Check function</i>
	11	<i>Actuator not present</i>	<i>Check function</i>
	12	<i>Inhibit mode on</i>	<i>Check function</i>

NOTE: You can modify the configuration from the **Discrete 1**, **Discrete 3** and **Discrete 4** application template tabs.

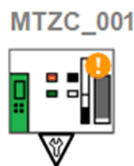
Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in symbols.

Symbol Description

The table describes the symbols that are included in the *\$MasterpactMTZMBUCE* master template to display data of Masterpact circuit breakers during operation.

Name	Graphic symbol	Description
MasterpactMTZwoC		Symbol and icons for Masterpact MTZ circuit breakers without chassis.

Faceplates

Representation of Supervision Data

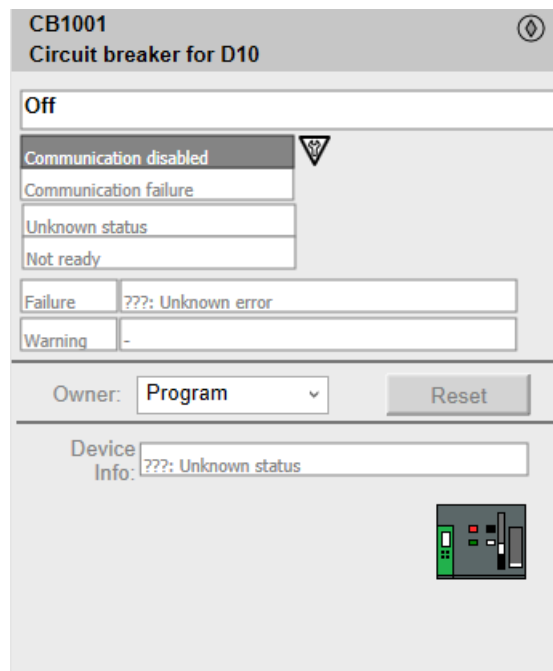
At the beginning of this document, you can find a general description, page 46 of the graphic elements and element styles that are used in faceplates.

Available Tabs

During operation, clicking a Masterpact circuit breaker symbol opens a faceplate with the following tabs:

- Operation
- Analog data, page 72
- Discrete data, page 73
- Alarms, page 75

Operation Tab



NOTE: This tab features the control module **Reset** button. By default, when you click **Reset**, a dialog box opens, which requires that you confirm the command for the reset of the control module to take effect. Refer to Parameters, page 372 in this chapter for description of the `Param.FailureRearmConfirmation` parameter, which allows you to configure the reset confirmation. For Reset Confirmation refer, page 67.

\$MasterpactNxMBUCE: Masterpact Nx Circuit Breaker without Chassis (x= T/W)

Overview

This section describes the *\$MasterpactNxMBUCE* master template, which contains supervision resources to monitor and operate Nx circuit breakers.

Supervision Functions

Description

The *\$MasterpactNxMBUCE* master template provides the following monitoring and operation functions:

- Device status and data monitoring.
- Monitoring of abnormal conditions.
- Device logic resetting.
- Owner selection.
- Alarm management.

During operation, these functions are implemented by instances through symbols and their associated faceplate.

NOTE: You can modify the default configuration in the corresponding configuration pages, page 87.

Control/Supervision Relationship

Control Resources

To provide core supervision functions, the *\$PSxMasterpactNx* master template is configured to exchange data with the following control resources of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
MBUMASTERPACTNx	Logic for Masterpact Nx circuit breakers without chassis.	MASTERPACT_ST_DDT	<instance name>_ MPact_ST	Core supervision functions.
		MASTERPACT_CFG_DDT	<instance name>_ MPact_CFG	
		MASTERPACT_MEA_DDT	<instance name>_ MPact_Me	
		MASTERPACT_MEExt_ DDT	<instance name>_ MPact_MeEx	
		MASTERPACT_MEExt1_ DDT	<instance name>_ MPact_MeEx1	
NOTE: <ul style="list-style-type: none">• ** Mandatory variables to be defined.• The syntax of the Instance name must be same as the Variable name excluding the variable specific suffixes like _ST, _CFG etc.				

For description of these control resources, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the [object editor](#), page 100.

These parameters allow you to configure core functions.

Parameter Description

The table describes the parameters that are defined as part of the *\$MasterpactNxMBUCE* master template attributes.

Name	Data type	Initial value	Description
Param.ModeNormal	String	P	Specifies the normal owner modes (separated by a comma): <ul style="list-style-type: none"> O: Operator P: Program For example, P, O.
Name	Data type	Initial value	Description
Param.FailureRearmConfirmation	Boolean	True	<p>False = After you click the Reset button on the faceplate during operation and have successfully validated the command according to the configured security classification, resets the control logic with no additional confirmation being required.</p> <p>True = After you click the Reset button on the faceplate during operation, displays a dialog box, which requires that you confirm the reset command. The control logic is reset only by clicking OK and validating the command according to the configured security classification. By default, the security classification is <i>secured write</i>.</p>

Default State Alarms and Additional Alarm Conditions

Overview

In the *\$MasterpactNxMBUCE* master template, alarms related to supervision functions are managed in the following ways:

- Certain attributes have associated state alarms. When the condition that is defined in the [script](#), page 101 is satisfied, the alarm becomes active.
- Certain bits of the word structure that the master template manages have associated [Namur statuses](#), page 40. When the bit is set, an alarm with the default priority that is associated to the status becomes active.

You can manage the alarms from the alarms tab of the faceplate during operation.

State Alarms for Masterpact Circuit Breakers

For a description of the attributes for which a state alarm is configured by default, refer to the topic describing [default state alarms for devices](#), page 366.

Additional Namur Alarm Conditions for Masterpact Circuit Breakers

The table indicates for which bits an alarm is configured in the *\$MasterpactNxMBUCE* master template and provides the associated Namur status.

Word structure	Bit	Description	Namur status
Masterpact_CFG.DataStatus	2	<i>SD Electrical trip</i>	<i>Failure</i>
	3	<i>SDE Electrical trip</i>	<i>Failure</i>
	4	<i>Discharged</i>	<i>Check function</i>
	6	<i>Not ready to close</i>	<i>Check function</i>
Masterpact_CFG.WarningCodeExt	0	<i>Ground fault</i>	<i>Failure</i>
	1	<i>Differential detected alarm (Vigi)</i>	<i>Failure</i>
Masterpact_CFG.WarningOrderCode	1	<i>Wrong password</i>	<i>Check function</i>
	2	<i>IFE locking pad/EIFE intrusive command is locked</i>	<i>Check function</i>
	3	<i>IFM locking pad locked</i>	<i>Check function</i>
	4	<i>Resource/Module does not exist</i>	<i>Check function</i>
	5	<i>Timeout during command</i>	<i>Failure</i>
	6	<i>Circuit breaker tripped, reset before commands</i>	<i>Failure</i>
	7	<i>Circuit breaker already closed</i>	<i>Check function</i>
	8	<i>Circuit breaker already open</i>	<i>Check function</i>
	9	<i>Circuit breaker already reset</i>	<i>Check function</i>
	10	<i>Actuator in manual mode</i>	<i>Check function</i>
	11	<i>Actuator not present</i>	<i>Check function</i>
	12	<i>Inhibit mode on</i>	<i>Check function</i>

NOTE: You can modify the configuration from the **Discrete 1**, **Discrete 3** and **Discrete 4** application template tabs.


Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in symbols.

Symbol Description

The table describes the symbols that are included in the *\$MasterpactNxMBUCE* master template to display data of Masterpact circuit breakers during operation.

Name	Graphic symbol	Description
MasterpactNxwoC		Symbol and icons for Masterpact Nx circuit breakers without chassis.

Faceplates

Representation of Supervision Data

At the beginning of this document, you can find a general description, page 46 of the graphic elements and element styles that are used in faceplates.

Available Tabs

During operation, clicking a Masterpact circuit breaker symbol opens a faceplate with the following tabs:

- Operation
- Analog data, page 72
- Discrete data, page 73
- Alarms, page 75

NOTE: This tab features the control module **Reset** button. By default, when you click **Reset**, a dialog box opens, which requires that you confirm the command for the reset of the control module to take effect. Refer to *Parameters*, page 372 in this chapter for description of the `Param.FailureRearmConfirmation` parameter, which allows you to configure the reset confirmation. For Reset Confirmation refer, page 67.

***\$MasterpactNxCMBUCE*: Masterpact Nx Circuit Breakers with Chassis (x= T/W)**

Overview

This section describes the *\$MasterpactNxCMBUCE* master template, which contains supervision resources to monitor and operate Masterpact Nx circuit breakers.

Supervision Functions

Description

The *\$MasterpactNxCMBUCE* master template provides the following monitoring and operation functions:

- Device status and data monitoring.
- Monitoring of abnormal conditions.
- Device logic resetting.
- Owner selection.

- Alarm management.

During operation, these functions are implemented by instances through symbols and their associated faceplate.

NOTE: You can modify the default configuration in the corresponding configuration pages, page 87.

Control/Supervision Relationship

Control Resources

To provide core supervision functions, the *\$PSxMasterpactNxC* master template is configured to exchange data with the following control resources of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
MBUMASTERPACTNx C	Logic for Masterpact Nx circuit breakers with chassis.	MASTERPACT_ST_DDT	<instance name>_MPact_ST	Core supervision functions.
		MASTERPACT_CFG_DDT	<instance name>_MPact_CFG	
		MASTERPACT_MEA_DDT	<instance name>_MPact_Me	
		MASTERPACT_MEAEExt_DDT	<instance name>_MPact_MeEx	
		MASTERPACT_MEAEExt1_DDT	<instance name>_MPact_MeEx1	
NOTE: <ul style="list-style-type: none">• ** Mandatory variables to be defined.• The syntax of the Instance name must be same as the Variable name excluding the variable specific suffixes like _ST, _CFG etc.				

For description of these control resources, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the **object editor**, page 100.

These parameters allow you to configure core functions.

Parameter Description

The table describes the parameters that are defined as part of the *\$MasterpactNxCMBUCE* master template attributes.

Name	Data type	Initial value	Description
Param.ModeNormal	String	P	Specifies the normal owner modes (separated by a comma): <ul style="list-style-type: none"> O: Operator P: Program For example, P, O.

Name	Data type	Initial value	Description
Param.FailureRearmConfirmation	Boolean	True	<p>False = After you click the Reset button on the faceplate during operation and have successfully validated the command according to the configured security classification, resets the control logic with no additional confirmation being required.</p> <p>True = After you click the Reset button on the faceplate during operation, displays a dialog box, which requires that you confirm the reset command. The control logic is reset only by clicking OK and validating the command according to the configured security classification. By default, the security classification is <i>secured write</i>.</p>

Default State Alarms and Additional Alarm Conditions

Overview

In the *\$MasterpactNxCMBUCE* master template, alarms related to supervision functions are managed in the following ways:

- Certain attributes have associated state alarms. When the condition that is defined in the *script*, page 101 is satisfied, the alarm becomes active.
- Certain bits of the word structure that the master template manages have associated *Namur statuses*, page 40. When the bit is set, an alarm with the default priority that is associated to the status becomes active.

You can manage the alarms from the alarms tab of the faceplate during operation.

State Alarms for Masterpact Circuit Breakers

For a description of the attributes for which a state alarm is configured by default, refer to the topic describing *default state alarms for devices*, page 366.

Additional Namur Alarm Conditions for Masterpact Circuit Breakers

The table indicates for which bits an alarm is configured in the *\$MasterpactNxCMBUCE* master template and provides the associated Namur status.

Word structure	Bit	Description	Namur status
Masterpact_CFG.DataStatus	2	SD Electrical trip	Failure
	3	SDE Electrical trip	Failure
	4	Discharged	Check function
	6	Not ready to close	Check function
	10	Chassis disconnected position	Check function
	11	Chassis test position	Check function

Word structure	Bit	Description	Namur status
Masterpact_CFG.WarningCodeExt	0	Ground fault	<i>Failure</i>
	1	Earth leakage	<i>Failure</i>
	2	Chassis status discordance	<i>Check Function</i>
	3	Unknown IO configuration	<i>Check Function</i>
Masterpact_CFG.WarningOrderCode	1	Wrong password	<i>Check Function</i>
	2	IFE locking pad	<i>Check Function</i>
	3	IFM locking pad locked	<i>Check Function</i>
	4	Resource/Module does not exist	<i>Check Function</i>
	5	Timeout during command	<i>Failure</i>
	6	Circuit breaker tripped, reset before commands	<i>Failure</i>
	7	Circuit breaker already closed	<i>Check Function</i>
	8	Circuit breaker already open	<i>Check Function</i>
	9	Circuit breaker already reset	<i>Check Function</i>
	10	Actuator in manual mode	<i>Check Function</i>
	11	Actuator not present	<i>Check Function</i>
	12	Inhibit mode on	<i>Check Function</i>

NOTE: You can modify the configuration from the **Discrete 1**, **Discrete 3** and **Discrete 4** application template tabs.


Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in symbols.

Symbol Description

The table describes the symbols that are included in the *\$MasterpactNxCMBUCE* master template to display data of Masterpact circuit breakers during operation.

Name	Graphic symbol	Description
MasterpactNxC		Symbol and icons for Masterpact Nx circuit breakers with chassis.

Faceplates

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in faceplates.

Available Tabs

During operation, clicking a Masterpact circuit breaker symbol opens a faceplate with the following tabs:

- Operation
- Analog data, page 72
- Discrete data, page 73
- Alarms, page 75

NOTE: This tab features the control module **Reset** button. By default, when you click **Reset**, a dialog box opens, which requires that you confirm the command for the reset of the control module to take effect. Refer to [Parameters](#), page 372 in this chapter for description of the `Param.FailureRearmConfirmation` parameter, which allows you to configure the reset confirmation. For Reset Confirmation refer, page 67.

\$MasterpactHWCE: Hardwired Circuit Breaker

Overview

This section describes the *\$MasterpactHWCE* master template, which contains supervision resources to monitor and operate Hardwired circuit breaker.

Supervision Functions

Description

The *\$MasterpactHWCE* master template provides the following monitoring and operation functions:

- Device status and data monitoring.
- Monitoring of abnormal conditions.
- Device logic resetting.
- Owner selection.
- Alarm management.

During operation, these functions are implemented by instances through symbols and their associated faceplate.

NOTE: You can modify the default configuration in the corresponding configuration pages, page 87.

Control/Supervision Relationship

Control Resources

To provide core supervision functions, the *\$PSxHWCircuitBreaker* master template is configured to exchange data with the following control resources of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
HWCIRCUITBREAKER	Logic for Hardwired circuit breaker.	HWCB_ST_DDT	<instance name>_ MPact_HWCB_ST	Core supervision functions.
		HWCB_CFG_DDT	<instance name>_ MPact_HWCB_CFG	
** Mandatory variables to be defined.				

For description of the above control resource, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the object editor, page 100.

These parameters allow you to configure core functions.

Parameter Description

The table describes the parameters that are defined as part of the *\$MasterpactHWCE* master template attributes.

Name	Data type	Initial value	Description
Param.ModeNormal	String	P	Specifies the normal owner modes (separated by a comma): <ul style="list-style-type: none"> O: Operator P: Program For example, P, O.

Name	Data type	Initial value	Description
Param.FailureRearmConfirmation	Boolean	True	<p>False = After you click the Reset button on the faceplate during operation and have successfully validated the command according to the configured security classification, resets the control logic with no additional confirmation being required.</p> <p>True = After you click the Reset button on the faceplate during operation, displays a dialog box, which requires that you confirm the reset command. The control logic is reset only by clicking OK and validating the command according to the configured security classification. By default, the security classification is <i>secured write</i>.</p>

Default State Alarms and Additional Alarm Conditions

Overview

In the *\$MasterpactHWCE* master template, alarms related to supervision functions are managed in the following ways:

- Certain attributes have associated state alarms. When the condition that is defined in the *script*, [page 101](#) is satisfied, the alarm becomes active.
- Certain bits of the word structure that the master template manages have associated *Namur statuses*, [page 40](#). When the bit is set, an alarm with the default priority that is associated to the status becomes active.

You can manage the alarms from the alarms tab of the faceplate during operation.

State Alarms for Masterpact Circuit Breakers

For a description of the attributes for which a state alarm is configured by default, refer to the topic describing *default state alarms for devices*, [page 366](#).

Additional Namur Alarm Conditions for Masterpact Circuit Breakers

The table indicates for which bits an alarm is configured in the *\$MasterpactHWCE* master template and provides the associated Namur status.

Word structure	Bit	Description	Namur status
HWCB_CFG.DataStatus	2	<i>SD Electrical trip</i>	<i>Failure</i>
	3	<i>SDE Electrical trip</i>	<i>Failure</i>
	7	<i>Chassis disconnected position</i>	<i>Check function</i>
	8	<i>Chassis test position</i>	<i>Check function</i>

NOTE: You can modify the configuration from the **Discrete 1** application template tab.

Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a *general description*, [page 46](#) of the graphic elements and element styles that are used in symbols.

Symbol Description

The table describes the symbols that are included in the *\$MasterpactHWCE* master template to display data of Hardwired circuit breakers during operation.

Name	Graphic symbol	Description
Circuitbreaker		Symbol and icons for Hardwired circuit breaker.

Faceplates

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in faceplates.

Available Tabs

During operation, clicking a Masterpact circuit breaker symbol opens a faceplate with the following tabs:

- Operation
- Analog data, page 72
- Discrete data, page 73
- Alarms, page 75

Operation Tab

MPactHW
Hardwired masterpact circuit breaker control

Off

Communication disabled

Communication failure

Unknown status

Not ready

Failure

Warning

Owner: Program

Reset

Device Info: ??? Unknown status

NOTE: This tab features the control module **Reset** button. By default, when you click **Reset**, a dialog box opens, which requires that you confirm the command for the reset of the control module to take effect. Refer to [Parameters](#), page 388 in this chapter for description of the `Param.FailureRearmConfirmation` parameter, which allows you to configure the reset confirmation. For Reset Confirmation refer, page 67.

\$CompactHWCE: Hardwired Compact Circuit Breaker

Overview

This section describes the *\$CompactHWCE* master template, which contains supervision resources to monitor and operate Hardwired Compact Circuit Breaker.

Supervision Functions

Description

The *\$CompactHWCE* master template provides the following monitoring and operation functions:

- Device status and data monitoring.
- Monitoring of abnormal conditions.
- Device logic resetting.
- Owner selection.
- Alarm management.

During operation, these functions are implemented by instances through symbols and their associated faceplate.

NOTE: You can modify the default configuration in the corresponding configuration pages, page 87.

Control/Supervision Relationship

Control Resources

To provide core supervision functions, the *\$PSxHWCompact* master template is configured to exchange data with the following control resources of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
HWCIRCUITBREAKER	Logic for Hardwired Circuit Breaker.	HWCB_ST_DDT	<instance name>_CPact_HWCB_ST	Core supervision functions.
		HWCB_CFG_DDT	<instance name>_CPact_HWCB_CFG	
** Mandatory variables to be defined.				

For description of the above control resource, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the *object editor*, page 100.

These parameters allow you to configure core functions.

Parameter Description

The table describes the parameters that are defined as part of the *\$CompactHWCE* master template attributes.

Name	Data type	Initial value	Description
Param.ModeNormal	String	P	Specifies the normal owner modes (separated by a comma): <ul style="list-style-type: none"> O: Operator P: Program For example, P, O.

Name	Data type	Initial value	Description
Param.FailureRearmConfirmation	Boolean	True	<p><i>False</i> = After you click the Reset button on the faceplate during operation and have successfully validated the command according to the configured security classification, resets the control logic with no additional confirmation being required.</p> <p><i>True</i> = After you click the Reset button on the faceplate during operation, displays a dialog box, which requires that you confirm the reset command. The control logic is reset only by clicking OK and validating the command according to the configured security classification. By default, the security classification is <i>secured write</i>.</p>

Default State Alarms and Additional Alarm Conditions

Overview

In the *\$CompactHWCE* master template, alarms related to supervision functions are managed in the following ways:

- Certain attributes have associated state alarms. When the condition that is defined in the script, page 101 is satisfied, the alarm becomes active.
- Certain bits of the word structure that the master template manages have associated *Namur statuses*, page 40. When the bit is set, an alarm with the default priority that is associated to the status becomes active.

You can manage the alarms from the alarms tab of the faceplate during operation.

State Alarms for Compact Circuit Breakers

For a description of the attributes for which a state alarm is configured by default, refer to the topic describing default state alarms for devices, page 366.

Additional Namur Alarm Conditions for Compact Circuit Breakers

The table indicates for which bits an alarm is configured in the *\$CompactHWCE* master template and provides the associated *Namur status*.

Word structure	Bit	Description	Namur status
HWCB_CFG.DataStatus	2	SD Electrical trip	Failure
	3	SDE Electrical trip	Failure

NOTE: You can modify the configuration from the **Discrete 1** application template tab.


Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in symbols.

Symbol Description

The table describes the symbols that are included in the *\$CompactHWCE* master template to display data of Hardwired circuit breakers during operation.

Name	Graphic symbol	Description
hwcompact		Symbol and icons for Hardwired Compact Circuit Breaker.

Faceplates

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in faceplates.

Available Tabs

During operation, clicking a Compact circuit breaker symbol opens a faceplate with the following tabs:

- Operation
- Analog data, page 72
- Discrete data, page 73
- Alarms, page 75

Operation Tab

CcompactHW
Hardwired compact circuit breaker control

Off

Communication disabled
Communication failure
Unknown status
Not ready

Failure
Warning -

Owner: Program Reset

Device Info: ??? : Unknown status

NOTE: This tab features the control module **Reset** button. By default, when you click **Reset**, a dialog box opens, which requires that you confirm the command for the reset of the control module to take effect. Refer to [Parameters](#), page 388 in this chapter for description of the `Param.FailureRearmConfirmation` parameter, which allows you to configure the reset confirmation. For Reset Confirmation refer, page 67.

Digital Protection Relays

What's in This Chapter

<i>\$Sepam80ECE</i> and <i>\$Sepam80MBCE</i> : Sepam80 Digital Protection Relays	395
<i>\$EasergyP3EMCE</i> : Digital Protection Relays	399
<i>\$EasergyP5EMCE</i> : Digital Protection Relays	403

Overview

This chapter describes the master templates that provide the supervision functions for the digital protection relay family.

\$Sepam80ECE and *\$Sepam80MBCE*: Sepam80 Digital Protection Relays

Overview

This section describes the supervision resources and runtime services that are available for the management of the *\$Sepam80ECE* and *\$Sepam80MBCE* protection relay.

Supervision Functions

Description

The supervision resources provide device status monitoring, communication status, owner selection, resetting, current commands, and device data.

These functions are implemented in runtime through symbols and their associated faceplate.

Control/Supervision Relationship

Control Resources

To provide core supervision functions, the *\$PSxSepam80C* master template is configured to exchange data with the following control resources of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
ESEPAM80C	Sepam 80C on Ethernet (Modbus TCP I/O scanning)	SEPAM_ST_DDT	<instance name>_Sepam80_ST	Core supervision functions.
		SEPAM_CFG_DDT	<instance name>_Sepam80_CFG	
		SEPAM_IO80_DDT	<instance name>_Sepam80_IO80	
		SEPAM_MEA_DDT	<instance name>_Sepam80_MEA	
MBSEPAM80C	Sepam 80C on Modbus SL	SEPAM_ST_DDT	<instance name>_Sepam80_ST	Core supervision functions.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
		SEPAM_CFG_DDT	<instance name>_ Sepam80_CFG	
		SEPAM_IO80_DDT	<instance name>_ Sepam80_IO80	
		SEPAM_MEA_DDT	<instance name>_ Sepam80_MEA	
** Mandatory variables to be defined.				

For description of these control resources, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the [object editor](#), page 100.

These parameters allow you to configure core functions.

Parameter Description

The table describes the parameters that are defined as part of the *\$Sepam80ECE* master template attributes.

Parameter	Data type	Initial value	Description
Param.ModeNormal	String	P	Specifies the normal owner modes (separated by a comma): <ul style="list-style-type: none"> O: Operator P: Program For example, P, O.

Name	Data type	Initial value	Description
Param.FailureRearmConfirmation	Boolean	True	<p>False = After you click the Reset button on the faceplate during operation and have successfully validated the command according to the configured security classification, resets the control logic with no additional confirmation being required.</p> <p>True = After you click the Reset button on the faceplate during operation, displays a dialog box, which requires that you confirm the reset command. The control logic is reset only by clicking OK and validating the command according to the configured security classification. By default, the security classification is <i>secured write</i>.</p>

Default State Alarms and Additional Alarm Conditions

Overview

In the *\$Sepam80ECE* master template, alarms related to core supervision functions are managed in the following ways:

- Certain attributes have associated state alarms. When the condition that is defined in the *script*, [page 101](#) is satisfied, the alarm becomes active.
- Certain bits of the word structure that the master template manages have associated *Namur statuses*, [page 40](#). When the bit is set, an alarm with the default priority that is associated to the status becomes active.

You can manage the alarms from the alarms tab of the faceplate during operation.

State Alarms for Sepam 80

For a description of the attributes for which a state alarm is configured by default, refer to the topic describing *default state alarms for devices*, [page 366](#).

Additional Namur Alarm Conditions for Sepam 80

The table indicates for which bits an alarm is configured in the *\$Sepam80ECE* master template and provides the associated Namur status.


Word structure	Bit	Description	Namur status
SEPAM_CFG.DataStatus	0	<i>Detected fault</i>	<i>Failure</i>
	3	<i>Trip</i>	<i>Failure</i>
	9	<i>Loss of synchronization</i>	<i>Failure</i>
	10	<i>Loss of event 1 data</i>	<i>Failure</i>
	12	<i>Detected partial fault</i>	<i>Failure</i>
	13	<i>Detected major fault</i>	<i>Failure</i>
	14	<i>Loss of event 2 data</i>	<i>Failure</i>

NOTE: You can modify the configuration from the **Discrete 1** page.

Graphic Representation

Representation

The table describes the symbols that are included in the *\$Sepam80ECE* master template to display data of Sepam 80 digital protection relays during operation

Name	Graphic symbol	Description
Sepam80C		Sepam 80C symbol

Faceplates

Overview

During operation, clicking a Sepam 80 graphic symbol opens a faceplate with the following tabs:

- Operation
- Analog Data, page 72
- Discrete Data, page 73
- Alarms, page 75

Operation Tab

The figure shows an example of the operation tab.

The screenshot displays the 'Operation' tab of the RL1001 Digital protection relay for D10. The interface includes a status bar at the top showing 'Off'. Below this, a list of communication statuses is shown: 'Communication disabled' (highlighted), 'Communication failure', 'Unknown status', and 'Not ready'. A warning icon is present next to 'Communication disabled'. Further down, there are fields for 'Failure' (displaying '???: Unknown error') and 'Warning' (displaying '-'). At the bottom, the 'Owner' is set to 'Program' with a dropdown arrow, and a 'Reset' button is available. The 'Device Info' section shows '???: Unknown status'. A small image of the relay hardware is located in the bottom right corner.

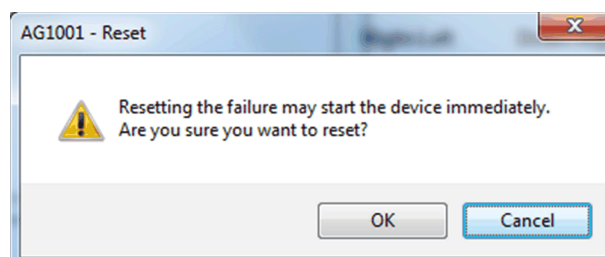
NOTE: This tab features the control module **Reset** button.

When the control module is reset, the current setpoint that is shown in this tab is effective.

By default, when you click **Reset**, a dialog box opens, which requires that you confirm the command for the reset of the control module to take effect.

Refer to *Parameters* in this chapter for a description of the *Param.FailureRearmConfirmation* parameter, which allows you to configure the reset confirmation.

The figure shows the confirmation dialog box which is model in nature.



Resetting the control module by clicking **OK** underlies a security classification, page 89. The default configuration is *secured write*.

When the reset confirmation dialog box is enabled, the security classification that normally applies when you click **Reset** is not effective.

\$EasergyP3EMCE: Digital Protection Relays

Overview

This section describes the Supervision resources and runtime services that are available for the management of \$EasergyP3EMCE

Supervision Functions

Description

The supervision resources provide device status monitoring, communication status, owner selection, resetting, current commands, and device data.

These functions are implemented in runtime through symbols and their associated faceplate.

Control/Supervision Relationship

Control Resources

To provide core supervision functions, the \$EasergyP3 master template is configured to exchange data with the following control resources of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
EMEasergyP3	Easergy P3 on Ethernet	EasergyP3_ST_DDT	<instance name>_EP3_ST	Core supervision functions.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
		EasergyP3_Inputs_DDT	<instance name>_EP3_IPMap	
		EasergyP3_Outputs_DDT	<instance name>_EP3_OPMap	
		EasergyP3_ARC_DDT	<instance name>_EP3_Arc	
		EasergyP3_MEA_DDT	<instance name>_EP3_MEA	
		EasergyP3_Demand_DDT	<instance name>_EP3_Dem	
		EasergyP3_DeviceStatus_DDT	<instance name>_EP3_Status	
** Mandatory variables to be defined.				

For description of these control resources, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the [object editor](#).

These parameters allow you to configure core functions.

Parameter Description

The table describes the parameters that are defined as part of the *\$EasergyP3EMCE* master template attributes.

Parameter	Data type	Initial value	Description
Param.ModeNormal	String	P	Specifies the normal owner modes (separated by a comma): <ul style="list-style-type: none"> O: Operator P: Program For example, P, O.

Name	Data type	Initial value	Description
Param.FailureRearmConfirmation	Boolean	True	<p>False = After you click the Reset button on the faceplate during operation and have successfully validated the command according to the configured security classification, resets the control logic with no additional confirmation being required.</p> <p>True = After you click the Reset button on the faceplate during operation, displays a dialog box, which requires that you confirm the reset command. The control logic is reset only by clicking OK and validating the command according to the configured security classification. By default, the security classification is <i>secured write</i>.</p>

Default State Alarms and Additional Alarm Conditions

Overview

In the *\$EasergyP3MCE* master template, alarms related to core supervision functions are managed in the following ways:

- Certain attributes have associated state alarms. When the condition that is defined in the *script* is satisfied, the alarm becomes active.
- Certain bits of the word structure that the master template manages have associated *Namur statuses*. When the bit is set, an alarm with the default priority that is associated to the status becomes active.

You can manage the alarms from the alarms tab of the faceplate during operation.

State Alarms for EasergyP3

For a description of the attributes for which a state alarm is configured by default, refer to the topic describing *default state alarms for devices*.

Additional Namur Alarm Conditions for EasergyP3

The table indicates for which bits an alarm is configured in the *\$EasergyP3MCE* master template and provides the associated Namur status.

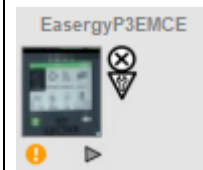
Word structure	Bit	Description	Namur status
EasergyP3_CFG.DataStatus	0	<i>Detected fault</i>	<i>Failure</i>
	3	<i>Trip</i>	<i>Failure</i>
	9	<i>Loss of synchronization</i>	<i>Failure</i>
	10	<i>Loss of event 1 data</i>	<i>Failure</i>
	12	<i>Detected partial fault</i>	<i>Failure</i>
	13	<i>Detected major fault</i>	<i>Failure</i>
	14	<i>Loss of event 2 data</i>	<i>Failure</i>

NOTE: You can modify the configuration from the **Discrete 1** page.

Graphic Representation

Representation

The table describes the symbols that are included in the *\$EasergyP3MCE* master template to display data of EasergyP3 digital protection relays during operation

Name	Graphic symbol	Description
EasergyP3EMCE		EasergyP3 symbol.

Faceplates

Overview

During operation, clicking a *EasergyP3* graphic symbol opens a faceplate with the following tabs:

- Operation
- Analog Data
- Discrete Data
- Alarms

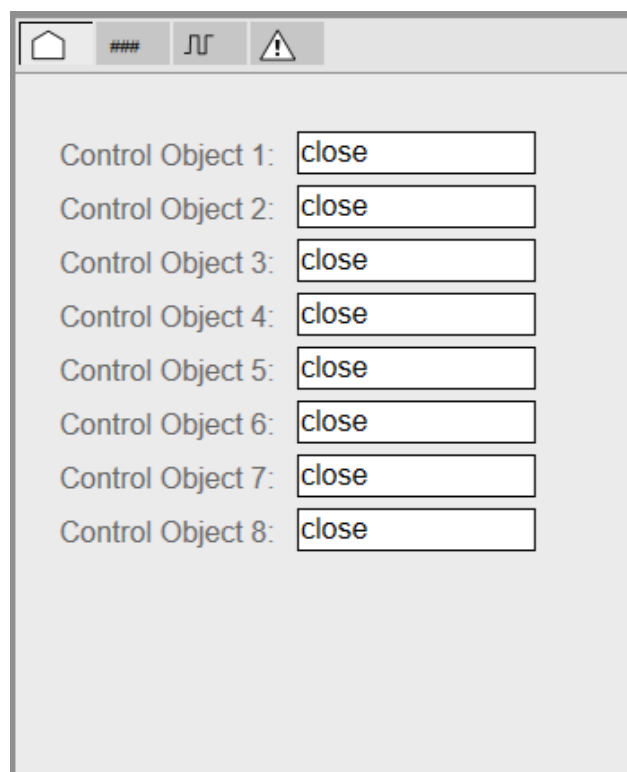
Operation Tab

The figure shows an example of the operation tab.

The screenshot displays the 'EasergyP3_300' faceplate, specifically the 'Operation' tab. The title bar shows 'EasergyP3_300' and 'EasergyP3'. The main area is divided into several sections. At the top, there is a large text field displaying 'Off'. Below this, a list of status indicators is shown: 'Communication disabled', 'Communication failure', 'Unknown status', and 'Not ready'. Further down, there are two rows of status information: 'Failure' with the value '???; Unknown error' and 'Warning' with the value '-'. Below these, there is a section for 'Owner' with a dropdown menu set to 'Program' and a 'Reset' button. At the bottom, there is a 'Device Info' section with the value '???; Unknown status' and a small thumbnail image of the device's physical interface.

Extended Operator Tab

The figure shows an example of the extended operator tab.



\$EasergyP5EMCE: Digital Protection Relays

Overview

This section describes the Supervision resources and runtime services that are available for the management of \$EasergyP5EMCE

Supervision Functions

Description

The supervision resources provide device status monitoring, communication status, owner selection, resetting, current commands, and device data.

These functions are implemented in runtime through symbols and their associated faceplate.

Control/Supervision Relationship

Control Resources

To provide core supervision functions, the \$EasergyP5 master template is configured to exchange data with the following control resources of the Modicon Libraries - General Purpose for Control Expert.

Control Resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
EMEasergyP5	Easergy P5 on Ethernet	EasergyP5_ST_DDT	<instance name>_EP5_ST	Core supervision functions.
		EasergyP5_Inputs_DDT	<instance name>_EP5_IPMap	

Control Resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
		EasergyP5_Outputs_DDT	<instance name>_EP5_OPMap	
		EasergyP5_ARC_DDT	<instance name>_EP5_Arc	
		EasergyP5_MEA_DDT	<instance name>_EP5_MEA	
		EasergyP5_Demand_DDT	<instance name>_EP5_Dem	
		EasergyP5_DeviceStatus_DDT	<instance name>_EP5_Status	
** Mandatory variables to be defined.				

For description of these control resources, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the **object editor**.

These parameters allow you to configure core functions.

Parameter Description

The table describes the parameters that are defined as part of the *\$EasergyP5EMCE* master template attributes.

Parameter	Data type	Initial value	Description
Param.ModeNormal	String	P	Specifies the normal owner modes (separated by a comma): <ul style="list-style-type: none"> O: Operator P: Program For example, P, O.

Name	Data type	Initial value	Description
Param.FailureRearmConfirmation	Boolean	True	<p>False = After you click the Reset button on the faceplate during operation and have successfully validated the command according to the configured security classification, resets the control logic with no additional confirmation being required.</p> <p>True = After you click the Reset button on the faceplate during operation, displays a dialog box, which requires that you confirm the reset command. The control logic is reset only by clicking OK and validating the command according to the configured security classification. By default, the security classification is <i>secured write</i>.</p>

Default State Alarms and Additional Alarm Conditions

Overview

In the *\$EasergyP5EMCE* master template, alarms related to core supervision functions are managed in the following ways:

- Certain attributes have associated state alarms. When the condition that is defined in the *script* is satisfied, the alarm becomes active.
- Certain bits of the word structure that the master template manages have associated *Namur statuses*. When the bit is set, an alarm with the default priority that is associated to the status becomes active.

You can manage the alarms from the alarms tab of the faceplate during operation.

State Alarms for EasergyP5

For a description of the attributes for which a state alarm is configured by default, refer to the topic describing *default state alarms for devices*.

Additional Namur Alarm Conditions for EasergyP5

The table indicates for which bits an alarm is configured in the *\$EasergyP5EMCE* master template and provides the associated Namur status.


Word structure	Bit	Description	Namur status
EasergyP5_CFG.DataStatus	0	<i>Detected fault</i>	<i>Failure</i>
	3	<i>Trip</i>	<i>Failure</i>
	9	<i>Loss of synchronization</i>	<i>Failure</i>
	10	<i>Loss of event 1 data</i>	<i>Failure</i>
	12	<i>Detected partial fault</i>	<i>Failure</i>
	13	<i>Detected major fault</i>	<i>Failure</i>
	14	<i>Loss of event 2 data</i>	<i>Failure</i>

NOTE: You can modify the configuration from the **Discrete 1** page.

Graphic Representation

Representation

The table describes the symbols that are included in the *\$EasergyP5EMCE* master template to display data of EasergyP5 digital protection relays during operation

Name	Graphic symbol	Description
EasergyP5		EasergyP5 symbol.

Faceplates

Overview

During operation, clicking a *EasergyP5* graphic symbol opens a faceplate with the following tabs:

- Operation
- Analog Data
- Discrete Data
- Alarms





Operation Tab

The figure shows an example of the operation tab.

The screenshot displays the 'Operation' tab of the 'EasergyP5EMCE_2' faceplate. The title bar reads 'EasergyP5EMCE_2' and 'Digital Protection Relay Easergy P5 on Modb...'. The main status area shows 'Off'. Below this, a list of status messages is shown: 'Communication disabled', 'Communication failure' (highlighted), 'Unknown status', and 'Not ready'. To the right of these messages are two circular icons with an 'X'. Below the status messages are two input fields labeled 'Failure' and 'Warning'. At the bottom, there is an 'Owner:' dropdown menu set to 'Program' and a 'Reset' button. The 'Device Info:' field shows '???; Unknown status'. A small thumbnail image of the relay device is visible in the bottom right corner.

Extended Operator Tab

The figure shows an example of the extended operator tab.



Control Object 1:	<input type="text" value="close"/>
Control Object 2:	<input type="text" value="close"/>
Control Object 3:	<input type="text" value="close"/>
Control Object 4:	<input type="text" value="close"/>
Control Object 5:	<input type="text" value="close"/>
Control Object 6:	<input type="text" value="close"/>

Motor Controllers and Starters

What's in This Chapter

\$TesysT: TeSys T Motor Controllers and Starters..... 408
\$TesysU: TeSys U Motor Controllers and Starters 413

Overview

This chapter describes the master templates that provide the supervision functions for the motor controller and starter family.

\$TesysT: TeSys T Motor Controllers and Starters

Overview

This section describes the master templates that contain supervision resources to monitor and operate TeSys T motor controllers and starters.

The table indicates the relationship between master templates and TeSys T devices.

Master template	TeSys T device
<i>\$TesysTAIIDataCE</i>	Communicating by using either: <ul style="list-style-type: none">• Ethernet Modbus TCP implicit messaging (normal I/O scanning)• Ethernet Modbus TCP explicit messaging• Modbus serial
<i>\$TesysTEFastCE</i>	Communicating by using either: <ul style="list-style-type: none">• Ethernet Modbus TCP implicit messaging (fast I/O scanning)• CANopen (device connected to an STB island)
<i>\$TesysTPBCE</i>	Communicating by using Profibus network.

Supervision Functions

Description

The *\$TesysTAIIDataCE*, *\$TesysTEFastCE* and *\$TesysTPBCE* master templates provide the following monitoring and operation functions:

- Device status and data monitoring.
- Monitoring of abnormal conditions.
- Device logic resetting.
- Owner selection.
- Alarm signal management.

During operation, these functions are implemented by instances through symbols and their associated faceplate.

NOTE: You can modify the default configuration in the corresponding configuration pages, page 87.

Control/Supervision Relationship

Control Resources

To provide core supervision functions, the master templates are configured to exchange data with the following control resources of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
MBTESYST	Logic for TeSys T motor management system on Modbus serial.	TESYST_ST_DDT	<instance name>_TesysT_ST	Core supervision functions.
		TESYST_CFG_DDT	<instance name>_TesysT_CFG	
		TESYST_MEA_DDT	<instance name>_TesysT_MEA	
		TESYST_MEA40_DDT	<instance name>_TesysT_MEA40	
		TESYST_MEAEXT_DDT	<instance name>_TesysT_MEAEXT	
EIOSTESYST	Logic for TeSys T motor management system on Ethernet Modbus TCP implicit messaging (normal I/O scanning).	TESYST_ST_DDT	<instance name>_TesysT_ST	Core supervision functions.
		TESYST_CFG_DDT	<instance name>_TesysT_CFG	
		TESYST_MEA_DDT	<instance name>_TesysT_MEA	
		TESYST_MEA40_DDT	<instance name>_TesysT_MEA40	
		TESYST_MEAEXT_DDT	<instance name>_TesysT_MEAEXT	
ETESYST	Logic for TeSys T motor management system on Ethernet Modbus TCP implicit messaging (fast I/O scanning)	TESYST_ST_DDT	<instance name>_TesysT_ST	Core supervision functions.
		TESYST_CFG_DDT	<instance name>_TesysT_CFG	
PBTESYST	Logic for TeSys T motor management system on Profibus network.	TESYST_ST_DDT	<instance name>_TesysT_ST	Core supervision functions.
		TESYST_CFG_DDT	<instance name>_TesysT_CFG	
NOTE: <ul style="list-style-type: none">** Mandatory variables to be defined.The syntax of the Instance name must be same as the Variable name excluding the variable specific suffixes like _ST, _CFG etc.				

For description of these control resources, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the object editor, page 100.

These parameters allow you to configure core functions.

Parameter Description

The tables describe the parameters that are defined as part of the *\$TsysTAIIDataCE*, *\$TsysTEFastCE* and *\$TsysTPBCE* master template attributes.

Parameter	Data type	Initial value	Description
Param.HiAvgCurrent	Float	100.0	Defines the high limit of the present value to scale the Y axis for trending.
Param.LoAvgCurrent	Float	0.0	Defines the low limit of the present value to scale the Y axis for trending.
Param.ModeNormal	String	P	Specifies the normal owner modes (separated by a comma): <ul style="list-style-type: none"> • O: Operator • P: Program For example, P, O.
AO.ResetFaultVisibility	BOOL	False	Visible reset fault authentication on <i>\$TsysTPBCE</i> .
		True	Visible reset fault authentication on <i>\$TsysTAIIDataCE</i> and <i>\$TsysTEFastCE</i> .

Name	Data type	Initial value	Description
Param.FailureRearmConfirmation	Boolean	True	<p><i>False</i> = After you click the Reset button on the faceplate during operation and have successfully validated the command according to the configured security classification, resets the control logic with no additional confirmation being required.</p> <p><i>True</i> = After you click the Reset button on the faceplate during operation, displays a dialog box, which requires that you confirm the reset command. The control logic is reset only by clicking OK and validating the command according to the configured security classification. By default, the security classification is <i>secured write</i>.</p>

Default State Alarms and Additional Alarm Conditions

Overview

In the *\$TsysTAIIDataCE*, *\$TsysTEFastCE* and *\$TsysTPBCE* master templates, alarms related to core supervision functions are managed in the following ways:

- Certain attributes have associated state alarms. When the condition that is defined in the script, page 101 is satisfied, the alarm becomes active.
- Certain bits of the word structure that the master template manages have associated Namur statuses, page 40. When the bit is set, an alarm with the default priority that is associated to the status becomes active.

You can manage the alarms from the alarms tab of the faceplate during operation.

State Alarms for TeSys T Motor Controllers and Starters

For a description of the attributes for which a state alarm is configured by default, refer to the topic describing default state alarms for devices, page 366.

Additional Namur Alarm Conditions for TeSys T Motor Controllers and Starters

The table indicates for which bits an alarm is configured in the *\$TesysTAIIDataCE*, *\$TesysTEFastCE* and *\$TesysTPBCE* master templates and provides the associated Namur status.

Word structure	Bit	Description	Namur status
TESYST_CFG.DataStatus	2	Device fault state	Failure
	3	Detected alarm	Failure
	4	Trip	Failure
	11	Detected fault	Function Check
	14	HMI communication lost	Failure

NOTE: You can modify the configuration from the **Discrete 1** page.

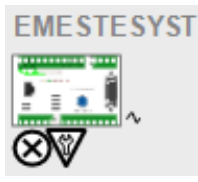

Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a general description, page 46 of the graphic elements and element styles that are used in symbols.

Representation

The table describes the symbols that are included in the *\$TesysTAIIDataCE*, *\$TesysTEFastCE* and *\$TesysTPBCE* master templates to display data of TeSys T motor controllers and starters during operation.

Name	Graphic symbol	Description
<i>TesysT</i>		TeSys T device symbol and icons.
<i>TesysT_Amp</i>		In addition to icons, the symbol displays (from top to bottom): <ul style="list-style-type: none"> The label. Engineering units. The average current value in engineering units.

Faceplates

Representation of Supervision Data

At the beginning of this document, you can find a general description, page 46 of the graphic elements and element styles that are used in faceplates.

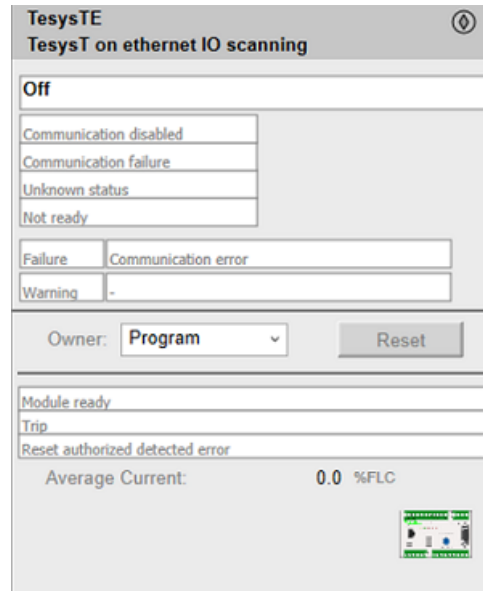
Available Tabs

During operation, clicking a TeSys T motor controller and starter symbol opens a faceplate with the following tabs:

- Operation
- Analog Data, page 72
- Discrete Data, page 73
- Alarms, page 75

Operation Tab

The figure shows an example of the operation tab.



NOTE: *FaultResetAuth* is not available for *\$TesysTPBCE*.

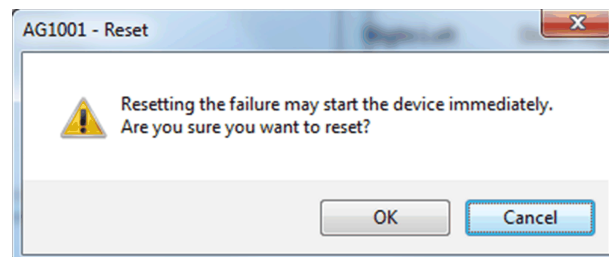
NOTE: This tab features the control module **Reset** button.

When the control module is reset, the current setpoint that is shown in this tab is effective.

By default, when you click **Reset**, a dialog box opens, which requires that you confirm the command for the reset of the control module to take effect.

Refer to *Parameters* in this chapter for a description of the *Param.FailureRearmConfirmation* parameter, which allows you to configure the reset confirmation.

The figure shows the confirmation dialog box which is model in nature.



Resetting the control module by clicking **OK** underlies a security classification, page 89. The default configuration is *secured write*.

When the reset confirmation dialog box is enabled, the security classification that normally applies when you click **Reset** is not effective.

\$TesysU: TeSys U Motor Controllers and Starters

Overview

This section describes the following master templates that contain supervision resources to monitor and operate TeSys U motor controllers and starters, which use various protocols for communication..

Template	Communication protocol used by the device
<i>\$TesysUIOCE</i>	Either of: <ul style="list-style-type: none"> Modbus serial. CANopen.
<i>\$TesysUMainDataCE</i>	Either of: <ul style="list-style-type: none"> Modbus serial. CANopen.
<i>\$TesysUMECCE</i>	Modbus serial.

Supervision Functions

Description

The *\$TesysUIOCE*, *\$TesysUMainDataCE*, and *\$TesysUMECCE* master templates provide the following monitoring and operation functions:

- Device status and data monitoring.
- Monitoring of abnormal conditions such as communication interruption.
- Device logic resetting.
- Owner selection.
- Alarm signal management.

During operation, these functions are implemented by instances through symbols and their associated faceplate.

NOTE: You can modify the default configuration in the corresponding configuration pages, page 87.

Control/Supervision Relationship

Control Resources

To provide core supervision functions, the master templates are configured to exchange data with the following control resources of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
TESYSUCTL	Logic for TeSys U starter with advanced control unit and Advantys STB communication module.	TESYSU_ST_DDT	<instance name>_ TesysU_ST	Core supervision functions.
		TESYSU_CFG_DDT	<instance name>_ TesysU_CFG	
TESYSUC	Logic for TeSys U controller with advanced or multifunction control unit and Advantys STB communication module.	TESYSU_ST_DDT	<instance name>_ TesysU_ST	Core supervision functions.
		TESYSU_CFG_DDT	<instance name>_ TesysU_CFG	

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
		TESYSU_IO_DDT	<instance name>_TesysU_IO	
MBTESYSUC	Logic for TeSys U controller with advanced or multifunction control unit and Modbus communication module.	TESYSU_ST_DDT	<instance name>_TesysU_ST	Core supervision functions.
		TESYSU_CFG_DDT	<instance name>_TesysU_CFG	
		TESYSU_IO_DDT	<instance name>_TesysU_IO	
TESYSUSC	Logic for TeSys U starter with multifunction control unit and Advantys STB communication module.	TESYSU_ST_DDT	<instance name>_TesysU_ST	Core supervision functions.
		TESYSU_CFG_DDT	<instance name>_TesysU_CFG	
		TESYSU_MEC_DDT	<instance name>_TesysU_MEC	
MBTESYSUSC	Logic for TeSys U starter with advanced or multifunction control unit and Modbus communication module.	TESYSU_ST_DDT	<instance name>_TesysU_ST	Core supervision functions.
		TESYSU_CFG_DDT	<instance name>_TesysU_CFG	
		TESYSU_MEC_DDT	<instance name>_TesysU_MEC	
TESYSUSCST	Logic for TeSys U starter with standard control unit and Advantys STB communication module.	TESYSU_ST_DDT	<instance name>_TesysU_ST	Core supervision functions.
		TESYSU_CFG_DDT	<instance name>_TesysU_CFG	
MBTESYSUSCST	Logic for TeSys U starter with standard control unit and Modbus communication module.	TESYSU_ST_DDT	<instance name>_TesysU_ST	Core supervision functions.
		TESYSU_CFG_DDT	<instance name>_TesysU_CFG	
NOTE: <ul style="list-style-type: none">** Mandatory variables to be defined.The syntax of the Instance name must be same as the Variable name excluding the variable specific suffixes like _ST, _CFG etc.				

For description of these control resources, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the object editor, page 100.

These parameters allow you to configure core functions.

Parameter Description

The tables describe the parameters that are defined as part of the *\$TesySUIOCE*, *\$TesySUMainDataCE*, and *\$TesySUMECCE* master template attributes.

Parameter	Data type	Initial value	Description
Param.HiAvgCurrent	Float	100.0	Defines the high limit of the present value to scale the Y axis for trending.
Param.LoAvgCurrent	Float	0.0	Defines the low limit of the present value to scale the Y axis for trending.
Param.ModeNormal	String	P	Specifies the normal owner modes (separated by a comma): <ul style="list-style-type: none"> O: Operator P: Program For example, P, O.

Name	Data type	Initial value	Description
Param.FailureRearmConfirmation	Boolean	True	<p><i>False</i> = After you click the Reset button on the faceplate during operation and have successfully validated the command according to the configured security classification, resets the control logic with no additional confirmation being required.</p> <p><i>True</i> = After you click the Reset button on the faceplate during operation, displays a dialog box, which requires that you confirm the reset command. The control logic is reset only by clicking OK and validating the command according to the configured security classification. By default, the security classification is <i>secured write</i>.</p>

Default State Alarms and Additional Alarm Conditions

Overview

In the *\$TesysUIOCE*, *\$TesysUMainDataCE*, and *\$TesysUMECCE* master templates, alarms related to core supervision functions are managed in the following ways:

- Certain attributes have associated state alarms. When the condition that is defined in the [script, page 101](#) is satisfied, the alarm becomes active.
- Certain bits of the word structure that the master template manages have associated [Namur statuses, page 40](#). When the bit is set, an alarm with the default priority that is associated to the status becomes active.

You can manage the alarms from the alarms tab of the faceplate during operation.

State Alarms for TeSys U Motor Controllers and Starters

For a description of the attributes for which a state alarm is configured by default, refer to the topic describing [default state alarms for devices, page 366](#).

Additional Namur Alarm Conditions for TeSys U Motor Controllers and Starters

The table indicates for which bits an alarm is configured in the *\$TesysUIOCE*, *\$TesysUMainDataCE*, and *\$TesysUMECCE* master templates and provides the associated Namur status.

Word structure	Bit	Description	Namur status
TESYSU_CFG.DataStatus	2	Device in fault state	Failure
	3	Detected alarm	Failure

Word structure	Bit	Description	Namur status
	4	Trip	Failure

NOTE: You can modify the configuration from the **Discrete 1** page.


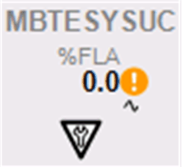
Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in symbols.

Representation

The table describes the symbols that are included in the *\$TesysUIOCE*, *\$TesysUMainDataCE*, and *\$TesysUMECCE* master templates to display data of TeSys U motor controllers and starters during operation.

Name	Graphic symbol	Description
<i>TesysU</i>		TeSys U device symbol and icons.
<i>TesysU_Amp</i>		In addition to icons, the symbol displays (from top to bottom): <ul style="list-style-type: none"> The label. Engineering units. The average current value in engineering units.

Faceplates

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in faceplates.

Available Tabs

During operation, clicking a TeSys U motor controller and starter symbol opens a faceplate with the following tabs:

- Operation
- Analog Data, page 72
- Discrete Data, page 73
- Alarms, page 75

Operation Tab

The figure shows an example of the operation tab.

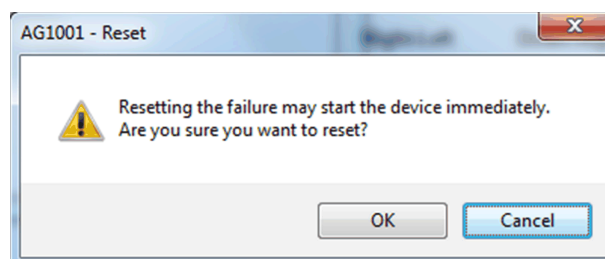
NOTE: This tab features the control module **Reset** button.

When the control module is reset, the current setpoint that is shown in this tab is effective.

By default, when you click **Reset**, a dialog box opens, which requires that you confirm the command for the reset of the control module to take effect.

Refer to *Parameters* in this chapter for a description of the *Param.FailureRearmConfirmation* parameter, which allows you to configure the reset confirmation.

The figure shows the confirmation dialog box which is model in nature.



Resetting the control module by clicking **OK** underlies a security classification, page 89. The default configuration is *secured write*.

When the reset confirmation dialog box is enabled, the security classification that normally applies when you click **Reset** is not effective.

Power Measurement

What's in This Chapter

\$PM5350MBCE and \$PM53xxEMCE : PM5350 and PM53xx Power Meters.....	418
\$PM82xxEMCE: PM82xx Power Meter	422

Overview

This chapter describes the master templates that provide the supervision functions for the power meter family.

***\$PM5350MBCE* and *\$PM53xxEMCE* : PM5350 and PM53xx Power Meters**

Overview

This section describes the *\$PM5350MBCE* and *\$PM53xxEMCE* master templates, which contains supervision resources to monitor and operate PM5350 power meter by using Modbus serial communication and PM53xx power meter by using Ethernet explicit communication.

Supervision Functions

Description

The *\$PM5350MBCE* and *\$PM53xxEMCE* master templates provide the following monitoring and operation functions:

- Device status and data monitoring.
- Monitoring of abnormal conditions such as communication interruption.
- Device logic resetting.
- Owner selection.
- Alarm signal management.

During operation, these functions are implemented by instances through symbols and their associated faceplate.

NOTE: You can modify the default configuration in the corresponding configuration pages, page 87.

Control/Supervision Relationship

Control Resources

To provide core supervision functions, the *\$PSxPM5350* and *\$PSxPM53xx* master templates are configured to exchange data with the following control resources of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
EMPM53xx	PM53xx power meter logic for Ethernet explicit communication.	PM_ST_DDT	<instance name>_PM_ST	Core supervision functions.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
MBPM5350	PM5350 power meter logic for Modbus serial communication.	PM_CFG_DDT	<instance name>_PM_CFG	Core supervision functions.
		PM53xx_MEA_DDT	<instance name>_PM_MEA	
		PM_ST_DDT	<instance name>_PM_ST	
		PM_CFG_DDT	<instance name>_PM_CFG	
		PM_MEA_DDT	<instance name>_PM_MEA	

** Mandatory variables to be defined.

For description of these control resources, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the [object editor](#), page 100.

These parameters allow you to configure core functions.

Parameter Description

The table describes the parameters that are defined as part of the *\$PM5350MBCE* and *\$PM53xxEMCE* master templates attributes.

Name	Data type	Initial value	Description
<i>Param.HiEnergy</i>	Float	<i>10000000.0</i>	Defines the high limit of the present value to scale the Y axis for trending.
<i>Param.LoEnergy</i>	Float	<i>0.0</i>	Defines the low limit of the present value to scale the Y axis for trending.
<i>Param.HiPower</i>	Float	<i>100.0</i>	Defines the high limit of the present value to scale the Y axis for trending.
<i>Param.LoPower</i>	Float	<i>0.0</i>	Defines the low limit of the present value to scale the Y axis for trending.
<i>Param.ModeNormal</i>	String	<i>P</i>	Specifies the normal owner modes (separated by a comma): <ul style="list-style-type: none"> <i>O</i>: Operator <i>P</i>: Program For example <i>P,O</i> .

Default State Alarms and Additional Alarm Conditions

Overview

In the *\$PM5350MBCE* and *\$PM53xxEMCE* master templates, alarms related to core supervision functions are managed through attributes, which have

associated state alarms. When the condition that is defined in the script, page 101 is satisfied, the alarm becomes active.

You can manage the alarms from the alarms tab of the faceplate during operation.

State Alarms for PM5350 and PM53xx Power Meters

For a description of the attributes for which a state alarm is configured by default, refer to the topic describing default state alarms for devices, page 366.

Additional Namur Alarm Conditions for PM5350 and PM53xx Power Meters

In the *\$PM5350MBCE* and *\$PM53xxEMCE* master templates, there are no bits for which additional alarm conditions are configured.

NOTE: You can modify the configuration from the **Main** page.

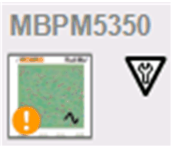
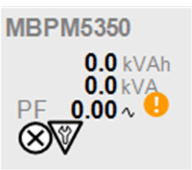
Graphic Representation

Representation of Supervision Data


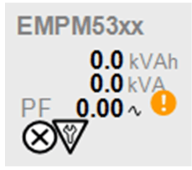
At the beginning of this document, you can find a general description, page 46 of the graphic elements and element styles that are used in symbols.

Symbol Description

The table describes the symbols that are included in the *\$PM5350MBCE* master template to display data of PM5350 power meters during operation.

Name	Graphic symbol	Description
PM5350		PM5350 power meter symbol and icons.
PM5350_Power		In addition to icons, the symbol displays (from top to bottom): <ul style="list-style-type: none">• The label.• Apparent energy consumption with engineering units.• Total apparent power with engineering units.• Total power factor.

The table describes the symbols that are included in the *\$PM53xxEMCE* master template to display data of PM53xx power meters during operation.

Name	Graphic symbol	Description
PM53xx		PM53xx power meter symbol and icons.
PM53xx_Power		<p>In addition to icons, the symbol displays (from top to bottom):</p> <ul style="list-style-type: none"> The label. Apparent energy consumption with engineering units. Total apparent power with engineering units. Total power factor.

Faceplates

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in faceplates.

Available Tabs

During operation, clicking a PM5350/PM53xx power meter symbol opens a faceplate with the following tabs:

- Operation
- Analog data, page 72
- Alarms, page 75

NOTE: The master template also features the trends faceplate.

Operation Tab

The figure shows the operation tab of MBPM5350.

AG1001MEA

AG1001 Power meter

On

Communication disabled

Communication failure

Unknown status

Not ready

Failure

-

Warning

Owner:

Operator

Reset

Energy:

Power:

Active:

0.0 kWh

0.0 kW

Apparent:

0.0 kVAh

0.0 kVA

Reactive:

0.0 kVARh

0.0 kVAR

Avg V L-L:

0.0 V

Avg V L-N:

0.0 V

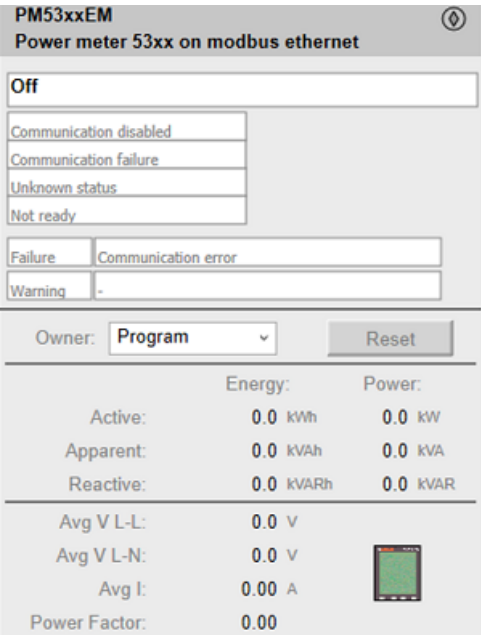
Avg I:

0.00 A

Power Factor:

0.00

The figure shows the operation tab of `EMPM53xx`.



NOTE: This tab features the control module **Reset** button.

\$PM82xxEMCE: PM82xx Power Meter

Overview

This section describes the `$PM82xxEMCE` master template, which contains supervision resources to monitor and operate PM82xx power meter by using Ethernet explicit communication.

Supervision Functions

Description

The `$PM82xxEMCE` master template provide the following monitoring and operation functions:

- Device status and data monitoring.
- Monitoring of abnormal conditions such as communication interruption.
- Device logic resetting.
- Owner selection.
- Alarm signal management.

During operation, these functions are implemented by instances through symbols and their associated faceplate.

NOTE: You can modify the default configuration in the corresponding configuration pages, page 87.

Control/Supervision Relationship

Control Resources

To provide core supervision functions, the *\$PSxPM82xx* master template are configured to exchange data with the following control resources of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
EMPM82xx	PM82xx power meter logic for Ethernet explicit communication.	PM_ST_DDT	<instance name>_PM_ST	Core supervision functions.
		PM82xx_CFG_DDT	<instance name>_PM_CFG	
		PM82xx_MEA_DDT	<instance name>_PM_MEA	
** Mandatory variables to be defined.				

For description of these control resources, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the *object editor*, page 100.

These parameters allow you to configure core functions.

Parameter Description

The table describes the parameters that are defined as part of the *\$PM82xxEMCE* master templates attributes.

Name	Data type	Initial value	Description
<i>Param.HiEnergy</i>	Float	10000000.0	Defines the high limit of the present value to scale the Y axis for trending.
<i>Param.LoEnergy</i>	Float	0.0	Defines the low limit of the present value to scale the Y axis for trending.
<i>Param.HiPower</i>	Float	100.0	Defines the high limit of the present value to scale the Y axis for trending.
<i>Param.LoPower</i>	Float	0.0	Defines the low limit of the present value to scale the Y axis for trending.
<i>Param.ModeNormal</i>	String	P	Specifies the normal owner modes (separated by a comma): <ul style="list-style-type: none"> O: Operator P: Program For example P,O.

Default State Alarms and Additional Alarm Conditions

Overview

In the *\$PM82xxEMCE* master template, alarms related to core supervision functions are managed through attributes, which have associated state alarms. When the condition that is defined in the script, page 101 is satisfied, the alarm becomes active.

You can manage the alarms from the alarms tab of the faceplate during operation.

State Alarms for PM82xx Power Meters

For a description of the attributes for which a state alarm is configured by default, refer to the topic describing default state alarms for devices, page 366.

Additional Namur Alarm Conditions for PM82xx Power Meters

In the *\$PM82xxEMCE* master template, there are no bits for which additional alarm conditions are configured.

NOTE: You can modify the configuration from the **Main** page.


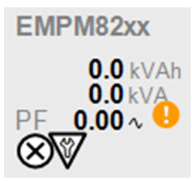
Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a general description, page 46 of the graphic elements and element styles that are used in symbols.

Symbol Description

The table describes the symbols that are included in the *\$PM82xxEMCE* master template to display data of PM82xx power meters during operation.

Name	Graphic symbol	Description
PM82xx		PM82xx power meter symbol and icons.
PM82xx_Power		In addition to icons, the symbol displays (from top to bottom): <ul style="list-style-type: none">• The label.• Apparent energy consumption with engineering units.• Total apparent power with engineering units.• Total power factor.

Faceplates

Representation of Supervision Data

At the beginning of this document, you can find a general description, page 46 of the graphic elements and element styles that are used in faceplates.

Available Tabs

During operation, clicking a PM82xx power meter symbol opens a faceplate with the following tabs:

- Operation
- Analog data, page 72
- Alarms, page 75

NOTE: The master template also features the trends faceplate.

Operation Tab

The figure shows the operation tab of EMPM82xx.

AG1001MEA AG1001 Power meter		
On		
Communication disabled		
Communication failure		
Unknown status		
Not ready		
Failure	-	
Warning		
Owner:	Operator	Reset
	Energy:	Power:
Active:	0.0 kWh	0.0 kW
Apparent:	0.0 kVAh	0.0 kVA
Reactive:	0.0 kVARh	0.0 kVAR
Avg V L-L:	0.0 V	
Avg V L-N:	0.0 V	
Avg I:	0.00 A	
Power Factor:	0.00	

NOTE: This tab features the control module **Reset** button.

Soft Starters

What's in This Chapter

\$ATS22MBCE: Altistart 22 Soft Starters 426
\$ATS48MBCE: Altistart 48 Soft Starters 430
MBTCPATS480 - ATS480 (Modbus TCP/IP) and *EIPATS480 - ATS480 (Ethernet IP)*: Progressive Starters 435

Overview

This chapter describes the master templates that provide the supervision functions for the soft starter family.

\$ATS22MBCE: Altistart 22 Soft Starters

Overview

This section describes the *\$ATS22MBCE* master template, which contains supervision resources to monitor and operate Altistart 22 soft starters.

Supervision Functions

Description

The *\$ATS22MBCE* master template provides the following monitoring and operation functions:

- Device status and data monitoring.
- Monitoring of abnormal conditions.
- Device logic resetting.
- Owner selection.
- Alarm signal management.

During operation, these functions are implemented by instances through symbols and their associated faceplate.

NOTE: You can modify the default configuration in the corresponding configuration pages, page 87.

Control/Supervision Relationship

Control Resources

To provide core supervision functions, the *\$PSxATS22* master template is configured to exchange data with the following control resource of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
MBATS22	Altistart 22 soft starter logic.	ATS22_ST_DDT	<instance name>_ ATS_ST	Core supervision functions.
		ATS22_CFG_DDT	<instance name>_ ATS_CFG	
** Mandatory variables to be defined.				

For description of the control resource, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the object editor, page 100.

These parameters allow you to configure core functions.

Parameter Description

The tables describe the parameters that are defined as part of the \$ATS22MBCE master template attributes.

Name	Data type	Initial value	Description
Param.HiCurrent	Float	100.0	Defines the high limit of the present value to scale the Y axis for trending.
Param.LoCurrent	Float	0.0	Defines the low limit of the present value to scale the Y axis for trending.
Param.ModeNormal	String	P	Specifies the normal owner modes (separated by a comma): <ul style="list-style-type: none"> O: Operator P: Program For example, P,O.

Name	Data type	Initial value	Description
Param.FailureRearmConfirmation	Boolean	True	<p><i>False</i> = After you click the Reset button on the faceplate during operation and have successfully validated the command according to the configured security classification, resets the control logic with no additional confirmation being required.</p> <p><i>True</i> = After you click the Reset button on the faceplate during operation, displays a dialog box, which requires that you confirm the reset command. The control logic is reset only by clicking OK and validating the command according to the configured security classification. By default, the security classification is <i>secured write</i>.</p>

Default State Alarms and Additional Alarm Conditions

Overview

In the *\$ATS22MBCE* master template, alarms related to core supervision functions are managed in the following ways:

- Certain attributes have associated state alarms. When the condition that is defined in the *script*, [page 101](#) is satisfied, the alarm becomes active.
- Certain bits of the word structure that the master template manages have associated *Namur statuses*, [page 40](#). When the bit is set, an alarm with the default priority that is associated to the status becomes active.

You can manage the alarms from the alarms tab of the faceplate during operation.

State Alarms for Altistart 22

For a description of the attributes for which a state alarm is configured by default, refer to the topic describing *default state alarms for devices*, [page 366](#).

Additional Namur Alarm Conditions for Altistart 22

The table indicates for which bits an alarm is configured in the *\$ATS22MBCE* master template and provides the associated Namur status.

Word structure	Bit	Description	Namur status
ATS22_CFG.DataStatus	2	<i>Trip</i>	<i>Failure</i>
	3	<i>Detected alarm</i>	<i>Failure</i>

NOTE: You can modify the configuration from the **Discrete 1** page.


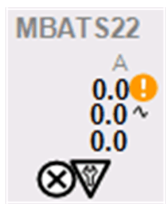
Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a *general description*, [page 46](#) of the graphic elements and element styles that are used in symbols.

Symbol Description

The table describes the symbols that are included in the *\$ATS22MBCE* master template to display data of Altistart 22 soft starters during operation.

Name	Graphic symbol	Description
ATS22		Altistart 22 symbol and icons.
ATS22_Amp		In addition to icons, the symbol displays (from top to bottom): <ul style="list-style-type: none"> • The label. • Engineering units. • Current on starter line 1 in Amperes. • Current on starter line 2 in Amperes. • Current on starter line 3 in Amperes.

Faceplates

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in faceplates.

Available Tabs

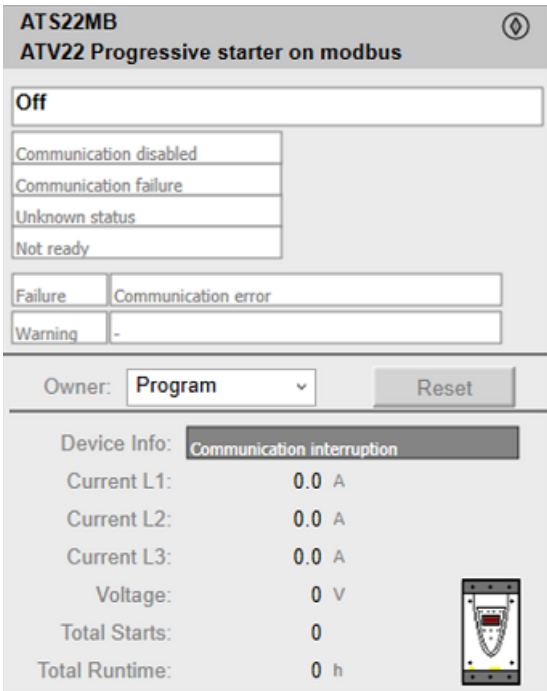
During operation, clicking an Altistart 22 soft starter symbol opens a faceplate with the following tabs:

- Operation
- Analog data, page 72
- Discrete data, page 73
- Alarms, page 75

NOTE: The master template also features the trends faceplate.

Operation Tab

The figure shows an example of the operation tab.



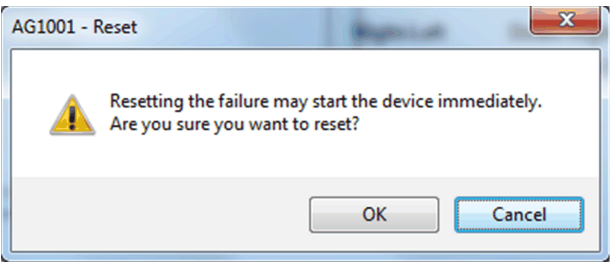
NOTE: This tab features the control module **Reset** button.

When the control module is reset, the current setpoint that is shown in this tab is effective.

By default, when you click **Reset**, a dialog box opens, which requires that you confirm the command for the reset of the control module to take effect.

Refer to *Parameters* in this chapter for a description of the *Param.FailureRearmConfirmation* parameter, which allows you to configure the reset confirmation.

The figure shows the confirmation dialog box which is model in nature.



Resetting the control module by clicking **OK** underlies a security classification, page 89. The default configuration is *secured write*.

When the reset confirmation dialog box is enabled, the security classification that normally applies when you click **Reset** is not effective.

\$ATS48MBCE: Altistart 48 Soft Starters

Overview

This section describes the \$ATS48MBCE master template, which contains supervision resources to monitor and operate Altistart 48 soft starters.

Supervision Functions

Description

The *\$ATS48MBCE* master template provides the following monitoring and operation functions:

- Device status and data monitoring.
- Monitoring of abnormal conditions.
- Device logic resetting.
- Owner selection.
- Alarm signal management.

During operation, these functions are implemented by instances through symbols and their associated faceplate.

NOTE: You can modify the default configuration in the corresponding configuration pages, page 87.

Control/Supervision Relationship

Control Resources

To provide core supervision functions, the *\$PSxATS48* master template is configured to exchange data with the following control resource of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
MBATS48	Altistart 48 soft starter logic.	ATS_ST_DDT	<instance name>_ ATS_ST	Core supervision functions.
		ATS_CFG_DDT	<instance name>_ ATS_CFG	
** Mandatory variables to be defined.				

For description of the control resources, refer to the topics describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the *object editor*, page 100.

These parameters allow you to configure core functions.

Parameter Description

The tables describe the parameters that are defined as part of the *\$ATS48MBCE* master template attributes.

Name	Data type	Initial value	Description
Param.HiCurrent	Float	100.0	Defines the high limit of the present value to scale the Y axis for trending.
Param.LoCurrent	Float	0.0	Defines the low limit of the present value to scale the Y axis for trending.
Param.ModeNormal	String	P	Specifies the normal owner modes (separated by a comma): <ul style="list-style-type: none"> ○: Operator P: Program For example P, O.

Name	Data type	Initial value	Description
Param.FailureRearmConfirmation	Boolean	True	<p>False = After you click the Reset button on the faceplate during operation and have successfully validated the command according to the configured security classification, resets the control logic with no additional confirmation being required.</p> <p>True = After you click the Reset button on the faceplate during operation, displays a dialog box, which requires that you confirm the reset command. The control logic is reset only by clicking OK and validating the command according to the configured security classification. By default, the security classification is <i>secured write</i>.</p>

Default State Alarms and Additional Alarm Conditions

Overview

In the *\$ATS48MBCE* master template, alarms related to core supervision functions are managed in the following ways:

- Certain attributes have associated state alarms. When the condition that is defined in the *script*, [page 101](#) is satisfied, the alarm becomes active.
- Certain bits of the word structure that the master template manages have associated *Namur statuses*, [page 40](#). When the bit is set, an alarm with the default priority that is associated to the status becomes active.

You can manage the alarms from the alarms tab of the faceplate during operation.

State Alarms for Altistart 48

For a description of the attributes for which a state alarm is configured by default, refer to the topic describing *default state alarms for devices*, [page 366](#).

Additional Namur Alarm Conditions for Altistart 48

The table indicates for which bits an alarm is configured in the *\$ATS48MBCE* master template and provides the associated *Namur status*.

Word structure	Bit	Description	Namur status
ATS_CFG.DataStatus	3	<i>Malfunction</i>	<i>Failure</i>
	7	<i>Detected alarm</i>	<i>Failure</i>

NOTE: You can modify the configuration from the **Discrete 1** page.


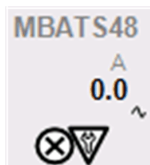
Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in symbols.

Symbol Description

The table describes the symbols that are included in the \$ATS48MBCE master template to display data of Altistart 48 soft starters during operation.

Name	Graphic symbol	Description
ATS48		Altistart 48 symbol and icons.
ATS48_Amp		In addition to icons, the symbol displays (from top to bottom): <ul style="list-style-type: none"> The label. Engineering units. Current on starter line in Amperes.

Faceplates

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in faceplates.

Available Tabs

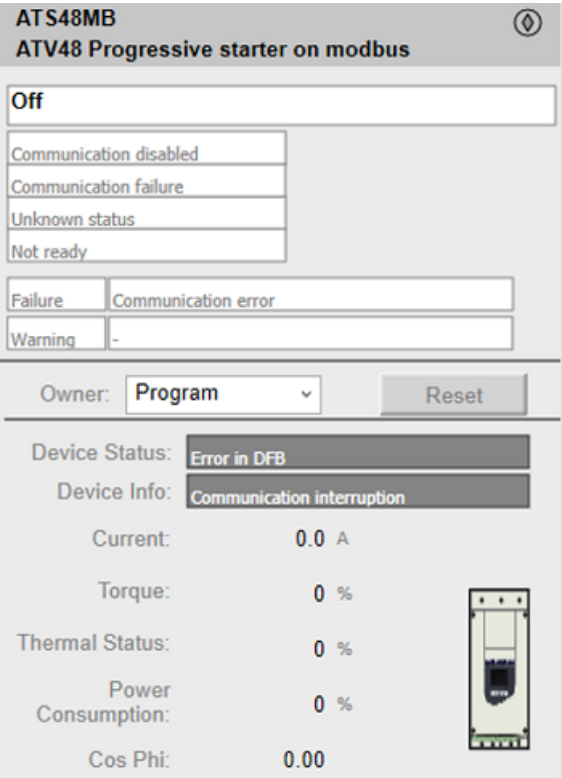
During operation, clicking an Altistart 48 soft starter symbol opens a faceplate with the following tabs:

- Operation
- Analog data, page 72
- Discrete data, page 73
- Alarms, page 75

NOTE: The master template also features the trends faceplate.

Operation Tab

The figure shows an example of the operation tab.



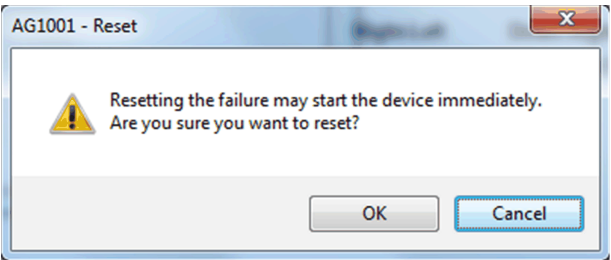
NOTE: This tab features the control module **Reset** button.

When the control module is reset, the current setpoint that is shown in this tab is effective.

By default, when you click **Reset**, a dialog box opens, which requires that you confirm the command for the reset of the control module to take effect.

Refer to *Parameters* in this chapter for a description of the *Param.FailureRearmConfirmation* parameter, which allows you to configure the reset confirmation.

The figure shows the confirmation dialog box which is model in nature.



Resetting the control module by clicking **OK** underlies a security classification, page 89. The default configuration is *secured write*.

When the reset confirmation dialog box is enabled, the security classification that normally applies when you click **Reset** is not effective.

MBTCPATS480 - ATS480 (Modbus TCP/IP) and EIPATS480 - ATS480 (Ethernet IP): Progressive Starters

Overview

This section describes the *\$ATS480MBTCPCE* and *\$ATS480EIPCE* master template, which contains supervision resources to monitor and operate Altistart 480 soft starters.

Supervision Functions

Description

The *\$ATS480MBTCPCE* and *\$ATS480EIPCE* master template provides the following monitoring and operation functions:

- Device status and data monitoring.
- Monitoring of abnormal conditions.
- Device logic resetting.
- Owner selection.
- Alarm signal management.

During operation, these functions are implemented by instances through symbols and their associated faceplate.

NOTE: You can modify the default configuration in the corresponding configuration pages, page 87.

Control/Supervision Relationship

Control Resources

To provide core supervision functions, the *\$ATS480MBTCPCE* and *\$ATS480EIPCE* master templates are configured to exchange data with the following control resource of the Modicon Libraries - General Purpose for Control Expert.

Refer to the table below for the control/supervision relationship of *\$ATS480MBTCPCE* template.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
EIOSATS480	Altistart 480 soft starter logic.	ATS480_ST_DDT	<instance name>_ ATS_ST	Core supervision functions.
		ATS480_CFG_DDT	<instance name>_ ATS_CFG	
		ATS480_IO_DDT	<instance name>_ ATS_IO	
		ATS480_IOEXT_DDT	<instance name>_ ATS_IOEXT	
EMESATS480DATA	Altistart 480 soft starter auxiliary data logic.	EMESATS480DATA_ST_DDT	<instance name>_ ATSE_ST	
** Mandatory variables to be defined.				

Refer to the table below for the control/supervision relationship of *\$ATS480EIPCE* template.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
EIOSATS480	Altistart 480 soft starter logic.	ATS480_ST_DDT	<instance name>_ATS_ST	Core supervision functions.
		ATS480_CFG_DDT	<instance name>_ATS_CFG	
		ATS480_IO_DDT	<instance name>_ATS_IO	
		ATS480_IOEXT_DDT	<instance name>_ATS_IOEXT	
EIPATS480DATA	Altistart 480 soft starter auxiliary data logic.	EIPATS480DATA_ST_DDT	<instance name>_ATSE_ST	
** Mandatory variables to be defined.				

For description of the control resources, refer to the topics describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the **object editor**, page 100.

These parameters allow you to configure core functions.

Parameter Description

The tables describe the parameters that are defined as part of the *\$ATS480MBTCPCE* and *\$ATS480EIPCE* master template attributes.

Name	Data type	Initial value	Description
Param.HiCurrent	Float	1000.0	Defines the high limit of the present value to scale the Y axis for trending.
Param.LoCurrent	Float	0.0	Defines the low limit of the present value to scale the Y axis for trending.
Param.ModeNormal	String	P	Specifies the normal owner modes (separated by a comma): <ul style="list-style-type: none"> O: Operator P: Program For example P, O.

Name	Data type	Initial value	Description
Param. FailureRearmConfirmation	Boolean	True	<p><i>False</i> = After you click the Reset button on the faceplate during operation and have successfully validated the command according to the configured security classification, resets the control logic with no additional confirmation being required.</p> <p><i>True</i> = After you click the Reset button on the faceplate during operation, displays a dialog box, which requires that you confirm the reset command. The control logic is reset only by clicking OK and validating the command according to the configured security classification. By default, the security classification is <i>secured write</i>.</p>

Default State Alarms and Additional Alarm Conditions

Overview

In the *\$ATS480MBTCPCE* and *\$ATS480EIPCE* master template, alarms related to core supervision functions are managed in the following ways:

- Certain attributes have associated state alarms. When the condition that is defined in the [script, page 101](#) is satisfied, the alarm becomes active.
- Certain bits of the word structure that the master template manages have associated [Namur statuses, page 40](#). When the bit is set, an alarm with the default priority that is associated to the status becomes active.

You can manage the alarms from the alarms tab of the faceplate during operation.

State Alarms for Altistart 480

For a description of the attributes for which a state alarm is configured by default, refer to the topic describing [default state alarms for devices, page 366](#).

Additional Namur Alarm Conditions for Altistart 480

The table indicates for which bits an alarm is configured in the *\$ATS480MBTCPCE* and *\$ATS480EIPCE* master template and provides the associated Namur status.

Word structure	Bit	Description	Namur status
ATS_CFG.DataStatus	3	<i>Malfunction</i>	<i>Failure</i>
	7	<i>Detected alarm</i>	<i>Failure</i>

NOTE: You can modify the configuration from the **Discrete 1** page.



Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a [general description, page 46](#) of the graphic elements and element styles that are used in symbols.

Symbol Description

The table describes the symbols that are included in the *\$ATS480MBTCPCE* and *\$ATS480EIPCE* master template to display data of Altistart 480 soft starters during operation.

Name	Graphic symbol	Description
ATS480		Altistart 480 symbol and icons.
ATS48_Amp		In addition to icons, the symbol displays (from top to bottom): <ul style="list-style-type: none">• The label.• Engineering units.• Current on starter line in Amperes.

Faceplates

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), [page 46](#) of the graphic elements and element styles that are used in faceplates.

Available Tabs

During operation, clicking an Altistart 480 soft starter symbol opens a faceplate with the following tabs:

- Operation
- Analog data, [page 72](#)
- Discrete data, [page 73](#)
- Alarms, [page 75](#)

NOTE: The master template also features the trends faceplate.

Operation Tab

The figure shows an example of the operation tab.

Parameter	Value
Current	40.1 A
Torque	17 %
Thermal Status	0 %
Power Consumption	1719 kWh
Cos Phi	0.63

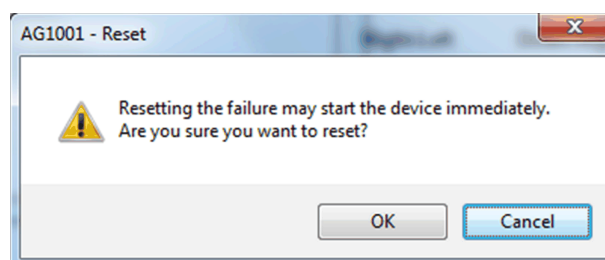
NOTE: This tab features the control module **Reset** button.

When the control module is reset, the current setpoint that is shown in this tab is effective.

By default, when you click **Reset**, a dialog box opens, which requires that you confirm the command for the reset of the control module to take effect.

Refer to *Parameters* in this chapter for a description of the *Param.FailureRearmConfirmation* parameter, which allows you to configure the reset confirmation.

The figure shows the confirmation dialog box which is model in nature.



Resetting the control module by clicking **OK** underlies a security classification. The default configuration is *secured write*.

When the reset confirmation dialog box is enabled, the security classification that normally applies when you click **Reset** is not effective.

Speed Drives

What's in This Chapter

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Overview

This chapter describes the master templates that provide the supervision functions for the speed drive family.

\$ATV6xxECE: Altivar 6xx Series Variable Speed Drives

Overview

This section describes the *\$ATV6xxECE* master template, which contains supervision resources to monitor and operate Altivar 6xx series variable speed drives (6xx represents the device model number).

Supervision Functions

Description

The *\$ATV6xxECE* master template provides the following monitoring and operation functions:

- Device status and data monitoring.
- Setting of speed setpoint and direction of rotation.
- Monitoring of abnormal conditions.
- Device logic resetting.
- Owner selection.
- Alarm signal management.

During operation, these functions are implemented by instances through symbols and their associated faceplate.

NOTE: You can modify the default configuration in the corresponding configuration pages, page 87.

Control/Supervision Relationship

Control Resources

To provide core supervision functions, the *\$PSxATV6xxAllData* master template is configured to exchange data with the following control resource of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
ATV6xx	Altivar 6xx series variable speed drive logic.	ATV6xx_ST_DDT	<instance name>_ ATV_ST	Core supervision functions.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
		ATV6xx_CFG_DDT	<instance name>_ ATV_CFG	
		ATV6xx_IO_DDT	<instance name>ATV_ IO	
		ATV6xx_IOEXT_DDT	<instance name>ATV_ IOEXT	
** Mandatory variables to be defined.				

For a description of the control resource, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the **object editor**, page 100.

These parameters allow you to configure core functions.

Parameter Description

The tables describe the parameters that are defined as part of the \$ATV6xxECE master template attributes.

Name	Data type	Initial value	Description
Param.HiPV	Float	100.0	Defines the high limit of the present value to scale the Y axis for trending.
Param.LoPV	Float	0.0	Defines the low limit of the present value to scale the Y axis for trending.
Param.ModeNormal	String	P	Defines the normal owner modes (separated by a comma): <ul style="list-style-type: none"> O: Operator P: Program For example, P, O.

Name	Data type	Initial value	Description
Param.FailureRearmConfirmation	Boolean	True	<p>False = After you click the Reset button on the faceplate during operation and have successfully validated the command according to the configured security classification, resets the control logic with no additional confirmation being required.</p> <p>True = After you click the Reset button on the faceplate during operation, displays a dialog box, which requires that you confirm the reset command. The control logic is reset only by clicking OK and validating the command according to the configured security classification. By default, the security classification is <i>secured write</i>.</p>

Default State Alarms and Additional Alarm Conditions

Overview

In the `$ATV6xxECE` master template, alarms related to core supervision functions are managed in the following ways:

- Certain attributes have associated state alarms. When the condition that is defined in the `script`, page 101 is satisfied, the alarm becomes active.
- Certain bits of the word structure that the master template manages have associated `Namur statuses`, page 40. When the bit is set, an alarm with the default priority that is associated to the status becomes active.

You can manage the alarms from the alarms tab of the faceplate during operation.

State Alarms for Altivar 6xx Series Speed Drives

For a description of the attributes for which a state alarm is configured by default, refer to the topic describing default state alarms for devices, page 366.

Additional Namur Alarm Conditions for Altivar 6xx Series Speed Drives

The table indicates for which bits an alarm is configured in the `$ATV6xxECE` master template and provides the associated Namur status.

Word structure	Bit	Description	Namur status
ATV_CFG.DataStatus	3	<i>Malfunction</i>	<i>Failure</i>
	7	<i>Detected alarm</i>	<i>Failure</i>
	10	<i>Speed setpoint outside of limit</i>	<i>Out Of Specs</i>

NOTE: You can modify the configuration from the **Discrete 1** page.




Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a `general description`, page 46 of the graphic elements and element styles that are used in symbols.

Symbol Description

The table describes the symbols that are included in the `$ATV6xxECE` master template to display data of Altivar 6xx series variable speed drives during operation.

Name	Graphic symbol	Description
ATV6xx		Altivar 600 symbol and icons.
ATV6xx_PV		In addition to icons, the symbol displays (from top to bottom): <ul style="list-style-type: none"> The label. Engineering units. Direction of rotation. Present motor speed.
ATV6xx_PVSP		In addition to icons, the symbol displays (from top to bottom): <ul style="list-style-type: none"> The label. Engineering units. Direction of rotation. Present motor speed. Direction of rotation setpoint. Motor speed setpoint.

Faceplates

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in faceplates.

Available Tabs

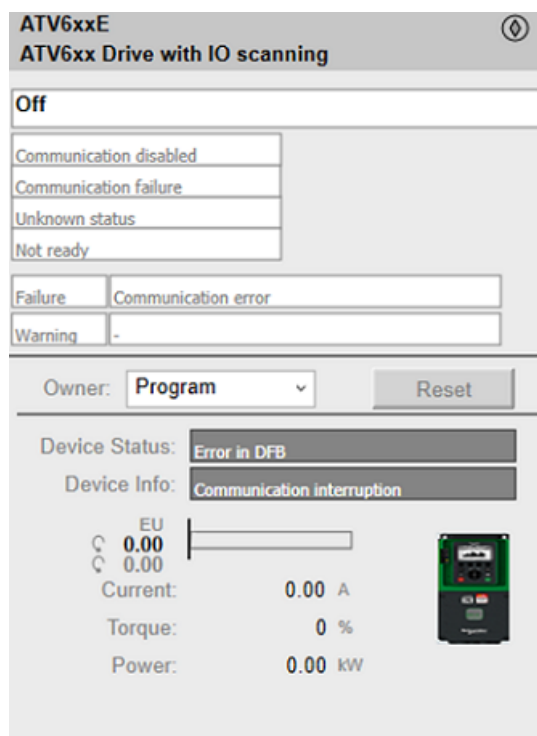
During operation, clicking an Altivar 6xx series variable speed drive symbol opens a faceplate with the following tabs:

- Operation
- Analog data, page 72
- Discrete data, page 73
- Alarms, page 75

NOTE: The master template also features the trends faceplate.

Operation Tab

The figure shows an example of the operation tab.



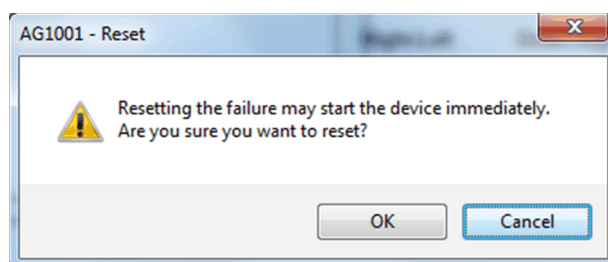
NOTE: This tab features the control module **Reset** button.

When the control module is reset, the current setpoint that is shown in this tab is effective.

By default, when you click **Reset**, a dialog box opens, which requires that you confirm the command for the reset of the control module to take effect.

Refer to *Parameters* in this chapter for a description of the *Param.FailureRearmConfirmation* parameter, which allows you to configure the reset confirmation.

The figure shows the confirmation dialog box which is model in nature.



Resetting the control module by clicking **OK** underlies a security classification, page 89. The default configuration is *secured write*.

When the reset confirmation dialog box is enabled, the security classification that normally applies when you click **Reset** is not effective.

\$ATV9xxECE: Altivar 9xx Series Variable Speed Drives

Overview

This section describes the *\$ATV9xxECE* master template, which contains supervision resources to monitor and operate Altivar 9xx series variable speed drives (9xx represents the device model number).

Supervision Functions

Description

The *\$ATV9xxECE* master template provides the following monitoring and operation functions:

- Device status and data monitoring.
- Setting of speed setpoint and direction of rotation.
- Setting of torque setpoint.
- Monitoring of abnormal conditions.
- Device logic resetting.
- Owner selection.
- Alarm signal management.

During operation, these functions are implemented by instances through symbols and their associated faceplate.

NOTE: You can modify the default configuration in the corresponding configuration pages, page 87.

Control/Supervision Relationship

Control Resources

To provide core supervision functions, the *\$PSxATV9xxAllData* master template is configured to exchange data with the following control resource of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
ATV9xx	Altivar 9xx series variable speed drive logic.	ATV9xx_ST_DDT	<instance name>_ ATV_ST	Core supervision functions.
		ATV9xx_CFG_DDT	<instance name>_ ATV_CFG	
		ATV9xx_IO_DDT	<instance name>ATV_ IO	
		ATV9xx_IOEXT_DDT	<instance name>ATV_ IOEXT	
** Mandatory variables to be defined.				

For description of the control resource, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the [object editor](#), page 100.

These parameters allow you to configure core functions.

Parameter Description

The tables describe the parameters that are defined as part of the *\$ATV9xxECE* master template attributes.

Name	Data type	Initial value	Description
Param.HiPV	Float	100.0	Defines the high limit of the speed present value to scale the Y axis for trending.
Param.LoPV	Float	0.0	Defines the low limit of the speed present value to scale the Y axis for trending.
Param.TorqueHiPV	Float	100.0	Defines the high limit of the torque present value to scale the Y axis for trending.
Param.TorqueLoPV	Float	0.0	Defines the low limit of the torque present value to scale the Y axis for trending.
Param.ModeNormal	String	P	Defines the normal owner modes (separated by a comma): <ul style="list-style-type: none"> O: Operator P: Program For example, P, O.

Name	Data type	Initial value	Description
Param.FailureRearmConfirmation	Boolean	True	<p><i>False</i> = After you click the Reset button on the faceplate during operation and have successfully validated the command according to the configured security classification, resets the control logic with no additional confirmation being required.</p> <p><i>True</i> = After you click the Reset button on the faceplate during operation, displays a dialog box, which requires that you confirm the reset command. The control logic is reset only by clicking OK and validating the command according to the configured security classification. By default, the security classification is <i>secured write</i>.</p>

Default State Alarms and Additional Alarm Conditions

Overview

In the *\$ATV9xxECE* master template, alarms related to core supervision functions are managed in the following ways:

- Certain attributes have associated state alarms. When the condition that is defined in the [script](#), page 101 is satisfied, the alarm becomes active.
- Certain bits of the word structure that the master template manages have associated [Namur statuses](#), page 40. When the bit is set, an alarm with the default priority that is associated to the status becomes active.

You can manage the alarms from the alarms tab of the faceplate during operation.

State Alarms for Altivar 9xx Series Speed Drives

For a description of the attributes for which a state alarm is configured by default, refer to the topic describing [default state alarms for devices](#), page 366.

Additional Namur Alarm Conditions for Altivar 9xx Series Speed Drives

The table indicates for which bits an alarm is configured in the \$ATV9xxECE master template and provides the associated Namur status.

Word structure	Bit	Description	Namur status
ATV_CFG.DataStatus	3	Malfunction	Failure
	7	Detected alarm	Failure
	10	Speed setpoint outside of limit	Out Of Specs

NOTE: You can modify the configuration from the **Discrete 1** page.




Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in symbols.

Symbol Description

The table describes the symbols that are included in the \$ATV9xxECE master template to display data of Altivar 9xx series variable speed drives during operation.

Name	Graphic symbol	Description
ATV9xx		Altivar 900 symbol and icons.
ATV9xx_PV		In addition to icons, the symbol displays (from top to bottom): <ul style="list-style-type: none"> The label. Engineering units. Direction of rotation. Present motor speed.
ATV9xx_PVSP		In addition to icons, the symbol displays (from top to bottom): <ul style="list-style-type: none"> The label. Engineering units. Direction of rotation. Present motor speed. Direction of rotation setpoint. Motor speed setpoint.

Faceplates

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in faceplates.

Available Tabs

During operation, clicking an Altivar 9xx series variable speed drive symbol opens a faceplate with the following tabs:

- Operation, page 448
- Analog data, page 72
- Discrete data, page 73
- Alarms, page 75

NOTE: The master template also features the trends faceplate.

Operation Tab

The figure shows an example of the operation tab.

The screenshot displays the 'ATV9xxE' faceplate for an 'ATV9xx Drive with IO scanning'. The main status is 'Off'. Below this, a list of communication-related messages includes 'Communication disabled', 'Communication failure', 'Unknown status', and 'Not ready'. A 'Failure' section shows 'Communication error', and a 'Warning' section shows '-'. The 'Owner' is set to 'Program' with a 'Reset' button. The 'Device Status' is 'Error in DFB' and 'Device Info' is 'Communication interruption'. The 'Speed' and 'Torque' are both at 0.00. The 'Current' is 0 A and 'Power' is 0 kW. A small image of the drive unit is shown on the right.

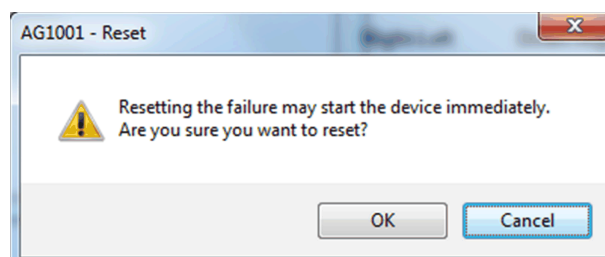
NOTE: This tab features the control module **Reset** button.

When the control module is reset, the current setpoint that is shown in this tab is effective.

By default, when you click **Reset**, a dialog box opens, which requires that you confirm the command for the reset of the control module to take effect.

Refer to *Parameters* in this chapter for a description of the *Param.FailureRearmConfirmation* parameter, which allows you to configure the reset confirmation.

The figure shows the confirmation dialog box which is model in nature.



Resetting the control module by clicking **OK** underlies a security classification, page 89. The default configuration is *secured write*.

When the reset confirmation dialog box is enabled, the security classification that normally applies when you click **Reset** is not effective.

\$ATV6xxxECE: Altivar 6xxx Series Variable Speed Drives

Overview

This section describes the \$ATV6xxxECE master template, which contains supervision resources to monitor and operate Altivar 9xxx series variable speed drives (9xxx represents the device model number).

Supervision Functions

Description

The \$ATV6xxxECE master template provides the following monitoring and operation functions:

- Device status and data monitoring.
- Setting of speed setpoint and direction of rotation.
- Setting of torque setpoint.
- Monitoring of abnormal conditions.
- Device logic resetting.
- Owner selection.
- Alarm signal management.

During operation, these functions are implemented by instances through symbols and their associated faceplate.

NOTE: You can modify the default configuration in the corresponding configuration pages, page 87.

Control/Supervision Relationship

Control Resources

To provide core supervision functions, the *\$PSxATV6xxxAllData* master template is configured to exchange data with the following control resource of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
ATV6xxx	Altivar 6xxx series variable speed drive logic.	ATV6xxx_ST_DDT	<instance name>_ ATV_ST	Core supervision functions.
		ATV6xxx_CFG_DDT	<instance name>_ ATV_CFG	
		ATV6xxx_IO_DDT	<instance name>ATV_ IO	
		ATV6xxx_IOEXT_DDT	<instance name>ATV_ IOEXT	
** Mandatory variables to be defined.				

For description of the control resource, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the object editor, page 100.

These parameters allow you to configure core functions.

Parameter Description

The tables describe the parameters that are defined as part of the *\$ATV6xxxECE* master template attributes.

Name	Data type	Initial value	Description
Param.HiPV	Float	100.0	Defines the high limit of the speed present value to scale the Y axis for trending.
Param.LoPV	Float	0.0	Defines the low limit of the speed present value to scale the Y axis for trending.
Param.TorqueHiPV	Float	100.0	Defines the high limit of the torque present value to scale the Y axis for trending.
Param.TorqueLoPV	Float	0.0	Defines the low limit of the torque present value to scale the Y axis for trending.
Param.ModeNormal	String	P	Defines the normal owner modes (separated by a comma): <ul style="list-style-type: none"> O: Operator P: Program For example, P, O.

Name	Data type	Initial value	Description
Param. FailureRearmConfirmation	Boolean	True	<p><i>False</i> = After you click the Reset button on the faceplate during operation and have successfully validated the command according to the configured security classification, resets the control logic with no additional confirmation being required.</p> <p><i>True</i> = After you click the Reset button on the faceplate during operation, displays a dialog box, which requires that you confirm the reset command. The control logic is reset only by clicking OK and validating the command according to the configured security classification. By default, the security classification is <i>secured write</i>.</p>

Default State Alarms and Additional Alarm Conditions

Overview

In the *\$ATV6xxxECE* master template, alarms related to core supervision functions are managed in the following ways:

- Certain attributes have associated state alarms. When the condition that is defined in the [script, page 101](#) is satisfied, the alarm becomes active.
- Certain bits of the word structure that the master template manages have associated [Namur statuses, page 40](#). When the bit is set, an alarm with the default priority that is associated to the status becomes active.

You can manage the alarms from the alarms tab of the faceplate during operation.

State Alarms for Altivar 6xxx Series Speed Drives

For a description of the attributes for which a state alarm is configured by default, refer to the topic describing [default state alarms for devices, page 366](#).

Additional Namur Alarm Conditions for Altivar 6xxx Series Speed Drives

The table indicates for which bits an alarm is configured in the *\$ATV6xxxECE* master template and provides the associated Namur status.

Word structure	Bit	Description	Namur status
ATV_CFG.DataStatus	3	<i>Malfunction</i>	<i>Failure</i>
	7	<i>Detected alarm</i>	<i>Failure</i>
	10	<i>Speed setpoint outside of limit</i>	<i>Out Of Specs</i>

NOTE: You can modify the configuration from the **Discrete 1** page.




Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a [general description, page 46](#) of the graphic elements and element styles that are used in symbols.

Symbol Description

The table describes the symbols that are included in the \$ATV6xxxECE master template to display data of Altivar 6xxx series variable speed drives during operation.

Name	Graphic symbol	Description
ATV6xxx		Altivar 900 symbol and icons.
ATV6xxx_PV		In addition to icons, the symbol displays (from top to bottom): <ul style="list-style-type: none"> The label. Engineering units. Direction of rotation. Present motor speed.
ATV6xxx_PVSP		In addition to icons, the symbol displays (from top to bottom): <ul style="list-style-type: none"> The label. Engineering units. Direction of rotation. Present motor speed. Direction of rotation setpoint. Motor speed setpoint.

Faceplates

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in faceplates.

Available Tabs

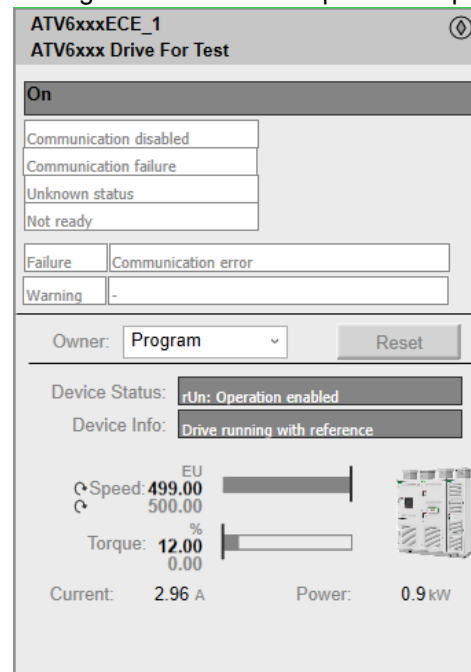
During operation, clicking an Altivar 6xxx series variable speed drive symbol opens a faceplate with the following tabs:

- Operation
- Analog data, page 72
- Discrete data, page 73
- Alarms, page 75

NOTE: The master template also features the trends faceplate.

Operation Tab

The figure shows an example of the operation tab.



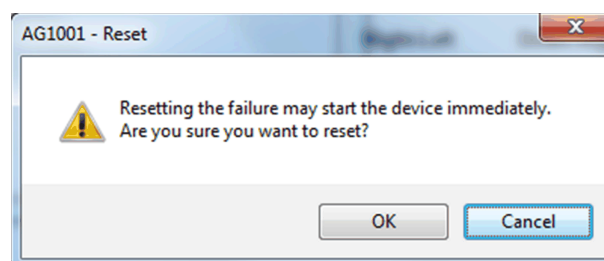
NOTE: This tab features the control module **Reset** button.

When the control module is reset, the current setpoint that is shown in this tab is effective.

By default, when you click **Reset**, a dialog box opens, which requires that you confirm the command for the reset of the control module to take effect.

Refer to *Parameters* in this chapter for a description of the *Param.FailureRearmConfirmation* parameter, which allows you to configure the reset confirmation.

The figure shows the confirmation dialog box which is model in nature.



Resetting the control module by clicking **OK** underlies a security classification, page 89. The default configuration is *secured write*.

When the reset confirmation dialog box is enabled, the security classification that normally applies when you click **Reset** is not effective.

\$ATV320EMCE: Altivar 320 Series Variable Speed Drives

Overview

This section describes the \$ATV320EMCE master template, which contains supervision resources to monitor and operate Altivar 320 series variable speed drives (320 represents the device model number).

Supervision Functions

Description

The *\$ATV320EMCE* master template provides the following monitoring and operation functions:

- Device status and data monitoring.
- Setting of speed setpoint and direction of rotation.
- Monitoring of abnormal conditions.
- Device logic resetting.
- Owner selection.
- Alarm signal management.

During operation, these functions are implemented by instances through symbols and their associated faceplate.

NOTE: You can modify the default configuration in the corresponding configuration pages, page 87.

Control/Supervision Relationship

Control Resources

To provide core supervision functions, the *\$PSxATV320AllData* master template is configured to exchange data with the following control resource of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
ATV320	Altivar 320 series variable speed drive logic.	ATV320_ST_DDT	<instance name>_ ATV_ST	Core supervision functions.
		ATV320_CFG_DDT	<instance name>_ ATV_CFG	
		ATVParamDDT	<instance name>_ ATV_ParamRead	
** Mandatory variables to be defined.				

For description of the control resource, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the *object editor*, page 100.

These parameters allow you to configure core functions.

Parameter Description

The tables describe the parameters that are defined as part of the *\$ATV320EMCE* master template attributes.

Name	Data type	Initial value	Description
Param.HiPV	Float	100.0	Defines the high limit of the speed present value to scale the Y axis for trending.
Param.LoPV	Float	0.0	Defines the low limit of the speed present value to scale the Y axis for trending.
Param.TorqueHiPV	Float	100.0	Defines the high limit of the torque present value to scale the Y axis for trending.
Param.TorqueLoPV	Float	0.0	Defines the low limit of the torque present value to scale the Y axis for trending.
Param.ModeNormal	String	P	Defines the normal owner modes (separated by a comma): <ul style="list-style-type: none"> • O: Operator • P: Program For example, P,O.

Name	Data type	Initial value	Description
Param.FailureRearmConfirmation	Boolean	True	<p>False = After you click the Reset button on the faceplate during operation and have successfully validated the command according to the configured security classification, resets the control logic with no additional confirmation being required.</p> <p>True = After you click the Reset button on the faceplate during operation, displays a dialog box, which requires that you confirm the reset command. The control logic is reset only by clicking OK and validating the command according to the configured security classification. By default, the security classification is <i>secured write</i>.</p>

Default State Alarms and Additional Alarm Conditions

Overview

In the *\$ATV320EMCE* master template, alarms related to core supervision functions are managed in the following ways:

- Certain attributes have associated state alarms. When the condition that is defined in the [script, page 101](#) is satisfied, the alarm becomes active.
- Certain bits of the word structure that the master template manages have associated [Namur statuses, page 40](#). When the bit is set, an alarm with the default priority that is associated to the status becomes active.

You can manage the alarms from the alarms tab of the faceplate during operation.

State Alarms for Altivar 320 Series Speed Drives

For a description of the attributes for which a state alarm is configured by default, refer to the topic describing [default state alarms for devices, page 366](#).

Additional Namur Alarm Conditions for Altivar 320 Series Speed Drives

The table indicates for which bits an alarm is configured in the *\$ATV320EMCE* master template and provides the associated Namur status.

Word structure	Bit	Description	Namur status
ATV_CFG.DataStatus	3	<i>Malfunction</i>	<i>Failure</i>

Word structure	Bit	Description	Namur status
	7	Detected alarm	Failure
	10	Speed setpoint outside of limit	Out Of Specs

NOTE: You can modify the configuration from the **Discrete 1** page.



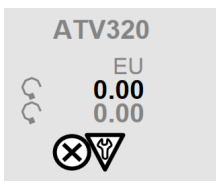
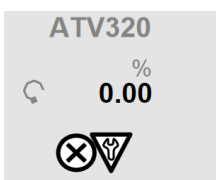
Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in symbols.

Symbol Description

The table describes the symbols that are included in the \$ATV320EMCE master template to display data of Altivar 320 series variable speed drives during operation.

Name	Graphic symbol	Description
ATV320		Altivar 320 symbol and icons.
ATV320_PV		In addition to icons, the symbol displays (from top to bottom): <ul style="list-style-type: none"> The label Engineering units. Direction of rotation. Present motor speed.
ATV320_PVSP		In addition to icons, the symbol displays (from top to bottom): <ul style="list-style-type: none"> The label Engineering units. Direction of rotation. Present motor speed. Direction of rotation setpoint. Motor speed setpoint.
ATV320_Item_PV		In addition to icons, the symbol displays (from top to bottom): <ul style="list-style-type: none"> The label Engineering units of the item selected. Direction of rotation. Value of the item selected.

Faceplates

Representation of Supervision Data

At the beginning of this document, you can find a general description, page 46 of the graphic elements and element styles that are used in faceplates.

Available Tabs

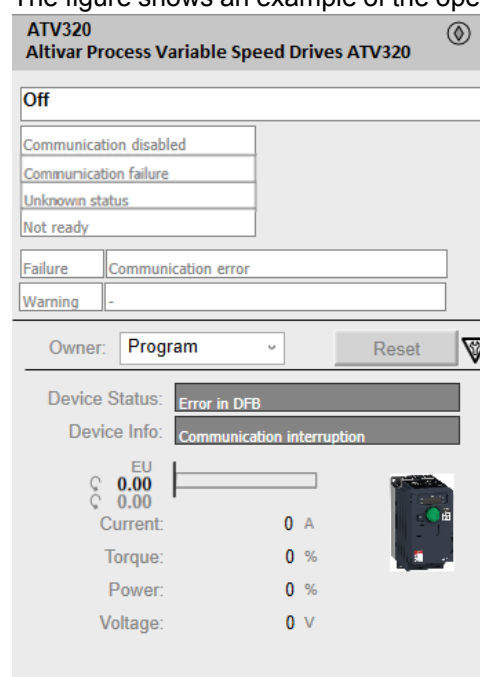
During operation, clicking an Altivar 320 series variable speed drive symbol opens a faceplate with the following tabs:

- Operation
- Analog data, page 72
- Discrete data, page 73
- Alarms, page 75

NOTE: The master template also features the trends faceplate.

Operation Tab

The figure shows an example of the operation tab.



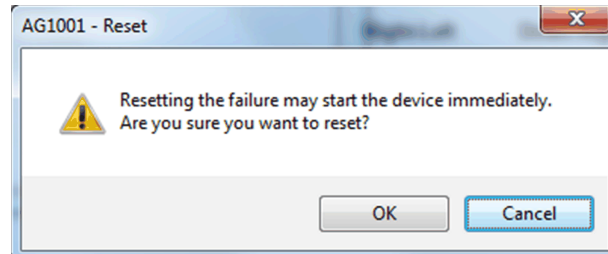
NOTE: This tab features the control module **Reset** button.

When the control module is reset, the current setpoint that is shown in this tab is effective.

By default, when you click **Reset**, a dialog box opens, which requires that you confirm the command for the reset of the control module to take effect.

Refer to *Parameters* in this chapter for a description of the *Param.FailureRearmConfirmation* parameter, which allows you to configure the reset confirmation.

The figure shows the confirmation dialog box which is model in nature.



Resetting the control module by clicking **OK** underlies a security classification, page 89. The default configuration is *secured write*.

When the reset confirmation dialog box is enabled, the security classification that normally applies when you click **Reset** is not effective.

\$ATV340CE: Altivar 340 Series Variable Speed Drives

Overview

This section describes the \$ATV340CE master template, which contains supervision resources to monitor and operate Altivar 340 series variable speed drives (340 represents the device model number).

Supervision Functions

Description

The \$ATV340CE master template provides the following monitoring and operation functions:

- Device status and data monitoring.
- Setting of speed setpoint and direction of rotation.
- Setting of torque setpoint.
- Monitoring of abnormal conditions.
- Device logic resetting.
- Owner selection.
- Alarm signal management.

During operation, these functions are implemented by instances through symbols and their associated faceplate.

NOTE: You can modify the default configuration in the corresponding configuration pages, page 87.

Control/Supervision Relationship

Control Resources

To provide core supervision functions, the *\$PSxATV340AllData* master template is configured to exchange data with the following control resource of the Modicon Libraries - General Purpose for Control Expert.

Control resource	Description	DDT name**	Syntax of variable name for DDT**	Used for
ATV340	Altivar 340 series variable speed drive logic.	ATV340_ST_DDT	<instance name>_ ATV_ST	Core supervision functions.
		EMESATV340_CFG_DDT, EIOSATV340_CFG_DDT	<instance name>_ ATV_CFG	
** Mandatory variables to be defined.				

For description of the control resource, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the object editor, page 100.

These parameters allow you to configure core functions.

Parameter Description

The tables describe the parameters that are defined as part of the *\$ATV340CE* master template attributes.

Name	Data type	Initial value	Description
Param.HiPV	Float	100.0	Defines the high limit of the speed present value to scale the Y axis for trending.
Param.LoPV	Float	0.0	Defines the low limit of the speed present value to scale the Y axis for trending.
Param.TorqueHiPV	Float	100.0	Defines the high limit of the torque present value to scale the Y axis for trending.
Param.TorqueLoPV	Float	0.0	Defines the low limit of the torque present value to scale the Y axis for trending.
Param.ModeNormal	String	P	Defines the normal owner modes (separated by a comma): <ul style="list-style-type: none"> O: Operator P: Program For example, P, O.

Name	Data type	Initial value	Description
Param. FailureRearmCon- firmation	Boolean	True	<p><i>False</i> = After you click the Reset button on the faceplate during operation and have successfully validated the command according to the configured security classification, resets the control logic with no additional confirmation being required.</p> <p><i>True</i> = After you click the Reset button on the faceplate during operation, displays a dialog box, which requires that you confirm the reset command. The control logic is reset only by clicking OK and validating the command according to the configured security classification. By default, the security classification is <i>secured write</i>.</p>

Default State Alarms and Additional Alarm Conditions

Overview

In the \$ATV340CE master template, alarms related to core supervision functions are managed in the following ways:

- Certain attributes have associated state alarms. When the condition that is defined in the [script](#), [page 101](#) is satisfied, the alarm becomes active.
- Certain bits of the word structure that the master template manages have associated [Namur statuses](#), [page 40](#). When the bit is set, an alarm with the default priority that is associated to the status becomes active.

You can manage the alarms from the alarms tab of the faceplate during operation.

State Alarms for Altivar 340 Series Speed Drives

For a description of the attributes for which a state alarm is configured by default, refer to the topic describing [default state alarms for devices](#), [page 366](#).

Additional Namur Alarm Conditions for Altivar 340 Series Speed Drives

The table indicates for which bits an alarm is configured in the \$ATV340CE master template and provides the associated Namur status.

Word structure	Bit	Description	Namur status
ATV_CFG.DataStatus	3	<i>Malfunction</i>	<i>Failure</i>
	7	<i>Detected alarm</i>	<i>Failure</i>
	10	<i>Speed setpoint outside of limit</i>	<i>Out Of Specs</i>

NOTE: You can modify the configuration from the **Discrete 1** page.




Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), [page 46](#) of the graphic elements and element styles that are used in symbols.

Symbol Description

The table describes the symbols that are included in the \$ATV340CE master template to display data of Altivar 340 series variable speed drives during operation.

Name	Graphic symbol	Description
ATV340		Altivar 900 symbol and icons.
ATV340_PV		In addition to icons, the symbol displays (from top to bottom): <ul style="list-style-type: none"> • The label. • Engineering units. • Direction of rotation. • Present motor speed.
ATV340_PVSP		In addition to icons, the symbol displays (from top to bottom): <ul style="list-style-type: none"> • The label. • Engineering units. • Direction of rotation. • Present motor speed. • Direction of rotation setpoint. • Motor speed setpoint.

Faceplates

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in faceplates.

Available Tabs

During operation, clicking an Altivar 340 series variable speed drive symbol opens a faceplate with the following tabs:

- Operation
- Analog data, page 72
- Discrete data, page 73
- Alarms, page 75

NOTE: The master template also features the trends faceplate.

Operation Tab

The figure shows an example of the operation tab.

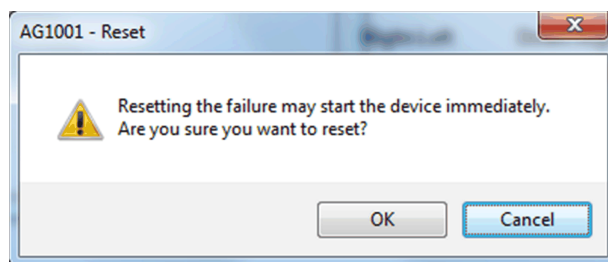
NOTE: This tab features the control module **Reset** button.

When the control module is reset, the current setpoint that is shown in this tab is effective.

By default, when you click **Reset**, a dialog box opens, which requires that you confirm the command for the reset of the control module to take effect.

Refer to *Parameters* in this chapter for a description of the *Param. FailureRearmConfirmation* parameter, which allows you to configure the reset confirmation.

The figure shows the confirmation dialog box which is model in nature.



Resetting the control module by clicking **OK** underlies a security classification, page 89. The default configuration is *secured write*.

When the reset confirmation dialog box is enabled, the security classification that normally applies when you click **Reset** is not effective.

Diagnosis

What's in This Part

Controller Diagnosis	464
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Overview

This section describes the master templates that provide the supervision functions for the diagnosis category.

Schneider Electric provides the templates described in this document. These templates can be used in various applications to minimize engineering efforts but the use, integration, configuration, and validation of the system is the sole responsibility of the user. Said user must ensure the safety of the system as a whole by performing a safety analysis, including the resources provided by Schneider Electric through procedures that the user deems appropriate.

⚠ WARNING

LOSS OF CONTROL

- Perform a Failure Mode and Effects Analysis (FMEA) of your application, and apply preventive and detective controls before implementation.
- Provide a fallback state for undesired control events or sequences.
- Provide separate or redundant control paths wherever required.
- Supply appropriate parameters, particularly for limits.
- Review the implications of transmission delays and take actions to mitigate.
- Review the implications of communication link interruptions and take actions to mitigate.
- Provide independent paths for control functions (for example, emergency stop, over-limit conditions, and fault conditions) according to the safety analysis and applicable codes, and regulations.
- Apply local accident prevention and safety regulations and guidelines.¹
- Test each implementation of this library for proper operation before placing it into service.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

¹ For additional information, refer to NEMA ICS 1.1 (latest edition), *Safety Guidelines for the Application, Installation, and Maintenance of Solid State Control* and to NEMA ICS 7.1 (latest edition), *Safety Standards for Construction and Guide for Selection, Installation and Operation of Adjustable-Speed Drive Systems* or their equivalent governing your particular location.

Controller Diagnosis

What's in This Chapter

\$M340DiagCE and *\$M580DiagCE*: Modicon Controller Diagnosis 464

Overview

This section describes the master templates that provides the supervision functions for the controller diagnosis.

\$M340DiagCE and *\$M580DiagCE*: Modicon Controller Diagnosis

Overview

This section describes the *\$M340DiagCE* and *\$M580DiagCE* master templates, which contain supervision resources to monitor and update real time clock in the controller.

Supervision Functions

Description

Use the master templates for the following controllers:

- *\$M340DiagCE* for Modicon M340.
- *\$M580DiagCE* for Modicon M580.

These master templates provide the following monitoring and operation functions:

- Viewing CPU-related information.
- Viewing controller status.
- Viewing communication status information.
- Monitoring of abnormal conditions.
- Updating the real-time clock (RTC).
- Alarm signal management.

NOTE:

- AUX task information is not available for CPUs of the M340 platforms.
- Battery status information is not available for CPUs of the M340 and M580 platforms.

During operation, these functions are implemented by instances through symbols and their associated faceplate.

NOTE: You can modify the default configuration in the corresponding configuration pages as applicable, page 87.

Control/Supervision Relationship

Control Resources

To provide core and optional supervision functions, the *\$PSxPACM340* and *\$PSxPACM580* master templates are configured to exchange data with the following control resources of the Modicon Libraries - General Purpose for Control Expert.

Master template	Control resource	DDT name**	Syntax of variable name for DDT**	Used for
\$PSxPACM340	GENSTS	GENSTS_ST_DDT	<instance name>_ M340_GENSTS_ST	Core supervision functions.
	COMM	COMM_ST_DDT	<instance name>_ M340_COMM_ST	Optional supervision functions.
	OSINFO	OSINFO_ST_DDT	<instance name>_ M340_OSINFO_ST	
	RTC	RTC_ST_DDT	<instance name>_ M340_RTC_ST	
		RTC_CFG_DDT	<instance name>_ M340_RTC_CFG	
	MASTINFO	MASTINFO_ST_DDT	<instance name>_ M340_MASTINFO_ST	
	LASTSTOP	LASTSTOP_ST_DDT	<instance name>_ M340_LASTSTOP_ST	
	FASTINFO	FASTINFO_ST_DDT	<instance name>_ M340_FASTINFO_ST	
\$PSxPACM580	GENSTS	GENSTS_ST_DDT	<instance name>_ M580_GENSTS_ST	Core supervision functions.
	COMM	COMM_ST_DDT	<instance name>_ M580_COMM_ST	Optional supervision functions.
	OSINFO	OSINFO_ST_DDT	<instance name>_ M580_OSINFO_ST	
	RTC	RTC_ST_DDT	<instance name>_ M580_RTC_ST	
		RTC_CFG_DDT	<instance name>_ M580_RTC_CFG	
	MASTINFO	MASTINFO_ST_DDT	<instance name>_ M580_MASTINFO_ST	
	LASTSTOP	LASTSTOP_ST_DDT	<instance name>_ M580_LASTSTOP_ST	
	FASTINFO	FASTINFO_ST_DDT	<instance name>_ M580_FASTINFO_ST	
	AUX1INFO	AUX1INFO_ST_DDT	<instance name>_ M580_AUX1INFO_ST	
	AUX0INFO	AUX0INFO_ST_DDT	<instance name>_ M580_AUX0INFO_ST	
** Mandatory variables to be defined.				

For description of these control resources, refer to the topic describing the respective control resource in the manual documenting the control services of the library.

Parameters

Parameter Configuration

The initial value of the parameters described in this topic corresponds to what is considered the normal operating mode. You can modify the values in the derived application template or in its instances. You can access the parameters from the **Attributes** page of the [object editor](#), page 100.

These parameters allow you to configure core functions.

Parameter Description

The tables describe the parameters that are defined as part of the *\$M340DiagCE* and *\$M580DiagCE* master template attributes.

Name	Data type	Initial value	Description
Param.ModeNormal	String	P	Specifies the normal owner modes (separated by a comma): <ul style="list-style-type: none"> O: Operator P: Program For example P, O.

Default State Alarms and Additional Alarm Conditions

Overview

In the *\$M340DiagCE* and *\$M580DiagCE* master templates, alarms related to core supervision functions are managed in the following ways:

- Certain attributes have associated state alarms. When the condition that is defined in the [script](#), page 101 is satisfied, the alarm becomes active.
- Certain bits of the word structure that the master template manages have associated [Namur statuses](#), page 40. When the bit is set, an alarm with the default priority that is associated to the status becomes active.

You can manage the alarms from the alarms tab of the faceplate during operation.

State Alarms for Modicon Controller Diagnostic

For a description of the attributes for which a state alarm is configured by default, refer to the topic describing [default state alarms for devices](#), page 366.

Additional Namur Alarm Conditions for Modicon Controller Diagnostic

The table indicates for which bits an alarm is configured in the *\$M340DiagCE* and *\$M580DiagCE* master templates and provides the associated Namur status.

Customized reference	Bit	Description	Namur status
Me.Diagnostic.AO.DataStatus	0	Controller Stopped	Function Check
	3	Detected Error in I/O	Failure
	4	Watchdog Overflow	Failure

NOTE: You can modify the configuration from the **Discrete 1** and/or **Discrete 2** pages of the parent template *\$PSxPACModicon*.


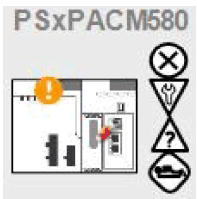
Graphic Representation

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in symbols.

Symbol Description

The table describes the symbols that are included in the master templates to display data of Modicon controllers during operation.

Master template	Symbol name	Graphic symbol	Description
<i>\$M340DiagCE</i>	PACM340		M340 controller symbol and icons.
<i>\$M580DiagCE</i>	PACM580		M580 controller symbol and icons.

Faceplates

Representation of Supervision Data

At the beginning of this document, you can find a [general description](#), page 46 of the graphic elements and element styles that are used in faceplates.

Available Tabs

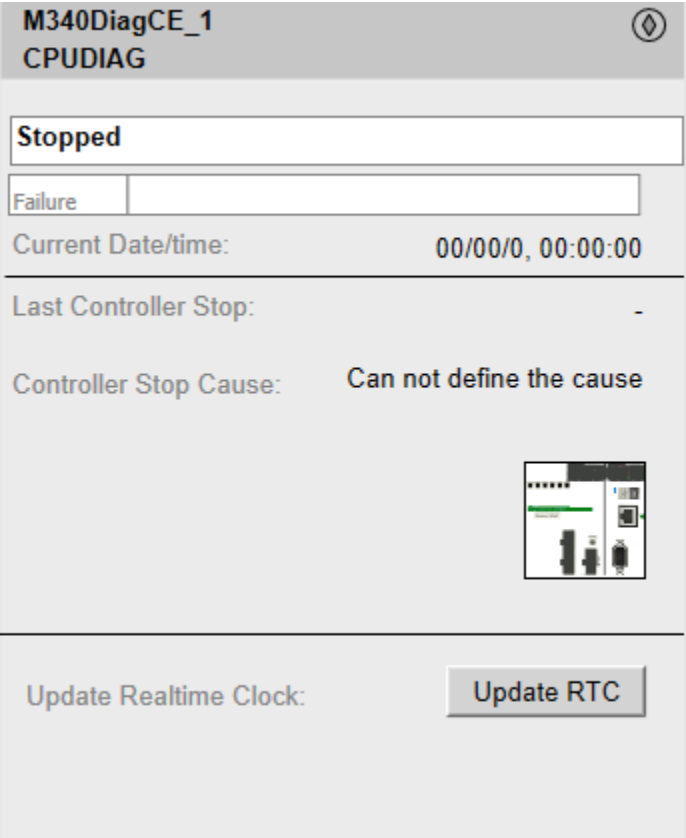
During operation, clicking a Modicon controller diagnostic symbol opens a faceplate with the following tabs:

- Operation
- Analog data, page 72
- Discrete data, page 73
- Alarms, page 75

NOTE: Analog Data tab > Operating System and Comm Information tab displays the information of processor patch version and firmware version. The value displayed is in decimal, user has to manually convert this decimal value to hexadecimal value to get the correct processor patch version and firmware version of the controller.

Operation Tab

The figure shows an example of the operation tab for a M340 controller, which opens when you click a PACM340 symbol.



- NOTE:** The tab for M340 and M580 controllers is identical except for the controller graphic, which shows a controller-specific rack.
- NOTE:** In faceplate, **Analog** tab shows controller OS, patch and firmware information. The value displayed on the faceplate will be in decimal value when communicated with PLC simulator.

NOTICE

ERRONEOUS DATA LOGGING
Confirm the input date and time before setting the date and time in the controller.
Failure to follow these instructions can result in data loss.

The table indicates which attribute corresponds to the field or menu that appears on the tab.

Item	Attribute
Controller status	Statues are indicated by using the following attributes: <ul style="list-style-type: none">Controller status:<ul style="list-style-type: none"><i>Me.Diagnostic.AO.STW.10</i>. When true, Booting is displayed.<i>Me.Diagnostic.AO.STW.11</i>. When true, Running is displayed; when false, Stopped.Abnormal conditions:<ul style="list-style-type: none"><i>Me.Diagnostic.AO.STW.03</i>. When true, Failure is displayed and next to it the description from <i>Me.AO.Lastfailure</i> NOTE: These fields use the <i>active</i> and <i>passive</i> element styles, page 47.
Current Date/Time	<i>Me.Diagnostic.AO.ActualClock</i> RTC data.

Item	Attribute
	Format: <i>dd/mm/yyyy, hh:mm:ss</i>
Last Controller Stop	<p><i>Me.Diagnostic.AO.ActualClock</i> and <i>Me.Diagnostic.AO.CausePLCStop</i></p> <p>RTC data and reason of last controller stop.</p> <p>RTC data format: <i>dd/mm/yyyy, hh:mm:ss</i></p>
Update Real-Time Clock (RTC)	<p>Allows user to update Real-Time Clock on Update RTC button action from the faceplate, Current system date and time are passed to the following attributes individually:</p> <ul style="list-style-type: none"> • <i>Me.Diagnostic.AO.RTC.Cfg.NEWDAY</i> • <i>Me.Diagnostic.AO.RTC.Cfg.NEWMONTH</i> • <i>Me.Diagnostic.AO.RTC.Cfg.NEWEAR</i> • <i>Me.Diagnostic.AO.RTC.Cfg.NEWHOUR</i> • <i>Me.Diagnostic.AO.RTC.Cfg.NEWMIN</i> • <i>Me.Diagnostic.AO.RTC.Cfg.NEWSEC</i> <p>The display format is: <i>dd/mm/yyyy hh:mm:ss</i></p> <p>NOTE: For the M580 controller current UTC date and time are passed to the above mentioned attributes, however for M340 controllers current system date and time are passed.</p>

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