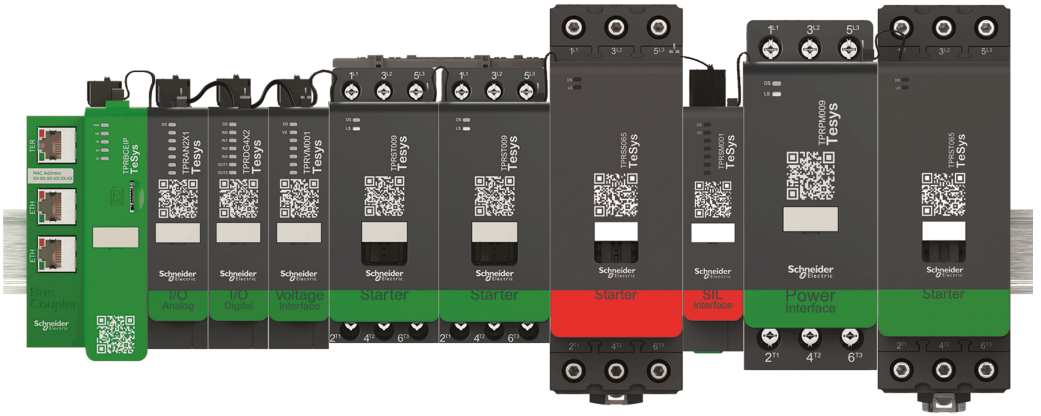
TeSys Active

TeSys™island DTM

Online Help

TeSys offers innovative and connected solutions for motor starters.

8536IB1907-05
05/2023



www.se.com

Legal Information

Table of Contents

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 personnel 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.

About the Book

Document Scope

The purpose of this document is to help you to:

- Install and use different functions of TeSys island DTM Library configuration software.
- Configure the parameters of TeSys island .

Validity Note

This document has been updated with the release of SoMove software V2.9.4 or later version and TeSys island DTM Library V2.4.1 or later.

This instruction bulletin is valid for all TeSys island configurations. The availability of some functions described in the bulletin depends on the communication protocol used and the physical modules installed on theTeSys island.

For product compliance with environmental directives such as RoHS, REACH, PEP, and EOLI, go to www.se.com/green-premium.

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

Related Documents

Title of Documentation	Reference Number
TeSys island System, Installation, and Operation Guide	DOCA0270EN
TeSys island – EtherNet/IP™ – Quick Start and Function Block Library Guide	DOCA0271EN
TeSys island – PROFINET and PROFIBUS – Quick Start and Function Block Library Guide	DOCA0272EN
TeSys island – Functional Safety Guide	8536IB1904
TeSys island – Third Party Function Block Guide	8536IB1905

You can download these technical publications and other technical information from our website at www.se.com/ww/en/download/ .

Cybersecurity

Introduction

Cybersecurity is a branch of network administration that addresses attacks on or by PCs and through PC networks that can result in accidental or intentional disruptions. The objective of cybersecurity is to help provide increased levels of protection for information and physical assets from theft, corruption, misuse, or accidents while maintaining access for their intended users.

No single cybersecurity approach is adequate. Schneider Electric recommends a defense-in-depth approach. Conceived by the National Security Agency (NSA), this approach layers the network with security features, appliances, and processes. The basic components of this approach are:

- Risk assessment
- Security plan built on the results of the risk assessment
- Multi-phase training campaign
- Physical separation of the industrial networks from enterprise networks using a demilitarized zone (DMZ) and the use of firewalls and routing to establish other security zones
- System access control
- Device hardening
- Network monitoring and maintenance

This section defines elements that help you configure a system that is less susceptible to cyber attacks. For detailed information on the defense-in-depth approach, refer to the *Recommended Cybersecurity Best Practices* on the Schneider Electric website.

Schneider Electric's Approach on Cybersecurity

Schneider Electric adheres to industries best practice in the development and implementation of control systems. This includes a defense-in-depth approach to secure an industrial control system. This approach places the controllers behind one or more firewalls to restrict access to authorized personnel and protocols only.

⚠WARNING

UNAUTHENTICATED ACCESS AND SUBSEQUENT UNAUTHORIZED OPERATION

- Evaluate whether your equipment or complete environment are connected to your critical infrastructure and, if so, take appropriate steps in terms of prevention, based on defense-in-depth, before connecting the automation system to any network.
- Limit the number of devices connected to a network inside your company.
- Isolate your industrial network from other networks inside your company.
- Protect any network against unintended access by using firewalls, VPN, or other, proven security measures.
- Monitor activities within your systems.
- Prevent subject devices from direct access or direct link by unauthorized parties or unauthenticated actions.
- Prepare a recovery plan including backup of your system and process information.

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

Cyber Threats

Cyber threats are deliberate actions or accidents that can disrupt the normal operations of PCs and PC networks. These actions can be initiated from within the physical facility or from an external location. Security challenges for the control environment include:

- Diverse physical and logical boundaries
- Multiple sites and large geographic spans
- Adverse effects of security implementation on process availability
- Increased exposure to worms and viruses migrating from business systems to control systems as business-control communications become more open
- Increased exposure to malicious software from USB devices, vendor and service technician laptops, and the enterprise network
- Direct impact of control systems on physical and mechanical systems

Sources of Cyber Attacks

Implement a cybersecurity plan that accounts for various potential sources of cyber attacks and accidents, including:

Source	Description
Internal	• Inappropriate employee or contractor behavior • Disgruntled employee or contractor
External opportunistic (non-directed)	• Script kiddies(1) • Recreational hackers • Virus writers
External deliberate (directed)	• Criminal groups • Activists • Terrorists • Agencies of foreign states
Accidental	
(1) Slang term for hackers who use malicious scripts written by others without necessarily possessing a comprehensive understanding of how the script works or its potential impact on a system.	

A deliberate cyber attack on a control system may be launched to achieve a number of malicious results, including:

- Disrupt the production process by blocking or delaying the flow of information.
- Damage, disable, or shut down equipment to negatively impact production or the environment.
- Modify or disable safety systems to cause intentional harm.

How Attackers Gain Access

A cyber attacker bypasses the perimeter defenses to gain access to the control system network. Common points of access include:

- Dial-up access to remote terminal unit (RTU) devices
- Supplier access points (such as technical support access points)
- IT-controlled network products
- Corporate virtual private network (VPN)
- Database links
- Poorly configured firewalls
- Peer utilities

Reporting and Management

To submit a cybersecurity question, report security issues, or to get the latest news from Schneider Electric, visit our Schneider Electric website.

Schneider Electric Guidelines

Introduction

Your PC can run a variety of applications to enhance security in your control environment. The system has factory default settings that require reconfiguration to align with Schneider Electric's device hardening recommendations of the defense-in-depth approach.

The following guidelines describe procedures in a Windows operating system. They are provided as examples only. Your operating system and application may have different requirements or procedures.

Disabling Unused Network Interface Cards

Verify that network interface cards not required by the application are disabled. For example, if your PC has two cards and the application uses only one, verify that the other network card (Local Area Connection 2) is disabled.

Perform the following steps to disable a network card in Windows:

Step	Action
1	Open **Control Panel > Network and Internet > Network and Sharing Center > Change Adapter Settings**.
2	Right-click the unused connection, and select **Disable**.

Configuring the Local Area Connection

Various Windows network settings provide enhanced security aligned with the defense-in-depth approach that Schneider Electric recommends.

In Windows systems, access these settings by opening **Control Panel > Network and Internet > Network and Sharing Center > Change Adapter Settings > Local Area Connection (x).**

This list is an example of the configuration changes you might make to your system on the **Local Area Connection Properties** screen:

- Disable all IPv6 stacks on their respective network cards. (For example this PC doesnot require the IPv6 address range and disabling the IPv6 stacks limits vulnerability to potential IPv6 security risks.
- Disable **File and Print Sharing for Microsoft Network**.

Schneider Electric defense-in-depth recommendations also include the following:

- Define only static IPv4 addresses, subnet masks, and gateways.
- Do not use DHCP or DNS in the control room.

Managing Windows Firewall

Schneider Electric defense-in-depth approach recommendations include enabling the Windows host firewall on all PC. Enable the firewalls for any public or private profile listed.

It is recommended practice that users define firewall rules that refuse connections to or from any unknown or untrusted external host.

Disabling the Remote Desktop Protocol

Schneider Electric defense-in-depth approach recommendations include disabling remote desktop protocol (RDP) unless your application requires the RDP.

The following steps describe how to disable the protocol:

Step	Action
1	In Windows 2008R2 or Windows 7, disable RDP via **Computer > System Properties > Advanced System Settings**.
2	On the **Remote** tab, deselect the **Allow Remote Assistance Connections to this Computer** check box.
3	Select the **Don't Allow Connection to this Computer** check box.
4	In Windows 10, remote desktop protocol (RDP) is disabled using **Settings > System > Remote Desktop > Enable Remote Desktop** (Toggle to **Off**)

Updating Security Policies

Update the security policies on the PC by `gpupdate` in a command window. For more information, refer to the Microsoft documentation on `gpupdate`.

Disabling LANMAN and NTLM

The Microsoft LAN Manager protocol (LANMAN or LM) and its successor NT LAN Manager (NTLM) have vulnerabilities that make their use in control applications inadvisable.

The following steps describe how to disable LM and NTLM in a Windows system:

Step	Action
1	In a command window, execute `secpol.msc` to open the **Local Security Policy** window.
2	Open **Security Settings > Local Policies > Security Options**.
3	Select **Send NTLMv2 response only. Refuse LM & NTLM** in the **Network Security: LAN Manger authentication level** field.
4	Select the **Network Security: Do not store LAN Manager hash value on next password change** check box.
5	In a command window, enter `gpupdate` to commit the changed security policy.

Managing Updates

Before deployment, update all PC operating systems using the utilities on Microsoft's **Windows Update** web page. To access this tool in Windows, select **Start > All Programs > Windows Update**.

Workstation Protection

To reduce the security risks associated with the engineering workstation, enable the memory exploit settings such as Data Execution Prevention (DEP) and Address Space Layout Randomization (ASLR). These security settings can be enabled by using the system exploit protection settings in Windows 10 operating system. For more information, refer to the Microsoft security features webage.

Introduction

Basics

TeSys island is a modular, multifunctional system providing integrated functions inside an automation architecture, primarily for the direct control and management of low-voltage loads. TeSys island can switch, help protect, and manage motors and other electrical loads up to 80 A (AC1) or 65 A (AC3) installed in an electrical control panel.

This system is designed around the concept of TeSys avatars .

These avatars:

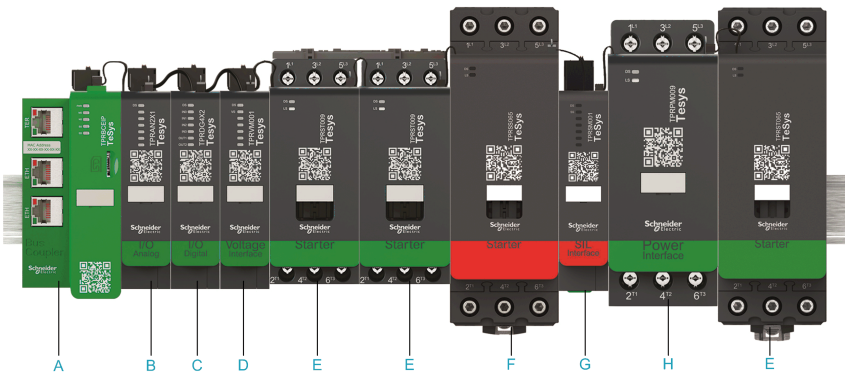
- Represent both the logical and physical aspects of the automation functions.
- Determine the configuration of the island.

The logical aspects of the TeSys island are managed with software tools, covering all phases of product and application lifecycle: design, engineering, commissioning, operation, and maintenance.

The physicalTeSys island consists of a set of devices installed on a single DIN rail, and connected together with a flat cable providing the internal communication between modules. The external communication with the automation environment is made through a single bus coupler module, and the TeSys island is seen as a single node on the network.

The other modules include starters, power interface modules, analog and digital IO modules, voltage interface modules, and SIL interface modules, covering a wide range of operational functions.

TeSys island Overview



A Bus Coupler

B Analog I/O Module

C Digital I/O Module

D Voltage Interface Module

E Standard Starter

F SIL Starter

G SIL Interface Module

H Power Interface Module

DTM Overview

The DTM (Device Type Manager) is used together with FDT container (Field Device Tool container, also referred to as FDT frame) to commission and diagnose TeSys island. The combination of FDT and DTM is also called commissioning software.

Once a DTM is installed, it can be used by different FDT containers.

Examples of FDT containers:

- SoMove software(Schneider Electric)
- FDT CONTAINER (M&M Software GmbH)

Functions of the DTM

The functions of the DTM include:

- Scanning various fieldbuses for devices
- Device power and energy monitoring
- Management of configuration of device parameters
- Project file management
- Customization of device parameter units
- Troubleshooting

Prerequisites, Installing, and Uninstalling the TeSys island DTM Library

Prerequisites

Accessing the TeSys island DTM Library Software

The latest version of the TeSys island DTM Library software is available from the website www.se.com/en/download.

NOTE: You must have administrator rights to install or uninstall the TeSys island DTM Library software on your PC.

System Requirements

This software can be installed on the following operating system:

- Microsoft Windows 7 SP1 (32/64-bit) or
- Microsoft Windows 10

Software Requirements

The TeSys island DTM Library requires the following software installed on the PC:

- Microsoft .NET Framework v3.5 SP1
- SoMove v2.9.2 or later or FDT Frame Application compliant to the FDT standard v1.2.1
- Modbus DTM Library v2.6.12 or later

Hardware Requirements

Minimum hardware requirements are:

PC hardware	Specification
Processor	Pentium 4/Core 2 Duo, 2 GHz
RAM	2 GB

PC hardware	Specification
Hard disk space	1 GB of disk space must be available.
Display resolution	Resolution: 1024 x 768, 1366 x 768, 1600 x 1200 and 1920 x 1080 pixels. DPI: 96 (100%) and 120 (125%)

Recommended hardware requirements are:

PC hardware	Specification
Processor	Intel (R) Core (TM) i3
RAM	4 GB
Hard disk space	2 GB
Display resolution	Resolution: 1600 x 1200 and 1920 x 1080 pixels. DPI: 96 (100%) and 120 (125%)

Installing the TeSys island DTM Library

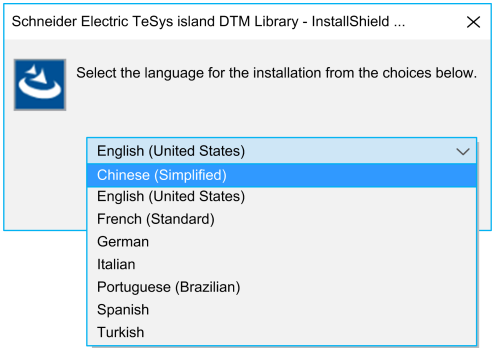
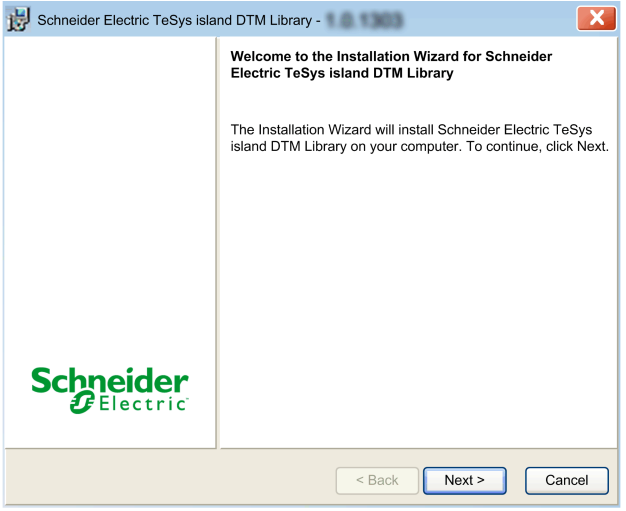
Overview

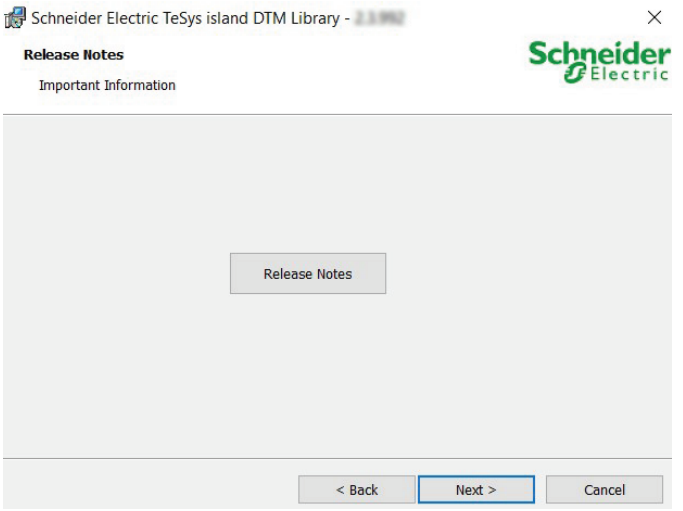
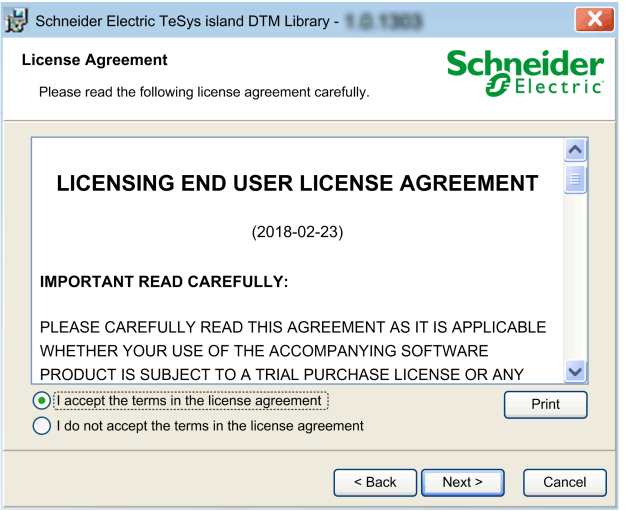
The TeSys island DTM Library is installed with the following file:

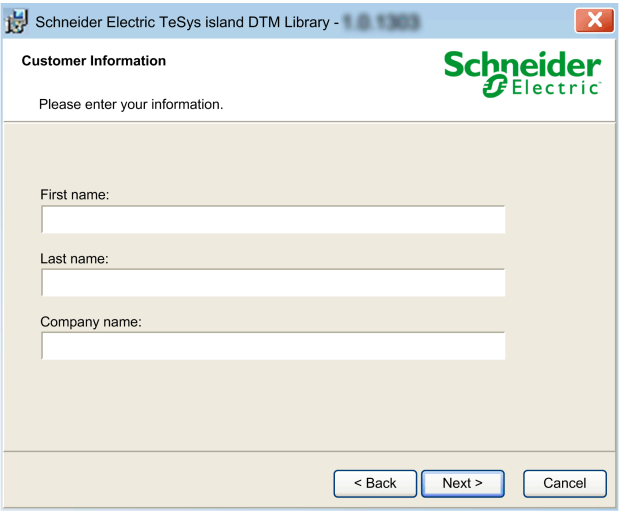
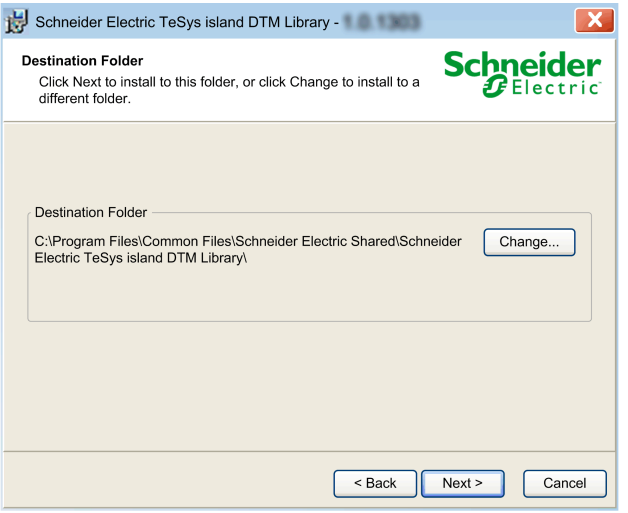
Schneider_Electric_TeSys_island_DTM_Library_V2.4.1.exe or later

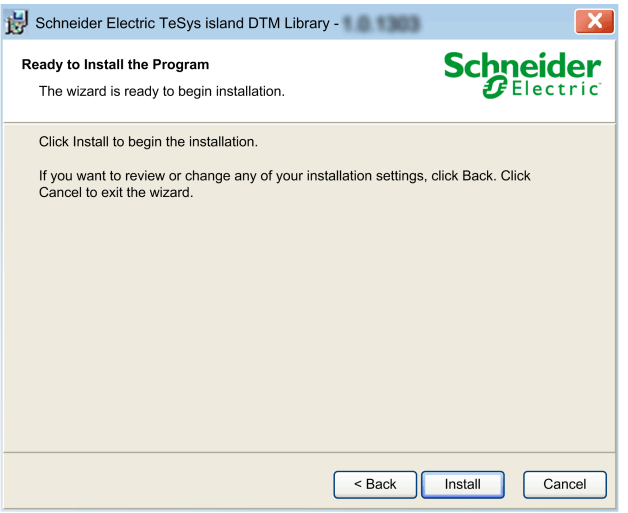
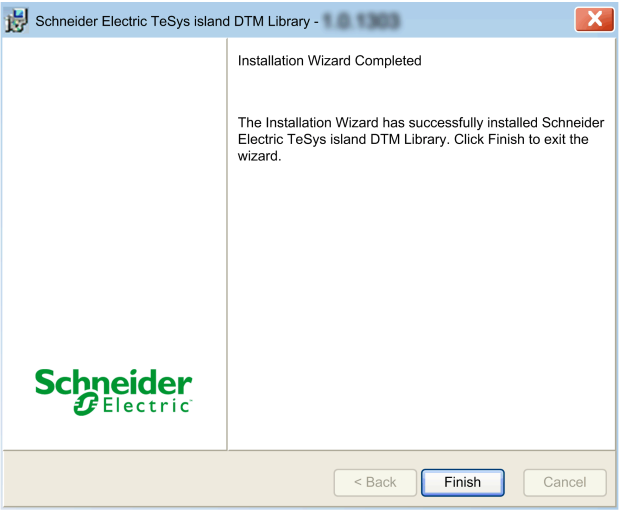
This table describes the procedure to install the TeSys island DTM Library:

Step	Action
1	Verify that the hardware and software requirements mentioned in the section Prerequisites, page 17 are fulfilled.
2	Double-click the *Schneider_Electric_TeSys_island_DTM_Library_V2.4.1.exe* or later file.

Step	Action
3	Select the language of the software to be installed and click **OK**. 
4	Click **Next** to start the installation process. 

Step	Action
5	Click **Release Notes** to view product information or click **Next**. 
6	Read the license agreement carefully, and select **I accept the terms in the license agreement** option and click **Next**. 

Step	Action
7	Enter the required details in the **Customer Information** and click **Next**. 
8	Click **Next** to install in the selected path, or click **Change...** to select a different path for the installation. 

Step	Action
9	Click **Install** to start the installation. 
10	Click **Finish** to exit the installer. 

Uninstalling the TeSys island DTM Library

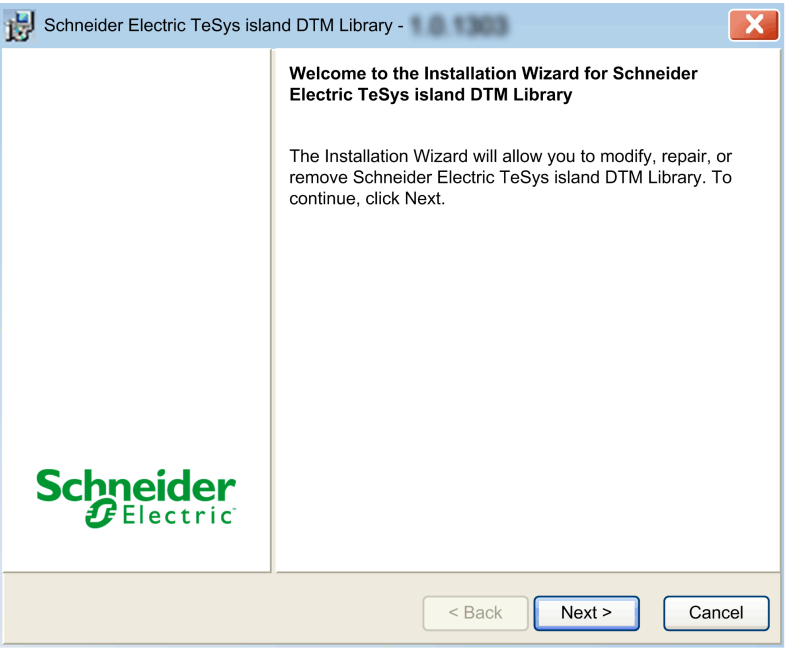
Overview

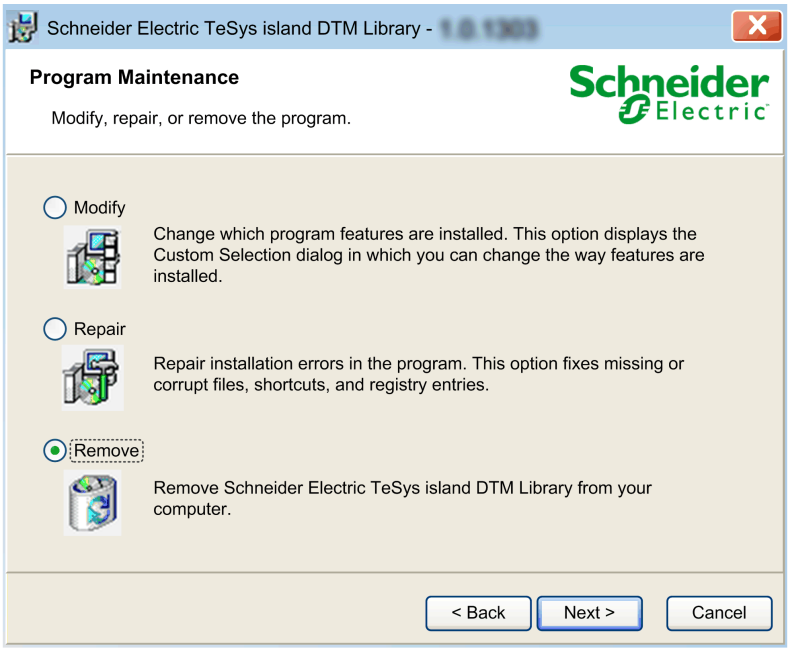
You can uninstall the TeSys island DTM Library via the setup (.exe) file or from the **Control Panel** in Windows.

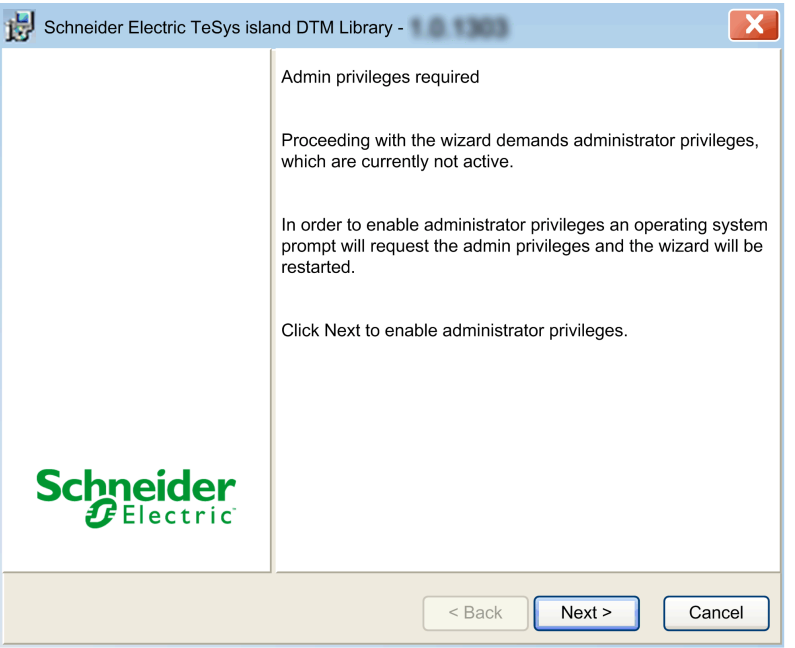
Procedure

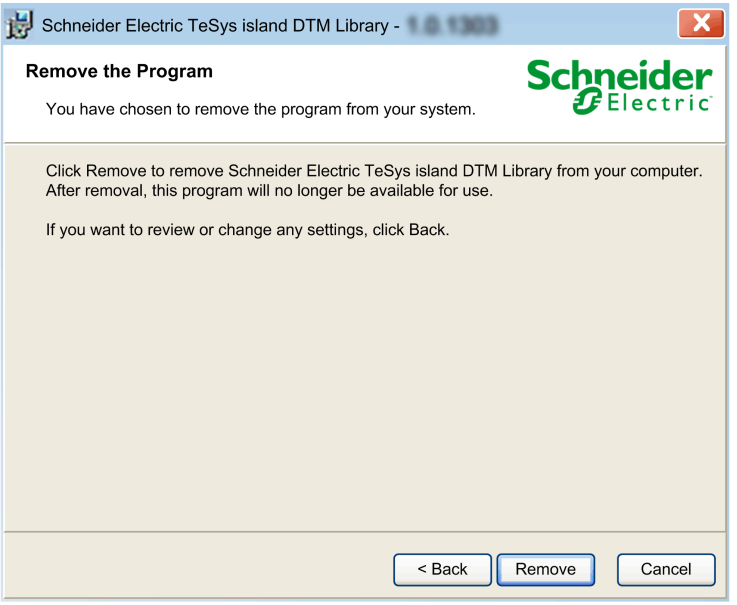
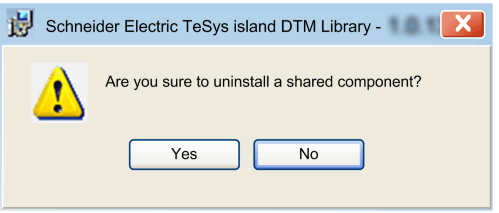
This table describes the procedure to uninstall the TeSys island DTM Library from the computer:

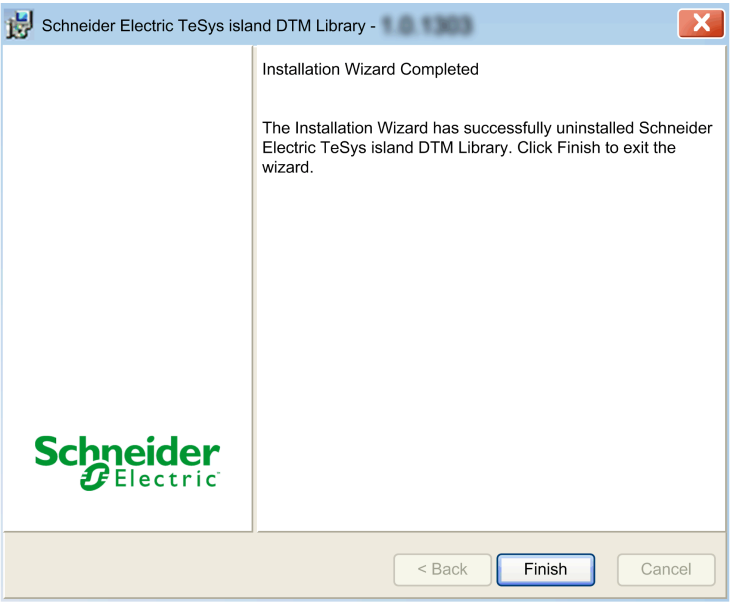
Step	Action
1	Close all instances of the FDT container running TeSys island DTM Library.
2	Select one of the following based on the operating system installed on the PC: • For Microsoft Windows 7, from the Microsoft Windows taskbar icon, click **Start > Control Panel > Programs > Programs and Features**. • For Microsoft Windows 10, from the Microsoft Windows taskbar icon, click **Start** → search. Type **Control Panel**. When the **Control Panel** appears, click **Programs and Features**. Select the TeSys island DTM Library file.
3	Right-click on the TeSys island DTM Library file and select **Change**.

Step	Action
	Result: The following screen appears. 
4	Click **Next**.

Step	Action
5	Select **Remove** and click **Next**. 
6	Click **Next**.

Step	Action
	 **Result**: A message box appears, prompting you to confirm the administrator privileges.
7	Click **Yes**.

Step	Action
8	Click **Remove** to uninstall TeSys island DTM Library from your PC.  **Result:** A message box appears. 
9	Click **Yes** to confirm the removal of TeSys island DTM Library.
10	Click **Finish** to exit the installer.

Step	Action
	

Schneider Electric TeSys island DTM Library -
Installation Wizard Completed
The Installation Wizard has successfully uninstalled Schneider Electric TeSys island DTM Library. Click Finish to exit the wizard.
Schneider Electric
< Back
Finish
Cancel

User Interface

Launching the TeSys island DTM Library

Launching SoMove software

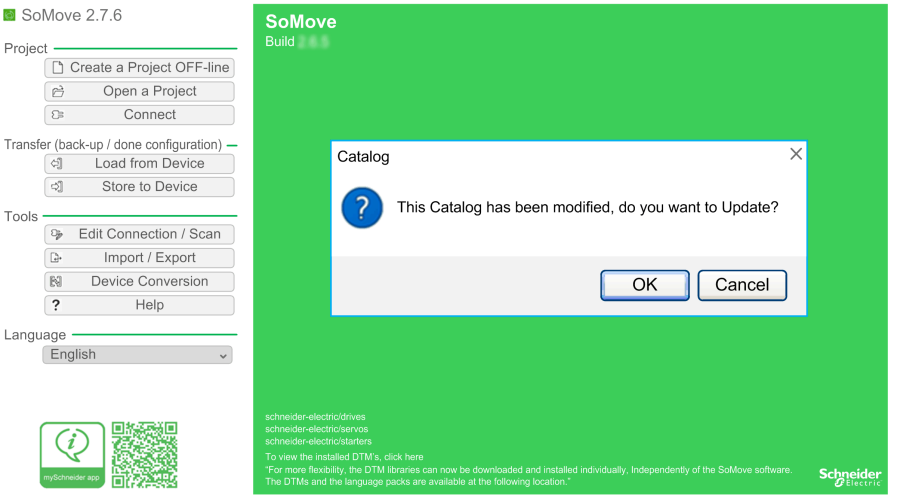
To create an instance of the TeSys island DTM Library, you need to first launch SoMove software.

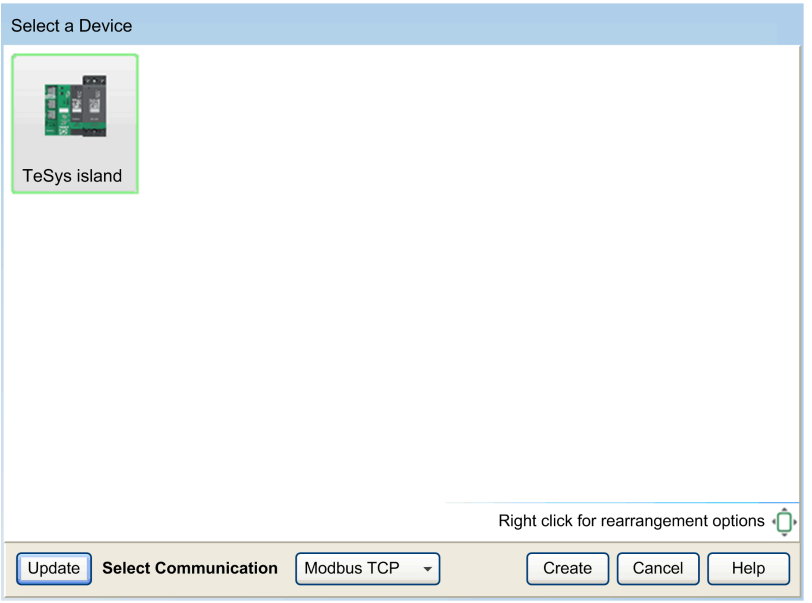
You can open SoMove software in one of the following ways:

- Double-click the  icon located on the desktop.
- In Microsoft Windows 7 SP1, from the windows taskbar, go to **Start > All Programs > Schneider Electric > SoMove** and click the  icon.
- In Microsoft Windows 10, from the windows taskbar, click **Start** → search. Type SoMove. Click **SoMove** when it appears.

Creating an Instance of the TeSys island DTM Library

This table describes the procedure to create an instance of the TeSys island DTM Library:

Step	Action
1	Open SoMove software. **Result**: The following screen is displayed. 
2	Click **OK** to update the catalog. **NOTE:** The **Catalog** window appears for the first time when you install the TeSys island DTM Library and launch SoMove.

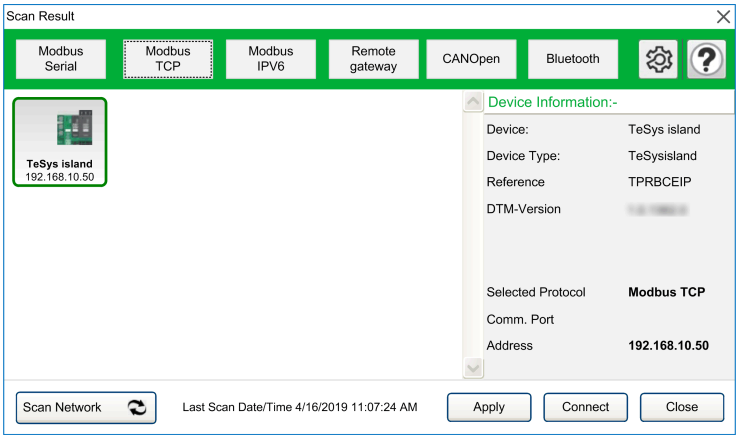
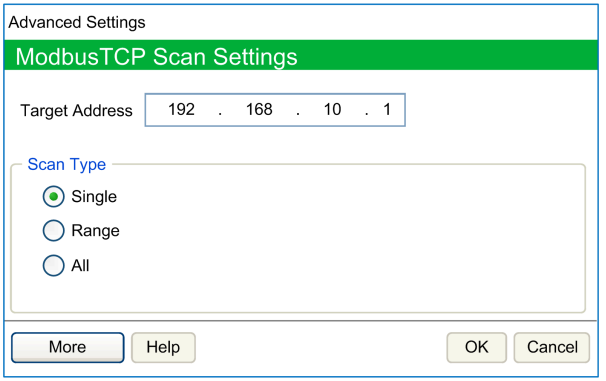
Step	Action
3	Click **Create a Project OFF-line**. **Result**: The **Select a Device** screen appears. 
4	Select TeSys island, and click **Create**. **NOTE:** The communication between TeSys island and DTM is through only Modbus TCP protocol irrespective of other fieldbus protocols. **Result**: The TeSys island DTM Library work area, My island, page 34 opens.

Connecting the Device on Network

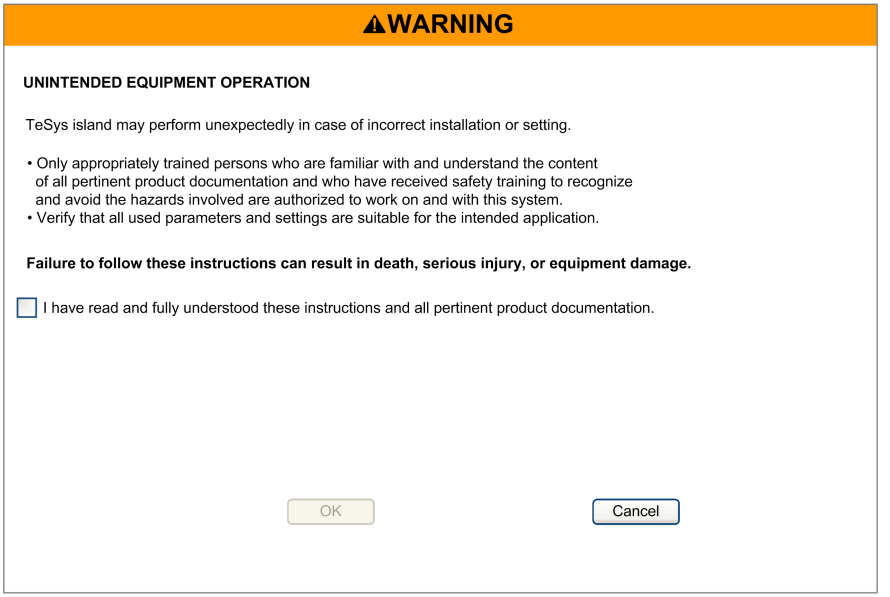
This action retrieves the configuration of the connected device. SoMove software remains connected to this device during the session.

This table describes the procedure to connect to the device:

Step	Action
1	Open SoMove software.
2	You can use one of the following ways to connect to the device: • In the start page, click **Edit Connection/Scan**. • On the toolbar, click  .

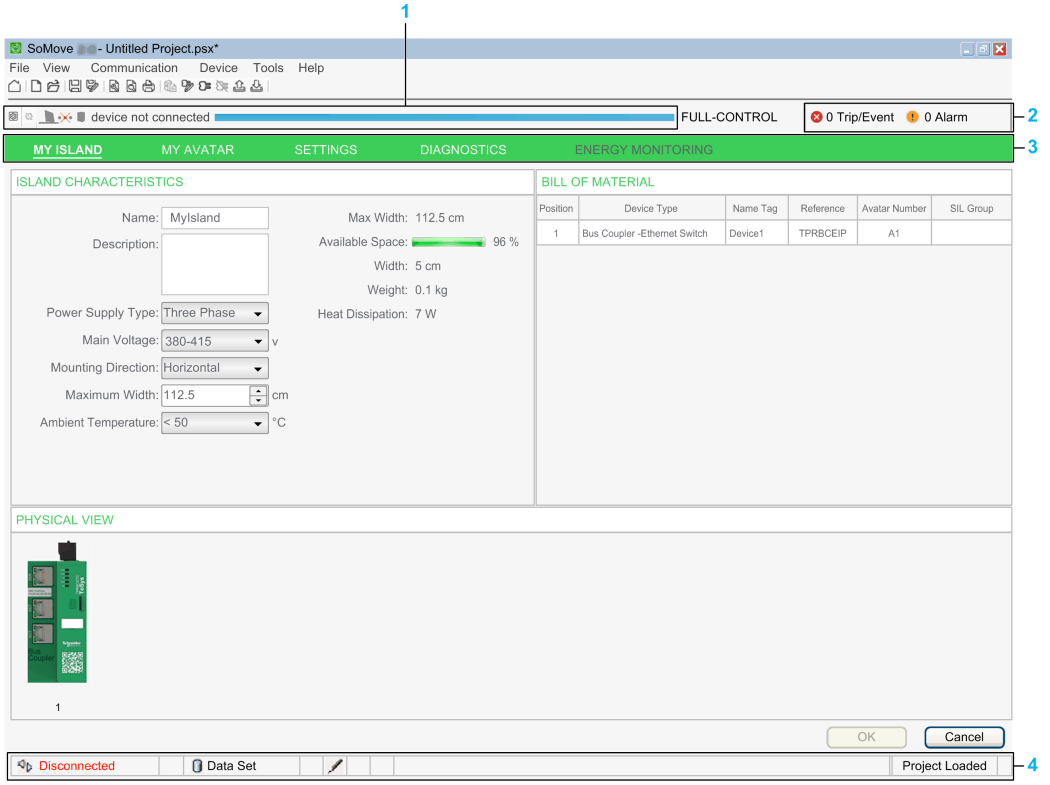
Step	Action
	• On the menu bar, click **Communication > Edit Connection/Scan**. **Result:** The following screen appears. 
3	In the **Scan Result** dialog box, click **Modbus TCP** tab.
4	Click  . **Result:** The following screen appears. 
5	In the **Advanced Settings** dialog box, enter the network address in the **Target Address**.
6	Select the **Scan Type**: • **Single**: Scans a single address of one target device in the range from 0 to 255 of the specified network range. • **Range**: Scans a specified address range from 0 to 255 in the defined network range. • **All**: Scans the complete address range of the defined network range (all addresses from 0 to 255).

Step	Action
7	Click **OK**. **Result:** The modifications are saved and the **Advanced Settings** dialog box is closed. The new values will be applied at the next scan. **NOTE:** • If you click **Cancel**, the **Advanced Settings** dialog box closes without any changes and the default values are applied at the next scan. • You can click **More** to configure additional settings.
8	Click  in **Scan Result** dialog box. **Result:** Displays all the devices on the network with Modbus TCP connectivity.

Step	Action
9	Select the suitable TeSys island device and click **Connect**. **Result:** The following safety message appears. 
10	When all the requirements of the safety message have been met, select the checkbox and click **OK**. **Result:** The TeSys island is connected to your computer. **NOTE:** If your computer is unable to establish the connection with the device: • Verify that the cable between the device and the computer is connected correctly. • Verify that the device is connected to the power supply. • Click the **Advanced Setting** button to verify that the connection parameters are defined correctly.

Introduction to TeSys island DTM Library

The TeSys island DTM Library contains the following:



1 Tool bar, page 36

2 Trip/Event status, page 38

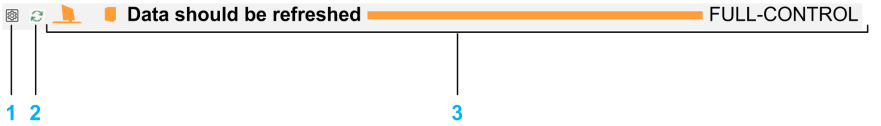
3 Tabs, page 39

4 Status bar, page 36

For details on user functions of TeSys island DTM Library, refer to User Functions, page 114.

Tool Bar, Status Bar, and Trip or Event Status

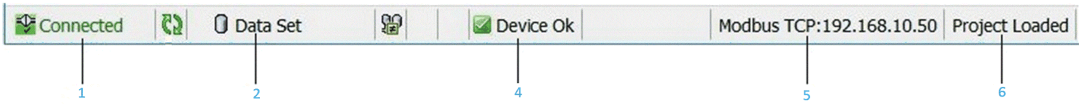
Tool Bar



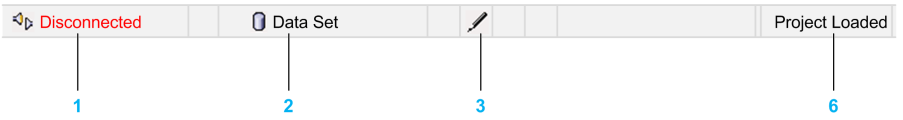
Item	Name	Description
1	**Control Panel**	Shows or hides the **Control Panel** bar. For more information, refer to Control Panel, page 110.
2	**Refresh**	Refreshes the data. When the DTM is in Online mode, the configuration parameters are loaded from the device and updated in the DTM.
3	**Synchronization Status**	Indicates the connection status of the device. The status bar is displayed with a color coding: • **Device connected**: Orange • **Device not connected**: Blue **FULL-CONTROL**: Indicates that you have full control of the island and can configure the parameters. **READ-ONLY**: Indicates that you do not have full control of the device and cannot modify the parameters. **NOTE:** • When the connection with the device is established for the first time, the DTM is in **FULL-CONTROL** mode. • When the device is already connected to another DTM instance or OMT, the DTM is in **READ-ONLY** mode. • When the other connection with the device is closed, the DTM changes to **FULL-CONTROL** mode automatically.

Status Bar

Online mode:

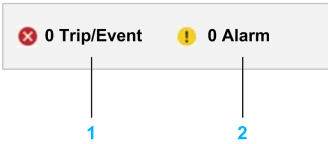


Offline mode:



Item	Name	Description
1	DTM connection	**Disconnected**: The device is not connected. **Connected**: The device is connected. **Disturbed**: The connection with device has been lost.
2	Data source	**Data set**: The parameter values in the data set can be modified in Online mode. **Data set or device locked**: The device is protected in Online mode. **Device**: The device data set contains information. **Device/Data set**: All parameter values are stored to both data sources.
3	Pen icon	The parameter values have been changed in the data source.
4	Device status	**Detected event**: The device has detected an event. **Device OK**: The device is functioning properly.
5	Communication status	Shows the active communication protocol and the device network address.
6	Project status	**Project Loaded**: A project is displayed in the work area. **No Project Open**: The work area is empty **NOTE:** The project status is displayed in both Online and Offline modes.

Trip/Event Status



Item	Name	Description
1	**Trip/Event**	Displays the number of detected trips or events.
2	**Alarm**	Displays the number of detected alarms.

Tabs

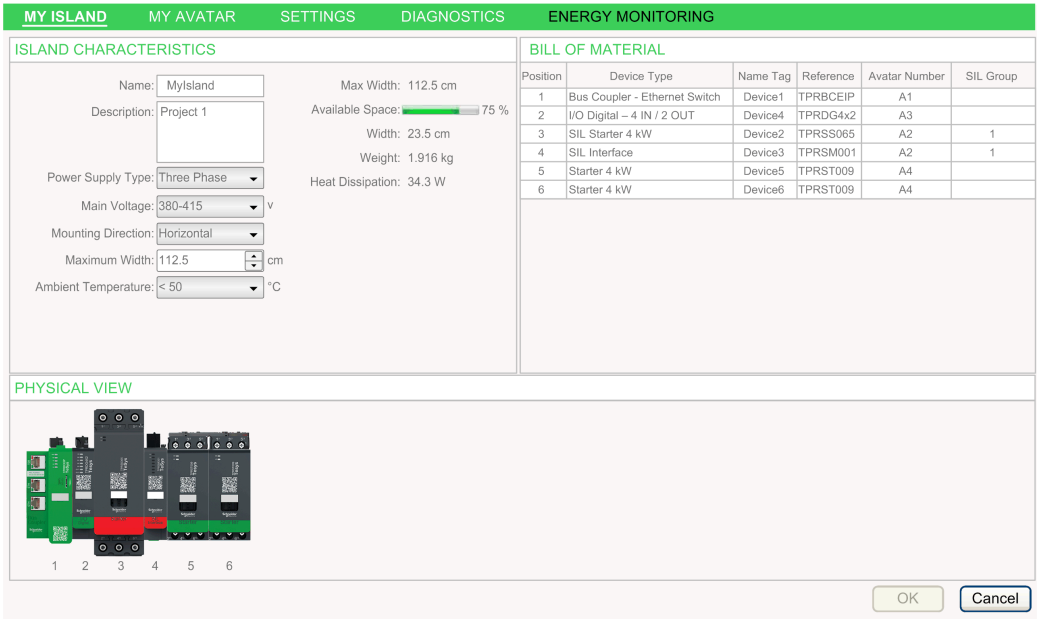
MY ISLAND Tab

Overview

This tab displays the characteristics of the TeSys island and allows you to configure them.

NOTE: You can configure the characteristics of the **MY ISLAND** tab only when the device is not connected to the TeSys island (offline mode).

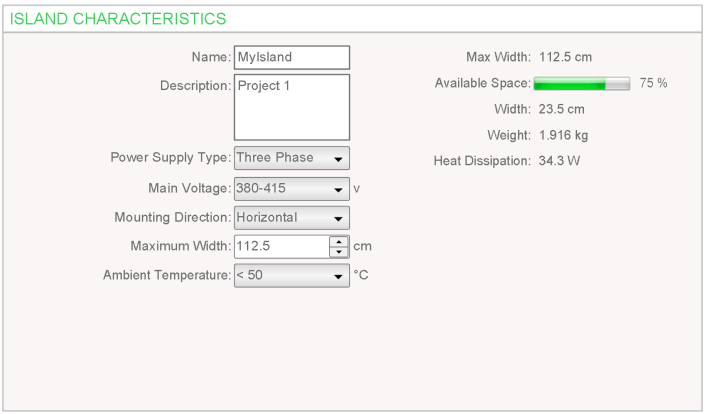
MY ISLAND Tab Description



The **MY ISLAND** tab has the following sections:

- **ISLAND CHARACTERISTICS**
- **BILL OF MATERIAL**
- **PHYSICAL VIEW**

ISLAND CHARACTERISTICS



This table lists the characteristics of the island:

Characteristics	Description
Name	Enter the name of the TeSys island.
Description	Enter the description.
Power Supply Type	Select the type of power supply from the drop-down list. Supply type: **Single Phase** or **Three Phase**.
Main Voltage	Select the main voltage of the TeSys island from the drop-down list. **NOTE:** The main voltage values depend on the **Power Supply Type** selected and the **Customized Units**, page 116 for motor rating.
Mounting Direction	Select the mounting direction of the device (**Horizontal** or **Vertical**). **NOTE:** If the ambient temperature exceeds 50 °C or if **Vertical** mounting is selected, the derating factor is accounted for in the starter selection.
Maximum Width	Set the maximum width of the TeSys island. Range: 7.5 cm to 112.5 cm
Ambient Temperature	Select the ambient temperature from the drop-down list. Range: <50 °C or ≥50 °C
Max Width	Displays the maximum width which you have set.
Available Space	Displays the available space on the TeSys island.

Characteristics	Description
	NOTE: The available space is calculated based on the width, energy consumption, size of input dataset* and number of modules on the island. **NOTE:** * indicates that it is applicable for Profibus protocol only.
Width	Displays the total width of the configured devices on the TeSys island.
Weight	Displays the total weight of the configured devices on the TeSys island.
Heat Dissipation	Displays the total heat dissipation of the configured devices on the TeSys island.

BILL OF MATERIAL

The bill of material displays the devices and accessories configured on the TeSys island.

Based on the avatar type and the reference numbers of the devices selected to compose the island, the related accessories will be included in bill of material.

BILL OF MATERIAL

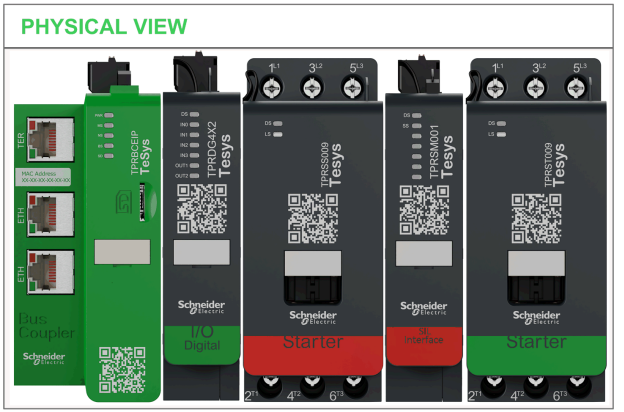
Position	Device Type	Name Tag	Reference	Avatar Number	SIL Group
1	Bus Coupler - Ethernet Switch	Device1	TPRBCEIP	A1	
2	I/O Digital - 4 IN / 2 OUT	Device4	TPRDG4x2	A3	
3	SIL Starter 4 kW	Device2	TPRSS009	A2	1
4	SIL Interface	Device3	TPRSM001	A2	1
5	Starter 4 kW	Device5	TPRST009	A4	
6	Starter 4 kW	Device6	TPRST009	A4	

Characteristics	Description
Position	Displays the position of the device on the bus.
Device Type	Displays the type of device along with the number of I/Os and the voltage and current ratings of the device.
Name Tag	Displays the tag name configured for the device.
Reference	Displays the reference of the selected device or accessory.
Avatar Number	Displays the avatar number which is associated with the device or accessory.
SIL Group	Displays the SIL group number of the SIL avatar.

PHYSICAL VIEW

This section displays the physical view of the devices configured on the TeSys island, along with the position of each device on the bus.

NOTE: You can double click on the device image to navigate to the associated avatar in **My Avatar** tab.



MY AVATAR Tab

Avatar

Introduction

Avatars are digital representations of the physical modules on the TeSys island.

There are three types of TeSys island avatars:

- **System**

  A single avatar representing the entire island provides communication and management of the TeSys island. The **System** avatar does not directly provide load control or protection functions as the **Device** and **Load** avatars do.

- **Device**

  Device avatars provide the functionality of a single module used in the island, such as a starter or an I/O module.

- **Load**

  Load avatars provide functionality specific to different load types, by including multiple modules on the island in a single avatar. When load avatars are used, the island applies the appropriate number of modules, types of modules, and operating characteristics to serve the load type.

  For example, a forward-reverse motor avatar includes a forward starter, a reverse starter, and pre-programmed forward-reverse operating logic.

- **Application**

  Application avatars provide the functionality specific to different application types, by including multiple modules on the island in a single avatar. When application avatars are used, the island applies the appropriate number of modules, types of modules, and operating characteristics to serve the application type.

  For example, a pump avatar includes a digital input output module, a starter and pre-programmed operating logic.

List of Avatars

This table lists the available avatars and their descriptions:

Name		Icon	Description
System Avatar			A required Avatar that enables a single point of communication to the island.
Device Avatars	**Switch**		To make or break a power line in an electrical circuit.
	Switch - SIL Stop, W. Cat 1/2		To make or break a power line in an electrical circuit with Stop category 0 or Stop category 1, wiring category 1 and category 2. Stop category 0 or Stop category 1 is according to IEC 60204-1.
	Switch - SIL Stop, W. Cat 3/4		To make or break a power line in an electrical circuit with Stop category 0 or Stop category 1, wiring category 3 and category 4. Stop category 0 or Stop category 1 is according to IEC 60204-1.
	Digital I/O		To provide control of 2 digital outputs and the status of 4 digital inputs.
	Analog I/O		To provide control of 1 analog output and the status of 2 analog inputs.
Load Avatars	**Power Interface without I/O (measure)**		To monitor current supplied to an external device, such as a solid-state relay, soft starter, or variable speed drive.

Name		Icon	Description
	Power Interface with I/O (control)		To monitor current supplied to an external device and to control the external device, such as a solid-state relay, soft starter, or variable speed drive.
	Motor One Direction		To manage a motor in one direction.
	Motor One Direction - SIL Stop, W. Cat 1/2		To manage a motor in one direction, with Stop category 0 or Stop category 1, wiring category 1 and category 2. Stop category 0 or Stop category 1 is according to IEC 60204-1.
	Motor One Direction - SIL Stop, W. Cat 3/4		To manage a motor in one direction, with Stop category 0 or Stop category 1, wiring category 3 and category 4. Stop category 0 or Stop category 1 is according to IEC 60204-1.
	Motor Two Directions		To manage a motor in two directions (forward and reverse).
Load Avatars	**Motor Two Directions - SIL Stop, W. Cat 1/2**		To manage a motor in two directions (forward and reverse), with Stop category 0 or Stop category 1, wiring category 1 and category 2. Stop category 0 or Stop category 1 is according to IEC 60204-1.
	Motor Two Directions - SIL Stop, W. Cat 3/4		To manage a motor in two directions (forward and reverse), with Stop category 0 or Stop category 1, wiring category 3 and category 4. Stop category 0 or Stop category 1 is according to IEC 60204-1.
	Motor Y/D One Direction		To manage a wye/delta (star/delta) motor in one direction.
	Motor Y/D Two Directions		To manage a wye/delta (star/delta) motor in two directions (forward and reverse).
	Motor Two Speeds		To manage a two-speed motor.
	Motor Two Speeds - SIL Stop, W. Cat 1/2		To manage a two-speed motor, with Stop category 0 or Stop category 1, wiring category 1 and category 2. Stop category 0 or Stop category 1 is according to IEC 60204-1.
	Motor Two Speeds - SIL Stop, W. Cat 3/4		To manage a two-speed motor, with Stop category 0 or Stop category 1, wiring category 3 and category 4. Stop category 0 or Stop category 1 is according to IEC 60204-1.
	Motor Two Speeds Two Directions		To manage a two-speed motor in two directions (forward and reverse).
	Motor Two Speeds Two Directions - SIL Stop, W. Cat 1/2		To manage a two-speed motor in two directions (forward and reverse), with Stop category 0 or Stop category 1, wiring category 1 and category 2. Stop category 0 or Stop category 1 is according to IEC 60204-1.

Name		Icon	Description
	Motor Two Speeds Two Directions - SIL Stop, W. Cat 3/4		To manage a two-speed motor in two directions (forward and reverse), with Stop category 0 or Stop category 1, wiring category 3 and category 4. Stop category 0 or Stop category 1 is according to IEC 60204-1.
	Resistor		To manage a resistive load.
	Power Supply		To manage a power supply.
	Transformer		To manage a transformer.
Application Avatars	**Pump**		• To energize a motor attached to a pump. • To provide electrical protection and motor overload protection. Additional functions: • To detect cavitation and jam. • To avoid repetitive restart.
	Conveyor		• To energize a motor attached to a 1-direction conveyor. • To provide electrical protection and motor overload protection. Additional function: • To detect stall, long start and jam.
	Conveyor One Direction - SIL Stop, W. Cat 1/2		• To energize a motor attached to a 1-direction conveyor. • To provide electrical protection and motor overload protection. • To perform SIL Stop by removing the energy applied to the motor. Additional function: • To detect stall, long start and jam.
	Conveyor Two Directions		• To energize a motor attached to a two-direction conveyor. • To provide electrical protection and motor overload protection. Additional function: • To detect stall, long start and jam.

Name		Icon	Description
	Conveyor Two Directions - SIL Stop, W. Cat 1/2		• To energize a motor attached to a two-direction conveyor. • To provide electrical protection and motor overload protection. • To perform SIL Stop by removing the energy applied to the motor. Additional function: • To detect stall, long start and jam.
NOTE: W. Cat refers to wiring category.			

MY AVATAR

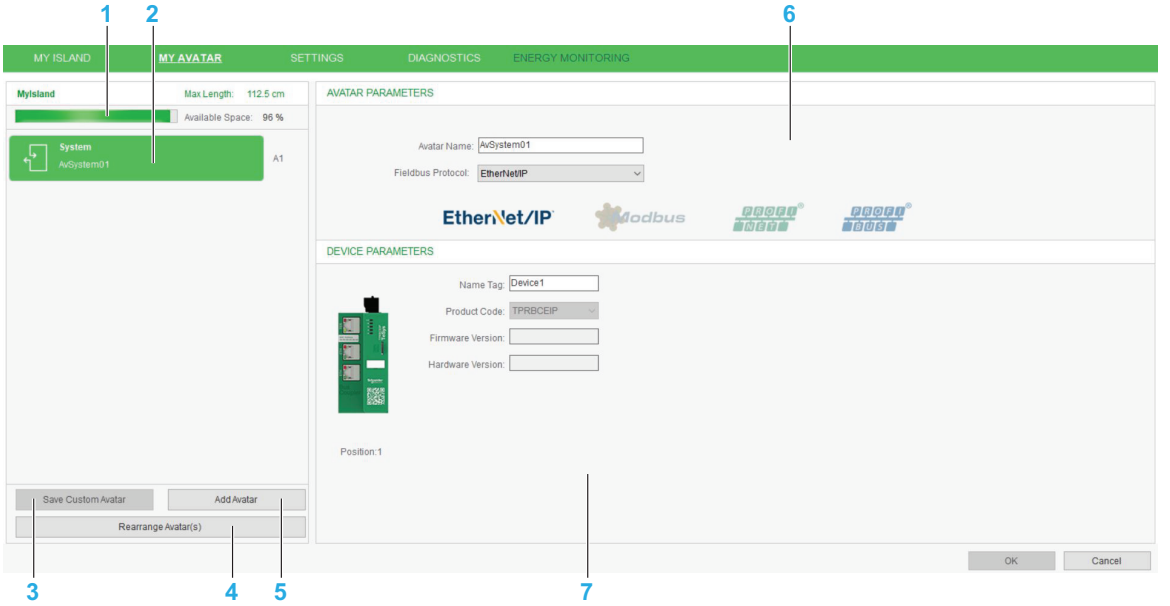
Overview

This tab allows you to modify the island topology. You can add, remove, configure, and reorder the avatars.

NOTE: You can modify the parameters of **MY AVATAR** tab only when the device is not connected to the TeSys island (offline mode).

MY AVATAR Tab Description

The following illustration is an example of the **MY AVATAR** tab:



1 Island space, page 47

2 Avatar list, page 48

3 Save custom avatar, page 48

4 Rearrange Avatar(s), page 48

5 Add avatar, page 48

6 Avatar parameters, page 49

7 Device parameters, page 51

Island Space

The TeSys island space displays the available space on the TeSys island DTM Library.

The available space changes when you:

- Add avatars to or delete them from the TeSys island.
- Modify the device references.

- Enable or disable additional devices on the TeSys island.

Avatar List

Displays the list of the avatars added in the TeSys island DTM Library.

NOTE:

- You can drag and drop the avatar to a required position (this will change the TeSys island topology).
- In avatar list, you can click  icon to delete the avatar from the TeSys island DTM Library.

Save Custom Avatar

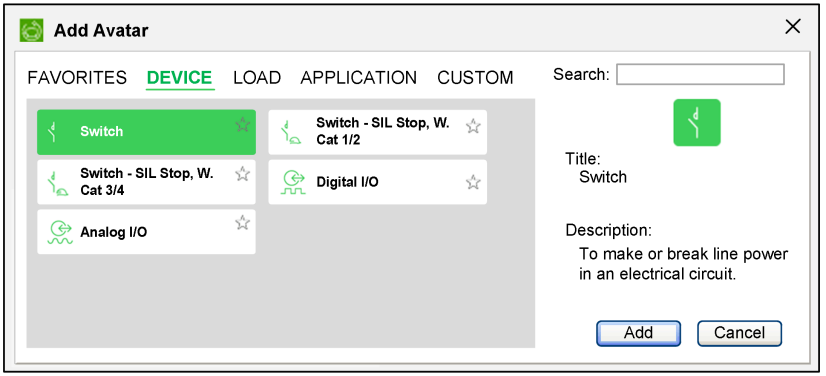
Saves the selected customized avatars in the TeSys island DTM Library.

Rearrange Avatar(s)

This option helps the user to automatically try and resolve the warnings like Electromagnetic Interference and Mounting Positions by rearranging the position of avatars.

Add Avatar

You can add the avatars of the TeSys island DTM Library. You can also search for a required avatar based on the name of the avatar entered.

Step	Action
1	In the **My Avatar** tab, click **Add Avatar**. **Result:** The **Add Avatar** screen appears. 
2	Select the avatar from the **DEVICE** tab or the **LOAD** tab or **APPLICATION** tab and click **Add**. **Result:** The new avatar is added in the avatar list. **NOTE:** Click the ☆ icon to add frequently used avatars in the **FAVORITES** tab. The customized avatars appears in the **CUSTOM** tab.

For more details, refer to List of Avatars, page 43.

AVATAR PARAMETERS

The **Avatar Parameters** section shows the parameters of the avatar based on the type of avatar you have selected. It also allows you to modify the parameters of the selected avatar.

NOTE: The list of parameters described below depends on the selected avatar.

Parameters	Description
Avatar Name	Enter name of the avatar.
Fieldbus Protocol	Select the protocol for communication with the devices.
Power Supply Type	Select the type of power supply from the drop-down list.
Upstream Voltage	Select the upstream voltage from the drop-down list.
Rating power	Select the power rating from the drop-down list.
Rating current	Select the current rating from the drop-down list.
Type Of Utilization	Select the type of utilization of a device from the drop-down list:

Parameters	Description
	• **Start/Stop**: Starts or stops the motor. • **Plugging**: Breaks the motor. • **Inching**: Runs the motor at low speed. • **Resistor**(1): Controls non-inductive or slightly inductive loads. • **Power Supply**(1): Controls capacitor bank switching. • **Transformer**(1): Controls transformer switching. • **Compressor**(1): Controls compressor motor switching with automatic reset of overload release. **NOTE:** (1) This category is available only for **Switch**, **Switch - SIL Stop, W. Cat 1/2** and **Switch - SIL Stop, W. Cat 3/4** avatars.
PV Inputs Nb	Select the number of PV inputs from the drop-down list.
PV Switches Nb	Select the number of PV switches from the drop-down list.
Individual Short-Circuit Protection	Select the type of short-circuit protection of a device from the drop-down list: • **Yes:** Short circuit protection applied. • **No**: No short-circuit protection applied. • **Coordination Type 1**: Under short circuit conditions, the contactor or starter shall cause no danger to person or installation and may not be suitable for further service without repair and replacement of parts. • **Coordination Type 2**: Under short circuit conditions, the contactor or starter shall cause no danger to person or installation and shall be suitable for further use. The risk of contact welding is recognized, in which case the manufacturer shall indicate the measures to be taken in regards to equipment maintenance. **NOTE:** • The possible values depend on the type of power unit selected: ◦ If the power unit selected is **kW**, possible values are **No**, **Coordination Type 1**, and **Coordination Type 2**. ◦ If the power unit selected is **hp**, possible values are **No** and **Yes**. • The short circuit protection ratings are optimized for the TeSys™ GVL circuit breakers (for more details, refer to *TeSys™ Catalog*). • The GV circuit breakers are not recommended to be used with TeSys island for loads exceeding trip class 15.
Load Energy Monitoring For conditions to enable **Load Energy Monitoring**, refer to Conditions for Enabling Load Energy Monitoring Parameter, page 51.	Enable energy monitoring, which monitors the amount of voltage, power, and energy consumption of the load. If enabled, a voltage interface module is added in the island. **NOTE:** The island has only one voltage interface module even if you have enabled load energy monitoring function in multiple avatars. For more details, refer to ENERGY MONITORING Tab, page 102.
Temperature Sensor Available	Enable functions using the motor temperature sensor. If enabled, an analog I/O module is added in the island.

Parameters	Description
SIL Group	Enter the SIL group number for the SIL avatar. You can have multiple SIL avatars within a SIL group. Range: 1 to 10
Local Control Enabled	Select **Yes** to enable the local control mode.
Local Trip Reset	Select **Yes** to enable the local trip reset. If enabled, a digital I/O module (DIOM) is added in the island. **NOTE:** • If both **Local Control Enabled** and **Local Trip Reset Enabled** are enabled, then **Local Control Enabled** and **Local Trip Reset Enabled** will be listed in one DIOM module. • Digital input 4 will be assigned to **Local Trip Reset**. If digital input 4 is occupied for PvSwitch 1, which is mandatory in few applications, such as Pump avatar, then new DIOM module will be added and the first input of the new DIOM module will be used for **Local Trip Reset Enabled**.
Dahlander Control Enabled	Select **Yes** to enable the Dahlander control mode. **NOTE:** This parameter is available for only Motor Two Speeds avatar. Disabled (Default setting)

Conditions for Enabling the Load Energy Monitoring Parameter

Power Supply Type		Load Energy Monitoring
Island	**Avatar**	
Three Phase	**Three Phase**	Can enable the function, if the island and the avatar voltage values are the same.
Three Phase	**Single Phase**	Can enable the function.
Single Phase	**Single Phase**	Can enable the function, if the island and the avatar voltage values are the same.
Single Phase	**Three Phase**	Cannot enable the function.

DEVICE PARAMETERS

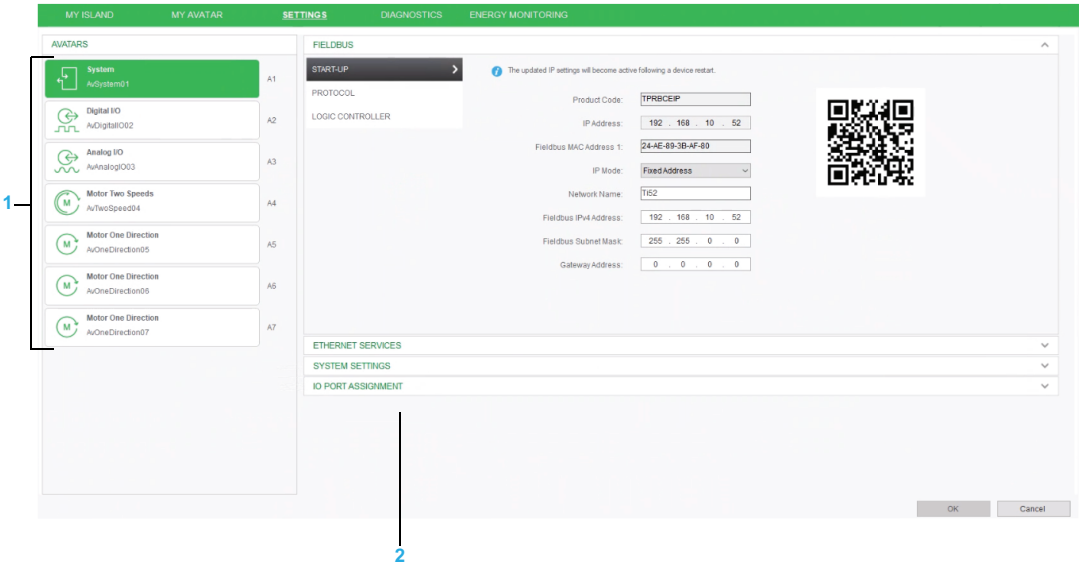
The **Device Parameters** section displays the physical representation of the module along with its position on TeSys island. This section also displays the characteristics of the selected avatar with an option to configure the tag name and product reference.

Parameters	Description
Name Tag	Enter the name tag of the device.
Product Code	Displays the sized **Reference** in accordance with the rating selected. You can select higher references for heavy duty performance needs.
Utilization Category[1]	Displays the utilization category of the device.
Firmware Version	Displays the firmware version of the bus coupler.
Hardware Version	Displays the firmware version of the hardware.
(1) This parameter is not available for the **System** avatar, **Digital I/O** avatar, **Analog I/O** avatar, **Power Interface** avatar, and **Power Interface with I/O** avatar.	

SETTINGS Tab

Introduction

In the **SETTINGS** tab, you can configure the parameters of the selected avatars. You can modify the parameter value in offline or online mode. In online mode, when you click **OK**, the DTM writes the set parameter value to the connected island.



1 Avatar list, page 53

2 Display area, page 53

Avatar List

Displays the list of the avatars added in the TeSys island.

Display Area

A display area on the right side shows the group of parameters of the avatar selected in avatar list.

System Avatar Settings

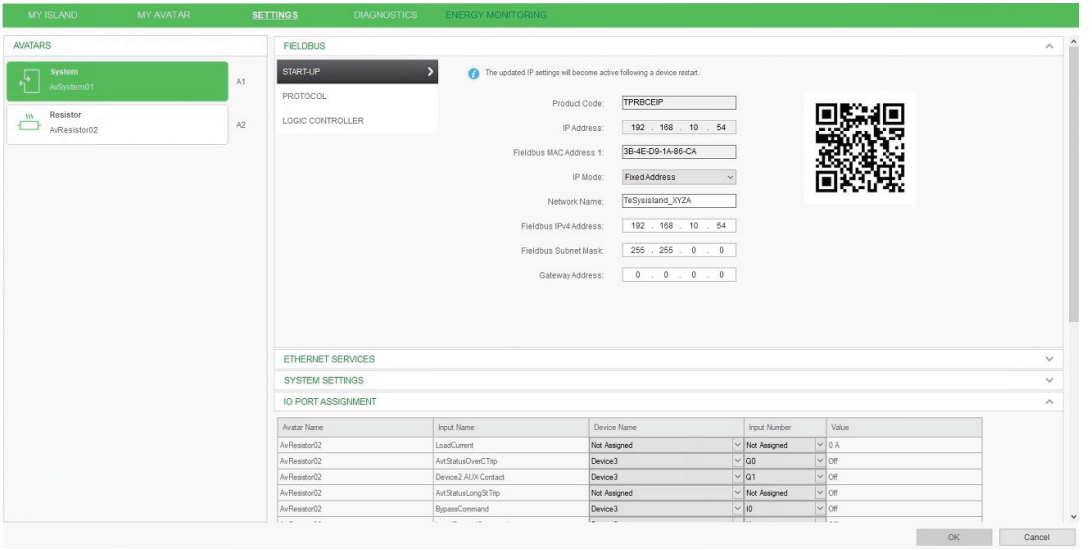
Overview

You can configure the parameters linked to the network and configuration ports of the **System** avatar.

The settings of the **System** avatar are grouped as follows:

- Fieldbus, page 54
- Ethernet services, page 56
- System settings, page 58
- IO Port Assignment, page 59

The following illustration is an example of the **System** avatar settings:



FIELDBUS

Section	Setting	Description
START-UP	**Product Code**	Displays the product reference of a system avatar.
	DCP Override(3)	Indicates when the controller is using the DCP addressing mechanism to configure the bus coupler, which can override the IP address settings such as **Fieldbus IPv4 Address**, **Fieldbus Subnet Mask**, **Gateway Address**, and **Network Name**.
	IP Address **NOTE:** You must restart the device to activate the modified IP settings.	IP address is defined based on the **IP Mode** selected.
	Fieldbus MAC Address 1	Displays the MAC address of fieldbus Ethernet port 1.
	PROFINET Station Name(3)	Enter the name which identifies the device on the PROFINET network.
	Profibus Node ID(4)	Enter the number which identifies the device on the PROFIBUS network.
	IP Mode	Select the IP mode from the list:

Section	Setting	Description
		• **Fixed Address**: When this option is selected, you can type the address into the **Fieldbus IPv4 Address**, **Fieldbus Subnet Mask**, and **Gateway Address** fields. • **BOOTP**: When this option is selected, the device obtains the IP address from BOOTP server. • **DHCP**: When this option is selected, the device obtains the IP address from the DHCP server.
	Network Name	Enter the network name.
	Fieldbus IPv4 Address(1)	Enter the fieldbus IPv4 address.
	Fieldbus Subnet Mask(1)	Enter the fieldbus subnet mask address.
	Gateway Address(1)	Enter the gateway address.
PROTOCOL	**Fieldbus Protocol**	Displays the selected **Fieldbus Protocol**.
	Unit ID(2)	Displays the Modbus TCP unit ID.
	Fallback Management	Displays how the fallback behavior of the system is managed during a communication interruption with the controller.
LOGIC CONTROLLER	**Client (PLC) IP Address**	Enter the IP address of the Modbus client device connection which is controlling the island (mainly a PLC).
	Modbus Client Port	Enter the port of the Modbus client device connection which is controlling the island (mainly a PLC).
	Enable Modbus Client	Enable or disable the exempting of the client IP connection from the Modbus server's Least Recently Used (LRU) connection management algorithm.
	Enable Degraded Mode Auto-Reset	Enable or disable the auto degraded reset mode, which automatically exits from degraded mode when communication is restored.
	Communication Loss Timeout	Set the communication loss timeout value for **MODBUS/TCP**.

(1) This parameter can be configured when **IP Mode** is **Fixed Address**.

(2) This parameter is displayed for Modbus TCP **Fieldbus Protocol**.

(3) This parameter is displayed for PROFINET **Fieldbus Protocol**.

(4) This parameter is displayed for PROFIBUS-DP **Fieldbus Protocol**.

ETHERNET SERVICES

You can configure the following Ethernet services:

- **SNMP**: Simple Network Management Protocol (SNMP) is an internet-standard protocol for managing devices on IP networks. It is used for monitoring devices connected to the network.
- **SNTP**: Simple Network Time Protocol (SNTP) is a time maintenance application that allows you to synchronize the time of devices connected to the network.
- **RSTP**: Rapid Spanning Tree Protocol (RSTP) provides event tolerance if any active links fail and provides recovery through cable redundancy.
- **FDR**: The FDR (Fast Device Replacement) service allows automatic reconfiguration of a new device installed to replace an existing device.

⚠WARNING

POTENTIAL COMPROMISE OF SYSTEM AVAILABILITY, INTEGRITY, AND CONFIDENTIALITY

Change default SNMP community names to help prevent unauthorized access to device.

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

Section	Setting		Description
SNMP		**SNMP**	**Enable**: Enables SNMP service. **Disable**: Disables SNMP service. **NOTE:** By default, SNMP is disabled.
	Manager's IP Address	**Manger 1**	Enter the IP address of SNMP **Manger 1**. **NOTE:** SNMP manager is a central system, which is used for monitoring and controlling the SNMP agents.
		Manger 2	Enter the IP address of SNMP **Manager 2**.
	Agent	**System Location**	Enter the location of the system.
		System Contact	Enter the system contact. **NOTE: System Contact** is a contact point to get the information about the system.
	Community Name	**Get**	Requests are sent from SNMP manager to agent to retrieve the data. **NOTE:** The default value is **public**. For better security, it is recommended to change the default community name.

Section	Setting		Description
		Set	Requests are sent from SNMP manager to agent to change the data. **NOTE:** The default value is **private**. For better security, it is recommended to change the default community name.
		Trap	Requests are sent from SNMP manager to agent to find the available data. **NOTE:** The default value is **alert**. For better security, it is recommended to change the default community name.
SNTP	**SNTP Configuration**	**SNTP**	**Enable**: Enables SNTP service. **Disable**: Disables SNTP service.
		Primary SNTP Server Address	Enter the IP address of the primary SNTP server.
		Secondary SNTP Server Address	Enter the IP address of the secondary SNTP server.
		Polling Period	Select the scanning interval for checking the time change.
RSTP	**RSTP Enable** **NOTE:** You must restart the device to activate the modified settings.		**Enable** or **Disable** the RSTP service.
	RSTP Operation State	**Bridge Identifier Priority**	Select the priority from the dropdown list. **NOTE:** The bridge priority is a 2-byte value for the switch, used to establish the relative position of the switch in the RSTP hierarchy.
FDR(1) **NOTE:** You can enable FDR only if the **IP Mode** selected is **DHCP**.	**Device FDR Function Start-up Control**	**FDR Enable**	Select **Yes** to enable or **No** to disable the FDR service.
	Device FDR Scheduling	**FDR Synchronization Enable**	Select **Yes** to enable FDR synchronization, which sends the device configuration data to the FDR server at regular time intervals.
		FDR Synchronization Period	Set the time interval for automatic synchronization.

(1) This parameter is displayed for EtherNet/IP and Modbus TCP **Fieldbus Protocol**.

SYSTEM SETTINGS

Section	Setting	Description
SETTINGS	**Force Mode Data Retention**	**Enable** or **Disable** the force mode data retention. When enabled, the bus coupler retains force mode data (force mode commands to avatar inputs and outputs) during a power cycle or system restart. When disabled, the bus coupler does not retain force mode data during a power cycle or system restart.
POWER VOLTAGE **NOTE:** The **Power Voltage** settings are displayed in settings tab if you have enabled the **Load Energy Monitoring** option for a selected avatar. To enable, go to **My Avatar** tab → **Avatar Parameters > Load Energy Monitoring** and select **Yes**.	**Voltage Dip Level**	Set the voltage dip level.
	Voltage Swell Level	Set the voltage swell level.

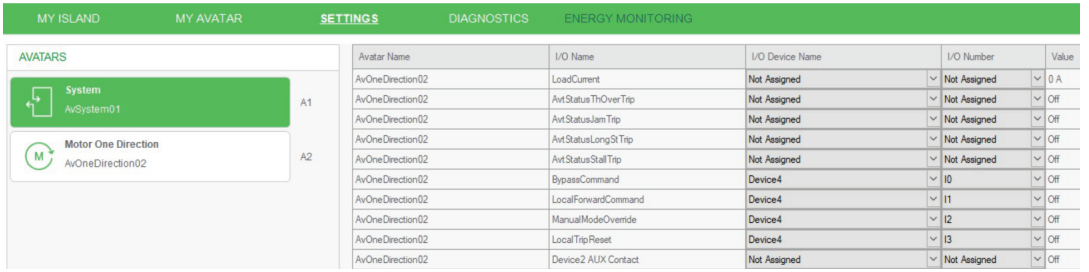
IO PORT ASSIGNMENT

For more details, refer to IO PORT ASSIGNMENT, page 59.

IO PORT ASSIGNMENT

The **IO PORT ASSIGNMENT** section displays the ports assigned to the I/O of the avatar and the trip status of the motor.

The following illustration is an example of the **IO PORT ASSIGNMENT** section:



Name	Description
Avatar Name	Displays the name of the avatar. **NOTE:** The field is not editable in **SETTINGS** page. The name is taken from **My Avatar** tab.
I/O Name	Displays the analog input/output and digital input/output along with the starter auxillary contact. **NOTE:** This field is not editable.
I/O Device Name	Displays the name of the input/output device DIOM/AIOM. **NOTE:** The user can select the assigned I/O device in the avatar from the drop-down menu.
I/O Number	Displays the name of the input/output number. **NOTE:** The user can select the assigned input/output number in the avatar from the drop-down menu.
Value	Displays the value. **NOTE:** The value is updated with the real value if the TeSys island is in online mode.

I/O Module Assignment to Multiple Avatars

Digital I/O modules TPRDG4X2 or analog I/O modules TPRAN2X1 can be assigned to multiple avatars. Refer to IO Optimization, page 60.

NOTE: Only analog module can be assigned to power interface avatar.

The number of analog I/O modules added to TeSys island is based on the number of PV inputs and temperature sensor configured in avatars.

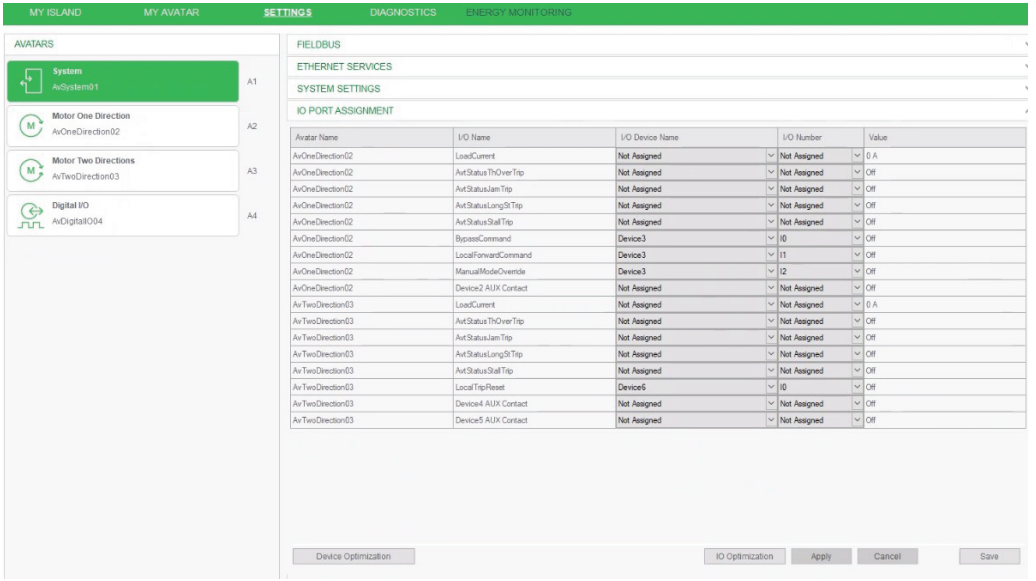
The number of digital I/O modules added to TeSys island is based on the number of PV switches and the configuration of **Local Control Enabled** or **Local Trip Reset Enabled** selected in the avatars.

> **NOTE:** I/O modules assigned to application avatars as part of default configuration cannot be removed. If application avatar is removed, then the I/O module also gets deleted. The I/O added as part of PV switch/PV input can be optimized.

IO Optimization

The unused I/O port of one avatar can be used by another avatar using **IO Optimization** feature. The user can click the **IO Optimization** button to optimize the I/O port assignment and to store the TeSys island configuration.

The following illustration is an example of the **IO Optimization** section:



The **IO Optimization** button will run the below algorithm:

If the algorithm detects the number of unused I/O point greater or equal to the maximum number of I/O point of an I/O module, it starts optimization.

For example:

- **Scenario 1:** Detecting 4 or more unused digital inputs and 2 or more digital outputs - minimum one DIOM can be removed.

- **Scenario 2:** Detecting 2 or more unused analog inputs and 1 or more analog outputs - minimum one AIOM can be removed.

If scenario 1 or scenario 2 is true, then the algorithm will fill up the configured logical I/O to the physical I/O in the order of the avatar configuration.

The user must confirm, by clicking the **Apply** button to save the configuration or click **Cancel** to discard the configuration.

If **IO Optimization** is not possible with the selected port options, a pop-up message will appear.

The unused I/O modules that has to be removed from the avatar configuration will be added as device avatar to the configuration.

NOTE:

- For IO PORT ASSIGNMENT, device avatar need to move top of all load or application avatar
- First avatar parameters are to be configured and then IO optimization or device optimization must be performed. Whenever there is a change in the avatar parameters the IO PORT ASSIGNMENT should be rechecked before proceeding for IO optimization.

Device Optimization

The device optimization feature, helps the user to update the TeSys island configuration by removing the unused I/O modules. By clicking the **Device Optimization** option, the unused I/O devices will be removed from the TeSys island configuration.

> **NOTE: Device Optimization** algorithm will run independently of **IO Optimization** and it is completely optional for a user.

During offline mode, the user can download the updated TeSys island configuration by clicking **Store to device** option.

Auxilliary Contact Listing in IO PORT ASSIGNMENT

The auxiliary contact information of each configured starter of an avatar can be assigned to digital output only and shown in **IO PORT ASSIGNMENT** table.

Auxiliary contact status can be configured or selected to only digital outputs of DIOM module or not assigned to any module.

These logical I/O by default will not be assigned to any digital output; user must manually assign to any unused digital output.

When there are multiple auxiliary contact status assigned to a single output, then output will be triggered if any of the input is high.

If there are not enough unused I/O points for the status information, the user wants to assign an I/O point and then add I/O device or I/O **Device** avatar to the main configuration.

NOTE: For the Auxilliary contact, DIOM (Q0, Q1) are available for selection in the I/O number column.

If there are not enough unused I/O points for the auxiliary contact status assignment, user must add DIOM avatar from **Device** avatar Configuration Tab.

I/O Listing in IO PORT ASSIGNMENT Table

Digital I/O

The trip status information will be listed in the **IO PORT ASSIGNMENT** table and assigned to a digital output.

The following digital I/O are listed in the **IO PORT ASSIGNMENT** table :

Trip Status	Thermal Overload
	Jam
	Long Start
	Stall
	Undercurrent
	Overcurrent
	Ground Current Detected
Local I/O	Local Control*
	Local Trip Reset
	Manual Mode Override
	Bypass Command
Starter AUX Contact	Auxilliary contact

PV Switches	PV Switches (0 to 5)

1. *Local control includes following control listed below:
   - LocalForwardCommand
   - LocalReverseCommand
   - LocalLowSpeedForwardCommand
   - LocalHighSpeedForwardCommand
   - LocalLowSpeedReverseCommand
   - LocalHighSpeedReverseCommand

   NOTE: Depending upon the avatar type selected, any of the above listed control will be available.
2. *This will be applicable only for PIM with IO avatar.
   - LocalOutput1 command
   - LocalOutput2 command

It is recommended not to assign multiple local control signals to a single input.

Analog I/O

For analog output point, there is range options (-10 Vdc/+10 Vdc, 0 Vdc/+10 Vdc, 0 mA/20 mA, 4 mA/ 20 mA).

The following analog I/O are listed in the **IO PORT ASSIGNMENT**:

Analog I/O	Load Current
	Motor Overheat
	PV Input (0...5)

Load current can be assigned to analog output. Motor overheat and PV input can be assigned to Analog I/O only.

I/O Port Listing

The following table shows the list of possible digital and analog input/output for each avatar which, will be listed in the IO PORT ASSIGNMENT table.

In the following table, **Ok** indicates the particular data for that particular avatar.

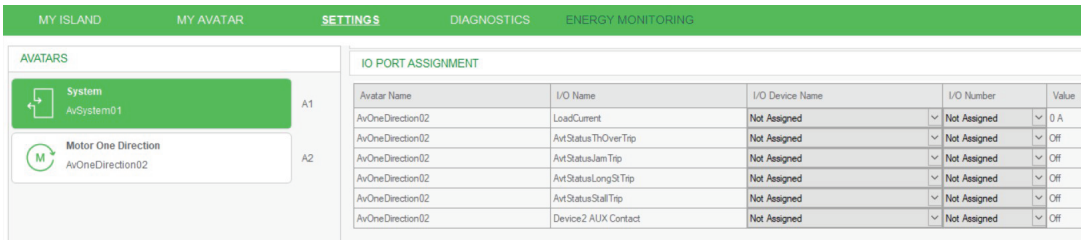
Name	Digital I/O				Analog I/O		
	Trip Status	Local I/O	Auxilliary Contact	PV Switch	Load Current	Motor Overheat	PV Input
System avatar	–	–	–	–	–	–	–
Switch	–	–	Ok	–	–	–	–
Switch - SIL Stop, W. Cat 1/2[1]	–	–	Ok	–	–	–	–
Switch - SIL Stop, W. Cat 3/4[2]	–	–	Ok	–	–	–	–
Digital I/O	–	–	–	–	–	–	–
Analog I/O	–	–	–	–	–	–	–
Power Interface without IO (measure)	–	–	–	–	Ok	Ok	–
Power Interface with IO (control)	Ok	Ok	–	–	Ok	Ok	–
Motor One Direction	Ok	Ok	Ok	Ok	Ok	Ok	Ok
Motor One Direction - SIL Stop, W. Cat 1/2	Ok	Ok	Ok	–	Ok	Ok	–
Motor One Direction - SIL Stop, W. Cat 3/4	Ok	Ok	Ok	–	Ok	Ok	–
Motor Two Directions	Ok	Ok	Ok	Ok	Ok	Ok	Ok
Motor Two Directions - SIL Stop, W. Cat 1/2	Ok	Ok	Ok	–	Ok	Ok	–
Motor Two Directions - SIL Stop, W. Cat 3/4	Ok	Ok	Ok	–	Ok	Ok	–
Motor Y/D One Direction	Ok	Ok	Ok	Ok	Ok	Ok	Ok
Motor Y/D Two Directions	Ok	Ok	Ok	Ok	Ok	Ok	Ok
Motor Two Speeds	Ok	Ok	Ok	Ok	Ok	Ok	Ok

(1) Safety Integrity Level according to standard IEC 61508. Wiring Category 1 and Category 2 according to ISO 13849.

(2) Safety Integrity Level according to standard IEC 61508. Wiring Category 3 and Category 4 according to ISO 13849.

Name	Digital I/O				Analog I/O		
	Trip Status	Local I/O	Auxilliary Contact	PV Switch	Load Current	Motor Overheat	PV Input
Motor Two Speeds - SIL Stop, W. Cat 1/2	Ok	Ok	Ok	–	Ok	Ok	–
Motor Two Speeds - SIL Stop, W. Cat 3/4	Ok	Ok	Ok	–	Ok	Ok	–
Motor Two Speeds Two Directions	Ok	Ok	Ok	Ok	Ok	Ok	Ok
Motor Two Speeds Two Directions - SIL Stop, W. Cat 1/2	Ok	Ok	Ok	–	Ok	Ok	–
Motor Two Speeds Two Directions - SIL Stop, W. Cat 3/4	Ok	Ok	Ok	–	Ok	Ok	–
Resistor	Ok	Ok	Ok	–	Ok	–	–
Power Supply	Ok	Ok	Ok	–	Ok	–	–
Transformer	Ok	Ok	Ok	–	Ok	–	–
Pump	Ok	Ok	Ok	Ok	Ok	Ok	Ok
Conveyor One Direction	Ok	Ok	Ok	Ok	Ok	Ok	Ok
Conveyor One Direction - SIL Stop, W. Cat 1/2	Ok	Ok	Ok	Ok	Ok	Ok	Ok
Conveyor Two Directions	Ok	Ok	Ok	Ok	Ok	Ok	Ok
Conveyor Two Directions - SIL Stop, W. Cat 1/2	Ok	Ok	Ok	Ok	Ok	Ok	Ok

The following illustration is an example of default trip status for **Motor One Direction** avatar.



All status information of each avatar is shown as logical I/O in the **IO PORT ASSIGNMENT** table in the **System** avatar settings except for power interface avatar.

NOTE: For **Power Interface with IO** avatar, the I/O assignment is applicable.

These logical I/O will not be assigned to device; user must manually assign to any unused digital or analog output.

When there are multiple Inputs assigned to a single digital output, then the output will be triggered if any of the input is high.

When analog input is assigned to analog output, the output will be triggered with the same value as analog input.

- For DIOM, the available I/O port numbers are (I0, I1, I2, I3, Q0, Q1)
- For AIOM, the available I/O port numbers are (I0+/I0-, I1+/I1-, O+/O-)

  NOTE: If the user select the sensor NI100 or N1000 or PT 100 or PT1000 sensor in the PV input, NC0 and NC1 will be added in the input port of the **IO PORT ASSIGNMENT** table.

If there are not enough unused I/O points for the status information and the user wants to assign an I/O point, then an I/O device or I/O **Device** avatar has to be added to the main configuration.

Possible Assignments

The following section describe the possible assignments of digital and analog input/output.

- Trip status can be assigned only to output of DIOM module.
- Local I/O can be assigned only to input of DIOM module.
- Auxiliary contact status can be configured/selected to only digital output of DIOM module or not assigned to any module.
- **PV Switch** can be configured/selected to only digital input of DIOM module.
- Load current can be configured/selected to only analog output of AIOM module or not assigned to any module.
- **Motor overheat** can be configured/selected to only analog input of AIOM module.
- **PV Input** can be configured/selected to only analog input of AIOM module.

List of Mandatory or Optional Ports

- Trip status and auxiliary contact status are optional which means they can be not assigned to any IO module.
- PV switch, Local IO, Load current, Motor overheat, PV input must be assigned to IO module in the TeSys island.

- IO module which are added by default for avatar like PIM with IO avatar, application avatars will not participate in IO optimization.

Switch Avatar Settings

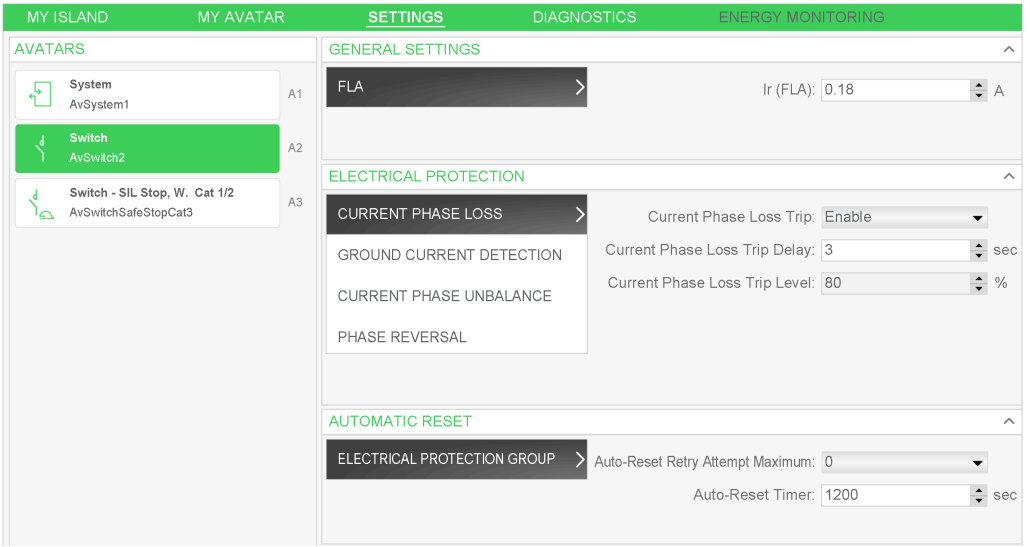
Overview

The following sections describe the settings of **Switch**, **Switch - SIL Stop, W. Cat. 1/2** and **Switch - SIL Stop, W. Cat. 3/4** avatars.

The settings of the switch avatars are grouped as follows:

- General settings, page 68
- Electrical protection, page 69
- Automatic reset, page 70

The following illustration is an example of the **Switch** avatar settings:



GENERAL SETTINGS

The following general settings are available for the selected avatars:

Section	Setting	Description
FLA	**Ir (FLA)**	Set the rated current of the motor. **NOTE:** Full-load amperage (FLA) refers to the motor's rated current (Ir) at rated load and rated voltage. This is the amount of current (A) that the motor draws from the electrical system when producing its rated output horsepower.

ELECTRICAL PROTECTION

The avatars with electrical protection functions enable detected electrical conditions between the starter and the load, and issue an alarm or a trip. The following electrical protection settings are available for the selected avatars:

Section	Setting	Description
CURRENT PHASE LOSS(1)	**Current Phase Loss Trip**	**Enable** or **Disable** the current phase loss trip. If this function is enabled, a trip is initiated when the current phase unbalance exceeds the **Current Phase Loss Trip Level** in the **Motor Start State** or **Motor Run State** for a period longer than the **Current Phase Loss Trip Delay**.
	Current Phase Loss Trip Delay	Set the trip delay for current phase loss.
	Current Phase Loss Trip Level	Displays the trip level. **NOTE:** Trip level is fixed at 80% and you cannot change it.
GROUND CURRENT DETECTION	**Ground Current Trip**	**Enable** or **Disable** the ground current trip. If this function is enabled, a trip is initiated when the ground current exceeds the **Ground Current Trip Level** for a period longer than the **Ground Current Trip Delay**.
	Ground Current Trip Delay	Set the trip delay for ground current.
	Ground Current Trip Level	Set the trip level for ground current.
	Ground Current Alarm	**Enable** or **Disable** the ground current alarm. This function is activated to indicate when the ground current exceeds the **Ground Current Alarm Level**.
	Ground Current Alarm Level	Set the alarm level percentage for ground current.
CURRENT PHASE UNBALANCE(1)	**Current Phase Unbalance Trip**	**Enable** or **Disable** the current phase unbalance trip. Avatars set to three-phase operation, with the **Current Phase Unbalance Trip** function enabled, initiate a trip when the unbalance in phase current exceeds the **Current Phase Unbalance Trip Level**: • in the motor start state for a period longer than the **Current Phase Unbalance Trip Delay - Start**. or

Section	Setting	Description
		• in the motor run state for a period longer than the **Current Phase Unbalance Trip Delay - Run**. You can configure separate trip delays for run state and start state.
	Current Phase Unbalance Trip Delay - Start	Set the trip delay for a current phase unbalance during the motor start state.
	Current Phase Unbalance Trip Delay - Run	Set the trip delay for a current phase unbalance during the motor run state.
	Current Phase Unbalance Trip Level	Set the trip level percentage for current phase unbalance.
	Current Phase Unbalance Alarm	**Enable** or **Disable** the current phase unbalance alarm. Avatars set to three-phase operation, with the **Current Phase Unbalance Alarm** function enabled, indicate when the current phase unbalance exceeds the **Current Phase Unbalance Alarm Level**.
	Current Phase Unbalance Alarm Level	Set the alarm level percentage for current phase unbalance.
PHASE REVERSAL(1)	**Current Phase Reversal Trip**	**Enable** or **Disable** the current phase reversal trip. If this function is enabled, a trip is initiated when the detected current phase sequence does not match with the current phase sequence setting for 100 ms. **NOTE:** There is no alarm for current phase reversal. This function is not adjustable.
	Current Phase Sequence	Select the order of the phases (ABC or ACB) in rotation for the avatar.
(1) This parameter is displayed if the **Power Supply Type** is **Three Phase**.		

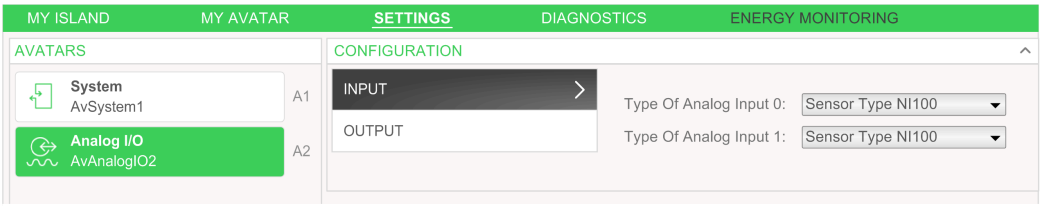
AUTOMATIC RESET

For more details, refer to AUTOMATIC RESET, page 78.

Analog I/O Avatar Settings

Overview

The following illustration is an example of the **Analog I/O** avatar settings:



CONFIGURATION

Section	Setting	Description
INPUT	**Type Of Analog Input 0**	Select the type of analog input from the drop-down list.
	Type Of Analog Input 1	
OUTPUT	**Type Of Analog Output 0**	Select the type of analog output from the drop-down list.

Load Avatar Settings

Overview

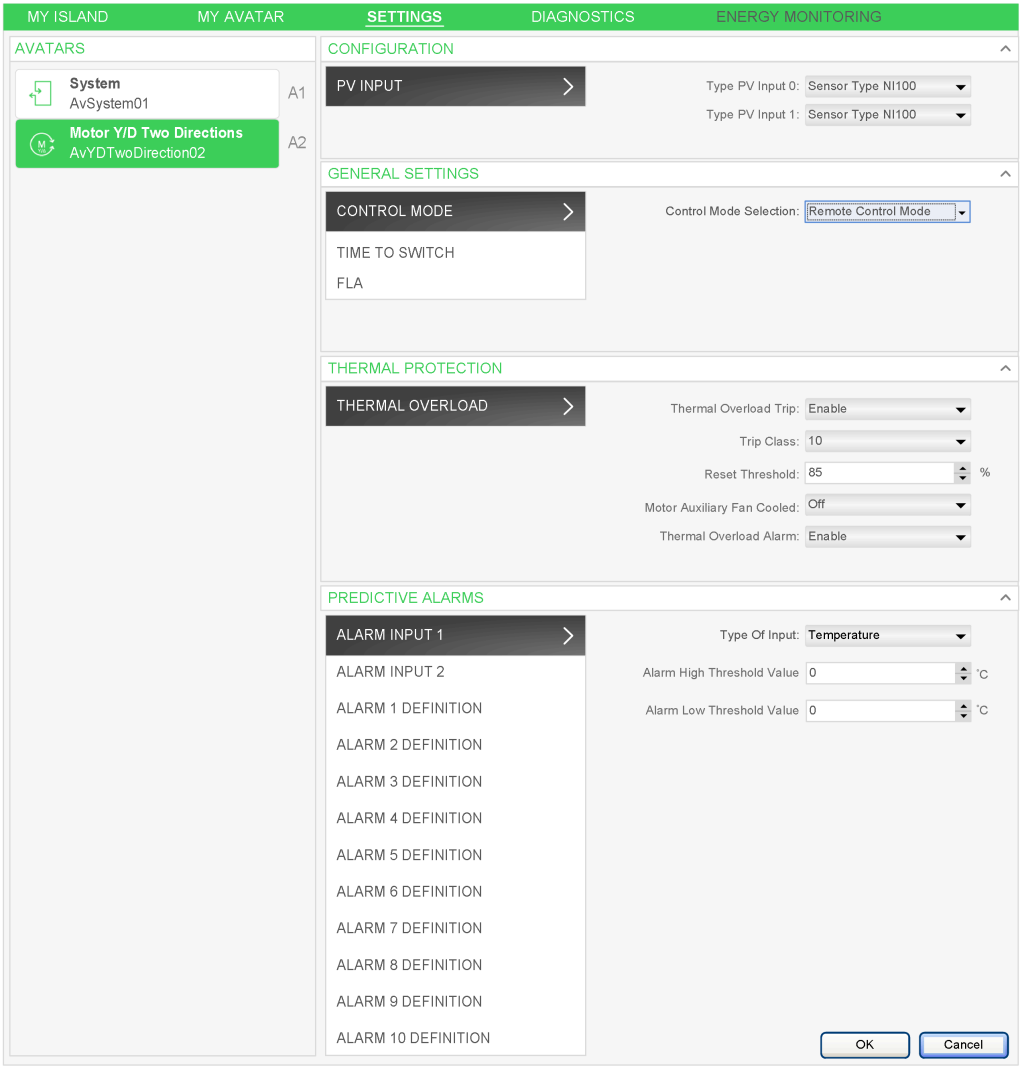
The settings of **LOAD** avatars are described in the following sections.

NOTE: The settings of Load avatars, page 43 are displayed based on the type of avatar you have selected.

The settings of the avatars are grouped as follows:

- Configuration, page 72
- General settings, page 73
- Thermal protection, page 73
- Electrical protection, page 74
- Load protection, page 76
- Automatic reset, page 78
- Predictive alarms, page 79

The following illustration is an example of the settings for the **Motor Y/D Two Directions** avatar:



CONFIGURATION

The following configuration settings are available for the selected avatars:

Section	Setting	Description
PV INPUT	**Type PV Input** **NOTE:** The **Type PV Input** settings are displayed if you have set the number of **PV Inputs Nb** for the selected avatar. To set, go to **My Avatar** tab → **Avatar Parameters** and set **PV Inputs Nb** from 0 to 5.	Select the type of analog input to be measured.

GENERAL SETTINGS

The following general settings are available for the selected avatars:

Section	Setting	Description
TIME TO SWITCH	**Y/D Timer**(1)	Set the Y/D time. **NOTE:** The Y/D timer is used to change the circuit from star to delta connection when the motor reaches the specified rated speed.
FLA	**Ir (FLA)**	Set the rated current of the motor. **NOTE:** Full-load amperage (FLA) refers to the motor's rated current (Ir) at rated load and rated voltage. This is the amount of current (A) that the motor draws from the electrical system when producing its rated output horsepower.
	Ir (FLA) 2(2)	Set the rated current of the motor for two-speed avatars.

(1) This parameter is displayed for the **Motor Y/D One Direction** and **Motor Y/D Two Directions** avatars.

(2) This parameter is displayed for the **Motor Two Speeds**, **Motor Two Speeds - SIL Stop, W. Cat. 1/2**, **Motor Two Speeds Two Directions**, **Motor Two Speeds Two Directions - SIL Stop, W. Cat. 1/2**, **Motor Two Speeds - SIL Stop, W. Cat. 3/4**, and **Motor Two Speeds Two Directions - SIL Stop, W. Cat. 3/4** avatars.

THERMAL PROTECTION

The thermal protection function signals a trip if the motor thermal capacity used exceeds the thermal overload or overheat trip level. The following thermal protection settings are available for the selected avatars:

Section	Setting	Description
THERMAL OVERLOAD	**Thermal Overload Trip**	**Enable** or **Disable** the thermal overload trip.

Section	Setting	Description
	Trip Class	Select the trip class. The option selected determines how quickly the overload relay trips upon detection of a thermal overload.
	Reset Threshold	Set the reset threshold as a percentage of the motor thermal capacity.
	Thermal Overload Alarm	**Enable** or **Disable** the thermal overload alarm. This function is activated when the thermal capacity of the motor exceeds the thermal overload alarm level.
	Overload Alarm Level	Set the percentage for the overload alarm level.
MOTOR OVERHEAT **NOTE:** This setting is displayed, if you have enabled **Temperature Sensor Available** parameter in the **My Avatar** tab. To enable, go to **My Avatar** tab → **AVATAR PARAMETERS** → **Temperature Sensor Available** and select **Yes**.	**Motor Overheat Trip**	**Enable** or **Disable** the motor overheat trip. If this function is enabled, a trip is initiated when the motor temperature measurement exceeds the motor overheat **Trip Level** for a period longer than the motor overheat **Trip Delay**.
	Trip Delay	Set the time delay before a trip occurs.
	Trip Level	Set the level of an input that triggers a trip
	Reset Threshold	Set the reset threshold.
	Motor Overheat Alarm	**Enable** or **Disable** the motor overheat alarm. If enabled, this function indicates when the motor temperature measurement exceeds the motor overheat alarm level.
	Alarm Threshold	Set the alarm threshold of the motor overheat trip.
	Temperature Sensor	Select the temperature sensor from the drop-down list. **NOTE:** The temperature sensor provides motor temperature output.
NOTE: The **THERMAL PROTECTION** function is not displayed for the **Resistor**, **Power Supply**, or **Transformer** avatars.		

ELECTRICAL PROTECTION

The avatars with electrical protection functions enabled detect electrical event, and issue an alarm or a trip. The following electrical protection settings are available for the selected avatars:

Section	Setting	Description
CURRENT PHASE LOSS(1)	**Current Phase Loss Trip**	**Enable** or **Disable** the current phase loss trip. If this function is enabled, a trip is initiated when the current phase unbalance exceeds the **Current Phase Loss Trip Level** in the **Motor Start State** or **Motor Run State** for a period longer than the **Current Phase Loss Trip Delay**.
	Current Phase Loss Trip Delay	Set the trip delay for current phase loss.
	Current Phase Loss Trip Level	Set the trip level percentage for current phase loss.
GROUND CURRENT DETECTION	**Ground Current Trip**	**Enable** or **Disable** the ground current trip. If this function is enabled, a trip is initiated when the ground current exceeds the **Ground Current Trip Level** for a period longer than the **Ground Current Trip Delay**.
	Ground Current Trip Delay	Set the trip delay for ground current.
	Ground Current Trip Level	Set the trip level for ground current.
	Ground Current Alarm	**Enable** or **Disable** the ground current alarm. This function is activated to indicate when the ground current exceeds the **Ground Current Alarm Level**.
	Ground Current Alarm Level	Set the alarm level percentage for ground current.
CURRENT PHASE UNBALANCE(1)	**Current Phase Unbalance Trip**	**Enable** or **Disable** the current phase unbalance trip. Avatars set to three-phase operation, with the **Current Phase Unbalance Trip** function enabled, initiate a trip when the unbalance in phase current exceeds the **Current Phase Unbalance Trip Level**: • in the motor start state for a period longer than the **Current Phase Unbalance Trip Delay - Start**. or • in the motor run state for a period longer than the **Current Phase Unbalance Trip Delay - Run**. You can configure separate trip delays for run state and start state.
	Current Phase Unbalance Trip Delay - Start	Set the trip delay for a current phase unbalance during start state.

Section	Setting	Description
	Current Phase Unbalance Trip Delay - Run	Set the trip delay for a current phase unbalance during run state.
	Current Phase Unbalance Trip Level	Set the trip level percentage for current phase unbalance.
	Current Phase Unbalance Alarm	**Enable** or **Disable** the current phase unbalance alarm. Avatars set to three-phase operation, with the **Current Phase Unbalance Alarm** function enabled, indicate when the current phase unbalance exceeds the **Current Phase Unbalance Alarm Level**.
	Current Phase Unbalance Alarm Level	Set the alarm level percentage for current phase unbalance.
PHASE REVERSAL(1)	**Current Phase Reversal Trip**	**Enable** or **Disable** the current phase reversal trip. If this function is enabled, a trip is initiated when the detected current phase sequence does not match the current phase sequence setting for 100 ms. **NOTE:** There is no alarm for current phase reversal. This function is not adjustable.
	Current Phase Sequence	Select the order of the phases (ABC or ACB) in rotation for the avatar.
(1) This parameter is displayed if the **Power Supply Type** is **Three Phase**.		

LOAD PROTECTION

The avatars with load protection functions enabled detect mechanical or operating problems on the load and issue as alarm or a trip. The following load protection settings are available for the selected avatars:

Section	Setting	Description
JAM	**Jam Trip**	**Enable** or **Disable** the jam trip. If this function is enabled, a trip is initiated when the maximum phase current exceeds the **Jam Trip Level** in the motor run state for a time longer than the **Jam Trip Delay**.
	Jam Trip Delay	Set the jam trip delay.
	Jam Trip Level	Set the threshold for jam trip level.
	Jam Alarm	**Enable** or **Disable** the jam alarm.

Section	Setting	Description
		This function is activated to indicate when the maximum phase current exceeds the **Jam Alarm Level** in the motor run state.
	Jam Alarm Level	Set the threshold for jam alarm level.
LONG START	**Long Start Trip**	**Enable** or **Disable** the long start trip. Avatars with the **Long Start** function detect a long start and initiate a trip if either of the following conditions occur during the time specified in **Long Start Trip Delay**, after the motor has entered the start phase: • Average current exceeds the **Long Start Trip Level** and does not fall below it again. • Average current does not reach the **Long Start Trip Level**.
	Long Start Trip Delay	Set the long start trip delay.
	Long Start Trip Level	Set the long start trip level.
STALL	**Stall Trip**	**Enable** or **Disable** the stall trip. If this function is enabled, a trip is initiated when the maximum phase current exceeds the **Stall Trip Level** in the motor start state for a period longer than the **Stall Trip Delay**.
	Stall Trip Delay	Set the stall trip delay.
	Stall Trip Level	Set the threshold for the stall trip level.
UNDERCURRENT	**Undercurrent Trip**	**Enable** or **Disable** the undercurrent trip. If this function is enabled, a trip is initiated when the average phase current is less than the **Undercurrent Trip Level** in the motor run state for a period longer than the **Undercurrent Trip Delay**.
	Undercurrent Trip Level	Set the threshold for undercurrent trip level.
	Undercurrent Trip Delay	Set the undercurrent trip delay.
	Undercurrent Alarm	**Enable** or **Disable** the undercurrent alarm. This function is activated to indicate when the average phase current is less than the **Undercurrent Alarm Level** in the motor run state.
	Undercurrent Alarm Level	Set the threshold for the undercurrent alarm level.
OVERCURRENT	**Overcurrent Trip**	**Enable** or **Disable** the overcurrent trip. If this function is enabled, a trip is initiated when the maximum phase current exceeds the **Overcurrent**

Section	Setting	Description
		Trip Level in the motor run state for a period longer than the **Overcurrent Trip Delay**.
	Overcurrent Trip Level	Set the threshold for the overcurrent trip level.
	Overcurrent Trip Delay	Set the overcurrent trip delay.
	Overcurrent Alarm	**Enable** or **Disable** the overcurrent alarm. This function is activated to indicate when the maximum phase current exceeds the **Overcurrent Alarm Level** in the motor run state.
	Overcurrent Alarm Level	Set the threshold for the overcurrent alarm level.
RAPID CYCLE LOCKOUT	**Rapid Cycle Lockout**	**Enable** or **Disable** the rapid cycle lockout. The **Rapid Cycle Lockout** function ignores new run commands for the time specified in the **Rapid Cycle Lockout Timeout** after a transition to the motor start state.
	Rapid Cycle Lockout Timeout	Set the rapid cycle lockout timeout.
RAPID RESTART LOCKOUT	**Rapid Restart Lockout**	**Enable** or **Disable** the rapid restart lockout. The **Rapid Restart Lockout** function ignores run commands for the time specified in the **Rapid Restart Lockout Timeout** after a transition to the motor Off state.
	Rapid Restart Lockout Timeout	Set the rapid restart lockout timeout.
NOTE: The **JAM**, **STALL**, **RAPID CYCLE LOCKOUT**, and **RAPID RESTART LOCKOUT** functions are not displayed for the **Resistor**, **Power Supply**, or **Transformer** avatars.		

AUTOMATIC RESET

NOTE: The **Auto-Reset** function may lead to immediate energizing of the load, with an active command from the PLC or the **Force Mode** function.

⚠WARNING

UNINTENDED EQUIPMENT OPERATION

Configure this function in a such a way that this function does not result in unsafe conditions.

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

The automatic reset function allows you to automatically reset the trips of avatars grouped in the thermal, electrical, or load protection sections. The following automatic reset settings are available for the selected avatars:

Section	Setting	Description
THERMAL PROTECTION GROUP **ELECTRICAL PROTECTION GROUP** **LOAD PROTECTION GROUP**	**Maximum Auto-Reset Retries**	Set the maximum number of auto-reset retry attempts. The **Maximum Auto-Reset Retries** specifies the number of reset attempts made if the previous ones are unsuccessful (for instance, if the external conditions causing the trip to occur still exist).
	Auto-Reset Timer	Set the auto-reset timer. The **Auto-Reset Timer** is a delay between the moment a protection function detects the presence of trip conditions (and triggers a trip), and the first auto-reset attempt.
NOTE: The **THERMAL PROTECTION GROUP** function is not displayed for the **Resistor**, **Power Supply**, or **Transformer** avatars.		

PREDICTIVE ALARMS

The following settings are available for the selected avatars:

Section	Setting	Description
ALARM INPUT1 **ALARM INPUT2** **NOTE:** The PV inputs enabled for the avatar are also the predictive alarm inputs. The first PV input is the first alarm input, the second PV input is the second alarm input, and so on. To set, go to **My Avatar** tab → **Avatar Parameters** and set **PV Inputs Nb** to the desired number of avatar PV inputs, from 0 to 5.	**Type of Input**	Select the type of measurement represented by the analog input, for display purposes only.
	Alarm High Threshold Value	Enter the high threshold value for the alarm based on the input selected.
	Alarm Low Threshold Value	Enter the low threshold value for the alarm based on the input selected.

Application Avatar Settings

Overview

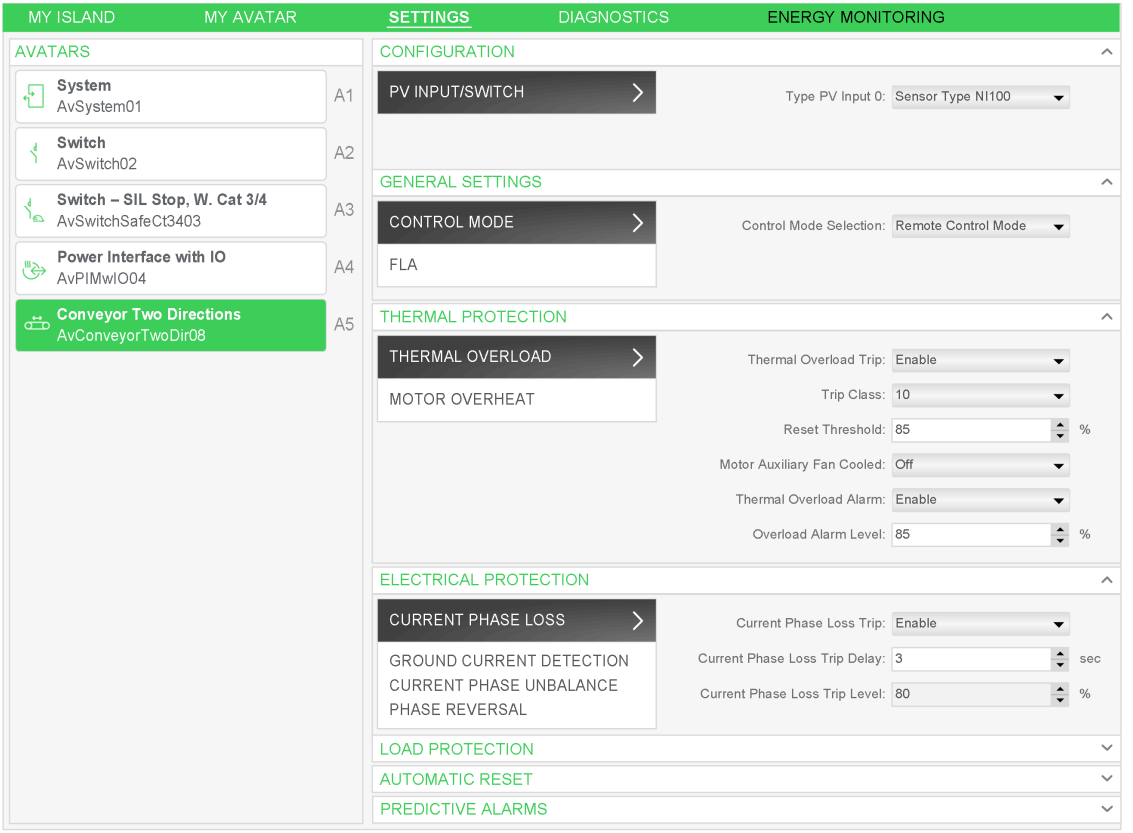
The settings of **Application** avatars are described in the following sections.

NOTE: The settings of Application avatars, page 43 are displayed based on the type of avatar you have selected.

The settings of the avatars are grouped as follows:

- Configuration, page 81
- General settings, page 82
- Thermal protection, page 84
- Electrical protection, page 84
- Load protection, page 84
- Automatic reset, page 84
- Predictive alarms, page 84

The following illustration is an example of the settings for the **Conveyor Two Directions** avatar:



CONFIGURATION

The following configuration settings are available for the selected avatars:

Section	Setting	Description
PV INPUT/SWITCH	**Type PV Input** **NOTE:** The **Type PV Input** settings are displayed if you have set the number of **PV Inputs Nb** for the selected avatar. To set, go to **My Avatar** tab → **Avatar Parameters** and set **PV Inputs Nb** to the desired number of avatar PV inputs, from 0 to 5.	Select the type of analog input to be measured.

GENERAL SETTINGS

The following general settings are available for the selected avatars:

Section	Setting	Description
CONTROL MODE	**Control Mode Selection**	Select the type of control mode from the drop-down list. • **Remote** The avatar is controlled by PLC command. By default, **Remote** mode is selected. • **Local** The avatar is controlled by Local Command & PV Control. • **Autonomous** The avatar is controlled by PV Control.
CONTROL MODE	**PV CONTROL INPUT SOURCE**	Select the required control source from the drop-down list. • **PVInput** • **PVSwitch** When **PVInput** selected, the following parameters appear. • **PV Control Input Level** Enter the required input level. • **PV Control Input Hysteresis** Enter the input hysteresis value in percentage. • **PV Control Input Hysteresis High Level** Displays the high level of the **PV Control Input Hysteresis**.

Section	Setting	Description
		• **PV Control Input Hysteresis Low Level** Displays the low level of the **PV Control Input Hysteresis**. • **PV Control Input0 Logic** Select the type of PV control logic: ◦ **Positive** logic: The PV control input provides a run command when the associated PV input is above the PV control level. ◦ **Negative** logic: The PV control input provides a run command when the associated PV input is below the PV control level. • **PV Control Input1 Logic** Select the type of PV control logic: ◦ **Positive** logic: The PV control input provides a run command when the associated PV input is above the PV control level. ◦ **Negative** logic: The PV control input provides a run command when the associated PV input is below the PV control level.
CONTROL MODE		• **Combined PV Control** Select the type of PV control mode: ◦ **Separate** control: The logical OR provides a run command to the avatar if one of the PV control inputs provides a run command. ◦ **Combined** control: The logical AND provides a run command to the avatar only if both PV control inputs provide a run command. When **PVSwitch** selected, the following parameters appear. • **PV Control Input Debounce Delay** Enter the delay for the control input in secs.
FLA	**Ir (FLA)**	Set the rated current of the motor. **NOTE:** Full-load amperage (FLA) refers to the motor's rated current (Ir) at rated load and rated voltage. This is the amount of current (A) that the motor draws from the electrical system when producing its rated output horsepower.

THERMAL PROTECTION

For more details, refer to THERMAL PROTECTION, page 73.

ELECTRICAL PROTECTION

For more details, refer to ELECTRICAL PROTECTION, page 74.

LOAD PROTECTION

For more details, refer to LOAD PROTECTION, page 76.

AUTOMATIC RESET

For more details, refer to AUTOMATIC RESET, page 78.

PREDICTIVE ALARMS

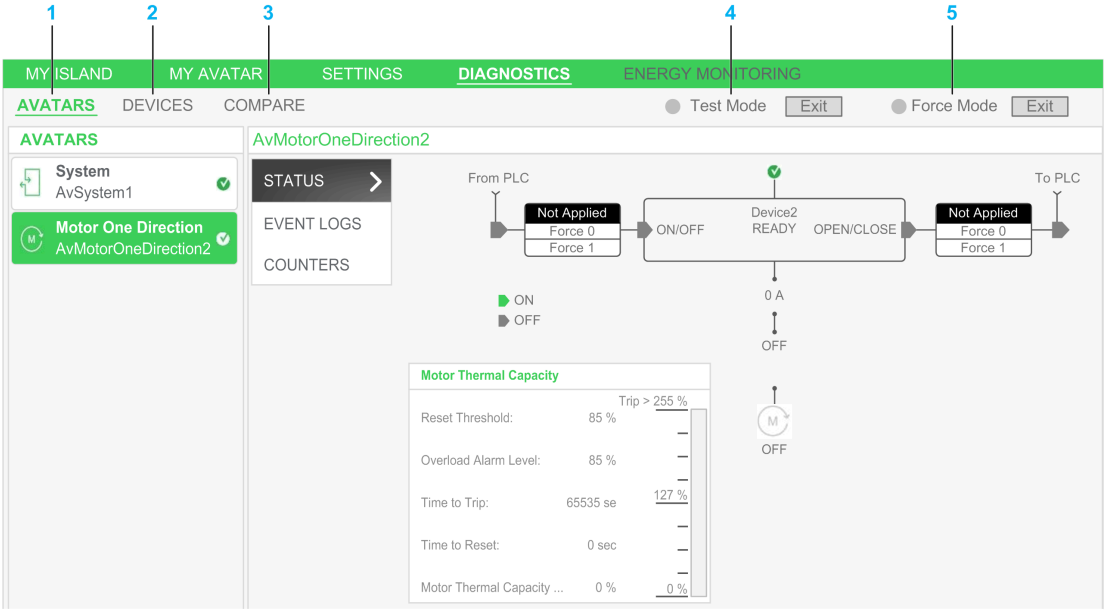
For more details, refer to PREDICTIVE ALARMS, page 79.

DIAGNOSTICS Tab

Introduction

Overview

The **DIAGNOSTICS** tab displays the status and diagnostic information of avatars and devices connected to the island. You can also reset the trip and alarm counters.



1 Avatars tab, page 85

2 Devices tab, page 90

3 Compare tab, page 96

4 Test mode status indicator, page 99

5 Force mode status indicator, page 100

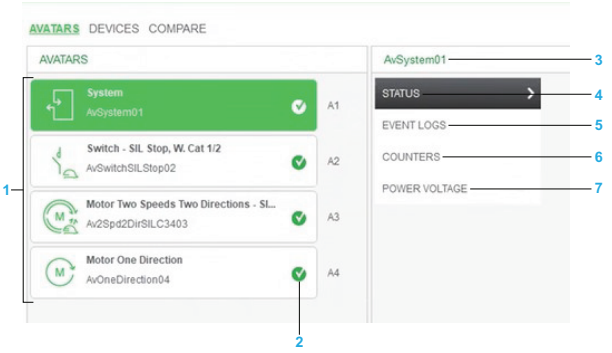
NOTE: The **Motor Thermal Capacity** is displayed when the **Thermal Overload Alarm** is enabled for a selected avatar. To enable, go to **Settings > THERMAL PROTECTION > THERMAL OVERLOAD > Thermal Overload Alarm** and select **Enable**.

AVATARS Tab

Overview

In this tab, the list of the configured avatars is displayed, along with **STATUS**, **EVENT LOGS**, **COUNTERS**, and **POWER VOLTAGE** diagnostics information.

The following illustration is an example of the **AVATARS** tab in the **DIAGNOSTICS** tab:



1 Avatar list, page 86

2 Status icons, page 86

3 Name of avatar, page 87

4 Status, page 87

5 Event logs, page 88

6 Counters, page 89

7 Power voltage, page 89

Avatar List

Displays the avatars added in the TeSys island.

Status Icons

The status icons displayed in avatar list indicate the following:

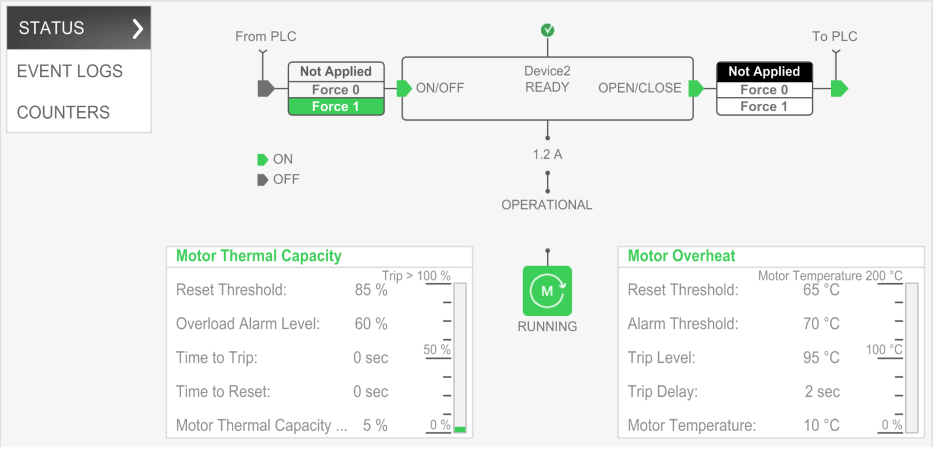
- : DTM is in offline mode.
- : Avatar is OK or ready.
- : Avatar has issued an alarm.
- : Avatar is tripped or has detected an event.

Name of Avatar

This field displays the **Avatar Name** that you have entered into the **MY AVATAR** tab.

STATUS

The **STATUS** section displays the status of the selected avatar.



For more details on functionality of the **STATUS** section, refer to Force Mode, page 100.

NOTE:

- **Motor Overheat** is displayed when the motor overheat trip or alarm is enabled in avatar settings.
- **Motor Thermal Capacity** is displayed when the thermal overload trip or alarm is enabled in avatar settings.

Process Variable (PV)

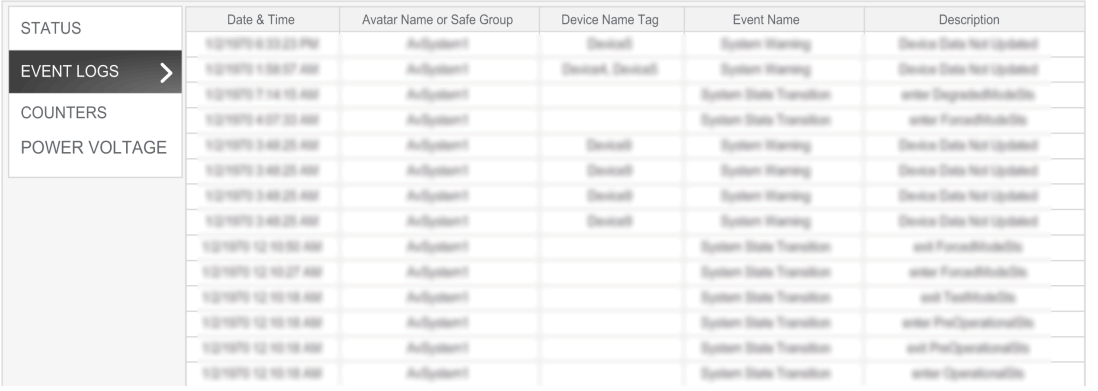
PV Name	PV Value
PvInput1	0 °C
PvInput2	0 °C
PvInput3	0 mA
PvSwitch1	False
PvSwitch2	False

This section displays the process variable name and value of the selected application avatar which you have configured in CONFIGURATION, page 81 section.

The process variable table is shown for the avatars which support process variables. PV inputs and PV switches that are configured for the avatar are shown in the table. The PV names are the names configured in the My **Avatar** tab. The PV value (On or Off) are shown for PV switches. The PV value for PV inputs is shown in units corresponding to the PV input type configured in the avatar settings.

EVENT LOGS

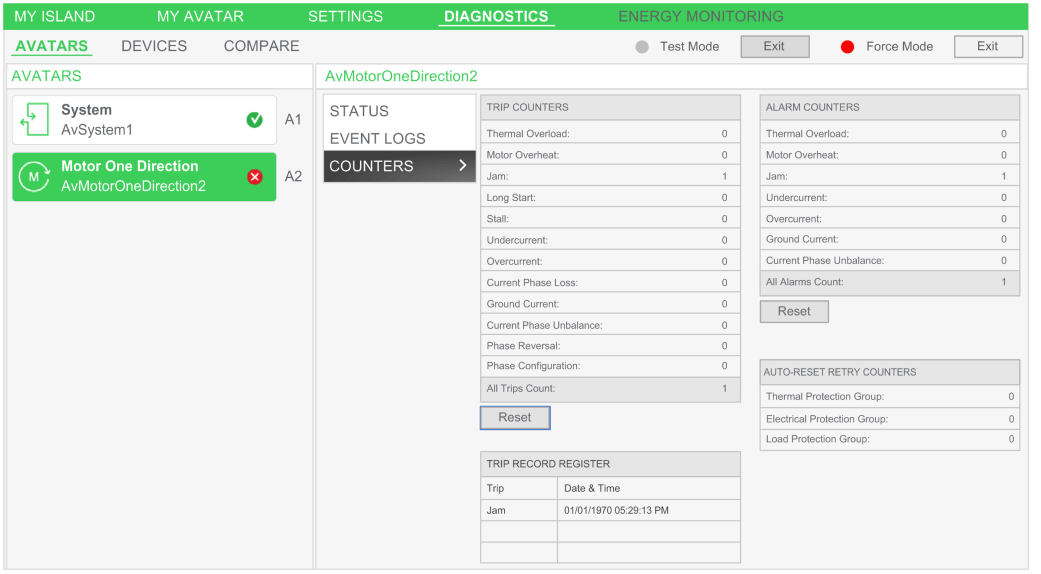
The **EVENT LOGS** section displays the event logs of the selected avatar.



Item	Description
Date & Time	Displays the date and time that the event occurred.
Avatar	Displays the name of the avatar.
Device or SIL Group	Displays the name tag of the device or SIL group number.
Event Name	Displays the name of event that has occurred.
Description	Displays the description of the event that has occurred.

COUNTERS

The **COUNTERS** section displays the trip, alarm, and auto-reset retry counters of the selected avatar.



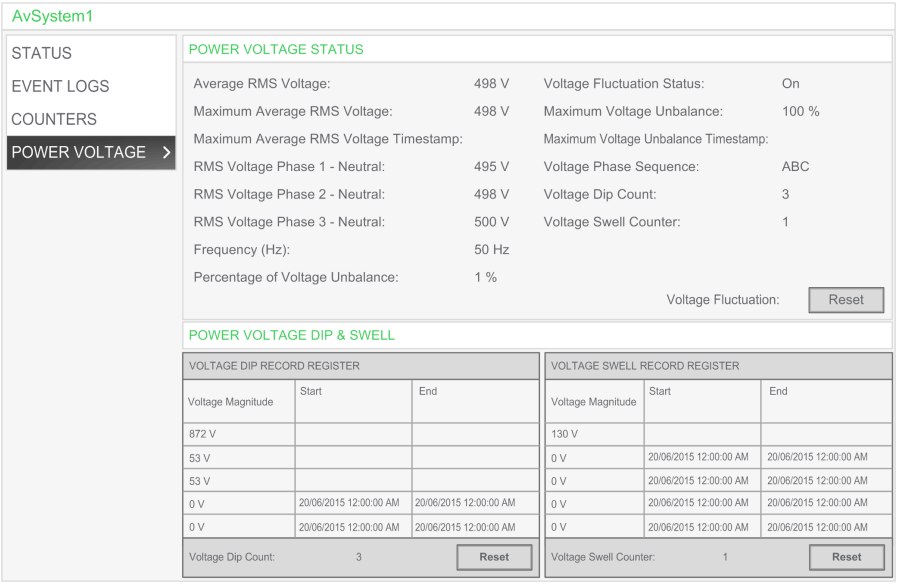
To reset the **TRIP COUNTERS** and **ALARM COUNTERS**, click **Reset**.

POWER VOLTAGE

The **POWER VOLTAGE** section displays the power voltage status of the island.

NOTE:

- This function is displayed only for the **System** avatar.
- The **Power Voltage** section is displayed if you have enabled the **Load Energy Monitoring** option for a selected avatar.



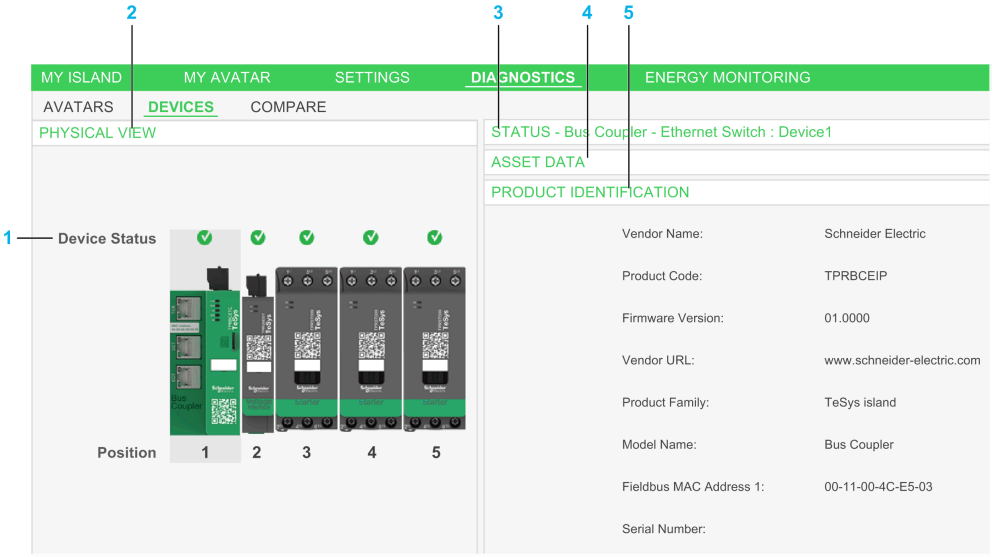
To reset the voltage dip and swell record register, click **Reset**.

DEVICES Tab

Overview

In this tab, the **PHYSICAL VIEW** of the devices is displayed, along with **STATUS**, **ASSET DATA**, and **PRODUCT IDENTIFICATION**.

The following illustration is an example of the **DEVICES** tab:



1 Device status, page 91

2 Physical view, page 92

3 Status, page 92

4 Asset data, page 93

5 Product identification, page 95

Device Status

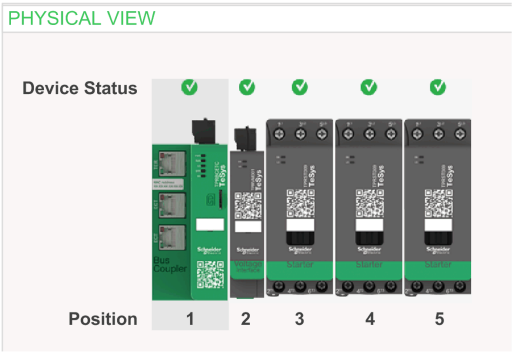
The status icons indicate the following:

- : DTM is in offline mode.
- : Device is OK or ready.
- : Device has issued an alarm.
- : Device has detected an event.

PHYSICAL VIEW

In this section, the physical view of the devices configured on the TeSys island is displayed, indicating the position of each device on the bus.

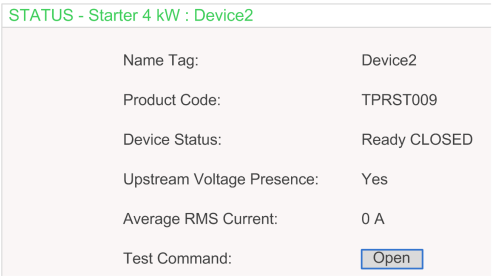
The following illustration is an example of the **PHYSICAL VIEW** section:



To see the details in **STATUS**, **ASSET DATA**, and **PRODUCT IDENTIFICATION** sections, click the devices.

STATUS

The following illustration is an example of the **STATUS** section:

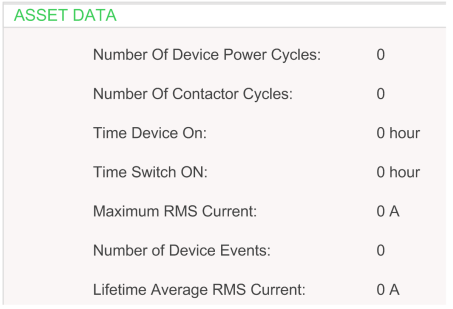


Name		Description
Name Tag		Displays the name tag of the module.
Product Code		Displays the product reference of the module
System Status		Displays the **System** status.
Command	**Locate**	The bus coupler's PWR LED illuminates a yellow pattern for 5 seconds to help you identify the device to which the DTM is communicating.

Name		Description
		NOTE: This command is displayed only for the bus coupler device.
	System Restart	Starts the complete system again. **NOTE: System Restart** will disconnect the DTM from the island. **NOTE:** This command is displayed only for the bus coupler device.
Device Status		Displays the device status.
SIL Stop 0 LED State		Displays the LED status of the SIL interface module.
Upstream Voltage Presence		Displays the presence of upstream voltage.
Average RMS Current		Displays the average RMS current.
Test Command		Activate or deactivate the **Test Mode**, page 99. **NOTE:** This command is displayed only for **Switch** and **SIL Switch** devices.
Input 0		Displays the status of **Input 0** of the **Digital I/O** module.
Input 1		Displays the status of **Input 1** of the **Digital I/O** module.
Input 2		Displays the status of **Input 2** of the **Digital I/O** module.
Input 3		Displays the status of **Input 3** of the **Digital I/O** module.
Output 1		Displays the status of **Output 1** of the **Digital I/O** module.
Output 2		Displays the status of **Output 2** of the **Digital I/O** module.

ASSET DATA

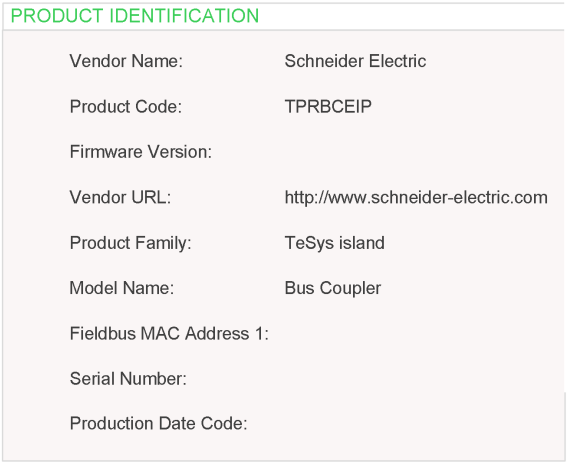
The following illustration is an example of the **ASSET DATA** section:



Name	Description
Number Of Device Power Cycles	Displays the number of times that the device has been powered On from the Off state.
Number Of Contactor Cycles	Displays the number of contactor cycles of the device.
Time Device On	Displays the total time in hours that the device has been powered On in its lifetime.
Time Switch ON	Displays the total time in hours that the switch has been closed in its lifetime.
Number of Device Events	Displays the number of events occurred.
Max Average Voltage	Displays the maximum average voltage of the device.
Average Lifetime Voltage	Displays the total lifetime average voltage of the device.
Maximum RMS Current	Displays the maximum RMS current of the device.
Lifetime Average RMS Current	Displays the total lifetime average RMS current of the device.
Number Of SIL-In 1 Operations	Displays the number of SIL operations of SIL input 1 of the SIL interface device.
Number Of SIL-In 2 Operations	Displays the number of SIL operations of SIL input 2 of the SIL interface device.
Mirror Relay Operations Counter	Displays the number of counts of mirror relay operations.

PRODUCT IDENTIFICATION

The following illustration is an example of the **PRODUCT IDENTIFICATION** section:



Name	Description
Vendor Name	Displays the vendor name of the selected device.
Product Code	Displays the product reference of the selected device.
Firmware Version	Displays the firmware version of the selected device.
Vendor URL	Displays the vendor URL of the selected device.
Product Family	Displays the product family of the selected device.
Model Name	Displays the model name of the selected device.
Fieldbus Mac Address1	Displays the fieldbus MAC address of the selected device. **NOTE:** This command is displayed only for the bus coupler device.
Serial Number	Displays the serial number of the selected device.
Product Date Code	Displays the date code of the selected device.

COMPARE Tab

Overview

The **COMPARE** tab displays the difference between the offline project topology with the connected island topology and also compares the configured parameters of an offline project with the connected island.

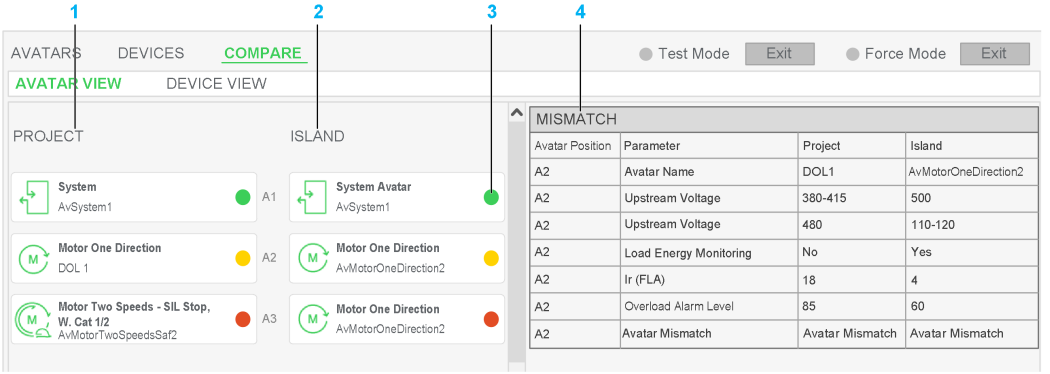
The **COMPARE** tab has the following sub tabs:

- **AVATAR VIEW**
- **DEVICE VIEW**

AVATAR VIEW

This tab displays the avatar topology configured in your project. It also displays the difference between the avatar topology, configured parameters, and the values of parameters.

The following illustration is an example of the **AVATAR VIEW** section:



1 Project, page 97

2 Island, page 97

3 Comparison status, page 97

4 Mismatch, page 97

PROJECT

This section displays the avatar topology configured in your offline project.

ISLAND

This section displays the avatar topology configured in the connected island.

Comparison Status

The icons represent the following:

-  : No mismatch.
- : Avatars are the same, but the settings are different.
-  : Avatars do not match.

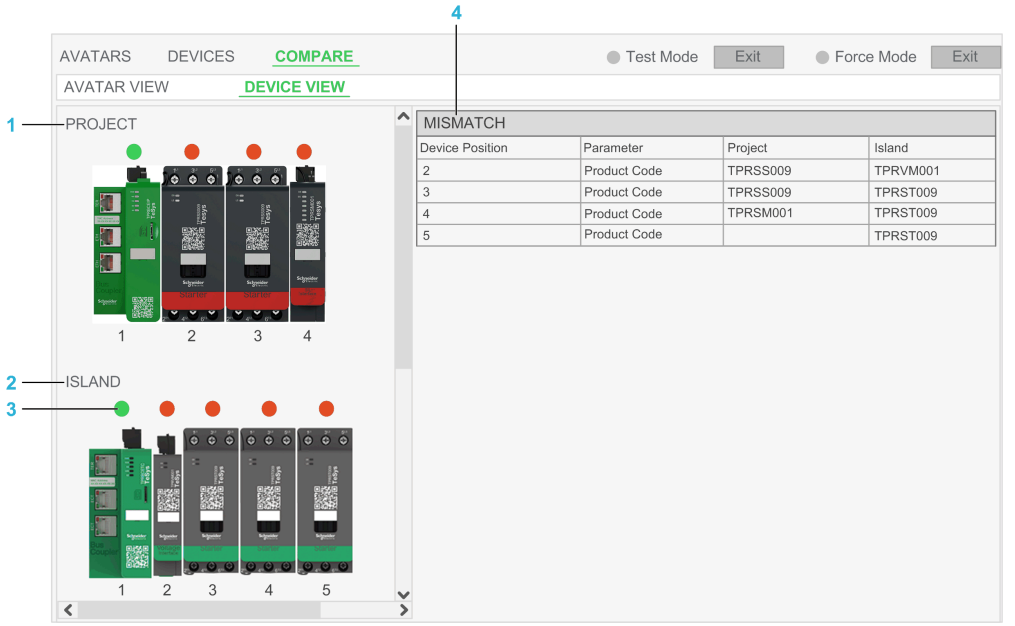
MISMATCH

This section displays the difference between the configured parameters of an avatar in an offline project with the connected island in a tabular format. It also displays the missing avatar information.

DEVICE VIEW

This tab displays the device topology configured in your project. It also displays the difference between the device topology, configured parameters, and the values of the parameters.

The following illustration is an example of the **DEVICE VIEW** tab:



1 Project, page 98

2 Island, page 98

3 Comparison status, page 98

4 Mismatch, page 99

PROJECT

This section displays the device topology configured in your offline project.

ISLAND

This section displays the device topology configured in the connected island.

Comparison Status

The icons represent the following:

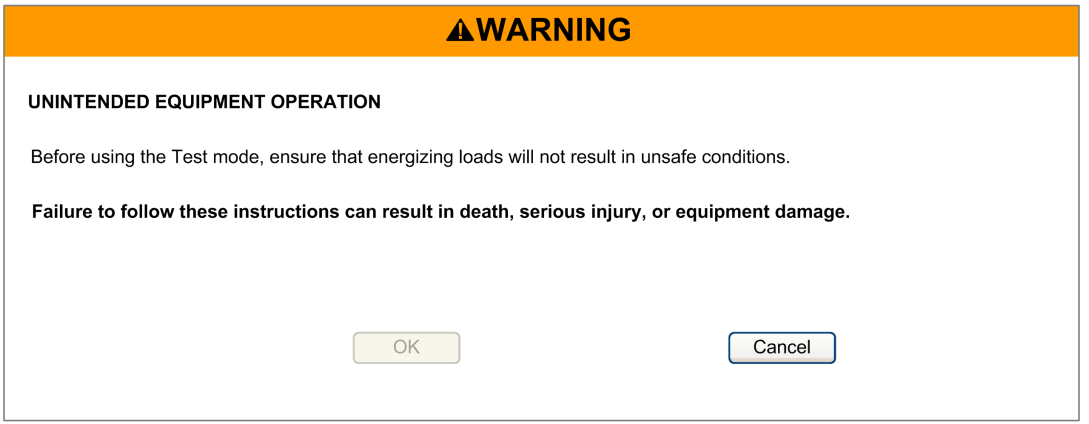
- : No mismatch.
- : Devices are the same, but the settings are different.
- : Devices do not match.

MISMATCH

This section displays the difference between the configured parameters of the device in an offline project with the connected island in a tabular format. It also displays the missing device information.

Test Mode

In **Test Mode**, the DTM enables you to send the test command (open or close) to the contactor to verify the working of an individual device.



The **Test Mode** is available when the DTM is in **Full-Control**, page 36 mode.

Procedure

To activate the **Test Mode**, perform the following steps:

NOTE: The **Test Command** is available only for digital I/O devices.

Step	Action
1	Go to the **DIAGNOSTICS > DEVICES** tab and click on the device in the **PHYSICAL VIEW** section.
2	In the **STATUS**, page 92 section, click **Close** or **Open** next to the **Test Command** parameter. **Result:** • The DTM sends the test command (**Close** or **Open**) to the contactor. • The **Device Status** changes to the **Ready CLOSED** status (for **Close** command) or to the **Ready** status (for **Open** command). • The **Test Mode** is activated. Test Mode Exit The blinking icon indicates that the **Test Mode** is active. You can click **Exit** to deactivate the **Test Mode**. **NOTE: Exit** test mode will close all test commands.

NOTE: When **Test Mode** is active, the DTM cannot change the settings of the avatars.

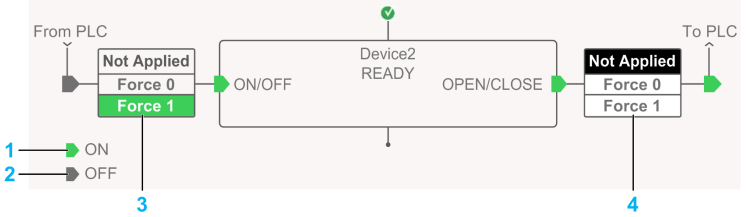
Force Mode

In **Force Mode**, you can force the input from the PLC to the device, or the output from the device to the PLC.

The **Force Mode** is available when the DTM is in **Full-Control**, page 36 mode.

Force Mode Interface

The following screen is an example of the **Motor One Direction** avatar:



1 Indicates input or output is ON.

2 Indicates input or output is OFF.

3 Input from PLC to the device.

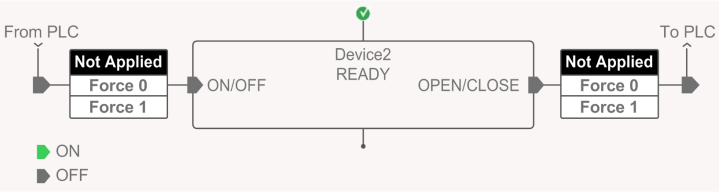
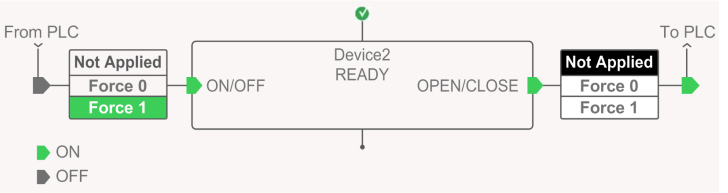
4 Output from device to the PLC

The table describes the **Force Mode** inputs:

Input	Description
Not Applied	No value is forced and the value coming from/to the PLC is processed.
Force 0	The command input processed by the Avatar logic is forced to OFF, or the status output from the Avatar logic is forced to OFF.
Force 1	The command input processed by the Avatar logic is forced to ON, or the status output from the Avatar logic is forced to ON.

Procedure

To activate the **Force Mode**, perform the following steps:

Step	Action
1	Go to the **DIAGNOSTICS > AVATARS** tab and click on the required avatar from avatar list, page 86. **Result:** The avatar diagnostic interface with pictorial representation is displayed in the **STATUS** section. 
2	Click **Force 1** to force an On command to the logic for this Avatar input.  **Result:** The **Force Mode** is activated.  The blinking icon indicates that the **Force Mode** is active. You can click **Exit** to deactivate the **Force Mode**. **NOTE: Exit** force mode changes all force commands to **Not Applied**.

ENERGY MONITORING Tab

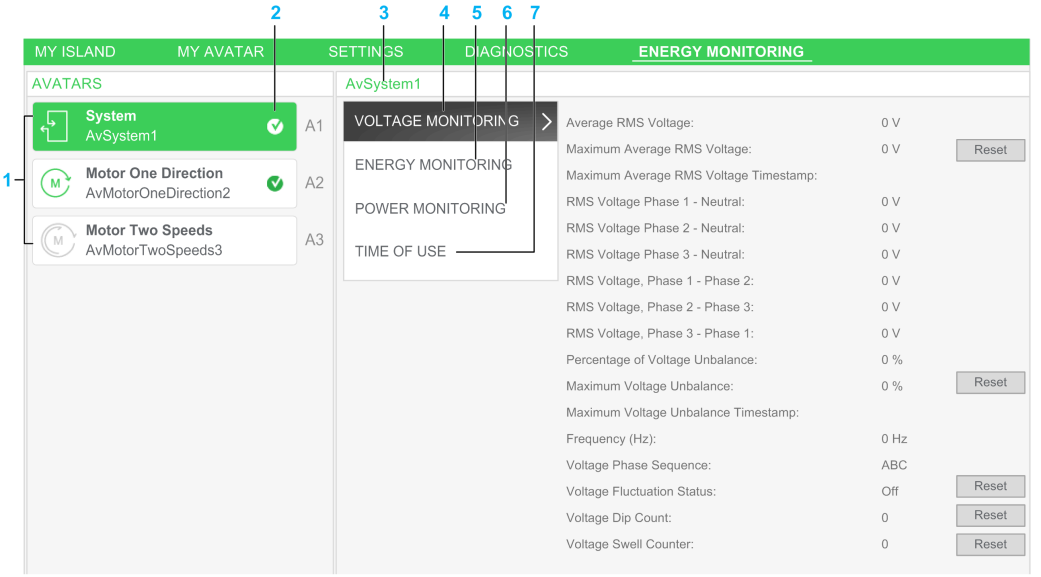
Overview

This tab displays the voltage, energy, and power monitoring at the island level and at the avatar level with a voltage interface module.

System Energy Monitoring: Energy monitoring at the island level provides the voltage, power, and energy data for the TeSys island.

Avatar Energy Monitoring: Energy monitoring at the avatar level provides the power and energy data for the TeSys island.

The following illustration is an example of the **ENERGY MONITORING** tab:



1 Avatar list, page 103

2 Status icons, page 104

3 Name of avatar, page 104

4 Voltage monitoring, page 104

5 Energy monitoring, page 106

6 Power monitoring, page 107

7 Time of use, page 108

NOTE: TIME OF USE is displayed in the **Load** and **Application** avatars only when **Load Energy Monitoring** is enabled for an avatar in the **MY AVATAR** tab.

Avatar List

Displays the list of the avatars added in the TeSys island DTM.

Status Icons

The status icons displayed in avatar list indicate the following:

-  : Avatar is OK or ready.
-  : Avatar has issued an alarm.
-  : Avatar is tripped or has detected an event.

Name of Avatar

Displays the **Avatar Name** which you have configured in the **MY AVATAR** tab.

VOLTAGE MONITORING

NOTE: VOLTAGE MONITORING is displayed in the **System** avatar only when **Load Energy Monitoring** is enabled for an avatar in the **MY AVATAR** tab.

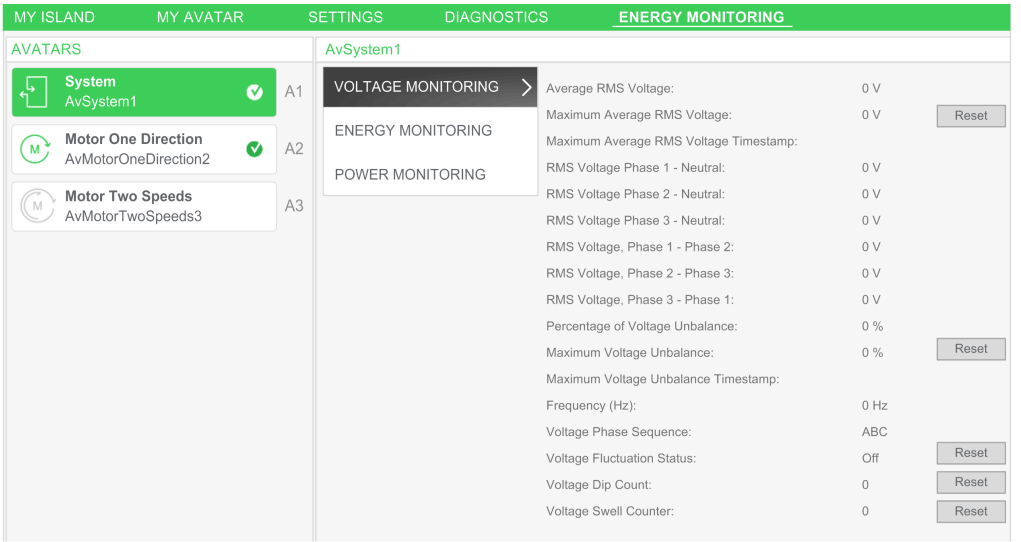
⚠⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Do not use the voltage monitoring function to verify an electrically safe working condition as defined in NFPA 70E. Use properly rated measuring device to verify absence of the voltage.

Failure to follow these instructions will result in death or serious injury.

The following illustration is an example of the **VOLTAGE MONITORING** section:



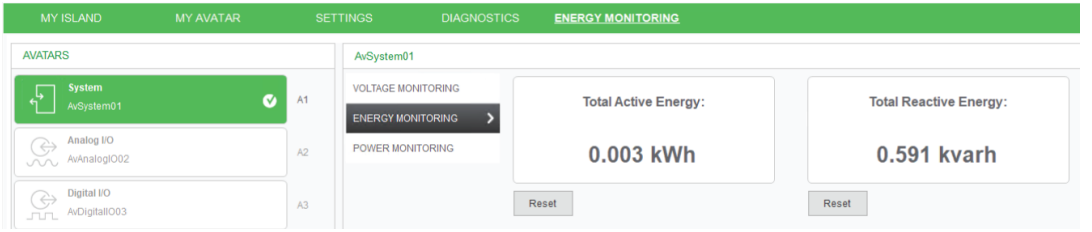
Parameter	Description
Average RMS Voltage	Displays the average RMS voltage.
Maximum Average RMS Voltage	Displays the maximum average RMS voltage. You can click **Reset** to reset the maximum average voltage to 0 and reset the associated timestamp.
Maximum Average RMS Voltage Timestamp	Displays the timestamp of the maximum average RMS voltage.
RMS Voltage Phase 1 - Neutral	Displays the RMS voltage of phase 1.
RMS Voltage Phase 2 - Neutral	Displays the RMS voltage of phase 2.
RMS Voltage Phase 3 - Neutral	Displays the RMS voltage of phase 3.
RMS Voltage Phase 1 - Phase 2	Displays the RMS voltage between phase 1 and phase 2.
RMS Voltage Phase 2 - Phase 3	Displays the RMS voltage between phase 2 and phase 3.
RMS Voltage Phase 3 - Phase 1	Displays the RMS voltage between phase 3 and phase 1.
Percentage of Voltage Unbalance	Displays the percentage of voltage unbalance.
Maximum Voltage Unbalance	Displays the maximum voltage unbalance. You can click **Reset** to reset the maximum unbalance voltage to 0 and reset the associated timestamp.

Parameter	Description
Maximum Voltage Unbalance Timestamp	Displays the timestamp of the maximum voltage unbalance.
Frequency (Hz)	Displays the frequency.
Voltage Phase Sequence	Displays the phase sequence of the voltage. Sequence ABC: Indicates clockwise. Sequence CBA: Indicates counterclockwise.
Voltage Fluctuation Status	Displays **ON** when a voltage dip or swell has occurred. You can click **Reset** to reset the status.
Voltage Dip Count	Displays the count of voltage dips detected. You can click **Reset** to reset the counter to 0.
Voltage Swell Counter	Displays the count of voltage swells detected. You can click **Reset** to reset the counter to 0.

ENERGY MONITORING

ENERGY MONITORING displays the **Total Active Energy** and **Total Reactive Energy**.

The following illustration is an example of the **ENERGY MONITORING** section:

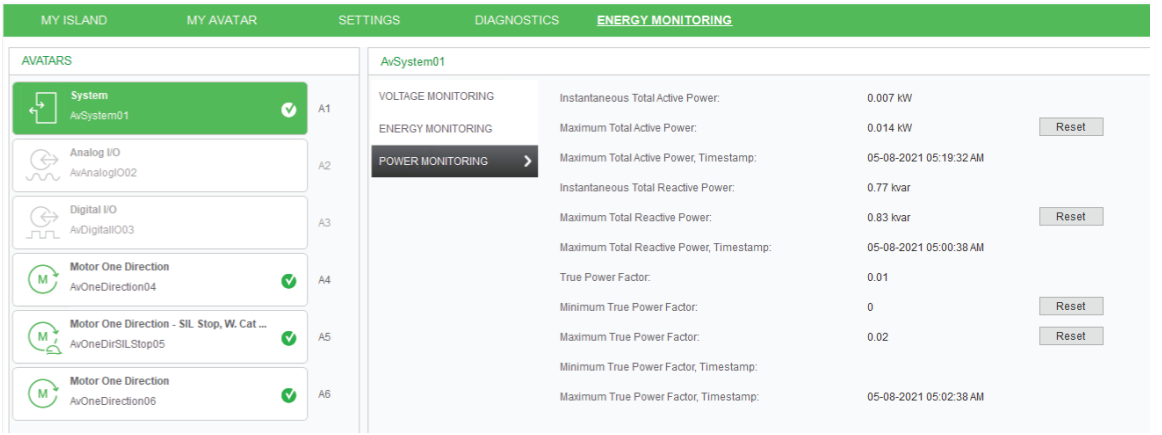


You can click **Reset** to reset the active and reactive energy to zero.

NOTE: Resetting does not affect the load energy data.

POWER MONITORING

The following illustration is an example of the **POWER MONITORING** section:



Parameter	Description
Instantaneous Total Active Power	Displays the instantaneous total active power.
Maximum Total Active Power	Displays the maximum total active power. You can click **Reset** to reset the maximum total active power to 0 and reset the associated timestamp.
Maximum Total Active Power Timestamp	Displays the timestamp of the maximum total active power.
Instantaneous Total Reactive Power	Displays the instantaneous total reactive power.
Maximum Total Reactive Power	Displays the maximum total reactive power. You can click **Reset** to reset the maximum total reactive power to 0 and reset the associated timestamp.
Maximum Total Reactive Power Timestamp	Displays the timestamp of the maximum total reactive power.
True Power Factor	Displays the true power factor.
Minimum True Power Factor	You can change the power factor to 1 and reset the associated timestamp.
Maximum True Power Factor	You can change the power factor to 0 and reset the associated timestamp.

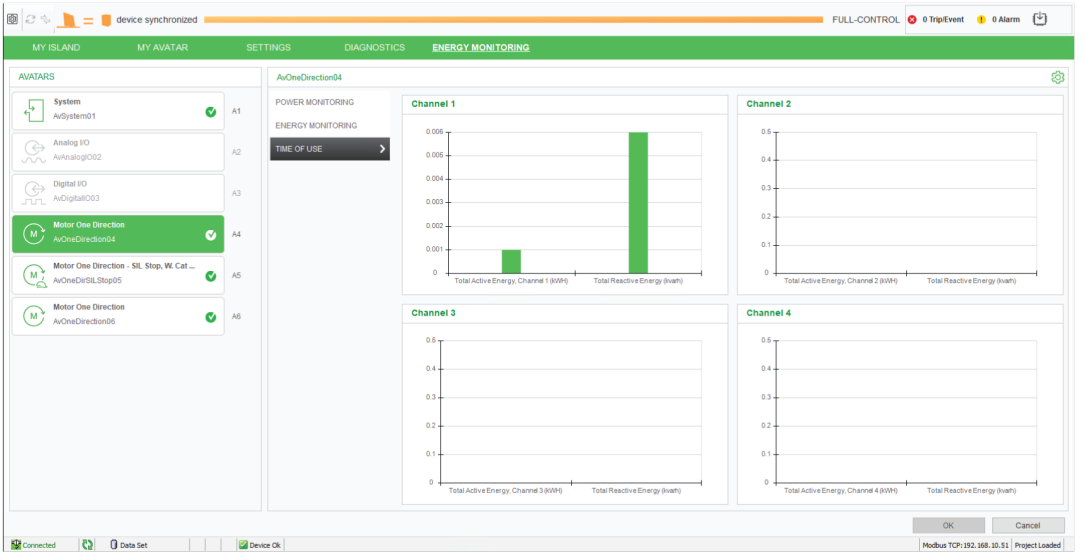
Parameter	Description
Minimum True Power Factor Timestamp	Displays the timestamp of the minimum true power factor.
Maximum True Power Factor Timestamp	Displays the timestamp of the maximum true power factor.

TIME OF USE

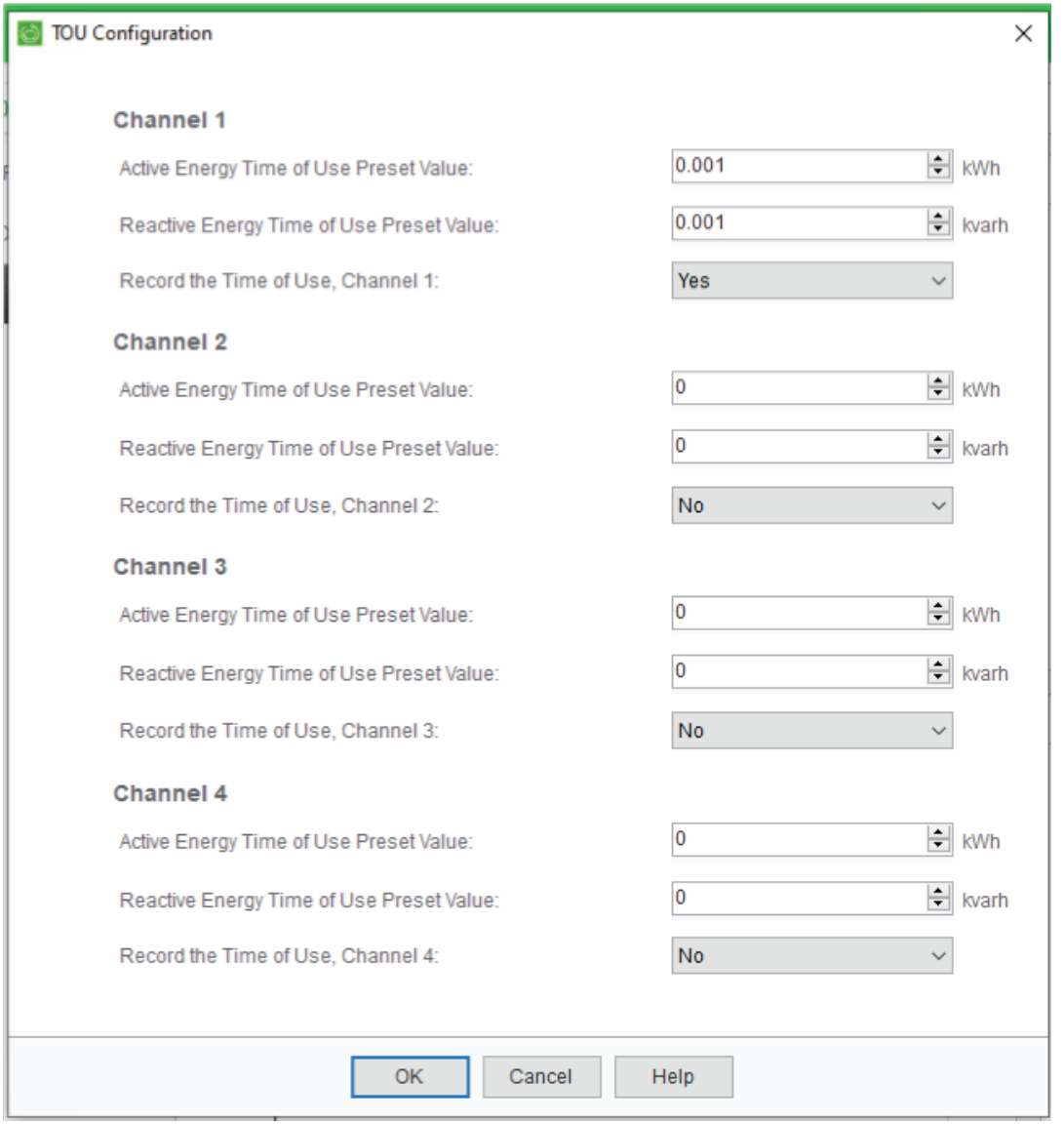
NOTE: TIME OF USE is displayed in the **Load** and **Application** avatar only when **Load Energy Monitoring** is enabled for an avatar in the **MY AVATAR** tab.

The **TIME OF USE** window provides graphs showing accumulated energy when each channel is enabled. The channels can be enabled/disabled through the **TIME OF USE** configuration window in DTM or through the PLC. The four channels are independent of each other. The **TIME OF USE** configuration window in the DTM also allows you to preset energy data in these graphs.

The following illustration is an example of the **TIME OF USE** section:



To access the settings in the **TIME OF USE** window for the avatar, click the wheel icon in the top right corner. After you have changed the values, click **OK** and close the window.


TOU Configuration
Channel 1
Active Energy Time of Use Preset Value:
0.001
kWh
Reactive Energy Time of Use Preset Value:
0.001
kvarh
Record the Time of Use, Channel 1:
Yes
Channel 2
Active Energy Time of Use Preset Value:
0
kWh
Reactive Energy Time of Use Preset Value:
0
kvarh
Record the Time of Use, Channel 2:
No
Channel 3
Active Energy Time of Use Preset Value:
0
kWh
Reactive Energy Time of Use Preset Value:
0
kvarh
Record the Time of Use, Channel 3:
No
Channel 4
Active Energy Time of Use Preset Value:
0
kWh
Reactive Energy Time of Use Preset Value:
0
kvarh
Record the Time of Use, Channel 4:
No
OK
Cancel
Help

Control Panel

Overview

The control panel allows you to do the following:

- View the island status.
- Physically locate the device with which the DTM is communicating.
- Reset trips and the system.
- Restart the system.
- Switch off the island.

Accessing the Control Panel

You can access the **CONTROL PANEL** in one of the following ways:

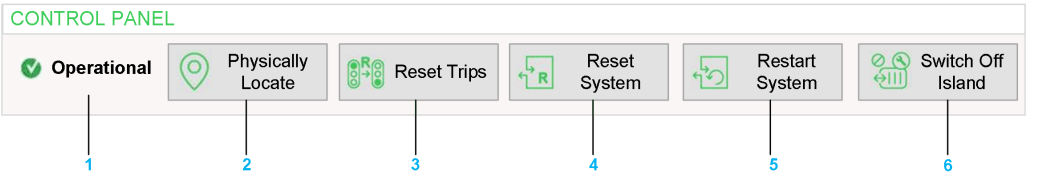
- On the menu bar, go to **Device** and click **Control Panel**.
- On the toolbar, click the control panel button .

Result: The control panel appears at the bottom of the screen.

Control Panel Functions

The control panel buttons are enabled when TeSys island is in Online mode.

The control panel has the following sections:



Island Status

Status	Description
Offline	Displays when the TeSys island is in Offline mode.
Operational	Displays when the TeSys island is in Online mode.
Test Mode	Displays when the TeSys island is in Test Mode, page 99.

Physically Locate

When the **Physically Locate** button is clicked, the **PWR** LED of the bus coupler illuminates a yellow pattern for 5 seconds. This action helps you to identify the device with which the DTM is communicating.

Reset Trips

The reset function may lead to immediate energizing of the load, with an active command from the PLC or the **Force Mode** function.

⚠WARNING

UNINTENDED EQUIPMENT OPERATION

Before resetting the protection functions, verify that this function does not result in unsafe conditions.

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

Click the **Reset Trips** button to clear the protection trips which meet the trip reset conditions of all avatars.

NOTE: Reset Trips button is disabled in **Test Mode**, page 99.

Reset System

Click the **Reset System** button to clear alarms and detected minor events of the system.

Restart System

Perform the following steps to reboot the system:

1. Click the **Restart System** button.
   Result: The warning message is displayed on the screen.

2. Read the warning message and click **CONTINUE** to reboot the system.
   Result: The system enters into reboot state.

NOTE: The DTM is disconnected from the island device after executing this command.

Switch Off Island

Click the **Switch Off Island** button to turn off all the loads on the island.

NOTE: The system can be used for maintenance purpose after executing this command.

User Functions

Firmware Update

Overview

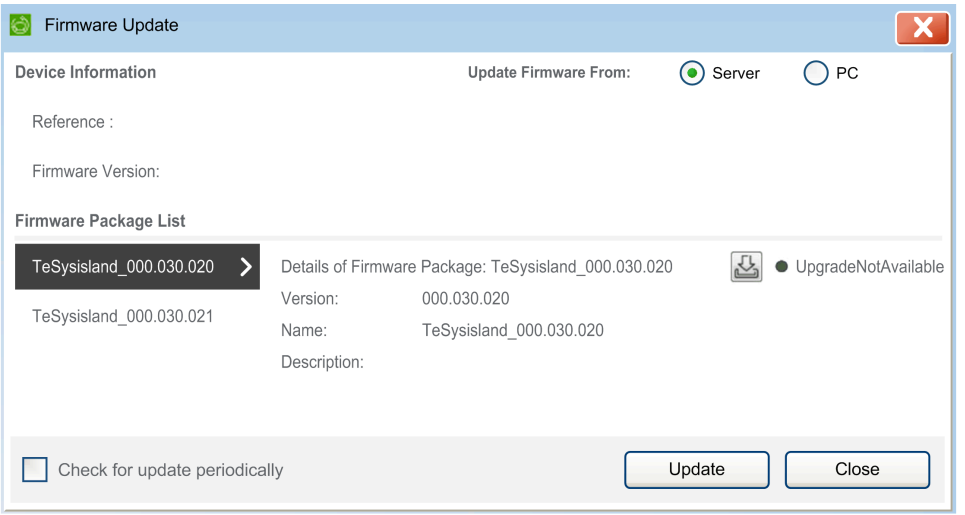
You can update the firmware of the TeSys island using one of the following sources:

- **Server**
- **PC**

Accessing the Firmware Update

Perform the following steps to access the firmware update:

1. On the menu bar, click **Device > Firmware Update**.
   Result: The **Firmware Update** screen appears.



2. Perform either of the steps:

a. When you select **Server** in the **Update Firmware From** section, the available firmware packages from the server are listed in the **Firmware Package List**, where you can select and update or download to your PC.

b. When you select **PC** in the **Update Firmware From** section, you can select the firmware package which is already downloaded on your PC.

Updating the Firmware

You can update the firmware from the **Server** or **PC**.

NOTE: To update the firmware from the **Server**, you must have an internet connection.

To update the firmware from the **Server**, perform the following steps:

Step	Action
1	On the **Firmware Update** screen, select **Server** in the **Update Firmware From** section.
2	Select the firmware package from the **Firmware Package List** and click **Update**. **NOTE:** You can also click the  icon to download the firmware package and save on your PC to update from the **PC**. **Result:** An update successful message is displayed at the bottom of the **Firmware Update** screen.

To update the firmware from **PC**, perform the following steps:

Step	Action
1	On the **Firmware Update** screen, select **PC** in the **Update Firmware From** section.
2	Click the  icon to browse and select the firmware package file from the PC.
3	Click **Update**. **Result:** An update successful message is displayed at the bottom of the **Firmware Update** screen.

Customize Units

Overview

The **Customize Units** function allows you to define units for:

- Length
- Weight
- Motor rating
- Date format
- Temperature

Accessing the Customize Units Dialog Box

On the menu bar, click **Device > Customize Units**.

Result: Customize Units dialog box appears.

Selecting Display Units

Select the required units from the **Customize Units** dialog box and click **OK** to apply the changes in the project.

NOTE: The units for the parameters change, depending on the units defined in the **Customize Units** dialog box.

Import the TeSys island Configuration File

Overview

The **Import** function allows you to replace the TeSys island configuration with the configuration file saved on your computer.

The **Import TeSys island Configurator Format** function allows you to import the file generated from the TeSys island Configurator tool. This file includes the island configuration and avatar topology information. This file does not include the avatar parameter settings.

Accessing the Import

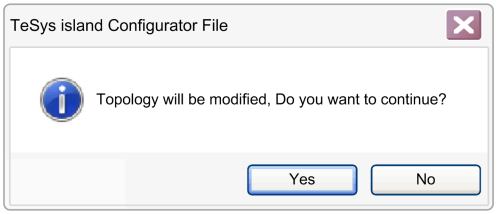
On the menu bar, click **Device > Import**.

Importing the Configuration File

NOTE:

- When the DTM is in offline mode, the imported configuration is applied to the offline project.
- Before importing the configuration, make sure that the configuration file is compatible with the connected device.

To import the configuration file to the TeSys island, proceed as follows:

Step	Action
1	On the menu bar, click **Device > Import > Import TeSys island Configurator Format**. **Result:** A message box appears. 
2	Click **Yes**. **Result:** The **Open File** dialog box appears.
3	In the **Open File** dialog box, select the required configuration file (.xml).
4	Click **Open**. **Result:** The selected configuration file is imported to the TeSys island.

Import Custom Avatar

Overview

The **Import Custom Avatar** function imports the customized avatar.

Accessing the Function

On the menu bar, click **Device > Import**.

Importing the Customized Avatars

Perform the following steps to import the custom avatar:

Step	Action
1	On the menu bar, click **Device > Import > Import Custom Avatar**. **Result**: The **Open File** dialog box appears.
2	In the **Open File** dialog box, select the required custom avatar file (.xml).
3	Click **Open**. **Result**: The selected custom avatar is imported to the TeSys island.

Export

Overview

The **Export** function allows you to save the TeSys island configuration on your PC.

Accessing the Export

On the menu bar, click **Device > Export**.

Export

You can export:

- **TeSys island Configurator Format**
- **EDS File Format**

  An EDS (Electronic Data Sheet) file is a plain text format, and used to specify various descriptive and communication data for hardware devices. The file can be imported in any engineering tool to configure the TeSys island.
- **EDS to L5X File Format**

  L5X file is a xml format and used in Rockwell automation systems.
- **AML File Format**

  AML file format is an XML format used for data exchange with Siemens TIA Portal automation systems.

- **Predictive Alarms File Format**

  Predictive alarms file format is global data block format used for exporting the defined predictive alarms messages for data exchange with Siemens TIA portal automation systems.

To export the **TeSys island Configurator Format** configuration file to your computer, proceed as follows:

Step	Action
1	On the menu bar, click **Device > Export > TeSys island Configurator Format**. **Result:** The **Save File** dialog box appears.
2	In the **Save File** dialog box, select the required location and click **Save**. **Result:** The selected configuration file is exported to your computer.

To export the **EDS File Format**, **EDS to L5X File Format** configuration file to your computer, proceed as follows:

Step	Action
1	On the menu bar, click **Device > Export > EDS File Format** or **EDS to L5X File Format**. **Result:** • If you select the **EDS File Format** option, the **Save File** dialog box appears. • If you select the **EDS to L5X File Format** option, the **Select directory** dialog box appears.
2	In the **Save File** or **Select directory** dialog box, select the required location and click **Save**. **Result:** The selected configuration file is exported to your computer.

To export the **AML File Format** configuration file to your computer, proceed as follows:

Step	Action
1	On the menu bar, click **Device > Export > AML File Format**. **Result:** • If you select the **Create new AML from this configuration** option and click **Export**, the **Save File** dialog box appears. Use this option when you want to create a new AML file. • If you select the **Merge this configuration into existing AML** option and click **Select**, the **Open File** dialog box appears. Use this option when you have an existing AML file to be merged with this configuration.
2	In the **Save File** dialog box, select the required location and click **Save**. **Result:** The selected configuration file is exported to your computer. In the **Open File** dialog box, select the AML file to be updated and click **Export**. **Result:** The selected configuration file is merged on existing AML file and exported to your computer.

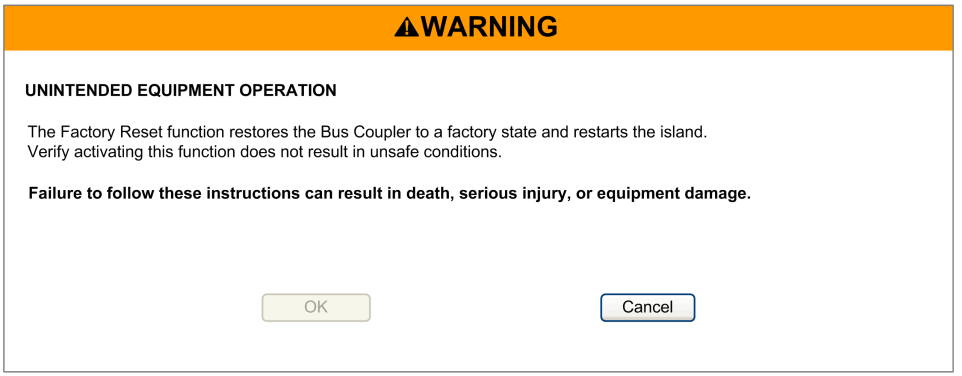
To export the predictive alarms configuration file to your computer, proceed as follows:

Step	Action
1	On the menu bar, click **Device > Export > Predictive Alarms File Format**. **Result:** The **Save File** dialog box appears.
2	In the **Save File** dialog box, select the required location and click **Save**. **Result:** The selected configuration file is exported to your computer.

Factory Reset

The **Factory Reset** function allows you to reset the bus coupler to the factory set values.

When the **Factory Reset** command is executed, this function restores the configuration of the bus coupler to the factory settings and restarts the island.

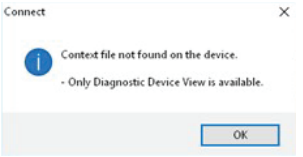
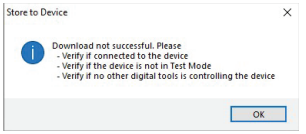


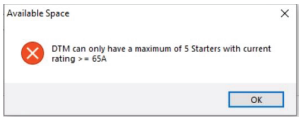
NOTE: The DTM is disconnected from the island after executing this command.

When the DTM is reconnected, it is loaded with **no context** scenario.

NOTE: Except **Diagnostics Tab > Device View** tab, all other tabs are disabled.

Troubleshooting

Problem	Probable cause	Solution
Context file not found on the device. • Only diagnostic device view is available 	The DTM, which connects to a bus coupler has not been configured.	User must disconnect and exit back to the home screen of SoMove (the engineering tool) and configure a new project (Create project OFF-line). Once that project is created with avatars and an IP address for the bus coupler, choose **Store to Device** and connect back to the island to configure it.
Download not possible. Please check the following and try again: • Verify the connection to the device • Verify that the system is not in test mode • Verify that no other engineering tools are connected to the device 	**Probable cause 1** The DTM tries to store a configuration to the bus coupler, but it is rejected. This could happen if there is a mismatch between versions of the DTM and the bus coupler firmware. **Probable cause 2** This message will also display if the bus coupler reference is inconsistent, i.e. storing a configuration for a profinet bus coupler (TPRBCPFN) on an EtherNet/IP bus coupler (TPRBCEIP).	**Solution 1** Check the compatibility matrix from the release notes and then verify with your DTM and firmware version if it matches.
Cannot download the firmware. Cannot validate the file 	This message is shown if the DTM tries to store a firmware image on the bus coupler but it is considered invalid. This could happen if the image was corrupted during download. However: if you are participating in a field trial or using an internal device from a Schneider Electric employee that could potentially be a prototype, the likely reason for this message is that the firmware and the bus coupler do not have a consistent signature.	Prototype bus couplers must use prototype-signed firmware. Production bus couplers must use production-signed firmware. **NOTE:** The firmware on the SESU server or se.com is always production firmware.

Problem	Probable cause	Solution
This avatar as configured cannot be added due to capacity constraints of the island. Removing or reconfiguring another avatar may be required to allow adding this avatar  DTM can only have a maximum of 5 – Starters with current rating >= 65A Please reconfigure it to continue 	The constraints are: • Maximum of 21 bus devices, (20 starters + 1 VIM or 20 starters + 1 SIM). 21 starters is invalid • Maximum of 5 Starters with current rating >= 65A devices active (a reverser avatar counts as 1 Starters with current rating >= 65A, because only one is ever on at a given moment) • Maximum of ~15 avatars (depends on specific avatars) with Profibus	Remove avatar, IO module, or split up into two islands if this constraint arrives.
Before configuring the TeSys island, update the firmware. Launch firmware update function from the device menu. 	The DTM you have used to connect to TeSys island is detecting an older version of firmware that it knows is incompatible.	Check the release notes and ensure you are using the right DTM, updated your TeSys island firmware to the compatible version, then proceed. To update the firmware, follow the below steps: 1. Save the DTM project (or open a new instance of SoMove). 2. Connect the DTM project to the device (do not store a config, load one). 3. Update the firmware. 4. Then, go back to your configuration and store it.

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As standards, specifications, and design change from time to time, please ask for confirmation of the information given in this publication.

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