



# Process Expert - General Purpose Library Classic

## Device Supervision Services Reference Manual

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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.

## Qualification of Personnel

A qualified person is one who has the following qualifications:

- Skills and knowledge related to the construction and operation of electrical equipment and the installation.
- Knowledge and experience in industrial control programming.
- Received safety-related training to recognize and avoid the hazards involved.

The qualified person must be able to detect possible hazards that may arise from parameterization, modifying parameter values and generally from mechanical,

electrical, or electronic equipment. The qualified person must be familiar with the standards, provisions, and regulations for the prevention of industrial accidents, which they must observe when designing and implementing the system.

## Proper Use

This product is a library to be used together with the automation control systems and is intended solely for the purposes described in the present documentation as applied in the industrial sector.

Always observe the applicable safety-related instructions, the specified conditions, and the technical data.

Perform a risk evaluation concerning the specific use before using the product. Take protective measures according to the result.

Since the product is used as a part of an overall system, you must ensure the safety of the personnel by means of the concept of this overall system (for example, machine concept).

Any other use is not intended and may be hazardous.

## 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:

(In case of divergence or contradiction between any translation and the English original, the original text in the English language will prevail.)

- 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 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 tags, genies, faceplates, and other Supervision components that are the Supervision resources of the EcoStruxure Process Expert device control module templates, providing the Supervision services.

For a list of templates, refer to the user guides mentioned in this document.

This document only covers the functional aspects of Supervision services when engineering a system, using EcoStruxure Process Expert , and describes the dynamic objects visible from the runtime. It does not cover any operational aspects, nor does it provide information on how to use the Supervision services to monitor and operate control systems.

Users of Supervision services need to have knowledge of EcoStruxure Process Expert, and of the Supervision and Control Participants.

## Validity Note

This document has been updated for the release of EcoStruxure™ Process Expert 2023.

## Related Documents

The characteristics that are described in the present document, as well as those described in the documents included in the Related Documents section below, can be found online. To access the information online, go to the Schneider Electric home page [www.se.com/ww/en/download/](http://www.se.com/ww/en/download/).

The characteristics that are described in the present document should be the same as those characteristics that appear online. In line with our policy of constant improvement, we may revise content over time to improve clarity and accuracy. If you see a difference between the document and online information, use the online information as your reference.

Title of Documentation	Reference Number
EcoStruxure™ Process Expert - General Purpose Library Classic Device Templates Reference Manual	EIO0000001308
EcoStruxure™ Process Expert - General Purpose Library Classic Device Control Services Reference Manual	EIO0000001309
EcoStruxure Process Expert User Guide	EIO0000001114

## Technical Support

Visit <https://www.se.com/myschneider/> for support, software updates, and latest information.

## Product Related Information

### **⚠ WARNING**

#### **LOSS OF CONTROL**

- Perform a Failure Mode and Effects Analysis (FMEA), or equivalent risk analysis, 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 them.
- Review the implications of communication link interruptions and take actions to mitigate them.
- Provide independent paths for control functions (for example, emergency stop, over-limit conditions, and error conditions) according to your risk assessment, and applicable codes and regulations.
- Apply local accident prevention and safety regulations and guidelines.<sup>1</sup>
- Test each implementation of a system for proper operation before placing it into service.

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

<sup>1</sup> 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.

Examples described in this manual 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.**

## Terminology Derived from Standards

The technical terms, terminology, symbols and the corresponding descriptions in this manual, or that appear in or on the products themselves, are generally derived from the terms or definitions of international standards.

In the area of functional safety systems, drives and general automation, this may include, but is not limited to, terms such as safety, safety function, safe state, fault, fault reset, malfunction, failure, error, error message, dangerous, etc.

Among others, these standards include:

Standard	Description
IEC 61131-2:2007	Programmable controllers, part 2: Equipment requirements and tests.
ISO 13849-1:2015	Safety of machinery: Safety related parts of control systems. General principles for design.
EN 61496-1:2013	Safety of machinery: Electro-sensitive protective equipment.

Standard	Description
	Part 1: General requirements and tests.
ISO 12100:2010	Safety of machinery - General principles for design - Risk assessment and risk reduction.
EN 60204-1:2006	Safety of machinery - Electrical equipment of machines - Part 1: General requirements.
ISO 14119:2013	Safety of machinery - Interlocking devices associated with guards - Principles for design and selection.
ISO 13850:2015	Safety of machinery - Emergency stop - Principles for design.
IEC 62061:2015	Safety of machinery - Functional safety of safety-related electrical, electronic, and electronic programmable control systems.
IEC 61508-1:2010	Functional safety of electrical/electronic/programmable electronic safety-related systems: General requirements.
IEC 61508-2:2010	Functional safety of electrical/electronic/programmable electronic safety-related systems: Requirements for electrical/electronic/programmable electronic safety-related systems.
IEC 61508-3:2010	Functional safety of electrical/electronic/programmable electronic safety-related systems: Software requirements.
IEC 61784-3:2016	Industrial communication networks - Profiles - Part 3: Functional safety fieldbuses - General rules and profile definitions.
2006/42/EC	Machinery Directive
2014/30/EU	Electromagnetic Compatibility Directive
2014/35/EU	Low Voltage Directive

In addition, terms used in the present document may tangentially be used as they are derived from other standards such as:

Standard	Description
IEC 60034 series	Rotating electrical machines
IEC 61800 series	Adjustable speed electrical power drive systems
IEC 61158 series	Digital data communications for measurement and control – Fieldbus for use in industrial control systems

Finally, the term zone of operation may be used in conjunction with the description of specific hazards, and is defined as it is for a hazard zone or danger zone in the Machinery Directive (2006/42/EC) and ISO 12100:2010.

**NOTE:** The aforementioned standards may or may not apply to the specific products cited in the present documentation. For more information concerning the individual standards applicable to the products described herein, see the characteristics tables for those product references.



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# General

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## Overview

This part explains general overview of EcoStruxure Process Expert device library and concepts implemented for controlling devices.

# General Overview of Device Library

## What's in This Chapter

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## Overview

This chapter provides overview of Process Expert General Purpose library for devices.

## Introduction

## Overview of Device Templates

The EcoStruxure Process Expert automation system provides resources that have been pre-configured and tested by Schneider Electric and that are designed specifically for automating the control of Schneider Electric devices such as variable-speed drives, starters, and power meters.

The control resources for Control (functional blocks, components, and libraries) and the monitoring resources (components for Supervision) provide common required functions, facilitating the development of control systems.

The system provides Control function blocks (DFB) for control and also provides dynamic representations (Genies) and faceplates (implemented through windows with SuperGenies syntax) for monitoring.

To automate and simplify the implementation of control systems of the electrical devices, you can use these resources with the tools for massive code generation and for the synchronization of control and monitoring subsystems.

You can link the resources that are specifically designed for device control purposes with other generic resources for discrete, continuous, and/or batch process management included in the EcoStruxure Process Expert General Purpose library. You can also use EcoStruxure Process Expert General Purpose library to link device control functions with extra data monitoring and for Modbus communications.

This document describes the basic concepts and details of each function blocks (DFBs) to implement the device control functions.



# Overview of Device Resources

## What's in This Chapter

List of Supervision Functions.....21

## List of Supervision Functions

### Overview

The Supervision functions described in this document are grouped by family.

The families are the same as the ones used to group the device control module templates.

Each function is assigned to the same family as the control module template that references it.

For example, the \$PM700MB control module template belongs to the power monitoring devices family, therefore the PM 700 Modbus Supervision functions are also a part of the power monitoring devices family.

## EcoStruxure Process Expert Function Blocks for Devices

The DFBs have been classified based on the families being used.

The following table lists function blocks and its description:

Family name	Function blocks	Description
Circuit breakers	MBCOMPACTNSX, page 52	Compact NSX management on Modbus
	MBUCOMPACTNSX, page 52	Compact NSX management on Modbus over ULP
	MBMASTERPACT, page 58	Masterpact management on Modbus
	MBMASTERPACTC, page 63	Masterpact chassis management on Modbus
	MBUMASTERPACTMTZ, page 58	Masterpact MTZ circuit breaker without chassis management on Modbus over ULP
	MBUMASTERPACTMTZC, page 63	Masterpact MTZ circuit breaker with chassis management on Modbus over ULP
	MBUMASTERPACTNx, page 58	Masterpact Nx Circuit Breaker without Chassis on Modbus over ULP
	MBUMASTERPACTNxC, page 63	Masterpact Nx Circuit Breaker with Chassis on Modbus over ULP
	HCIRCUITBREAKER, page 68	Hardwired Circuit Breaker
	HWCOMPACT, page 73	Hardwired Compact Circuit Breaker
	HWMASTERPACT, page 77	Hardwired Masterpact Circuit Breaker
Digital protective relays	MBSEPAM20CSTM, page 83 and MBSEPAM20CB, page 83	Sepam 20 management
	MBSEPAM40, page 88	Sepam 40 management
	MBSEPAM80, page 90	Sepam 80 management (Modbus serial)

Family name	Function blocks	Description
		Sepam 80 management (I/O scanning)
Motor controllers and starters	EIOTESYST, page 97	Tesys T management (normal I/O scanning)
	ETESYST, page 97	Tesys T management (fast I/O scanning)
	EMESTESYST, page 103	Tesys T management (Ethernet explicit messaging)
	MBTESYST, page 105	Tesys T management (Modbus serial)
	TESYSTCTL, page 107	Tesys T motor management (Advantys STB)
	MBTESYSUSCST, page 114	Tesys U standard starter management (Modbus serial)
	MBTESYSUSC, page 119	Tesys U advanced and multifunction starter management (Modbus serial)
	MBTESYSUC, page 121	Tesys U advanced and multifunction controller management (Modbus serial)
	TESYSUSCST, page 123	Tesys U standard starter management (Advantys STB)
	TESYSUSCTL, page 125	Tesys U advanced starter management (Advantys STB)
	TESYSUSC, page 125	Tesys U multifunction starter management (Advantys STB)
	TESYSUC, page 129	Tesys U advanced and multifunction controller management (Advantys STB)
Power monitoring devices	EACCUSINE, page 171	Accusine management
	EMPM800, page 150	Power Meter 800 management (Ethernet explicit messaging)
	EMPM53xx, page 139	Power Meter 53xx management (Ethernet messaging)
	EMPM82xx, page 144	Power Meter 82xx management (Ethernet messaging)
	MBPM700, page 134	Power Meter 700 management
	MBPM800, page 148	Power Meter 800 management (Modbus serial)
	MBPM1200, page 154	Power Meter 1200 management
	MBPM5350, page 164	Power Meter 5350 management (Modbus serial)
	MBPM9C, page 159	Power Meter 9C management
	MBSMARTUPS, page 166	Smart UPS management
	PM800E, page 150	Power Meter 800 management (I/O scanning)
Progressive starters	MBATS22, page 177	Altistart 22 management
	MBATS48, page 182	Altistart 48 management
Variable speed drives	ATV7161, page 189	Altivar 61 and Altivar 71 management (I/O scanning)
	EATV32, page 195	Altivar 32 management (I/O scanning)
	EMESATV7161, page 198	Altivar 61 and Altivar 71 management (Ethernet explicit messaging)
	MBATV212, page 200	Altivar 212 management (Modbus serial)
	MBATV, page 205	Altivar 12, Altivar 31 and Altivar 312 management (Modbus serial)
	MBATV7161, page 207	Altivar 61 and Altivar 71 management (Modbus serial)
	ASATV31, page 209	Altivar 31 management (Advantys STB)

Family name	Function blocks	Description
	ASATV7161, page 211	Altivar 61 and Altivar 71management (Advantys STB)
	PBATV7161, page 213	Altivar 61 and Altivar 71management (Profibus)
	ATV6xx/ATV9xx/ ATV6xxx, page 215	Altivar process drive
Weighing Module	EIPMPMESWT, page 226	Weighing module

# Overview of Supervision Services

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Monitoring .....	26

## Overview

This chapter describes the concepts implemented by the resources used for device Supervision purposes.

## Function Blocks (DFB) Interface

### Overview

The Control function blocks for devices provide an interface that allows the DFBs to be configured, monitored, and controlled both from the monitoring subsystem and from the control subsystem itself.

The following interfaces are provided:

- Basic Configuration
- Control
- States and Monitoring
- Variables

### Basic Configuration

DFB public variables for static and identified data are in engineering time (for example, range for an input channel, refreshing communication variables and so on).

### Control

DFB input and output pins:

- enable issuing commands from other program blocks or sections.
- provide the DFB status to allow implementing switching operations (for example, device controlled from HMI/SCADA system, `ExtControlled` output pin), detected failures (for example, communication interruption), alarm (for example, thermal trip alarm), and so on.

### States and Monitoring

Depending on their types, the DFBs have several input/output pins that need to be connected to variables used to hold either the states of the pins or data. In addition, these variables allow commands and parameters received from the monitoring subsystem to be managed.

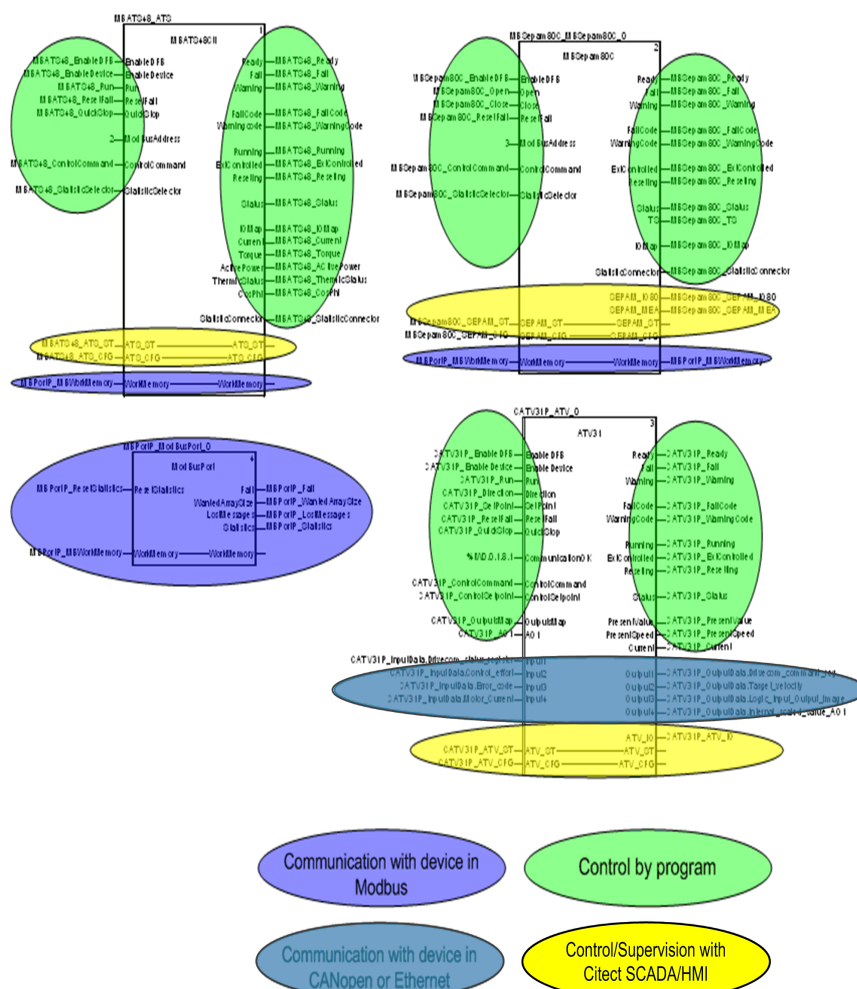
The following variables are considered:

State and control (identified by means of the <code>_ST</code> suffix):	These variables hold the state and control used from the first monitoring subsystem level (dynamic symbols in flowcharts). This variable is an input/output variable.
Configuration and information (identified with the <code>_CFG</code> suffix):	These variables hold second-level information for configuring device control or information parameters (device status and so on). This information is normally accessible from the faceplates of the monitoring subsystem. This variable is an input/output variable.
Status/state of measurements or of device inputs/outputs (identified with <code>_IO</code> , <code>_MEA</code> , or other suffixes):	This information is normally accessible from the faceplates of the monitoring subsystem for digital or analog values. This variable is an output variable and is available depending on the device information and on the communications system (Modbus, CANopen, or Ethernet) being used.

## Variables

Variables communicate with devices. If you use components with CANopen or Ethernet-based communications, the DFBs have an `Inputs` input DDT and an `Outputs` output DDT to communicate with the actual physical device. Allocate these variables (%MWX) to the memory segment reserved for communications so that the device control mechanisms work correctly. When you use Modbus-based communications, use a Modbus port that serializes the requests sent to the devices on the bus (messaging).

## Function Block Illustration



# Set-Point Management

## Overview

The blocks used for device control purposes manage the set-points coming from the following sources according to the owner:

- Operator
- Program

To avoid unwanted transitions in the set-point, continuously set the local set-points (Operator or Program) to match the selected set-point.

In principle, the owner (Operator or Program) of the function block is not modified from the control subsystem (through the program in the PLC) because the control subsystem is mechanism that stops the Program from affecting the block. This is to confirm that the commands issued towards the block are those generated from the monitoring subsystem.

**NOTE:** The dynamic symbols and the faceplates corresponding to the EcoStruxure Process Expert devices are used to implement the control function for block resetting (as long as the block is in Operator mode). If you want to perform additional control actions (Run, QuickStop, and so on) from faceplates, use the control blocks included in the General Purpose library for process.

## Operator (Operator/Local set-point)

Receives commands from the monitoring subsystem (Supervision/HMI). The DFBs receive these commands through `***_ST` and `***_CFG` structures. The `Owner` variable is implemented in the devices in the `***_ST.CFGW.1` and is set to 1 to specify operator-based control.

## Program

Generates commands from the control program (Control). The DFBs receive these commands through the input and output pins of the DFBs. The `Owner` variable is implemented in the devices in the `***_ST.CFGW.1` and is set to 0 to specify program-based control.

# Monitoring

## Overview

The function blocks in the General Purpose library have Monitoring mode (which you can select by setting the `ControlCommand` input to FALSE) that allows the device to be monitored in a communications-based manner independently of the state of the control inputs. This way, the control block only performs read operations on the device and updates the output variables of the block without sending any commands.

You can use the operating mode if switching operations are carried out on the device locally through a physical screw terminal.

**NOTE:** If the block is in Monitoring mode (`ControlCommand` set to FALSE), it resets communication interruptions through the program or HMI/SCADA system.

If you configure the device to be controlled and monitored completely by the PLC in a communications-based manner, set this variable to TRUE.

---

# Supervision Features

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## Overview

This part describes the features of Supervision services of EcoStruxure Process Expert.

# Environment Preparation

## What's in This Chapter

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## Overview

This chapter provides the preparation of an environment.

## Preparation of an Environment

### Overview

Supervision resources are deployed with a project named **SGC\_include2**, which EcoStruxure Process Expert automatically includes in your Supervision project so that the resources are available to you. These resources include symbols, genies, screens (with SuperGenie syntax), labels, devices, and so on.

The following sections briefly describe the basic configuration aspects of the Supervision project integrated into the EcoStruxure Process Expert system. For more details, refer to the.

### OPC Client Configuration

EcoStruxure Process Expert supports communications with controllers through OPC (the recommended option, because it enables you to work without explicitly addressing Control variables) and through the native MODNET driver (Modbus TCP). If you use OPC, consider a series of parameters (refer to the Supervision Help and OPC Client Help for more details). Adjust these parameters according to the specific characteristics of each project.

You can use the following initial configuration (this configuration also identifies the main parameters to be considered):

#### OPC

`LeaveTagsActive = 0`

`Block = 1`

`FailOnBadData = 1`

`FailOnUncertain = 0`

`CacheRead = 0`

`RefreshAfterWrite = 1`

`UseOPC2 = 1`

**NOTE:** In previous EcoStruxure Process Expert versions, it was recommended to set the `AddItemAsVtEmpty` parameter to 0. With the new OPC address syntax for string-type data, set this parameter to 1. Because of this, do not include the default value in *citect.ini*, or set it explicitly to 1:

`AddItemAsVtEmpty = 1.`

If you plan to implement redundancy for OPC-based communications, use tags that enable you to monitor the communication status (refer to the Supervision user manual for details concerning `OPCUseStatusTags` parameters and item definitions that need to be used to implement this type of monitoring).



## OPC Server Configuration

If you use Supervision OPC, consider some basic aspects while configuring the connection to the controllers through the Schneider Electric OPC Server (OFS):

- Use a symbol table file of type XVM because the loading time for symbols is smaller and does not require Control to be installed.
- Enable the **Dynamic Consistency Check** option and the **Reload Database** option and set the **Rate** to, for example, 3 seconds. This way, it helps you to confirm that if the symbol file changes, it reloads within an acceptable amount of time.
- Set the minimum update time parameter (Group Min Update Rate) to confirm that the maximum rate at which data is requested from the controllers is suitable for the network and hardware used.
- Likewise, enable the data sampling rate adaptation option (**Rate Adapt**) so that if the data is requested at a rate higher than that at which it can be provided, the sampling rate automatically sets to the maximum possible one to avoid data from causing a communications detected error (overrun).

# Representation of Supervision Data

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## Overview

Genies 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, color is used to distinguish between types of information or to highlight changes or situations that require action.








This chapter describes the user interface of Supervision components and the color code that is used to represent Supervision data.





## Color Codes

## Dynamic Variable Status

### Description

This table describes the possible statuses of dynamic variables and the colors that are used to represent them in elements of Supervision components:

Function	Color	Status	Example of use
Digital indicators: <ul style="list-style-type: none"> <li>Status (PV)</li> <li>Setpoint (SP)</li> <li>Control (OP)</li> </ul>	Green 	Active	Active running order. Active running confirmation. Open active valve order. Open valve.
	Black 	Idle	Idle running order. Idle running confirmation. Active close valve order. Closed valve.
	Yellow 	Inconsistency	Open-valve and closed-valve limit switches are active simultaneously.
	Blue 	Transition	Open-valve and closed-valve limit switches are idle at the same time.
Information	Yellow 	Active	Active bypass for an interlock.
	—	Idle	—
Alarms	Red and yellow alternating 	Active, not acknowledged	Very high level alarm. Detection of not confirmed operation.
	Red 	Active and acknowledged	

Function	Color	Status	Example of use
	Black and yellow alternating 	Inactive, pending acknowledgement	Thermal overload alarm was generated and the condition was cleared. The alarm has not been acknowledged yet.
	—	Normal	No alarm.
Numeric indicators	Blue on gray background 	Current value (PV)	Current temperature value.
	Green on gray background 	Setpoint value (SP)	Target temperature value.
	Yellow on gray background 	Control output (OP)	Control valve position.

## Genies

### Overview

This section provides general information about the representation of genies that are part of the SGC\_Include2 project.

## Using Genies

### Genie Availability

The SGC\_Include2 resource contains a number of genies grouped in libraries that correspond to Supervision functions. For example, the `sgc_devctl_motors` library contains six genies for on/off motor management.

These genies allow monitoring and interacting with control modules during operation.

Genies become visible in runtime once you assign them to a Supervision page.

### Assigning Genies

You can assign the genies that are referenced a template to a Supervision page by editing the page, using the **Edit** command. Refer to Supervision Project Refinement Stage.

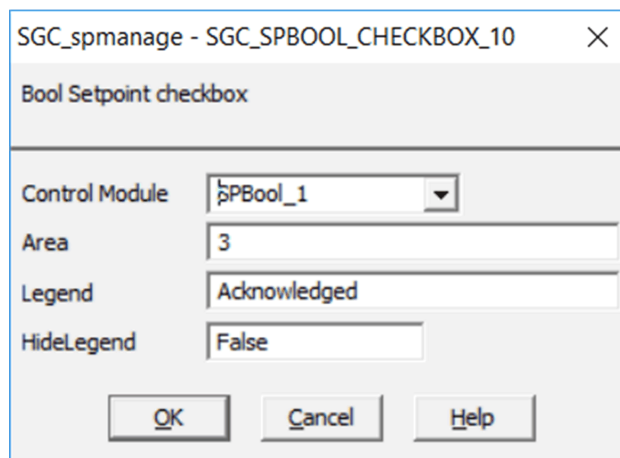
### Genie Properties

Once you have assigned a genie to a page, double-click it to display its properties.

Genies of the SGC\_Include2 project have the **Control Module** and **Area** properties but may also feature additional properties. Refer to the corresponding library template user guide for more information.

You can configure these properties through the **Properties** window of the instance referencing the genie or through refinement.

The following figure shows an example of the properties dialog box of the `SPBool_Checkbox_10` genie, featuring the additional **Legend** and **HideLegend** properties:



## Genie Control Module Name




The name that appears in the **Control Module** field of the genie properties window is used to generate expressions referencing tags.

























For example, a genie of the `sgc_devctl_motors` library (on/off motor management) with `Conveyor1` as a **Control Module** (CM) name generates connections with the following tags: `Conveyor1_DEVCTL_STW` and `Conveyor1_DEVCTL_CFGW`.











**NOTE:** Typically, when you use genies by instantiating control module templates of the General Purpose library, the **Control Module** name is equal to the value of the `$InstanceID` parameter of the instance.

## General Icons

### General Icon Table

Function	Icon	Color Animation	Meaning	Examples of Use	Comments
Owner		N/A	Operator	Valve in Operator mode (the operator sets the set-point).	–
		N/A	Program	Valve in Program mode (the program sets the set-point).	–
Operating mode	<b>AUTO</b>	N/A	Automatic	Closed-loop PID controller.	–
	<b>MAN</b>	N/A	Manual	Open-loop PID controller.	–
	<b>CASC</b>	N/A	Cascade	Closed-loop PID controller with an externally set set-point.  Valve that is controlled remotely according to an externally set set-point.	–
Interlocking		N/A	Active	Valve motor, PID controller, and so on, interlocking.	–

Function	Icon	Color Animation	Meaning	Examples of Use	Comments
		Flashing	Active (waiting for manual resetting)	There is at least one interlock that: <ul style="list-style-type: none"> <li>works with manual resetting</li> <li>is waiting to be reset</li> </ul>	–
		N/A	Idle	–	–
Bypass		N/A	Active	Global bypass for a valve interlock.	Represented on the element that is bypassed.
		N/A	Partial Bypass	Bypass for an interlock from the list of those possible, but not a global bypass.	Represented on the element that is bypassed.
	(Invisible)	N/A	Idle	–	–
External control / Cancelled output "power removal"		N/A	Active	Pump controlled with electrical switching from machine base pushbutton panel.	Represented on the symbol representing the output (OP).
	(Invisible)	N/A	Idle	–	–
Resetting Required		Flashing	Awaiting resetting	Motor awaiting resetting after thermal trip.	–
	(invisible)	N/A	Does not required resetting	–	–
Simulation		N/A	Active	Simulation of limit switches for an on-off valve.	Represented by placing the control module in simulation mode.
	(Invisible)	N/A	Not Active	–	–
Unknown state		Alarm Standard	Device state	No response from device.	–
Detection of alarm/ not confirmed operation		Alarm Standard	Alarm raised/not confirmed operation	Level alarm. Position of on/off valve not confirmed (ZSH).	Enables acknowledgment of the alarm.
Detection of non-operational device		Alarm Standard	Inoperable device	Thermal motor overload.	–
Detection of non-operational I/O Channel		Alarm Standard	Non-operational I/O channel	Analog input channel problem.	–
Level Alarms		Alarm Standard	Very High	Very high temperature	Enables acknowledgment of the alarm.
		Alarm Standard	High	High temperature	Enables acknowledgment of the alarm.
		Alarm Standard	Deviation	Temperature outside of set-point	Enables acknowledgment of the alarm.
		Alarm Standard	Low	Low temperature	Enables acknowledgment of the alarm.
		Alarm Standard	Very Low	Very low temperature	Enables acknowledgment of the alarm.
Alarm Level Set-Points		Background color 	Very High	Very high temperature	–
		Background color 	High	High temperature	–
		Background color 	Valid signal range	Temperature outside of set-point	–
		Background color 	Low	Low temperature	–

Function	Icon	Color Animation	Meaning	Examples of Use	Comments
		Background color 	Very Low	Very low temperature	–
Circuit breaker status		NA	Not Ready to close	Masterpact circuit breaker with chassis is not ready to close.	–
Circuit breaker charging status		NA	Circuit breaker is charged	Masterpact circuit breaker with chassis is charged.	–
Circuit breaker position		NA	Connected position	Masterpact circuit breaker with chassis is in connected position.	–
		NA	Test position	Masterpact circuit breaker with chassis is in test position.	–
Communication interruption		Red cross flashing	Communication not healthy between device and controller	Communication not healthy between Masterpact and controller.	–
		Red Cross continuous	Communication not healthy between device and controller acknowledged	Communication not healthy between Masterpact and controller but Acknowledged by operator.	–
		Yellow cross flashing	Communication fail alarm cleared and awaiting for acknowledgment	Communication made healthy between Masterpact and controller after communication fail and waiting for operator acknowledgment.	–
Weighing Module		N/A	Unstability	Measurement is unstable.	Applicable only for EIPMPMESWT (pmeswt_netpv_10, pmeswt_netpv_grosspv_10 and pmeswt_full_pv_10) genies.
Out of service		N/A	OOS mode	Device is in out of service mode.	Applicable only for EIPMPMESWT (pmeswt_netpv_10, pmeswt_netpv_grosspv_10 and pmeswt_full_pv_10) genies.

## Displaying Genies

### Overview

The label that identifies each dynamic object inserted into a synoptic can be shown or hidden at will during run time.

The value of the number 1 native integer variable of Supervision Pages (accessible with the `PageGetInt(1)` function) defines whether or not the identifying Tags are shown.

If the variable is set to 1 (with the `PageSetInt(1, 1)` function), the identifying labels are shown. If the variable is set to 0 (with the `PageSetInt(1, 0)` function), they are hidden.

# Faceplates

## Overview

This section provides general information about the representation of faceplates linked to genies.

You can access a faceplate by clicking the genie during operation.

This faceplate allows interacting with the corresponding Control resource.

## Genie-Faceplate Link

### Description

Genies included in the SGC\_Include2 project are already linked to a faceplate without the need for further configuration.

The genie-faceplate link is established by the function `sgc_call_faceplate`, which uses the following parameters:

- *GenieType*: Name of the genie type.
- *Parameters*: Function that is called by the *Call Faceplate* function, which opens the faceplate.

For this purpose, a default parameter set is defined in the `sgc_faceplate_ass` table in the `sgc_faceplates.ci` file of the SGC\_Include2 project.

The genie passes the parameters to the function that is defined. These are the parameters that you configure either in the **Properties** window of the instance and/or in the properties window of the genie when assigning it to a page.

You can find the standard code for the functions that have been supplied in the `sgc_faceplates.ci` file of the SGC\_Include2 project.

## Changing the Genie-Faceplate Link

You can link to a genie to a different faceplate. To do so, you need to define the `<GenieType>` parameter and the corresponding function in the `SGC_CALL_FACEPLATE` section of the `sgc_faceplates.ci` file.

When the program detects that `<GenieType>` is defined in this section, it calls the function that you have defined with this parameter; otherwise it calls to the default function defined in the `sgc_faceplate_ass` table

You can define this parameter set directly in this file or, preferably, using the **Cicode Editor**, which you can access from the Supervision Participant.

In this example, the parameter set is configured so that genies belonging to the `sgc_ainput` library call the `my_ainput_faceplate` function, which opens the corresponding faceplate:

Parameter	Description
<i>GenieType</i>	For example, <code>AINPUT</code> .  <b>NOTE:</b> The name of the genie type corresponds to the root of the library name that the genie belongs to. The library name is indicated in the <i>Genies</i> topic of every chapter describing a Supervision function. For example, for <i>Analog Input Management</i> , the genies belong to the <code>sgc_ainput</code> library. The <code>&lt;GenieType&gt;</code> is therefore <code>AINPUT</code> .
<i>Parameters</i>	For example, <code>my_ainput_faceplate</code> .

## Faceplate Icons

### Overview







Faceplates consist of tabs that regroup by category the functionalities provided by the associated Control block during operation.

Each category is represented by an icon that you can click to display its tab.

Certain tabs are optional and become available only if the control module features the corresponding element and the element is selected.

### Description

The table describes the functions that are available in each category:

Category/Tab	Icon	Functions	Examples of use
Operation		<ul style="list-style-type: none"> <li>Owner change</li> <li>Operating mode change</li> <li>Setpoint (SP) change</li> <li>Resetting</li> </ul>	<ul style="list-style-type: none"> <li>Operator/ program</li> <li>Manual/Auto</li> <li>PID controller setpoint (SP) change in auto mode and output change in manual mode</li> </ul>
Interlocks / Start Conditions		<ul style="list-style-type: none"> <li>Interlock status</li> <li>Bypassing and/or resetting of interlocks</li> </ul>	Interlocks associated with an on-off valve
Diagnostic Information		<ul style="list-style-type: none"> <li>Status of abnormal conditions</li> <li>Bypassing of conditions</li> </ul>	High-level alarm
Maintenance		<ul style="list-style-type: none"> <li>Access to accumulated data regarding the control module operation</li> <li>Counter resetting</li> </ul>	<ul style="list-style-type: none"> <li>Hours of operation</li> <li>Number of switch events of a motor</li> </ul>
Configuration		Changing settings or parameters	<ul style="list-style-type: none"> <li>Adjustment of PID control parameters</li> <li>Activating the simulation mode</li> </ul>
Information		Access to component data in the system	<ul style="list-style-type: none"> <li>Component name and version</li> <li>Addresses used to access controllers</li> </ul>

## Faceplate Buttons


### Overview

Buttons are shown as pressed if their function is activated.
















They are shown as disabled if the operator does not have the rights to operate them, or if the function is not available due to the Control block configuration (for example, button to open the valve if the program is configured as the owner).


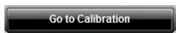









### Description

The table describes the buttons that may appear on the different tabs of a faceplate:

Function	Button	Action	Examples of use	Comment
Change Owner		Operator becomes the owner	Placing a motor in operator mode to be able to set its set-point from the Supervision.	—



Function	Button	Action	Examples of use	Comment
		Program becomes the owner	Placing a motor in program mode so that the program sets the desired setpoint (SP) depending on the programmed strategies.	–
Set the Discrete Setpoint (SP)	Green 	Activate	Starting a motor or opening a valve.	–
	Red 	Deactivate	Stopping a motor or closing a valve.	–
Control Module Reset		Reset	Manually resetting a motor following a thermal overload after the overload condition is cleared.	Available on the Operation tab. The button is enabled when manual resetting of the Control block controlling the device is mandatory after the abnormal condition is cleared.  To enable this button, you may need to click the partial reset buttons that appear on the Diagnostic Information tab if the function is enabled in the corresponding Control block.
Simulation		Activate	Entering the simulation mode to operate an on-off valve, using the open/close buttons of the faceplate.	Displayed on the Configuration tab
		Deactivate	Returning to normal operation mode where the valve is controlled by the program.	
Global Bypass of Interlocks		Activate	Activating the global bypass of interlocks for a valve (the valve is not interlocked anymore).	Available on the Configuration tab
		Deactivate	Deactivating the global bypass of interlocks of a motor (the motor becomes interlocked if applicable).	
Resetting a Counter		Set to 0	Resetting the hours-of-operation counter for a device.	The icon on the button is only shown if the counter has exceeded its maximum value (it has started over).
Rotation Direction		Forward	Selecting a forward rotation direction on a motor.	–
		Reverse	Selecting a reverse rotation direction on a motor.	–
Enabling	 or 	Enable	Activating detection of alarms or deactivate bypass of the interlock (from the list of bypassed interlock conditions).	Available on the Interlocks and Diagnostic Information tabs. The alarm button can be displayed on the Configuration tab also.
			Activating bypass of the interlock (from the list of active interlock conditions).	
Partial Reset		Reset	Manually resetting the input of the respective Control block after an interlock condition or a detected failure condition is cleared.	Available on the Interlocks and Diagnostic Information tabs. The button is enabled when manual resetting the corresponding input of the Control block that detects the condition is mandatory after the condition is cleared.  <b>NOTE:</b> For detected failure conditions, may require

Function	Button	Action	Examples of use	Comment
				additional, manual reset of the equipment by using the control module reset button that is located on the Operation tab if the function is enabled.
Close Faceplate		Exit	–	–
Go to Calibration		It will open calibration faceplate	-	Applicable only for Weighing Module. It is available on operator tab.
In Service		In service	It is required to take the device to in service mode.	Applicable only for Weighing Module. It is available on calibration faceplate.
Out Of Service		Out of Service	It is required to take the device to out of service mode.	Applicable only for Weighing Module. It is available on calibration faceplate.
Weight_tarebalancing		Execution of Tare command	Start Tare operation.	Applicable only for Weighing Module. It is available on Operator tab.
Weight_tarerreset		Execution of Cancel Tare command	Cancel Tare operation.	Applicable only for Weighing Module. It is available on Operator tab.
Weight_reset		Execution of Zero adjustment	This operation is performed to make the zero adjustment required for process.	Applicable only for Weighing Module. It is available on calibration faceplate.
Weight_calibration		Start Calibration Command	It will start calibrating the device.	Applicable only for Weighing Module. It is available on calibration faceplate.
Cancel		Cancel calibration command	Execution of cancel current command.	Applicable only for Weighing Module. It is available on calibration faceplate.
Accept new values		It will accept new values	It will accept new values calibrated by DTM.	Applicable only for Weighing Module. It is available on calibration faceplate.
Next		Start execution of next step	To proceed to next step of calibration faceplate.	Applicable only for Weighing Module. It is available on calibration faceplate.

# Access Control

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## Overview

This chapter describes access control functions that are managed by Supervision components.

## Privilege Levels and Labels

### Overview

Supervision components feature access control so that only users having access to the configured area and the required privilege level can execute actions on dynamic objects and/or faceplates during operation.

You need to assign privilege levels and areas to users to configure their access permissions depending on the specific requirements of each application.

Supervision components use non-hierarchical privilege levels (Supervision default mode) to provide the components with maximum access control flexibility.

## Default Privilege Levels

By default, the following general criteria have been defined to assign privilege levels in Supervision components:

Privilege	Use
1	Enables the acknowledgment of alarms associated to Supervision components.  <b>NOTE:</b> Alarm acknowledgment is also conditioned by the <i>[Privilege] AckAlarms</i> parameter (set to 1 by default). If a privilege level that is different from that configured in the <i>[Privilege] AckAlarms</i> parameter is configured in the alarm tag, you require both privilege levels to acknowledge the alarm.
2	Operator actions: Operator setpoint changes (including parameters and commands regarding sequences).
3	First-level supervisor actions: <ul style="list-style-type: none"> <li>Changes to alarm setpoints and enabling/disabling first-level alarms (HI, LO, DEV).</li> <li>Adjustments to control parameters.</li> </ul>
4	Second-level supervisor actions: Change of owner (Operator/Program)
5	Engineering and/or maintenance personnel actions: <ul style="list-style-type: none"> <li>Set-point changes and enabling/disabling second-level alarms (HIHI, LOLO, digital).</li> <li>Interlock bypassing.</li> <li>Enabling/disabling the simulation mode.</li> </ul>
6	Not used.
7	Not used.
8	Not used.

## Labels

Supervision labels have been defined in the SGC\_Include2 project. These labels define the default privilege level that is required to carry out actions on the different Supervision components. Each action that you can perform on a component is associated to a label.

The syntax of the privilege labels is: SGC\_PRIV\_<type of component>\_<type of action>.

For example, SGC\_PRIV\_SD\_SIM defines the privilege level to enable the simulation mode in the faceplate of a variable speed drive.

You can modify the privilege level that is associated to each label to adapt the behavior of components according to the requirements of the system.

The table lists the values that exist for the <type of component> parameter, the corresponding library, and their description:

<Type of Component>	Library	Component description
AA	Process Monitoring	Analog alarms (AALARM)
AI	Process Monitoring	Analog inputs (AINPUT)
AI1	Process Monitoring	Analog inputs (AINPUT1)
AO	Process Monitoring	Analog outputs (AOUTPUT)
AR	Process Monitoring	Analog ramps (ARAMP)
AS	Process Monitoring	Analog signal selectors (ASELECT1)
B	Control Subsystem Diagnosis	Battery
BB	Power Management	Busbar (BUSBAR)
CPUDIAG	Control Subsystem Diagnosis	CPU diagnosis
CV	Process Monitoring	Control valves (CVALVE)
D	Process Monitoring	On-off devices (DEVCTL)
DI	Process Monitoring	Digital inputs (DINPUT)
DO	Process Monitoring	Digital outputs (DOUTPUT)
DP	Device Monitoring	Device publishing (DEVPUB)
G	Power Management	Central system (SGU_SYSTEMCONFIG)
GS	Control Subsystem Diagnosis	Controller status (GENSTS)
GN	Power Management	Generators (SGU_ENERGYSOURCE)
HV	Process Monitoring	Manual valves (HVALVE)
IM	Process Monitoring	IMC controllers (IMCTL)
IN	Power Management	Infeeds (INFEED)
LD	Power Management	System loads (LOAD)
LL	Process Monitoring	Lead-lag controllers (LDLGCTL)
M2	Process Monitoring	2-speed/rotation direction motors (MOTOR2)
MB	Process Monitoring	Messages for the operator (MSGBOX)
MC	Power Management	Masterpact devices (DEVICES)
MD	Process Monitoring	Motorized valves without positioner (MVALVED)
MV	Process Monitoring	Motorized valves with positioner (MVALVE)
PAR	Uploading and Downloading of Parameters or Recipes	–
PID	Process Monitoring	PID controllers (PIDCTL)

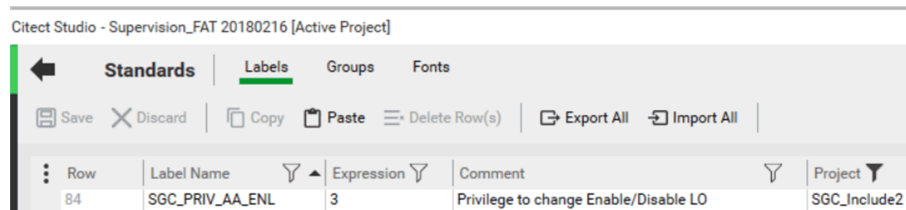
<Type of Component>	Library	Component description
PM	Process Monitoring	PIDMUX configurators (PIDMUX)
PW	Process Monitoring	PWM controllers (PWMCTL)
RST	Supervision System Diagnosis	–
RT	Process Monitoring	Ratio controllers (RATIOCTL)
SC	Process Monitoring	Sequential control (SEQCTL1)
SD	Process Monitoring	Variable speed drives (SDDEVCTL)
SP	Process Monitoring	Setpoint management
SPL	Process Monitoring	Split range controllers (SPLRGCTL)
SR	Power Management	Power supply (SOURCE)
STEP3	Process Monitoring	Three-step controllers (STEP3CTL)
TR	Power Management	Transformers (SGU_ENERGYSOURCE)

**NOTE:** The names that appear in brackets in the *Component description* column are the names of the Control resources that provide the data to the Supervision resources.

## Example

The **SGC\_PRIV\_AA\_ENL** label in the SGC\_Include2 project defines the privilege required to enable/disable monitoring of the low-level alarm in resources for analog alarm management.

By default, the privilege level for the label is 3. This action is categorized as an action that should be accessible to users of type first-level supervisor.



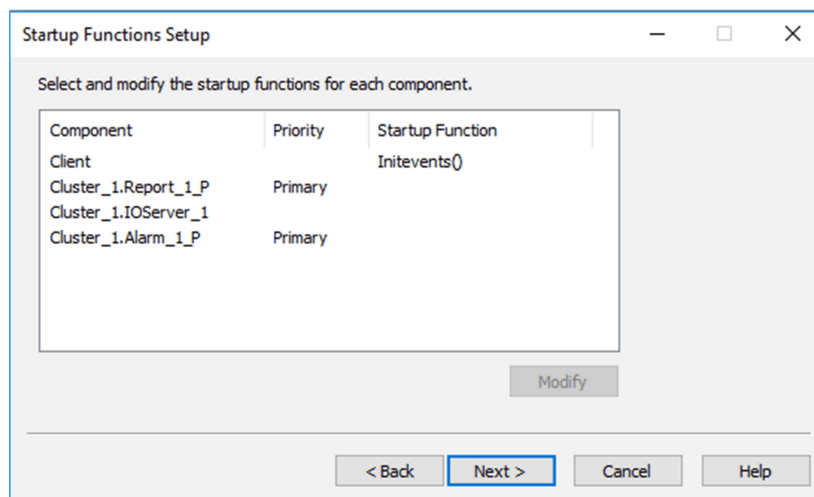
Row	Label Name	Expression	Comment	Project
84	SGC_PRIV_AA_ENL	3	Privilege to change Enable/Disable LO	SGC_Include2

## System Access Traceability

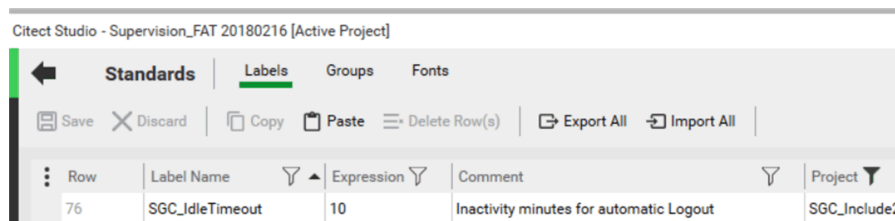
### Configuration Aspects

The configuration aspects are listed below.

The Supervision project needs to call the `InitEvents` function. Normally, include this call in the Supervision node configuration.



When necessary, modify the **SGC\_IdleTimeout** Supervision label (Labels) in the **SGC\_include2** project to define the period (in minutes) of inactivity after which you will be automatically logged off from Citect SCADA. It is set to 10 (minutes) by default.



# Alarm Categories

## What's in This Chapter

Alarm Category Labels and Numbers.....43

## Overview

This chapter describes alarm categories.

## Alarm Category Labels and Numbers

### Overview

Labels are defined in the SGC\_Include2 project to associate an alarm category to each alarm function. These labels also include a number.

You can change the label that is associated to an alarm function to adapt its behavior to the specific requirements of your project.

Refer to *Advanced Alarm Properties* in the help of the Supervision Participant for details on the alarm category property.

### Alarm Category Numbers

By default, the following general criteria is applied to assign category numbers to alarms:

Number	Use
1	Device and input/output detected failures; very high-level (HIHI) and very low-level (LOLO) alarms.
2	Digital alarms; high-level (HI) and low-level (LO) alarms.
3	Deviation alarms regarding setpoints.
253	Process events.

### Alarm Category Labels

The syntax for alarm category labels is: SGC\_CAT\_<type of component>\_<type of alarm>.

**NOTE:** Refer to *Privilege Levels and Labels*, page 39 for a list of abbreviations used for <type of component>. It allows you to identify the type of Control resource from which data used by alarm functions is originating when you implement Supervision, using control module templates of the General Purpose library.

# User Interface Messages

## What's in This Chapter

User Interface Messages ..... 44

# User Interface Messages

## Overview

The standard Supervision components provide visibility of interlocking conditions, initial conditions, inoperable conditions, and so on. A database file (*UIMessag.dbf*) is located in the Supervision project for this very purpose.

**NOTE:** Keep this file updated on the monitoring nodes of the system.

## *UIMessag.dbf* Description

UIMessag.DBF would be automatically located in generated Master Project user. You have to configure this DBF manually. The messages are generated depending on the tests stored in control and according to the system needs.

The messages contained in this database file are used, for instance, to configure the messages associated with interlocking conditions, initial conditions, or inoperable conditions that are implemented with the CONDSUM and CONDSUM1 components of Control services.



# Multilanguage Support

## What's in This Chapter

Multilanguage Support.....	45
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# Multilanguage Support

## Overview

Supervision components support multiple languages. The native language used is English but a translation into Spanish is also provided.

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# Device Monitoring Services

## What's in This Part

Faceplates.....47

## Overview

This part defines the specific characteristics of the monitoring library components that enables you to monitor the status of the electric devices (motor protection, variable speed drives, power meters, and so on) integrated into the Process Expert control system.

<b>⚠ WARNING</b>
<b>UNEXPECTED SYSTEM BEHAVIOR</b>
The Control application must pass the relevant validations before being used in the process.
<b>Failure to follow these instructions can result in death, serious injury, or equipment damage.</b>

# Faceplates

## What's in This Chapter

Information Tab .....	47
Diagnostic Tab .....	48

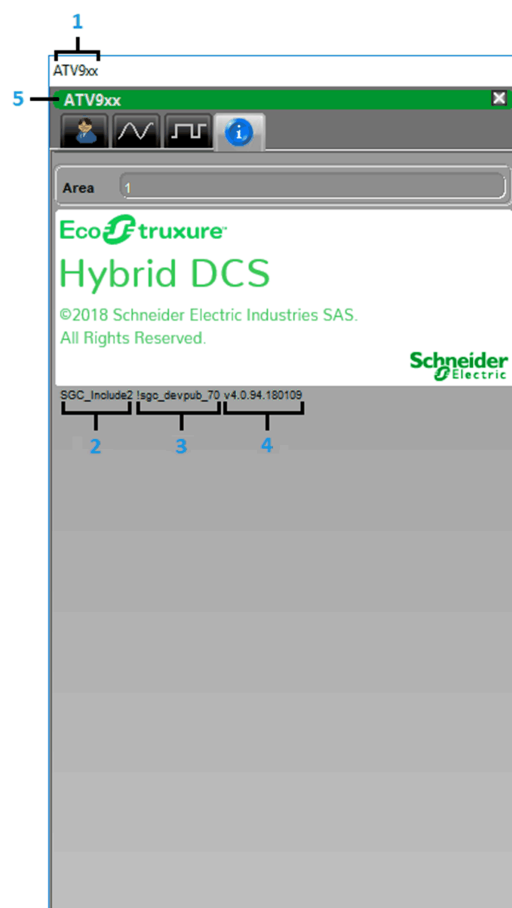
## Overview

This chapter provides the faceplates representation of commonly used faceplates of the different devices.

## Information Tab

## Representation

The following figure shows an example of the information tab that is available for each faceplate:

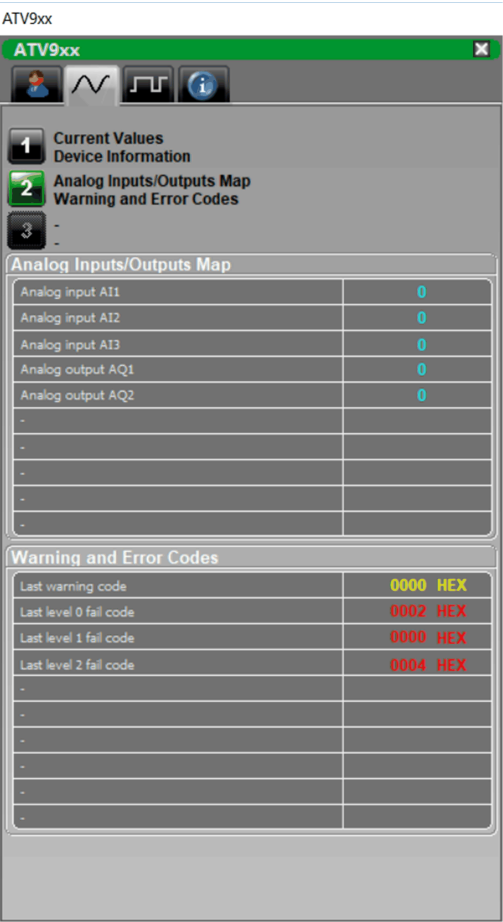


- 1 Default identifier of the instance using the faceplate
- 2 Name of the include project that contains the faceplate
- 3 Name of the faceplate file
- 4 Version of the include project that contains the faceplate
- 5 Description of the object

# Diagnostic Tab

## Representation

The following figure shows an example of the Analog tab(2) for the detected error.



**NOTE:** Error codes are available in hex code. For detail information refer Diagnostic Information Management of the respective device.

# Circuit Breakers

## What's in This Part

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MASTERPACT, MBUMASTERPACTMTZ and MBUMASTERPACTNxC - Masterpact without Chassis (Modbus and Modbus over ULP) .....	58
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HWCOMPACT - Hardwired Compact Circuit Breaker .....	73
HWMMASTERPACT - Hardwired Masterpact Circuit Breaker .....	77

## Overview

This part describes the components that provides the functions for the Circuit Breakers.

These components do not reflect any specific installation.

### **⚠ WARNING**

#### **LOSS OF CONTROL**

- Perform a Failure Mode and Effects Analysis (FMEA), or equivalent risk analysis, 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 them.
- Review the implications of communication link interruptions and take actions to mitigate them.
- Provide independent paths for control functions (for example, emergency stop, over-limit conditions, and error conditions) according to your risk assessment, and applicable codes and regulations.
- Apply local accident prevention and safety regulations and guidelines.<sup>1</sup>
- Test each implementation of a system for proper operation before placing it into service.

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

<sup>1</sup> 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.

# Commonly Used Tags

## What's in This Chapter

..... 50

## Variable Tags

The table describes the variable tags that are managed by Supervision components of *MBMASTERPACT*, *MBMASTERPACTC*, *EMMASTERPACT*, *EMMASTERPACTC*, *MBUMASTERPACTMTZ*, *MBUMASTERPACTMTZC*, *MBUMASTERPACTN<sub>x</sub>* and *MBUMASTERPACTN<sub>x</sub>C*:

Name	Type	Description
<i>CM name_MASTERPACT_AD1_0</i>	REAL	Current I1
<i>CM name_MASTERPACT_AD1_1</i>	REAL	Current I2
<i>CM name_MASTERPACT_AD1_2</i>	REAL	Current I3
<i>CM name_MASTERPACT_AD1_3</i>	REAL	Residual current
<i>CM name_MASTERPACT_AD1_4</i>	REAL	Voltage U21
<i>CM name_MASTERPACT_AD1_5</i>	REAL	Voltage U32
<i>CM name_MASTERPACT_AD1_6</i>	REAL	Voltage U13
<i>CM name_MASTERPACT_AD1_7</i>	REAL	Voltage V1
<i>CM name_MASTERPACT_AD1_8</i>	REAL	Voltage V2
<i>CM name_MASTERPACT_AD1_9</i>	REAL	Voltage V3
<i>CM name_MASTERPACT_AD2_0</i>	REAL	Frequency
<i>CM name_MASTERPACT_AD2_1</i>	REAL	Total active power
<i>CM name_MASTERPACT_AD2_2</i>	REAL	Total reactive power
<i>CM name_MASTERPACT_AD2_3</i>	REAL	Total apparent power
<i>CM name_MASTERPACT_AD2_4</i>	REAL	Active power L1
<i>CM name_MASTERPACT_AD2_5</i>	REAL	Active power L2
<i>CM name_MASTERPACT_AD2_6</i>	REAL	Active power L3
<i>CM name_MASTERPACT_AD2_7</i>	REAL	Reactive power L1
<i>CM name_MASTERPACT_AD2_8</i>	REAL	Reactive power L2
<i>CM name_MASTERPACT_AD2_9</i>	REAL	Reactive power L3
<i>CM name_MASTERPACT_AD3_0</i>	REAL	Apparent power L1
<i>CM name_MASTERPACT_AD3_1</i>	REAL	Apparent power L2
<i>CM name_MASTERPACT_AD3_2</i>	REAL	Apparent power L3
<i>CM name_MASTERPACT_AD3_3</i>	REAL	CosPhi
<i>CM name_MASTERPACT_AD3_4</i>	REAL	Active energy
<i>CM name_MASTERPACT_AD3_5</i>	REAL	Reactive energy
<i>CM name_MASTERPACT_AD3_6</i>	REAL	Total apparent energy
<i>CM name_MASTERPACT_AD3_7</i>	REAL	Positive active energy
<i>CM name_MASTERPACT_AD3_8</i>	REAL	Negative active energy
<i>CM name_MASTERPACT_AD3_9</i>	REAL	Positive reactive energy
<i>CM name_MASTERPACT_AD4_0</i>	REAL	Negative reactive energy
<i>CM name_MASTERPACT_AD4_1</i>	REAL	THD voltage L1 to L2

Name	Type	Description
<i>CM name_MASTERPACT_AD4_2</i>	REAL	THD voltage L2 to L3
<i>CM name_MASTERPACT_AD4_3</i>	REAL	THD voltage L1 to L3
<i>CM name_MASTERPACT_AD4_4</i>	REAL	THD voltage L1 to neutral
<i>CM name_MASTERPACT_AD4_5</i>	REAL	THD voltage L2 to neutral
<i>CM name_MASTERPACT_AD4_6</i>	REAL	THD voltage L3 to neutral
<i>CM name_MASTERPACT_AD4_7</i>	REAL	THD current L1
<i>CM name_MASTERPACT_AD4_8</i>	REAL	THD current L2
<i>CM name_MASTERPACT_AD4_9</i>	REAL	THD current L3
<i>CM NAME_MASTERPACT_AD5_0</i>	REAL	Average of 3 phase current THD
<i>CM NAME_MASTERPACT_AD5_1</i>	ULONG	Trip Counter
<i>CM NAME_MASTERPACT_AD6_0</i>	INT	Alert Order Code
<i>CM NAME_MASTERPACT_AD6_1</i>	INT	Alert Code
<i>CM NAME_MASTERPACT_AD6_2</i>	INT	Fail Code 0
<i>CM NAME_MASTERPACT_AD6_3</i>	INT	Fail Code 1
<i>CM NAME_MASTERPACT_AD6_4</i>	INT	Fail Code 2
<i>CM NAME_MASTERPACT_AD6_5</i>	INT	Tripping Cause
<i>CM NAME_MASTERPACT_AD6_6</i>	INT	Tripping Cause Extended
<i>CM name_MASTERPACT_DD1_WORD</i>	UINT	Status
<i>CM name_MASTERPACT_DD2_WORD</i>	UINT	Alert code
<i>CM name_MASTERPACT_DD3_WORD</i>	UINT	Alert code extended
<i>CM name_MASTERPACT_DD4_WORD</i>	UINT	Alert order code
<i>CM name_MASTERPACT_DC1_WORD</i>	UINT	Commands
<i>CM name_MASTERPACT_DEVPUB_STW</i>	UINT	Status

## Advanced Alarm Tags

The table describes the advanced alarm tags that are managed by Supervision components for *MBMASTERPACT*, *MBMASTERPACTC*, *EMMASTERPACT*, *EMMASTERPACTC*, *MBUMASTERPACTMTZ*, *MBUMASTERPACTMTZC*, *MBUMASTERPACTN<sub>x</sub>* and *MBUMASTERPACTN<sub>x</sub>C*. It also indicates the expression that is configured in the Supervision components to read or write the corresponding bit of the status or configuration word:

Name	Expression	Description
<i>CM name_MASTERPACT_DEVPUB_COMM</i>	<i>CM_name_MASTERPACT_DEVPUB_STW BitAND 0x0020</i>	Communication interruption.
<i>CM name_MASTERPACT_DEVPUB_FAIL</i>	<i>CM_name_MASTERPACT_DEVPUB_STW BitAND 0x0008</i>	Inoperable device.
<i>CM name_MASTERPACT_DEVPUB_ALARM</i>	<i>CM_name_MASTERPACT_DEVPUB_STW BitAND 0x0010</i>	Device alert.

# COMPACTNSX and MBUCOMPACTNSX - Compact NSX (Modbus and Modbus over ULP)

## What's in This Chapter

Supervision Functions .....	52
Control/Supervision Relationship .....	52
Tags .....	52
Genies .....	54
Faceplates .....	54

## Overview

This chapter describes the services provided by the `MBCOMPACTNSX` and `MBUCOMPACTNSX` on Modbus and Modbus over Universal Logic Plug (ULP).

## Supervision Functions

### Description

Core resources provide the following monitoring and operation functions:  
Resetting and device measurement data monitoring.

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

## Control/Supervision Relationship

### Description

When the Supervision components for Compact NSX management are implemented through the `$CompactNSXMB`, `$CompactNSXEM` and `$CompactNSXMBU` control module templates, it is the `MBCOMPACTNSX`, `EMCOMPACTNSX` and `MBUCOMPACTNSX` Control resources that provide data.

The data is created from the corresponding Control templates and shared through interfaces. This allows the necessary tags with the appropriate syntax to be generated in the databases of the Supervision Participant.

For a description of this Control resource,.

**NOTE:** `EMCOMPACTNSX` and `MBCOMPACTNSX` are deprecated control functions.

## Tags

### Tag Syntax

Refer to Genie Control Module Name, page 32.



## Variable Tags

The table describes the variable tags that are managed by Supervision components of MBCOMPACTNSX and MBUCOMPACTNSX:

Name	Type	Description
CM name_COMPACT_AD1_0	REAL	Current I1
CM name_COMPACT_AD1_1	REAL	Current I2
CM name_COMPACT_AD1_2	REAL	Current I3
CM name_COMPACT_AD1_3	REAL	Residual current
CM name_COMPACT_AD1_4	REAL	Voltage U21
CM name_COMPACT_AD1_5	REAL	Voltage U32
CM name_COMPACT_AD1_6	REAL	Voltage U13
CM name_COMPACT_AD1_7	REAL	Voltage V1
CM name_COMPACT_AD1_8	REAL	Voltage V2
CM name_COMPACT_AD1_9	REAL	Voltage V3
CM name_COMPACT_AD2_0	REAL	Frequency
CM name_COMPACT_AD2_1	REAL	Total active power
CM name_COMPACT_AD2_2	REAL	Total reactive power
CM name_COMPACT_AD2_3	REAL	Total apparent power
CM name_COMPACT_AD2_4	REAL	Active power L1
CM name_COMPACT_AD2_5	REAL	Active power L2
CM name_COMPACT_AD2_6	REAL	Active power L3
CM name_COMPACT_AD2_7	REAL	Reactive power L1
CM name_COMPACT_AD2_8	REAL	Reactive power L2
CM name_COMPACT_AD2_9	REAL	Reactive power L3
CM name_COMPACT_AD3_0	REAL	Apparent power L1
CM name_COMPACT_AD3_1	REAL	Apparent power L2
CM name_COMPACT_AD3_2	REAL	Apparent power L3
CM name_COMPACT_AD3_3	REAL	CosPhi
CM name_COMPACT_AD3_4	REAL	Active energy
CM name_COMPACT_AD3_5	REAL	Reactive energy
CM name_COMPACT_AD3_6	REAL	Total apparent energy
CM name_COMPACT_AD3_7	REAL	Positive active energy
CM name_COMPACT_AD3_8	REAL	Negative active energy
CM name_COMPACT_AD3_9	REAL	Positive reactive energy
CM name_COMPACT_AD4_0	REAL	Negative reactive energy
CM name_COMPACT_AD4_1	REAL	THD voltage L1 to L2
CM name_COMPACT_AD4_2	REAL	THD voltage L2 to L3
CM name_COMPACT_AD4_3	REAL	THD voltage L1 to L3
CM name_COMPACT_AD4_4	REAL	THD voltage L1 to neutral
CM name_COMPACT_AD4_5	REAL	THD voltage L2 to neutral
CM name_COMPACT_AD4_6	REAL	THD voltage L3 to neutral
CM name_COMPACT_AD4_7	REAL	THD current L1
CM name_COMPACT_AD4_8	REAL	THD current L2

Name	Type	Description
<i>CM name_COMPACT_AD4_9</i>	REAL	THD current L3
<i>CM NAME_COMPACT_AD5_0</i>	REAL	Trip Counter
<i>CM NAME_COMPACT_AD6_0</i>	INT	Alert Order Code
<i>CM NAME_COMPACT_AD6_1</i>	INT	Alert Code
<i>CM NAME_COMPACT_AD6_2</i>	INT	Fail Code 0
<i>CM NAME_COMPACT_AD6_3</i>	INT	Fail Code 1
<i>CM NAME_COMPACT_AD6_4</i>	INT	Fail Code 2
<i>CM NAME_COMPACT_AD6_5</i>	INT	Tripping Cause
<i>CM name_COMPACT_DD1_WORD</i>	UINT	Status
<i>CM name_COMPACT_DD2_WORD</i>	UINT	Alert code
<i>CM name_COMPACT_DD3_WORD</i>	UINT	Alert code extended
<i>CM name_COMPACT_DD4_WORD</i>	UINT	Alert order code
<i>CM name_COMPACT_DC1_WORD</i>	UINT	Commands
<i>CM name_COMPACT_DEVPUB_STW</i>	UINT	Status

## Advanced Alarm Tags

The table describes the advanced alarm tags that are managed by Supervision components. It also indicates the expression that is configured in the Supervision components to read or write the corresponding bit of the status or configuration word:

Name	Expression	Description
<i>CM name_COMPACT_DEVPUB_COMM</i>	<i>CM name_COMPACT_DEVPUB_STW BitAND 0x0020</i>	Communication interruption
<i>CM name_COMPACT_DEVPUB_FAIL</i>	<i>CM name_COMPACT_DEVPUB_STW BitAND 0x0008</i>	Inoperable device
<i>CM name_COMPACT_DEVPUB_ALARM</i>	<i>CM name_COMPACT_DEVPUB_STW BitAND 0x0010</i>	Device alert

## Trend Tags

No trend tags are managed by Supervision components for Compact management.

## Genies

## Representation

## Faceplates

## Overview

During operation, clicking a genie of the `sgc_devices` library allows you to display a faceplate with the following tabs:

- Standard tabs:
  - Operator Tab, page 55
  - Analog Tab, page 56
  - Digital Tab, page 57

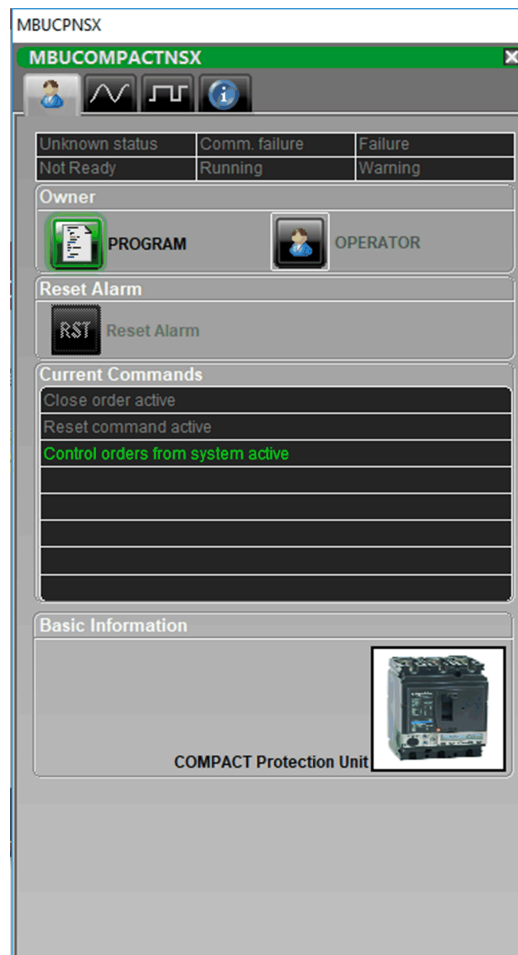
## Faceplate Description

At the beginning of this manual, you can find the description of:

- The color convention, page 30 that is used to display data on the faceplate.
- The buttons, page 36 that appear on the different tabs.

## Operator Tab (MBCOMPACTNSX and MBUCOMPACTNSX)

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







## Analog Tab (MBCOMPACTNSX and MBUCOMPACTNSX)

This tab provides information about the analog data provided by the device:

MBUCPNSX

**MBUCOMPACTNSX** ✕

- 1** Current and Voltage  
Frequency and Power
- 2** Apparent Power and Energy  
Voltage and Current THDs
- 3** Trip Counter  
Warning and Error Codes

**Current and Voltage**

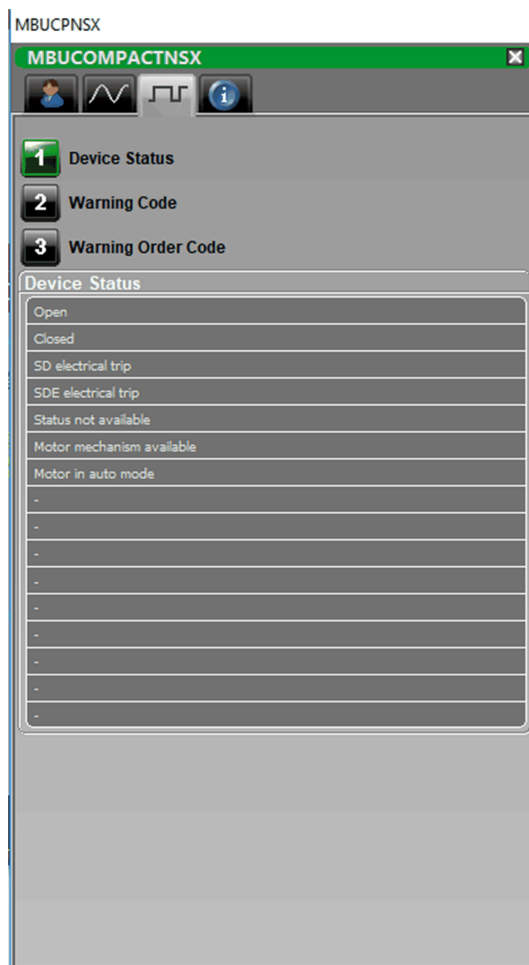
Current phase 1	0.00 A
Current phase 2	0.00 A
Current phase 3	0.00 A
Residual current measurement	0.00 A
Voltage phase 2 and 1	0.00 V
Voltage phase 3 and 2	0.00 V
Voltage phase 1 and 3	0.00 V
Voltage phase 1 and N	0.00 V
Voltage phase 2 and N	0.00 V
Voltage phase 3 and N	0.00 V

**Frequency and Power**

Frequency	0.00 Hz
Active power	0 kW
Reactive power	0 kVAR
Apparent power	0 kVA
Active power phase 1	0 kW
Active power phase 2	0 kW
Active power phase 3	0 kW
Reactive power phase 1	0 kVAR
Reactive power phase 2	0 kVAR
Reactive power phase 3	0 kVAR

## Digital Tab (MBCOMPACTNSX and MBUCOMPACTNSX)

This tab provides information about the digital data provided by the device:



# MASTERPACT, MBUMASTERPACTMTZ and MBUMASTERPACTNx - Masterpact without Chassis (Modbus and Modbus over ULP)

## What's in This Chapter

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## Overview

This chapter describes the services provided by MBMASTERPACT, MBUMASTERPACTMTZ and MBUMASTERPACTNx circuit breakers without chassis on Modbus and Modbus over Universal Logic Plug (ULP).

## Supervision Functions

### Description

Core resources provide the following monitoring and operation functions:  
Resetting and device measurement data monitoring.

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

## Control/Supervision Relationship

### Description

When the Supervision components for Masterpact management are implemented through the \$MasterpactMB, \$MasterpactEM, \$MasterpactNxMBU and \$MasterpactMTZMBU control module templates, it is the *MBMASTERPACT*, *EMMASTERPACT*, *MBUMASTERPACTMTZ* and *MBUMASTERPACTNx* Control resources that provide data.

The data is created from the corresponding Control templates and shared through interfaces. This allows the necessary tags with the appropriate syntax to be generated in the databases of the Supervision Participant.

For a description of this Control resource,.

**NOTE:** *EMMASTERPACT* and *MBMASTERPACT* are deprecated control functions.

## Tags

### Tag Syntax

Refer to Genie Control Module Name, page 32.

## Variable Tags

Refer to commonly used tags, page 50.

## Advanced Alarm Tags

Refer to commonly used tags, page 50.

## Trend Tags

No trend tags are managed by Supervision components for Masterpact management.

## Genies

## Representation

## Faceplates

## Overview

During operation, clicking a genie of the `sgc_devices` library allows you to display a faceplate with the following tabs:

- Standard tabs:
  - Operator Tab, page 60
  - Analog Tab, page 61
  - Digital Tab, page 62

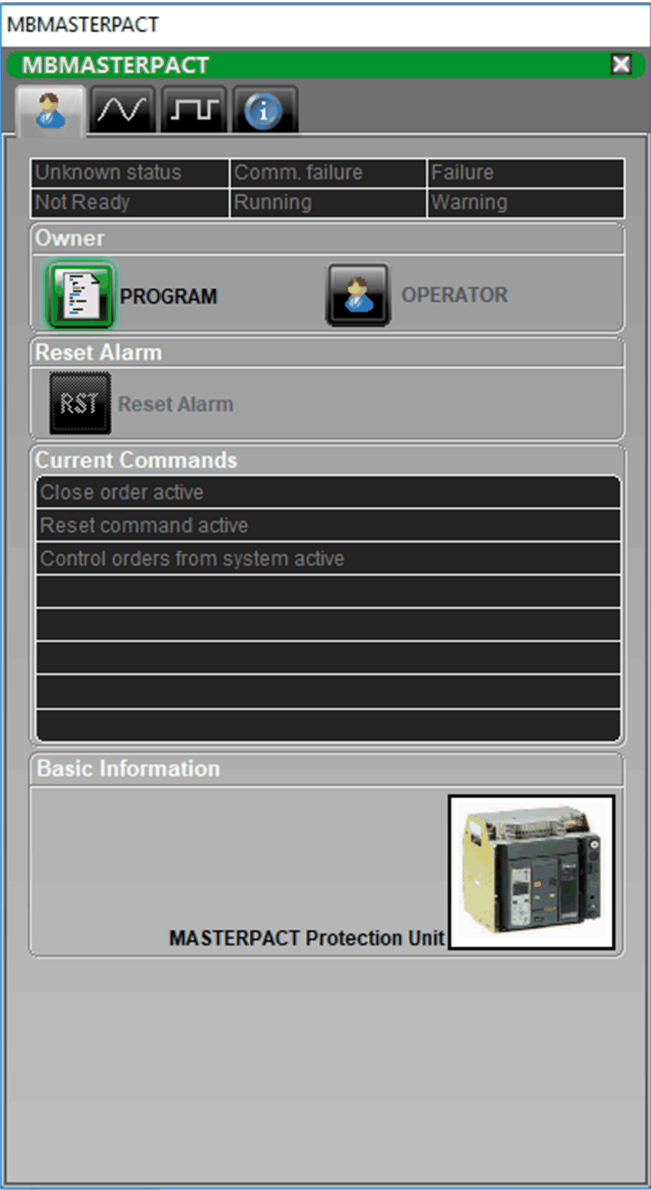
## Faceplate Description

At the beginning of this manual, you can find the description of:

- The color convention, page 30 that is used to display data on the faceplate.
- The buttons, page 36 that appear on the different tabs.

# Operator Tab (MBMASTERPACT, MBUMASTERPACTMTZ and MBUMASTERPACTN<sub>x</sub>)

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









## Analog Tab (MBMASTERPACT, MBUMASTERPACTMTZ and MBUMASTERPACTN<sub>x</sub>)

This tab provides information about the analog data provided by the device:

MBMASTERPACT

MBMASTERPACT

1

Current and Voltage  
Frequency and Power

2

Apparent Power and Energy  
Voltage and Current THDs

3

Average Current THD and Trip Counter  
Warning and Error Codes

Current and Voltage

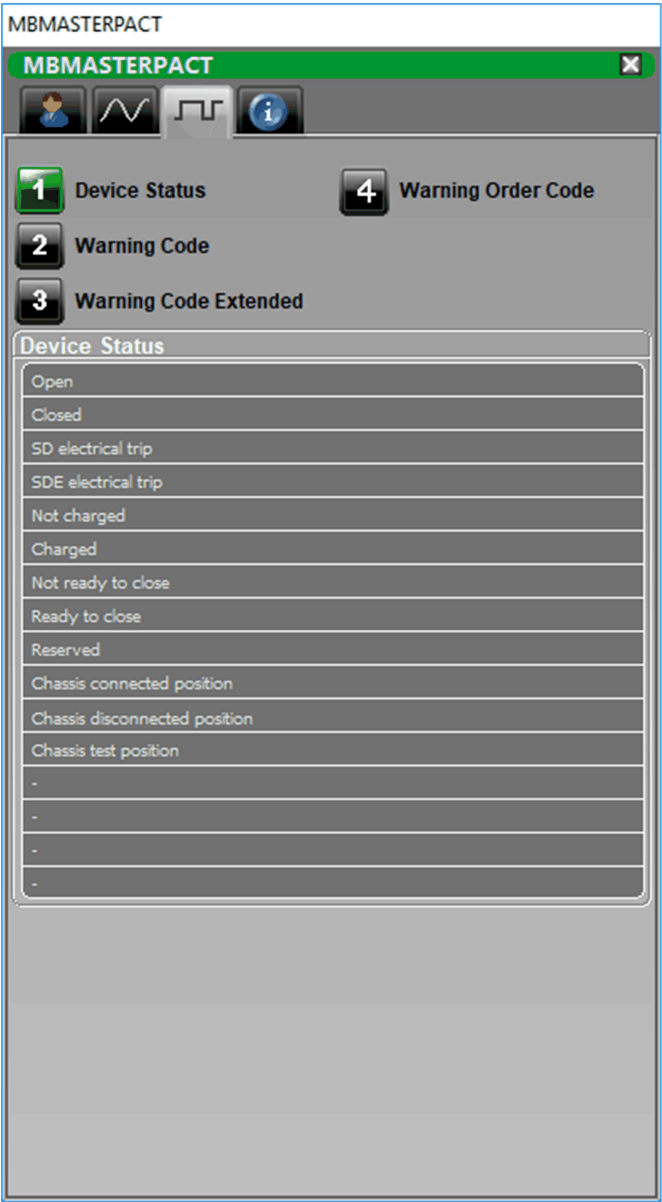
Current phase 1	0.00 A
Current phase 2	0.00 A
Current phase 3	0.00 A
Residual current measurement	0.00 A
Voltage phase 2 and 1	0.00 V
Voltage phase 3 and 2	0.00 V
Voltage phase 1 and 3	0.00 V
Voltage phase 1 and N	0.00 V
Voltage phase 2 and N	0.00 V
Voltage phase 3 and N	0.00 V

Frequency and Power

Frequency	0.00 Hz
Active power	0 kW
Reactive power	0 kVAR
Apparent power	0 kVA
Active power phase 1	0 kW
Active power phase 2	0 kW
Active power phase 3	0 kW
Reactive power phase 1	0 kVAR
Reactive power phase 2	0 kVAR
Reactive power phase 3	0 kVAR

# Digital Tab (MBMASTERPACT, MBUMASTERPACTMTZ and MBUMASTERPACTN<sub>x</sub>)

This tab provides information about the digital data provided by the device:



# MASTERPACTC, MBUMASTERPACTMTZC and MBUMASTERPACTNx C - Masterpact with Chassis (Modbus and Modbus over ULP)

## What's in This Chapter

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## Overview

This chapter describes the services provided by MBMASTERPACTC, MBUMASTERPACTMTZC and MBUMASTERPACTNx C circuit breaker with chassis on Modbus and Modbus over Universal Logic (ULP).

## Supervision Functions

### Description

Core resources provide the following monitoring and operation functions:  
Resetting and device measurement data monitoring.

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

## Control/Supervision Relationship

### Description

When the Supervision components for Masterpact chassis management are implemented through the \$MasterpactCMB, \$MasterpactCEM, \$MasterpactMTZCMBU and \$MasterpactNx CMBU control module templates, it is the MBMASTERPACTC, EMMASTERPACTC, MBMASTERPACTMTZC and MBMASTERPACTNx C Control resources that provide data.

The data is created from the corresponding Control templates and shared through interfaces. This allows the necessary tags with the appropriate syntax to be generated in the databases of the Supervision Participant.

For a description of this Control resource,.

**NOTE:** EMMMASTERPACTC and MBMASTERPACTC are deprecated control functions.

## Tags

### Tag Syntax

Refer to Genie Control Module Name, page 32.

## Variable Tags

Refer to commonly used tags, page 50.

## Advanced Alarm Tags

Refer to commonly used tags, page 50.

## Trend Tags

No trend tags are managed by Supervision components for Masterpact chassis management.

## Genies

## Representation

## Faceplates

## Overview

During operation, clicking a genie of the `sgc_devices` library allows you to display a faceplate with the following tabs:

- Standard tabs:
  - Operator Tab, page 65
  - Analog Tab, page 66
  - Digital Tab, page 67

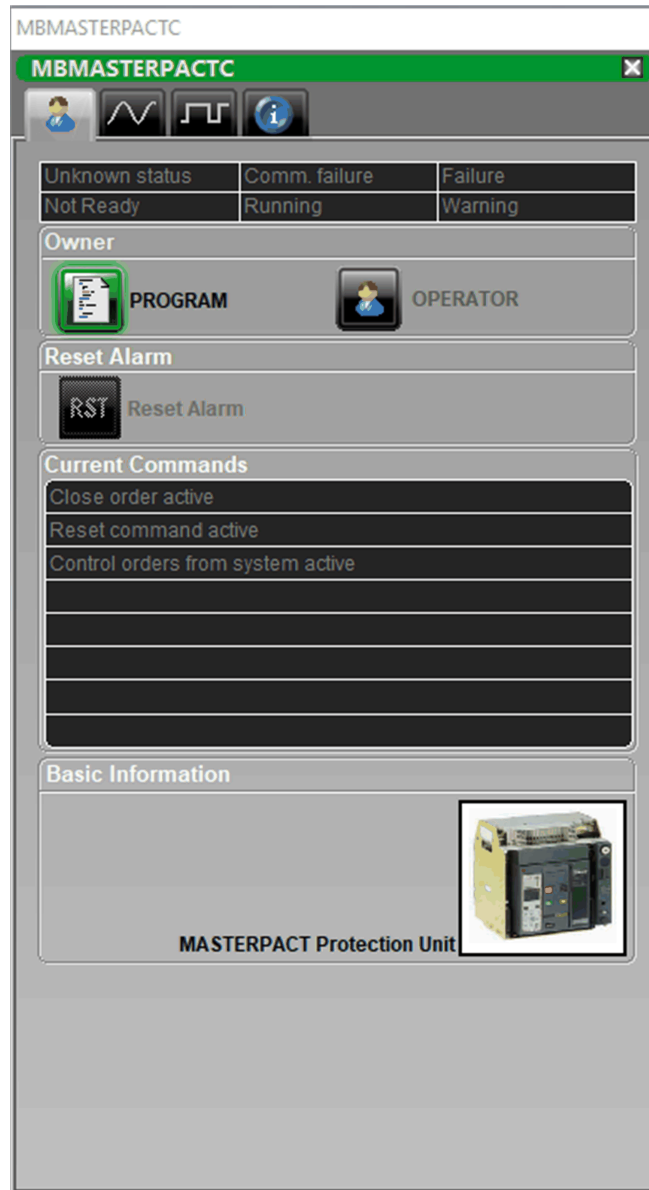
## Faceplate Description

At the beginning of this manual, you can find the description of:

- The color convention, page 30 that is used to display data on the faceplate.
- The buttons, page 36 that appear on the different tabs.

## Operator Tab (MBMASTERPACTC, MBUMASTERPACTMTZC MBUMASTERPACTNxC)

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







## Analog Tab (MBMASTERPACTC, MBUMASTERPACTMTZC and MBUMASTERPACTNxC)

This tab provides information about the analog data provided by the device:

MBMASTERPACTC

MBMASTERPACTC

1

Current and Voltage  
Frequency and Power

2

Apparent Power and Energy  
Voltage and Current THDs

3

Average Current THD and Trip Counter  
Warning and Error Codes

Current and Voltage

Current phase 1	0.00 A
Current phase 2	0.00 A
Current phase 3	0.00 A
Residual current measurement	0.00 A
Voltage phase 2 and 1	0.00 V
Voltage phase 3 and 2	0.00 V
Voltage phase 1 and 3	0.00 V
Voltage phase 1 and N	0.00 V
Voltage phase 2 and N	0.00 V
Voltage phase 3 and N	0.00 V

Frequency and Power

Frequency	0.00 Hz
Active power	0 kW
Reactive power	0 kVAR
Apparent power	0 kVA
Active power phase 1	0 kW
Active power phase 2	0 kW
Active power phase 3	0 kW
Reactive power phase 1	0 kVAR
Reactive power phase 2	0 kVAR
Reactive power phase 3	0 kVAR

## Digital Tab (MBMASTERPACTC, MBUMASTERPACTMTZC and MBUMASTERPACTNxC)

This tab provides information about the digital data provided by the device:

The screenshot displays the 'MBMASTERPACTC' digital tab interface. At the top, there is a title bar with the text 'MBMASTERPACTC' and a close button. Below the title bar, there are four icons: a person, a waveform, a square wave, and an information icon. The main content area is divided into four numbered sections: 1. Device Status, 2. Warning Code, 3. Warning Code Extended, and 4. Warning Order Code. The 'Device Status' section is expanded, showing a list of status options: Open, Closed, SD electrical trip, SDE electrical trip, Not charged, Charged, Not ready to close, Ready to close, Reserved, Chassis connected position, Chassis disconnected position, Chassis test position, and four empty rows. The 'Warning Code' and 'Warning Code Extended' sections are currently empty.

1	Device Status	4	Warning Order Code
2	Warning Code		
3	Warning Code Extended		

**Device Status**

Open
Closed
SD electrical trip
SDE electrical trip
Not charged
Charged
Not ready to close
Ready to close
Reserved
Chassis connected position
Chassis disconnected position
Chassis test position
-
-
-
-

# HWCIRCUITBREAKER - Hardwired Circuit Breaker

## What's in This Chapter

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Control/Supervision Relationship .....	68
Tags .....	68
Genies .....	69
Faceplates .....	69

## Overview

This chapter describes the Supervision services provided by the HWCIRCUITBREAKER.

## Supervision Functions

### Description

Core resources provide the following monitoring and operation functions:  
Resetting and device status monitoring.

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

## Control/Supervision Relationship

### Description

When the Supervision component for Hardwired circuit breaker is implemented through the `$CircuitBreakerHW` control module template, it is the *HWCIRCUITBREAKER* Control resource that provides data.

The data is created from the corresponding Control templates and shared through interfaces. This allows the necessary tags with the appropriate syntax to be generated in the databases of the Supervision Participant.

For a description of this Control resource,.

## Tags

### Tag Syntax

Refer to *Genie Control Module Name*, page 32.

### Variable Tags

The table describes the variable tags that are managed by Supervision components:



Name	Type	Description
CM name_HWCB_AD1_0	INT	Information code
CM name_HWCB_AD1_1	INT	Fail Code 0
CM name_HWCB_AD1_2	INT	Fail Code 1
CM name_HWCB_AD1_3	INT	Fail Code 2
CM name_HWCB_DD1_WORD	UINT	Device status
CM name_HWCB_DC1_WORD	UINT	Commands
CM name_HWCB_DEVPUB_STW	UINT	Status word

## Advanced Alarm Tags


The table describes the advanced alarm tags that are managed by Supervision components. It also indicates the expression that is configured in the Supervision components to read or write the corresponding bit of the status or configuration word:

Name	Expression	Description
CM name_HWCB_DEVPUB_FAIL	CM name_HWCB_DEVPUB_STW BitAND 0x0008	Inoperable device.
CM name_HWCB_DEVPUB_ALARM	CM name_HWCB_DEVPUB_STW BitAND 0x0010	Device alert.

## Genies

### Representation

The following table shows the genies representation of HWCIRCUITBREAKER:

Graphic Symbol	Genies Name	Facet Template Identifier
	hwcircuitbreaker_10	\$CircuitBreakerHW_CG

## Faceplates

### Overview

Clicking on hwcircuitbreaker\_10 genie during operation will give user access to the following tabs:

- Standard tabs:
  - Operator Tab
  - Analog Tab
  - Digital Tab

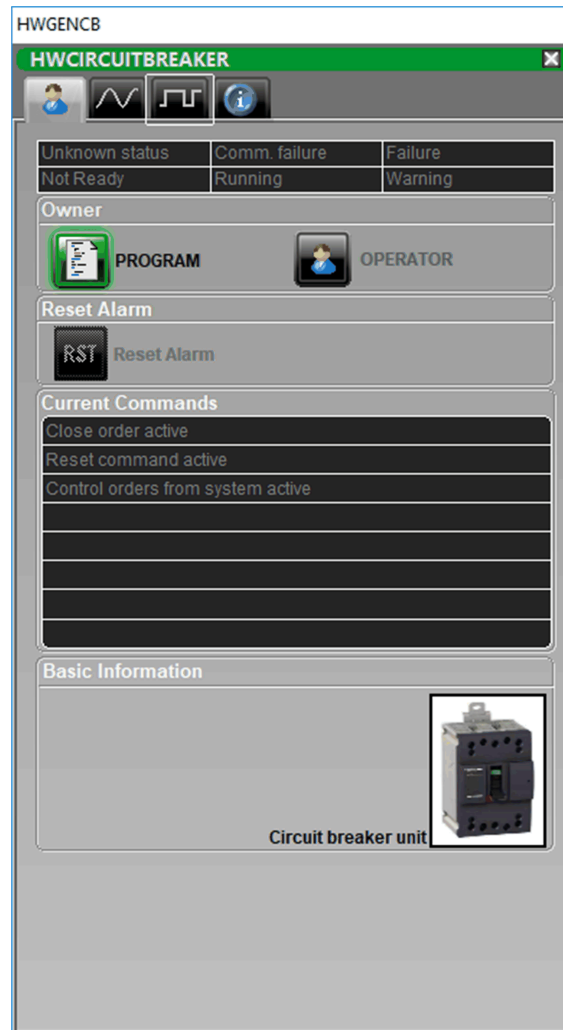
## Faceplate Description

At the beginning of this manual, you can find the description of:

- The color convention, page 30 that is used to display data on the faceplate.
- The buttons, page 36 that appear on the different tabs.

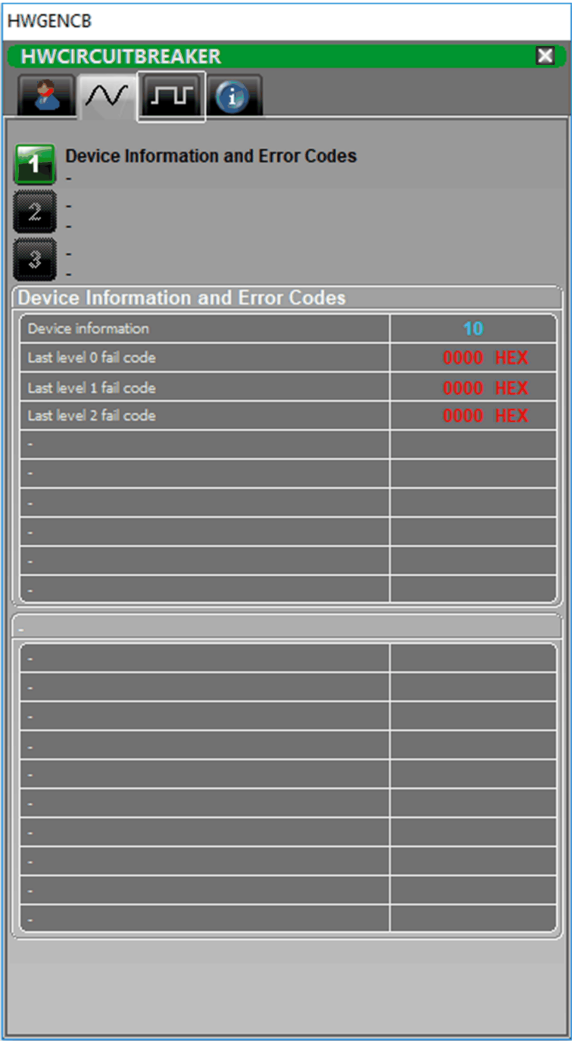
## Operator Tab

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



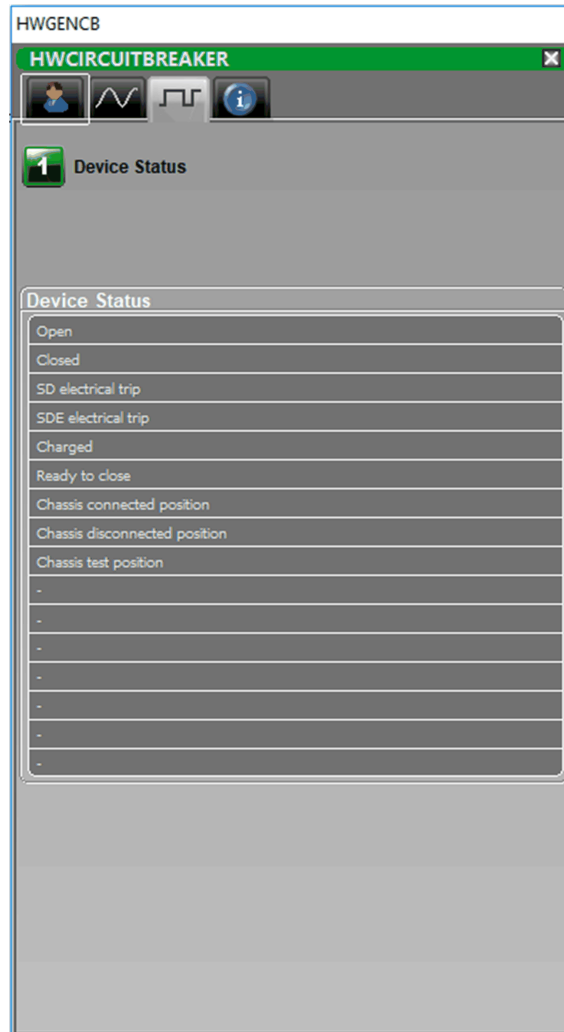
## Analog Tab

This tab provides information about the analog data provided by the device:



Digital Tab

This tab provides information about the digital data provided by the device:



# HWCOMPACT - Hardwired Compact Circuit Breaker

## What's in This Chapter

Supervision Functions .....	73
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Tags .....	73
Genies .....	74
Faceplates .....	74

## Overview

This chapter describes the Supervision services provided by the HWCOMPACT.

## Supervision Functions

### Description

Core resources provide the following monitoring and operation functions:  
Resetting and device status monitoring.

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

## Control/Supervision Relationship

### Description

When the Supervision component for Hardwired circuit breaker is implemented through the `$CompactHW` control module template, it is the `HWCIRCUITBREAKER` Control resource that provides data.

The data is created from the corresponding Control templates and shared through interfaces. This allows the necessary tags with the appropriate syntax to be generated in the databases of the Supervision Participant.

## Tags

### Tag Syntax

Refer to [Genie Control Module Name](#), page 32.

### Variable Tags

The table describes the variable tags that are managed by Supervision components

Name	Type	Description
CM name_HWCPACT_AD1_0	INT	Information code
CM name_HWCPACT_AD1_1	INT	Fail Code 0

Name	Type	Description
CM name_HWCPACT_AD1_2	INT	Fail Code 1
CM name_HWCPACT_AD1_3	INT	Fail Code 2
CM name_HWCPACT_DD1_WORD	UINT	Device status
CM name_HWCPACT_DC1_WORD	UINT	Commands
CM name_HWCPACT_DEVPUB_STW	UINT	Status word

## Advanced Alarm Tags


The table describes the advanced alarm tags that are managed by Supervision components. It also indicates the expression that is configured in the Supervision components to read or write the corresponding bit of the status or configuration word:

Name	Expression	Description
CM name_HWCPACT_DEVPUB_FAIL	CM name_HWCB_DEVPUB_STW BitAND 0x0008	Inoperable device.
CM name_HWCPACT_DEVPUB_ALARM	CM name_HWCB_DEVPUB_STW BitAND 0x0010	Device alert.

## Genies

### Representation

The following table shows the genies representation of HWCIRCUITBREAKER:

Graphic Symbol	Genies Name	Facet Template Identifier
	hwcompact_10	\$CompactHW_CG

## Faceplates

### Overview

Clicking on `hwcompact_10` genie during operation will give user access to the following tabs:

- Standard tabs:
  - Operator Tab
  - Analog Tab
  - Digital Tab

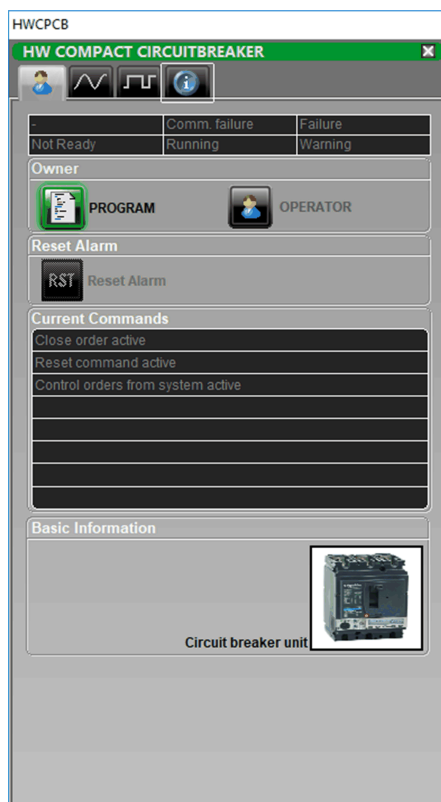
## Faceplate Description

At the beginning of this manual, you can find the description of:

- The color convention, page 30 that is used to display data on the faceplate.
- The buttons, page 36 that appear on the different tabs.

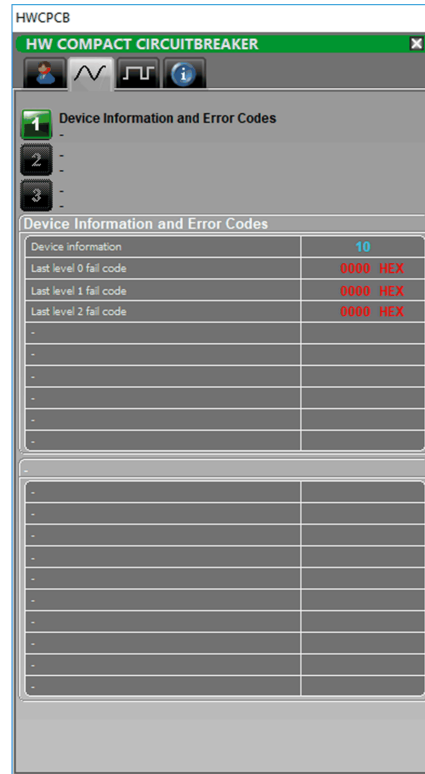
## Operator Tab

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



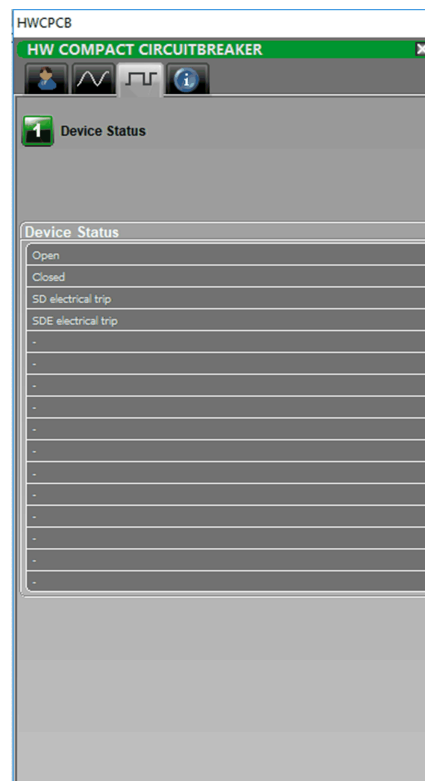
## Analog Tab

This tab provides information about the analog data provided by the device:



## Digital Tab

This tab provides information about the digital data provided by the device:





# HWMMASTERPACT - Hardwired Masterpact Circuit Breaker

## What's in This Chapter

Supervision Functions .....	77
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Faceplates .....	78

## Overview

This chapter describes the Supervision services provided by the HWMMASTERPACT.

## Supervision Functions

### Description

Core resources provide the following monitoring and operation functions:  
Resetting and device status monitoring.

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

## Control/Supervision Relationship

### Description

When the Supervision component for Hardwired circuit breaker is implemented through the `$MasterpactHW` control module template, it is the *HWCIRCUITBREAKER* Control resource that provides data.

The data is created from the corresponding Control templates and shared through interfaces. This allows the necessary tags with the appropriate syntax to be generated in the databases of the Supervision Participant.

## Tags

### Tag Syntax

Refer to *Genie Control Module Name*, page 32.

### Variable Tags

The table describes the variable tags that are managed by Supervision components

Name	Type	Description
CM name_HWMPACT_AD1_0	INT	Information code
CM name_HWMPACT_AD1_1	INT	Fail Code 0
CM name_HWMPACT_AD1_2	INT	Fail Code 1
CM name_HWMPACT_AD1_3	INT	Fail Code 2
CM name_HWMPACT_DD1_WORD	UINT	Device status
CM name_HWMPACT_DC1_WORD	UINT	Commands
CM name_HWMPACT_DEVPUB_STW	UINT	Status word

## Advanced Alarm Tags


The table describes the advanced alarm tags that are managed by Supervision components. It also indicates the expression that is configured in the Supervision components to read or write the corresponding bit of the status or configuration word:

Name	Expression	Description
CM name_HWMPACT_DEVPUB_FAIL	CM name_HWCB_DEVPUB_STW BitAND 0x0008	Inoperable device.
CM name_HWMPACT_DEVPUB_ALARM	CM name_HWCB_DEVPUB_STW BitAND 0x0010	Device alert.

## Genies

### Representation

The following table shows the genies representation of HWCIRCUITBREAKER:

Graphic Symbol	Genies Name	Facet Template Identifier
	hwmasterpact_10	\$MasterpactHW_CG

## Faceplates

### Overview

Clicking on hwmasterpact\_10 genie during operation will give user access to the following tabs:

- Standard tabs:
  - Operator Tab
  - Analog Tab
  - Digital Tab

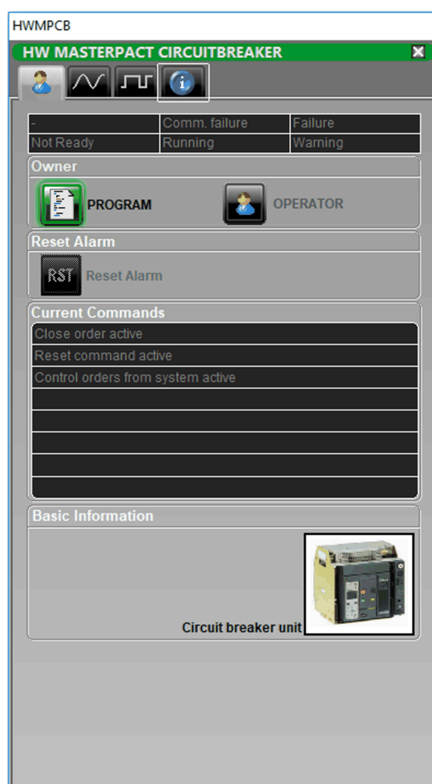
## Faceplate Description

At the beginning of this manual, you can find the description of:

- The color convention, page 30 that is used to display data on the faceplate.
- The buttons, page 36 that appear on the different tabs.

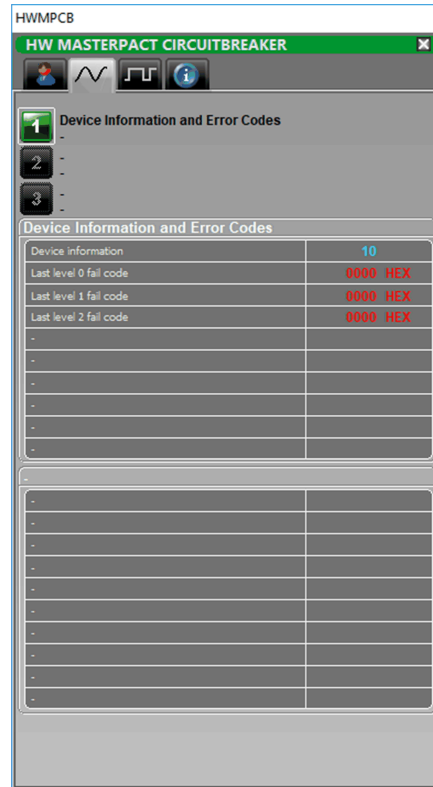
## Operator Tab

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



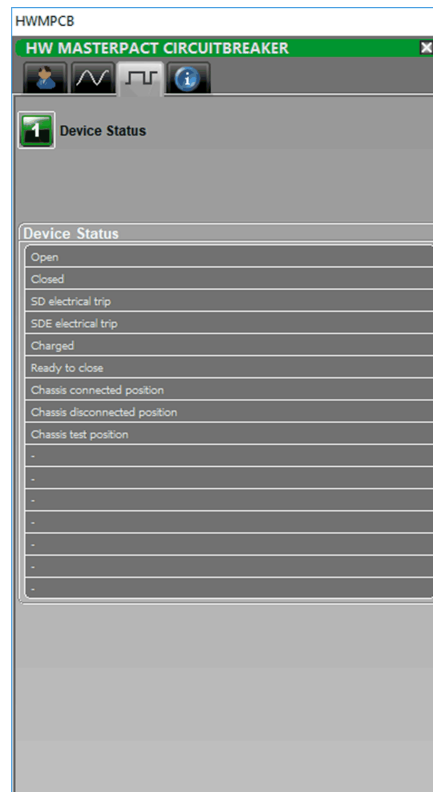
## Analog Tab

This tab provides information about the analog data provided by the device:



## Digital Tab

This tab provides information about the digital data provided by the device:



# Digital Protective Relays

## What's in This Part

Commonly Used Tags.....	82
MBSEPAM20CSTM and MBSEPAM20CB - Sepam 20 Controller.....	83
MBSEPAM40C - Sepam 40 Controller.....	88
MBSEPAM80C and SEPAM80E - Sepam 80 Controller (Modbus and I/O Scanning).....	90

## Overview

This part describes the components that provides the supervision functions for the digital protective relays.

These components do not reflect any specific installation.

### **▲ WARNING**

#### **LOSS OF CONTROL**

- Perform a Failure Mode and Effects Analysis (FMEA), or equivalent risk analysis, 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 them.
- Review the implications of communication link interruptions and take actions to mitigate them.
- Provide independent paths for control functions (for example, emergency stop, over-limit conditions, and error conditions) according to your risk assessment, and applicable codes and regulations.
- Apply local accident prevention and safety regulations and guidelines.<sup>1</sup>
- Test each implementation of a system for proper operation before placing it into service.

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

<sup>1</sup> 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.

# Commonly Used Tags

## What's in This Chapter

..... 82

## Variable Tags

The table describes the variable tags that are managed by Supervision components: for *MBSEPAM20CSTM*, *MBSEPAM20CB*, *MBSEPAM40C*, and *MBSEPAM80C*:

Name	Description
CM name_1_SEPAM_AD1_0	Information code.
CM name_1_SEPAM_AD4_6	Alert code.
CM name_1_SEPAM_AD4_7	<i>FailCode[0]</i>
CM name_1_SEPAM_AD4_8	<i>FailCode[1]</i>
CM name_1_SEPAM_AD4_9	<i>FailCode[2]</i>
CM name_1_SEPAM_DD1_WORD	Data status.
CM name_1_SEPAM_DC1_WORD	Commands.
CM name_1_SEPAM_DEVPUB_STW	Status word.
CM name_1_SEPAM_AD1_0	Information code.
CM name_1_SEPAM_AD4_6	Alert code.

## Advanced Alarm Tags

The table describes the advanced alarm tags that are managed by Supervision components for *MBSEPAM20CSTM*, *MBSEPAM20CB*, *MBSEPAM40C*, and *MBSEPAM80C*. It also indicates the expression that is configured in the Supervision components to read or write the corresponding bit of the status or configuration word:

Name	Expression	Description
CM name_SEPAM_DEVPUB_COMM	CM name_SEPAM_DEVPUB_STW BitAND 0x0020	Communication interruption.
CM name_SEPAM_DEVPUB_FAIL	CM name_SEPAM_DEVPUB_STW BitAND 0x0008	Inoperable device.
CM name_SEPAM_DEVPUB_ALARM	CM name_SEPAM_DEVPUB_STW BitAND 0x0010	Device alert.

# MBSEPAM20CSTM and MBSEPAM20CB - Sepam 20 Controller

## What's in This Chapter

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Genies .....	84
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## Overview

This chapter describes the services provided by the two variants of SEPAM20MB.

SEPAM20MB is classified into two variants:

- The MBSEPAM20CSTM DFB allows you to manage SEPAM 20 electrical network protection devices on a Modbus network for S (Substation), T (Transformer), M (Motor) variants of the product.
- The MBSEPAM20CB DFB allows you to manage SEPAM 20 electrical network protection devices on a Modbus network for B (Busbar) variant of the product.

## Supervision Functions

### Description

Core resources provide the following monitoring and operation functions: Resetting, opening/closing and device parameter monitoring.

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

## Control/Supervision Relationship

### Description

When the Supervision components for Sepam 20 management are implemented through the \$SEPAM20MBCSTM and \$SEPAM20MBCB control module template, it is the MBSEPAM20CSTM and MBSEPAM20CB Control resources that provide data.

The data is created from the corresponding Control templates and shared through interfaces. This allows the necessary tags with the appropriate syntax to be generated in the databases of the Supervision Participant.

For a description of this Control resource,.

## Tags

### Tag Syntax

Refer to Genie Control Module Name, page 32.

## Variable Tags

Refer to Commonly used tags, page 82.

## Advanced Alarm Tags

Refer to Commonly used tags, page 82.

## Trend Tags

No trend tags are managed by Supervision components for Sepam 20 management.

## Genies

## Representation

## Faceplates

## Overview

During operation, clicking a genie of the `sgc_devices` library allows you to display a faceplate with the following tabs:

- Standard tabs:
  - Operator Tab, page 85
  - Analog Tab, page 86
  - Digital Tab, page 87

## Faceplate Description

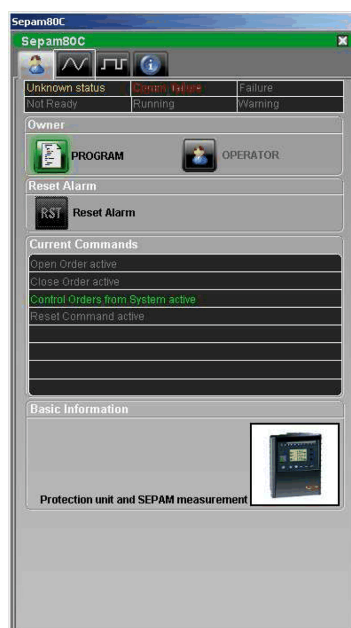
At the beginning of this manual, you can find the description of:

- The color convention, page 30 that is used to display data on the faceplate.
- The buttons, page 36 that appear on the different tabs.



## Operator Tab

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



## Analog Tab

This tab provides information about the analog data provided by the device:

[illegible]

## Digital Tab

This tab provides information about the digital data provided by the device:



# MBSEPAM40C - Sepam 40 Controller

## What's in This Chapter

Supervision Functions .....	88
Control/Supervision Relationship .....	88
Tags .....	88
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## Overview

This chapter describes the services provided by the MBSEPAM40C DFB.

## Supervision Functions

### Description

Core resources provide the following monitoring and operation functions:  
Resetting, opening/closing and device parameter monitoring.

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

## Control/Supervision Relationship

### Description

When the Supervision components for Sepam 40 management are implemented through the \$SEPAM40MB control module template, it is the *MBSEPAM40C* Control resource that provides data.

The data is created from the corresponding Control templates and shared through interfaces. This allows the necessary tags with the appropriate syntax to be generated in the databases of the Supervision Participant.

For a description of this Control resource,.

## Tags

### Tag Syntax

Refer to Genie Control Module Name, page 32.

### Variable Tags

Refer to Commonly used tags, page 82.

## Advanced Alarm Tags

Refer to Commonly used tags, page 82.

## Trend Tags

No trend tags are managed by Supervision components for Sepam 40 management.

## Genies

Refer to Genies, page 84.

## Faceplates

### Overview

During operation, clicking a genie of the `sgc_devices` library allows you to display a faceplate with the following tabs:

- Standard tabs:
  - Operator Tab, page 85
  - Analog Tab, page 86
  - Digital Tab, page 87

### Faceplate Description

At the beginning of this manual, you can find the description of:

- The color convention, page 30 that is used to display data on the faceplate.
- The buttons, page 36 that appear on the different tabs.

# MBSEPAM80C and SEPAM80E - Sepam 80 Controller (Modbus and I/O Scanning)

## What's in This Chapter

Supervision Functions .....	90
Control/Supervision Relationship .....	90
Tags .....	90
Genies .....	92
Faceplates .....	92

## Overview

This chapter describes the services provided by the MBSEPAM80C and SEPAM80E DFB.

## Supervision Functions

### Description

Core resources provide the following monitoring and operation functions:  
Resetting, opening/closing and device parameter monitoring.

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

## Control/Supervision Relationship

### Description

When the Supervision components for Sepam 80 management (Modbus serial) are implemented through the \$SEPAM80MB and \$SEPAM80E control module template, it is the MBSEPAM80C and SEPAM80E Control resource that provides data.

The data is created from the corresponding Control templates and shared through interfaces. This allows the necessary tags with the appropriate syntax to be generated in the databases of the Supervision Participant.

For a description of this Control resource,.

## Tags

### Tag Syntax

Refer to Genie Control Module Name, page 32.

### Variable Tags

Refer to Commonly used tags, page 82.

The table describes the variable tags that are managed by Supervision components of SEPAM80E:

Tag Name	Description
CM name_1_SEPAM_AD1_1	TS0-TS16.
CM name_1_SEPAM_AD1_2	TS17-TS32.
CM name_1_SEPAM_AD1_3	TS33-TS48.
CM name_1_SEPAM_AD1_4	TS49-TS64.
CM name_1_SEPAM_AD1_5	Phase current I1.
CM name_1_SEPAM_AD1_6	Phase current I2.
CM name_1_SEPAM_AD1_7	Phase current I3.
CM name_1_SEPAM_AD1_8	Residual current I0 sum.
CM name_1_SEPAM_AD1_9	Residual current measured.
CM name_1_SEPAM_AD2_0	Average phase current Im1.
CM name_1_SEPAM_AD2_1	Average phase current Im2.
CM name_1_SEPAM_AD2_2	Average phase current Im3.
CM name_1_SEPAM_AD2_3	Peak demand phase current Im1.
CM name_1_SEPAM_AD2_4	Peak demand phase current Im2.
CM name_1_SEPAM_AD2_5	Peak demand phase current Im3.
CM name_1_SEPAM_AD2_6	Phase-to-phase voltage U21.
CM name_1_SEPAM_AD2_7	Phase-to-phase voltage U32.
CM name_1_SEPAM_AD2_8	Phase-to-phase voltage U13.
CM name_1_SEPAM_AD2_9	Phase-to-neutral voltage V1.
CM name_1_SEPAM_AD3_0	Phase-to-neutral voltage V2.
CM name_1_SEPAM_AD3_1	Phase-to-neutral voltage V3.
CM name_1_SEPAM_AD3_2	Residual voltage V0.
CM name_1_SEPAM_AD3_3	Positive sequence voltage vd.
CM name_1_SEPAM_AD3_4	Negative sequence voltage Vi.
CM name_1_SEPAM_AD3_5	Frequency.
CM name_1_SEPAM_AD3_6	Active power P.
CM name_1_SEPAM_AD3_7	Reactive power Q.
CM name_1_SEPAM_AD3_8	Apparent power S.
CM name_1_SEPAM_AD3_9	Peak demand active power.
CM name_1_SEPAM_AD4_0	Peak demand reactive power.
CM name_1_SEPAM_AD4_1	Total power factor in use.
CM name_1_SEPAM_AD4_2	Positive active energy Ea+.
CM name_1_SEPAM_AD4_3	Negative active energy Ea-.
CM name_1_SEPAM_AD4_4	Positive reactive energy Er+.
CM name_1_SEPAM_AD4_5	Negative reactive energy Er-.

## Advanced Alarm Tags

Refer to Commonly used tags, page 82.

## Trend Tags

No trend tags are managed by Supervision components for Sepam 80 management.

## Genies

Refer to Genies, page 84.

## Faceplates

### Overview

During operation, clicking a genie of the `sgc_devices` library allows you to display a faceplate with the following tabs:

- Standard tabs:
  - Operator Tab, page 85
  - Analog Tab, page 86
  - Digital Tab, page 87

### Faceplate Description

At the beginning of this manual, you can find the description of:

- The color convention, page 30 that is used to display data on the faceplate.
- The buttons, page 36 that appear on the different tabs.



# Motor Controllers and Starters

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## Overview

This part describes the components that provides the functions for the motor controllers and starters.

These components do not reflect any specific installation.

### **▲ WARNING**

#### **LOSS OF CONTROL**

- Perform a Failure Mode and Effects Analysis (FMEA), or equivalent risk analysis, 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 them.
- Review the implications of communication link interruptions and take actions to mitigate them.
- Provide independent paths for control functions (for example, emergency stop, over-limit conditions, and error conditions) according to your risk assessment, and applicable codes and regulations.
- Apply local accident prevention and safety regulations and guidelines.<sup>1</sup>
- Test each implementation of a system for proper operation before placing it into service.

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

<sup>1</sup> 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.

# Commonly Used Tags

## What's in This Chapter

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## XML Template

### Variable Tags

The table describes the common variable tags of the XML template for *EIOSTESYST*, *ETESYST*, *EMESTESYST*, *MBTESYST*, *TESYSTCTL* and *PBTESYST*:

Name	Type	Description
<i>CM name_TESYST_AD2_0</i>	INT	Information code
<i>CM name_TESYST_DD1_WORD</i>	UINT	Status
<i>CM name_TESYST_DD2_WORD</i>	UINT	Inputs Map
<i>CM name_TESYST_DD3_WORD</i>	UINT	Outputs Map
<i>CM name_TESYST_AD1_0</i>	REAL	%FLA
<i>CM name_TESYST_DC1_WORD</i>	UINT	Commands
<i>CM name_TESYST_DEVPUB_STW</i>	UINT	Status

The table describes the common variable tags of the XML template for *MBTESYSUSCST*, *MBTESYSUSC*, *MBTESYSUC*, *TESYSUSCST*, *TESYSUCTL*, *TESYSUSC*, and *TESYSUC*:

Name	Type	Description
<i>CM name_TESYSU_AD1_0</i>	REAL	%FLA
<i>CM name_TESYSU_AD2_0</i>	INT	Information code
<i>CM name_TESYSU_AD3_0</i>	INT	Alert code
<i>CM name_TESYSU_AD3_1</i>	INT	<i>FailCode</i> 0
<i>CM name_TESYSU_AD3_2</i>	INT	<i>FailCode</i> 1
<i>CM name_TESYSU_AD3_3</i>	INT	<i>FailCode</i> 2
<i>CM name_TESYSU_DD1_WORD</i>	UINT	Status
<i>CM name_TESYSU_DC1_WORD</i>	UINT	Commands
<i>CM name_TESYSU_DEVPUB_STW</i>	UINT	Status

## Advanced Alarm Tags

The table describes the advanced alarm tags of the XML template for *EIOSTESYST*, *EIESYST*, *EMESTESYST*, *MBTESYST*, and *TESYSTCTL*:

Name	Expression	Description
<i>CM name_TESYST_DEVPUB_COMM</i>	<i>CM name_TESYST_DEVPUB_STW BitAND 0x0020</i>	Communication interruption
<i>CM name_TESYST_DEVPUB_FAIL</i>	<i>CM name_TESYST_DEVPUB_STW BitAND 0x0008</i>	Inoperable device
<i>CM name_TESYST_DEVPUB_ALARM</i>	<i>CM name_TESYST_DEVPUB_STW BitAND 0x0010</i>	Device alert

The table describes the advanced alarm tags of the XML template for *MBTESYSUSCST*, *MBTESYSUSC*, *MBTESYSUC*, *TESYSUSCST*, *TESYSUCTL*, *TESYSUSC*, and *TESYSUC*:

Name	Expression	Description
<i>CM name_TESYSU_DEVPUB_COMM</i>	<i>CM name_TESYSU_DEVPUB_STW BitAND 0x0020</i>	Communication interruption
<i>CM name_TESYSU_DEVPUB_FAIL</i>	<i>CM name_TESYSU_DEVPUB_STW BitAND 0x0008</i>	Inoperable device
<i>CM name_TESYSU_DEVPUB_ALARM</i>	<i>CM name_TESYSU_DEVPUB_STW BitAND 0x0010</i>	Device alert

## Trend Tags

The table describes the advanced trend tags of the XML template for *EIOSTESYST*, *EIESYST*, *EMESTESYST*, *MBTESYST*, and *TESYSTCTL*:

Name	Expression	Description
<i>CM name_TESYST_FL_A_T</i>	<i>CM name_TESYST_AD1_0</i>	Consumption

The table describes the trend tags of the XML template for *MBTESYSUSCST*, *MBTESYSUSC*, *MBTESYSUC*, *TESYSUSCST*, *TESYSUCTL*, *TESYSUSC*, and *TESYSUC*:

Name	Expression	Description
<i>CM name_TESYSU_FL_A_T</i>	<i>CM name_TESYSU_AD1_0</i>	Consumption

## EcoStruxure Process Expert Variables

The table describes the common variables in EcoStruxure Process Expert to establish communication with Citect SCADA for *EIOSTESYST*, *EIESYST*, *EMESTESYST*, *MBTESYST*, and *TESYSTCTL*:

Pin Name	Variable Name
<i>TESYST_ST</i>	<i>CM name_TESYST_ST</i>
<i>TESYST_CFG</i>	<i>CM name_TESYST_CFG</i>

The table describes the common variables in EcoStruxure Process Expert to establish communication with Citect SCADA for *MBTESYSUSCST*, *MBTESYSUSC*, *MBTESYSUC*, *TESYSUSCST*, *TESYSUCTL*, *TESYSUSC*, and *TESYSUC*:

<b>Pin Name</b>	<b>Variable Name</b>
<i>TESYSU_ST</i>	<i>CM name_TESYSU_ST</i>
<i>TESYSU_CFG</i>	<i>CM name_TESYSU_CFG</i>

# EIOTESYST and ETESYST - Tesys T Management (Normal and Fast I/O Scanning)

## What's in This Chapter

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Control/Supervision Relationship .....	97
Tags .....	97
Genies .....	99
Faceplates .....	99

## Overview

This chapter describes the Supervision resources and runtime services that are available for the TeSys T management with normal and fast I/O scanning.

## Supervision Functions

### Description

Core resources provide the following monitoring and operation functions: Device operation control, rotation direction selection, motor speed selection, diagnostic information management, resetting, device control and monitoring, and owner selection.

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

## Control/Supervision Relationship

### Description

When the Supervision components for TeSys T management (normal and fast I/O scanning) are implemented through the `$TesySTe` and `$TesySTeFast` control module template, it is the *EIOTESYST* and *ETESYST* Control resource that provides data.

The data is created from the corresponding Control templates and shared through interfaces. This allows the necessary tags with the appropriate syntax to be generated in the databases of the Supervision Participant.

For a description of this Control resource,.

## Tags

### Tag Syntax

Refer to Genie Control Module Name, page 32.

## Variable Tags

Refer to Commonly Used Tags, page 94.

The table describes the variable tags that are managed by Supervision components:

Supervision Component	Tag Name	Description
EIOSTESYST	CM name_1_TESYST_AD1_1	Ground current.
	CM name_1_TESYST_AD1_2	Frequency.
	CM name_1_TESYST_AD1_3	Thermal capacity.
	CM name_1_TESYST_AD1_4	Current phase.
	CM name_1_TESYST_AD1_5	Starts count.
	CM name_1_TESYST_AD1_6	Power factor.
	CM name_1_TESYST_AD1_7	Average voltage.
	CM name_1_TESYST_AD1_8	Voltage L3 to L1.
	CM name_1_TESYST_AD1_9	Voltage L1 to L2.
	CM name_1_TESYST_AD2_1	Voltage L2 to L3.
	CM name_1_TESYST_AD2_2	Voltage imbalance.
	CM name_1_TESYST_AD2_3	Active power.
	CM name_1_TESYST_AD2_4	Reactive power.
	CM name_1_TESYST_AD2_5	Current L1.
	CM name_1_TESYST_AD2_6	Current L2.
	CM name_1_TESYST_AD2_7	Current L3.
	CM name_1_TESYST_AD2_8	Temperature.
	CM name_1_TESYST_AD2_9	Average current.
	CM name_1_TESYST_AD3_0	Current L1.
	CM name_1_TESYST_AD3_1	Current L2.
	CM name_1_TESYST_AD3_2	Current L3.
	CM name_1_TESYST_AD3_3	Ground current.
	CM name_1_TESYST_AD3_4	Motor temperature.
	CM name_1_TESYST_AD3_5	Motor temperature.
	CM name_1_TESYST_AD3_6	Last start current.
	CM name_1_TESYST_AD3_7	Last start duration.
ETESYST	CM name_1_TESYST_AD4_0	Alert Code.
	CM name_1_TESYST_AD4_1	FailCode[0]
	CM name_1_TESYST_AD4_2	FailCode[1]
	CM name_1_TESYST_AD4_3	FailCode[2]
CM name refers to the block name.		

## Advanced Alarm Tags

Refer to Commonly Used Tags, page 94.

## Trend Tags

Refer to Commonly Used Tags, page 94.

## Genies

## Representation

## Faceplates

## Overview

During operation, clicking a genie of the `sgc_devices` library allows you to display a faceplate with the following tabs:

- Standard tabs:
  - Operator Tab, page 100
  - Analog Tab, page 101
  - Digital Tab, page 102

## Faceplate Description

At the beginning of this manual, you can find the description of:

- The color convention, page 30 that is used to display data on the faceplate.
- The buttons, page 36 that appear on the different tabs.

# Operator Tab

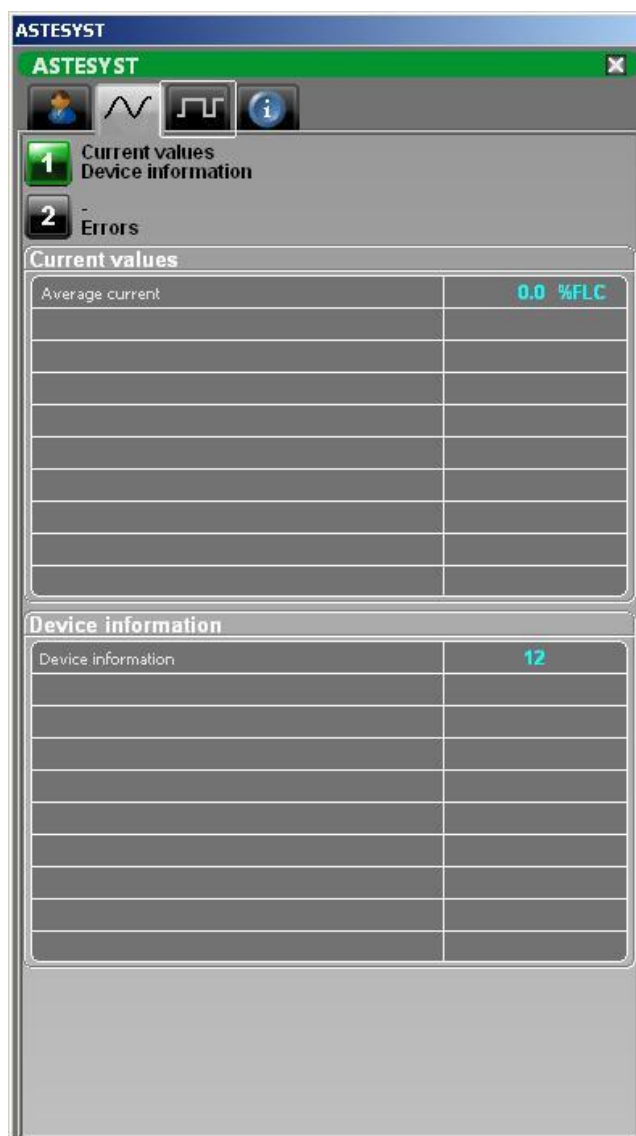
This tab provides information about the operator actions and the device information:





## Analog Tab

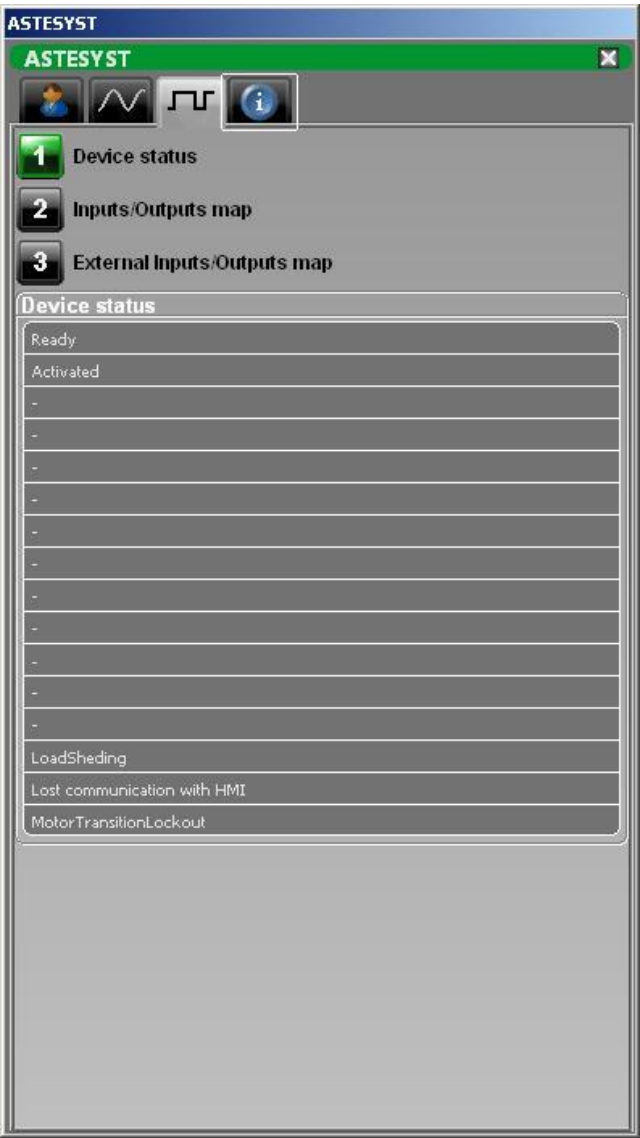
This tab provides information about the analog data provided by the device:



**NOTE:** Applicable only for *TeSys T* profile devices.

# Digital Tab

This tab provides information about the digital data provided by the device:



# EMESTESYST - Tesys T Motor Management Controller (Ethernet Messaging)

## What's in This Chapter

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## Overview

This chapter describes the services provided by the `EMESTESYST` DFB.

## Supervision Functions

### Description

Core resources provide the following monitoring and operation functions: Device operation control, rotation direction selection, motor speed selection, diagnostic information management, resetting, device control and monitoring, and owner selection.

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

## Control/Supervision Relationship

### Description

When the Supervision components for TeSys T management (Ethernet explicit messaging) are implemented through the `$TeSysTEM` control module template, it is the `EMESTESYST` Control resource that provides data.

The data is created from the corresponding Control templates and shared through interfaces. This allows the necessary tags with the appropriate syntax to be generated in the databases of the Supervision Participant.

For a description of this Control resource,.

## Tags

### Tag Syntax

Refer to Genie Control Module Name, page 32.

### Variable Tags

Refer to Commonly Used Tags, page 94.

## Advanced Alarm Tags

Refer to Commonly Used Tags, page 94.

## Trend Tags

Refer to Commonly Used Tags, page 94.

## Genies

Refer to Genies, page 99.

## Faceplates

### Overview

During operation, clicking a genie of the `sgc_devices` library allows you to display a faceplate with the following tabs:

- Standard tabs:
  - Operator Tab, page 100
  - Analog Tab, page 101
  - Digital Tab, page 102

### Faceplate Description

At the beginning of this manual, you can find the description of:

- The color convention, page 30 that is used to display data on the faceplate.
- The buttons, page 36 that appear on the different tabs.

# MBTESYST - Tesys T Motor Management Controller (Modbus)

## What's in This Chapter

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Control/Supervision Relationship .....	105
Tags .....	105
Genies .....	106
Faceplates .....	106

## Overview

This chapter describes the services provided by the MBTESYST DFB.

## Supervision Functions

### Description

Core resources provide the following monitoring and operation functions: Device operation control, rotation direction selection, motor speed selection, diagnostic information management, resetting, device control and monitoring, and owner selection.

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

## Control/Supervision Relationship

### Description

When the Supervision components for TeSys T management (Modbus serial) are implemented through the \$TesySTMB control module template, it is the MBTESYST Control resource that provides data.

The data is created from the corresponding Control templates and shared through interfaces. This allows the necessary tags with the appropriate syntax to be generated in the databases of the Supervision Participant.

For a description of this Control resource,.

## Tags

### Tag Syntax

Refer to Genie Control Module Name, page 32.

### Variable Tags

Refer to Commonly Used Tags, page 94.

## Advanced Alarm Tags

Refer to Commonly Used Tags, page 94.

## Trend Tags

Refer to Commonly Used Tags, page 94.

## Genies

Refer to Genies, page 99.

## Faceplates

### Overview

During operation, clicking a genie of the `sgc_devices` library allows you to display a faceplate with the following tabs:

- Standard tabs:
  - Operator Tab, page 100
  - Analog Tab, page 101
  - Digital Tab, page 102

### Faceplate Description

At the beginning of this manual, you can find the description of:

- The color convention, page 30 that is used to display data on the faceplate.
- The buttons, page 36 that appear on the different tabs.

# TESYSTCTL - Tesys T Motor Management System (Advantys)

## What's in This Chapter

Supervision Functions .....	107
Control/Supervision Relationship .....	107
Tags .....	107
Genies .....	108
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## Overview

This chapter describes the services provided by the `TESYSTCTL` DFB.

## Supervision Functions

### Description

Core resources provide the following monitoring and operation functions: Device operation control, rotation direction selection, motor speed selection, diagnostic information management, resetting, device control and monitoring, and owner selection.

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

## Control/Supervision Relationship

### Description

When the Supervision components for TeSys T management (Advantys STB) are implemented through the `$TesysTAS` control module template, it is the `TESYSTCTL` Control resource that provides data.

The data is created from the corresponding Control templates and shared through interfaces. This allows the necessary tags with the appropriate syntax to be generated in the databases of the Supervision Participant.

For a description of this Control resource,.

## Tags

### Tag Syntax

Refer to Genie Control Module Name, page 32.

### Variable Tags

Refer to Commonly Used Tags, page 94.

## Advanced Alarm Tags

Refer to Commonly Used Tags, page 94.

## Trend Tags

Refer to Commonly Used Tags, page 94.

## Genies

Refer to Genies, page 99.

## Faceplates

### Overview

During operation, clicking a genie of the `sgc_devices` library allows you to display a faceplate with the following tabs:

- Standard tabs:
  - Operator Tab, page 100
  - Analog Tab, page 101
  - Digital Tab, page 102

### Faceplate Description

At the beginning of this manual, you can find the description of:

- The color convention, page 30 that is used to display data on the faceplate.
- The buttons, page 36 that appear on the different tabs.



# PBTESYST - Tesys T Motor Management Controller (Profibus)

## What's in This Chapter

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Faceplates .....	111

## Overview

This chapter describes the services provided by the PBTESYST DFB.

## Supervision Functions

### Description

Core resources provide the following monitoring and operation functions: Device operation control, rotation direction selection, motor speed selection, diagnostic information management, resetting, device control and monitoring, and owner selection.

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

## Control/Supervision Relationship

### Description

When the Supervision components for TeSys T management (normal I/O scanning) are implemented through the \$TesySTPB control module template, it is the PBTESYST Control resource that provides data.

The data is created from the corresponding Control templates and shared through interfaces. This allows the necessary tags with the appropriate syntax to be generated in the databases of the Supervision Participant.

For a description of this Control resource,.

## Tags

### Tag Syntax

Refer to Genie Control Module Name, page 32.

### Variable Tags

The table describes the variable tags that are managed by Supervision components for TESYSTPB:

NAME	Description
CM name_TESYSTPB_AD1_0	Average value of current ratio in %FLC.
CM name_TESYSTPB_AD2_0	Information code.
CM name_TESYSTPB_DD1_WORD	Status.
CM name_TESYSTPB_DD2_WORD	Inputs map.
CM name_TESYSTPB_DD3_WORD	Inputs/Outputs map.
CM name_TESYSTPB_DC1_WORD	Commands.
CM name_TESYSTPB_DEVPUB_STW	Status.

The table describes the variable tags that are managed by Supervision components:

Tag Name	Description
CM name_1_TESYSTPB_AD4_0	Alert code
CM name_1_TESYSTPB_AD4_1	FailCode[0]
CM name_1_TESYSTPB_AD4_2	FailCode[1]
CM name_1_TESYSTPB_AD4_3	FailCode[2]
CM name refers to the block name.	

## Advanced Alarm Tags

The table describes the advanced alarm tags that are managed by Supervision components for *PBTESYST*. It also indicates the expression that is configured in the Supervision components to read or write the corresponding bit of the status or configuration word:

Name	Expression	Description
CM name_TESYSTPB_DEVPUB_COMM	CM name_TESYSTPB_DEVPUB_STW BitAND 0x0020	Communication interruption.
CM name_TESYSTPB_DEVPUB_FAIL	CM name_TESYSTPB_DEVPUB_STW BitAND 0x0008	Inoperable device.
CM name_TESYSTPB_DEVPUB_ALARM	CM name_TESYSTPB_DEVPUB_STW BitAND 0x0010	Device alert.

## Trend Tags

The table describes the trend tags that are managed by Supervision for *PBTESYST*:

Tag Name	Description	Expression
CM name_1_TESYSTPB_AD1_0	Average value of current ratio in %FLC.	CM name_1_TESYSTPB_AD1_0
CM name refers to the block name.		

# Genies

## Representation

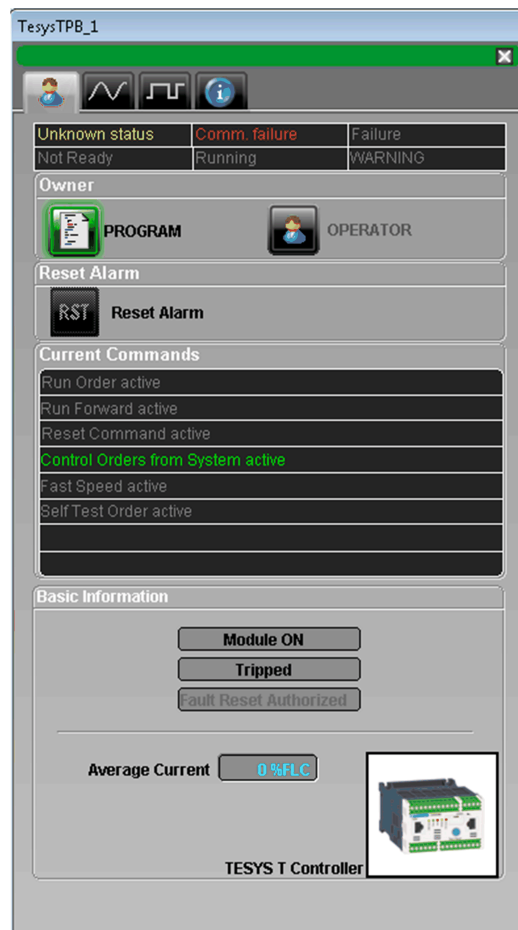
## Faceplates

## Overview

During operation, clicking a genie of the `sgc_devices` library allows you to display a faceplate with the following tabs:

## Operator Tab

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



## Analog Tab

This tab provides information about the analog data provided by the device:

TesysTPB\_1

1

Current values

2

Errors

Device information

Average Current

0.0 %FLC

-

-

-

-

-

-

-

-

Device information

Device information

12

-

-

-

-

-

-

-

-

## Digital Tab

This tab provides information about the digital data provided by the device:



## Faceplate Description

At the beginning of this manual, you can find the description of:

- The color convention, page 30 that is used to display data on the faceplate.
- The buttons, page 36 that appear on the different tabs.

# MBTESYSUSCST - Tesys U Standard Starter (Modbus)

## What's in This Chapter

Supervision Functions .....	114
Control/Supervision Relationship .....	114
Tags .....	114
Genies .....	115
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## Overview

This chapter describes the services provided by the MBTESYSUSCST DFB.

## Supervision Functions

### Description

Core resources provide the following monitoring and operation functions: Device operation control, diagnostic information management, resetting, device control and monitoring, and owner selection.

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

## Control/Supervision Relationship

### Description

When the Supervision components for TeSys U standard starter management (Modbus serial) are implemented through the \$*TesysUStdStMB* control module template, it is the *MBTESYSUSCST* Control resource that provides data.

The data is created from the corresponding Control templates and shared through interfaces. This allows the necessary tags with the appropriate syntax to be generated in the databases of the Supervision Participant.

For a description of this Control resource,.

## Tags

### Tag Syntax

Refer to Genie Control Module Name, page 32.

### Variable Tags

Refer to Commonly Used Tags, page 94.

## Advanced Alarm Tags

Refer to Commonly Used Tags, page 94.

## Trend Tags

Refer to Commonly Used Tags, page 94.

## Genies

## Representation

## Faceplates

## Overview

During operation, clicking a genie of the `sgc_devices` library allows you to display a faceplate with the following tabs:

- Standard tabs:
  - Operator Tab, page 116
  - Analog Tab, page 117
  - Digital Tab, page 118

## Faceplate Description

At the beginning of this manual, you can find the description of:

- The color convention, page 30 that is used to display data on the faceplate.
- The buttons, page 36 that appear on the different tabs.

# Operator Tab

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

ASTESYSUCAD

ASTESYSUCAD



Unknown status	Comm. failure	Failure
Not Ready	Running	WARNING

Owner

PROGRAM

OPERATOR

Reset Alarm

Reset Alarm

Current Commands

Run Order active

Run Forward active

Reset Command active

Control Orders from System active

Basic Information

Module Ready (ON)

Tripped

Fault Reset Authorized

Outputs

OA1

OA3

LO1

Current average

0 %FLA



TESYS U starter/controller



## Analog Tab

This tab provides information about the analog data provided by the device:

**ASTESYSUCAD**

**ASTESYSUCAD**

1 Current values  
Device information

2 Errors

**Current values**

Average current	0 %FLA

**Device information**

Device information	12

# Digital Tab

This tab provides information about the digital data provided by the device:



# MBTESYSUSC - Tesys U Advanced Starter and Multifunction Starter (Modbus)

## What's in This Chapter

Supervision Functions .....	119
Control/Supervision Relationship .....	119
Tags .....	119
Genies .....	120
Faceplates .....	120

## Overview

This chapter describes the services provided by the MBTESYSUSC DFB.

## Supervision Functions

### Description

Core resources provide the following monitoring and operation functions: Device operation control, diagnostic information management, resetting, device control and monitoring, and owner selection.

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

## Control/Supervision Relationship

### Description

When the Supervision components for TeSys U advanced and multifunction starter management (Modbus serial) are implemented through the `$TesysUAdStMB` and `$TesysUMfStMB` control module templates, it is the *MBTESYSUSC* Control resource that provides data.

The data is created from the corresponding Control templates and shared through interfaces. This allows the necessary tags with the appropriate syntax to be generated in the databases of the Supervision Participant.

For a description of this Control resource,.

## Tags

### Tag Syntax

Refer to Genie Control Module Name, page 32.

### Variable Tags

Refer to Commonly Used Tags, page 94.

## Advanced Alarm Tags

Refer to Commonly Used Tags, page 94.

## Trend Tags

Refer to Commonly Used Tags, page 94.

## Genies

Refer to Genies, page 115.

## Faceplates

### Overview

During operation, clicking a genie of the `sgc_devices` library allows you to display a faceplate with the following tabs:

- Standard tabs:
  - Operator Tab, page 116
  - Analog Tab, page 117
  - Digital Tab, page 118

### Faceplate Description

At the beginning of this manual, you can find the description of:

- The color convention, page 30 that is used to display data on the faceplate.
- The buttons, page 36 that appear on the different tabs.

# MBTESYSUC - Tesys U Advanced and Multifunction Controller (Modbus)

## What's in This Chapter

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## Overview

This chapter describes the services provided by the MBTESYSUC DFB.

## Supervision Functions

### Description

Core resources provide the following monitoring and operation functions: Device operation control, diagnostic information management, resetting, device control and monitoring, and owner selection.

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

## Control/Supervision Relationship

### Description

When the Supervision components for TeSys U advanced controller management (Modbus serial) are implemented through the `$TesysUAdCtlMB` control module template, it is the *MBTESYSUC* Control resource that provides data.

The data is created from the corresponding Control templates and shared through interfaces. This allows the necessary tags with the appropriate syntax to be generated in the databases of the Supervision Participant.

For a description of this Control resource,.

## Tags

### Tag Syntax

Refer to Genie Control Module Name, page 32.

### Variable Tags

Refer to Commonly Used Tags, page 94.

## Advanced Alarm Tags

Refer to Commonly Used Tags, page 94.

## Trend Tags

Refer to Commonly Used Tags, page 94.

## Genies

Refer to Genies, page 115.

## Faceplates

### Overview

During operation, clicking a genie of the `sgc_devices` library allows you to display a faceplate with the following tabs:

- Standard tabs:
  - Operator Tab, page 116
  - Analog Tab, page 117
  - Digital Tab, page 118

### Faceplate Description

At the beginning of this manual, you can find the description of:

- The color convention, page 30 that is used to display data on the faceplate.
- The buttons, page 36 that appear on the different tabs.

# TESYSUSCST - Tesys U Standard Starter (Advantys)

## What's in This Chapter

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## Overview

This chapter describes the services provided by the TESYSUSCST DFB.

## Supervision Functions

### Description

Core resources provide the following monitoring and operation functions: Device operation control, diagnostic information management, resetting, device control and monitoring, and owner selection.

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

## Control/Supervision Relationship

### Description

When the Supervision components for TeSys U standard starter management (Advantys STB) are implemented through the `$TesysUStdStAS` control module template, it is the *TESYSUSCST* Control resource that provides data.

The data is created from the corresponding Control templates and shared through interfaces. This allows the necessary tags with the appropriate syntax to be generated in the databases of the Supervision Participant.

For a description of this Control resource,.

## Tags

### Tag Syntax

Refer to Genie Control Module Name, page 32.

### Variable Tags

Refer to Commonly Used Tags, page 94.

## Advanced Alarm Tags

Refer to Commonly Used Tags, page 94.

## Trend Tags

Refer to Commonly Used Tags, page 94.

## Genies

Refer to Genies, page 115.

## Faceplates

### Overview

During operation, clicking a genie of the `sgc_devices` library allows you to display a faceplate with the following tabs:

- Standard tabs:
  - Operator Tab, page 191
  - Analog Tab, page 193
  - Digital Tab, page 194

### Faceplate Description

At the beginning of this manual, you can find the description of:

- The color convention, page 30 that is used to display data on the faceplate.
- The buttons, page 36 that appear on the different tabs.



# TESYSUCTL - Tesys U Advanced Starter (Advantys)

## What's in This Chapter

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## Overview

This chapter describes the services provided by the TESYSUCTL DFB.

## Supervision Functions

### Description

Core resources provide the following monitoring and operation functions: Device operation control, diagnostic information management, resetting, device control and monitoring, and owner selection.

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

## Control/Supervision Relationship

### Description

When the Supervision components for TeSys U advanced starter management (Advantys STB) are implemented through the `$TesysUAdvStAS` control module template, it is the *TESYSUSCTL* Control resource that provides data.

The data is created from the corresponding Control templates and shared through interfaces. This allows the necessary tags with the appropriate syntax to be generated in the databases of the Supervision Participant.

For a description of this Control resource,.

## Tags

### Tag Syntax

Refer to Genie Control Module Name, page 32.

### Variable Tags

Refer to Commonly Used Tags, page 94.

## Advanced Alarm Tags

Refer to Commonly Used Tags, page 94.

## Trend Tags

Refer to Commonly Used Tags, page 94.

## Genies

Refer to Genies, page 115.

## Faceplates

### Overview

During operation, clicking a genie of the `sgc_devices` library allows you to display a faceplate with the following tabs:

- Standard tabs:
  - Operator Tab, page 191
  - Analog Tab, page 193
  - Digital Tab, page 194

### Faceplate Description

At the beginning of this manual, you can find the description of:

- The color convention, page 30 that is used to display data on the faceplate.
- The buttons, page 36 that appear on the different tabs.

# TESYSUSC - Tesys U Multifunction Starter (Advantys)

## What's in This Chapter

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## Overview

This chapter describes the services provided by the TESYSUSC DFB.

## Supervision Functions

### Description

Core resources provide the following monitoring and operation functions: Device operation control, diagnostic information management, resetting, device control and monitoring, and owner selection.

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

## Control/Supervision Relationship

### Description

When the Supervision components for TeSys U multifunction starter management (Advantys STB) are implemented through the `$TesysUMfStAS` control module template, it is the *TESYSUSC* Control resource that provides data.

The data is created from the corresponding Control templates and shared through interfaces. This allows the necessary tags with the appropriate syntax to be generated in the databases of the Supervision Participant.

For a description of this Control resource,.

## Tags

### Tag Syntax

Refer to Genie Control Module Name, page 32.

### Variable Tags

Refer to Commonly Used Tags, page 94.

## Advanced Alarm Tags

Refer to Commonly Used Tags, page 94.

## Trend Tags

Refer to Commonly Used Tags, page 94.

## Genies

Refer to Genies, page 115.

## Faceplates

### Overview

During operation, clicking a genie of the `sgc_devices` library allows you to display a faceplate with the following tabs:

- Standard tabs:
  - Operator Tab, page 116
  - Analog Tab, page 117
  - Digital Tab, page 118

### Faceplate Description

At the beginning of this manual, you can find the description of:

- The color convention, page 30 that is used to display data on the faceplate.
- The buttons, page 36 that appear on the different tabs.

# TESYSUC - Tesys U Advanced and Multifunction Controller (Advantys)

## What's in This Chapter

Supervision Functions .....	129
Control/Supervision Relationship .....	129
Tags .....	129
Genies .....	130
Faceplates .....	130

## Overview

This chapter describes the services provided by the TESYSUC DFB.

## Supervision Functions

### Description

Core resources provide the following monitoring and operation functions: Device operation control, diagnostic information management, resetting, device control and monitoring, and owner selection.

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

## Control/Supervision Relationship

### Description

When the Supervision components for TeSys U advanced controller management (Advantys STB) are implemented through the `$TesysUAdCtlAS` control module template, it is the *TESYSUC* Control resource that provides data.

The data is created from the corresponding Control templates and shared through interfaces. This allows the necessary tags with the appropriate syntax to be generated in the databases of the Supervision Participant.

For a description of this Control resource,.

## Tags

### Tag Syntax

Refer to Genie Control Module Name, page 32.

### Variable Tags

Refer to Commonly Used Tags, page 94.

## Advanced Alarm Tags

Refer to Commonly Used Tags, page 94.

## Trend Tags

Refer to Commonly Used Tags, page 94.

## Genies

Refer to Genies, page 115.

## Faceplates

### Overview

During operation, clicking a genie of the `sgc_devices` library allows you to display a faceplate with the following tabs:

- Standard tabs:
  - Operator Tab, page 116
  - Analog Tab, page 117
  - Digital Tab, page 118

### Faceplate Description

At the beginning of this manual, you can find the description of:

- The color convention, page 30 that is used to display data on the faceplate.
- The buttons, page 36 that appear on the different tabs.

# Power Monitoring Devices

## What's in This Part

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## Overview

This part describes the components that provides the for the power monitoring devices.

These components do not reflect any specific installation.

### **⚠ WARNING**

#### **LOSS OF CONTROL**

- Perform a Failure Mode and Effects Analysis (FMEA), or equivalent risk analysis, 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 them.
- Review the implications of communication link interruptions and take actions to mitigate them.
- Provide independent paths for control functions (for example, emergency stop, over-limit conditions, and error conditions) according to your risk assessment, and applicable codes and regulations.
- Apply local accident prevention and safety regulations and guidelines.<sup>1</sup>
- Test each implementation of a system for proper operation before placing it into service.

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

<sup>1</sup> 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.

# Commonly Used Tags

## What's in This Chapter

Commonly Used Tags..... 132

# Commonly Used Tags

## Variable Tags

The table describes the common variable tags of the XML template for *MBPM700*, *MBPM800*, *MBPM9C*, *MBPM700*, *MBPM5350*, *PM800E*, *EMPM800*, *EMPM53xx* and *EMPM82xx*:

Name	Type	Description
<i>CM name_PM_AD1_0</i>	REAL	Apparent energy.
<i>CM name_PM_AD1_1</i>	REAL	Total Apparent power.
<i>CM name_PM_AD1_2</i>	REAL	Total power factor.
<i>CM name_PM_AD1_3</i>	REAL	Average current.
<i>CM name_PM_AD1_4</i>	REAL	Active energy.
<i>CM name_PM_AD1_5</i>	REAL	Reactive energy.
<i>CM name_PM_AD1_6</i>	REAL	Total active power.
<i>CM name_PM_AD1_7</i>	REAL	Total reactive power.
<i>CM name_PM_AD1_8</i>	REAL	Average L–L voltage.
<i>CM name_PM_AD1_9</i>	REAL	Average L–N voltage.
<i>CM name_PM_AD2_0</i>	REAL	Frequency.
<i>CM name_PM_AD2_1</i>	REAL	Current L1.
<i>CM name_PM_AD2_2</i>	REAL	Current L2.
<i>CM name_PM_AD2_3</i>	REAL	Current L3.
<i>CM name_PM_AD2_4</i>	REAL	Voltage L1–L2.
<i>CM name_PM_AD2_5</i>	REAL	Voltage L2–L3.
<i>CM name_PM_AD2_6</i>	REAL	Voltage L1–L3.
<i>CM name_PM_AD2_7</i>	REAL	Voltage L1–N.
<i>CM name_PM_AD2_8</i>	REAL	Voltage L2–N.
<i>CM name_PM_AD2_9</i>	REAL	Voltage L3–N.
<i>CM name_PM_AD3_0</i>	REAL	Active power L1.
<i>CM name_PM_AD3_1</i>	REAL	Active power L2.
<i>CM name_PM_AD3_2</i>	REAL	Active power L3.
<i>CM name_PM_AD3_3</i>	REAL	Apparent power L1.
<i>CM name_PM_AD3_4</i>	REAL	Apparent power L2.
<i>CM name_PM_AD3_5</i>	REAL	Apparent power L3.
<i>CM name_PM_AD3_6</i>	REAL	Reactive power L1.
<i>CM name_PM_AD3_7</i>	REAL	Reactive power L2.
<i>CM name_PM_AD3_8</i>	REAL	Reactive power L3.
<i>CM name_PM_AD4_0<sup>1</sup></i>	REAL	THD current L1.



Name	Type	Description
<i>CM name_PM_AD4_1</i> <sup>1</sup>	REAL	THD current L2.
<i>CM name_PM_AD4_2</i> <sup>1</sup>	REAL	THD current L3.
<i>CM name_PM_AD4_3</i> <sup>2</sup>	REAL	THD voltage L1 to neutral.
<i>CM name_PM_AD4_4</i> <sup>2</sup>	REAL	THD voltage L2 to neutral.
<i>CM name_PM_AD4_5</i> <sup>2</sup>	REAL	THD voltage L3 to neutral.
<i>CM name_PM_DC1_WORD</i>	UINT	Commands.
<i>CM name_PM_DEVPUB_STW</i>	UINT	Status.
1: Not applicable for <i>EMPM82xx</i> , <i>EMPM53xx</i> .		
1: Applicable only for <i>PM800E</i> .		

## Advanced Alarm Tags

The table describes the advanced alarm tags of the XML template for *MBPM700*, *MBPM800*, *MBPM1200*, *MBPM9C*, *EPM800*, *MBPM5350*, *EMPM800*, *PM800E*, *EMPM53xx* and *EMPM82xx*:

Name	Expression	Description
<i>CM name_PM_DEVPUB_COMM</i>	<i>CM name_ATV_DEVPUB_STW BitAND 0x0020</i>	Communication interruption.
<i>CM name_PM_DEVPUB_FAIL*</i>	<i>CM name_ATV_DEVPUB_STW BitAND 0x0008</i>	Inoperable device.
<i>CM name_PM_DEVPUB_ALARM*</i>	<i>CM name_ATV_DEVPUB_STW BitAND 0x0010</i>	Device alert.
*: Not applicable for <i>EMPM82xx</i>		

## EcoStruxure Process Expert Variables

The table describes the variables in EcoStruxure Process Expert to establish communication with Citect SCADA for *MBPM800*, *MBPM800*, *MBPM1200*, *MBPM9C*, *PM800E*, *MBPM5350*, *EMPM800*, *EMPM53xx* and *EMPM82xx*:

Pin name	Variable name
<i>PM_ST</i>	<i>CM name_PM_ST</i>
<i>PM_CFG</i>	<i>CM name_PM_CFG</i>
<i>PM_MEA</i>	<i>CM name_PM_MEA</i>

### NOTE:

- Analog Data - If the values from the EcoStruxure Process Expert is **-NaN** then the data displayed on the faceplate will be non numeric values.

For example, if the power meter is configured to measure single phase parameters, then the parameter value of **Voltage L-L average of three phase** will show **-NaN** in DFB and the value displayed on the faceplate will be **-1.\$**.

# MBPM700 - Power Meter 700 (Modbus)

## What's in This Chapter

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Control/Supervision Relationship .....	134
Tags .....	134
Genies .....	135
Faceplates .....	135

## Overview

This chapter describes the services provided by the MBPM700 DFB.

## Supervision Functions

### Description

Core resources provide the following monitoring and operation functions:  
Resetting and device parameter monitoring.

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

## Control/Supervision Relationship

### Description

When the Supervision components for Power Meter 710 management (Modbus serial) are implemented through the \$PM710MB control module template, it is the MBPM710 Control resource that provides data.

The data is created from the corresponding Control templates and shared through interfaces. This allows the necessary tags with the appropriate syntax to be generated in the databases of the Supervision Participant.

For a description of this Control resource,.

**NOTE:** MBPM710 is a deprecated control function.

## Tags

### Tag Syntax

Refer to Genie Control Module Name, page 32.

### Variable Tags

Refer to Commonly Used Tags.

## Advanced Alarm Tags

Refer to Commonly Used Tags.

## Trend Tags

Refer to Commonly Used Tags.

## Genies

## Representation

## Faceplates

### Overview

During operation, clicking a genie of the `sgc_devices` library allows you to display a faceplate with the following tabs:

- Standard tabs:
  - Operator Tab
  - Analog Tab
  - Digital Tab

### Faceplate Description

At the beginning of this manual, you can find the description of:

- The color convention, page 30 that is used to display data on the faceplate.
- The buttons, page 36 that appear on the different tabs.

## Operator Tab

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

The screenshot displays the MBPM710 Operator Tab interface. At the top, there is a title bar with 'MBPM710' and a close button. Below the title bar, there are four icons: a person, a waveform, a square wave, and an information icon. The main content area is divided into several sections:

- Status Section:** A table with three columns showing status information.
 

Unknown status	Comm. failure	Failure
Not Ready	Running	WARNING
- Owner Section:** Two buttons labeled 'PROGRAM' and 'OPERATOR' with corresponding icons.
- Reset Alarm Section:** A button labeled 'RST Reset Alarm'.
- Current Commands Section:** A list of commands, currently showing 'Reset Command active'.
- Basic Information Section:** A section containing various measurement data.
 

Energy		Power	
Active	0 kWh		0 kW
Apparent	0 kVAh		0 kVA
Reactive	0 kVARh		0 kVAR
AVG V L-L	0 V	<b>PM measurement unit</b> 	
AVG V L-N	0 V		
Avg I	0.00 A		
FactorPow	0.0000		

## Analog Tab

This tab provides information about the analog data provided by the device:

**Basic Data**

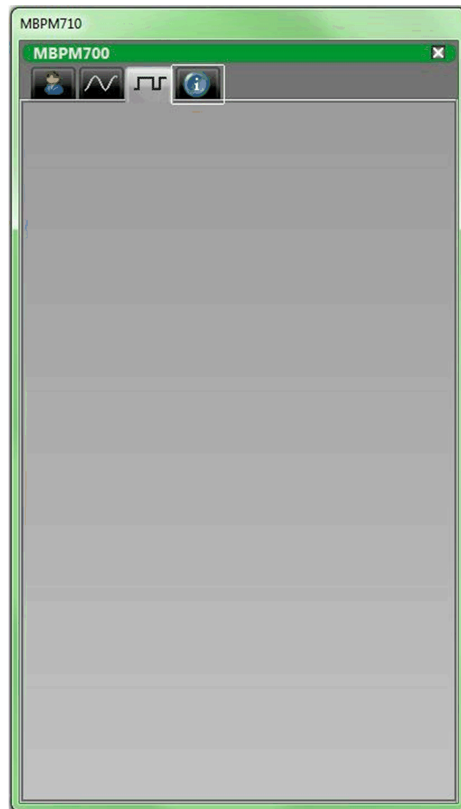
Apparent energy consumption	0.0 KVAh
Total apparent power	0.0 KVA
Total Power Factor	0.0000
Intensity 3 phases average	0.00 A
Active energy consumption	0.0 kWh
Reactive energy consumption	0.0 KVARh
Total Active Power	0.0 kW
Total reactive power	0.0 KVAR
Voltage L-L average of 3 Phases	0.0 V
Voltage L-N average of 3 Phases	0.0 V

**Advanced Data**

Frequency	0.00 Hz
Intensity current demand Phase 1	0.00 A
Intensity current demand Phase 2	0.00 A
Intensity current demand Phase 3	0.00 A
Voltage phase 1 and 2	0.0 V
Voltage phase 2 and 3	0.0 V
Voltage phase 1 and 3	0.0 V
Voltage phase 1 and N	0.0 V
Voltage phase 2 and N	0.0 V
Voltage phase 3 and N	0.0 V

## Digital Tab

There is no digital data available in MBPM700 control block to display in the **Digital** tab.



# EMPM53xx - Power Meter 53xx Series (Ethernet Messaging)

## What's in This Chapter

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Control/Supervision Relationship .....	139
Tags .....	139
Genies .....	140
Faceplates .....	140

## Overview

This chapter describes the services provided by the EMPM53xx DFB.

## Supervision Functions

### Description

Core resources provide the following monitoring and operation functions:  
Resetting and device parameter monitoring.

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

## Control/Supervision Relationship

### Description

When the Supervision components for Power Meter 53xx management (Modbus TCP/IP) are implemented through the \$PM53xxEM control module template, it is the *EMPM53xx* Control resource that provides data.

The data is created from the corresponding Control templates and shared through interfaces. This allows the necessary tags with the appropriate syntax to be generated in the databases of the Supervision Participant.

For a description of this Control resource,.

## Tags

### Tag Syntax

Refer to Genie Control Module Name, page 32.

### Variable Tags

Refer to commonly used tags, page 132.

The table describes the variable tags that are managed by Supervision components for *EMPM53xx*:

Name	Description
CM name_PM_AD3_9	Unbalance voltage line to line worst.
CM name_PM_AD4_0	Active power demand.
CM name_PM_AD4_1	Reactive power demand.
CM name_PM_AD4_2	Apparent power demand.
CM name_PM_AD4_3	Alarm code.
CM name_PM_AD4_4	Failcode [0].
CM name_PM_AD4_5	Failcode [1].
CM name_PM_AD4_6	Failcode [2].
CM name_PM_DC1_WORD	Commands.
CM name_PM_DEVPUB_STW	Status word.

## Advanced Alarm Tags

Refer to commonly used tags, page 132.

## Trend Tags

The table describes the trend tags that are managed by Supervision components and their expression for *EMPM53xx*:

Name	Expression	Description
CM name_1_PM_AD1_0	CM name_1_PM_AD1_0	Apparent energy.
CM name_1_PM_AD1_1	CM name_1_PM_AD1_1	Total apparent power.
CM name_1_PM_AD1_2	CM name_1_PM_AD1_2	Total power factor.
CM name_1_PM_AD1_3	CM name_1_PM_AD1_3	Average current.
CM name refers to the block name.		

## Genies

## Representation

## Faceplates

## Overview

During operation, clicking a genie of the `sgc_devices` library allows you to display a faceplate with the following tabs:

- Standard tabs:
  - Operator Tab
  - Analog Tab
  - Digital Tab



## Faceplate Description

At the beginning of this manual, you can find the description of:

- The color convention, page 30 that is used to display data on the faceplate.
- The buttons, page 36 that appear on the different tabs.

## Operator Tab

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

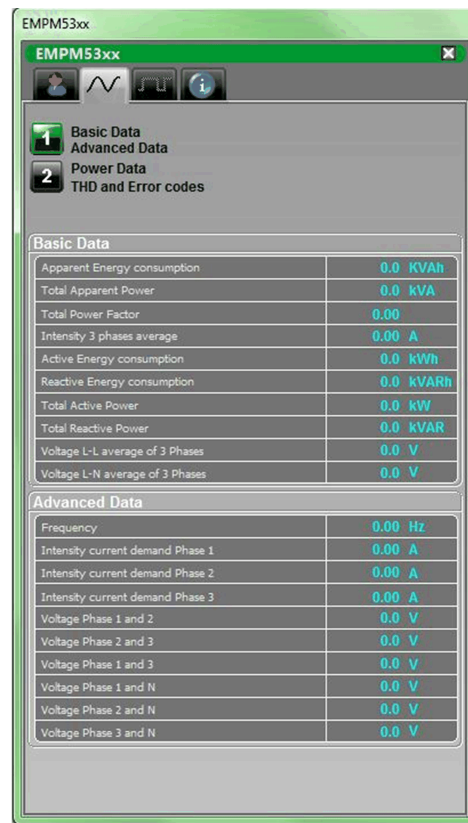
The screenshot displays the 'Operator' tab of the EMPM53xx interface. The window title is 'EMPM53xx\_0'. The main header shows 'EMPM53xx' with a close button. Below the header are three icons: a person, a waveform, and an information icon. The interface is divided into several sections:

- Status Section:** A table with three columns: 'Unknown status', 'Comm. failure', and 'Failure'. The values are 'Not Ready', 'Running', and 'WARNING' respectively.
- Owner Section:** Two buttons labeled 'PROGRAM' and 'OPERATOR'.
- Reset Alarm Section:** A button labeled 'RST' and 'Reset Alarm'.
- Current Commands Section:** A list of commands, with 'Reset Command active' at the top.
- Basic Information Section:** A table of energy and power measurements.
 

	Energy	Power
Active	20 kWh	2 kW
Apparent	243 kVAh	32 kVA
Reactive	242 kVARh	-32 kVAR
- AVG V L-L, AVG V L-N, Avg I, PowerFactor:** A section with four buttons showing average values: 400 V, 231 V, 46.23 A, and 0.0629.
- PM measurement unit:** A small image of the power meter device.

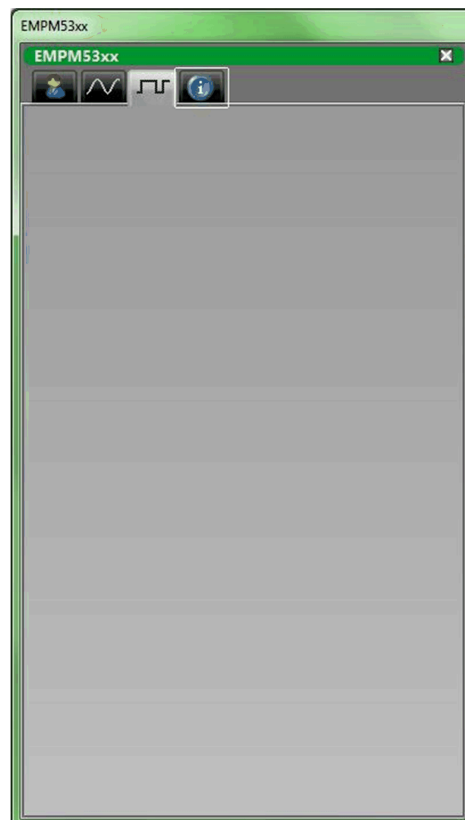
## Analog Tab

This tab provides information about the analog data provided by the device:



## Digital Tab

There is no digital data available in *EMPM53xx* control block to display in the **Digital** tab.



# EMPM82xx - Power Meter 82xx Series (Ethernet Messaging)

## What's in This Chapter

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Control/Supervision Relationship .....	144
Tags .....	144
Genies .....	145
Faceplates .....	145

## Overview

This chapter describes the services provided by the EMPM82xx DFB.

## Supervision Functions

### Description

Core resources provide the following monitoring and operation functions:  
Resetting and device parameter monitoring.

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

## Control/Supervision Relationship

### Description

When the Supervision components for Power Meter 82xx management (Ethernet messaging) are implemented through the \$PM82xxEM control module template, it is the *EMPM82xx* Control resource that provides data.

The data is created from the corresponding Control templates and shared through interfaces. This allows the necessary tags with the appropriate syntax to be generated in the databases of the Supervision Participant.

For a description of this Control resource,.

## Tags

### Tag Syntax

Refer to Genie Control Module Name, page 32.

### Variable Tags

Refer to commonly used tags, page 132.

The table describes the variable tags that are managed by Supervision components for *EMPM82xx*:

Name	Description
CM name_PM_AD3_9	Voltage unbalance line to neutral worst.
CM name_PM_AD4_0	Active power last demand.
CM name_PM_AD4_1	Reactive power total last demand.
CM name_PM_AD4_2	Apparent power last demand.
CM name_PM_AD4_3	Failcode [0].
CM name_PM_AD4_4	Failcode [1].
CM name_PM_AD4_5	Failcode [2].

## Advanced Alarm Tags

Refer to commonly used tags, page 132.

## Trend Tags

The table describes the trend tags that are managed by Supervision components and their expression for *EMPM82xx*:

Name	Expression	Description
CM name_PM_AD1_0	CM name_PM_AD1_0	Apparent energy consumption.
CM name_PM_AD1_1	CM name_PM_AD1_1	Total apparent power.
CM name_PM_AD1_2	CM name_PM_AD1_2	Total power factor.
CM name_PM_AD1_3	CM name_PM_AD1_3	Intensity three phase average.
CM name refers to the block name.		

## Genies

## Representation

## Faceplates

## Overview

During operation, clicking a genie of the *sgc\_devices* library allows you to display a faceplate with the following tabs:

- Standard tabs:
  - Operator Tab
  - Analog Tab
  - Digital Tab

## Faceplate Description

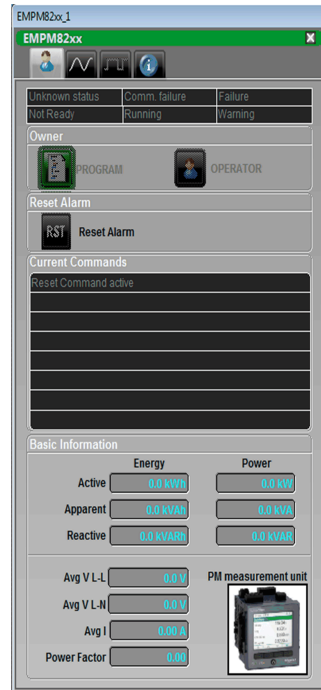
At the beginning of this manual, you can find the description of:

- The color convention, page 30 that is used to display data on the faceplate.

- The buttons, page 36 that appear on the different tabs.

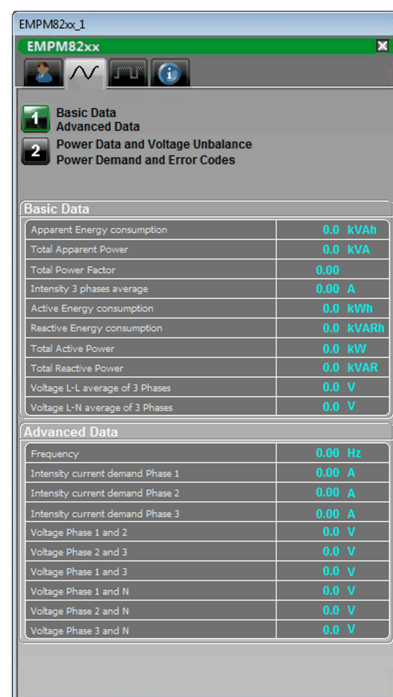
## Operator Tab

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



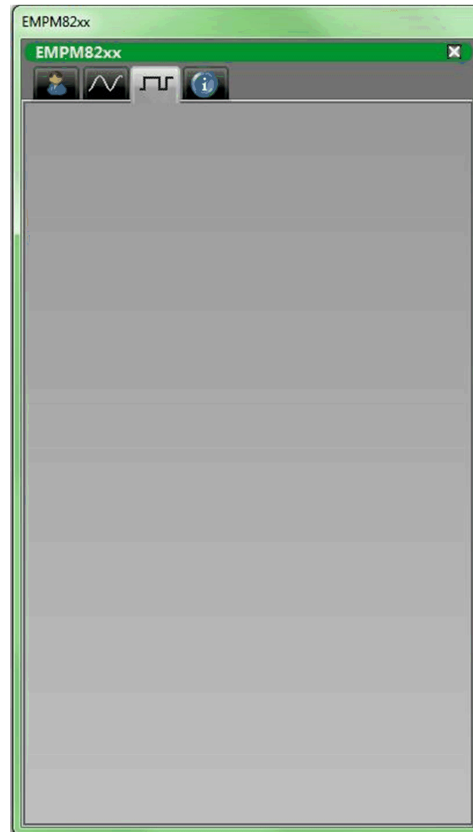
## Analog Tab

This tab provides information about the analog data provided by the device:



## Digital Tab

There is no digital data available in *EMPM82xx* control block to display in the **Digital** tab.



# MBPM800 - Power Meter 800 (Modbus)

## What's in This Chapter

Supervision Functions ..... 148

Control/Supervision Relationship ..... 148

Tags ..... 148

Genies ..... 149

Faceplates ..... 149

## Overview

This chapter describes the services provided by the MBPM800 DFB.

## Supervision Functions

### Description

Core resources provide the following monitoring and operation functions:  
Resetting and device parameter monitoring.

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

## Control/Supervision Relationship

### Description

When the Supervision components for Power Meter 800 management (Modbus serial) are implemented through the \$PM800MB control module template, it is the MBPM800 Control resource that provides data.

The data is created from the corresponding Control templates and shared through interfaces. This allows the necessary tags with the appropriate syntax to be generated in the databases of the Supervision Participant.

For a description of this Control resource,.

**NOTE:** MBPM800 is a deprecated control function.

## Tags

### Tag Syntax

Refer to Genie Control Module Name, page 32.

### Variable Tags

Refer to Commonly Used Tags.



## Advanced Alarm Tags

Refer to Commonly Used Tags.

## Trend Tags

Refer to Commonly Used Tags.

## Genies

Refer to Genies, page 135.

## Faceplates

### Overview

During operation, clicking a genie of the `sgc_devices` library allows you to display a faceplate with the following tabs:

- Standard tabs:
  - Operator Tab, page 136
  - Analog Tab, page 137
  - Digital Tab, page 138

### Faceplate Description

At the beginning of this manual, you can find the description of:

- The color convention, page 30 that is used to display data on the faceplate.
- The buttons, page 36 that appear on the different tabs.

# PM800E and EMPM800 - Power Meter 800 (I/O Scanning and Ethernet Messaging)

## What's in This Chapter

Supervision Functions .....	150
Control/Supervision Relationship .....	150
Tags .....	150
Genies .....	151
Faceplates .....	151

## Overview

This chapter describes the Supervision resources and runtime services that are available for the Power Meter 800 management with I/O scanning and Ethernet messaging.

## Supervision Functions

### Description

Core resources provide the following monitoring and operation functions:  
Resetting and device parameter monitoring.

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

## Control/Supervision Relationship

### Description

When the Supervision components for Power Meter 800 management (I/O scanning) are implemented through the \$PM800E and \$PM800EM control module template, it is the PM800E and EMPM800 Control resource that provides data.

The data is created from the corresponding Control templates and shared through interfaces. This allows the necessary tags with the appropriate syntax to be generated in the databases of the Supervision Participant.

For a description of this Control resource,.

**NOTE:** EPM800 and EMPM800 are deprecated control functions.

## Tags

### Tag Syntax

Refer to Genie Control Module Name, page 32.

## Variable Tags

Refer to Commonly Used Tags, page 132.

## Advanced Alarm Tags

Refer to Commonly Used Tags, page 133.

## Trend Tags

Refer to Commonly Used Tags.

## Genies

Refer to Genies, page 135.

## Faceplates

### Overview

During operation, clicking a genie of the `sgc_devices` library allows you to display a faceplate with the following tabs:

- Standard tabs:
  - Operator Tab, page 152
  - Analog Tab, page 152
  - Digital Tab, page 153

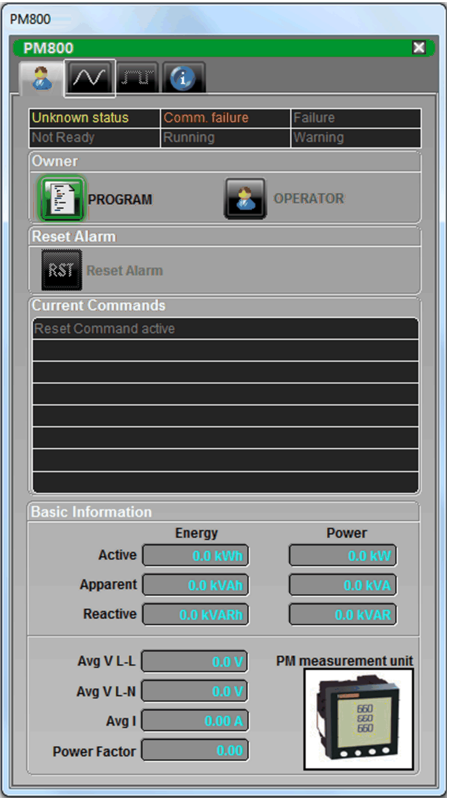
## Faceplate Description

At the beginning of this manual, you can find the description of:

- The color convention, page 30 that is used to display data on the faceplate.
- The buttons, page 36 that appear on the different tabs.

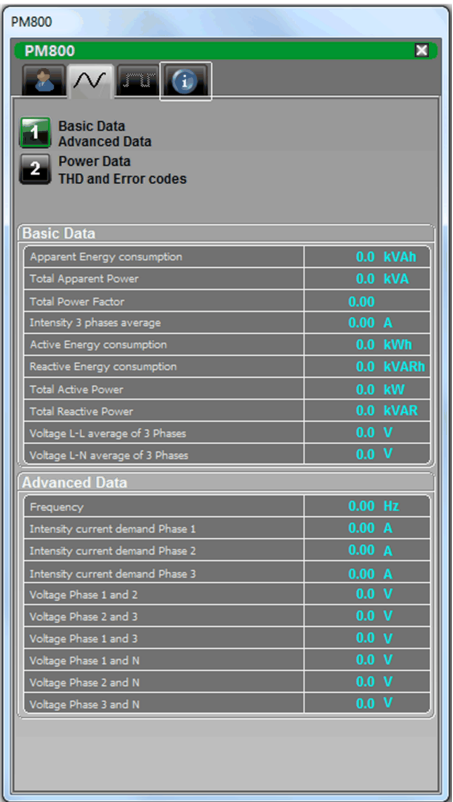
## Operator Tab (PM800E and EMPM800)

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



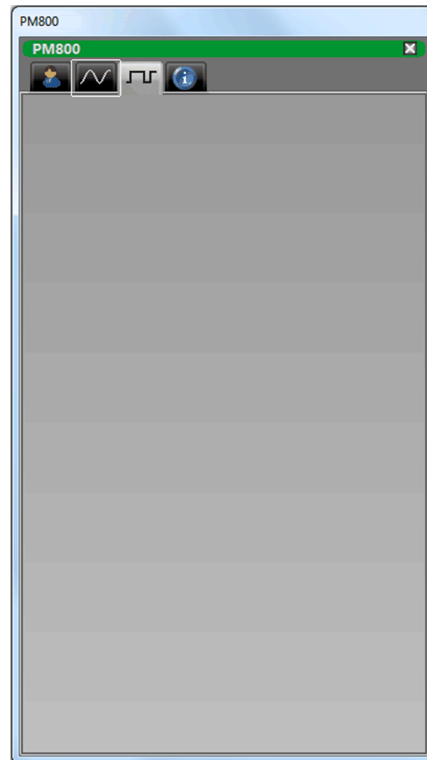
## Analog Tab (PM800E and EMPM800)

This tab provides information about the analog data provided by the device:



## Digital Tab (PM800E and EMPM800)

There is no digital data available in PM800E and EMPM800 control blocks to display in the **Digital** tab.



# MBPM1200 - Power Meter 1200 (Modbus)

## What's in This Chapter

Supervision Functions .....	154
Control/Supervision Relationship .....	154
Tags .....	154
Genies .....	155
Faceplates .....	155

## Overview

This chapter describes the services provided by the MBPM1200 DFB.

## Supervision Functions

### Description

Core resources provide the following monitoring and operation functions:  
Resetting and device parameter monitoring.

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

## Control/Supervision Relationship

### Description

When the Supervision components for Power Meter 1200 management (Modbus serial) are implemented through the \$PM1200MB control module template, it is the MBPM1200 Control resource that provides data.

The data is created from the corresponding Control templates and shared through interfaces. This allows the necessary tags with the appropriate syntax to be generated in the databases of the Supervision Participant.

For a description of this Control resource,.

## Tags

### Tag Syntax

Refer to Genie Control Module Name, page 32.

### Variable Tags

Refer to Commonly Used Tags.

## Advanced Alarm Tags

Refer to Commonly Used Tags.

## Trend Tags

Refer to Commonly Used Tags.

## Genies

## Representation

## Faceplates

## Overview

During operation, clicking a genie of the `sgc_devices` library allows you to display a faceplate with the following tabs:

- Standard tabs:
  - Operator Tab
  - Analog Tab
  - Digital Tab

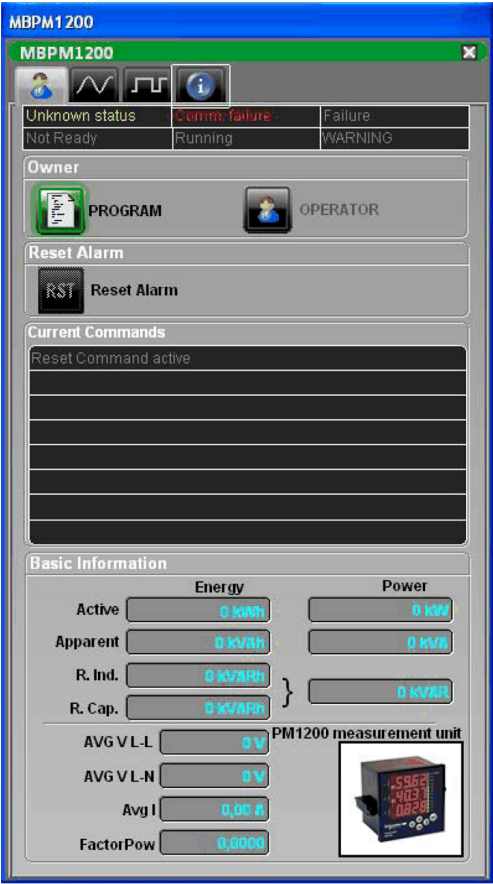
## Faceplate Description

At the beginning of this manual, you can find the description of:

- The color convention, page 30 that is used to display data on the faceplate.
- The buttons, page 36 that appear on the different tabs.

# Operator Tab

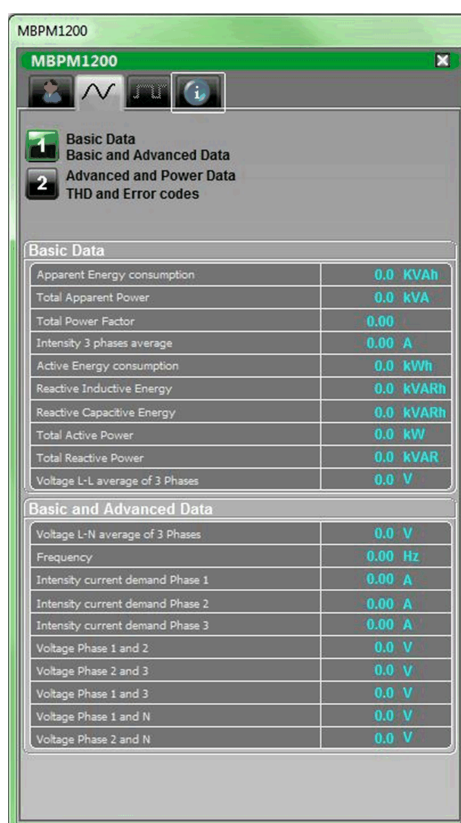
This tab provides information about the operator actions and the device information:





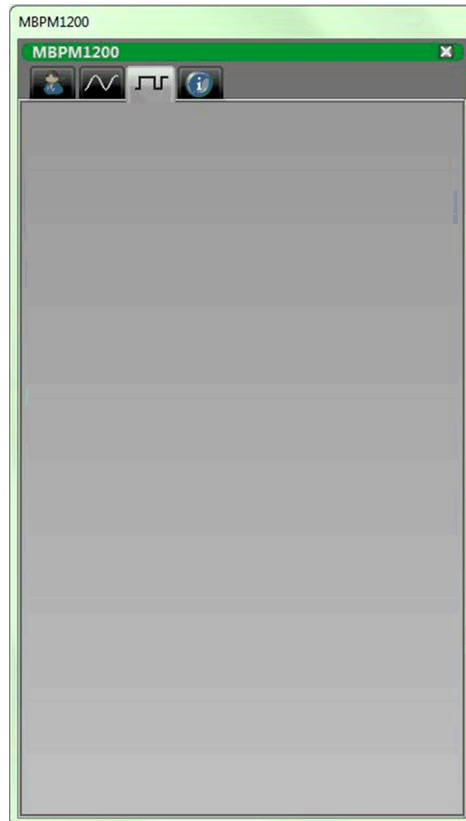
## Analog Tab

This tab provides information about the analog data provided by the device:



## Digital Tab

There is no digital data available in MBPM1200 control block to display in the **Digital** tab.



# MBPM9C - Power Meter 9C (Modbus)

## What's in This Chapter

Supervision Functions .....	159
Control/Supervision Relationship .....	159
Tags .....	159
Genies .....	160
Faceplates .....	160

## Overview

This chapter describes the services provided by the MBPM9C DFB.

## Supervision Functions

### Description

Core resources provide the following monitoring and operation functions:  
Resetting and device parameter monitoring.

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

## Control/Supervision Relationship

### Description

When the Supervision components for Power Meter 9C management (Modbus serial) are implemented through the `$PM9CMB` control module template, it is the *MBPM9C* Control resource that provides data.

The data is created from the corresponding Control templates and shared through interfaces. This allows the necessary tags with the appropriate syntax to be generated in the databases of the Supervision Participant.

For a description of this Control resource,.

**NOTE:** *MBPM9C* is a deprecated control function.

## Tags

### Tag Syntax

Refer to Genie Control Module Name, page 32.

### Variable Tags

Refer to Commonly Used Tags.

---

## Advanced Alarm Tags

Refer to Commonly Used Tags.

## Trend Tags

Refer to Commonly Used Tags.

## Genies

## Representation

## Faceplates

## Overview

During operation, clicking a genie of the `sgc_devices` library allows you to display a faceplate with the following tabs:

- Standard tabs:
  - Operator Tab
  - Analog Tab
  - Digital Tab

## Faceplate Description

At the beginning of this manual, you can find the description of:

- The color convention, page 30 that is used to display data on the faceplate.
- The buttons, page 36 that appear on the different tabs.

## Operator Tab

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

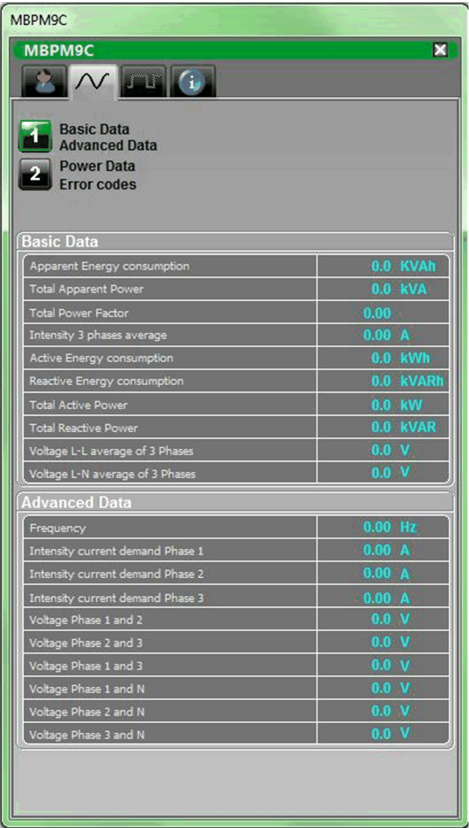
The screenshot displays the MBPM9C Operator Tab interface. At the top, there is a status bar with three icons: a person, a waveform, and an information icon. Below this, a status table shows the following data:

Unknown status	Comm failure	Failure
Not Ready	Running	WARNING

The 'Owner' section shows two roles: PROGRAM (with a document icon) and OPERATOR (with a person icon). The 'Reset Alarm' section contains a button labeled 'RST Reset Alarm'. The 'Current Commands' section shows 'Reset Command active' and several empty rows. The 'Basic Information' section is divided into 'Energy' and 'Power' columns. The 'Energy' column includes 'Active' (0 kWh), 'Apparent' (0 kVAh), and 'Reactive' (0 kVARh). The 'Power' column includes 'Active' (0 kW), 'Apparent' (0 kVA), and 'Reactive' (0 kVAR). Below these, there are fields for 'AVG V L-L' (0 V), 'AVG V L-N' (0 V), 'Avg I' (0.00 A), and 'FactorPow' (0.0000). To the right of these fields is a section labeled 'PM9C measurement unit' with an image of the device.

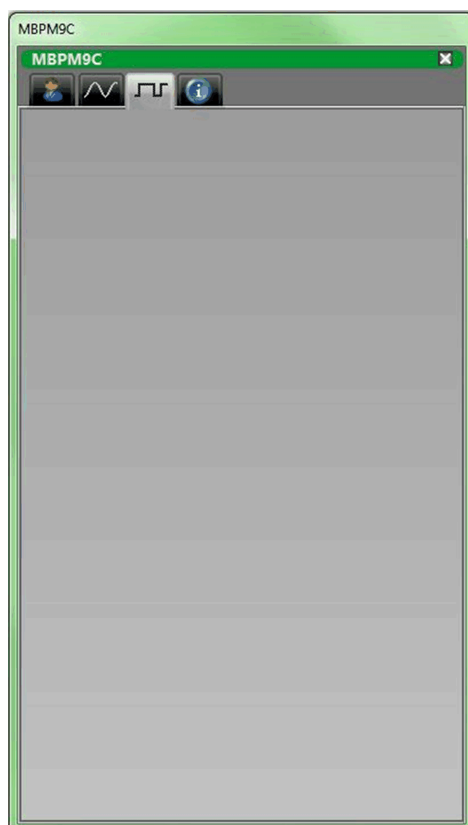
# Analog Tab

This tab provides information about the analog data provided by the device:



## Digital Tab

There is no digital data available in MBPM700 control block to display in the **Digital** tab.



# MBPM5350 - Power Meter 5350 (Modbus)

## What's in This Chapter

Supervision Functions .....	164
Control/Supervision Relationship .....	164
Tags .....	164
Genies .....	165
Faceplates .....	165

## Overview

This chapter describes the services provided by the MBPM5350 DFB.

## Supervision Functions

### Description

Core resources provide the following monitoring and operation functions:  
Resetting and device parameter monitoring.

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

## Control/Supervision Relationship

### Description

When the Supervision components for Power Meter 5350 management (Modbus serial) are implemented through the \$PM5350MB control module template, it is the MBPM5350 Control resource that provides data.

The data is created from the corresponding Control templates and shared through interfaces. This allows the necessary tags with the appropriate syntax to be generated in the databases of the Supervision Participant.

For a description of this Control resource,.

## Tags

### Tag Syntax

Refer to Genie Control Module Name, page 32.

### Variable Tags

Refer to Commonly Used Tags.



## Advanced Alarm Tags

Refer to Commonly Used Tags.

## Trend Tags

Refer to Commonly Used Tags.

## Genies

Refer to Genies, page 135.

## Faceplates

### Overview

During operation, clicking a genie of the `sgc_devices` library allows you to display a faceplate with the following tabs:

- Standard tabs:
  - Operator Tab, page 136
  - Analog Tab, page 137
  - Digital Tab, page 138

### Faceplate Description

At the beginning of this manual, you can find the description of:

- The color convention, page 30 that is used to display data on the faceplate.
- The buttons, page 36 that appear on the different tabs.

# MBSMARTUPS - SMART UPS PROFILE

## What's in This Chapter

Supervision Functions .....	166
Control/Supervision Relationship .....	166
Tags .....	166
Genies .....	168
Faceplates .....	168

## Overview

This chapter describes the services provided by the MBSMARTUPS DFB.

## Supervision Functions

### Description

Core resources provide the following monitoring and operation functions: Monitors inoperable device, resetting, and device parameter monitoring.

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

## Control/Supervision Relationship

### Description

When the Supervision components for Smart UPS management are implemented through the `$SmartUPSMB` control module template, it is the *MBSMARTUPS* Control resource that provides data.

The data is created from the corresponding Control templates and shared through interfaces. This allows the necessary tags with the appropriate syntax to be generated in the databases of the Supervision Participant.

For a description of this Control resource,.

## Tags

### Tag Syntax

Refer to *Genie Control Module Name*, page 32.

### Variable Tags

The table describes the variable tags that are managed by Supervision components:

Tag Name	Description
CM name_1_SUPS_AD1_0	Battery charge.
CM name_1_SUPS_AD1_1	Load.
CM name_1_SUPS_AD1_2	Remaining time.
CM name_1_SUPS_AD2_0	Alert code.
CM name_1_SUPS_AD2_1	<i>FailCode[0]</i>
CM name_1_SUPS_AD2_2	<i>FailCode[1]</i>
CM name_1_SUPS_AD2_3	<i>FailCode[2]</i>
CM name_1_SUPS_DC1_WORD	Commands.
CM name_1_SUPS_DD1_WORD	Status.
CM name_1_SUPS_DD2_WORD	Notification status
CM name_1_SUPS_DD3_WORD	Inoperable status.
CM name_1_SUPS_DEVPUB_STW	Status word
CM name refers to the block name	

## Advanced Alarm Tags

The table describes the advanced alarm tags that are managed by Supervision components. It also indicates the expression that is configured in the Supervision components to read or write the corresponding bit of the status or configuration word:

Alarm Tag	Description	Expression
CM name_1_SUPS_DEVPUB_ALARM	Device notification.	CM name_1_SUPS_DEVPUB_STW BitAND 0x0010
CM name_1_SUPS_DEVPUB_COMM	Communication interruption.	CM name_1_SUPS_DEVPUB_STW BitAND 0x0020
CM name_1_SUPS_DEVPUB_FAIL	Inoperable device.	CM name_1_SUPS_DEVPUB_STW BitAND 0x0008
CM name refers to the block name		

## Trend Tags

The table describes the trend tags that are managed by Supervision:

Tag Name	Description	Expression
CM name_1_SUPS_AD1_1	Load.	CM name_1_SUPS_AD1_1
CM name_1_SUPS_AD1_0	Battery charge.	CM name_1_SUPS_AD1_0
CM name refers to the block name		

# Genies

## Representation

## Faceplates

## Overview

During operation, clicking a genie of the `sgc_devices` library allows you to display a faceplate with the following tabs:

- Standard tabs:
  - Operator Tab
  - Analog Tab
  - Digital Tab

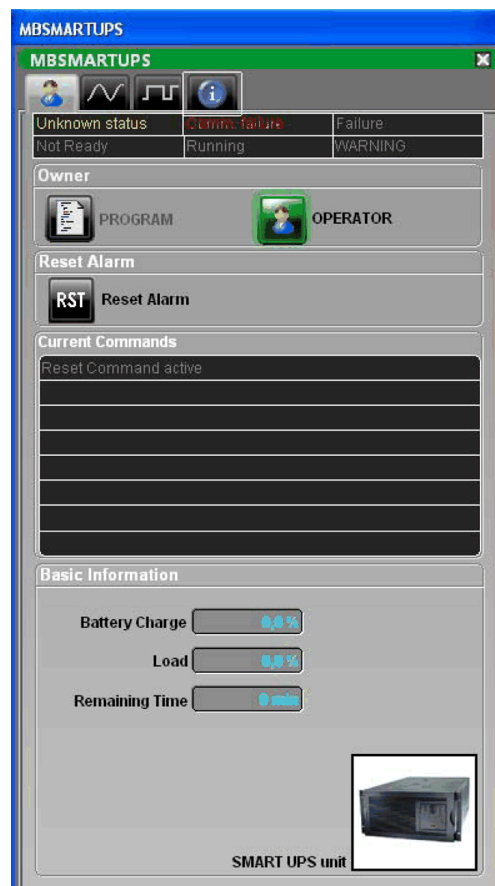
## Faceplate Description

At the beginning of this manual, you can find the description of:

- The color convention, page 30 that is used to display data on the faceplate.
- The buttons, page 36 that appear on the different tabs.

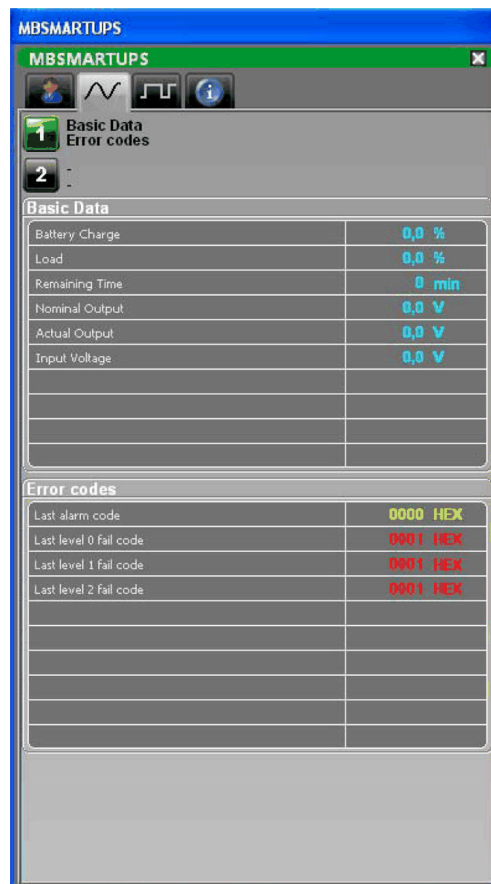
## Operator Tab

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



## Analog Tab

This tab provides information about the analog data provided by the device:



**MBSMARTUPS**

**1 Basic Data**  
**Error codes**

**2**

**Basic Data**

Battery Charge	0,0 %
Load	0,0 %
Remaining Time	0 min
Nominal Output	0,0 V
Actual Output	0,0 V
Input Voltage	0,0 V

**Error codes**

Last alarm code	0000 HEX
Last level 0 fail code	0001 HEX
Last level 1 fail code	0001 HEX
Last level 2 fail code	0001 HEX

## Digital Tab

This tab provides information about the digital data provided by the device:



# EACCUSINE - ACCUSINE PCS

## What's in This Chapter

Supervision Functions .....	171
Control/Supervision Relationship .....	171
Tags .....	171
Genies .....	172
Faceplates .....	172

## Overview

This chapter describes the services provided by the `EACCUSINE` DFB.

## Supervision Functions

### Description

Core resources provide the following monitoring and operation functions: Device operation control, resetting, device parameter monitoring, and owner selection.

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

## Control/Supervision Relationship

### Description

When the Supervision components for Accusine management are implemented through the `$AccusineE` control module template, it is the *EACCUSINE* Control resource that provides data.

The data is created from the corresponding Control templates and shared through interfaces. This allows the necessary tags with the appropriate syntax to be generated in the databases of the Supervision Participant.

For a description of this Control resource,.

## Tags

### Tag Syntax

Refer to *Genie Control Module Name*, page 32.

### Variable Tags

The table describes the variable tags that are managed by Supervision components:

Tag Name	Description
CM name_1_ACCU_AD3_0	Notification code.
CM name_1_ACCU_AD3_1	<i>FailCode[0]</i>
CM name_1_ACCU_AD3_2	<i>FailCode[1]</i>
CM name_1_ACCU_AD3_3	<i>FailCode[2]</i>
CM name_1_ACCU_DD1_WORD	Data status.
CM name_1_ACCU_DD2_WORD	Non critical detected fail status.
CM name_1_ACCU_DD3_WORD	Non critical detected fail status.
CM name_1_ACCU_DC1_WORD	Commands.
CM name_1_ACCU_DEVPUB_STW	Status word
CM name refers to the block name	

## Advanced Alarm Tags

The table describes the advanced alarm tags that are managed by Supervision components. It also indicates the expression that is configured in the Supervision components to read or write the corresponding bit of the status or configuration word:

Alarm Tag	Description	Expression
CM name_1_AccusineE_ACCU_DEVPUB_ALARM	Device notification.	CM name_1_AccusineE_ACCU_DEVPUB_STW BitAND 0x0010
CM name_1_AccusineE_ACCU_DEVPUB_COMM	Communication interruption.	CM name_1_AccusineE_ACCU_DEVPUB_STW BitAND 0x0020
CM name_1_AccusineE_ACCU_DEVPUB_FAIL	Inoperable device.	CM name_1_AccusineE_ACCU_DEVPUB_STW BitAND 0x0008
CM name refers to the block name		

## Trend Tags

No trend tags are managed by Supervision components.

## Genies

## Representation

## Faceplates

## Overview

During operation, clicking a genie of the `sgc_devices` library allows you to display a faceplate with the following tabs:

- Standard tabs:
  - Operator Tab
  - Analog Tab
  - Digital Tab



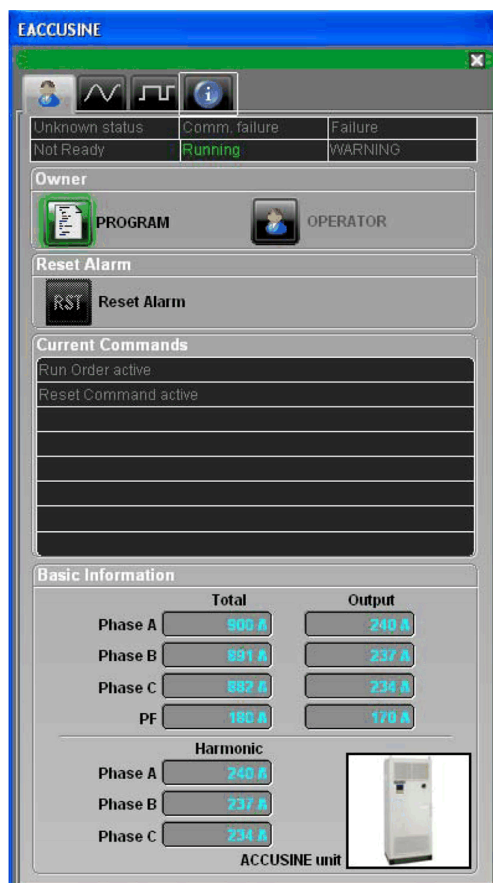
## Faceplate Description

At the beginning of this manual, you can find the description of:

- The color convention, page 30 that is used to display data on the faceplate.
- The buttons, page 36 that appear on the different tabs.

## Operator Tab

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



# Analog Tab

This tab provides information about the analog data provided by the device:

EACCUSINE

1

Basic Data

Error codes

2

Basic Data

Battery Charge	0.0 %
Load	0.0 %
Remaining Time	0 min
Nominal Output	0.0 V
Actual Output	0.0 V
Input Voltage	0.0 V

Error codes

Last alarm code	0000 HEX
Last level 0 fail code	0001 HEX
Last level 1 fail code	0001 HEX
Last level 2 fail code	0001 HEX

## Digital Tab

This tab provides information about the digital data provided by the device:



# Progressive Starters

## What's in This Part


MBATS22 - ATS 22 Progressive Starter (Modbus) ..... 177

MBATS48 - ATS 48 Progressive Starter (Modbus) ..... 182

## Overview

This part describes the components that provides the functions for the progressive starters.

These components do not reflect any specific installation.

 **WARNING**

**LOSS OF CONTROL**

- Perform a Failure Mode and Effects Analysis (FMEA), or equivalent risk analysis, 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 them.
- Review the implications of communication link interruptions and take actions to mitigate them.
- Provide independent paths for control functions (for example, emergency stop, over-limit conditions, and error conditions) according to your risk assessment, and applicable codes and regulations.
- Apply local accident prevention and safety regulations and guidelines.<sup>1</sup>
- Test each implementation of a system for proper operation before placing it into service.

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

<sup>1</sup> 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.

# MBATS22 - ATS 22 Progressive Starter (Modbus)

## What's in This Chapter

Supervision Functions .....	177
Control/Supervision Relationship .....	177
Tags .....	177
Genies .....	179
Faceplates .....	179

## Overview

This chapter describes the services provided by the MBATS22 DFB.

## Supervision Functions

### Description

Core resources provide the following monitoring and operation functions: Device operation control, resetting, monitors device failure, and device control and monitoring.

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

## Control/Supervision Relationship

### Description

When the Supervision components for Altistart 22 management are implemented through the \$ATS22MB control module template, it is the MBATS22 Control resource that provides data.

The data is created from the corresponding Control templates and shared through interfaces. This allows the necessary tags with the appropriate syntax to be generated in the databases of the Supervision Participant.

For a description of this Control resource,.

## Tags

### Tag Syntax

Refer to Genie Control Module Name, page 32.

### Variable Tags

The table describes the variable tags that are managed by Supervision components:

Tag Name	Description
CM name_1_ATS22MB_1_ATS22_AD1_0	Current 1.
CM name_1_ATS22MB_1_ATS22_AD1_1	Current 2.
CM name_1_ATS22MB_1_ATS22_AD1_2	Current L3.
CM name_1_ATS22MB_1_ATS22_AD1_3	Frequency.
CM name_1_ATS22MB_1_ATS22_AD1_4	Voltage.
CM name_1_ATS22MB_1_ATS22_AD1_5	Total Starts.
CM name_1_ATS22MB_1_ATS22_AD1_6	Total Runtime.
CM name_1_ATS22MB_1_ATS22_AD1_7	Last Start Time.
CM name_1_ATS22MB_1_ATS22_AD1_8	Last Start/Max. Current.
CM name_1_ATS22MB_1_ATS22_AD1_9	Trip Current.
CM name_1_ATS22MB_1_ATS22_AD2_0	Information code.
CM name_1_ATS22MB_1_ATS22_AD4_0	Notification code.
CM name_1_ATS22MB_1_ATS22_AD4_1	FailCode[0]
CM name_1_ATS22MB_1_ATS22_AD4_2	FailCode[1]
CM name_1_ATS22MB_1_ATS22_AD4_3	FailCode[2]
CM name_1_ATS22MB_1_ATS22_DC1_WORD	Commands.
CM name_1_ATS22MB_1_ATS22_DEVPUB_STW	Status word.
CM name_1_ATS22MB_1_ATS22_DD1_WORD	DataStatus.
CM name_1_ATS22MB_1_ATS22_DD2_WORD	Input/Output.
CM name refers to the block name.	

## Advanced Alarm Tags

The table describes the advanced alarm tags that are managed by Supervision components. It also indicates the expression that is configured in the Supervision components to read or write the corresponding bit of the status or configuration word:

Alarm Tag	Description	Expression
CM name_1_ATS22MB_1_ATS22_DEVPUB_ALARM	Device notification.	CM name_1_ATS22MB_1_ATS22_DEVPUB_STW BitAND 0x0010
CM name_1_ATS22MB_1_ATS22_DEVPUB_COMM	Communication interruption.	CM name_1_ATS22MB_1_ATS22_DEVPUB_STW BitAND 0x0020
CM name_1_ATS22MB_1_ATS22_DEVPUB_FAIL	Inoperable device.	CM name_1_ATS22MB_1_ATS22_DEVPUB_STW BitAND 0x0008
CM name refers to the block name.		

## Trend Tags

The table describes the trend tags that are managed by Supervision:

Tag Name	Description	Expression
CM name_1_ATS22MB_1_ATS22_AD1_0	Consumption.	CM name_1_ATS22MB_1_ATS22_AD1_0
CM name_1_ATS22MB_1_ATS22_AD1_1	Consumption.	CM name_1_ATS22MB_1_ATS22_AD1_1

Tag Name	Description	Expression
CM name_1_ATS22MB_1_ATS22_AD1_2	Consumption.	CM name_1_ATS22MB_1_ATS22_AD1_2
CM name refers to the block name.		

## Genies

## Representation

## Faceplates

## Overview

During operation, clicking a genie of the `sgc_devices` library allows you to display a faceplate with the following tabs:

- Standard tabs:
  - Operator Tab, page 180
  - Analog Tab, page 180
  - Digital Tab, page 181

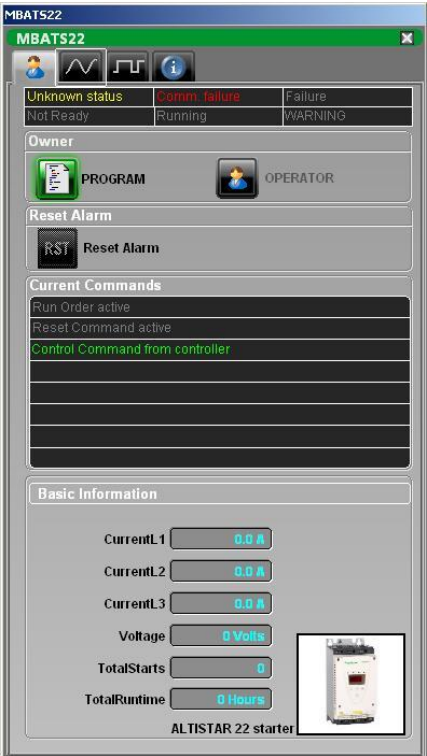
## Faceplate Description

At the beginning of this manual, you can find the description of:

- The color convention, page 30 that is used to display data on the faceplate.
- The buttons, page 36 that appear on the different tabs.

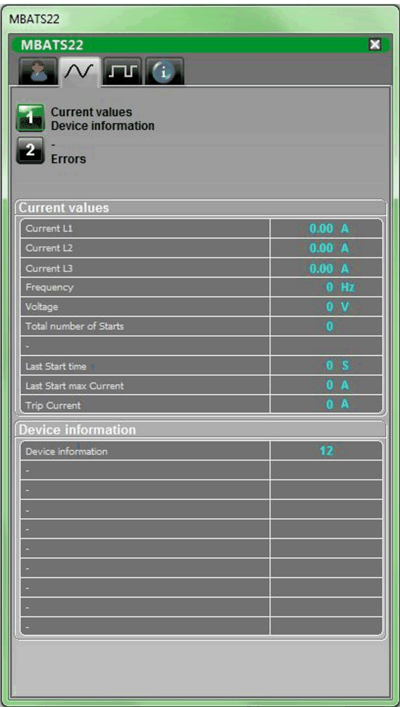
## Operator Tab

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



## Analog Tab

This tab provides information about the analog data provided by the device:





## Digital Tab

This tab provides information about the digital data provided by the device:



# MBATS48 - ATS 48 Progressive Starter (Modbus)

## What's in This Chapter

Supervision Functions .....	182
Control/Supervision Relationship .....	182
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Faceplates .....	184

## Overview

This chapter describes the services provided by the MBATS48 DFB.

## Supervision Functions

### Description

Core resources provide the following monitoring and operation functions: Device operation control, resetting, monitors inoperable device, and device control and monitoring.

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

**NOTE:** The device can operate only on serial Modbus networks.

## Control/Supervision Relationship

### Description

When the Supervision components for Altistart 48 management are implemented through the \$ATS48MB control module template, it is the MBATS48 Control resource that provides data.

The data is created from the corresponding Control templates and shared through interfaces. This allows the necessary tags with the appropriate syntax to be generated in the databases of the Supervision Participant.

For a description of this Control resource,.

## Tags

### Tag Syntax

Refer to Genie Control Module Name, page 32.

### Variable Tags

The table describes the variable tags that are managed by Supervision components:

Tag Name	Description
CM name_1_ATS_AD1_0	Current.
CM name_1_ATS_AD1_1	Torque.
CM name_1_ATS_AD1_2	Thermal status.
CM name_1_ATS_AD1_3	Motor power.
CM name_1_ATS_AD1_4	CosPhi.
CM name_1_ATS_AD2_0	Information code.
CM name_1_ATS_AD2_1	DSP402.
CM name_1_ATS_AD3_0	AO.
CM name_1_ATS_AD4_0	Notification code.
CM name_1_ATS_AD4_1	FailCode[0]
CM name_1_ATS_AD4_2	FailCode[1]
CM name_1_ATS_AD4_3	FailCode[2]
CM name_1_ATS_DC1_WORD	Commands.
CM name_1_ATS_DD1_WORD	Status-ETA.
CM name_1_ATS_DD2_WORD	Input/Output.
CM name_1_ATS_DEVPUB_STW	Status word.
CM name refers to the block name.	

## Advanced Alarm Tags

The table describes the advanced alarm tags that are managed by Supervision components. It also indicates the expression that is configured in the Supervision components to read or write the corresponding bit of the status or configuration word:

Alarm Tag	Description	Expression
CM name_1_ATS_DEVPUB_ALARM	Device notification.	CM name_1_ATS_DEVPUB_STW BitAND 0x0010
CM name_1_ATS_DEVPUB_COMM	Communication interruption.	CM name_1_ATS_DEVPUB_STW BitAND 0x00200
CM name_1_ATS_DEVPUB_FAILL	Inoperable device.	CM name_1_ATS_DEVPUB_STW BitAND 0x0008
CM name refers to the block name.		

## Trend Tags

The table describes the trend tags that are managed by Supervision:

Tag Name	Description	Expression
CM name_1_ATS_AD1_0	Consumption.	CM name_1_ATS_AD1_0
CM name refers to the block name.		

# Genies

## Representation

## Faceplates

## Overview

During operation, clicking a genie of the `sgc_devices` library allows you to display a faceplate with the following tabs:

- Standard tabs:
  - Operator Tab, page 100
  - Analog Tab, page 185
  - Digital Tab, page 185

## Faceplate Description

At the beginning of this manual, you can find the description of:

- The color convention, page 184 that is used to display data on the faceplate.
- The buttons, page 36 that appear on the different tabs.

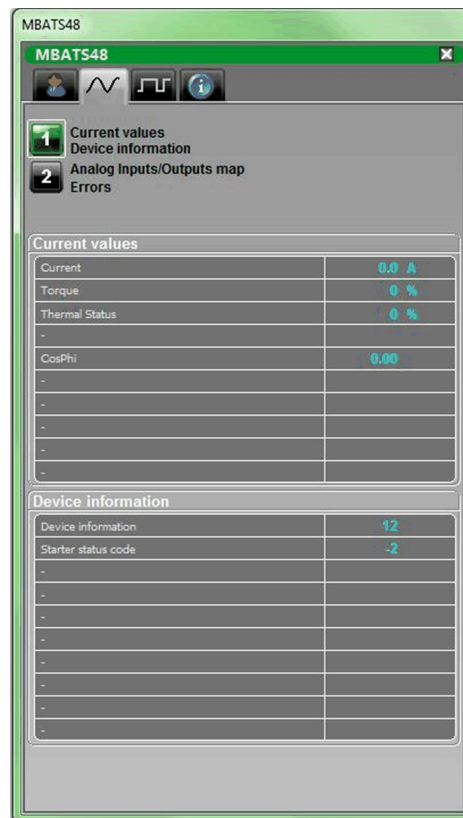
## Operator Tab

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



## Analog Tab

This tab provides information about the analog data provided by the device:



## Digital Tab

This tab provides information about the digital data provided by the device:



# Variable Speed Drives

## What's in This Part

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ATV7161 - Altivar 61 and Altivar 71 Drive Management (I/O Scanning).....	189
EATV32 - Altivar 32 Drive Management (I/O Scanning) .....	195
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MBATV212 - Altivar 212 Drive (Modbus) .....	200
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ASATV31 - Altivar 31 Drive (Advantys) .....	209
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## Overview

This part describes the components that provides the functions for the variable speed drives.

These components do not reflect any specific installation.

### WARNING

#### LOSS OF CONTROL

- Perform a Failure Mode and Effects Analysis (FMEA), or equivalent risk analysis, 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 them.
- Review the implications of communication link interruptions and take actions to mitigate them.
- Provide independent paths for control functions (for example, emergency stop, over-limit conditions, and error conditions) according to your risk assessment, and applicable codes and regulations.
- Apply local accident prevention and safety regulations and guidelines.<sup>1</sup>
- Test each implementation of a system for proper operation before placing it into service.

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

<sup>1</sup> 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.

# Commonly Used Tags

## What's in This Chapter

..... 187

## Variable Tags

The table describes the variable tags that are managed by Supervision components for *ATV7161*, *EATV32*, *EMESATV7161*, *MBATV212*, *MBATV*, *MBATV7161*, *ASATV31*, *ASATV7161*, *PBATV7161*, *ATV6xx*, *ATV9xx* and *ATV6xxx*:

Name	Type	Description
<i>CM name_ATV_AD1_0</i>	REAL	Present value.
<i>CM name_ATV_AD1_1</i>	REAL	Setpoint.
<i>CM name_ATV_AD2_0</i>	INT	Information code.
<i>CM name_ATV_AD2_1</i>	INT	<i>DSP402</i> .
<i>CM name_ATV_AD4_0</i>	INT	Alert code.
<i>CM name_ATV_AD4_1</i>	INT	<i>FailCode 0</i> .
<i>CM name_ATV_AD4_2</i>	INT	<i>FailCode 1</i> .
<i>CM name_ATV_AD4_3</i>	INT	<i>FailCode 2</i> .
<i>CM name_ATV_DD1_WORD</i>	UINT	Status.
<i>CM name_ATV_DC1_WORD</i>	UINT	Commands.
<i>CM name_ATV_DEVPUB_STW</i>	UINT	Status.

## Advanced Alarm Tags

The table describes the advanced alarm tags that are managed by Supervision components for *ATV7161*, *EATV32*, *EMESATV7161*, *MBATV212*, *MBATV*, *MBATV7161*, *ASATV31*, *ASATV7161*, *PBATV7161*, *ATV6xx*, *ATV9xx* and *ATV6xxx*. It also indicates the expression that is configured in the Supervision components to read or write the corresponding bit of the status or configuration word:

Name	Expression	Description
<i>CM name_ATV_DEVPUB_COMM</i>	<i>CM name_ATV_DEVPUB_STW BitAND 0x0020</i>	Communication interruption.
<i>CM name_ATV_DEVPUB_FAIL</i>	<i>CM name_ATV_DEVPUB_STW BitAND 0x0008</i>	Inoperable device.
<i>CM name_ATV_DEVPUB_ALARM</i>	<i>CM name_ATV_DEVPUB_STW BitAND 0x0010</i>	Device alert.

## Trend Tags

The table describes the trend tags that are managed by Supervision for *ATV7161*, *EATV32*, *EMESATV7161*, *MBATV212*, *MBATV*, *MBATV7161*, *ASATV31*, *ASATV7161*, *PBATV7161*, *ATV6xx*, *ATV9xx* and *ATV6xxx*:

Name	Expression	Description
CM name_ATV_AD1_0	Present value.	CM name_ATV_AD1_0
CM name_ATV_AD1_1	Setpoint.	CM name_ATV_AD1_1



# ATV7161 - Altivar 61 and Altivar 71 Drive Management (I/O Scanning)

## What's in This Chapter

Supervision Functions .....	189
Control/Supervision Relationship .....	189
Tags .....	189
Genies .....	190
Faceplates .....	190

## Overview

This chapter describes the Supervision resources and runtime services that are available for the Altivar 61 and Altivar 71 management with I/O scanning.

## Supervision Functions

### Description

Core resources provide the following monitoring and operation functions: Rotation direction selection, speed setpoint management, diagnostic information management, resetting, owner selection, and control and monitoring of the `SetPoint` input.

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

## Control/Supervision Relationship

### Description

When the Supervision components for Altivar 61 and Altivar 71 management (I/O scanning) are implemented through the `$ATV61E` and `$ATV71E` control module templates, it is the *ATV7161* Control resource that provides data.

The data is created from the corresponding Control templates and shared through interfaces. This allows the necessary tags with the appropriate syntax to be generated in the databases of the Supervision Participant.

For a description of this Control resource,.

## Tags

### Tag Syntax

Refer to Genie Control Module Name, page 32.

### Variable Tags

Refer to Commonly Used Tags, page 187.

The table describes the variable tags that are managed by Supervision components:

Tag Name	Description
CM name_ATV_AD1_2	Current value.
CM name_ATV_AD1_3	Torque.
CM name_ATV_AD3_0	Analog input 1.
CM name_ATV_AD3_1	Analog input 2.
CM name_ATV_AD3_2	Analog output1.
CM name_ATV_AD3_3	Analog output 2.
CM name_ATV_DD2_Word	Inputs map.
CM name_ATV_DD3_WORD	Outputs map.
CM name refers to the block name.	

## Advanced Alarm Tags

Refer to Commonly Used Tags, page 187.

## Trend Tags

Refer to Commonly Used Tags, page 187.

## Genies

## Representation

## Faceplates

## Overview

During operation, clicking a genie of the `sgc_devices` library allows you to display a faceplate with the following tabs:

- Standard tabs:
  - Operator Tab, page 191
  - Analog Tab, page 193
  - Digital Tab, page 194

## Faceplate Description

At the beginning of this manual, you can find the description of:

- The color convention, page 30 that is used to display data on the faceplate.
- The buttons, page 193 that appear on the different tabs.

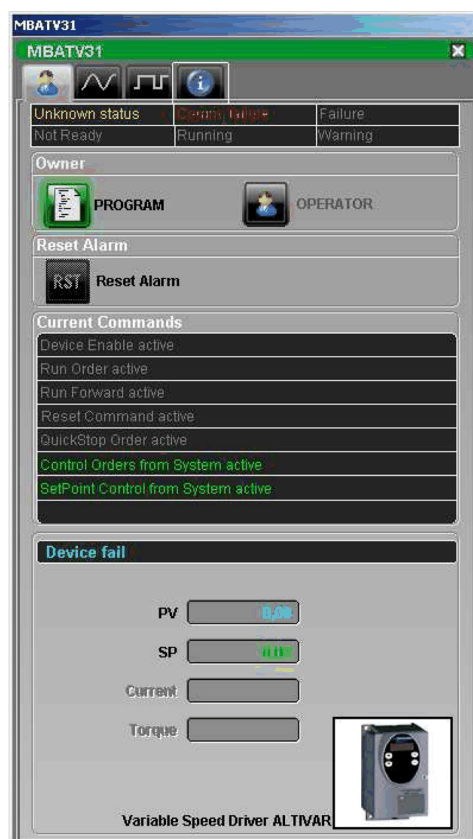
## Operator Tab (ATV7161, EATV32, EMESATV7161, MBATV7161 and ASATV7161)

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



## Operator Tab (MBATV and ASATV31)

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



## Analog Tab

This tab provides information about the analog data provided by the device:

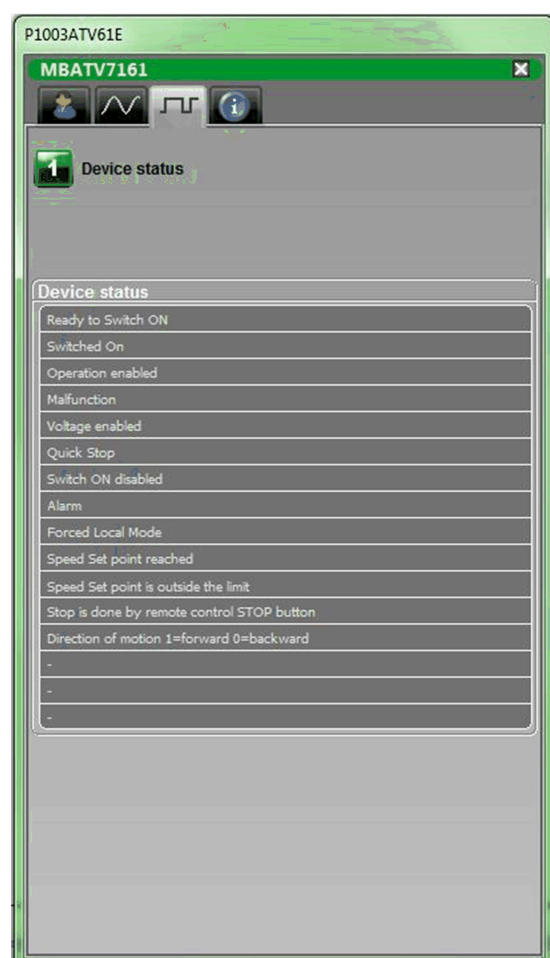
The screenshot displays the 'ATV71' interface with the 'Analog Tab' selected. The tab is divided into two main sections: 'Current values' and 'Device information'. The 'Current values' section contains a table with four rows of data. The 'Device information' section contains a table with two rows of data. The interface also features a top bar with icons for a person, a waveform, a square wave, and an information icon.

Current values	
Motor current speed	0.00 EU
Speed Set point	0.00 EU
Motor present current	0.00 A
Current Motor Torque	0 %

Device information	
Device information	10
Status code of driver	-1

## Digital Tab

This tab provides information about the digital data provided by the device:



# EATV32 - Altivar 32 Drive Management (I/O Scanning)

## What's in This Chapter

Supervision Functions .....	195
Control/Supervision Relationship .....	195
Tags .....	195
Genies .....	196
Faceplates .....	196

## Overview

This chapter describes the Supervision resources and runtime services that are available for the Altivar 32 management system with I/O scanning.

## Supervision Functions

### Description

Core resources provide the following monitoring and operation functions: Rotation direction selection, speed setpoint management, diagnostic information management, resetting, owner selection, and control and monitoring of the `SetPoint` input.

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

## Control/Supervision Relationship

### Description

When the Supervision components for Altivar 32 management (I/O scanning) are implemented through the `$ATV32E` control module template, it is the *EATV32* Control resource that provides data.

The data is created from the corresponding Control templates and shared through interfaces. This allows the necessary tags with the appropriate syntax to be generated in the databases of the Supervision Participant.

For a description of this Control resource,.

## Tags

### Tag Syntax

Refer to Genie Control Module Name, page 32.

## Variable Tags

Refer to Commonly Used Tags, page 187.

The table describes the variable tags that are managed by Supervision components:

Tag Name	Description
CM name_ATV_AD1_3	Torque.
CM name_ATV_AD1_2	Current value.
CM name_ATV_AD3_0	Analog input 1.
CM name_ATV_AD3_1	Analog input 2.
CM name_ATV_AD3_2	Analog output 1.
CM name_ATV_AD3_3	Analog output 2.
CM name_ATV_DD2_Word	Inputs map.
CM name_ATV_DD3_WORD	Outputs map.
CM name refers to the block name	

## Advanced Alarm Tags

Refer to Commonly Used Tags, page 187.

## Trend Tags

Refer to Commonly Used Tags, page 187.

The table describes the trend tags that are managed by Supervision:

Tag Name	Description	Expression
CM name_ATV_AD1_2	Consumption.	CM name_ATV_AD1_2
CM name_ATV_AD1_3	Torque.	CM name_ATV_AD1_3

## Genies

## Representation

## Faceplates

## Overview

During operation, clicking a genie of the `sgc_devices` library allows you to display a faceplate with the following tabs:

- Standard tabs:
  - Operator Tab, page 191
  - Analog Tab, page 193
  - Digital Tab, page 194

## Faceplate Description

At the beginning of this manual, you can find the description of:



- The color convention, page 30 that is used to display data on the faceplate.
- The buttons, page 36 that appear on the different tabs.

# EMESATV7161 - Altivar 61 and Altivar 71 Drive (Ethernet Messaging)

## What's in This Chapter

Supervision Functions .....	198
Control/Supervision Relationship .....	198
Tags .....	198
Genies .....	199
Faceplates .....	199

## Overview

This chapter describes the services provided by the EMESATV7161 DFB.

## Supervision Functions

### Description

Core resources provide the following monitoring and operation functions: Rotation direction selection, speed setpoint management, diagnostic information management, resetting, owner selection, and control and monitoring of the `SetPoint` input.

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

## Control/Supervision Relationship

### Description

When the Supervision components for Altivar 61 and Altivar 71 management (Ethernet explicit messaging) are implemented through the `$ATV61EM` and `$ATV71EM` control module templates, it is the *EMESATV7161* Control resource that provides data.

The data is created from the corresponding Control templates and shared through interfaces. This allows the necessary tags with the appropriate syntax to be generated in the databases of the Supervision Participant.

For a description of this Control resource,.

## Tags

### Tag Syntax

Refer to Genie Control Module Name, page 32.

### Variable Tags

Refer to Commonly Used Tags, page 187.

## Advanced Alarm Tags

Refer to Commonly Used Tags, page 187.

## Trend Tags

Refer to Commonly Used Tags, page 187.

## Genies

Refer to Genies, page 190.

## Faceplates

### Overview

During operation, clicking a genie of the `sgc_devices` library allows you to display a faceplate with the following tabs:

- Standard tabs:
  - Operator Tab, page 191
  - Analog Tab, page 193
  - Digital Tab, page 194

### Faceplate Description

At the beginning of this manual, you can find the description of:

- The color convention, page 30 that is used to display data on the faceplate.
- The buttons, page 36 that appear on the different tabs.

# MBATV212 - Altivar 212 Drive (Modbus)

## What's in This Chapter

Supervision Functions .....	200
Control/Supervision Relationship .....	200
Tags .....	200
Genies .....	201
Faceplates .....	201

## Overview

This chapter describes the services provided by the MBATV212 DFB.

## Supervision Functions

### Description

Core resources provide the following monitoring and operation functions: Rotation direction selection, speed setpoint management, diagnostic information management, resetting, owner selection, and control and monitoring of the `SetPoint` input.

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

## Control/Supervision Relationship

### Description

When the Supervision components for Altivar 12 management are implemented through the `$ATV212MB` control module template, it is the *MBATV212* Control resource that provides data.

The data is created from the corresponding Control templates and shared through interfaces. This allows the necessary tags with the appropriate syntax to be generated in the databases of the Supervision Participant.

For a description of this Control resource,.

## Tags

### Tag Syntax

Refer to Genie Control Module Name, page 32.

### Variable Tags

Refer to Commonly Used Tags, page 187.

## Advanced Alarm Tags

Refer to Commonly Used Tags, page 187.

## Trend Tags

Refer to Commonly Used Tags, page 187.

## Genies

## Representation

## Faceplates

### Overview

During operation, clicking a genie of the `sgc_devices` library allows you to display a faceplate with the following tabs:

- Standard tabs:
  - Operator Tab
  - Analog Tab
  - Digital Tab

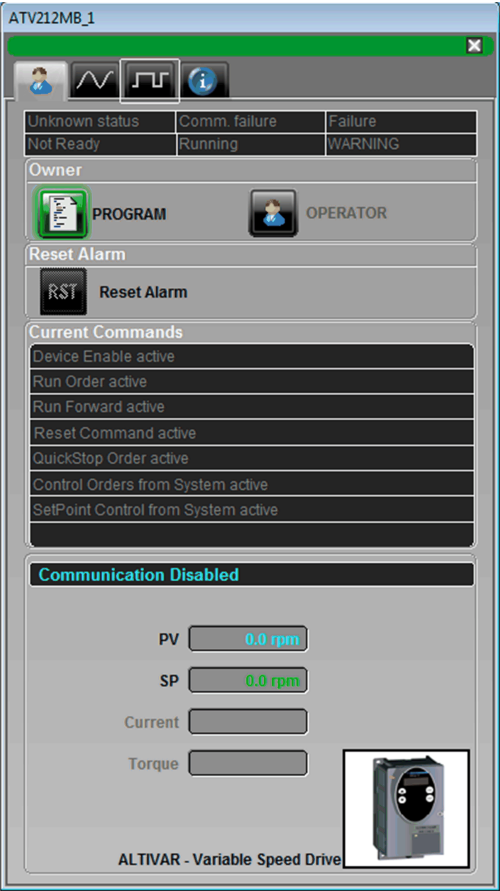
### Faceplate Description

At the beginning of this manual, you can find the description of:

- The color convention, page 30 that is used to display data on the faceplate.
- The buttons, page 36 that appear on the different tabs.

# Operator Tab

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



## Analog Tab

This tab provides information about the analog data provided by the device:

The screenshot shows the 'ATV212MB\_1' window with a green title bar. Below the title bar are icons for a user, a sine wave, a square wave, and an information icon. The main area has a sidebar with two tabs: '1 Current values' (selected) and '2 Errors'. The 'Current values' tab displays a table with two columns. The first column lists parameters, and the second column shows their values and units. The 'Device information' tab is also visible below it, showing a similar table structure.

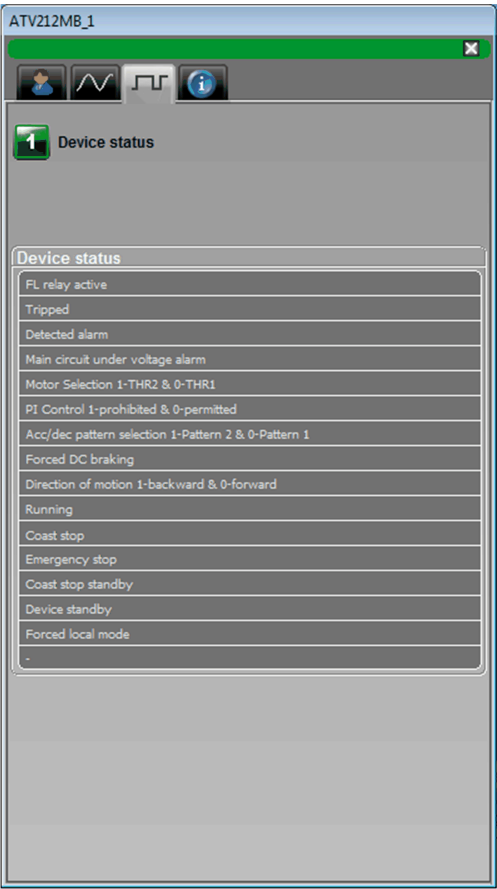
Current values	
Motor current Speed	0.00 EU
Speed Set point	0.00 EU
-	
-	
-	
-	
-	
-	
-	

Device information	
Device information	0
Status code of driver	0
-	
-	
-	
-	
-	
-	
-	

# Digital Tab

This tab provides information about the digital data provided by the device.





# MBATV - Altivar 12, Altivar 31 and Altivar 312 Drive (Modbus)

## What's in This Chapter

Supervision Functions .....	205
Control/Supervision Relationship .....	205
Tags .....	205
Genies .....	206
Faceplates .....	206

## Overview

This chapter describes the services provided by the MBATV DFB.

## Supervision Functions

### Description

Core resources provide the following monitoring and operation functions: Rotation direction selection, speed setpoint management, diagnostic information management, resetting, owner selection, and control and monitoring of the `SetPoint` input.

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

## Control/Supervision Relationship

### Description

When the Supervision components for Altivar 12, Altivar 31 and Altivar 312 management are implemented through the `$ATV12MB`, `$ATV31MB` and `$ATV312MB` control module templates, it is the *MBATV* Control resource that provides data.

The data is created from the corresponding Control templates and shared through interfaces. This allows the necessary tags with the appropriate syntax to be generated in the databases of the Supervision Participant.

For a description of this Control resource,.

**NOTE:** `MBATV31` is a deprecated control function.

## Tags

### Tag Syntax

Refer to Genie Control Module Name, page 32.

## Variable Tags

Refer to Commonly Used Tags, page 187.

## Advanced Alarm Tags

Refer to Commonly Used Tags, page 187.

## Trend Tags

Refer to Commonly Used Tags, page 187.

## Genies

## Representation

## Faceplates

### Overview

During operation, clicking a genie of the `sgc_devices` library allows you to display a faceplate with the following tabs:

- Standard tabs:
  - Operation, page 116
  - Analog, page 117
  - Digital, page 118

## Faceplate Description

At the beginning of this manual, you can find the description of:

- The color convention, page 30 that is used to display data on the faceplate.
- The buttons, page 36 that appear on the different tabs.

# MBATV7161 - Altivar 61 and Altivar 71 Drive (Modbus)

## What's in This Chapter

Supervision Functions .....	207
Control/Supervision Relationship .....	207
Tags .....	207
Genies .....	208
Faceplates .....	208

## Overview

This chapter describes the services provided by the MBATV7161 DFB.

## Supervision Functions

### Description

Core resources provide the following monitoring and operation functions: Rotation direction selection, speed setpoint management, diagnostic information management, resetting, owner selection, and control and monitoring of the `SetPoint` input.

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

## Control/Supervision Relationship

### Description

When the Supervision components for Altivar 61 and Altivar 71 management (Modbus serial) are implemented through the `$ATV61MB` and `$ATV71MBcontrol` module template, it is the *MBATV7161* Control resource that provides data.

The data is created from the corresponding Control templates and shared through interfaces. This allows the necessary tags with the appropriate syntax to be generated in the databases of the Supervision Participant.

For a description of this Control resource,.

## Tags

### Tag Syntax

Refer to Genie Control Module Name, page 32.

### Variable Tags

Refer to Commonly Used Tags, page 187.

## Advanced Alarm Tags

Refer to Commonly Used Tags, page 187.

## Trend Tags

Refer to Commonly Used Tags, page 187.

## Genies

Refer to Genies, page 190.

## Faceplates

### Overview

During operation, clicking a genie of the `sgc_devices` library allows you to display a faceplate with the following tabs:

- Standard tabs:
  - Operator Tab, page 191
  - Analog Tab, page 193
  - Digital Tab, page 194

### Faceplate Description

At the beginning of this manual, you can find the description of:

- The color convention, page 30 that is used to display data on the faceplate.
- The buttons, page 36 that appear on the different tabs.

# ASATV31 - Altivar 31 Drive (Advantys)

## What's in This Chapter

Supervision Functions .....	209
Control/Supervision Relationship .....	209
Tags .....	209
Genies .....	210
Faceplates .....	210

## Overview

This chapter describes the services provided by the ASATV31 DFB.

## Supervision Functions

### Description

Core resources provide the following monitoring and operation functions: Rotation direction selection, speed setpoint management, diagnostic information management, resetting, owner selection, and control and monitoring of the `SetPoint` input.

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

## Control/Supervision Relationship

### Description

When the Supervision components for Altivar 31 management (Advantys STB) are implemented through the `$ATV31AS` control module template, it is the ASATV31 Control resource that provides data.

The data is created from the corresponding Control templates and shared through interfaces. This allows the necessary tags with the appropriate syntax to be generated in the databases of the Supervision Participant.

For a description of this Control resource,.

**NOTE:** ASATV31 is a deprecated control function.

## Tags

### Tag Syntax

Refer to Genie Control Module Name, page 32.

### Variable Tags

Refer to Commonly Used Tags, page 187.

## Advanced Alarm Tags

Refer to Commonly Used Tags, page 187.

## Trend Tags

Refer to Commonly Used Tags, page 187.

## Genies

## Representation

## Faceplates

## Overview

During operation, clicking a genie of the `sgc_devices` library allows you to display a faceplate with the following tabs:

- Standard tabs:
  - Operator Tab, page 191
  - Analog Tab, page 193
  - Digital Tab, page 194

## Faceplate Description

At the beginning of this manual, you can find the description of:

- The color convention, page 30 that is used to display data on the faceplate.
- The buttons, page 36 that appear on the different tabs.

# ASATV7161 - Altivar 61 and Altivar 71 Drive (Advantys)

## What's in This Chapter

Supervision Functions .....	211
Control/Supervision Relationship .....	211
Tags .....	211
Genies .....	212
Faceplates .....	212

## Overview

This chapter describes the services provided by the ASATV7161 DFB.

## Supervision Functions

### Description

Core resources provide the following monitoring and operation functions: Rotation direction selection, speed setpoint management, diagnostic information management, resetting, owner selection, and control and monitoring of the `SetPoint` input.

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

## Control/Supervision Relationship

### Description

When the Supervision components for Altivar 61 and Altivar 671 management (Advantys STB) are implemented through the `$ATV61AS` and `$ATV71AS` control module template, it is the `ASATV7161` Control resource that provides data.

The data is created from the corresponding Control templates and shared through interfaces. This allows the necessary tags with the appropriate syntax to be generated in the databases of the Supervision Participant.

For a description of this Control resource,.

## Tags

### Tag Syntax

Refer to `Genie Control Module Name`, page 32.

### Variable Tags

Refer to `Commonly Used Tags`, page 187.

## Advanced Alarm Tags

Refer to Commonly Used Tags, page 187.

## Trend Tags

Refer to Commonly Used Tags, page 187.

## Genies

Refer to Genies, page 190.

## Faceplates

### Overview

During operation, clicking a genie of the `sgc_devices` library allows you to display a faceplate with the following tabs:

- Standard tabs:
  - Operator Tab, page 191
  - Analog Tab, page 193
  - Digital Tab, page 194

### Faceplate Description

At the beginning of this manual, you can find the description of:

- The color convention, page 30 that is used to display data on the faceplate.
- The buttons, page 36 that appear on the different tabs.



# PBATV7161 - Altivar 61 and Altivar 71 Drive (Profibus)

## What's in This Chapter

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Genies .....	214
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## Overview

This chapter describes the services provided by the PBATV7161 DFB.

## Supervision Functions

### Description

Core resources provide the following monitoring and operation functions: Rotation direction selection, speed setpoint management, diagnostic information management, resetting, owner selection, and control and monitoring of the `SetPointInput`.

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

## Control/Supervision Relationship

### Description

When the Supervision components for Altivar 61 and Altivar 71 management (PROFIBUS) are implemented through the `$ATV61PB` and `$ATV71PBcontrol` module template, it is the *PBATV7161* Control resource that provides data.

The data is created from the corresponding Control templates and shared through interfaces. This allows the necessary tags with the appropriate syntax to be generated in the databases of the Supervision Participant.

For a description of this Control resource,.

## Tags

### Tag Syntax

Refer to Genie Control Module Name, page 32.

### Variable Tags

Refer to Commonly Used Tags, page 187.

## Advanced Alarm Tags

Refer to Commonly Used Tags, page 187.

## Trend Tags

Refer to Commonly Used Tags, page 187.

## Genies

## Representation

## Faceplates

## Overview

During operation, clicking a genie of the `sgc_devices` library allows you to display a faceplate with the following tabs:

- Standard tabs:
  - Operator Tab, page 191
  - Analog Tab, page 193
  - Digital Tab, page 194

## Faceplate Description

At the beginning of this manual, you can find the description of:

- The color convention, page 30 that is used to display data on the faceplate.
- The buttons, page 36 that appear on the different tabs.

# ATV6xx/ATV9xx/ATV6xxx - Altivar Process Drive

## What's in This Chapter

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Control/Supervision Relationship .....	215
Tags .....	215
Genies .....	216
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## Overview

This chapter describes the services provided by ATV6xx, ATV9xx and ATV6xxx DFBs.

## Supervision Functions

### Description

Core resources provide the following monitoring and operation functions: Rotation direction selection, speed setpoint management, diagnostic information management, resetting, owner selection, and control and monitoring of the `SetPoint` input.

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

## Control/Supervision Relationship

### Description

When the Supervision components for Altivar 6xx/Altivar 9xx/Altivar 6xxx management are implemented through the `$ATV6xxE/$ATV9xxE/$ATV6xxxE` control module template, it is the `ATV6xx/ATV9xx/ATV6xxx` Control resource that provides data.

The data is created from the corresponding Control templates and shared through interfaces. This allows the necessary tags with the appropriate syntax to be generated in the databases of the Supervision Participant.

For a description of this Control resource,.

## Tags

### Tag Syntax

Refer to Genie Control Module Name, page 32.

### Variable Tags

Refer to Commonly Used Tags, page 187.

The table describes the variable tags of the XML template for ATV6xx, ATV9xx and ATV6xxx:

Name	Type	Description
CM name_ATV_DD2_WORD	UINT	Inputs
CM name_ATV_DD3_WORD	UINT	Outputs
CM name_ATV_DD4_WORD	UINT	Extended Status
CM name_ATV_AD1_2	REAL	Current
CM name_ATV_AD1_3	LONG	Torque
CM name_ATV_AD1_4	REAL	Power
CM name_ATV_AD1_5*	REAL	Torque Setpoint
CM name_ATV_AD3_0	INT	Analog input 1
CM name_ATV_AD3_1	INT	Analog input 2
CM name_ATV_AD3_2	INT	Analog input 3*/Analog output 1**
CM name_ATV_AD3_3	INT	Analog output 1*/Analog Output 2**
CM name_ATV_AD3_4*	INT	Analog output 2*
* Applicable only for ATV9xx and ATV6xxx.		
** Applicable only for ATV6xx.		

## Advanced Alarm Tags

Refer to Commonly Used Tags, page 187.

## Trend Tags

Refer to Commonly Used Tags, page 187.




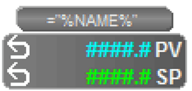
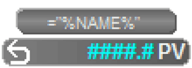
The table describes the trend tags that are managed by Supervision for ATV6xx, ATV9xx and ATV6xxx.

Tag Name	Description
CM name_ATV_AD1_2	Consumption.
CM name_ATV_AD1_3	Torque.
CM name_ATV_AD1_5	Torque Setpoint.

## Genies

## Representation

The following table shows the genres representation of the relevant DFBs:

Graphic symbol	Genies name	Genies Facet Identifier name
	atv6xx_10	\$ATV_10_CG
	atv9xx_10	\$ATV_10_CG
	atv6xxx_10	\$ATV_10_CG
	atvpvsp_10	\$ATV6xxPVSP_10_CG/\$ATV9xxPVSP_10_CG/\$ATV6xxxPVSP_10_CG
	atvpv_10	\$ATV6xxPV_10_CG/\$ATV9xxPV_10_CG/\$ATV6xxxPV_10_CG

## Faceplates

### Overview

During operation, clicking a genie of the `sgc_devices` library allows you to display a faceplate with the following tabs:

- Standard tabs:
  - Operator Tab, page 218
  - Analog Tab, page 220
  - Digital Tab

### Faceplate Description

At the beginning of this manual, you can find the description of:

- The color convention, page 30 that is used to display data on the faceplate.
- The buttons, page 36 that appear on the different tabs.

## Operator Tab

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

ATV9xx

ATV9xx

Unknown status	Comm. failure	Failure
Not Ready	Running	Warning

Owner

PROGRAM
 OPERATOR

Reset Alarm

Reset Alarm

Current Commands

Device enable active

Run order active

Run forward active

Reset command active

QuickStop order active

Control orders from system active

SetPoint control from system active

External error active

Switched ON - rdY

Speed PV 0.0 rpm

Speed SP 0.0 rpm

Torque PV 0.0 %

Torque SP 0.0 %

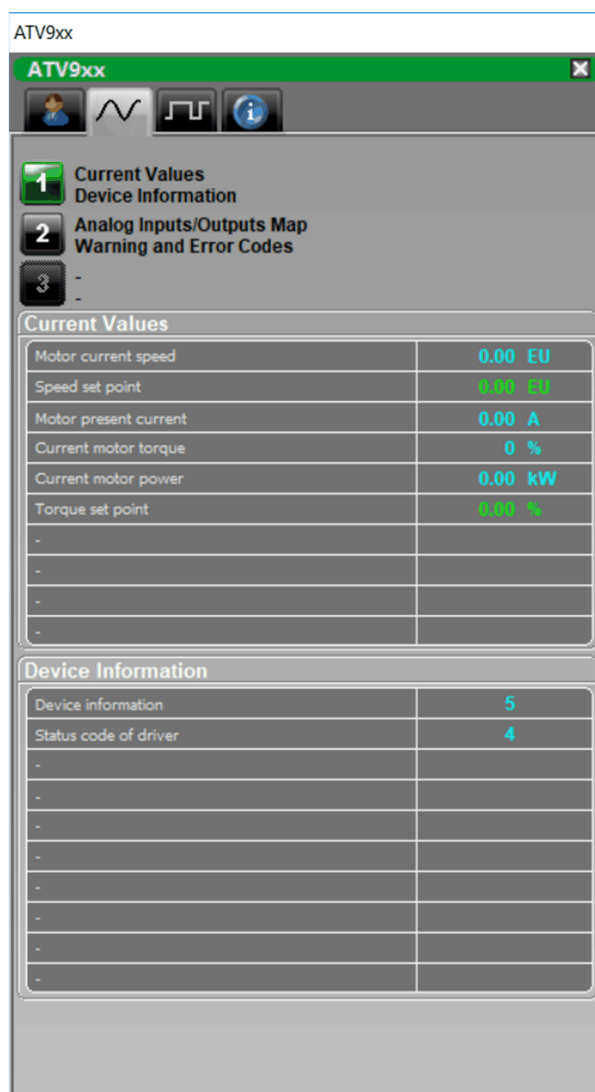
Power 0.00 kW

Current 0.00 A

ALTIVAR - Variable Speed Drive

## Analog Tab

The figure shows an example of the Analog tab with the Current Values and Device information:



## Analog Tab

The figure shows an example of the Analog tab with the Analog Inputs/Outputs Map detected Warnings and Errors:

ATV9xx

The screenshot shows the 'ATV9xx' window with the 'Analog' tab selected. The interface includes a sidebar with three items: '1 Current Values Device Information', '2 Analog Inputs/Outputs Map Warning and Error Codes' (highlighted), and '3'. The main area is divided into two sections: 'Analog Inputs/Outputs Map' and 'Warning and Error Codes'.

**Analog Inputs/Outputs Map**

Analog input AI1	0
Analog input AI2	0
Analog input AI3	0
Analog output AQ1	0
Analog output AQ2	0
-	
-	
-	
-	
-	

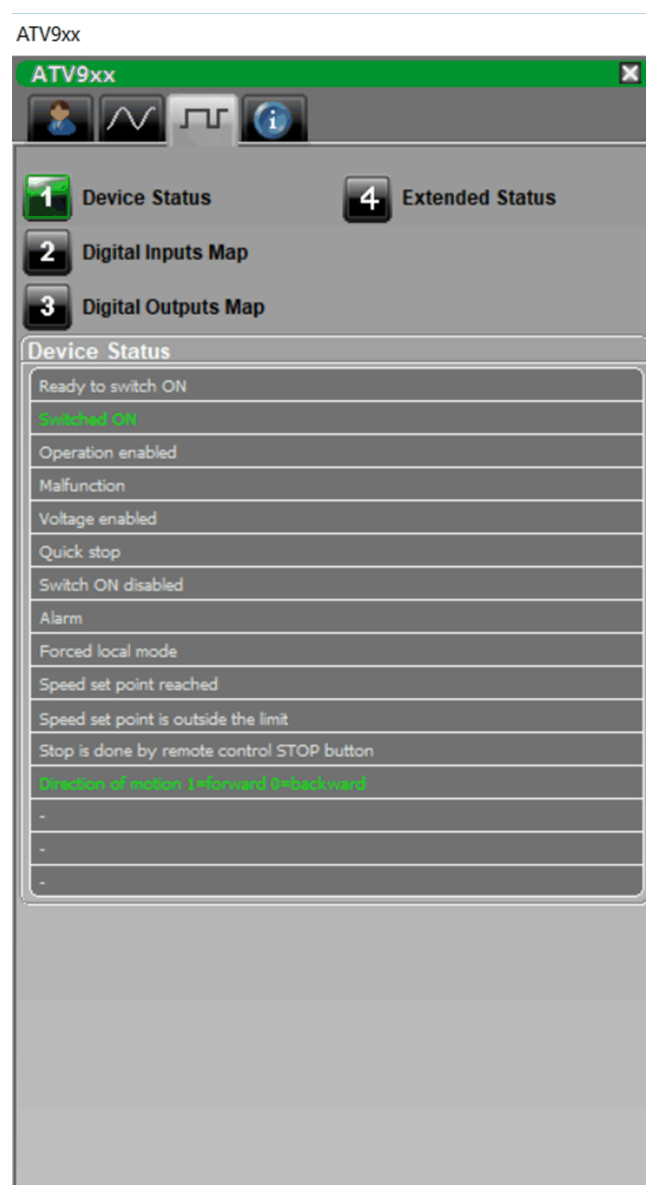
**Warning and Error Codes**

Last warning code	0000 HEX
Last level 0 fail code	0002 HEX
Last level 1 fail code	0000 HEX
Last level 2 fail code	0004 HEX
-	
-	
-	
-	
-	
-	



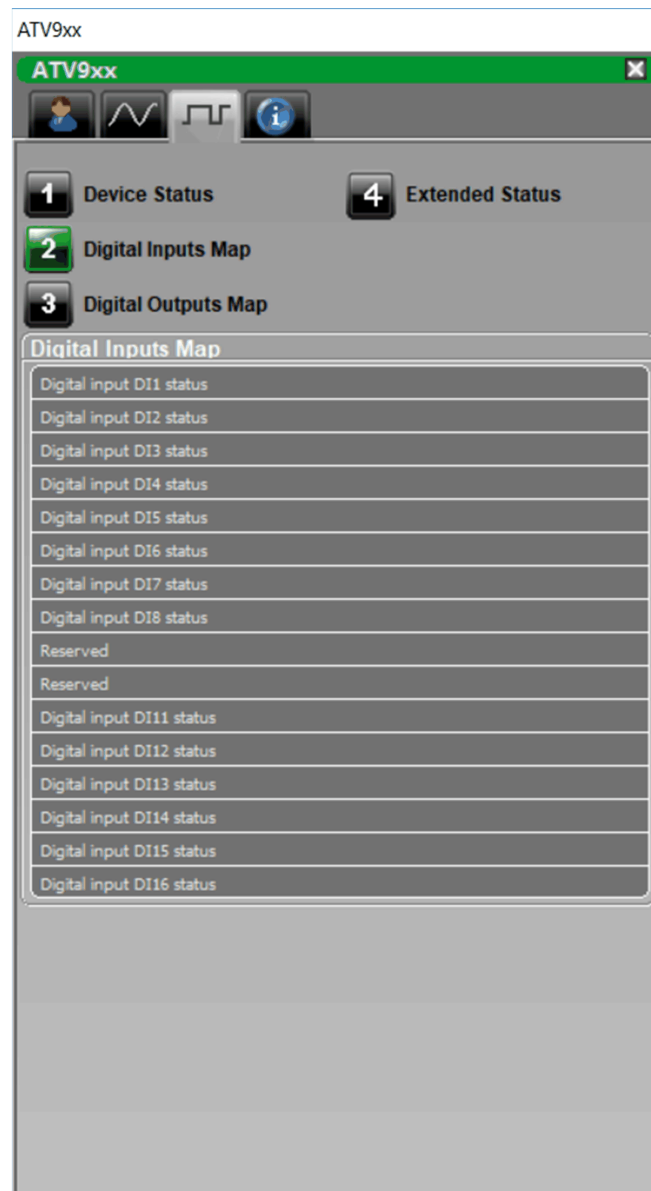
## Digital Tab

The figure shows an example of the Digital tab with the Device Status:



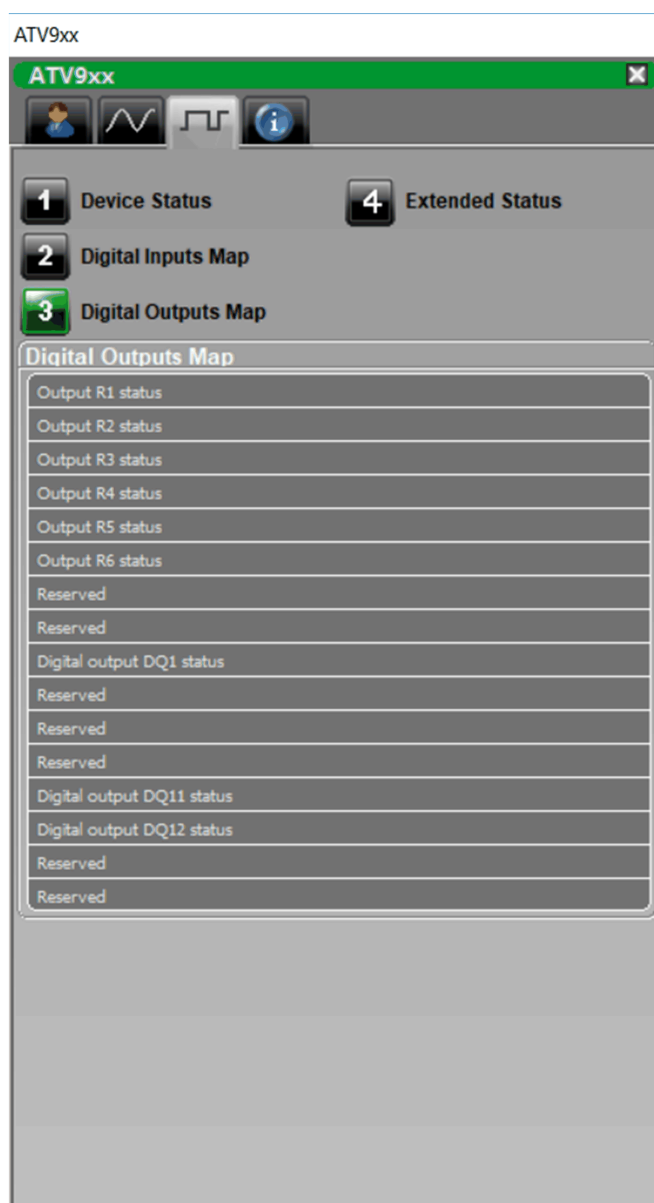
## Digital Tab

The figure shows an example of the Digital tab with the Digital Inputs Map:



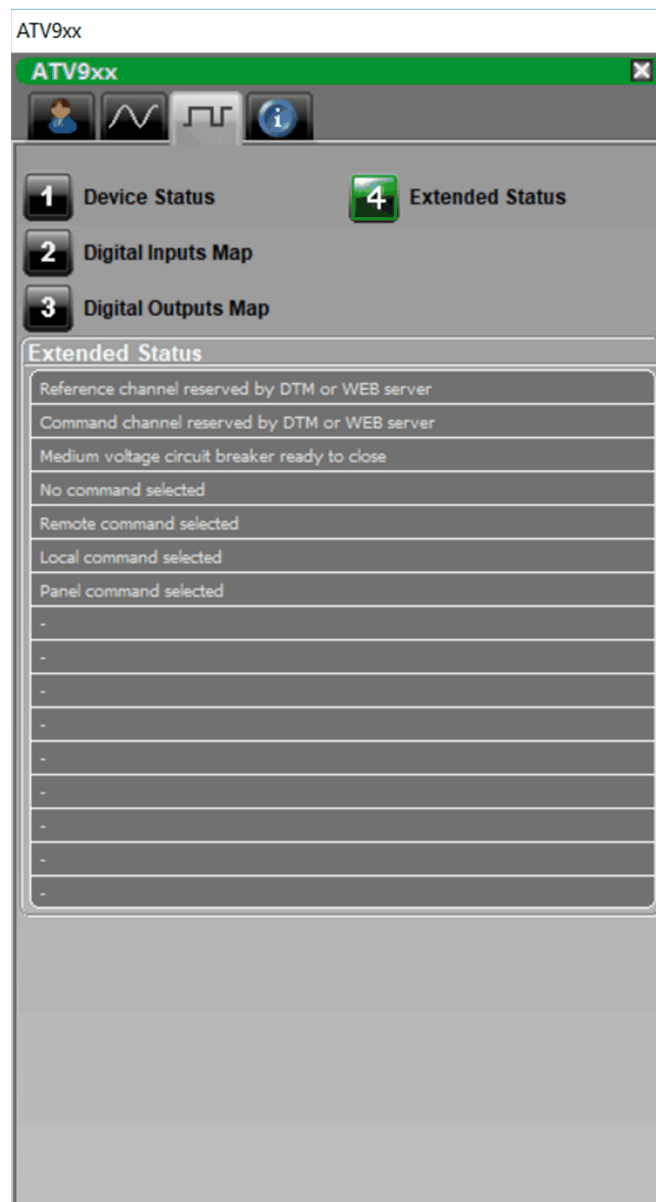
## Digital Tab

The figure shows an example of the Digital tab with the Digital Outputs Map:



## Digital Tab

The figure shows an example of the Digital tab with the Extended Status:



---

# Weighing Module

## What's in This Part

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## Overview

This part describes the components that provides the functions for the Weighing Module.

This component do not reflect any specific installation.

# EIPMPMESWT - Weighing Module

## What's in This Chapter

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Control/Supervision Relationship .....	226
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Calibration Procedure .....	231

## Overview

This chapter describes the services provided by the EIPMPMESWT DFB.

## Supervision Functions

### Description

Core resources provide the following monitoring and operation functions: Device operation control, resetting, device parameter monitoring, and owner selection.

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

## Control/Supervision Relationship

### Description

When the Supervision components for weighing module are implemented through the \$PMESWTEIPM control module template, it is the PMESWTEIPM Control resource that provides data.

The data is created from the corresponding Control templates and shared through interfaces. This allows the necessary tags with the appropriate syntax to be generated in the databases of the Supervision Participant.

For a description of this Control resource,.

## Tags

### Tag Syntax

Refer to Genie Control Module Name, page 32.

### Variable Tags

Name	Type	Description
CM name_PMESWT_DEVPUB_STW	UINT	Status
CM name_PMESWT_DC1_WORD	UINT	Commands

Name	Type	Description
CM name_PMESWT_AD1_0	REAL	Net measurement value
CM name_PMESWT_AD1_1	REAL	Gross measurement value
CM name_PMESWT_AD1_2	REAL	Tare measurement value
CM name_PMESWT_AD1_3	UINT	Engineering unit
CM name_PMESWT_AD4_0	INT	Alert code
CM name_PMESWT_AD4_1	INT	Fail code 0
CM name_PMESWT_AD4_2	INT	Fail code 1
CM name_PMESWT_AD4_3	INT	Fail code 2
CM name_PMESWT_DD1_WORD	UINT	Device status
CM name_PMESWT_DD2_WORD	UINT	Measurement status
CM name_PMESWT_DD3_WORD	UINT	Response status
CM name_PMESWT_CW1_0	ULONG	Maximum capacity
CM name_PMESWT_CW1_1	UINT	Scale interval
CM name_PMESWT_CW1_2	UINT	Calibration unit
CM name_PMESWT_CW1_3	ULONG	Calibration load
CM name_PMESWT_CW1_4	UINT	Step calibration
CM name_PMESWT_CW1_5	ULONG	Calibrated maximum capacity
CM name_PMESWT_CW1_6	UINT	Calibrated scale interval
CM name_PMESWT_CW1_7	UINT	Calibrated calibration unit

## Advanced Alarm Tags

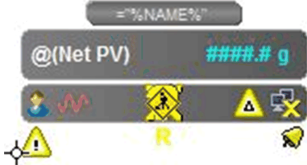
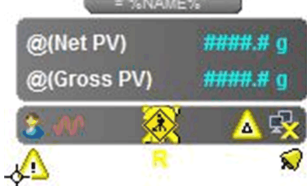
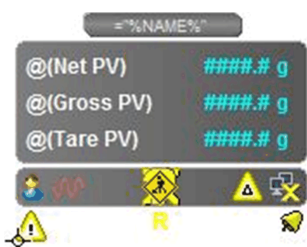
Name	Expression	Description
CM name_PMESWT_DEVPUB_FAIL	CM name_PMESWT_DEVPUB_STW BitAND 0x0008	Inoperable device
CM name_PMESWT_DEVPUB_ALARM	CM name_PMESWT_DEVPUB_STW BitAND 0x0010	Detected warning
CM name_PMESWT_DEVPUB_COM	CM name_PMESWT_DEVPUB_STW BitAND 0x0020	Communication Interruption
CM name_PMESWT_DEVPUB_BADST	CM name_PMESWT_STW BitAND 0x0400	Inoperable channel

## Trend Tags

Name	Expression	Description
CM name_PMESWT_AD1_0	CM name_PMESWT_AD1_0	Net measurement value
CM name_PMESWT_AD1_1	CM name_PMESWT_AD1_1	Gross measurement value
CM name_PMESWT_AD1_2	CM name_PMESWT_AD1_2	Tare measurement value

# Genies

## Representation

Genie Symbol	Genie Name	Facet Template Identifier
	pmeswt_netpv_10	\$PMESWTNET_CG
	pmeswt_netpv_grosspv_10	\$PMESWTNETGROSS_CG
	pmeswt_full_pv_10	\$PMESWTALL_CG

# Faceplates

## Overview

During operation, clicking a genie of the `sgc_devices` library allows you to display a faceplate with the following tabs:

- Standard tabs:
  - Operator Tab
  - Analog Tab
  - Digital Tab

## Faceplate Description

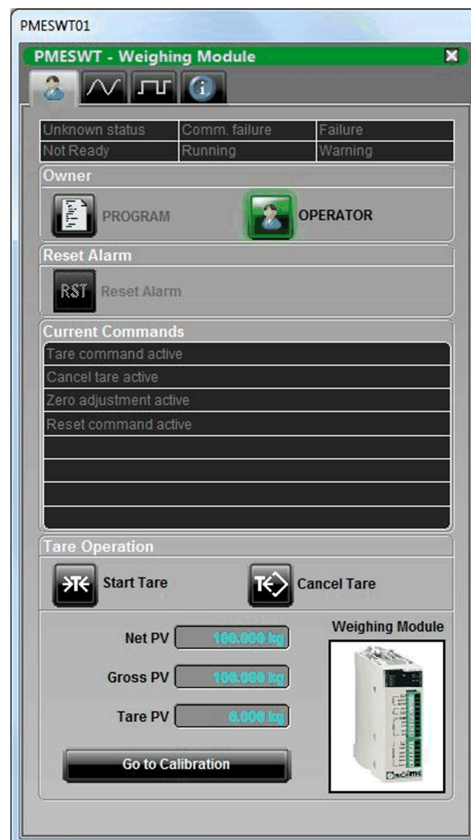
At the beginning of this manual, you can find the description of:

- The color convention, page 30 that is used to display data on the faceplate.
- The buttons, page 36 that appear on the different tabs.

## Operator Tab

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





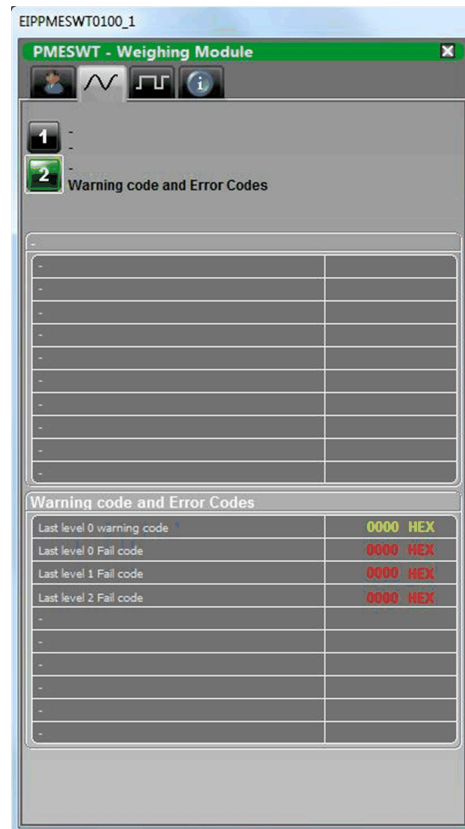
### Tare Operation

- **Start Tare:** When **Start Tare** operation command is given, net measurement (Net PV) is set to zero and Tare PV will show the tare value of the weight on load cell.
- **Cancel Tare:** When **Cancel Tare** operation command is given, Tare PV value will be set to zero and Net PV will show the weight on load cell.

**NOTE:** When the device is in Out of Service mode, then **Go to Calibration** button will be highlighted with a yellow colour background.

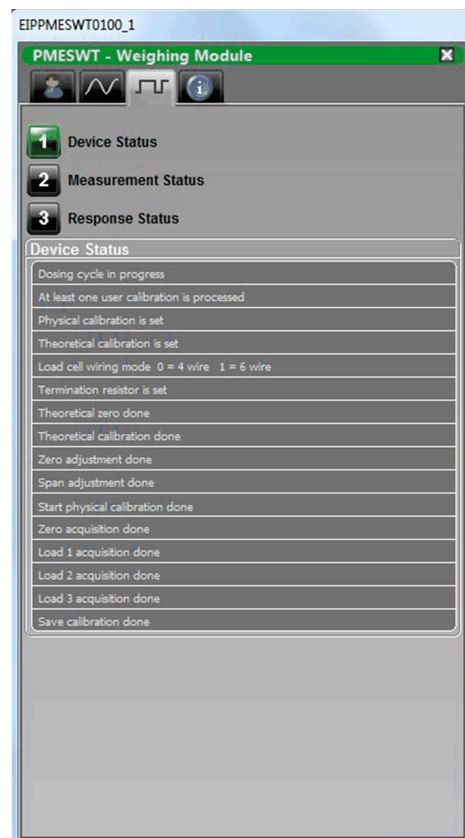
## Analog Tab

This tab provides information about the analog data provided by the device.



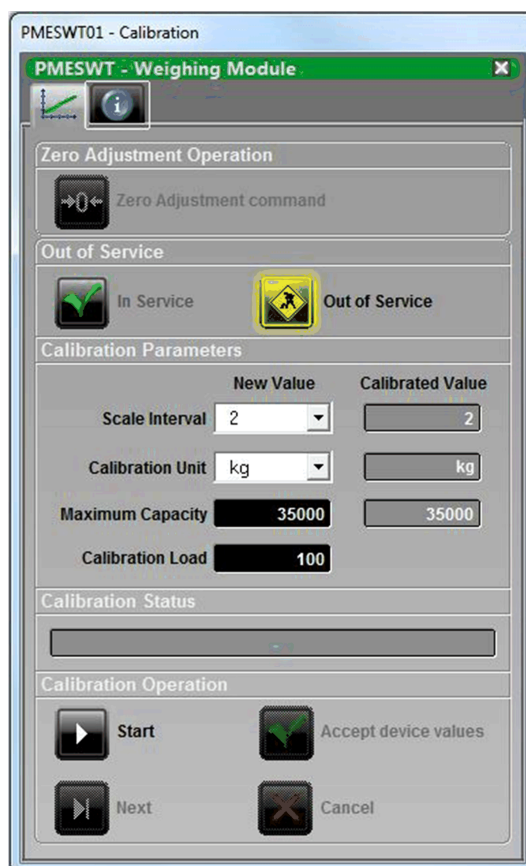
## Digital Tab

This tab provides information about the digital data provided by the device.



## Calibration Faceplate

This faceplate is used to calibrate the device.



### Zero Adjustment Operation

- **Zero Adjustment command:** When Zero Adjustment command is given, it will set Net PV, Gross PV and Tare PV to zero.

Example: Consider an application of a running conveyor with filling milk bottles, here an empty conveyor has some weight which is running over the load cell, here you can perform the zero adjustment which sets the Net PV, Gross PV, Tare PV values to zero, then the empty milk bottles on the conveyor will have some weight which can be tared to show the Tare PV value, and any filling of the milk bottle will display the Net PV value.

Tare PV + Net PV = Gross PV.

## Calibration Procedure

### Calibration Procedure of Weighing Module

Step	Action
1	During first scan or rising edge of <code>EnableDFB</code> , control function will be in Program mode and in In-Service mode.
2	Operator has to perform a <code>Reset</code> command from the device Faceplate to reset the communication interruption. <b>NOTE:</b> If external calibration is done before taking the control function to process at the first scan, you should follow step 3.

Step	Action
3	You can go to Owner (Operator mode) from device faceplate and to OOS mode from the calibration faceplate. You can either start a fresh calibration or <b>Accept Device Values</b> (calibrated values that are already stored will be accepted). Once <b>Accept Device Values</b> is done, you can go to In-Service mode and perform reset command from device faceplate. Thereby, resetting the detected fail conditions and control function will go to <i>Ready</i> state and process.
4	Refer to the flow chart for more information on the calibration process.

## Steps to Follow to Calibrate the Weighing Module

Step	Action
1	You need to go to Owner (Operator mode) from device faceplate and to OOS mode from the calibration faceplate.
2	You should enter the known calibration parameters (Scale Interval, Calibration Unit, Maximum Capacity, and Calibration Load) as required for calibration. <b>NOTE:</b> You can select the Scale Interval and Calibration Unit from the dialog box. Device supported Scale Interval and Calibration Unit are 1, 2, 5, 10, 20, 50 and g, kg, t, oz, lb, N (SI Units) respectively.
3	You can now start calibration by executing <b>Start</b> command. <b>NOTE:</b> After every calibration step command, a status message is displayed on the calibration faceplate.
4	After successful execution of <b>Start</b> command, <b>Start Physical Calibration Done</b> status will be displayed. You can click <b>Next</b> to perform the next step calibration command to perform <b>Zero Acquisition</b> or <b>Cancel</b> the calibration process. <b>NOTE:</b> <ul style="list-style-type: none"> <li>If <b>Cancel</b> button is clicked, then last calibrated values are written back to the device register.</li> <li><b>Start</b> and <b>Accept Device Values</b> button will be disabled to restrict you from entering wrong command execution.</li> </ul>
5	After successful execution of Zero acquisition command, <b>Zero Acquisition Done</b> status will be displayed. You can click <b>Next</b> to perform the next step calibration command to perform <b>Load 1 Acquisition</b> or <b>Cancel</b> the calibration process. <b>NOTE:</b> <ul style="list-style-type: none"> <li>If <b>Cancel</b> button is clicked, then last calibrated values are written back to the device register.</li> <li><b>Start</b> and <b>Accept Device Values</b> button will be disabled to restrict you user from entering wrong command execution.</li> </ul>
6	After successful execution of <b>Load 1 Acquisition</b> command, <b>Load 1 Acquisition Done</b> status will be displayed. <b>NOTE:</b> <b>Start</b> , <b>Accept Device Values</b> and <b>Cancel</b> button will be disabled to restrict you from entering wrong command execution
7	After successful execution of <b>Load 1 Acquisition</b> command, you can click <b>Next</b> button to save the calibrated parameters to the device and reset the device, a status message <b>Calibration Done</b> and <b>Parameters Saved</b> will be displayed of the calibration faceplate. <b>NOTE:</b> After successful calibration parameters saved to device, device will reset and <i>CommFail</i> signal will be high, now you can go to In-service mode and execute reset command to clear the <i>CommFail</i> signal and bring the control function to <i>Ready</i> state.

**NOTE:** If Device status is in any intermediate calibration state, external calibration (that is *Physical Calibration Done*, *Zero Acquisition Done*, *Load1 Acquisition Done* or *Save Calibration Done*). You cannot perform any calibration operation from the calibration faceplate until the external calibration operation is completed successfully. Once the external calibration operation is completed successfully, it is suggested to start and finish the calibration process or accept device values before taking the control function in process.

Tare and Zero Adjustment operation can be performed when the device is in In-service mode and Owner is in Operator mode.

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