



Rockwell Automation Library of Electrical Protection Devices

Version 5.10



Allen-Bradley

by ROCKWELL AUTOMATION

Reference Manual

Original Instructions

Important User Information

Read this document and the documents listed in the additional resources section about installation, configuration, and operation of this equipment before you install, configure, operate, or maintain this product. Users are required to familiarize themselves with installation and wiring instructions in addition to requirements of all applicable codes, laws, and standards.

Activities including installation, adjustments, putting into service, use, assembly, disassembly, and maintenance are required to be carried out by suitably trained personnel in accordance with applicable code of practice.

If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

In no event will Rockwell Automation, Inc. be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Rockwell Automation, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams.

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Throughout this manual, when necessary, we use notes to make you aware of safety considerations.



WARNING: Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.



ATTENTION: Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you identify a hazard, avoid a hazard, and recognize the consequence.

IMPORTANT

Identifies information that is critical for successful application and understanding of the product.

These labels may also be on or inside the equipment to provide specific precautions.



SHOCK HAZARD: Labels may be on or inside the equipment, for example, a drive or motor, to alert people that dangerous voltage may be present.



BURN HAZARD: Labels may be on or inside the equipment, for example, a drive or motor, to alert people that surfaces may reach dangerous temperatures.



ARC FLASH HAZARD: Labels may be on or inside the equipment, for example, a motor control center, to alert people to potential Arc Flash. Arc Flash will cause severe injury or death. Wear proper Personal Protective Equipment (PPE). Follow ALL Regulatory requirements for safe work practices and for Personal Protective Equipment (PPE).

The following icon may appear in the text of this document.



Identifies information that is useful and can help to make a process easier to do or easier to understand.

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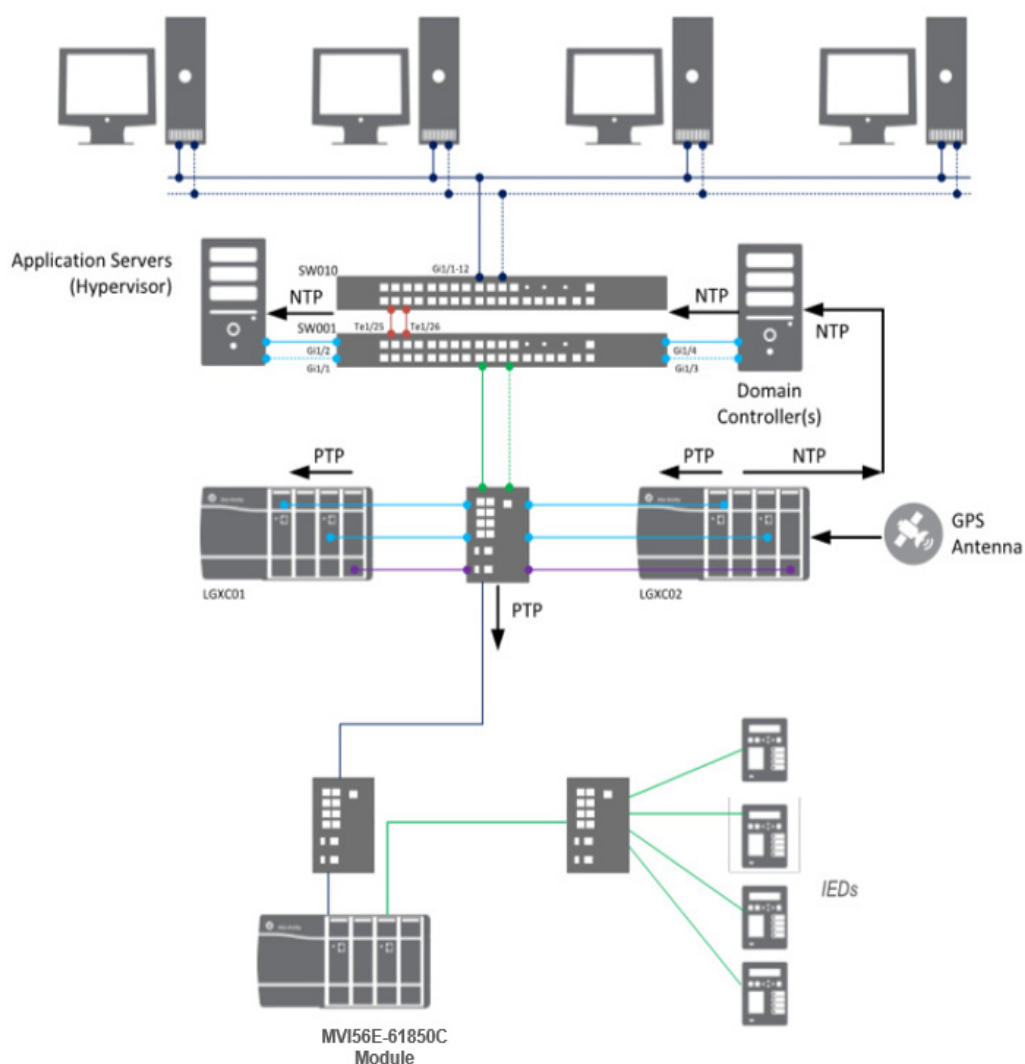
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This manual describes how to configure the Add-On Instructions and visualization objects to integrate electrical protection devices by using IEC 61850 or EtherNet/IP™ connectivity within the PlantPAx® System.

The files that are required to configure the electrical protection devices can be downloaded from the Product Compatibility and Download Center (PCDC) at <http://compatibility.rockwellautomation.com/Pages/home.aspx>.

Figure 1 - PlantPAx System.



See [Chapter 1](#) for more information on the IEC61850 standard.

New and Updated Information

This manual contains new and updated information as indicated in the following table.

Topic
Nested Tag structures are used in ProSoft Add-on Instructions.
Control points are no longer part of the Prosoft Add-on instructions. ProSoft Configuration Manager maps them directly to I/O tags. Output parameters in the Trip Source AOI must be mapped to these I/O tags.
Logix Tag Based Alarms replaces the use of the ALMD instruction in the Trip Source Add-on instructions.
Extended tag properties are used to define the Area, Instruction, Library, Label, and URL for Help.
Alarm tab added to HMI faceplates.
Tag naming in Trip Source Add-on Instructions modified to be more consistent with the 5.1 release of the Process Object library.

Additional Resources

These documents contain additional information concerning related products from Rockwell Automation.

Resource	Description
IEC 61850 Client Communication Module User Manual, MVI56E-61850C User Manual	Explains the features of the MVI56E-61850C module and guides you through the installation and configuration of the module. This includes using the ProSoft MVI56E-61850C Configuration Manager software to map data for Intelligent Electronic Devices (IEDs) on the IEC 61850 network for use with a Rockwell Automation® ControlLogix® processor.
PlantPax Distributed Control System Selection Guide, publication PROCES-SG001	Provides information to assist with equipment procurement for your PlantPax system.
PlantPax Distributed Control System Reference Manual, publication PROCES-RM001	Provides characterized recommendations for implementing your PlantPax system.
Rockwell Automation Library of Process Objects, publication PROCES-RM200	Provides general considerations for the PlantPax system library of process objects.
PlantPax Distributed Control System Infrastructure Configuration User Manual, publication PROCES-UM001	Describes procedures for how to configure system components that comprise a PlantPax modern DCS.
PlantPax Distributed Control System Application Configuration User Manual, publication PROCES-UM003	Describes the steps necessary to start development of PlantPax DCS.
Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1	Provides general guidelines for installing a Rockwell Automation industrial system.
Product Certifications website, http://www.rockwellautomation.com/global/certification/overview.page	Provides declarations of conformity, certificates, and other certification details.

You can view or download publications at <http://www.rockwellautomation.com/global/literature-library/overview.page>. To order paper copies of technical documentation, contact your local Allen-Bradley distributor or Rockwell Automation sales representative.

Introduction

PlantPax DCS and IEC 61850

The PlantPax® distributed control system architecture provides for the integration of electrical protection devices via the IEC 61850 standard and the EtherNet/IP™ network. The IEC 61850 standard defines a communication interface that monitors and controls electrical distribution systems with one common platform regardless of manufacturer. Substation equipment has evolved from electromechanical to microprocessor-based relays that allow for communication to industrial control systems.

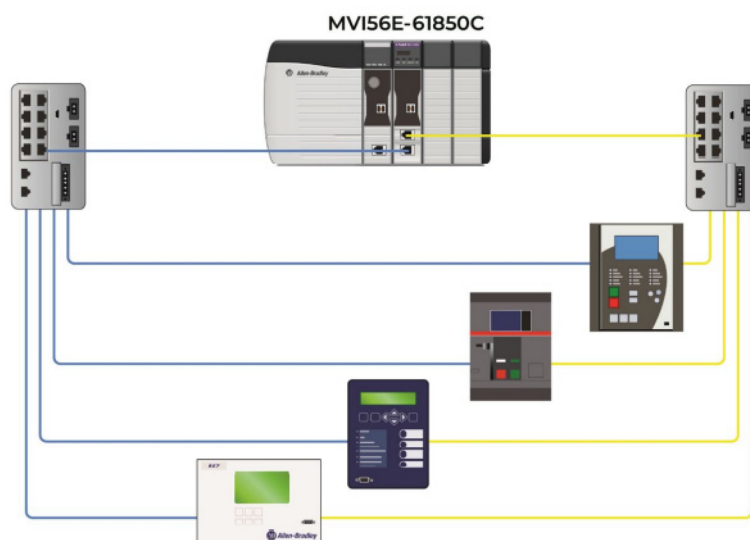
This manual describes how to integrate power infrastructure Add-On Instructions and visualization that are described in this manual. The instructions maximize process control with intelligent devices on The Connected Enterprise.

The IEC 61850 standard includes the following benefits:

- Support of comprehensive substation functions
- Ease of design, specification, setup, and maintenance
- Strong functional support for substation communication and flexibility to support system evolution

The ProSoft Technology® IEC 61850 communication module allows Rockwell Automation® ControlLogix® PACs to interface with IEC 61850 Intelligent Electronic Devices (IED) such as substation power monitors and protective relays. The module operates as an IEC 61850 Client supporting the polling of devices using MMS messaging and reports.

The dual Ethernet ports on the module provide support for Parallel Redundancy Protocol (PRP), as shown in the following figure.



Configuration is accomplished through a custom Add-On Profile for Studio 5000™ that launches the MVI56E-61850C Configuration Manager software,

which can be downloaded from the ProSoft website, www.prosoft-technology.com. The configuration utility automatically creates data tags and Add-On Instruction to be used in ControlLogix® 1756-L8x processors with Studio 5000 version 32 and greater and brings the data over as configured using the tag name of the device in the IEC 61850 network.

Trip Source Add-On Instructions are used to interface between the add-on instructions created by the ProSoft Configuration Manager and the HMI displays.

Required Files

The controller and visualization files are required to create instruction sets for programming logic. This logic is as a supplement to the instruction set provided natively in the ControlLogix® firmware.

Controller Files

The module Add-On Instruction files are included in the following table

Table 1 - Module Add-On Instruction Files

Module Type	Device Name	Process Library Add-On Instruction	Configuration File	Description
Power Relays	SEL 351	SEL351TripSource.I5x	(RA-LIB) SEL351.CID	Feeder protection relay with synchrophasor capability
	SEL 411L	SEL411LTripSource.I5x	(RA-LIB) SEL411L.CID	Transmission line protection.
	SEL 421	SEL421TripSource.I5x	(RA-LIB) SEL421.CID	High-speed distance and directional protection relay
	SEL 451	SEL451TripSource.I5x	(RA-LIB) SEL451.CID	Feeder protection relay.
	SEL 487B	SEL487BTripSource.I5x	(RA-LIB) SEL487B.CID	Bus differential and breaker failure relay
	SEL 700G	SEL700GTripSource.I5x	(RA-LIB) SEL700G.CID	Generator protection relay
	SEL 710/710d5	SEL710TripSource.I5x	(RA-LIB) SEL710.CID	Motor protection relay
	SEL 735	SEL735TripSource.I5x	(RA-LIB) SEL735.CID	Power quality and revenue meter.
	SEL 751	SEL751TripSource.I5x	(RA-LIB) SEL751.CID	Feeder protection relay.
	SEL 751A	SEL751ATripSource.I5x	(RA-LIB) SEL751A.CID	Feeder protection relay with arc flash detection
	SEL 787	SEL787TripSource.I5x	(RA-LIB) SEL787.CID	Transformer protection relay
	AB857	AB857TripSource.I5x	(RA-LIB) AB857.CID	Feeder protection relay
	AB865	AB865TripSource.I5x	(RA-LIB) AB865.CID	Generator protection relay
	GE Multilin 845	GE845TripSource.I5x	(RA-LIB) GE_845_Xfmr.CID	Transformer differential protection relay with arc flash protection
	GE Multilin 850	GE850TripSource.I5x	(RA-LIB) GE_850_Feeder.CID	Feeder protection relay with arc flash detection
	GE Multilin 869	GE869TripSource.I5x	(RA-LIB) GE_869_Motor.CID	Motor protection relay with arc flash protection.
	GE Multilin 889	GE889TripSource.I5x	(RA-LIB) GE_889_Gen.CID	Generator protection relay with arc flash protection.
Circuit Breakers	ABB EMAX2 E/IP	EMAXEIPTripSource.I5x	Ekip2_07_12+key.eds	Power circuit breaker with communication via EtherNet/IP
	ABB EMAX2 IEC 61850	EMAX61850TripSource.I5x	(RA-LIB) ABB EMAX2.CID	Power circuit breaker with communication via IEC 61850

Visualization Files

Each device type has associated visualization files that provide a common user interface. You must import these files in the following order:

- Images (.png files)
- Global Objects(.ggfx file type)
- HMI faceplates (.gfx file type)
- Tags (.csv file type)
- Macros (FactoryTalk® View SE software only) (.mcr file type)

File Type Abbreviations	Files	Description
Images (.png)	All .png (or .bmp) files in the images folder. IMPORTANT: FactoryTalk View application renames PNG files when they are imported with a .bmp file extension, but the files retain a .png format	Common icons that are used in the Global Objects and standard displays.
Global objects (.ggfx)	(RA-SEL) precedes the name of the global object display specific to the Library of Electrical Protection Devices. (ra*) precedes the name of other Global Object displays that are common to multiple libraries. Examples: (RA-SEL) SEL Module Faceplate Objects (raP-5-SE) Toolbox - Common Objects	Global object files contain Graphic Symbols that are created once and referenced multiple times on multiple displays in an application. When changes are made to a global object, all instances in the application are automatically updated.
Standard displays (.gfx)	(RA-*-SE) precedes the name of the display, where * represents the device manufacturer. Examples: (RA-AB-SE) AB_857-Faceplate (RA-SEL-SE) Sel_351-Faceplate (RA-GE-SE) ge_845-Faceplate	Standard display files, commonly called faceplates, provide a common user interface.
HMI tags (.csv)	EPD_5_1-Tags.csv	HMI tags are created in a FactoryTalk View SE application to support security and other features on Library faceplates. HMI tags can be imported via the comma-separated values file (.csv file type)
Macros (.mcr file)	Macros used for the library: NavToDisplay	In a FactoryTalk View SE application, a macro is a series of commands that are stored in a text file.

Global Objects

Global objects specific to the Library of Electrical Protection Devices are found in the global object file, (RA-SEL) SEL Module Faceplate Objects.

The following global objects which are common to multiple libraries are also included in the PCDC download for the Library of Electrical Protection devices:

- (RA-BAS) Common Faceplate Objects
- (RA-BAS) Process Faceplate Common Objects
- (RA-FRAME) Alarm Objects
- (RA-FRAME) P2f Template Objects
- (RA-FRAME) Standard Objects
- (raP-5-SE) Toolbox - Alarm Objects
- (raP-5-SE) Toolbox - Common Objects

Follow these steps to use the global object for launching one of the EPD library faceplates.

1. Open the (RA-SEL) SEL Module Faceplate Objects display

- 2. Copy the Nav to Faceplate button (godsBtnFaceplate1) global object from the global object file and paste it in the display file.



- 3. In the display, right-click the global object and choose Global ObjectParameter Values.
The Global Object Parameter Values dialog box appears.

Global Object Parameter Values				
	Name	Value	Tag	Description
1	#102		...	Trip Source Tag
2	#103		...	Relay Tag
3	#120		...	Additional display parameter (e.g. /X100 or /CC) (optional)
4	#121		...	Additional display parameter (e.g. /Y100) (optional)

The global object parameters are as follows.

Parameter	Required	Description
#102	Y	Trip Source tag to point to the Add-On Instruction tag in the controller.
#103	Y	Relay tag to point to the ProSoft Add-On instruction tag in the controller.
#120	N	Additional parameter to pass to the display command to open the faceplate. Typically used to define position for the faceplate.
#121	N	Additional parameter to pass to the display command to open the faceplate. To define X and Y coordinates, separate parameters so that #120 defines X and #121 defines Y. This separation lets these same parameters be used in subsequent display commands that originate from the faceplate.

- 4. In the Value column, enter the tag or value as specified in the Description column. See the following display for example values.

Global Object Parameter Values				
	Name	Value	Tag	Description
1	#102	{[Test]SEL787}	...	Trip Source Tag
2	#103	{[Test]PlantPAx787}	...	Relay Tag
3	#120	/r/p	...	Additional display parameter (e.g. /X100 or /CC) (optional)
4	#121		...	Additional display parameter (e.g. /Y100) (optional)



Select the ellipsis (...) to browse and select a tag. Values for items that are not required can be left blank.

Displays

The display files (.gfx file type) included with the Library of Electrical Protection Devices are listed in the following table.

FactoryTalk View SE Software Faceplate	FactoryTalk View SE Software Advanced	Description
(RA-SEL-SE) Sel_351-Faceplate	(RA-SEL-SE) Sel_351-Advanced	Faceplate for the feeder protection relay with synchrophasor capability
(RA-SEL-SE) Sel_411L-Faceplate	(RA-SEL-SE) Sel_351-Advanced	Faceplate for the transmission line protection relay.
(RA-SEL-SE) Sel_421-Faceplate	(RA-SEL-SE) Sel_351-Advanced	Faceplate for the high-speed distance and directional protection relay
(RA-SEL-SE) Sel_451-Faceplate	(RA-SEL-SE) Sel_351-Advanced	Faceplate for the feeder protection relay.
(RA-SEL-SE) Sel_487B-Faceplate	(RA-SEL-SE) Sel_351-Advanced	Faceplate for the bus differential and breaker failure relay
(RA-SEL-SE) Sel_700G-Faceplate	(RA-SEL-SE) Sel_700G-Advanced	Faceplate for the generator protection relay
(RA-SEL-SE) Sel_710-Faceplate	(RA-SEL-SE) Sel_710-Advanced	Faceplate for the motor protection relay
(RA-SEL-SE) Sel_735-Faceplate	(RA-SEL-SE) Sel_735-Advanced	Faceplate for the power quality and revenue meter.
(RA-SEL-SE) Sel_751-Faceplate	(RA-SEL-SE) Sel_751-Advanced	Faceplate for the feeder protection relay.
(RA-SEL) SEL_751A-faceplate	(RA-SEL) SEL_751A-Advanced	Faceplate for the feeder protection relay with arc flash detection
(RA-SEL) SEL 787-faceplate	(RA-SEL) SEL 787-Advanced,	Faceplate for the generator protection relay
(RA-AB) AB 857 61850-faceplate	(RA-AB) AB 857 61850-Advanced	Faceplate for the feeder protection relay
(RA-AB) AB 865 61850-faceplate	(RA-AB) AB 865 61850-Advanced	Faceplate for the generator protection relay
(RA-ABB) ABB EMAX2 EIP-faceplate	(RA-ABB) ABB EMAX2 EIP-Advanced	Faceplate for the power circuit breaker with communication via EtherNet/IP
(RA-ABB) ABB EMAX2 IEC 61850-faceplate	(RA-ABB) ABB EMAX2 IEC 61850-Advanced	Faceplate for the power circuit breaker with communication via IEC 61850
(RA-GE-SE) GE_845-Faceplate	(RA-GE-SE) GE_845-Advanced	Faceplate for the transformer differential protection relay with arc flash protection
(RA-GE-SE) GE_850-Faceplate	(RA-GE-SE) GE_850-Advanced	Faceplate for the feeder protection relay with arc flash detection
(RA-GE-SE) GE_869-Faceplate	(RA-GE-SE) GE_869-Advanced	Faceplate for the motor protection relay with arc flash protection.
(RA-GE-SE) GE_889-Faceplate	(RA-GE-SE) GE_889-Advanced	Faceplate for the generator protection relay with arc flash protection.

HMI Tags

HMI Tags are created in a FactoryTalk® View SE application to support security on Process Library faceplates. The HMI tags can be imported via the comma-separated values file (.csv file type) in the following table.

FactoryTalk View SE Software	Description
EPD_5_1-Tags	These tags must be imported into the FactoryTalk View SE project to support area based security on any Process Object faceplate.

Macros

The NavToDisplay macro is used for faceplate to faceplate navigation.

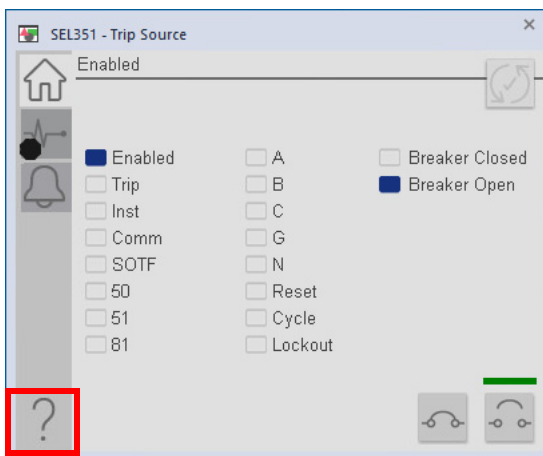
HMI Security

See publication [PROCES-RM002, Rockwell Automation Library of Process Objects: Configuration and Usage](#), section 'Configure HMI Security' for more information.

Help Files

The Library of Electrical Protection Devices does not include individual help displays or help files in this release. The help button can be configured to launch this user manual using the URL extended tag property of the trip source AOI tag.

1. Copy the PROCES-RM011 .pdf file to a folder accessible by the FactoryTalk View clients and configure the URL to point to the document in this folder.
2. Restart FactoryTalk View Studio for the settings to take effect.
3. The Help Files can now be accessed using the Help button on the HMI Display.



Configure the Gateway Module

This section describes how to configure the ProSoft Technology EtherNet/IP™ to the IEC 61850 communication gateway module. This section also describes how to export a program for use in the Studio 5000 Logix Designer® application to support devices that communicate through IEC 61850 protocol. This third-party program, including Add-On Instructions creates the communication path from the ports on the gateway module to the power relays. Ensure you have the ProSoft IEC 61850 Client Communication Module User Manual, publication [MVI56E-61850C User Manual](#), available. This publication is designed to work in tandem with the ProSoft IEC 61850 Client Communication Module User Manual.

IMPORTANT	This manual assumes that you are using the IEC 61850 CID files that are provided on the PCDC. If your application requires additional parameters, use the configuration software from the manufacturer to modify the PCDC CID files for parameters. Do not delete any content from pre-established reports that are labeled measurands, alarms, or PB and target status indicators. Deletion of these reports has an adverse effect on the faceplates.
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IMPORTANT	Use ProSoft firmware revision 2.01 or later when you integrate the PlantPAx® objects for electrical protection.
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Install the Software

Install the MVI56E-61850C required software, which is available in the Downloads section of the MVI56E-61850C product page on the ProSoft Technology website (www.prosoft-technology.com).

- MVI56E-61850C Add-On Profile (AOP): This program includes the IEC 61850 communication module profile and associated files.
- ProSoft MVI56E-61850C Configuration Manager: This program is used to configure all aspects associated with data communication between the MVI56E-61850C module and remote Intelligent Electronic Devices (IEDs) according to the IEC 61850 communication protocol.
- ProSoft MVI56E-61850C Diagnostics Tool: This application allows you to monitor diagnostics and configuration data for the module.



The install will set up both Configuration Manager and Diagnostics Tool.

Add the MVI56E-61850C Module to Studio 5000 Logix Designer

Follow the Add the Module to Studio 5000 Logix Designer section in the ProSoft IEC 61850 Client Communication Module User Manual, publication [MVI56E-61850C User Manual](#).

Configuring the MV156E-61850C Module

Launch the ProSoft MV156E-61850C Configuration Manager

Follow the Launch the ProSoft MV156E-61850C Configuration Manager section in the ProSoft IEC 61850 Client Communication Module User Manual, publication [MVI56E-61850C User Manual](#).

Import IED Configuration Files

Follow the Import IED Configuration Files section in the ProSoft IEC 61850 Client Communication Module User Manual, publication [MVI56E-61850C User Manual](#).

IMPORTANT	This manual assumes that you are using the IEC 61850 CID files that are provided on the PCDC. If your application requires additional parameters, use the configuration software from the manufacturer to modify the PCDC CID files for parameters. Do not delete any content from pre-established reports. Deletion of these reports has an adverse effect on the faceplates.
------------------	--

IMPORTANT	You must have a separate CID file for each device you are communicating with. If you have multiple devices of the same type, you will need to copy the CID file provided for that device type and provide a unique name for each device of that type.
------------------	---

Configure the IED Network

Follow the Configure the IED Network section in the ProSoft IEC 61850 Client Communication Module User Manual, publication [MVI56E-61850C User Manual](#).

IED Data Mapping

Follow the IED Data Mapping section in the ProSoft IEC 61850 Client Communication Module User Manual, publication [MVI56E-61850C User Manual](#).

Use the following table when dragging the data object, dataset, or data attributes from the tree into the mapping table. These are the minimum values required to support the Library of Electrical Protection Devices faceplates. Drag other values or commands to the canvas as required for your application.

Device type	Data Object, Dataset, or Data Attribute
SEL 351 SEL 411L SEL 421	CFG/LLN0/Reports/BRep02
	CFG/LLN0/Reports/BRep03
	ANN/BKGGIO22/Ind01/stVal
	ANN/BKGGIO22/Ind02/stVal
	CON/RBGGIO1/SPCS001/Oper
	CON/RBGGIO1/SPCS002/Oper
	CON/RBGGIO1/SPCS003/Oper
	CON/RBGGIO1/SPCS004/Oper
	CON/RBGGIO1/SPCS005/Oper
	CON/RBGGIO1/SPCS006/Oper
	CON/RBGGIO1/SPCS007/Oper
	CON/RBGGIO1/SPCS008/Oper
	451/487B only: CON/RBGGIO1/SPCS009/Oper CON/RBGGIO1/SPCS010/Oper
	487B only: CON/RBGGIO1/SPCS011/Oper CON/RBGGIO1/SPCS012/Oper
SEL 700G	CFG/LLN0/Reports/Measurands
	CFG/LLN0/Reports/Alarms
	CFG/LLN0/Reports/LEDs
	ANN/LTGGIO5/Ind01/stVal
	ANN/LTGGIO5/Ind02/stVal
	ANN/LTGGIO5/Ind03/stVal
	ANN/LTGGIO5/Ind04/stVal
	PRO/D87UPDIF1/Op
	PRO/D87RPDIF2/Op
	CON/RBGGIO1/SPCS001/Oper
	CON/RBGGIO1/SPCS002/Oper
	CON/RBGGIO1/SPCS003/Oper
	CON/RBGGIO1/SPCS004/Oper
	CON/RBGGIO1/SPCS005/Oper
	CON/RBGGIO1/SPCS006/Oper
	CON/RBGGIO1/SPCS007/Oper
	CON/RBGGIO1/SPCS008/Oper

Device type	Data Object, Dataset, or Data Attribute
SEL 710/710d5	CFG/LLNO/Reports/Measurands
	CFG/LLNO/Reports/Alarms
	CFG/LLNO/Reports/LEDs
	MET/MOTORMMOT1/StrTcu/mag
	MET/MOTORMMOT1/RtrTcu/mag
	MET/MOTORMMOT1/RtdTcu/mag
	CON/RBGGI01/SPCS001/Oper
	CON/RBGGI01/SPCS002/Oper
	CON/RBGGI01/SPCS003/Oper
	CON/RBGGI01/SPCS004/Oper
SEL 735	CON/RBGGI01/SPCS005/Oper
	CON/RBGGI01/SPCS006/Oper
	CON/RBGGI01/SPCS007/Oper
	CON/RBGGI01/SPCS008/Oper
	CFG/LLNO/Reports/BRep01
	CFG/LLNO/Reports/BRep02
	CFG/LLNO/Reports/BRep03
	ANN/ALMGGI01/Ind01/stVal
	CON/RBGGI01/SPCS001/Oper
	CON/RBGGI01/SPCS002/Oper
SEL 751	CON/RBGGI01/SPCS003/Oper
	CON/RBGGI01/SPCS004/Oper
	CON/RBGGI01/SPCS005/Oper
	CON/RBGGI01/SPCS006/Oper
	CON/RBGGI01/SPCS007/Oper
	CON/RBGGI01/SPCS008/Oper
	CFG/LLNO/Reports/BRep01
	CFG/LLNO/Reports/BRep02
	CFG/LLNO/Reports/BRep03
	CON/RBGGI01/SPCS001/Oper
SEL 751A SEL 787	CON/RBGGI01/SPCS002/Oper
	CON/RBGGI01/SPCS003/Oper
	CON/RBGGI01/SPCS004/Oper
	CON/RBGGI01/SPCS005/Oper
	CON/RBGGI01/SPCS006/Oper
	CON/RBGGI01/SPCS007/Oper
	CON/RBGGI01/SPCS008/Oper
	CFG/LLNO/Reports/Measurands
	CFG/LLNO/Reports/Alarms
	CFG/LLNO/Reports/LEDs

Device type	Data Object, Dataset, or Data Attribute
AB857 AB865	Relay/LLNO/Reports/bcrcEV1
	Relay/LLNO/Reports/bcrcEV2
	Relay/LLNO/Reports/bcrcEV3
	Relay/VI1GGI0137/SPCS0/Oper
	Relay/VI1GGI0137/SPCS0/Oper
	Relay/VI1GGI0137/SPCS0/Oper
	Relay/VI1GGI0137/SPCS0/Oper
	Relay/UoMMXU10/PhV/neut/cVal (Note: AB857 only)
GE Multilin 845 GE Multilin 850 GE Multilin 869 GE Multilin 889	Master/LLNO/Reports/brcb00_MEASURANDS01
	Master/LLNO/Reports/brcb01_ALARMS_101
	Master/LLNO/Reports/brcb02_ALARMS_201
	Master/LLNO/Reports/brcb03_ALARMS_301
	Master/LLNO/Reports/brcb04_INDICATORS01
	Master/GGI03/SPCS01/Oper
	Master/GGI03/SPCS02/Oper
	Master/GGI03/SPCS03/Oper
	Master/GGI03/SPCS04/Oper
	Master/GGI03/SPCS05/Oper
	Master/GGI03/SPCS06/Oper
	Master/GGI03/SPCS07/Oper
	Master/GGI03/SPCS08/Oper
ABB EMAX2 E/IP	N/A
ABB EMAX2 IEC 61850	LDO/LLNO/Reports/urcb_StatUrg01
	LDO/LLNO/Reports/urcb_StatNrmI01
	LDO/LLNO/Reports/urcb_MeasFit01
	LDO/LLNO/Reports/urcb_Statled01
	LDO/LLNO/Reports/urcb_Counters01
	LDO/CSWI1/Pos/Oper

Module Properties in Configuration Manager

Follow the Module Properties in Configuration Manager section in the ProSoft IEC 61850 Client Communication Module User Manual, publication [MVI56E-61850C User Manual](#).

Export the Configuration to the Add-On Profile

Follow the Export the Configuration to the Add-On Profile section in the ProSoft IEC 61850 Client Communication Module User Manual, publication [MVI56E-61850C User Manual](#).

Files Generated by the MVI56E-61850C Configuration Manager

Follow the Files Generated by the MVI56E-61850C Configuration Manager section in the ProSoft IEC 61850 Client Communication Module User Manual, publication [MVI56E-61850C User Manual](#).

Notes:

Integrate IEC 61850 into a Studio 5000 Project

Import the MVI56E-61850C Program into Studio 5000 Logix Designer

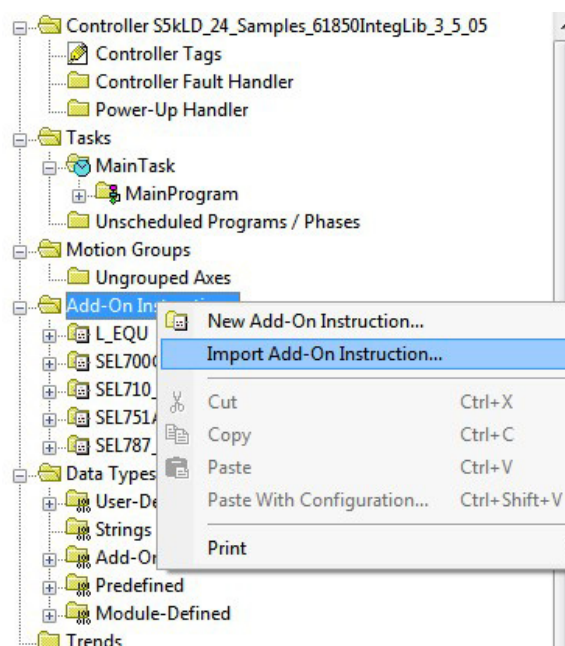
Follow the Import the MVI56E-61850C Program into Studio 5000 Logix Designer® section in the ProSoft IEC 61850 Client Communication Module User Manual, publication [MVI56E-61850C User Manual](#).

IMPORTANT If you need to modify the configuration of the IEDs in the 61850 network, follow the steps in the Updating and Reimporting a Project section of the MVI56E-61850C User Manual to update and re-import the project.

Import the Trip Source Add-On Instructions

You have successfully configured the ProSoft gateway within your Studio 5000® project. The following steps define how to import the Trip Source Add-On Instructions.

1. In the I/O Configuration tree, right-click Add-On Instruction and choose Import Add-On Instruction.

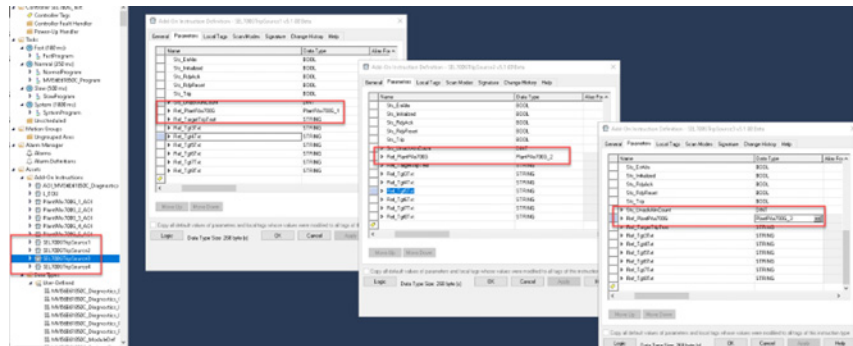


2. Navigate to the folder that contains the Trip Source Add-On Instructions.
3. Select the Add-On Instruction and click Open.
The Import Configuration window appears.
4. Click OK.
5. Repeat steps 1...4 for each device type Trip Source Add-On Instruction required for your application.

Create Additional Trip Source Add-On Instructions

Use this section to create additional Trip source Add-On instructions if configuring multiple devices of the same type.

If your application includes more than one instance of an IED type, the ProSoft Configuration Manager will create a unique UDT for each instance (The UDT name will match the name defined in your CID file). You will need to create a unique Trip Source AOI definition for each unique ProSoft data type. For example, if your application has multiple SEL 700G devices, with ProSoft data types named PlantPAX700G_1, PlantPAX700G_2, PlantPAX700G_3, and PlantPAX700G_4, you will need four SEL700GTripSource AOIs. The InOut parameter, Ref_PlantPAX700G, will need to be configured in each AOI to communicate with the associated ProSoft UDT as shown in the following example.

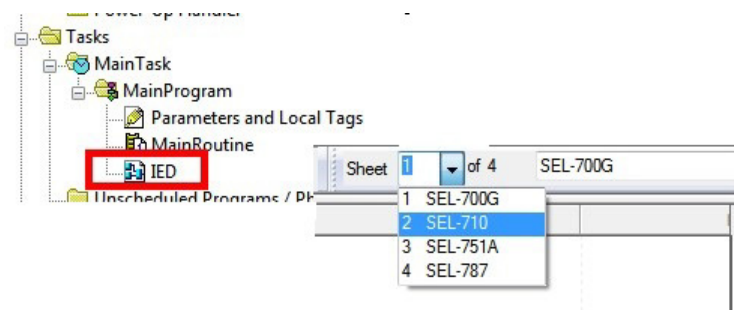


Use the Trip Source Add-On Instructions in a Routine

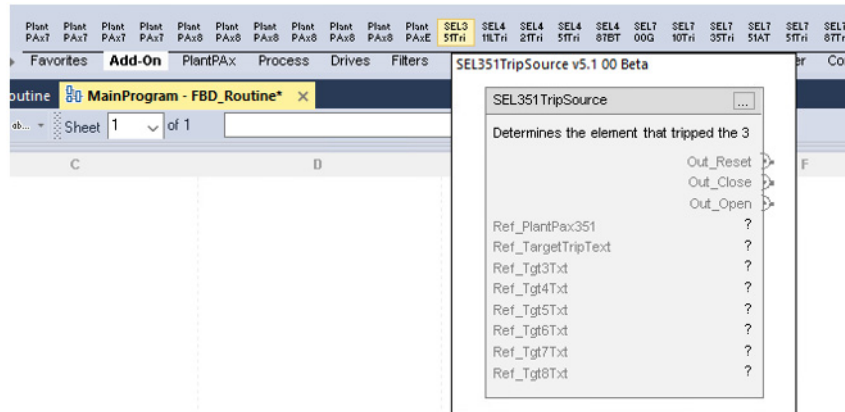
The following steps define how to configure the Trip Source Add-On Instructions in your project.

1. Create a routine in the Programmable Automation Controller.

This routine is used to instantiate the Trip Source Add-On Instructions for all of the IEDs in your project.

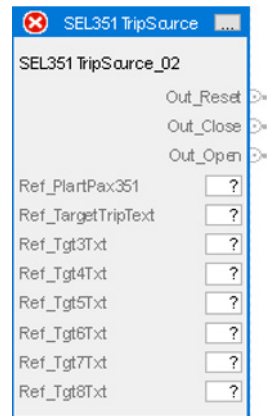


2. Select the Trip Source Add-on Instruction associated with your IED from the Add-On tool bar.

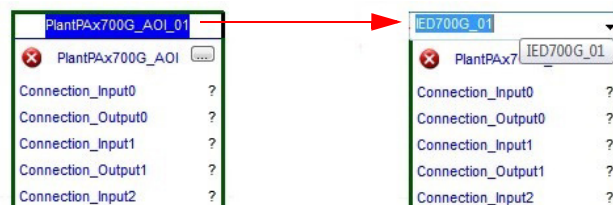


For each device in your system, you instantiate one TripSource Add-On Instruction.

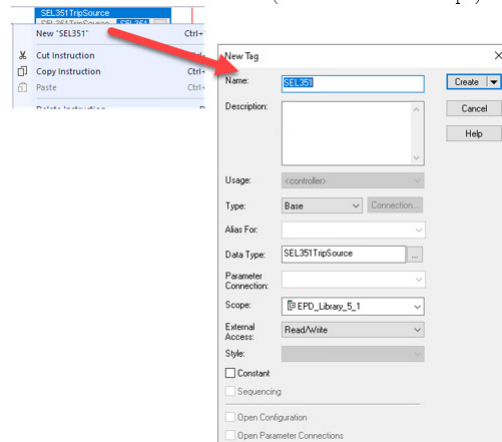
Function Block Diagram Example:



3. Inside the top of the instruction, double-click the tag name and type a new name.
4. Click Enter.



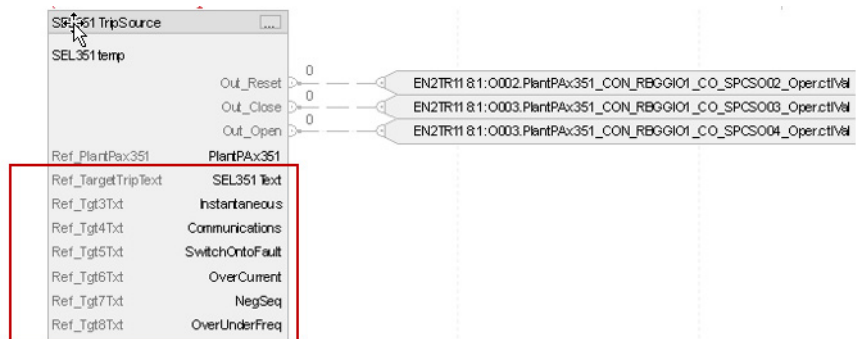
- Right-click the new tag name and choose New <new tag name> (New SEL351 in this example).



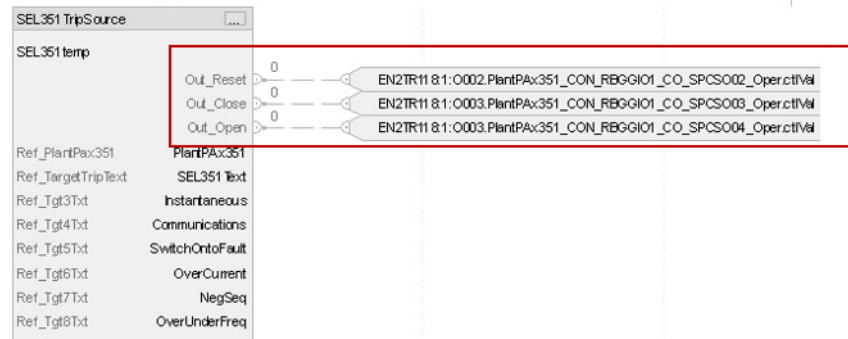
The New Tag dialog box appears.

By default the New Tag dialog box includes the tag name, data type, and external access (Read/Write)

- Enter an optional description and select a scope from the pull-down menu. Controller scope is selected in our example.
- Click Create.
- Map the Ref_PlantPax* tag to the corresponding ProSoft Add-On instruction tag that was created from the ProSoft Configuration Manager program import.
- Map the Text reference tags to string tags in your controller.



- Map the output tags to the corresponding I/O tags.

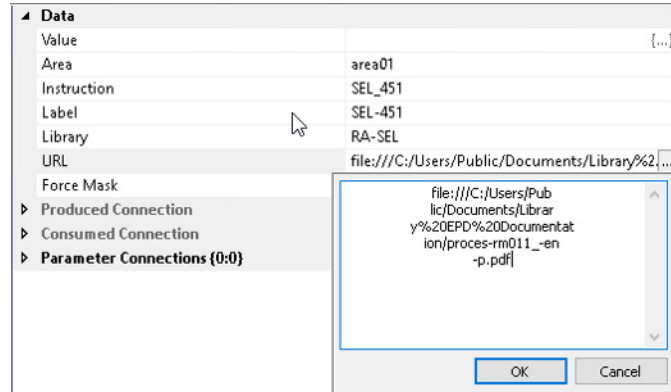


- Monitor the newly created tag and configure the Extended Tag Properties.
 - Area – The area name used for security
 - Instruction – The instruction name. This is in the format Manufacturer_devicetype.

- Library – The library name. This is in the format RA-(Manufacturer).
- Label – The label to display on the HMI for the device
- URL – The Help file URL

IMPORTANT The Library and Instruction extended tag properties are used for launching the faceplates from the NavToDisplay macro. The display name is in the format (Library-SE) Instruction-Faceplate. These extended tag properties must match the library and instruction names used in the display names. Refer to the display section for a list of display names associated with each device type. For example, an SEL 451 device should have the library name RA-SEL and the instruction name Sel_451. This would launch the display named (RA-SEL-SE) Sel_451-Faceplate.

Example Extended Tag properties:



12. Repeat steps 2...11 for each device in your project.

You have successfully configured the ProSoft gateway module in your Studio 5000 project.

The following chapters discuss each faceplate and its corresponding functionalities.

Two Add-On instructions back each faceplate. The ProSoft module generates one instruction, and the corresponding TripSource instruction is downloaded from the PCDC.

Notes:

Bulletin 857 Motor/Feeder Protection Object

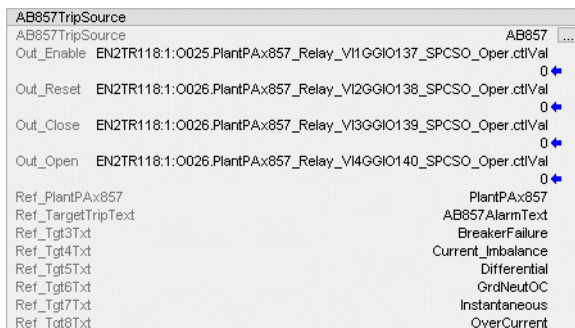


The Bulletin 857 Relay is a combined motor and feeder protection relay that is used for various tasks. These tasks include highly selective protection of rotating machines, line feeders, cable feeders, capacitor banks, reactors, transformers, and busbars.

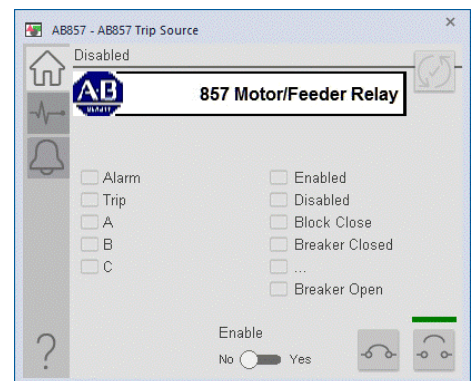
The relay is used in power distribution substations, power plants, and industrial power systems, marine, and offshore installations. The 857 relay offers extensive customizable control, advanced protection, circuit breaker control and monitoring, power and energy measurements, primary circuit monitoring and communication functionality. The 857 relay also offers a comprehensive range of standard motor and feeder protection functions.

This instruction monitors one 857 relay. Alarms are provided when the physical device experiences a protection-related trip. The instruction also provides capabilities for locking, and to open and close the breaker.

Add-On Instruction



Faceplate



Controller Code

Two Add-On Instructions represent each physical device. The first is generated by the ProSoft Configuration Manager and is included in the program import. The second is the TripSource Add-On Instruction, which is available for download from the Rockwell Automation® Library of Electrical Protection Devices from the PCDC.

InOut Structure for Trip Source Add-On Instruction

InOut parameters in [Table 2](#) are used to link the Add-On Instruction to external tags that contain necessary data for the instruction to operate. These external tags must be of the data type shown

Table 2 - Bulletin 857_TripSource

Name	Data Type	Description
Ref_PlantPAxAOI	<Defined by device AOI>	Device Data from the ProSoft Add-On Instruction. This data type changes to match each device tag in the ProSoft Gateway.
Ref_TargetTripText	STRING	Alarm text to be displayed when active.
Ref_Tgt3Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt4Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt5Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt6Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt7Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt8Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.

Remote Bit Control Value Structure

Remote Bit Control Value parameters are used to link the Add-On Instruction to configurable control points in the device. Each bit is configurable through the device vendor software. [Table 3](#) has the recommended uses for each bit.

Table 3 - Remote Bit Control - Bulletin 857

Name	Description
VI1GGI0137_CO_SPCSO_ctlVal	Enable/Disable
VI1GGI0138_CO_SPCSO_ctlVal	Target Reset
VI1GGI0139_CO_SPCSO_ctlVal	Breaker Close
VI1GGI0140_CO_SPCSO_ctlVal	Breaker Open

Mapping InOut Tags to Trip Source Add-On Instruction

Configure the Bulletin 857_TripSource Add-On Instruction.

1. Click the question mark next to Ref_PlantPAx857 and select the tag that was created by the ProSoft Configuration Manager for your device.
2. Click the question mark next to each Ref_Tgt#Txt and enter a string tag. These tags are intended to match the status indicators on the front panel of the device.
3. Once you type the tag name, if the tag is not already configured in the controller, you have to right-click and create a tag.
4. Click the question mark next to Ref_TargetTripText and select or create a String tag to be used for the final alarm message. The Trip Source AOI selects from the Ref_Tgt#Txt strings based on the active trip source and copies that reference string to this target string.
5. For Output parameters, click the question mark next to each Output parameter and select the tag to be used when using RLL. For FBD, add an ORef configured with the appropriate I/O tag and connect the associated output parameter to the ORef.

AB857TripSource	
AB857TripSource	AB857
Out_Enable	EN2TR118:1:0025.PlantPAx857_Relay_VI1GGIO137_SPCSO_Oper.ctiVal
	0
Out_Reset	EN2TR118:1:0026.PlantPAx857_Relay_VI2GGIO138_SPCSO_Oper.ctiVal
	0
Out_Close	EN2TR118:1:0026.PlantPAx857_Relay_VI3GGIO139_SPCSO_Oper.ctiVal
	0
Out_Open	EN2TR118:1:0026.PlantPAx857_Relay_VI4GGIO140_SPCSO_Oper.ctiVal
	0
Ref_PlantPAx857	PlantPAx857
Ref_TargetTripText	AB857AlarmText
Ref_Tgt3Txt	BreakerFailure
Ref_Tgt4Txt	Current_Imbalance
Ref_Tgt5Txt	Differential
Ref_Tgt6Txt	GrdNeutOC
Ref_Tgt7Txt	Instantaneous
Ref_Tgt8Txt	OverCurrent

Using Visualization Files

See [Visualization Files on page 13](#) for detailed information.

Faceplates

The Operator tab is displayed when the faceplate is initially opened. Click the appropriate icon on the left of the faceplate to access a specific tab.

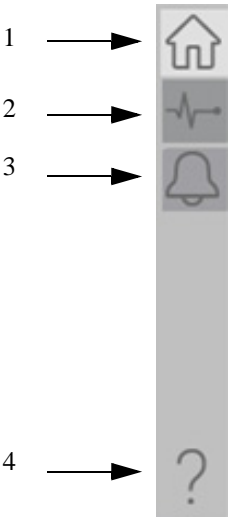


Table 4 - Tab Descriptions

Item	Description
1	Operator tab
2	Diagnostics tab
3	Alarm
4	Help

The faceplate provides the means for operators, maintenance workers, engineers, and others to interact with the instruction instance. This interaction provides a view of the status and values of the instruction instance and an ability to manipulate it through its commands and settings.

Operator Tab

The Faceplate initially opens to the Operator tab, sometimes called the Home tab. From here, an operator can monitor the device status and manually operate the device.

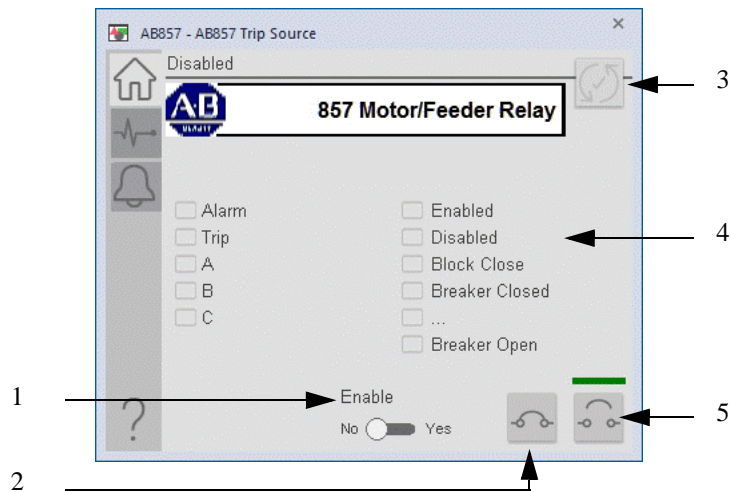


Table 5 - Operator Tab Description

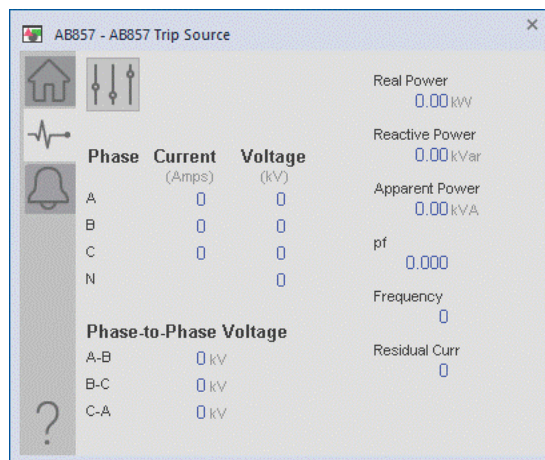
Item	Description
1	Click to enable/disable the device. To issue the commands to the device, enable the device. If the device is disabled, you can only monitor data from the device.
2	Click to close the circuit breaker.
3	Click to reset the device. The status of the device is indicated on the faceplate.
4	Status Indicators
5	Click to open the circuit breaker.

Diagnostics Tab

The diagnostics tab allows the operator to see the measurement values from the physical device.

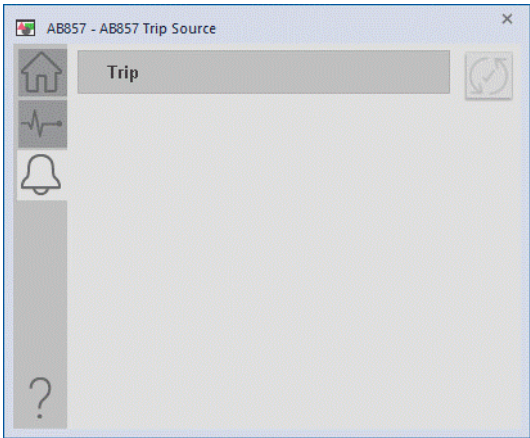
Diagnostics Tab

Readout of the measurement values from the 857 relay.



Alarms

The Alarm tab displays the trip source alarm. The icon on the tab for the alarms page has an outline that changes color to show the current active alarm status.



Advanced Properties


Click the advanced properties icon  on the diagnostics page to display the advanced properties. The following screen capture shows the tabs that are available in the advanced properties display



Table 6 - Advanced Properties Tab Descriptions

Item	Description
1	HMI Configuration
2	Faults
3	Help

HMI Configuration Tab

The HMI configuration tab displays the text configured in the extended tag properties for the description, label, tag, and security area for the device.

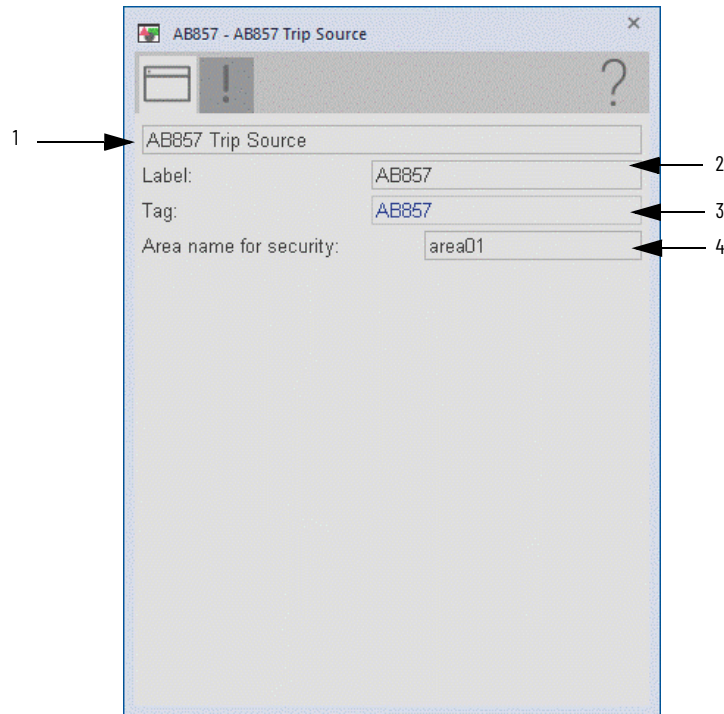
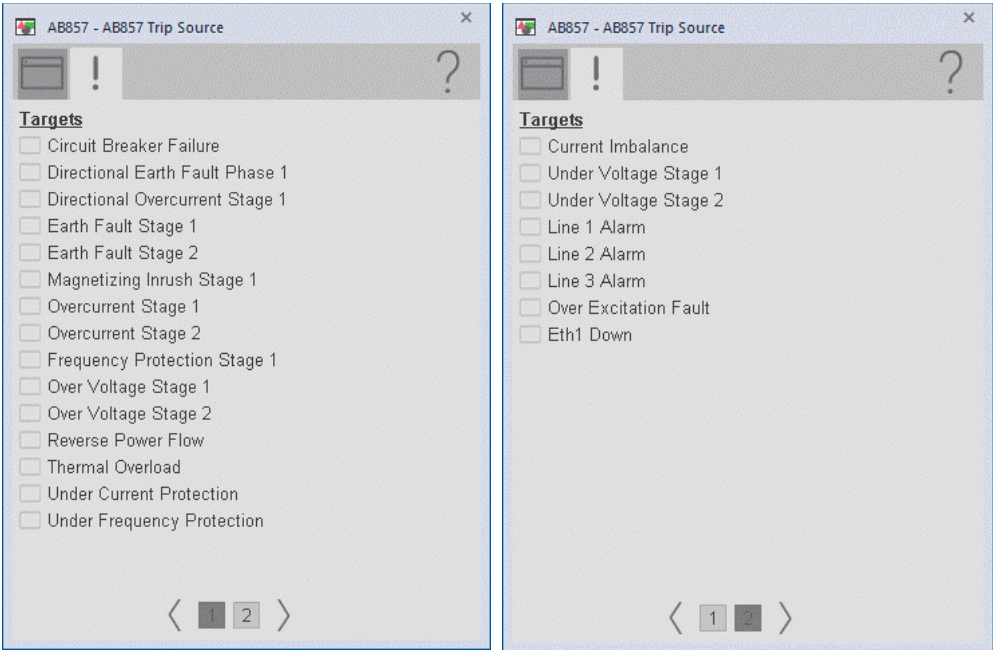


Table 7 - HMI Configuration Tab Description

Item	Action
1	Displays the device description to show on the faceplate title bar as configured for the extended tag property TripSourceA0ITag.@Description
2	The label to show on the graphic symbol as configured for the extended tag property TripSourceA0ITag.@Label.
3	The tag name to show on the faceplate and Tooltip.
4	The Area name for security based on the extended tag property TripSourceA0ITag.@Area.

Faults Tab

The faults tab shows which alarms are active from the physical device.

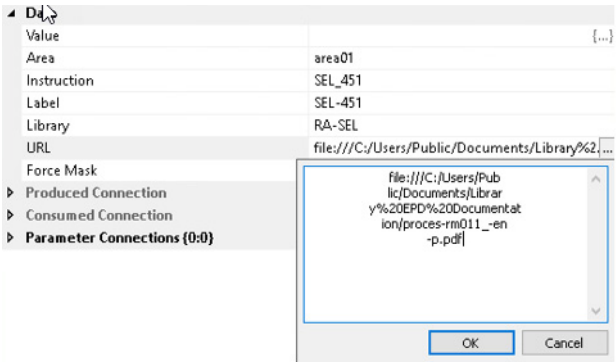


Help Button

Press the help button on the faceplates to access help for the faceplate.

The help file to launch is configurable using the URL extended tag property of the trip source AOI tag.

Note: Individual help files do not currently exist for the 61850 faceplates. The URL can be configured to launch this reference manual (or another reference document) using the following format:



Bulletin 865 Transformer Object

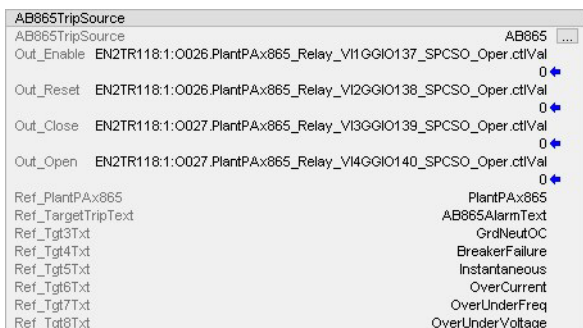


The Allen-Bradley® 865 is a differential protection relay that is used for various tasks. These tasks include selective differential protection of substation transmission lines, medium-voltage overhead and cable feeders, rotating machines, transformer feeders, capacitor banks, generators, reactors, and busbars. The relay is used in power system distribution substations, power plants, industrial power systems, and marine and offshore installations.

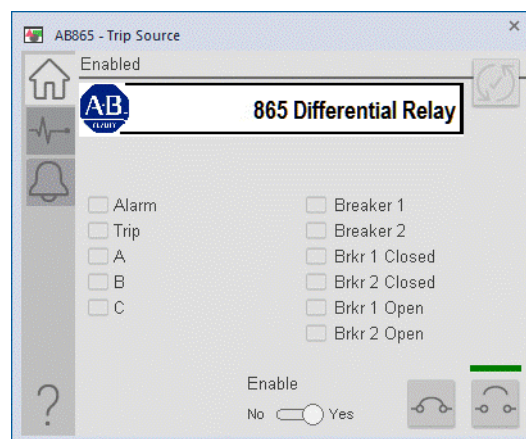
The 865 relay offers extensive customizable control, power and energy measurements, circuit breaker control and monitoring, primary circuit monitoring, and communication functionality, and a comprehensive range of standard protection functions.

This instruction monitors one 865 relay. Alarms are provided when the physical device experiences a protection-related trip. The instruction also provides capabilities for opening and closing the breaker. It is also possible to switch between the two available breakers.

Add-On Instruction



Faceplate



Controller Code

Two Add-On Instructions represent each physical device. The first is generated by the ProSoft Configuration Manager and is included in the program import. The second is the TripSource Add-On Instruction, which is available for download from the Rockwell Automation® Library of Electrical Protection Devices from the PCDC.

InOut Structure for Trip Source Add-On Instruction

InOut parameters in [Table 8](#) are used to link the Add-On Instruction to external tags that contain necessary data for the instruction to operate. These external tags must be of the data type shown

Table 8 - Bulletin 865_TripSource

Name	Data Type	Description
Ref_PlantPAxAOI	<Defined by device AOI>	Device Data from the ProSoft Add-On Instruction. This data type changes to match each device tag in the ProSoft Gateway.
Ref_TargetTripText	STRING	Alarm text to be displayed when active.
Ref_Tgt3Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt4Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt5Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt6Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt7Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt8Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.

Remote Bit Control Value Structure

Remote Bit Control Value parameters are used to link the Add-On Instruction to configurable input points in the device. Each bit is configurable through the device vendor software. [Table 9](#) has the recommended uses for each bit.

Table 9 - Remote Bit Control - Bulletin 865 Device

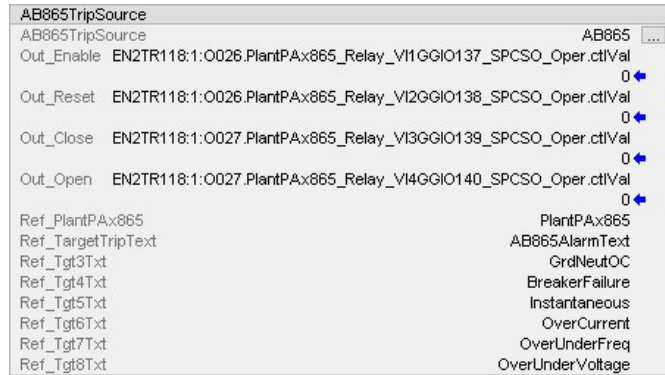
Name	Description
VI1GGI0137_CO_SPCSO_ctlVal	Breaker Select
VI1GGI0138_CO_SPCSO_ctlVal	Target Reset
VI1GGI0139_CO_SPCSO_ctlVal	Breaker Close
VI1GGI0140_CO_SPCSO_ctlVal	Breaker Open

Mapping InOut Tags to Trip Source Add-On Instruction

Configure the Bulletin 865_TripSource Add-On Instruction.

1. Click the question mark next to Ref_PlantPAx865 and select the tag that was created by the ProSoft Configuration Manager for your device.
2. Click the question mark next to each Ref_Tgt#Txt and enter a string tag. These tags are intended to match the status indicators on the front panel of the device.
3. Once you type the tag name, if the tag is not already configured in the controller, you have to right-click and create a tag.
4. Click the question mark next to Ref_TargetTripText and select or create a String tag to be used for the final alarm message. The Trip Source AOI selects from the Ref_Tgt#Txt strings based on the active trip source and copies that reference string to this target string.
5. For Output parameters, click the question mark next to each Output parameter and select the tag to be used when using RLL. For FBD, add an

ORef configured with the appropriate I/O tag and connect the associated output parameter to the ORef.



Using Visualization Files

See [Visualization Files on page 13](#) for detailed information.

Faceplates

The Operator tab is displayed when the faceplate is initially opened. Click the appropriate icon on the left of the faceplate to access a specific tab.

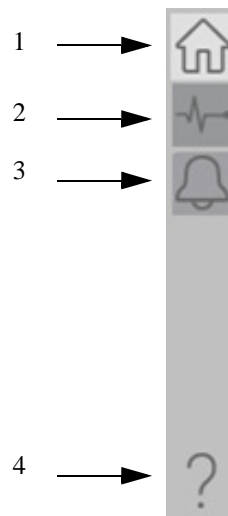


Table 10 - Tab Descriptions

Item	Description
1	Operator tab
2	Diagnostics tab
3	Alarm
4	Help

The faceplate provides the means for operators, maintenance workers, engineers, and others to interact with the instruction instance. This interaction provides a view of the status and values of the instruction instance and an ability to manipulate it through its commands and settings.

Operator Tab

The Faceplate initially opens to the Operator tab, sometimes called the Home tab. From here, an operator can monitor the device status and manually operate the device.

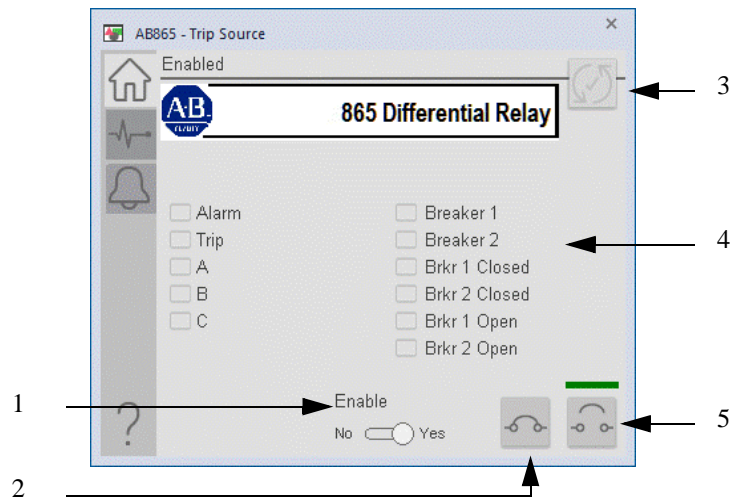


Table 11 - Operator Tab Description

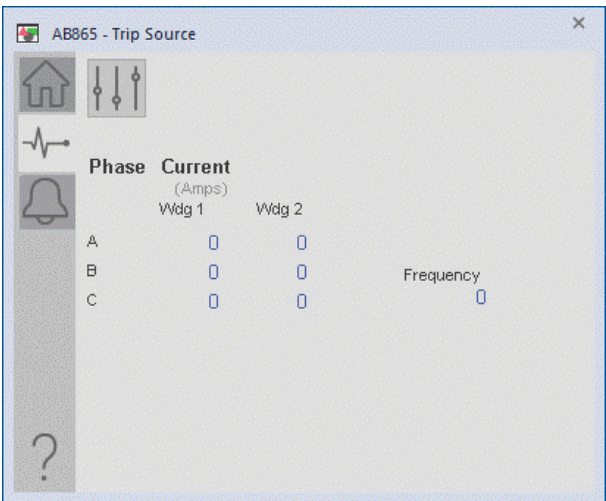
Item	Description
1	Click to enable/disable the device. To issue the commands to the device, enable the device. If the device is disabled, you can only monitor data from the device.
2	Click to close the circuit breaker.
3	Click to reset the device. The status of the device is indicated on the faceplate.
4	Status Indicators
5	Click to open the circuit breaker.

Diagnostics Tab

The diagnostics tab allows the operator to see the measurement values from the physical device.

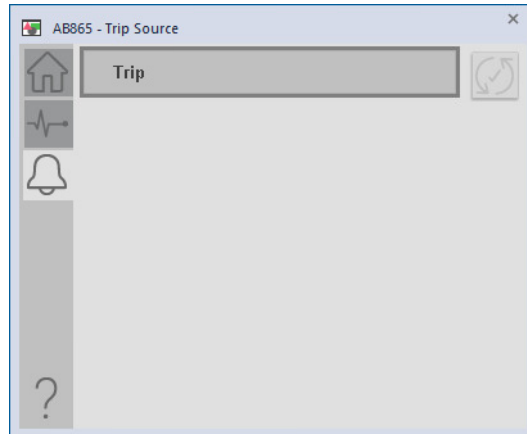
Diagnostics Tab

Readout of the measurement values from the 865 relay.



Alarms

The Alarm tab displays the trip source alarm. The icon on the tab for the alarms page has an outline that changes color to show the current active alarm status.



Advanced Properties


Click the advanced properties icon  on the diagnostics page to display the advanced properties. The following screen capture shows the tabs that are available in the advanced properties display



Table 12 - Advanced Properties Tab Descriptions

Item	Description
1	HMI Configuration
2	Faults
3	Help

HMI Configuration Tab

The HMI configuration tab provides access to displayed text, and faceplate-to-faceplate navigation settings. Configure the description, label, tag, and security area for the device.

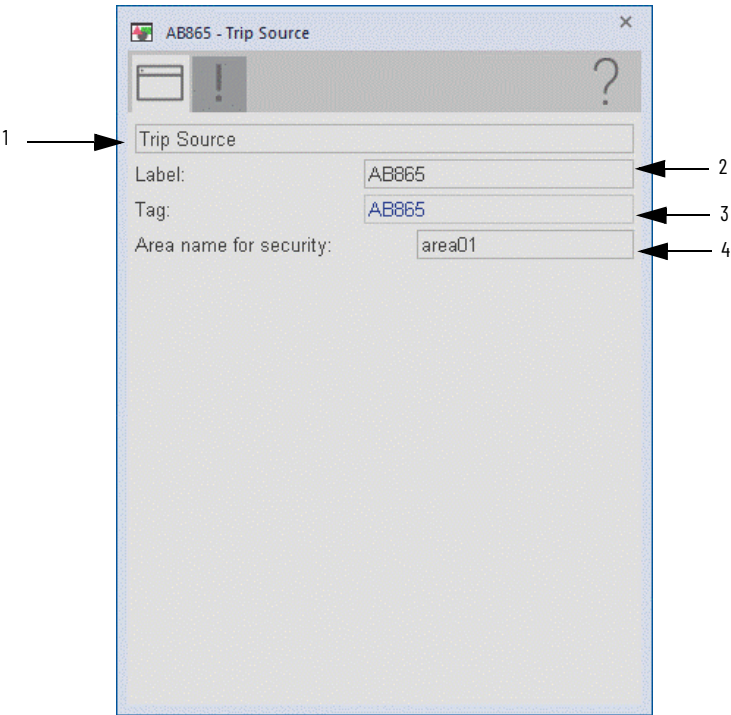
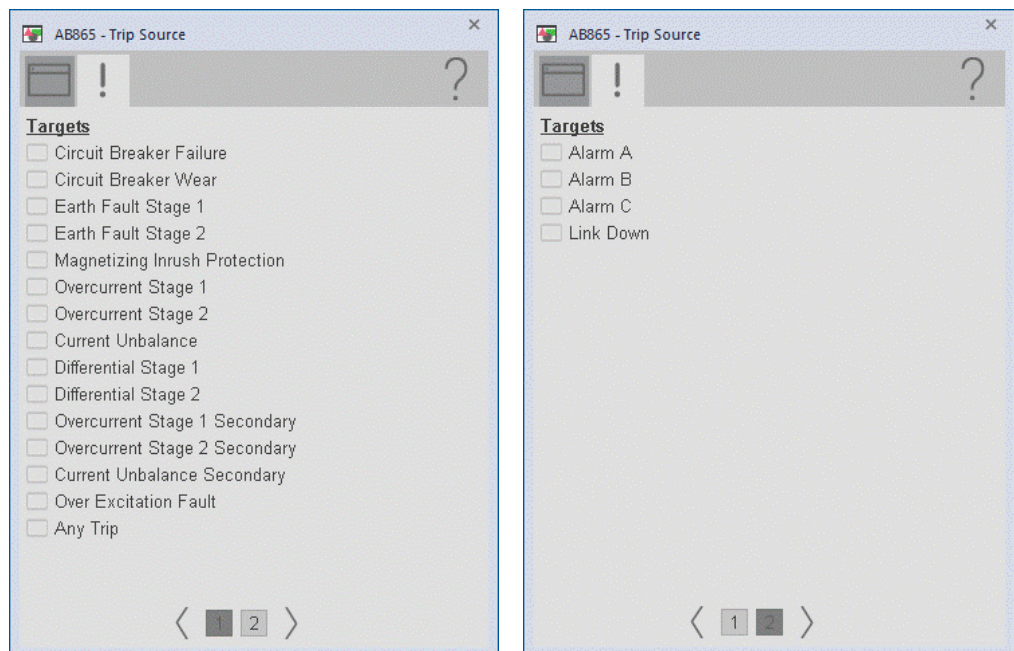


Table 13 - HMI Configuration Tab Description

Item	Action
1	Displays the device description to show on the faceplate title bar as configured for the extended tag property TripSourceA01Tag.@Description
2	The label to show on the graphic symbol as configured for the extended tag property TripSourceA01Tag.@Label.
3	The tag name to show on the faceplate and Tooltip.
4	The Area name for security based on the extended tag property TripSourceA01Tag.@Area.

Faults Tab

The faults tab shows which alarms are active from the physical device.

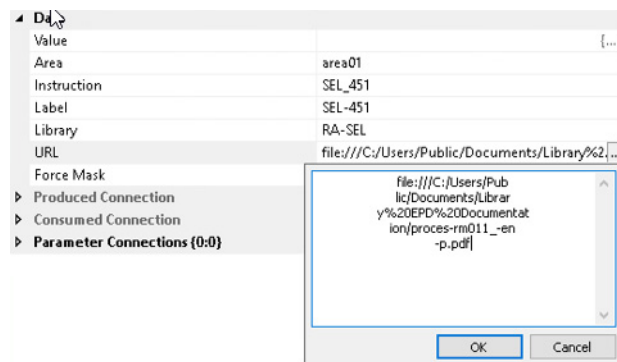


Help Button

Press the help button on the faceplates to access help for the faceplate.

The help file to launch is configurable using the URL extended tag property of the trip source AOI tag.

Note: Individual help files do not currently exist for the 61850 faceplates. The URL can be configured to launch this reference manual (or another reference document) using the following format:



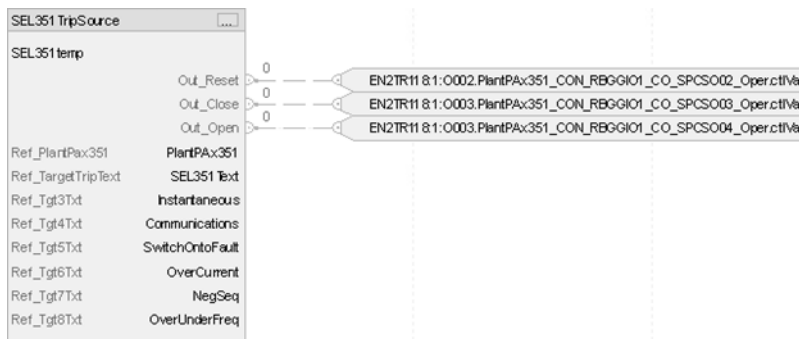
Notes:

SEL 351 Object

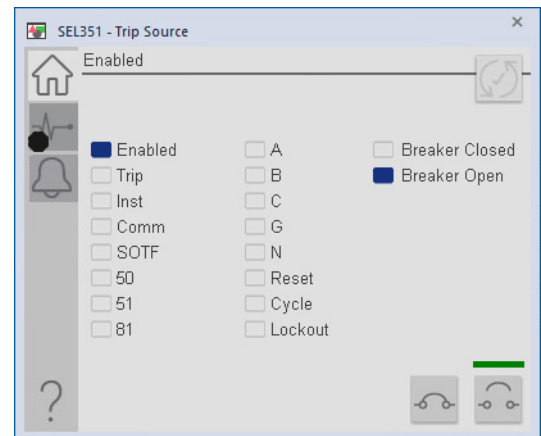
The Schweitzer Engineering Labs 351 is a feeder protection relay with synchrophasor capability. This device is used to help protect an electrical bus from conditions of over current, over voltage, under voltage, and so on. The device also provides multiple fundamental metering data including, voltage, current, frequency, and power.

This instruction monitors one SEL351 relay. Alarms are provided when the device experiences a protection-related trip. The instruction also provides capabilities for locking, and to open and close the breaker.

Add-On Instruction



Faceplate



Controller Code

Two Add-On Instructions represent each physical device. The first is generated by the ProSoft Configuration Manager and is included in the program import. The second is the TripSource Add-On Instruction, which is available for download from the Rockwell Automation® Library of Electrical Protection Devices from the PCDC.

InOut Structure for Trip Source Add-On Instruction

InOut parameters in [Table 14](#) are used to link the Add-On Instruction to external tags that contain necessary data for the instruction to operate. These external tags must be of the data type shown. These tags are representative of the tags that are required for each SEL-351 relay, which is configured in your system.

Table 14 - SEL351 Relay

Name	Data Type	Description
Ref_PlantPAxAOI	<Defined by device AOI>	Device Data from the ProSoft Add-On Instruction. This data type changes to match each device tag in the ProSoft Gateway.
Ref_TargetTripText	STRING	Alarm text to be displayed when active.
Ref_Tgt3Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt4Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt5Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt6Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt7Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt8Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.

Remote Bit Control Value Structure

Remote Bit Control Value parameters are used to link the Add-On Instruction to configurable input points in the physical device. Each bit is configurable via the vendor software of each device. [Table 15](#) has recommended uses for each bit.

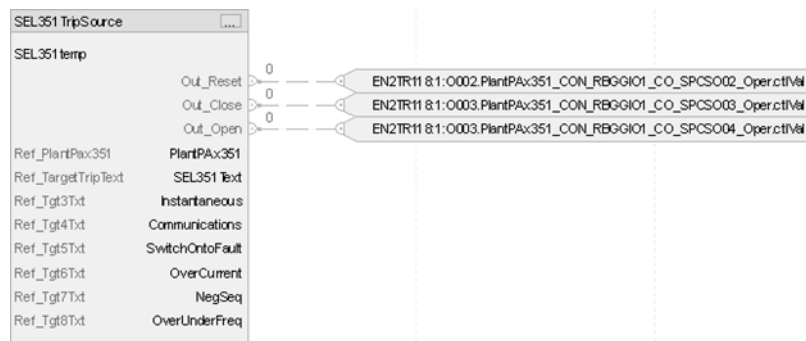
Table 15 - Remote Bit Control - SEL351 Relay

Name	Description
CON_RBGGI01_CO_SPCS001_Oper_ctlVal	Lock/Unlock
CON_RBGGI01_CO_SPCS002_Oper_ctlVal	Target Reset
CON_RBGGI01_CO_SPCS003_Oper_ctlVal	Breaker Close
CON_RBGGI01_CO_SPCS004_Oper_ctlVal	Breaker Open
CON_RBGGI01_CO_SPCS005_Oper_ctlVal	User Programmable
CON_RBGGI01_CO_SPCS006_Oper_ctlVal	User Programmable
CON_RBGGI01_CO_SPCS007_Oper_ctlVal	User Programmable
CON_RBGGI01_CO_SPCS008_Oper_ctlVal	User Programmable

Mapping InOut Tags to Trip Source Add-On Instruction

Configure the SEL 351_TripSource Add-On Instruction.

1. Click the question mark next to Ref_PlantPax351 and select the tag that was created by the ProSoft Configuration Manager for your device.
2. Click the question mark next to each Ref_Tgt#Txt and enter a string tag. These tags are intended to match the status indicators on the front panel of the device.
3. Once you type the tag name, if the tag is not already configured in the controller, you have to right-click and create a tag.
4. Click the question mark next to Ref_TargetTripText and select or create a String tag to be used for the final alarm message. The Trip Source AOI selects from the Ref_Tgt#Txt strings based on the active trip source and copies that reference string to this target string.
5. For Output parameters, click the question mark next to each Output parameter and select the tag to be used when using RLL. For FBD, add an ORef configured with the appropriate I/O tag and connect the associated output parameter to the ORef.



Using Visualization Files

See [Visualization Files on page 13](#) for detailed information.

Faceplates

The Operator tab is displayed when the faceplate is initially opened. Click the appropriate icon on the left of the faceplate to access a specific tab.

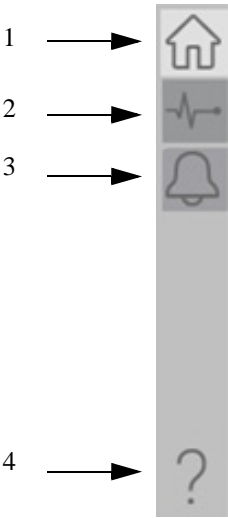


Table 16 - Tab Descriptions

Item	Description
1	Operator tab
2	Diagnostics tab
3	Alarm
4	Help

The faceplate provides the means for operators, maintenance workers, engineers, and others to interact with the instruction instance. This interaction provides a view of the status and values of the instruction instance and an ability to manipulate it through its commands and settings.

Operator Tab

The Faceplate initially opens to the Operator tab, sometimes called the Home tab. From here, an operator can monitor the device status and manually operate the device.

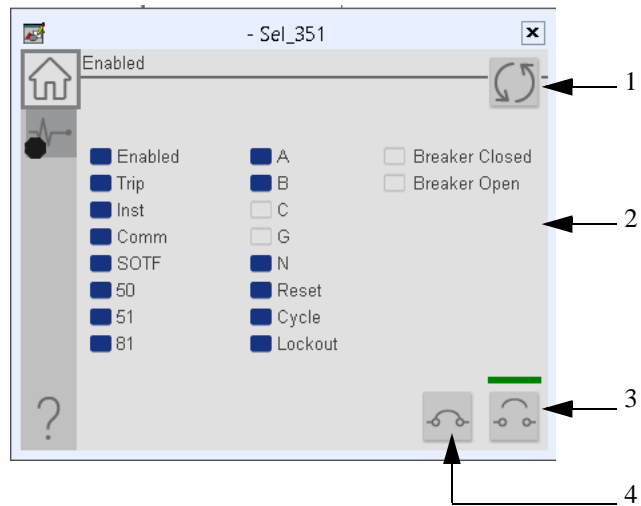


Table 17 - Operator Tab Description

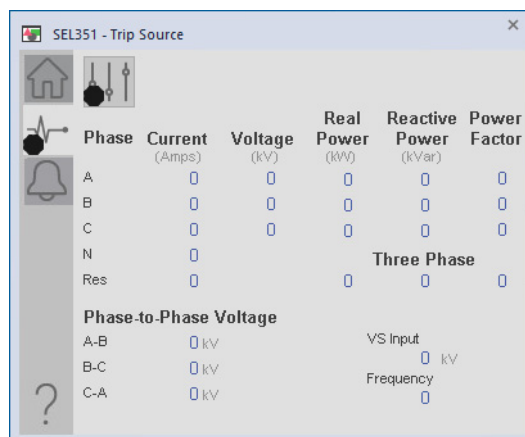
Item	Description
1	Click to reset the device. The status of the device is indicated on the faceplate.
2	Status Indicators
2	Click to open the circuit breaker.
4	Click to close the circuit breaker.

Diagnostics Tab

The diagnostics tab allows the operator to see the measurement values from the physical device.

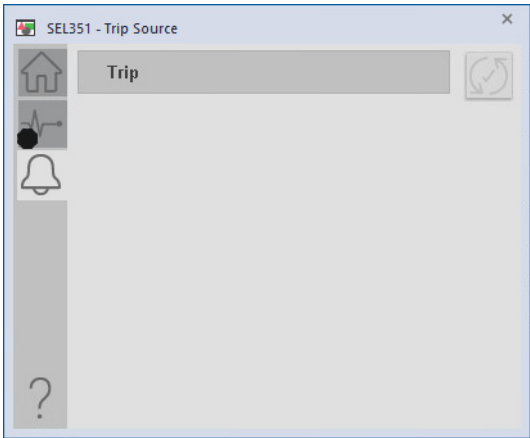
Diagnostics Tab

Readout of the measurement values from the SEL-351.



Alarms

The Alarm tab displays the trip source alarm. The icon on the tab for the alarms page has an outline that changes color to show the current active alarm status.



Advanced Properties


Click the advanced properties icon  on the diagnostics page to display the advanced properties. The following screen capture shows the tabs that are available in the advanced properties display



Table 18 - Advanced Properties Tab Descriptions

Table 19 -

Item	Description
1	HMI Configuration
2	Faults
3	Help

HMI Configuration Tab

The HMI configuration tab provides access to displayed text, and faceplate-to-faceplate navigation settings. Configure the description, label, tag, and security area for the device.

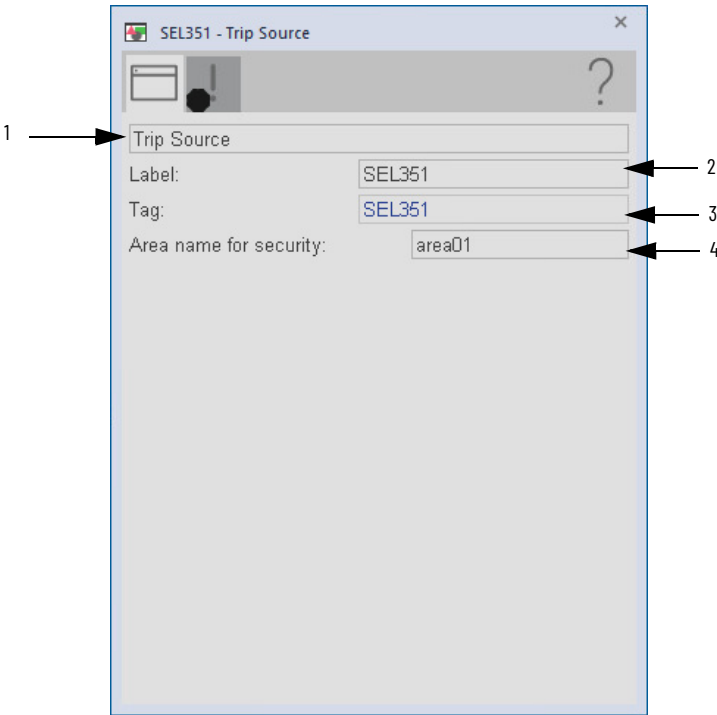
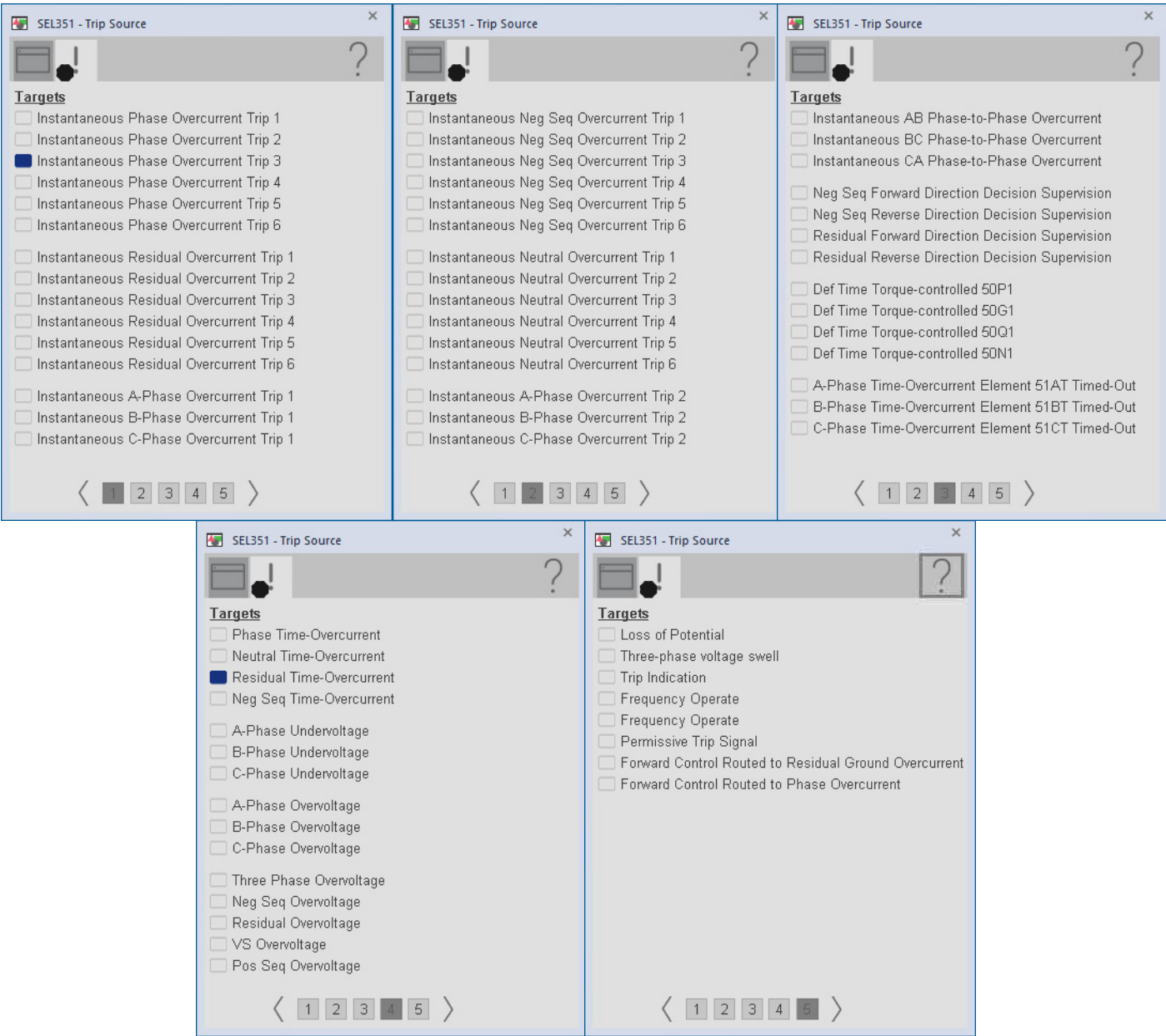


Table 20 - HMI Configuration Tab Description

Item	Action
1	Displays the device description to show on the faceplate title bar as configured for the extended tag property TripSourceA0ITag.@Description
2	The label to show on the graphic symbol as configured for the extended tag property TripSourceA0ITag.@Label.
3	The tag name to show on the faceplate and Tooltip.
4	The Area name for security based on the extended tag property TripSourceA0ITag.@Area.

Faults Tab

The Faults tab shows which alarms are active from the physical device.

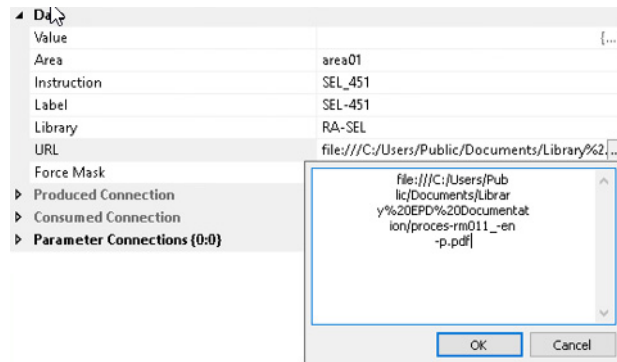


Help Button

Press the help button on the faceplates to access help for the faceplate.

The help file to launch is configurable using the URL extended tag property of the trip source AOI tag.

Note: Individual help files do not currently exist for the 61850 faceplates. The URL can be configured to launch this reference manual (or another reference document) using the following format:



Notes:

SEL 411L Object

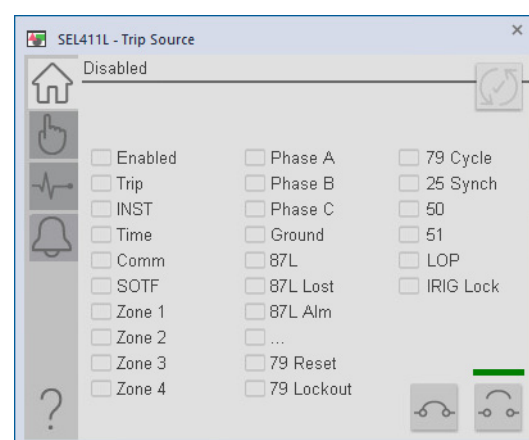
The SEL-411L provides protection and control of transmission lines. The SEL-411L provides differential protection with both phase- and sequence-based operating elements for sensitivity and high-speed operation.

This instruction monitors one SEL411L relay. Alarms are provided when the device experiences a protection-related trip. The instruction also provides capabilities for locking, and to open and close the breaker.

Add-On Instruction

SEL411LTripSource	
SEL411LTripSource	SEL411L
Out_Reset	EN2TR118:1:0001.PlantPax411L_CON_RBGGIO1_CO_SPCS002_Oper.ctlVal
Out_Close	EN2TR118:1:0001.PlantPax411L_CON_RBGGIO1_CO_SPCS003_Oper.ctlVal
Out_Open	EN2TR118:1:0001.PlantPax411L_CON_RBGGIO1_CO_SPCS004_Oper.ctlVal
Out_Enable87L	EN2TR118:1:0001.PlantPax411L_CON_RBGGIO1_CO_SPCS005_Oper.ctlVal
Out_EnableCommScheme	EN2TR118:1:0002.PlantPax411L_CON_RBGGIO1_CO_SPCS006_Oper.ctlVal
Out_EnableAltSettings	EN2TR118:1:0002.PlantPax411L_CON_RBGGIO1_CO_SPCS007_Oper.ctlVal
Out_EnableRelayTestMode	EN2TR118:1:0002.PlantPax411L_CON_RBGGIO1_CO_SPCS008_Oper.ctlVal
Out_EnableSPT	NotUsed
Out_EnableManClose	NotUsed
Out_EnableReclose	NotUsed
Ref_PlantPax411L	PlantPax411L
Ref_TargetTripText	SEL411LAlarmText
Ref_Tgt3Txd	Instantaneous
Ref_Tgt4Txd	OverCurrent
Ref_Tgt5Txd	Communications
Ref_Tgt6Txd	SwitchOntoFault
Ref_Tgt7Txd	TargetLED7
Ref_Tgt8Txd	TargetLED8

Faceplate



Controller Code

Two Add-On Instructions represent each physical device. The first is generated by the ProSoft Configuration Manager and is included in the program import. The second is the TripSource Add-On Instruction, which is available for download from the Rockwell Automation® Library of Electrical Protection Devices from the PCDC.

InOut Structure for Trip Source Add-On Instruction

InOut parameters in [Table 21](#) are used to link the Add-On Instruction to external tags that contain necessary data for the instruction to operate. These external tags must be of the data type shown. These tags are representative of

the tags that are required for each SEL-411L relay, which is configured in your system.

Table 21 - SEL411L Relay

Name	Data Type	Description
Ref_PlantPAxAOI	<Defined by device AOI>	Device Data from the ProSoft Add-On Instruction. This data type changes to match each device tag in the ProSoft Gateway.
Ref_TargetTripText	STRING	Alarm text to be displayed when active.
Ref_Tgt3Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt4Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt5Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt6Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt7Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt8Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.

Remote Bit Control Value Structure

Remote Bit Control Value parameters are used to link the Add-On Instruction to configurable input points in the physical device. Each bit is configurable via the vendor software of each device. The following table has recommended uses for each bit.

Name	Description
CON_RBGGIO1_CO_SPCS001_Oper_ctlVal	Lock/Unlock
CON_RBGGIO1_CO_SPCS002_Oper_ctlVal	Target Reset
CON_RBGGIO1_CO_SPCS003_Oper_ctlVal	Breaker Close
CON_RBGGIO1_CO_SPCS004_Oper_ctlVal	Breaker Open
CON_RBGGIO1_CO_SPCS005_Oper_ctlVal	User Programmable
CON_RBGGIO1_CO_SPCS006_Oper_ctlVal	User Programmable
CON_RBGGIO1_CO_SPCS007_Oper_ctlVal	User Programmable
CON_RBGGIO1_CO_SPCS008_Oper_ctlVal	User Programmable

Mapping InOut Tags to Add-On Instructions

Configure the SEL411L_TripSource Add-On Instruction.

1. Click the question mark next to Ref_PlantPAx411L and select the tag that was created by the ProSoft Configuration Manager for your device.
2. Click the question mark next to each Ref_Tgt#Txt and enter a string tag. These tags are intended to match the status indicators on the front panel of the device.
3. Once you type the tag name, if the tag is not already configured in the controller, you have to right-click and create a tag.
4. Click the question mark next to Ref_TargetTripText and select or create a String tag to be used for the final alarm message. The Trip Source AOI selects from the Ref_Tgt#Txt strings based on the active trip source and copies that reference string to this target string.
5. For Output parameters, click the question mark next to each Output parameter and select the tag to be used when using RLL. For FBD, add an

ORef configured with the appropriate I/O tag and connect the associated output parameter to the ORef.

SEL411LTripSource	
SEL411LTripSource	SEL411L
Out_Reset	EN2TR118:1:0001.PlantPax411L_CON_RBGGIO1_CO_SPCS002_Oper.ctiVal
Out_Close	EN2TR118:1:0001.PlantPax411L_CON_RBGGIO1_CO_SPCS003_Oper.ctiVal
Out_Open	EN2TR118:1:0001.PlantPax411L_CON_RBGGIO1_CO_SPCS004_Oper.ctiVal
Out_Enable87L	EN2TR118:1:0001.PlantPax411L_CON_RBGGIO1_CO_SPCS005_Oper.ctiVal
Out_EnableCommScheme	EN2TR118:1:0002.PlantPax411L_CON_RBGGIO1_CO_SPCS006_Oper.ctiVal
Out_EnableAltSettings	EN2TR118:1:0002.PlantPax411L_CON_RBGGIO1_CO_SPCS007_Oper.ctiVal
Out_EnableRelayTestMode	EN2TR118:1:0002.PlantPax411L_CON_RBGGIO1_CO_SPCS008_Oper.ctiVal
Out_EnableSPT	NotUsed
Out_EnableManClose	NotUsed
Out_EnableReclose	NotUsed
Ref_PlantPax411L	PlantPax411L
Ref_TargetTripText	SEL411LAlarmText
Ref_Tgt3Txt	Instantaneous
Ref_Tgt4Txt	OverCurrent
Ref_Tgt5Txt	Communications
Ref_Tgt6Txt	SwitchOntoFault
Ref_Tgt7Txt	TargetLED7
Ref_Tgt8Txt	TargetLED8

Using Visualization Files

See [Visualization Files on page 13](#) for detailed information.

Faceplates

The Operator tab is displayed when the faceplate is initially opened. Click the appropriate icon on the left of the faceplate to access a specific tab.

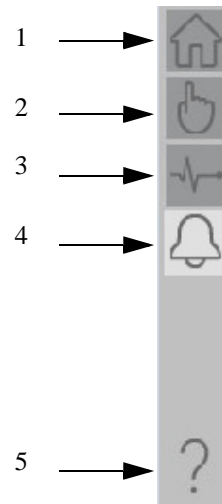


Table 22 - Tab Descriptions

Item	Description
1	Operator tab
2	Manual Control tab
3	Diagnostics tab
4	Alarm
5	Help

The faceplate provides the means for operators, maintenance workers, engineers, and others to interact with the instruction instance. This interaction provides a view of the status and values of the instruction instance and an ability to manipulate it through its commands and settings.

Operator Tab

The Faceplate initially opens to the Operator tab, sometimes called the Home tab. From here, an operator can monitor the device status and manually operate the device.

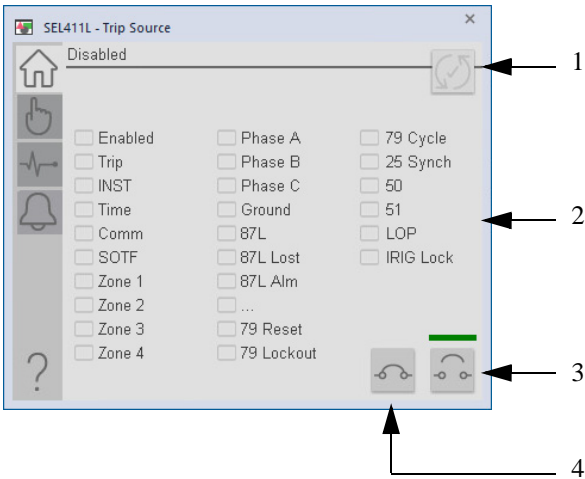
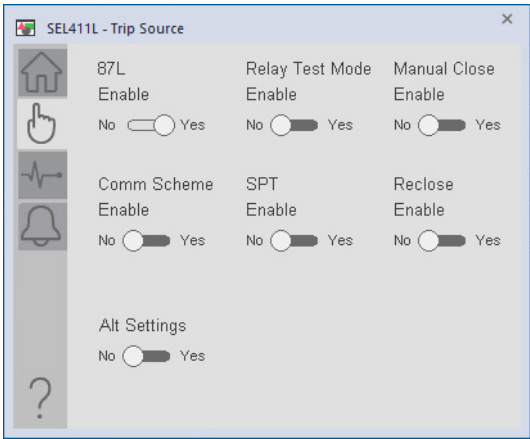


Table 23 - Operator Tab Description

Item	Description
1	Click to reset the device. The status of the device is indicated on the faceplate.
2	Status Indicators
3	Click to open the circuit breaker.
4	Click to close the circuit breaker.

Manual Control Tab

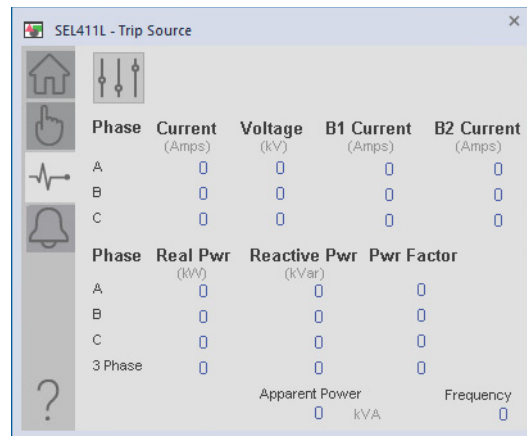


Diagnostics Tab

The diagnostics tab allows the operator to see the measurement values from the device.

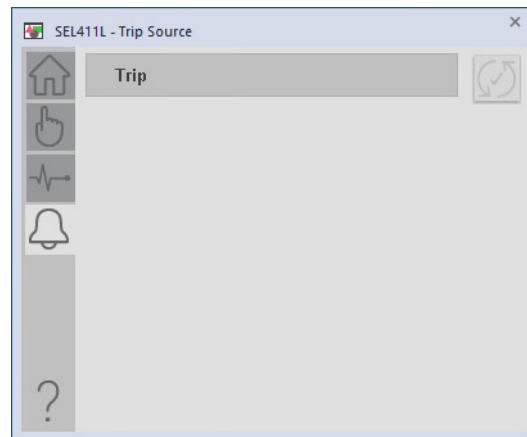
Diagnostics Tab

Readout of the measurement values from the SEL-411L.




Alarms

The Alarm tab displays the trip source alarm. The icon on the tab for the alarms page has an outline that changes color to show the current active alarm status.



Advanced Properties

Click the advanced properties icon  on the diagnostics page to display the advanced properties. The following screen capture shows the tabs that are available in the advanced properties display

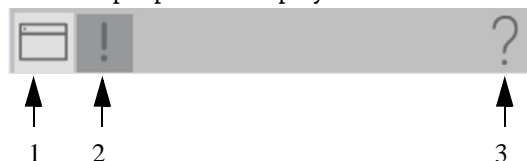


Table 24 - Advanced Properties Tab Descriptions

Item	Description
1	HMI Configuration
2	Faults
3	Help

HMI Configuration Tab

The HMI configuration tab provides access to displayed text, and faceplate-to-faceplate navigation settings. Configure the description, label, tag, and security area for the device.

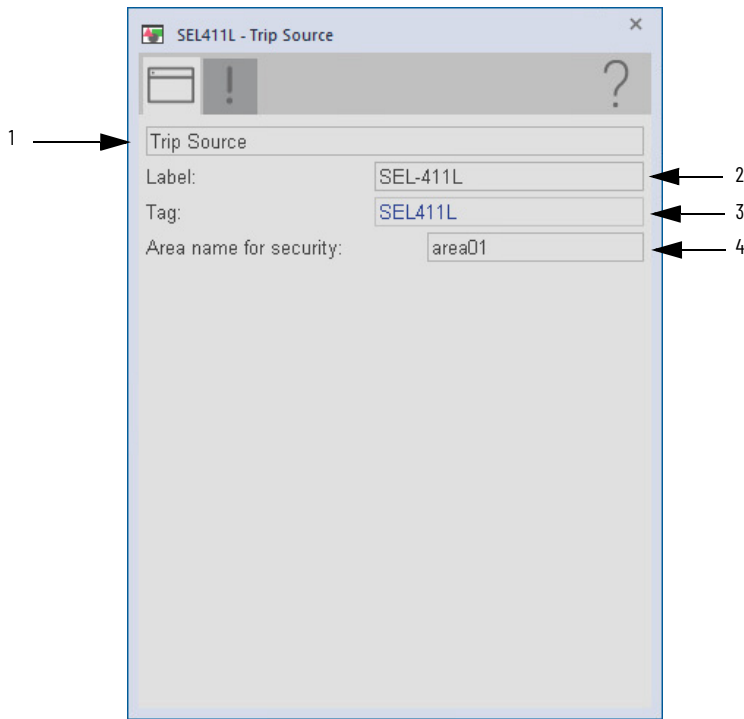
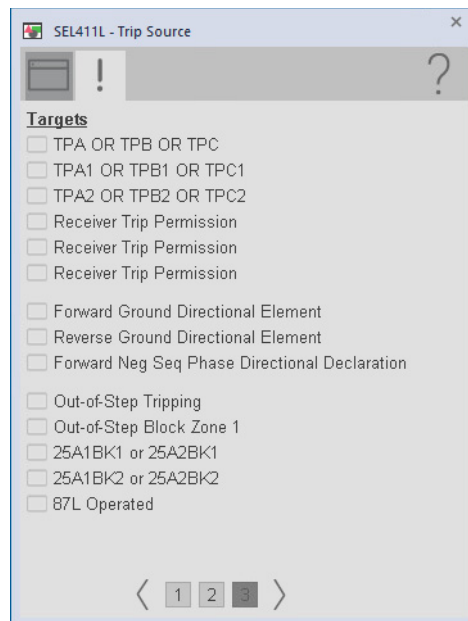
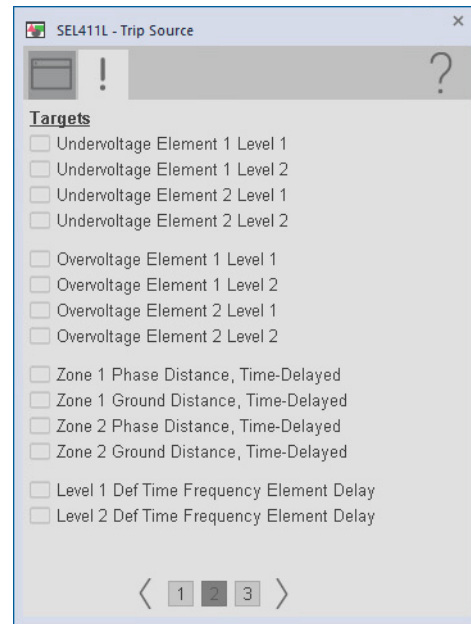
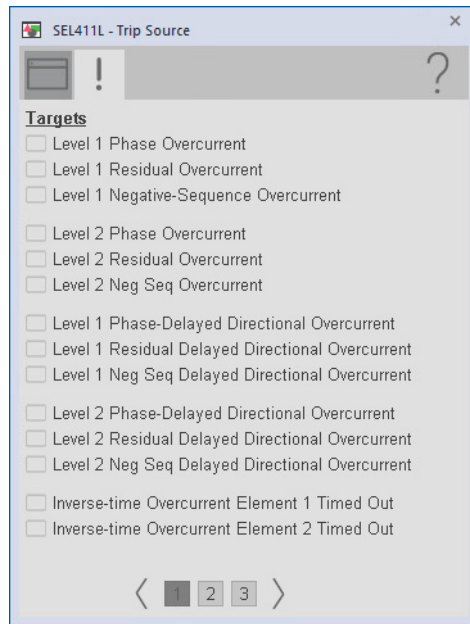


Table 25 - HMI Configuration Tab Description

Item	Action
1	Displays the device description to show on the faceplate title bar as configured for the extended tag property TripSourceA0ITag.@Description
2	The label to show on the graphic symbol as configured for the extended tag property TripSourceA0ITag.@Label.
3	The tag name to show on the faceplate and Tooltip.
4	The Area name for security based on the extended tag property TripSourceA0ITag.@Area.

Faults Tab

The faults tab shows which alarms are active from the device.

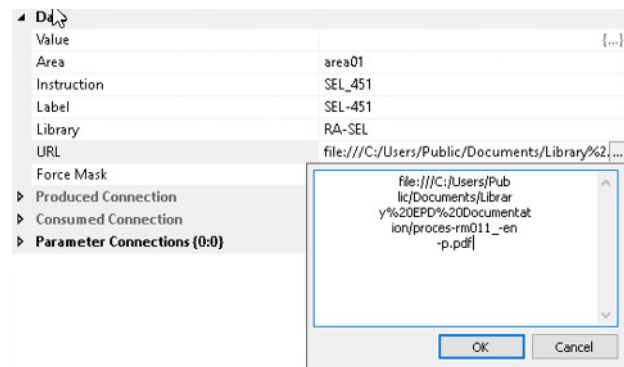


Help Button

Press the help button on the faceplates to access help for the faceplate.

The help file to launch is configurable using the URL extended tag property of the trip source AOI tag.

Note: Individual help files do not currently exist for the 61850 faceplates. The URL can be configured to launch this reference manual (or another reference document) using the following format:



SEL 421 Object

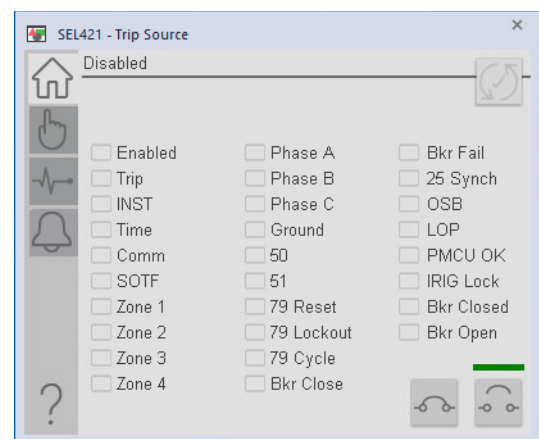
The SEL-421 is a high-speed distance and directional protection relay that can provide complete control of a two-breaker bay. It is used to help protect any transmission line using a combination of five zones of phase- and ground-distance and directional overcurrent elements.

This instruction monitors one SEL421 relay. Alarms are provided when the device experiences a protection-related trip. The instruction also provides capabilities for locking, and to open and close the breaker.

Add-On Instruction

SEL421 TripSource	
SEL421 TripSource	SEL421
Out_Reset	EN2TR118:1:0004.PlantPAx421_CON_RBGGIO1_CO_SPCS002_Oper.ctiVal
Out_Close	EN2TR118:1:0004.PlantPAx421_CON_RBGGIO1_CO_SPCS003_Oper.ctiVal
Out_Open	EN2TR118:1:0004.PlantPAx421_CON_RBGGIO1_CO_SPCS004_Oper.ctiVal
Out_EnableCommScheme	EN2TR118:1:0005.PlantPAx421_CON_RBGGIO1_CO_SPCS005_Oper.ctiVal
Out_EnableAltSettings	EN2TR118:1:0005.PlantPAx421_CON_RBGGIO1_CO_SPCS006_Oper.ctiVal
Out_EnableRelayTestMode	EN2TR118:1:0005.PlantPAx421_CON_RBGGIO1_CO_SPCS007_Oper.ctiVal
Out_EnableSPT	EN2TR118:1:0005.PlantPAx421_CON_RBGGIO1_CO_SPCS008_Oper.ctiVal
Out_EnableManClose	NotUsed
Out_EnableReclose	NotUsed
Ref_PlantPAx421	PlantPAx421
Ref_TargetTripText	SEL421 AlarmText
Ref_Tgt3Txt	Instantaneous
Ref_Tgt4Txt	Time
Ref_Tgt5Txt	Communications
Ref_Tgt6Txt	SwitchOntoFault
Ref_Tgt7Txt	Zone1
Ref_Tgt8Txt	Zone2

Faceplate



Controller Code

Two Add-On Instructions represent each physical device. The first is generated by the ProSoft Configuration Manager and is included in the program import. The second is the TripSource Add-On Instruction, which is available for download from the Rockwell Automation® Library of Electrical Protection Devices from the PCDC.

InOut Structure for Trip Source Add-On Instruction

InOut parameters in [Table 26](#) are used to link the Add-On Instruction to external tags that contain necessary data for the instruction to operate. These external tags must be

of the data type shown. These tags are representative of the tags that are required for each SEL-421 relay, which is configured in your system.

Table 26 - SEL421 Relay

Name	Data Type	Description
Ref_PlantPAxAOI	<Defined by device AOI>	Device Data from the ProSoft Add-On Instruction. This data type changes to match each device tag in the ProSoft Gateway.
Ref_TargetTripText	STRING	Alarm text to be displayed when active.
Ref_Tgt3Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt4Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt5Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt6Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt7Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt8Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.

Remote Bit Control Value Structure

Remote Bit Control Value parameters are used to link the Add-On Instruction to configurable input points in the physical device. Each bit is configurable via the vendor software of each device. The following table has recommended uses for each bit.

Name	Description
CON_RBGGI01_CO_SPCS001_Oper_ctlVal	Lock/Unlock
CON_RBGGI01_CO_SPCS002_Oper_ctlVal	Target Reset
CON_RBGGI01_CO_SPCS003_Oper_ctlVal	Breaker Close
CON_RBGGI01_CO_SPCS004_Oper_ctlVal	Breaker Open
CON_RBGGI01_CO_SPCS005_Oper_ctlVal	User Programmable
CON_RBGGI01_CO_SPCS006_Oper_ctlVal	User Programmable
CON_RBGGI01_CO_SPCS007_Oper_ctlVal	User Programmable
CON_RBGGI01_CO_SPCS008_Oper_ctlVal	User Programmable

Mapping InOut Tags to Trip Source Add-On Instruction

Configure the SEL421_TripSource Add-On Instruction.

1. Click the question mark next to Ref_PlantPAx421 and select the tag that was created by the ProSoft Configuration Manager for your device.
2. Click the question mark next to each Ref_Tgt#Txt and enter a string tag. These tags are intended to match the status indicators on the front panel of the device.
3. Once you type the tag name, if the tag is not already configured in the controller, you have to right-click and create a tag.
4. Click the question mark next to Ref_TargetTripText and select or create a String tag to be used for the final alarm message. The Trip Source AOI selects from the Ref_Tgt#Txt strings based on the active trip source and copies that reference string to this target string.
5. For Output parameters, click the question mark next to each Output parameter and select the tag to be used when using RLL. For FBD, add an ORef configured with the appropriate I/O tag and connect the associated output parameter to the ORef.

SEL421_TripSource		SEL421
SEL421_TripSource		...
Out_Reset	EN2TR118:1:0004.PlantPAx421_CON_RBGGIO1_CO_SPCS002_Oper.ctiVal	0
Out_Close	EN2TR118:1:0004.PlantPAx421_CON_RBGGIO1_CO_SPCS003_Oper.ctiVal	0
Out_Open	EN2TR118:1:0004.PlantPAx421_CON_RBGGIO1_CO_SPCS004_Oper.ctiVal	0
Out_EnableCommScheme	EN2TR118:1:0005.PlantPAx421_CON_RBGGIO1_CO_SPCS005_Oper.ctiVal	0
Out_EnableAltSettings	EN2TR118:1:0005.PlantPAx421_CON_RBGGIO1_CO_SPCS006_Oper.ctiVal	0
Out_EnableRelayTestMode	EN2TR118:1:0005.PlantPAx421_CON_RBGGIO1_CO_SPCS007_Oper.ctiVal	0
Out_EnableSPT	EN2TR118:1:0005.PlantPAx421_CON_RBGGIO1_CO_SPCS008_Oper.ctiVal	0
Out_EnableManClose		NotUsed
Out_EnableReclose		NotUsed
Ref_PlantPAx421		PlantPAx421
Ref_TargetTripText		SEL421 AlarmText
Ref_Tgt3Txt		Instantaneous
Ref_Tgt4Txt		Time
Ref_Tgt5Txt		Communications
Ref_Tgt6Txt		SwitchOntoFault
Ref_Tgt7Txt		Zone1
Ref_Tgt8Txt		Zone2

Using Visualization Files

See [Visualization Files on page 13](#) for detailed information.

Faceplates

The Operator tab is displayed when the faceplate is initially opened. Click the appropriate icon on the left of the faceplate to access a specific tab.

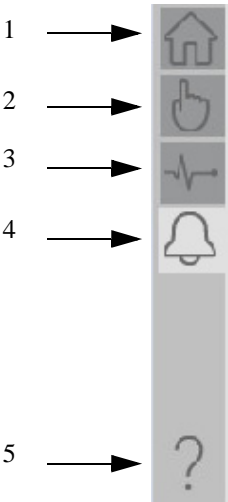


Table 27 - Tab Descriptions

Item	Description
1	Operator tab
2	Manual Control tab
3	Diagnostics tab
4	Alarm
5	Help

The faceplate provides the means for operators, maintenance workers, engineers, and others to interact with the instruction instance. This interaction provides a view of the status and values of the instruction instance and an ability to manipulate it through its commands and settings.

Operator Tab

The Faceplate initially opens to the Operator tab, sometimes called the Home tab. From here, an operator can monitor the device status and manually operate the device.

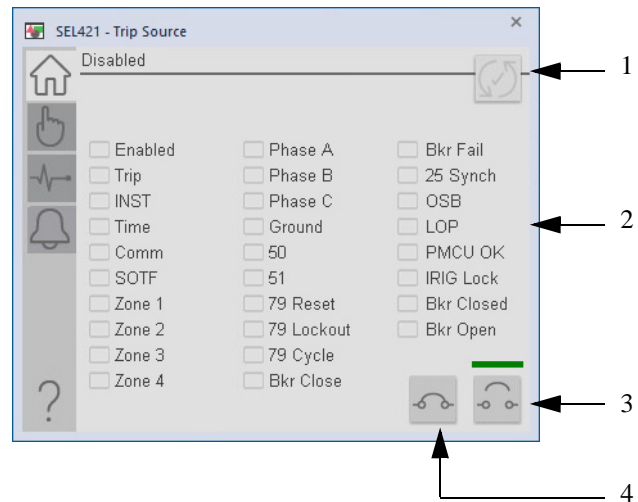
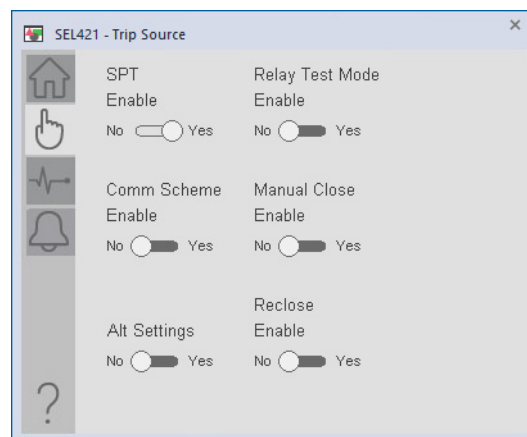


Table 28 - Operator Tab Description

Item	Description
1	Click to reset the device. The status of the device is indicated on the faceplate.
2	Status Indicators
3	Click to open the circuit breaker.
4	Click to close the circuit breaker.

Manual Control Tab

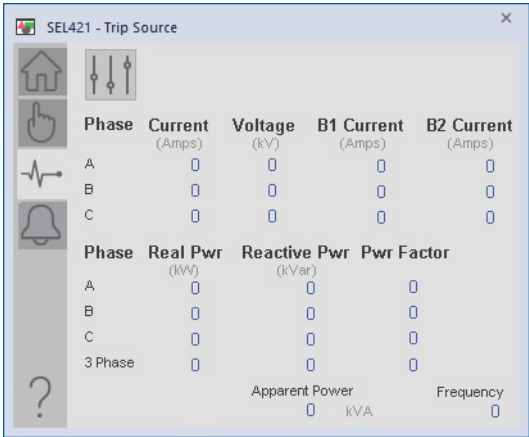


Diagnostics Tab

The diagnostics tab allows the operator to see the measurement values from the device.

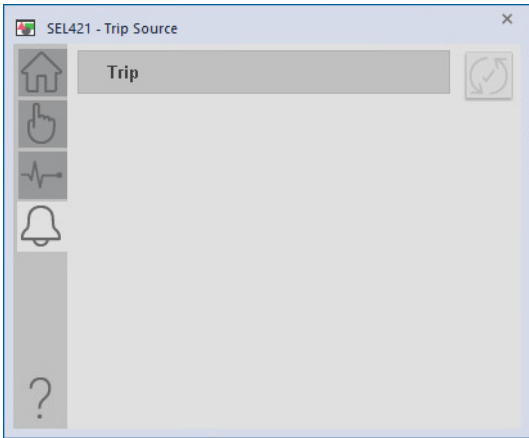
Diagnostics Tab

Readout of the measurement values from the SEL-421.



Alarms

The Alarm tab displays the trip source alarm. The icon on the tab for the alarms page has an outline that changes color to show the current active alarm status.



Advanced Properties


Click the advanced properties icon  on the diagnostics page to display the advanced properties. The following screen capture shows the tabs that are available in the advanced properties display



Table 29 - Advanced Properties Tab Descriptions

Item	Description
1	HMI Configuration
2	Faults
3	Help

HMI Configuration Tab

The HMI configuration tab provides access to displayed text, and faceplate-to-faceplate navigation settings. Configure the description, label, tag, and security area for the device.

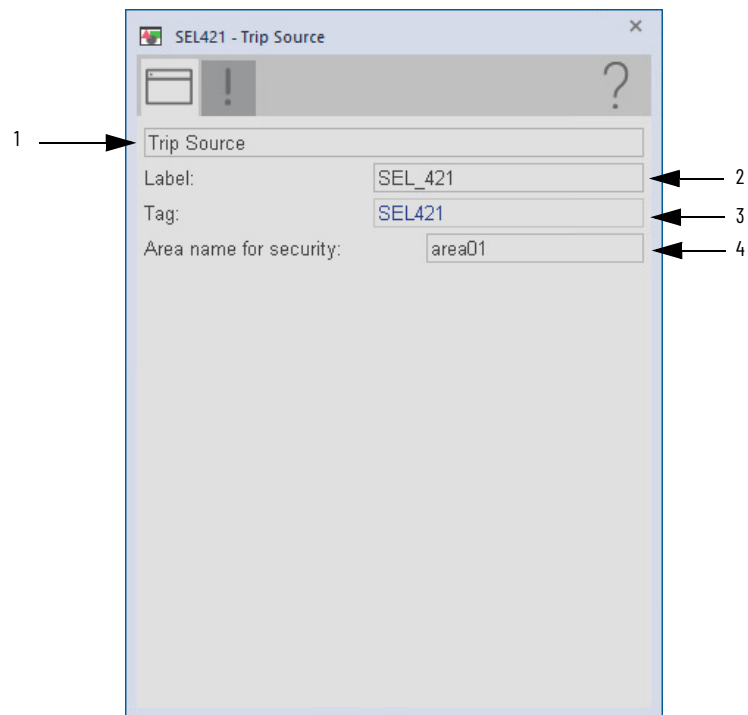
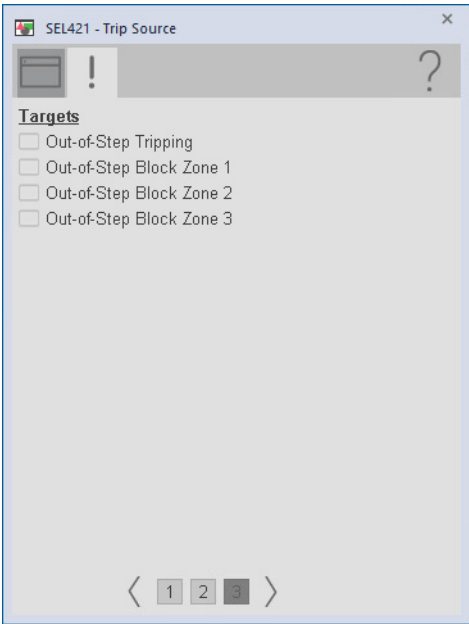
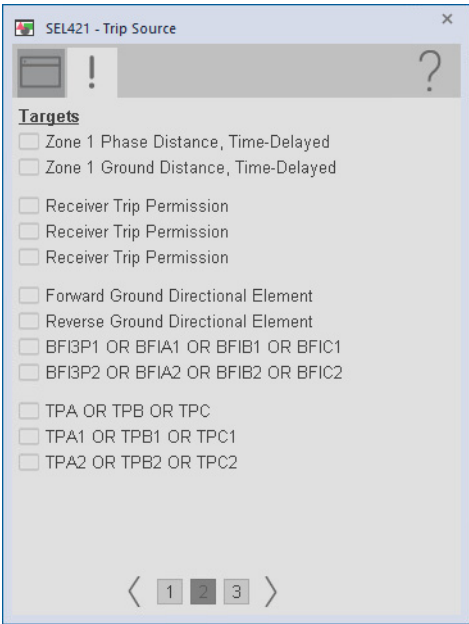
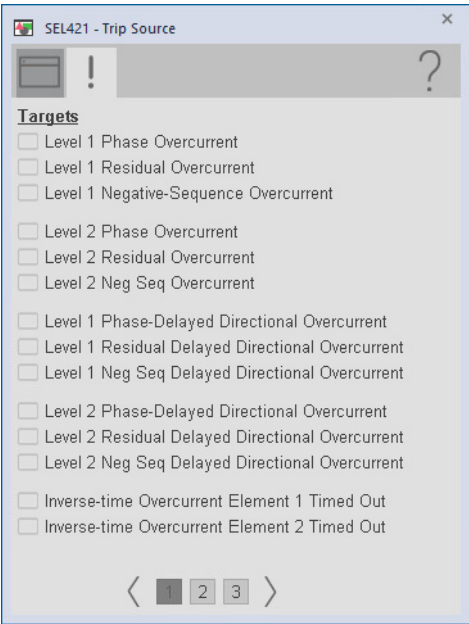


Table 30 - HMI Configuration Tab Description

Item	Action
1	Displays the device description to show on the faceplate title bar as configured for the extended tag property TripSourceA0ITag.@Description
2	The label to show on the graphic symbol as configured for the extended tag property TripSourceA0ITag.@Label.
3	The tag name to show on the faceplate and Tooltip.
4	The Area name for security based on the extended tag property TripSourceA0ITag.@Area.

Faults Tab

The faults tab shows which alarms are active from the device.

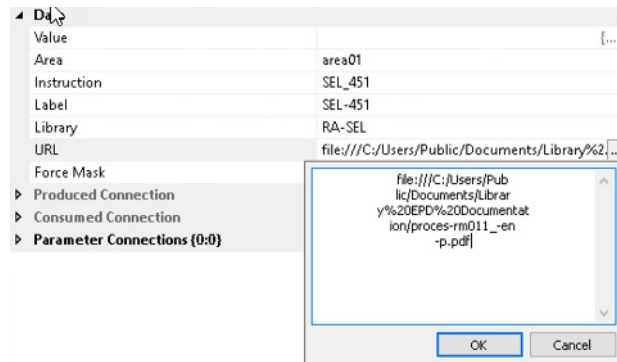


Help Button

Press the help button on the faceplates to access help for the faceplate.

The help file to launch is configurable using the URL extended tag property of the trip source AOI tag.

Note: Individual help files do not currently exist for the 61850 faceplates. The URL can be configured to launch this reference manual (or another reference document) using the following format:



Notes:

SEL 451 Object

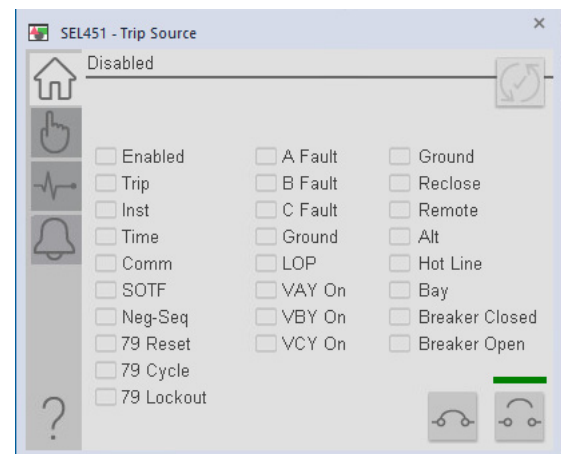
The Schweitzer Engineering Labs 451 is a feeder protection relay. This device is used to help protect an electrical bus from conditions of over current, over voltage, under voltage, and so on. The device also provides multiple fundamental metering data including, voltage, current, frequency, and power. The SEL-451 provides complete bay control functionality.

This instruction monitors one SEL451 relay. Alarms are provided when the device experiences a protection-related trip. The instruction also provides capabilities for locking, and to open and close the breaker.

Add-On Instruction

SEL451TripSource		SEL451
SEL451TripSource	EN2TR118:1:0015.PlantPax451_CON_RBGGIO1_CO_SPCS002_Oper.ctfVal	0
Out_Reset	EN2TR118:1:0015.PlantPax451_CON_RBGGIO1_CO_SPCS003_Oper.ctfVal	0
Out_Close	EN2TR118:1:0016.PlantPax451_CON_RBGGIO1_CO_SPCS004_Oper.ctfVal	0
Out_Open	EN2TR118:1:0016.PlantPax451_CON_RBGGIO1_CO_SPCS005_Oper.ctfVal	1
Out_EnableGround	EN2TR118:1:0016.PlantPax451_CON_RBGGIO1_CO_SPCS006_Oper.ctfVal	1
Out_EnableReclose	EN2TR118:1:0016.PlantPax451_CON_RBGGIO1_CO_SPCS007_Oper.ctfVal	1
Out_EnableRemote	EN2TR118:1:0016.PlantPax451_CON_RBGGIO1_CO_SPCS008_Oper.ctfVal	1
Out_EnableAllSettings	EN2TR118:1:0016.PlantPax451_CON_RBGGIO1_CO_SPCS008_Oper.ctfVal	1
Out_EnableHotLineTag	NotUsed	0
Out_EnableBayDisplay	NotUsed	0
Ref_PlantPax451	PlantPax451	
Ref_TargetTripText	SEL451AlarmText	
Ref_Tgt3Txt	Instantaneous	
Ref_Tgt4Txt	Time	
Ref_Tgt5Txt	Communications	
Ref_Tgt6Txt	SwitchOntoFault	
Ref_Tgt7Txt	NegSeq	
Ref_Tgt8Txt	TargetLED8	

Faceplate



Controller Code

Two Add-On Instructions represent each physical device. The first is generated by the ProSoft Configuration Manager and is included in the program import. The second is the TripSource Add-On Instruction, which is available for download from the Rockwell Automation® Library of Electrical Protection Devices from the PCDC.

InOut Structure for Trip Source Add-On Instruction

InOut parameters in [Table 31](#) are used to link the Add-On Instruction to external tags that contain necessary data for the instruction to operate. These external

tags must be of the data type shown. These tags are representative of the tags that are required for each SEL-451 relay, which is configured in your system.

Table 31 - SEL451 Relay

Name	Data Type	Description
Ref_PlantPAxAOI	<Defined by device AOI>	Device Data from the ProSoft Add-On Instruction. This data type changes to match each device tag in the ProSoft Gateway.
Ref_TargetTripText	STRING	Alarm text to be displayed when active.
Ref_Tgt3Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt4Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt5Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt6Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt7Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt8Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.

Remote Bit Control Value Structure

Remote Bit Control Value parameters are used to link the Add-On Instruction to configurable input points in the physical device. Each bit is configurable via the vendor software of each device. [Table 32](#) has recommended uses for each bit.

Table 32 - Remote Bit Control - SEL451 Relay

Name	Description
CON_RBGGI01_CO_SPCS001_Oper_ctlVal	Lock/Unlock
CON_RBGGI01_CO_SPCS002_Oper_ctlVal	Target Reset
CON_RBGGI01_CO_SPCS003_Oper_ctlVal	Breaker Close
CON_RBGGI01_CO_SPCS004_Oper_ctlVal	Breaker Open
CON_RBGGI01_CO_SPCS005_Oper_ctlVal	Ground Enable
CON_RBGGI01_CO_SPCS006_Oper_ctlVal	Reclose Enable
CON_RBGGI01_CO_SPCS007_Oper_ctlVal	Remote Enable
CON_RBGGI01_CO_SPCS008_Oper_ctlVal	Alt Settings
CON_RBGGI01_CO_SPCS009_Oper_ctlVal	Hot Line Tag
CON_RBGGI01_CO_SPCS010_Oper_ctlVal	Bay Display

Mapping InOut Tags to Trip Source Add-On Instruction

Configure the SEL451_TripSource Add-On Instruction.

1. Click the question mark next to Ref_PlantPAx451 and select the tag that was created by the ProSoft Configuration Manager for your device.
2. Click the question mark next to each Ref_Tgt#Txt and enter a string tag. These tags are intended to match the status indicators on the front panel of the device.
3. Once you type the tag name, if the tag is not already configured in the controller, you have to right-click and create a tag.
4. Click the question mark next to Ref_TargetTripText and select or create a String tag to be used for the final alarm message. The Trip Source AOI selects from the Ref_Tgt#Txt strings based on the active trip source and copies that reference string to this target string.
5. For Output parameters, click the question mark next to each Output parameter and select the tag to be used when using RLL. For FBD, add an ORef configured with the appropriate I/O tag and connect the associated output parameter to the ORef.

SEL451TripSource		SEL451
SEL451TripSource	EN2TR118:1:0015.PlantPAx451_CON_RBGGIO1_CO_SPCS002_Oper.ctfVal	0
Out_Reset	EN2TR118:1:0015.PlantPAx451_CON_RBGGIO1_CO_SPCS002_Oper.ctfVal	0
Out_Close	EN2TR118:1:0015.PlantPAx451_CON_RBGGIO1_CO_SPCS003_Oper.ctfVal	0
Out_Open	EN2TR118:1:0016.PlantPAx451_CON_RBGGIO1_CO_SPCS004_Oper.ctfVal	0
Out_EnableGround	EN2TR118:1:0016.PlantPAx451_CON_RBGGIO1_CO_SPCS005_Oper.ctfVal	1
Out_EnableReclose	EN2TR118:1:0016.PlantPAx451_CON_RBGGIO1_CO_SPCS006_Oper.ctfVal	1
Out_EnableRemote	EN2TR118:1:0016.PlantPAx451_CON_RBGGIO1_CO_SPCS007_Oper.ctfVal	1
Out_EnableAltSettings	EN2TR118:1:0016.PlantPAx451_CON_RBGGIO1_CO_SPCS008_Oper.ctfVal	1
Out_EnableHotLineTag	NotUsed	0
Out_EnableBayDisplay	NotUsed	0
Ref_PlantPAx451	PlantPAx451	
Ref_TargetTripText	SEL451AlarmText	
Ref_Tgt3Txt	Instantaneous	
Ref_Tgt4Txt	Time	
Ref_Tgt5Txt	Communications	
Ref_Tgt6Txt	SwitchOntoFault	
Ref_Tgt7Txt	NegSeq	
Ref_Tgt8Txt	TargetLED8	

Using Visualization Files

See [Visualization Files on page 13](#) for detailed information.

Faceplates

The Operator tab is displayed when the faceplate is initially opened. Click the appropriate icon on the left of the faceplate to access a specific tab.

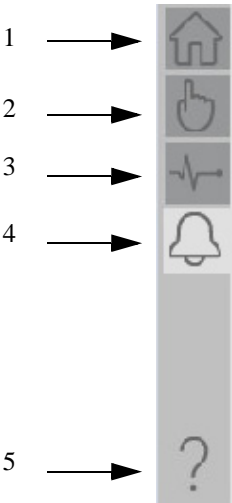


Table 33 - Tab Descriptions

Item	Description
1	Operator tab
2	Manual Control tab
3	Diagnostics tab
4	Alarms tab
5	Help

The faceplate provides the means for operators, maintenance workers, engineers, and others to interact with the instruction instance. This interaction provides a view of the status and values of the instruction instance and an ability to manipulate it through its commands and settings.

Operator Tab

The Faceplate initially opens to the Operator tab, sometimes called the Home tab. From here, an operator can monitor the device status and manually operate the device.

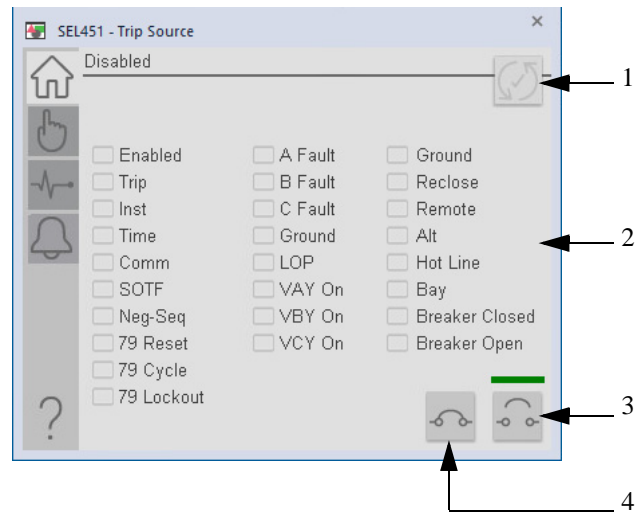
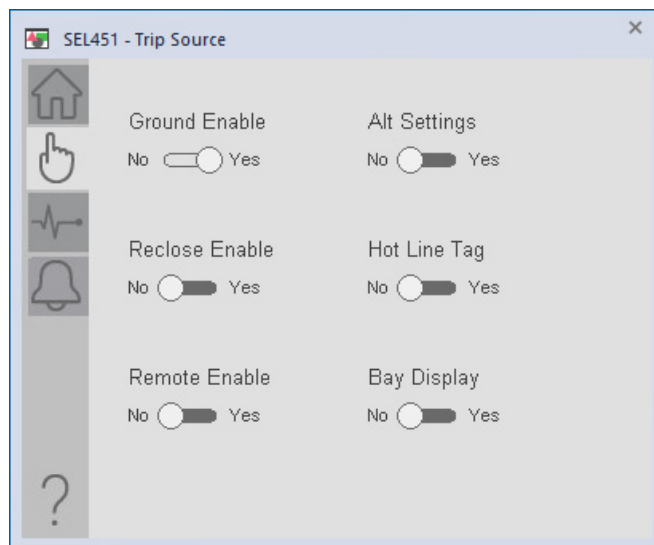


Table 34 - Operator Tab Description

Item	Description
1	Click to reset the device. The status of the device is indicated on the faceplate.
2	Status Indicators
3	Click to open the circuit breaker.
4	Click to close the circuit breaker.

Manual Control Tab

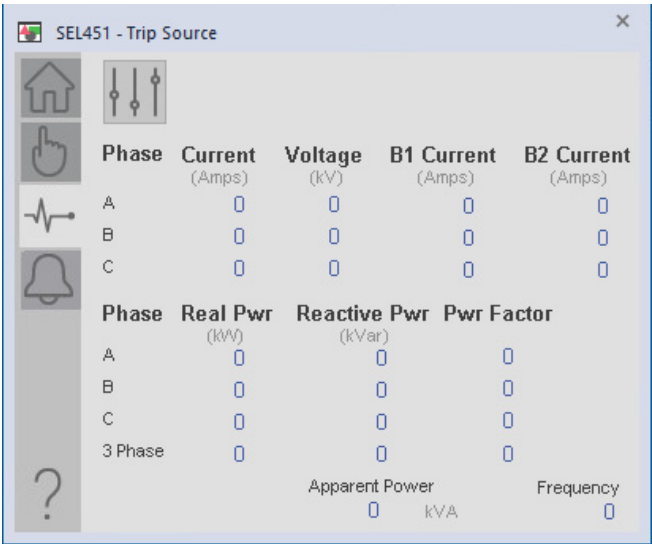


Diagnostics Tab

The diagnostics tab allows the operator to see the measurement values from the physical device.

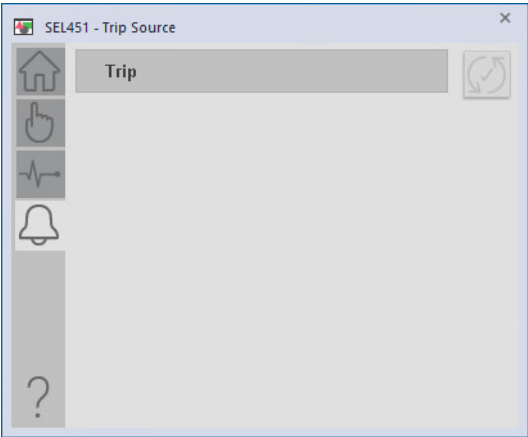
Diagnostics Tab

Readout of the measurement values from the SEL-451.



Alarms

The Alarm tab displays the trip source alarm. The icon on the tab for the alarms page has an outline that changes color to show the current active alarm status.



Advanced Properties


Click the advanced properties icon  on the diagnostics page to display the advanced properties. The following screen capture shows the tabs that are available in the advanced properties display



Table 35 - Advanced Properties Tab Descriptions

Item	Description
1	HMI Configuration
2	Faults
3	Help

HMI Configuration Tab

The HMI configuration tab provides access to displayed text, and faceplate-to-faceplate navigation settings. Configure the description, label, tag, and security area for the device.

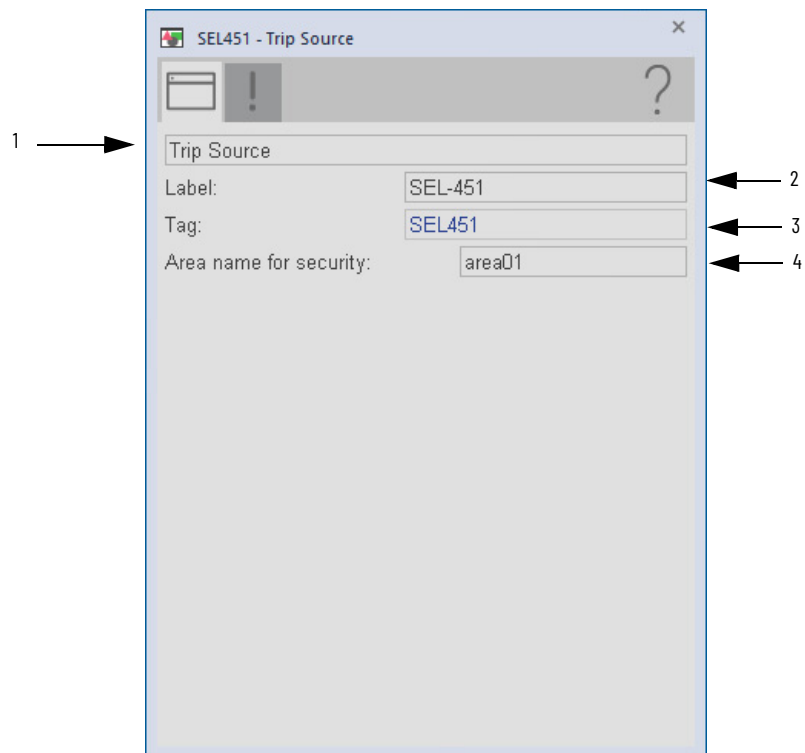


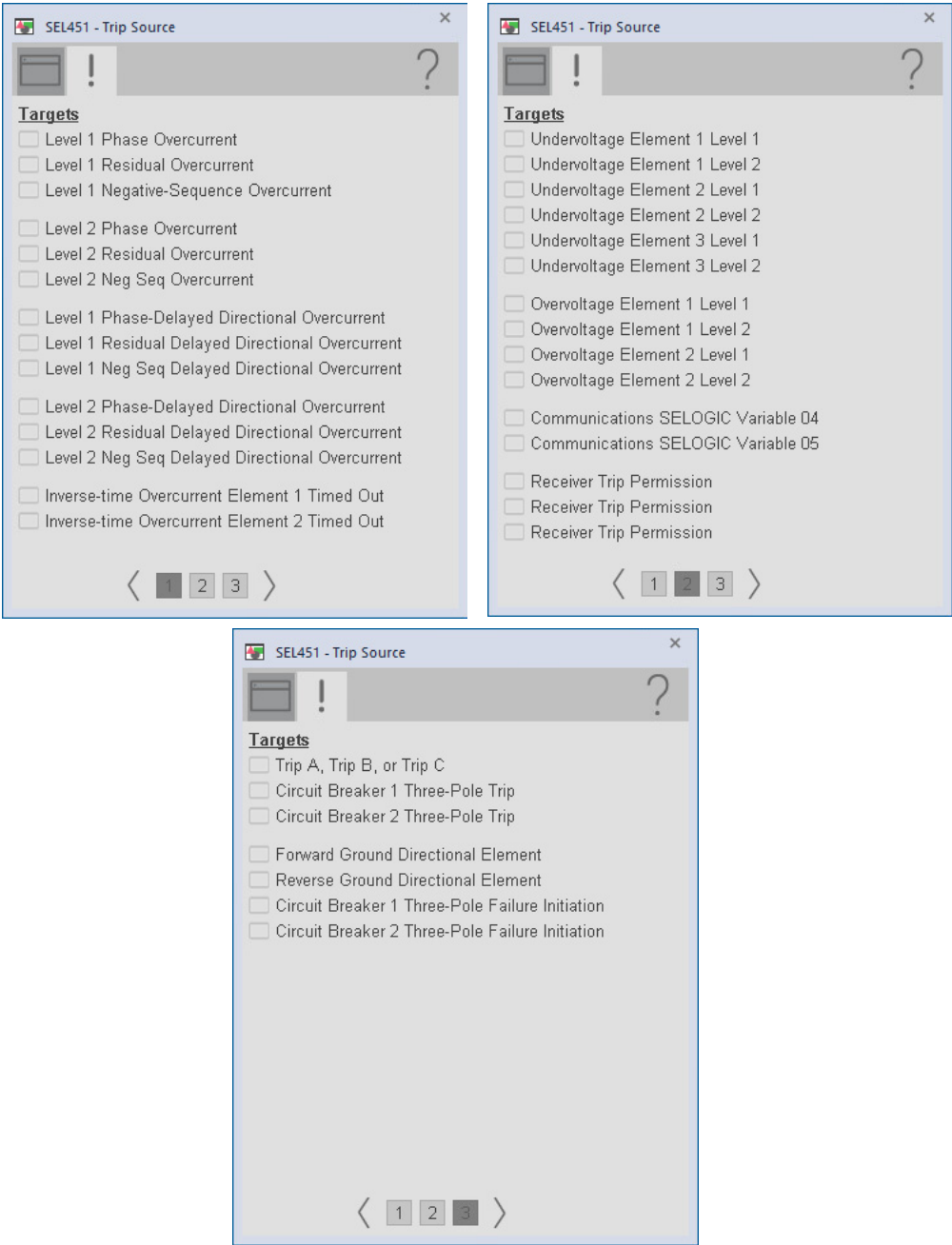
Table 36 - HMI Configuration Tab Description

Item	Action
1	Displays the device description to show on the faceplate title bar as configured for the extended tag property TripSourceA01Tag.@Description

Item	Action
2	The label to show on the graphic symbol as configured for the extended tag property TripSourceAOLTag.@Label.
3	The tag name to show on the faceplate and Tooltip.
4	The Area name for security based on the extended tag property TripSourceAOLTag.@Area.

Faults Tab

The Faults tab shows which alarms are active from the physical device.

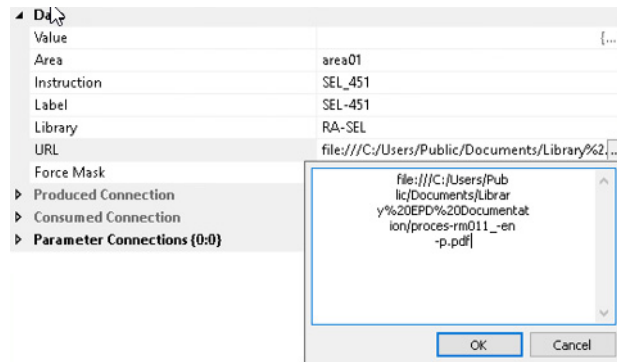


Help Button

Press the help button on the faceplates to access help for the faceplate.

The help file to launch is configurable using the URL extended tag property of the trip source AOI tag.

Note: Individual help files do not currently exist for the 61850 faceplates. The URL can be configured to launch this reference manual (or another reference document) using the following format:



Notes:

SEL 487B Object

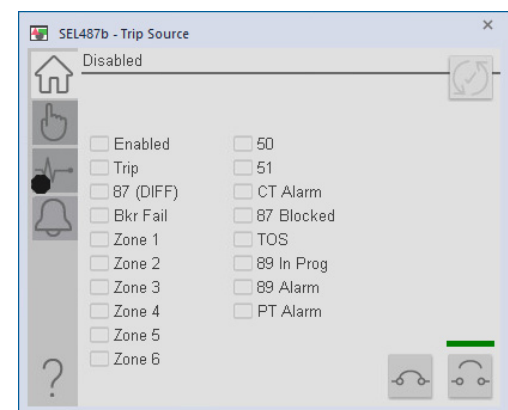
The SEL-487B is a bus differential and breaker failure relay. The SEL-487B provides optimized, low-impedance bus differential fault detection by using high-speed, subcycle protection.

This instruction monitors one SEL487B relay. Alarms are provided when the device experiences a protection-related trip. The instruction also provides capabilities for locking, and to open and close the breaker.

Add-On Instruction

SEL487BTripSource	
SEL487BTripSource	SEL487B
Out_Reset	EN2TR118:1:0017.PlantPax487B_CON_RBGGIO1_CO_SPCSO02_Oper.ctiVal 0
Out_Close	EN2TR118:1:0017.PlantPax487B_CON_RBGGIO1_CO_SPCSO03_Oper.ctiVal 0
Out_Open	EN2TR118:1:0018.PlantPax487B_CON_RBGGIO1_CO_SPCSO04_Oper.ctiVal 0
Out_Enable87Diff	EN2TR118:1:0018.PlantPax487B_CON_RBGGIO1_CO_SPCSO05_Oper.ctiVal 0
Out_EnableBkrFail	EN2TR118:1:0018.PlantPax487B_CON_RBGGIO1_CO_SPCSO06_Oper.ctiVal 1
Out_EnableRelayTestMode	EN2TR118:1:0018.PlantPax487B_CON_RBGGIO1_CO_SPCSO07_Oper.ctiVal 1
Out_Aux1	EN2TR118:1:0018.PlantPax487B_CON_RBGGIO1_CO_SPCSO08_Oper.ctiVal 0
Out_Aux2	NotUsed 0
Out_Aux3	NotUsed 0
Out_Aux4	NotUsed 0
Out_Aux5	NotUsed 0
Ref_PlantPax487B	PlantPax487B
Ref_TargetTripText	SEL487BAlarmText
Ref_Tgt3Txd	Differential
Ref_Tgt4Txd	BreakerFailure
Ref_Tgt5Txd	TargetLED5
Ref_Tgt6Txd	TargetLED6
Ref_Tgt7Txd	TargetLED7
Ref_Tgt8Txd	TargetLED8

Faceplate



Controller Code

Two Add-On Instructions represent each physical device. The first is generated by the ProSoft Configuration Manager and is included in the program import. The second is the TripSource Add-On Instruction, which is available for download from the Rockwell Automation® Library of Electrical Protection Devices from the PCDC.

InOut Structure for Trip Source Add-On Instruction

InOut parameters in [Table 37](#) are used to link the Add-On Instruction to external tags that contain necessary data for the instruction to operate. These external tags must be of the data type shown. These tags are representative of

the tags that are required for each SEL-487B relay, which is configured in your system.

Table 37 - SEL487B Relay

Name	Data Type	Description
Ref_PlantPAxAOI	<Defined by device AOI>	Device Data from the ProSoft Add-On Instruction. This data type changes to match each device tag in the ProSoft Gateway.
Ref_TargetTripText	STRING	Alarm text to be displayed when active.
Ref_Tgt3Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt4Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt5Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt6Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt7Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt8Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.

Remote Bit Control Value Structure

Remote Bit Control Value parameters are used to link the Add-On Instruction to configurable input points in the physical device. Each bit is configurable via the vendor software of each device. The following table has recommended uses for each bit.

Name	Description
CON_RBGGI01_CO_SPCS001_Oper_ctlVal	Lock/Unlock
CON_RBGGI01_CO_SPCS002_Oper_ctlVal	Target Reset
CON_RBGGI01_CO_SPCS003_Oper_ctlVal	Breaker Close
CON_RBGGI01_CO_SPCS004_Oper_ctlVal	Breaker Open
CON_RBGGI01_CO_SPCS005_Oper_ctlVal	87 Diff Enable
CON_RBGGI01_CO_SPCS006_Oper_ctlVal	BKR Fail Enable
CON_RBGGI01_CO_SPCS007_Oper_ctlVal	Relay Test Mode Enabled
CON_RBGGI01_CO_SPCS008_Oper_ctlVal	User Programmable
CON_RBGGI01_CO_SPCS009_Oper_ctlVal	User Programmable
CON_RBGGI01_CO_SPCS010_Oper_ctlVal	User Programmable
CON_RBGGI01_CO_SPCS011_Oper_ctlVal	User Programmable
CON_RBGGI01_CO_SPCS012_Oper_ctlVal	User Programmable

Mapping InOut Tags to Trip Source Add-On Instruction

Configure the SEL487B_TripSource Add-On Instruction.

1. Click the question mark next to Ref_PlantPAx487B and select the tag that was created by the ProSoft Configuration Manager for your device.
2. Click the question mark next to each Ref_Tgt#Txt and enter a string tag. These tags are intended to match the status indicators on the front panel of the device.
3. Once you type the tag name, if the tag is not already configured in the controller, you have to right-click and create a tag.
4. Click the question mark next to Ref_TargetTripText and select or create a String tag to be used for the final alarm message. The Trip Source AOI selects from the Ref_Tgt#Txt strings based on the active trip source and copies that reference string to this target string.
5. For Output parameters, click the question mark next to each Output parameter and select the tag to be used when using RLL. For FBD, add an ORef configured with the appropriate I/O tag and connect the associated output parameter to the ORef.

SEL487BTripSource	
SEL487BTripSource	SEL487B
Out_Reset	EN2TR118:1:0017.PlantPAx487B_CON_RBGGIO1_CO_SPCSO02_Oper.ctiVal 0
Out_Close	EN2TR118:1:0017.PlantPAx487B_CON_RBGGIO1_CO_SPCSO03_Oper.ctiVal 0
Out_Open	EN2TR118:1:0018.PlantPAx487B_CON_RBGGIO1_CO_SPCSO04_Oper.ctiVal 0
Out_Enable87Diff	EN2TR118:1:0018.PlantPAx487B_CON_RBGGIO1_CO_SPCSO05_Oper.ctiVal 0
Out_EnableBkrFail	EN2TR118:1:0018.PlantPAx487B_CON_RBGGIO1_CO_SPCSO06_Oper.ctiVal 1
Out_EnableRelayTestMode	EN2TR118:1:0018.PlantPAx487B_CON_RBGGIO1_CO_SPCSO07_Oper.ctiVal 1
Out_Aux1	EN2TR118:1:0018.PlantPAx487B_CON_RBGGIO1_CO_SPCSO08_Oper.ctiVal 0
Out_Aux2	NotUsed 0
Out_Aux3	NotUsed 0
Out_Aux4	NotUsed 0
Out_Aux5	NotUsed 0
Ref_PlantPAx487B	PlantPAx487B
Ref_TargetTripText	SEL487BAlarmText
Ref_Tgt3Txt	Differential
Ref_Tgt4Txt	BreakerFailure
Ref_Tgt5Txt	TargetLED5
Ref_Tgt6Txt	TargetLED6
Ref_Tgt7Txt	TargetLED7
Ref_Tgt8Txt	TargetLED8

Using Visualization Files

See [Visualization Files on page 13](#) for detailed information.

Faceplates

The Operator tab is displayed when the faceplate is initially opened. Click the appropriate icon on the left of the faceplate to access a specific tab.

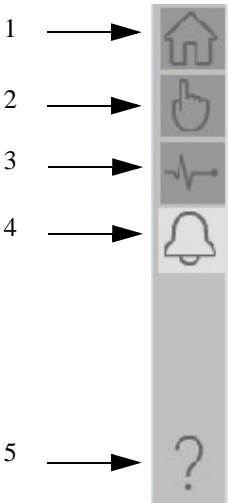


Table 38 - Tab Descriptions

Item	Description
1	Operator tab
2	Manual Control Tab
3	Diagnostics tab
4	Alarms tab
5	Help

The faceplate provides the means for operators, maintenance workers, engineers, and others to interact with the instruction instance. This interaction provides a view of the status and values of the instruction instance and an ability to manipulate it through its commands and settings.

Operator Tab

The Faceplate initially opens to the Operator tab, sometimes called the Home tab. From here, an operator can monitor the device status and manually operate the device.

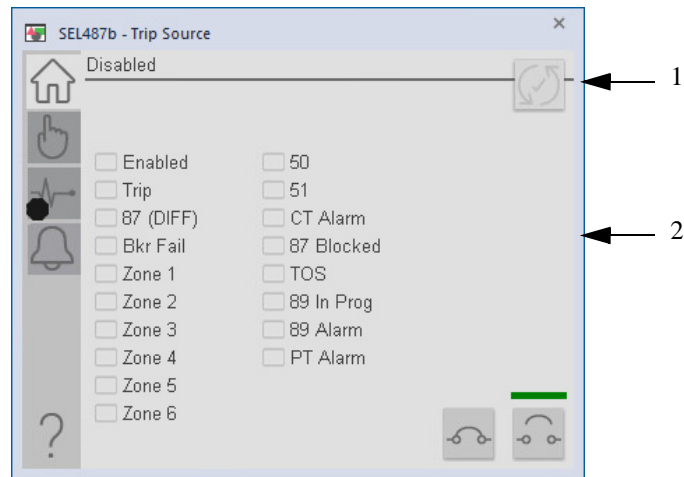
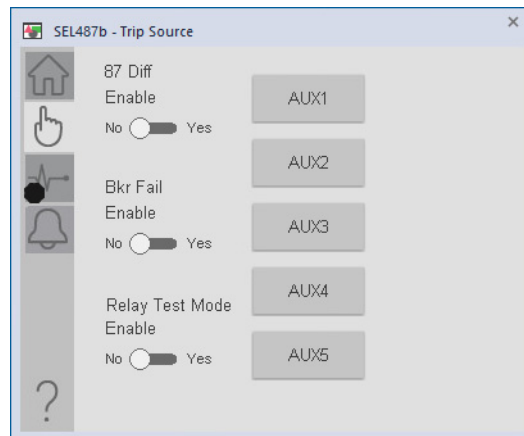


Table 39 - Operator Tab Description

Item	Description
1	Click to reset the device. The status of the device is indicated on the faceplate.
2	Status Indicators

Manual Control Tab

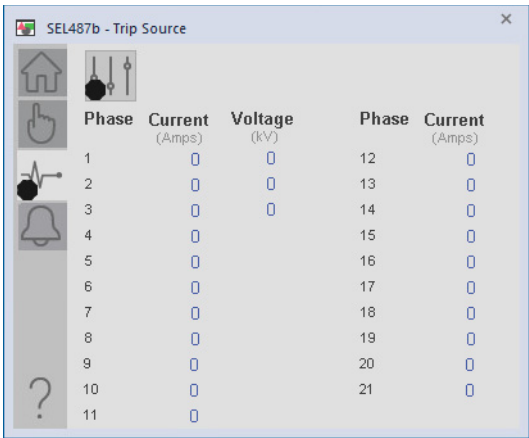


Diagnostics Tab

The diagnostics tab allows the operator to see the measurement values from the device.

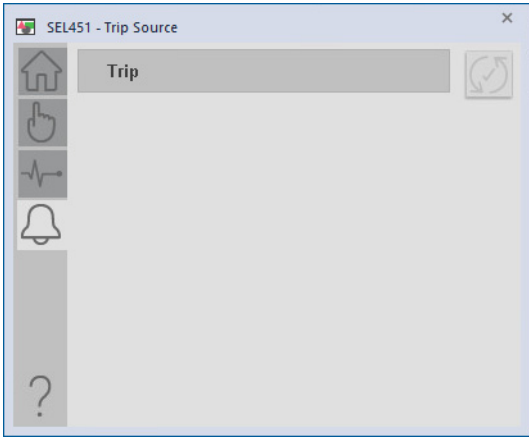
Diagnostics Tab

Readout of the measurement values from the SEL-487B.



Alarms

The Alarm tab displays the trip source alarm. The icon on the tab for the alarms page has an outline that changes color to show the current active alarm status.



Advanced Properties


Click the advanced properties icon  on the diagnostics page to display the advanced properties. The following screen capture shows the tabs that are available in the advanced properties display



Table 40 - Advanced Properties Tab Descriptions

Item	Description
1	HMI Configuration
2	Faults
3	Help

HMI Configuration Tab

The HMI configuration tab provides access to displayed text, and faceplate-to-faceplate navigation settings. Configure the description, label, tag, and security area for the device.

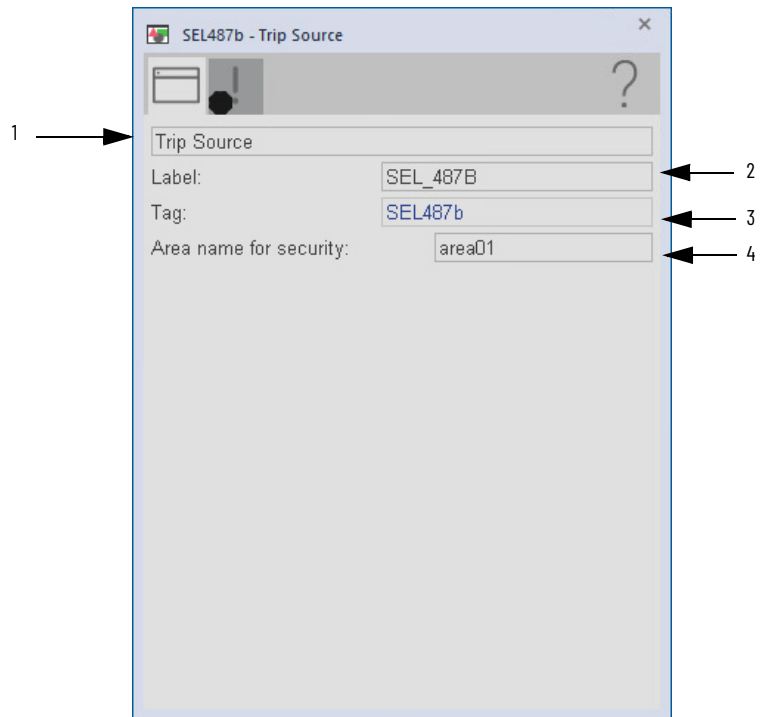
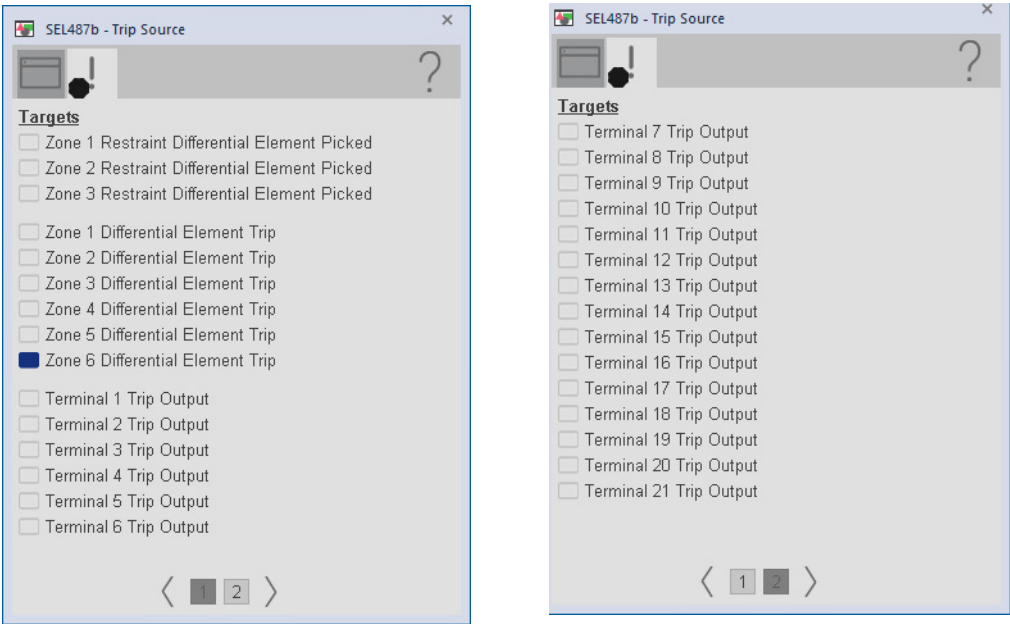


Table 41 - HMI Configuration Tab Description

Item	Action
1	Displays the device description to show on the faceplate title bar as configured for the extended tag property TripSourceA0ITag.@Description
2	The label to show on the graphic symbol as configured for the extended tag property TripSourceA0ITag.@Label.
3	The tag name to show on the faceplate and Tooltip.
4	The Area name for security based on the extended tag property TripSourceA0ITag.@Area.

Faults Tab

The faults tab shows which alarms are active from the device.

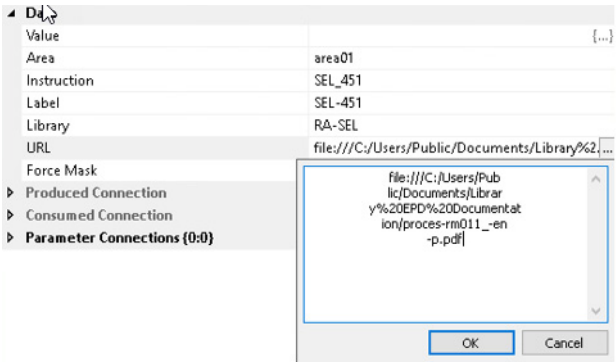


Help Button

Press the help button on the faceplates to access help for the faceplate.

The help file to launch is configurable using the URL extended tag property of the trip source AOI tag.

Note: Individual help files do not currently exist for the 61850 faceplates. The URL can be configured to launch this reference manual (or another reference document) using the following format:



SEL 700G Object



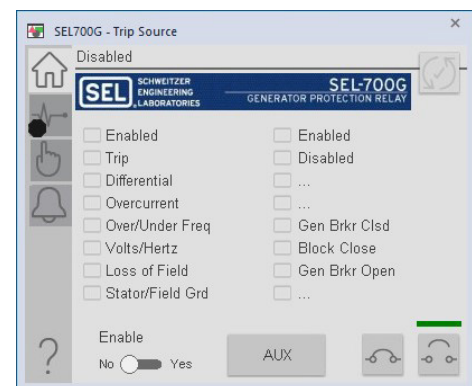
Add-On Instruction

SEL700G TripSource	
SEL700G TripSource	SEL700G
Out_Enable	EN2TR118:1:0012.PlantPAx700G_CON_RBGGIO1_CO_SPCS001_Oper.ctiVal
Out_Reset	EN2TR118:1:0012.PlantPAx700G_CON_RBGGIO1_CO_SPCS002_Oper.ctiVal
Out_Close	EN2TR118:1:0012.PlantPAx700G_CON_RBGGIO1_CO_SPCS003_Oper.ctiVal
Out_Open	EN2TR118:1:0012.PlantPAx700G_CON_RBGGIO1_CO_SPCS004_Oper.ctiVal
Out_Aux0	EN2TR118:1:0013.PlantPAx700G_CON_RBGGIO1_CO_SPCS005_Oper.ctiVal
Out_Sync	EN2TR118:1:0013.PlantPAx700G_CON_RBGGIO1_CO_SPCS006_Oper.ctiVal
Out_FreqSync	EN2TR118:1:0013.PlantPAx700G_CON_RBGGIO1_CO_SPCS007_Oper.ctiVal
Out_VoltSync	EN2TR118:1:0013.PlantPAx700G_CON_RBGGIO1_CO_SPCS008_Oper.ctiVal
Ref_PlantPAx700G	PlantPAx700G
Ref_TargetTripText	SEL700GAlarmText
Ref_Tgt3Txt	Differential
Ref_Tgt4Txt	OverCurrent
Ref_Tgt5Txt	OverUnderFreq
Ref_Tgt6Txt	VoltsHertz
Ref_Tgt7Txt	LossOfField
Ref_Tgt8Txt	StatorFieldGrid

The Schweitzer Engineering Labs (SEL) 700G is a generator protection relay. This device helps protect primary and backup generation. The device can also auto-synchronize when bringing the generator online with the system. The device also provides multiple fundamental metering data including, voltage, current, frequency, power, and so on.

The following instruction monitors one SEL700G relay. Alarms are provided when the device experiences a protection-related trip. The instruction also provides capabilities for locking, and to open and close the breaker. Synchronization control of the device is also permitted through the instruction.

Faceplate



Controller Code

Two Add-On Instructions represent each physical device. The first is generated by the ProSoft Configuration Manager and is included in the program import. The second is the TripSource Add-On Instruction, which is available for download from the Rockwell Automation® Library of Electrical Protection Devices from the PCDC.

InOut Structure for Trip Source Add-On Instruction

InOut parameters in [Table 42](#) are used to link the Add-On Instruction to external tags that contain necessary data for the instruction to operate. These external tags must be of the data type shown. These tags are representative of

the tags that are required for each SEL-700G relay, which is configured in your system.

Table 42 - SEL700G Relay

Name	Data Type	Description
Ref_PlantPAxAOI	<Defined by device AOI>	Device Data from the ProSoft Add-On Instruction. This data type changes to match each device tag in the ProSoft Gateway.
Ref_TargetTripText	STRING	Alarm text to be displayed when active.
Ref_Tgt3Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt4Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt5Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt6Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt7Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt8Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.

Remote Bit Control Value Structure

Remote Bit Control Value parameters are used to link the Add-On Instruction to configurable input points in the physical device. Each bit is configurable via the vendor software of each device. [Table 43](#) has recommended uses for each bit.

Table 43 - Remote Bit Control - SEL700G Relay

Name	Description
CON_RBGGI01_CO_SPCS001_Oper_ctlVal	Lock/Unlock
CON_RBGGI01_CO_SPCS002_Oper_ctlVal	Target Reset
CON_RBGGI01_CO_SPCS003_Oper_ctlVal	Breaker Close
CON_RBGGI01_CO_SPCS004_Oper_ctlVal	Breaker Open
CON_RBGGI01_CO_SPCS005_Oper_ctlVal	AUX
CON_RBGGI01_CO_SPCS006_Oper_ctlVal	Enable SYNC
CON_RBGGI01_CO_SPCS007_Oper_ctlVal	Frequency SYNC
CON_RBGGI01_CO_SPCS008_Oper_ctlVal	Voltage SYNC

IMPORTANT The bits shown in [Table 43](#) are dependent on the use of the IEC 61850 CID files and your gateway is configured as described in [Chapter 2](#). The IEC 61850 CID files are provided on the PCDC. If your application requires additional parameters, use the configuration software of the manufacturer to modify the PCDC CID files.

Mapping InOut Tags to Trip Source Add-On Instruction

Configure the SEL700G_TripSource Add-On Instruction.

1. Click the question mark next to Ref_PlantPAx700G and select the tag that was created by the ProSoft Configuration Manager for your device.
2. Click the question mark next to each Ref_Tgt#Txt and enter a string tag. These tags are intended to match the status indicators on the front panel of the device.
3. Once you type the tag name, if the tag is not already configured in the controller, you have to right-click and create a tag.
4. Click the question mark next to Ref_TargetTripText and select or create a String tag to be used for the final alarm message. The Trip Source AOI selects from the Ref_Tgt#Txt strings based on the active trip source and copies that reference string to this target string.
5. For Output parameters, click the question mark next to each Output parameter and select the tag to be used when using RLL. For FBD, add an ORef configured with the appropriate I/O tag and connect the associated output parameter to the ORef.



Using Visualization Files

See [Visualization Files on page 13](#) for detailed information.

Faceplates

The faceplates for each physical device are contained in the Accessory File that is part of the Rockwell Automation Library of Process Objects. The SEL700G faceplate consists of three tabs and each tab consists of one or more pages.

The Operator tab is displayed when the faceplate is initially opened. Click the appropriate icon on the left of the faceplate to access a specific tab.

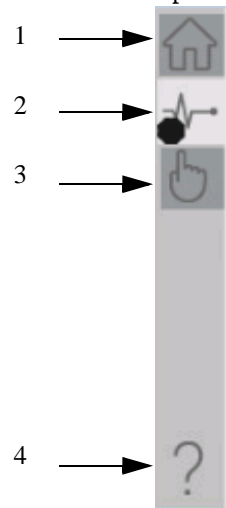


Table 44 - Tab Descriptions

Item	Description
1	Operator tab
2	Diagnostics tab
3	Auto-Sync tab
4	Help

The faceplate provides the means for operators, maintenance workers, engineers, and others to interact with the instruction instance. Here, they can view the status and values of the instruction instance and manipulate it through its commands and settings.

Operator Tab

The Faceplate initially opens to the Operator tab, sometimes called the Home tab. From here, an operator can monitor the device status and manually operate the device.

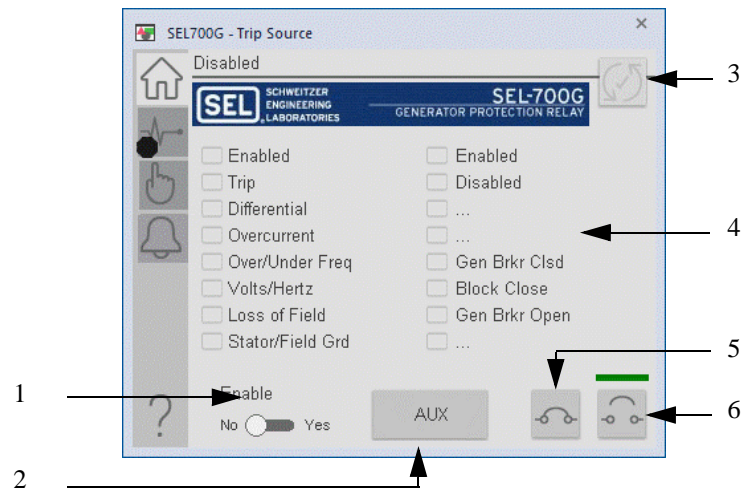


Table 45 - Operator Tab Description

Item	Description
1	Click to enable/disable the device. To issue the commands to the device, enable the device. If the device is disabled, you can only monitor data from the device.
2	Click to toggle the AUX input to the device. This input is configurable in the device vendor software. This button provides a configurable interface to provide a user chosen command.
3	Click to reset the device. The status of the device is indicated on the faceplate.
4	Status Indicators
5	Click to close the circuit breaker.
6	Click to open the circuit breaker.

Automatic-Synchronization Tab

The Automatic-synchronization tab allows the operator to initiate and monitor the status of the device synchronization. You can select the type of synchronization, voltage, or frequency and initiate the process by clicking the Start button.

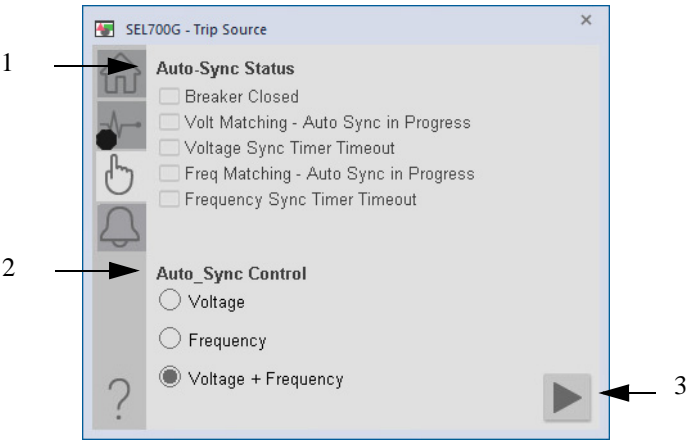


Table 46 - Auto-Sync Tab Description

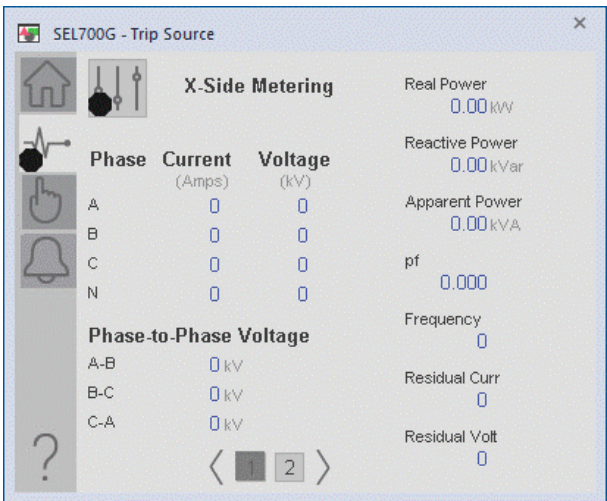
Item	Description
1	Auto-Sync Status
2	Auto-Sync control options
3	Click to initiate Auto-Sync.

Diagnostics Tab

The diagnostics tab allows the operator to see the measurement values from the physical device.

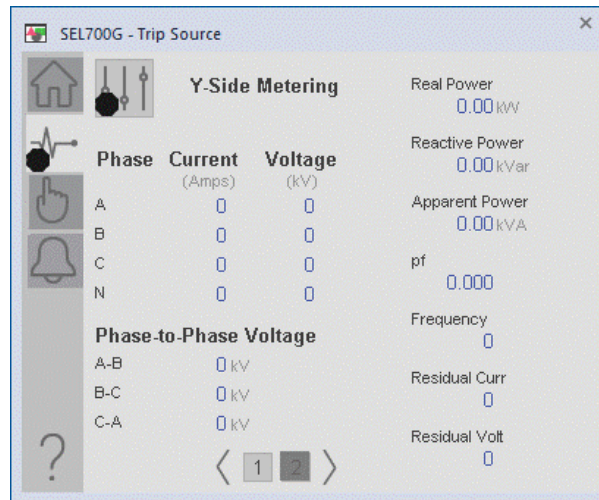
Diagnostics Page 1

Readout of the X-side measurement values from the SEL-700G. This readout displays fundamental metering data that is associated with the X-side of the generator.



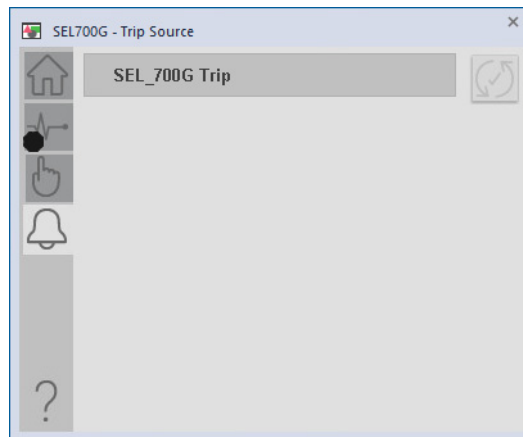
Diagnostics Page 2

Readout of the Y-side measurement values from the SEL-700G. This readout displays fundamental metering data that is associated with the Y-side of the generator.




Alarms

The Alarm tab displays the trip source alarm. The icon on the tab for the alarms page has an outline that changes color to show the current active alarm status.



Advanced Properties

Click the advanced properties icon  on the diagnostics page to display the advanced properties. The following screen capture shows the tabs that are available in the advanced properties display.

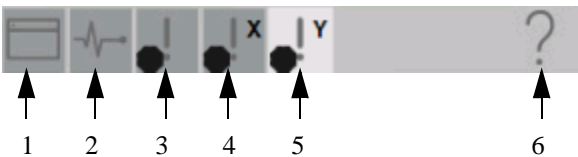


Table 47 - Advanced Properties Tab Descriptions

Item	Description
1	HMI Configuration
2	Diagnostics
3	Faults
4	X-Side Faults
5	Y-Side Faults
6	Help

HMI Configuration Tab

The HMI configuration tab provides access to displayed text, and faceplate-to-faceplate navigation settings. Configure the description, label, tag, and security area for the device.

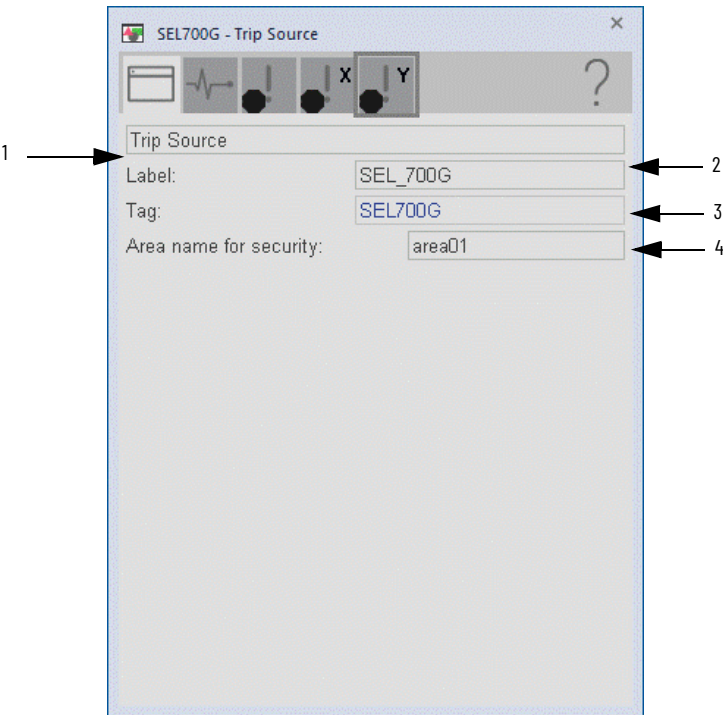
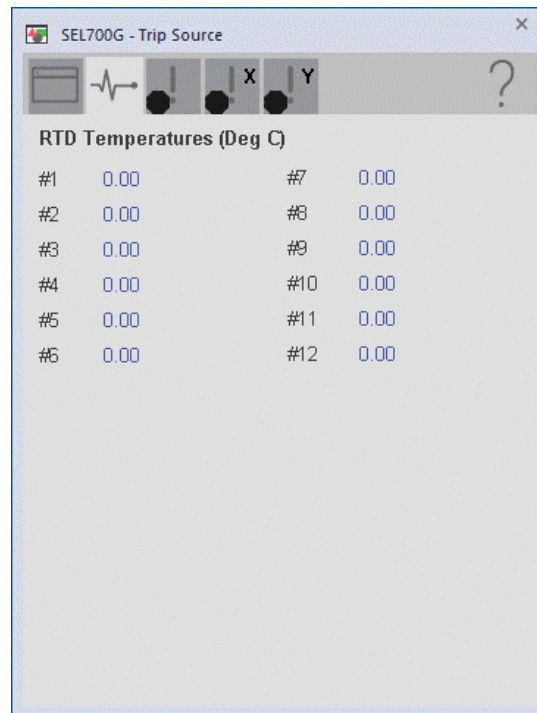


Table 48 - HMI Configuration Tab Description

Item	Action
1	Displays the device description to show on the faceplate title bar as configured for the extended tag property TripSourceA0ITag.@Description
2	The label to show on the graphic symbol as configured for the extended tag property TripSourceA0ITag.@Label.
3	The tag name to show on the faceplate and Tooltip.
4	The Area name for security based on the extended tag property TripSourceA0ITag.@Area.

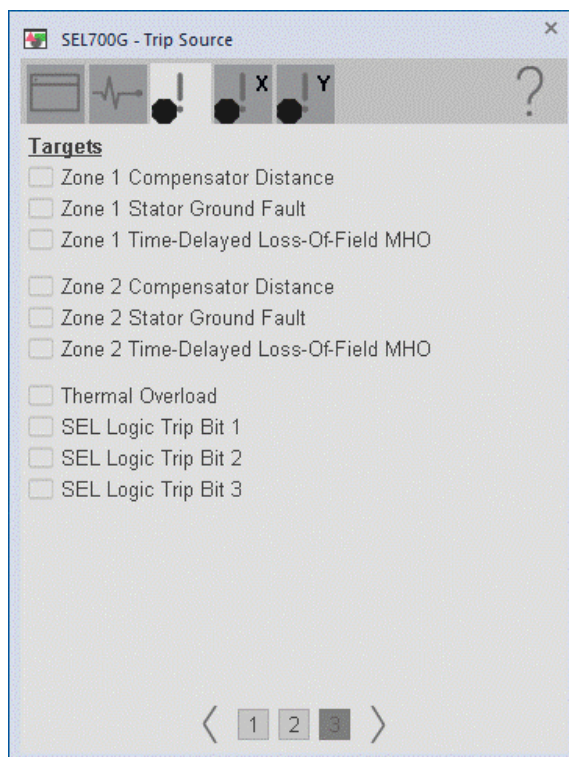
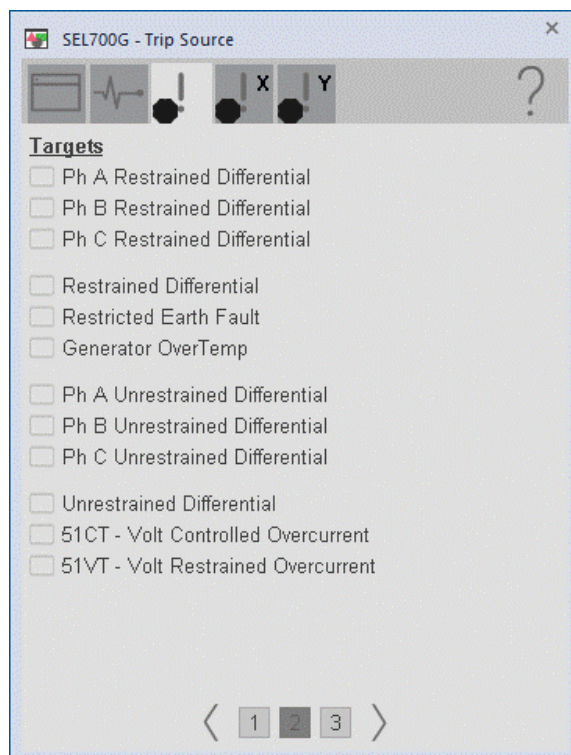
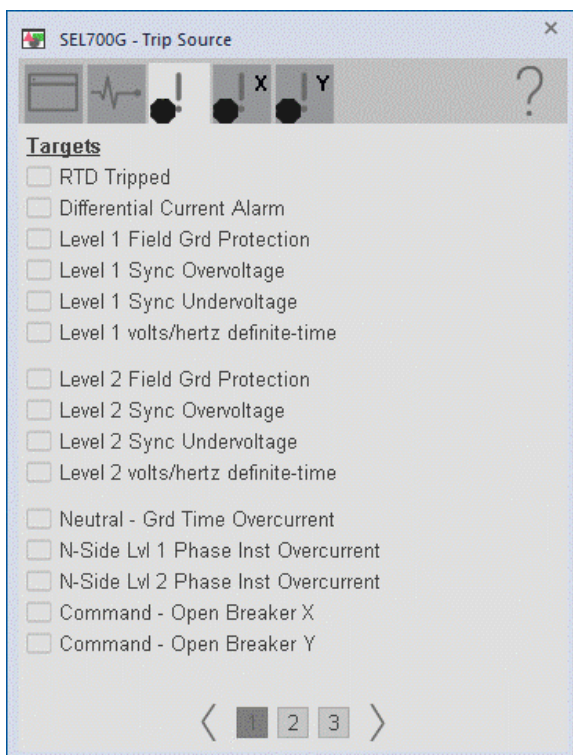
Advanced Diagnostics Tab

This tab provides a readout of the temperatures from the 12 RTD inputs that are available in the SEL-700G.

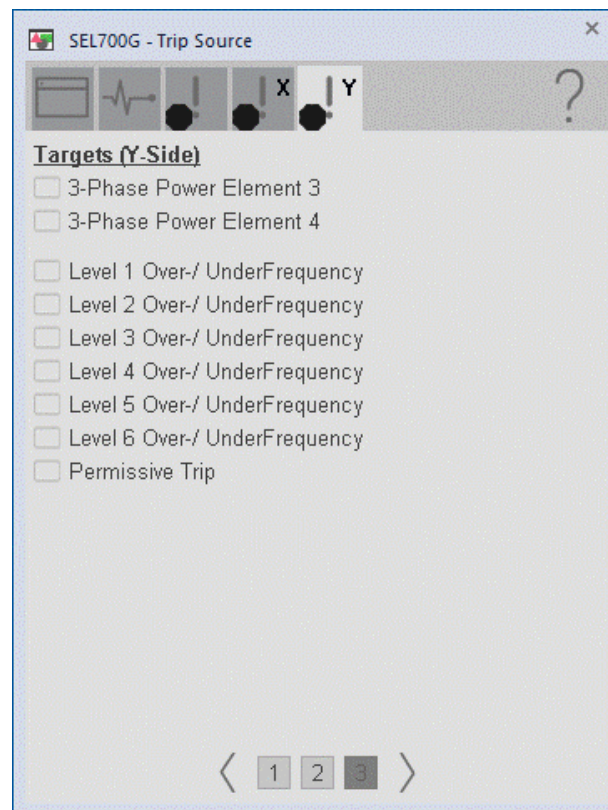
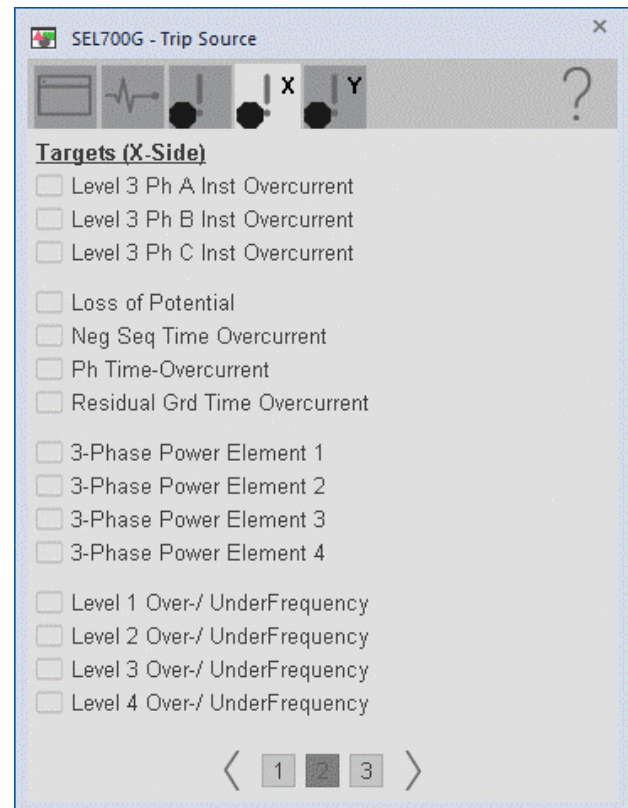
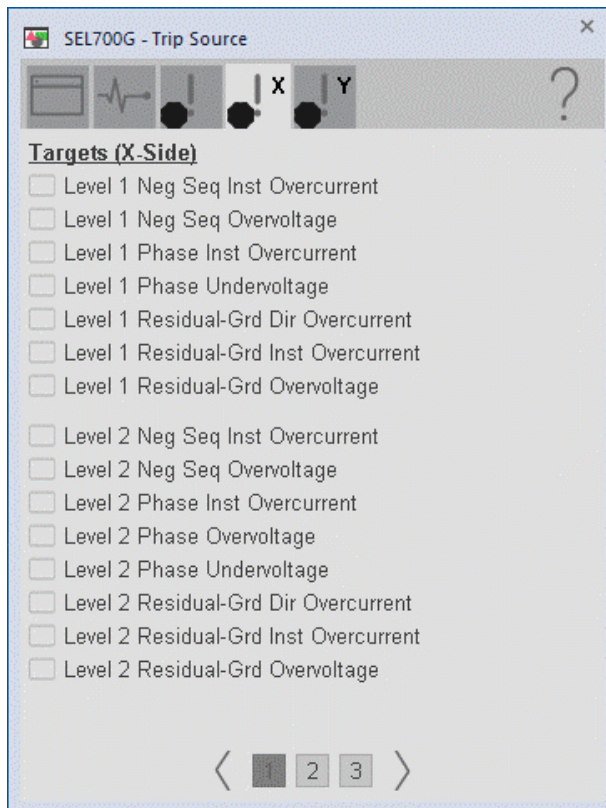


Faults Tab

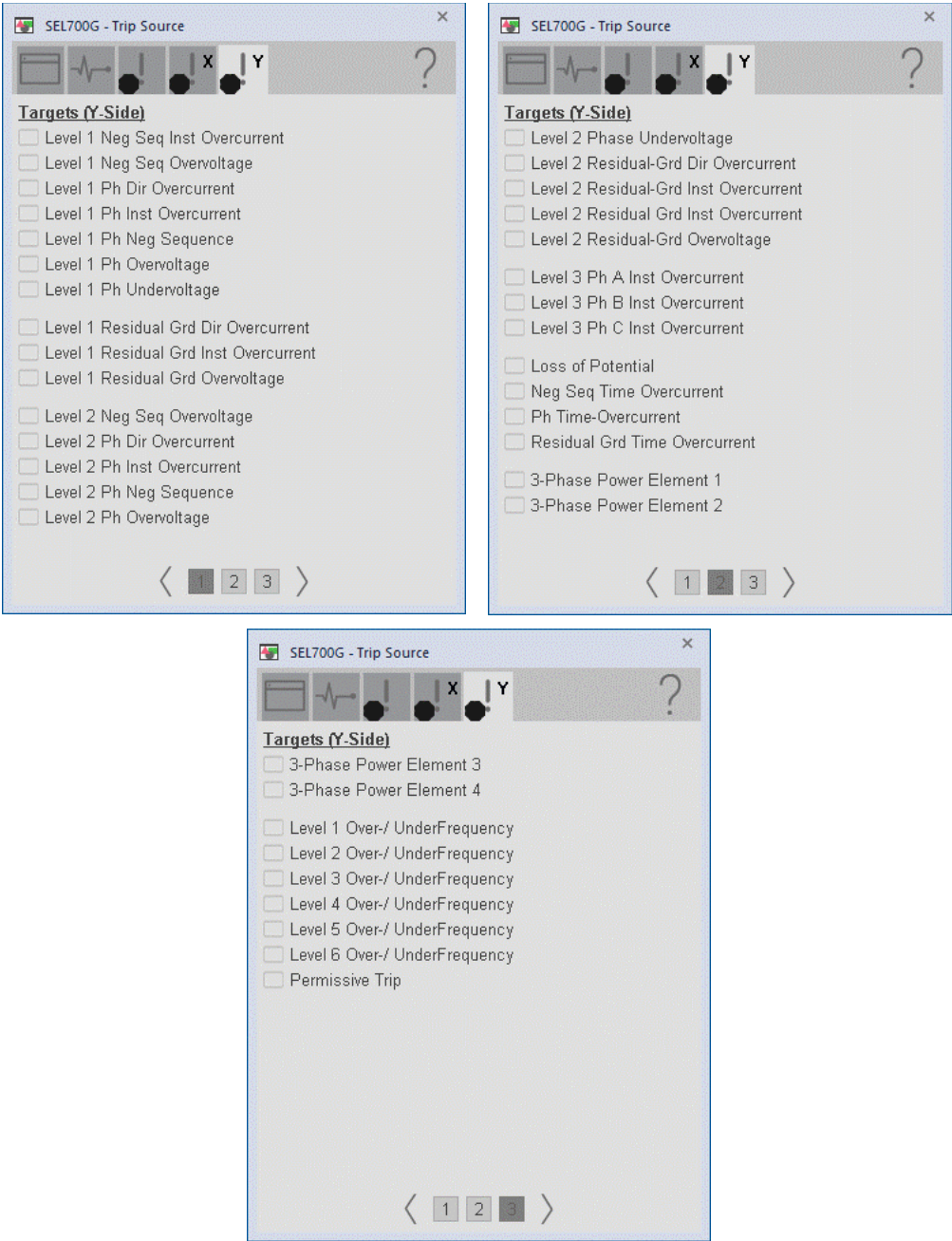
The faults tab shows which alarms are active from the physical device. The first tab shows general faults for the entire generator. There are separate tabs for the X-Side and Y-Side conditions.



X-Side Faults Tab



Y-Side Diagnostic Tab

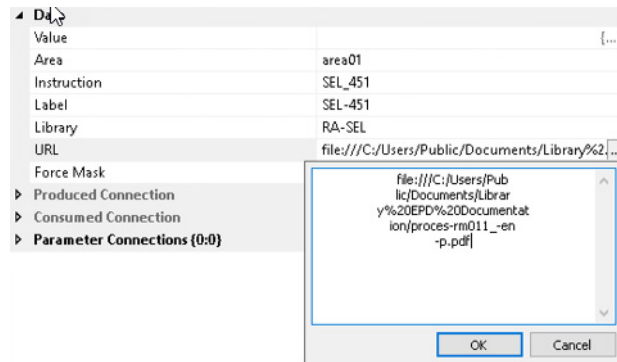


Help Button

Press the help button on the faceplates to access help for the faceplate.

The help file to launch is configurable using the URL extended tag property of the trip source AOI tag.

Note: Individual help files do not currently exist for the 61850 faceplates. The URL can be configured to launch this reference manual (or another reference document) using the following format:



Notes:

SEL 710 Object



Add-On Instruction

The Schweitzer Engineering Labs 710 / 710d5 is a motor protection relay. This device helps protect rotating load assets within the system. It is equipped with a thermal model and metering data that allows a configurable starting sequence of the motor. The device also provides multiple fundamental metering data including, voltage, current, frequency, power, and so on. The SEL 710d5 model version is equipped with synchronous machine protection capabilities.

The following instruction monitors one SEL710 relay. Alarms are provided when the device experiences a protection-related trip. The instruction also provides capabilities for starting and stopping the motor and two auxiliary inputs.

Faceplate



Controller Code

Two Add-On Instructions represent each physical device. The first is generated by the ProSoft Configuration Manager and is included in the program import. The second is the TripSource Add-On Instruction, which is available for download from the Rockwell Automation® Library of Electrical Protection Devices from the PCDC.

InOut Structure for Trip Source Add-On Instruction

InOut parameters in [Table 49](#) are used to link the Add-On Instruction to external tags that contain necessary data for the instruction to operate. These external tags must be of the data type shown. These tags are representative of

the tags that are required for each SEL-710 relay, which is configured in your system.

Table 49 - SEL710 Relay

Name	Data Type	Description
Ref_PlantPAxAOI	<Defined by device AOI>	Device Data from the ProSoft Add-On Instruction. This data type changes to match each device tag in the ProSoft Gateway.
Ref_TargetTripText	STRING	Alarm text to be displayed when active.
Ref_Tgt3Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt4Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt5Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt6Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt7Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt8Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.

Remote Bit Control Value Structure

Remote Bit Control Value parameters are used to link the Add-On Instruction to configurable input points in the physical device. Each bit is configurable via the vendor software of each device. [Table 50](#) has recommended uses for each bit.

Table 50 - Remote Bit Control - SEL710 Relay

Name	Description
CON_RBGGI01_CO_SPCS001_Oper_ctlVal	Lock/Unlock
CON_RBGGI01_CO_SPCS002_Oper_ctlVal	Target Reset
CON_RBGGI01_CO_SPCS003_Oper_ctlVal	Motor Start
CON_RBGGI01_CO_SPCS004_Oper_ctlVal	Motor Stop
CON_RBGGI01_CO_SPCS005_Oper_ctlVal	AUX1
CON_RBGGI01_CO_SPCS006_Oper_ctlVal	AUX2
CON_RBGGI01_CO_SPCS007_Oper_ctlVal	Not Used
CON_RBGGI01_CO_SPCS008_Oper_ctlVal	Not Used

Mapping InOut Tags to Trip Source Add-On Instruction

Configure the SEL710_TripSource Add-On Instruction.

1. Click the question mark next to Ref_PlantPAx710 and select the tag that was created by the ProSoft Configuration Manager for your device.
2. Click the question mark next to each Ref_Tgt#Txt and enter a string tag. These tags are intended to match the status indicators on the front panel of the device.
3. Once you type the tag name, if the tag is not already configured in the controller, you have to right-click and create a tag.
4. Click the question mark next to Ref_TargetTripText and select or create a String tag to be used for the final alarm message. The Trip Source AOI selects from the Ref_Tgt#Txt strings based on the active trip source and copies that reference string to this target string.
5. For Output parameters, click the question mark next to each Output parameter and select the tag to be used when using RLL. For FBD, add an ORef configured with the appropriate I/O tag and connect the associated output parameter to the ORef.

SEL710TripSource		SEL710	...
SEL710TripSource			
Out_Reset	EN2TR118:1:0014.PlantPAx710_CON_RBGGIO1_CO_SPCSO02_Oper.ctiVal	0	+
Out_Start	EN2TR118:1:0014.PlantPAx710_CON_RBGGIO1_CO_SPCSO03_Oper.ctiVal	0	+
Out_Stop	EN2TR118:1:0014.PlantPAx710_CON_RBGGIO1_CO_SPCSO04_Oper.ctiVal	0	+
Out_Aux1	EN2TR118:1:0014.PlantPAx710_CON_RBGGIO1_CO_SPCSO05_Oper.ctiVal	0	+
Out_Aux2	EN2TR118:1:0014.PlantPAx710_CON_RBGGIO1_CO_SPCSO06_Oper.ctiVal	0	+
Ref_PlantPAx710		PlantPAx710	
Ref_TargetTripText		SEL710AlarmText	
Ref_Tgt3Txt		ThermalOverload	
Ref_Tgt4Txt		OverCurrent	
Ref_Tgt5Txt		Unbalance	
Ref_Tgt6Txt		LoadLoss	
Ref_Tgt7Txt		OverUnderVoltage	
Ref_Tgt8Txt		Differential	

Using Visualization Files

See [Visualization Files on page 13](#) for detailed information.

Faceplates

The Operator tab is displayed when the faceplate is initially opened. Click the appropriate icon on the left of the faceplate to access a specific tab.

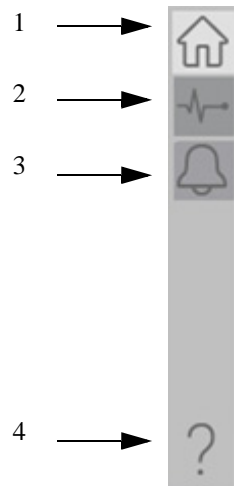


Table 51 - Tab Descriptions

Item	Description
1	Operator tab
2	Diagnostics tab
3	Alarms Tab
4	Help

The faceplate provides the means for operators, maintenance workers, engineers, and others to interact with the instruction instance. This interaction provides a view of the status and values of the instruction instance and an ability to manipulate it through its commands and settings.

Operator Tab

The Faceplate initially opens to the Operator tab, sometimes called the Home tab. From here, an operator can monitor the device status and manually operate the device.

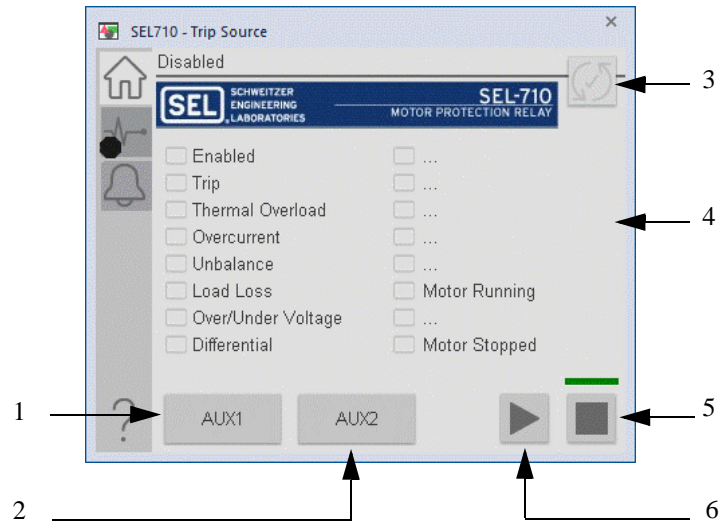


Table 52 - Operator Tab Description

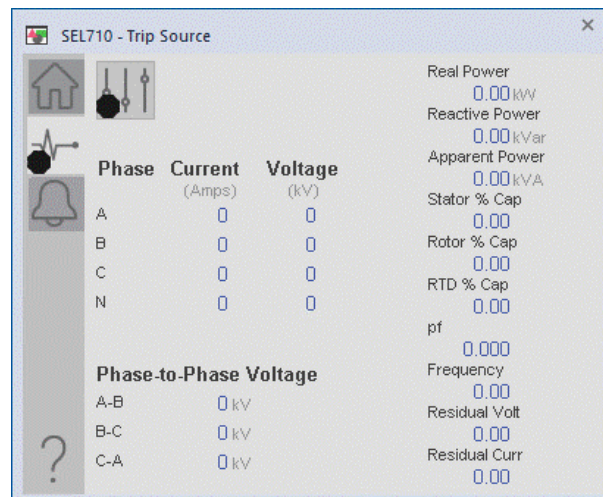
Item	Description
1	Click to toggle the AUX input to the device. This input is configurable in the device vendor software.
2	Click to toggle the AUX input to the device. This input is configurable in the device vendor software.
3	Click to reset the device. The status of the device is indicated on the faceplate.
4	Status Indicators
5	Click to stop the motor.
	Click to start the motor.

Diagnostics Tab

The diagnostics tab allows the operator to see the measurement values from the physical device.

Diagnostics Tab

Readout of measurement values from the SEL-710.



Alarms

The Alarm tab displays the trip source alarm. The icon on the tab for the alarms page has an outline that changes color to show the current active alarm status.

Advanced Properties


Click the advanced properties icon  on the diagnostics page to display the advanced properties. The following screen capture shows the tabs that are available in the advanced properties display



Table 53 - Advanced Properties Tab Descriptions

Item	Description
1	HMI Configuration
2	Diagnostics
3	Faults
4	Help

HMI Configuration Tab

The HMI configuration tab provides access to displayed text, and faceplate-to-faceplate navigation settings. Configure the description, label, tag, and security area for the device.

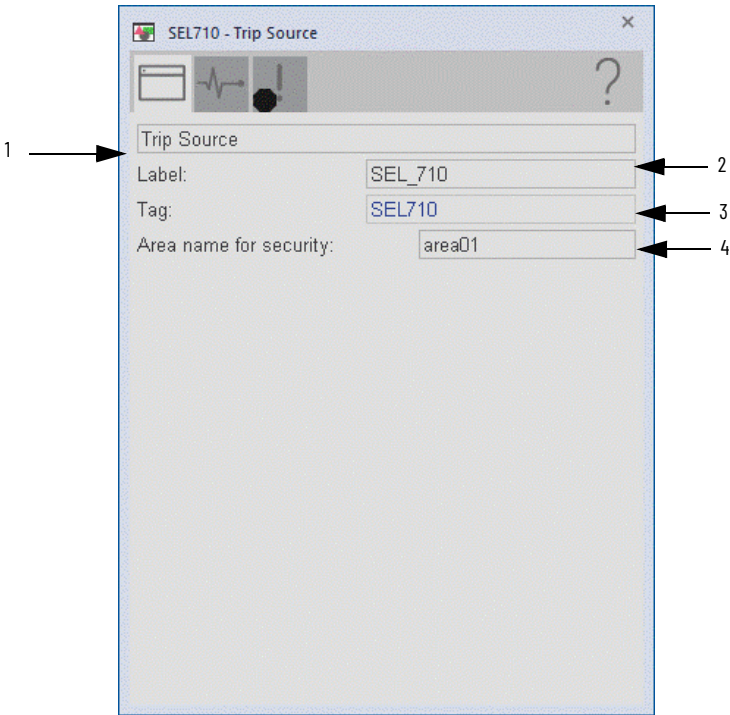
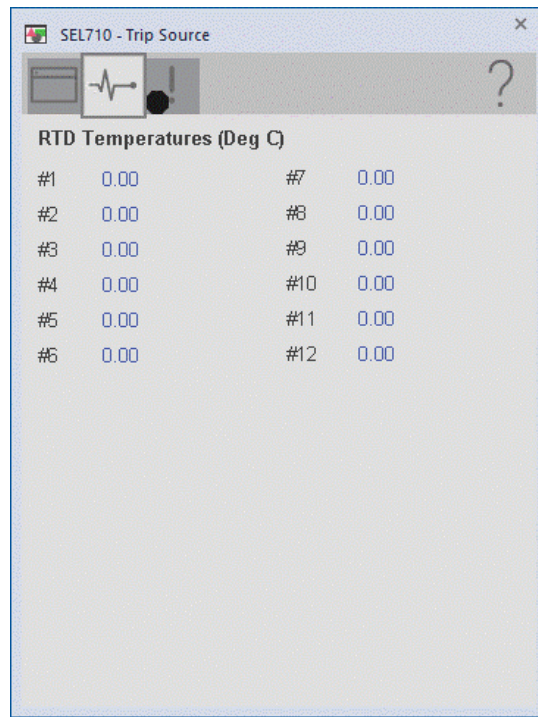


Table 54 - HMI Configuration Tab Description

Item	Action
1	Displays the device description to show on the faceplate title bar as configured for the extended tag property TripSourceA0ITag.@Description
2	The label to show on the graphic symbol as configured for the extended tag property TripSourceA0ITag.@Label.
3	The tag name to show on the faceplate and Tooltip.
4	The Area name for security based on the extended tag property TripSourceA0ITag.@Area.

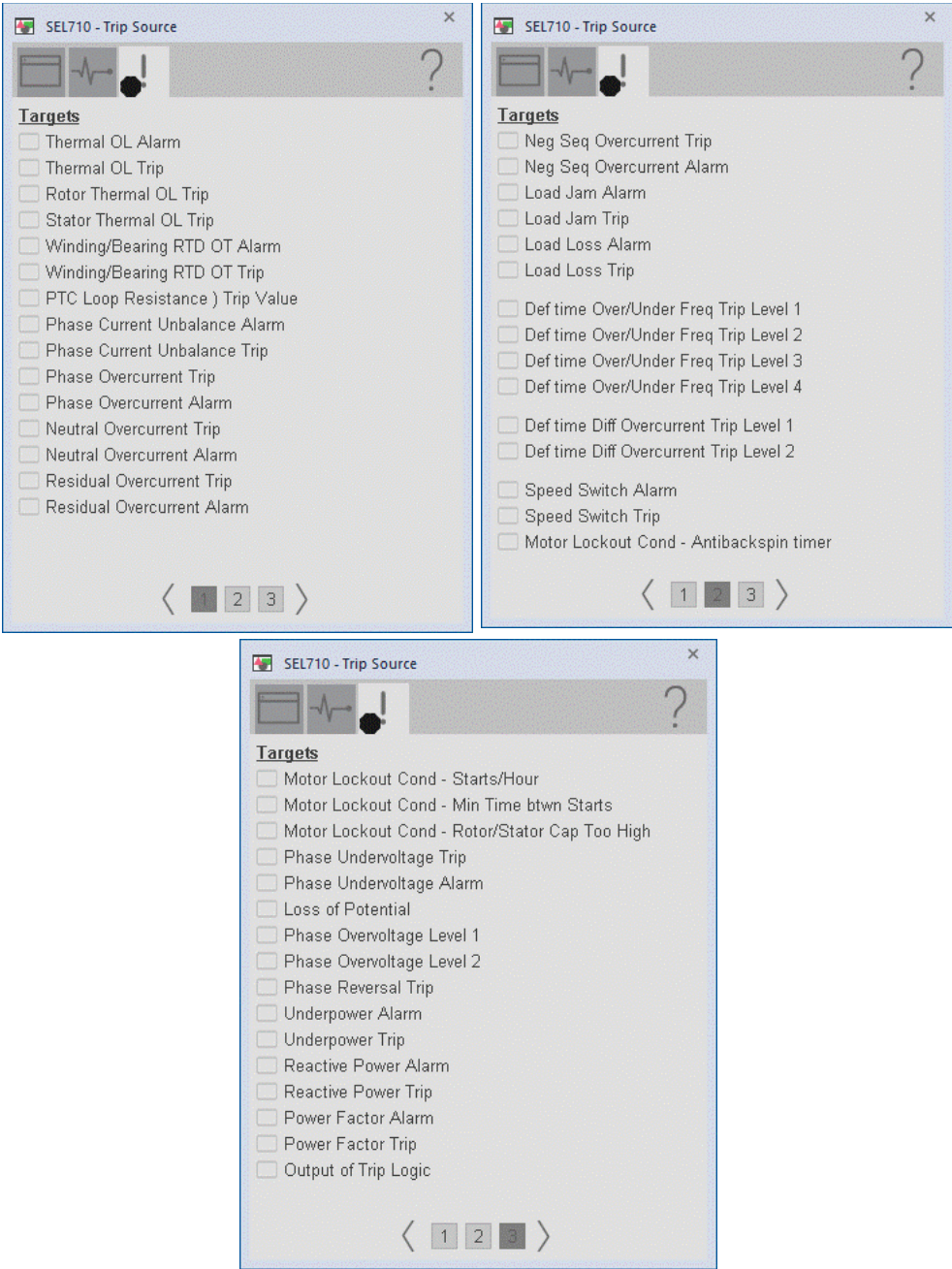
Diagnostics Tab

Readout of the temperatures from the 12 RTD inputs that are available in the SEL-710.



Faults Tab

The faults tab shows which alarms are active from the physical device.

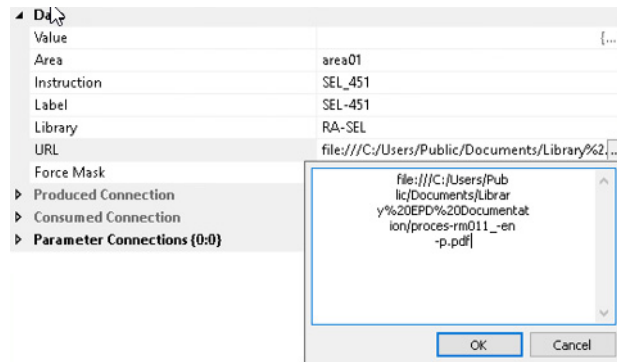


Help Button

Press the help button on the faceplates to access help for the faceplate.

The help file to launch is configurable using the URL extended tag property of the trip source AOI tag.

Note: Individual help files do not currently exist for the 61850 faceplates. The URL can be configured to launch this reference manual (or another reference document) using the following format:



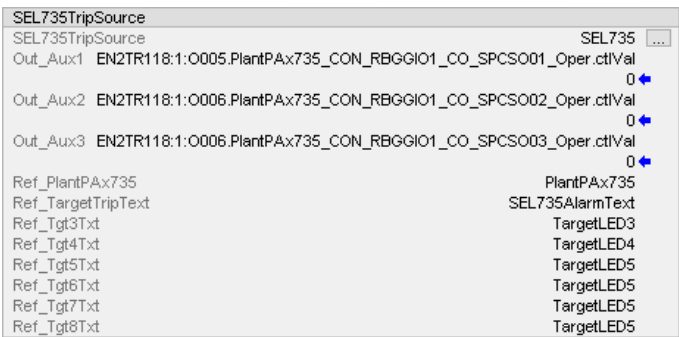
Notes:

SEL 735 Object

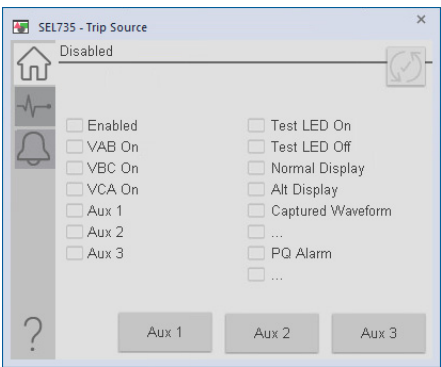
The SEL-735 Power Quality and Revenue Meter is fully Class A-compliant to the IEC 61000-4-30 power quality standard. The meter provides voltage, current, and power quality measures in an easy to utilize fashion.

This instruction monitors one SEL735. Alarms are provided when the device experiences a protection-related trip. The instruction also provides capabilities for locking, and to open and close the breaker.

Add-On Instruction



Faceplate



Controller Code

Two Add-On Instructions represent each physical device. The first is generated by the ProSoft Configuration Manager and is included in the program import. The second is the TripSource Add-On Instruction, which is available for download from the Rockwell Automation® Library of Electrical Protection Devices from the PCDC.

InOut Structure for Trip Source Add-On Instruction

InOut parameters in [Table 55](#) are used to link the Add-On Instruction to external tags that contain necessary data for the instruction to operate. These external tags must be of the data type shown. These tags are representative of the tags that are required for each SEL-735, which is configured in your system.

Table 55 - SEL735 Relay

Name	Data Type	Description
Ref_PlantPaxAOI	<Defined by device AOI>	Device Data from the ProSoft Add-On Instruction. This data type changes to match each device tag in the ProSoft Gateway.
Ref_TargetTripText	STRING	Alarm text to be displayed when active.
Ref_Tgt3Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt4Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.

Table 55 - SEL735 Relay

Name	Data Type	Description
Ref_Tgt5Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt6Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt7Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt8Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.

Remote Bit Control Value Structure

Remote Bit Control Value parameters are used to link the Add-On Instruction to configurable input points in the physical device. Each bit is configurable via the vendor software of each device. [Table 56](#) has recommended uses for each bit.

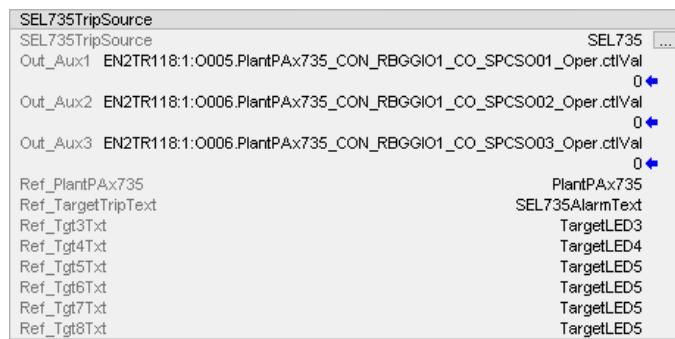
Table 56 - Remote Bit Control - SEL735

Name	Description
CON_RBGGI01_CO_SPCS001_Oper_ctlVal	User Programmable
CON_RBGGI01_CO_SPCS002_Oper_ctlVal	User Programmable
CON_RBGGI01_CO_SPCS003_Oper_ctlVal	User Programmable
CON_RBGGI01_CO_SPCS004_Oper_ctlVal	User Programmable
CON_RBGGI01_CO_SPCS005_Oper_ctlVal	User Programmable
CON_RBGGI01_CO_SPCS006_Oper_ctlVal	User Programmable
CON_RBGGI01_CO_SPCS007_Oper_ctlVal	User Programmable
CON_RBGGI01_CO_SPCS008_Oper_ctlVal	User Programmable

Mapping InOut Tags to Trip Source Add-On Instruction

Configure the SEL735_TripSource Add-On Instruction.

1. Click the question mark next to Ref_PlantPAx735 and select the tag that was created by the ProSoft Configuration Manager for your device.
2. Click the question mark next to each Ref_Tgt#Txt and enter a string tag. These tags are intended to match the status indicators on the front panel of the device.
3. Once you type the tag name, if the tag is not already configured in the controller, you have to right-click and create a tag.
4. Click the question mark next to Ref_TargetTripText and select or create a String tag to be used for the final alarm message. The Trip Source AOI selects from the Ref_Tgt#Txt strings based on the active trip source and copies that reference string to this target string.
5. For Output parameters, click the question mark next to each Output parameter and select the tag to be used when using RLL. For FBD, add an ORef configured with the appropriate I/O tag and connect the associated output parameter to the ORef.



Using Visualization Files

See [Visualization Files on page 13](#) for detailed information.

Faceplates

The Operator tab is displayed when the faceplate is initially opened. Click the appropriate icon on the left of the faceplate to access a specific tab.

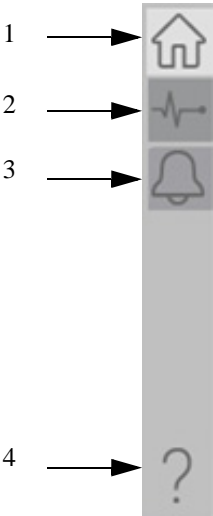


Table 57 - Tab Descriptions

Item	Description
1	Operator tab
2	Diagnostics tab
3	Alarms tab
4	Help

The faceplate provides the means for operators, maintenance workers, engineers, and others to interact with the instruction instance. This interaction provides a view of the status and values of the instruction instance and an ability to manipulate it through its commands and settings.

Operator Tab

The Faceplate initially opens to the Operator tab, sometimes called the Home tab. From here, an operator can monitor the device status and manually operate the device.

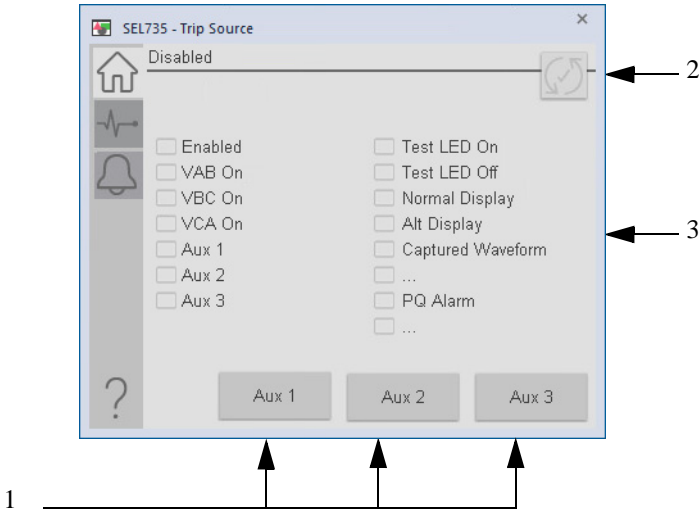


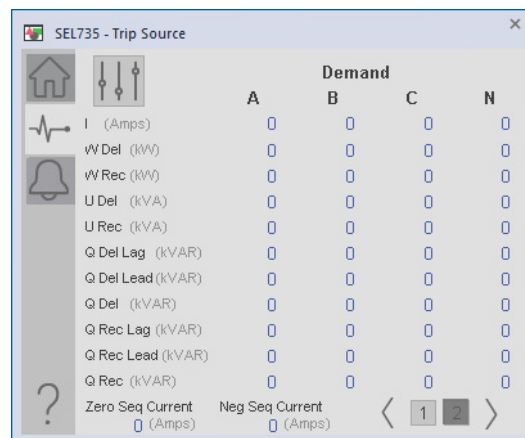
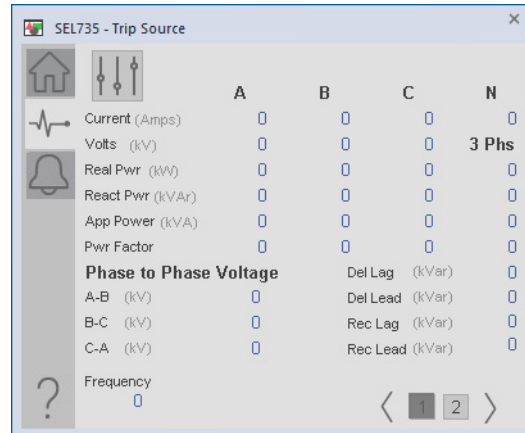
Table 58 - Operator Tab Description

Item	Description
1	Click to toggle the AUX input to the device. This input is configurable in the device vendor software.
2	Click to reset the device. The status of the device is indicated on the faceplate.
3	Status Indicators

Diagnostics Tab

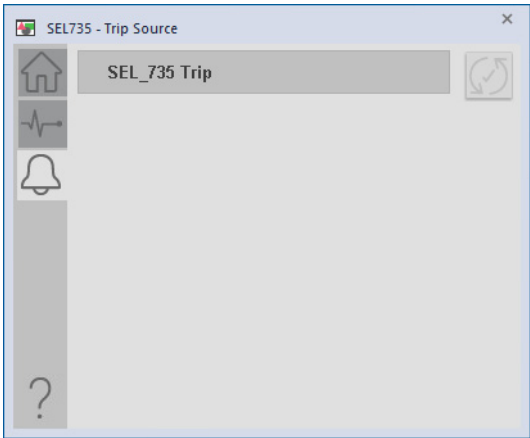
The diagnostics tabs allow the operator to see the measurement values from the physical device.

Readout of the measurement values from the SEL-735.



Alarms

The Alarm tab displays the trip source alarm. The icon on the tab for the alarms page has an outline that changes color to show the current active alarm status.



Advanced Properties


Click the advanced properties icon  on the diagnostics page to display the advanced properties. The following screen capture shows the tabs that are available in the advanced properties display



Table 59 - Advanced Properties Tab Descriptions

Item	Description
1	HMI Configuration
2	Help

HMI Configuration Tab

The HMI configuration tab provides access to displayed text, and faceplate-to-faceplate navigation settings. Configure the description, label, tag, and security area for the device.

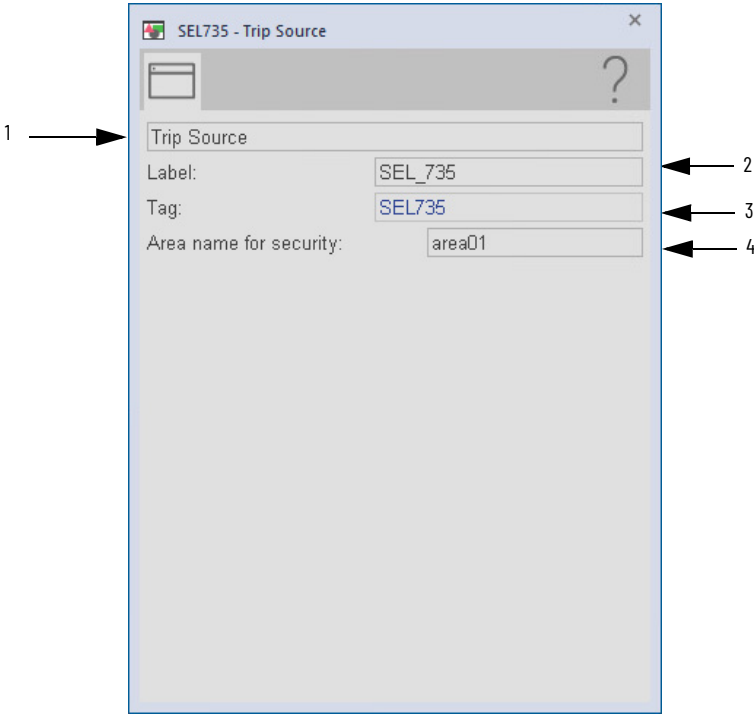


Table 60 - HMI Configuration Tab Description

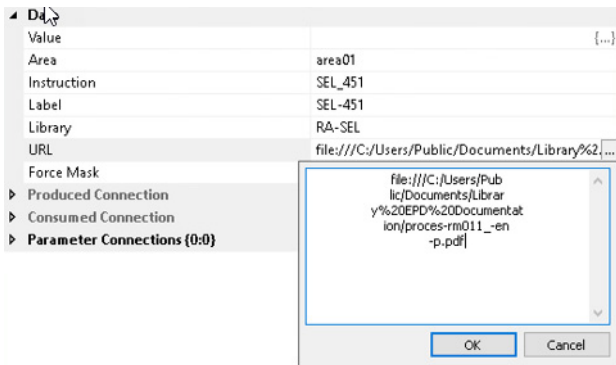
Item	Action
1	Displays the device description to show on the faceplate title bar as configured for the extended tag property TripSourceA0ITag.@Description
2	The label to show on the graphic symbol as configured for the extended tag property TripSourceA0ITag.@Label.
3	The tag name to show on the faceplate and Tooltip.
4	The Area name for security based on the extended tag property TripSourceA0ITag.@Area.

Help Button

Press the help button on the faceplates to access help for the faceplate.

The help file to launch is configurable using the URL extended tag property of the trip source AOI tag.

Note: Individual help files do not currently exist for the 61850 faceplates. The URL can be configured to launch this reference manual (or another reference document) using the following format:



SEL 751 Object

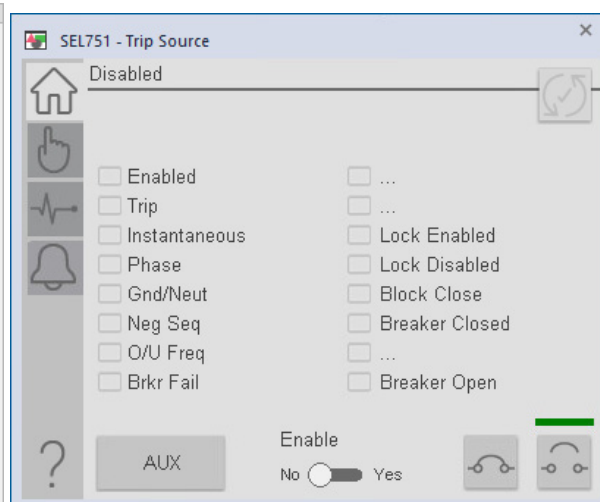
The Schweitzer Engineering Labs 751 is a feeder protection relay. This device is used to help protect an electrical bus from conditions of over current, over voltage, under voltage, and so on. The device also provides multiple fundamental metering data including, voltage, current, frequency, and power.

This instruction monitors one SEL751 relay. Alarms are provided when the device experiences a protection-related trip. The instruction also provides capabilities for locking, and to open and close the breaker.

Add-On Instruction

Faceplate

SEL751TripSource	
SEL751TripSource	SEL751
Out_Enable	EN2TR118:1:0007.PlantPax751_CON_RBGGIO1_CO_SPCS001_Oper.ctfVal
Out_Reset	EN2TR118:1:0007.PlantPax751_CON_RBGGIO1_CO_SPCS002_Oper.ctfVal
Out_Close	EN2TR118:1:0007.PlantPax751_CON_RBGGIO1_CO_SPCS003_Oper.ctfVal
Out_Open	EN2TR118:1:0008.PlantPax751_CON_RBGGIO1_CO_SPCS004_Oper.ctfVal
Out_Aux0	EN2TR118:1:0008.PlantPax751_CON_RBGGIO1_CO_SPCS005_Oper.ctfVal
Out_Aux1	EN2TR118:1:0008.PlantPax751_CON_RBGGIO1_CO_SPCS006_Oper.ctfVal
Out_Aux2	EN2TR118:1:0008.PlantPax751_CON_RBGGIO1_CO_SPCS007_Oper.ctfVal
Out_Aux3	EN2TR118:1:0008.PlantPax751_CON_RBGGIO1_CO_SPCS008_Oper.ctfVal
Out_Aux4	NotUsed
Ref_PlantPax751	PlantPax751
Ref_TargetTripText	SEL751AlarmText
Ref_Tgt3Txt	Instantaneous
Ref_Tgt4Txt	PhaseOC
Ref_Tgt5Txt	GrdNeutOC
Ref_Tgt6Txt	NegSeq
Ref_Tgt7Txt	OverUnderFreq
Ref_Tgt8Txt	BreakerFailure



Controller Code

Two Add-On Instructions represent each physical device. The first is generated by the ProSoft Configuration Manager and is included in the program import. The second is the TripSource Add-On Instruction, which is available for download from the Rockwell Automation® Library of Electrical Protection Devices from the PCDC.

InOut Structure for Trip Source Add-On Instruction

InOut parameters in [Table 61](#) are used to link the Add-On Instruction to external tags that contain necessary data for the instruction to operate. These external tags must be of the data type shown. These tags are representative of

the tags that are required for each SEL-751 relay, which is configured in your system.

Table 61 - SEL751 Relay

Name	Data Type	Description
Ref_PlantPAxAOI	<Defined by device AOI>	Device Data from the ProSoft Add-On Instruction. This data type changes to match each device tag in the ProSoft Gateway.
Ref_TargetTripText	STRING	Alarm text to be displayed when active.
Ref_Tgt3Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt4Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt5Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt6Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt7Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt8Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.

Remote Bit Control Value Structure

Remote Bit Control Value parameters are used to link the Add-On Instruction to configurable input points in the physical device. Each bit is configurable via the vendor software of each device. [Table 62](#) has recommended uses for each bit.

Table 62 - Remote Bit Control - SEL751 Relay

Name	Description
CON_RBGGI01_CO_SPCS001_Oper_ctlVal	Lock/Unlock
CON_RBGGI01_CO_SPCS002_Oper_ctlVal	Target Reset
CON_RBGGI01_CO_SPCS003_Oper_ctlVal	Breaker Close
CON_RBGGI01_CO_SPCS004_Oper_ctlVal	Breaker Open
CON_RBGGI01_CO_SPCS005_Oper_ctlVal	AUX
CON_RBGGI01_CO_SPCS006_Oper_ctlVal	User Programmable
CON_RBGGI01_CO_SPCS007_Oper_ctlVal	User Programmable
CON_RBGGI01_CO_SPCS008_Oper_ctlVal	User Programmable

Mapping InOut Tags to Trip Source Add-On Instruction

Configure the SEL751_TripSource Add-On Instruction.

1. Click the question mark next to Ref_PlantPAX751 and select the tag that was created by the ProSoft Configuration Manager for your device.
2. Click the question mark next to each Ref_Tgt#Txt and enter a string tag. These tags are intended to match the status indicators on the front panel of the device.
3. Once you type the tag name, if the tag is not already configured in the controller, you have to right-click and create a tag.
4. Click the question mark next to Ref_TargetTripText and select or create a String tag to be used for the final alarm message. The Trip Source AOI selects from the Ref_Tgt#Txt strings based on the active trip source and copies that reference string to this target string.
5. For Output parameters, click the question mark next to each Output parameter and select the tag to be used when using RLL. For FBD, add an ORef configured with the appropriate I/O tag and connect the associated output parameter to the ORef.

SEL751_TripSource	
SEL751_TripSource	SEL751 ...
Out_Enable	EN2TR118:1:0007.PlantPAX751_CON_RBGGIO1_CO_SPCSO01_Oper.ctiVal 1
Out_Reset	EN2TR118:1:0007.PlantPAX751_CON_RBGGIO1_CO_SPCSO02_Oper.ctiVal 0
Out_Close	EN2TR118:1:0007.PlantPAX751_CON_RBGGIO1_CO_SPCSO03_Oper.ctiVal 0
Out_Open	EN2TR118:1:0008.PlantPAX751_CON_RBGGIO1_CO_SPCSO04_Oper.ctiVal 0
Out_Aux0	EN2TR118:1:0008.PlantPAX751_CON_RBGGIO1_CO_SPCSO05_Oper.ctiVal 0
Out_Aux1	EN2TR118:1:0008.PlantPAX751_CON_RBGGIO1_CO_SPCSO06_Oper.ctiVal 0
Out_Aux2	EN2TR118:1:0008.PlantPAX751_CON_RBGGIO1_CO_SPCSO07_Oper.ctiVal 0
Out_Aux3	EN2TR118:1:0008.PlantPAX751_CON_RBGGIO1_CO_SPCSO08_Oper.ctiVal 0
Out_Aux4	NotUsed 0
Ref_PlantPAX751	PlantPAX751
Ref_TargetTripText	SEL751AlarmText
Ref_Tgt3Txt	Instantaneous
Ref_Tgt4Txt	PhaseOC
Ref_Tgt5Txt	GrdNeutOC
Ref_Tgt6Txt	NegSeq
Ref_Tgt7Txt	OverUnderFreq
Ref_Tgt8Txt	BreakerFailure

Using Visualization Files

See [Visualization Files on page 13](#) for detailed information.

Faceplates

The Operator tab is displayed when the faceplate is initially opened. Click the appropriate icon on the left of the faceplate to access a specific tab.

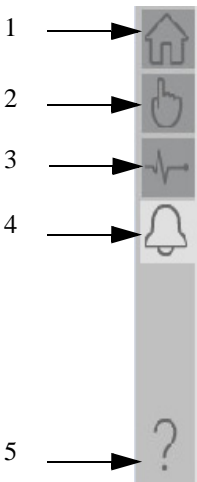


Table 63 - Tab Descriptions

Item	Description
1	Operator tab
2	Manual Control Tab
3	Diagnostics tab
4	Alarms tab
5	Help

The faceplate provides the means for operators, maintenance workers, engineers, and others to interact with the instruction instance. This interaction provides a view of the status and values of the instruction instance and an ability to manipulate it through its commands and settings.

Operator Tab

The Faceplate initially opens to the Operator tab, sometimes called the Home tab. From here, an operator can monitor the device status and manually operate the device.

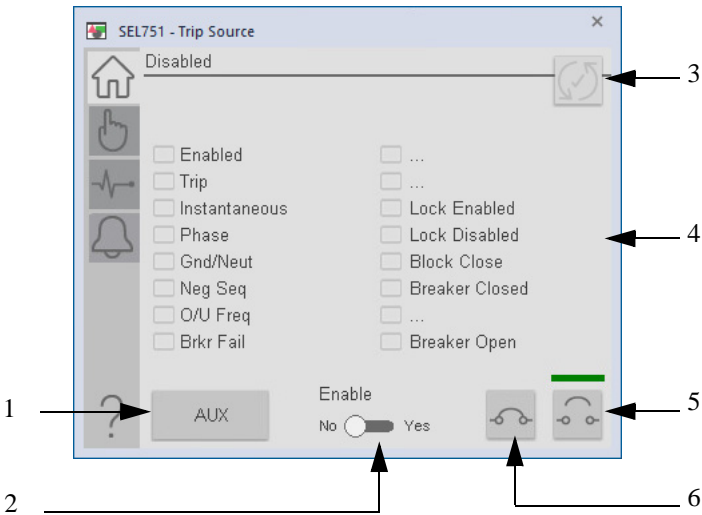
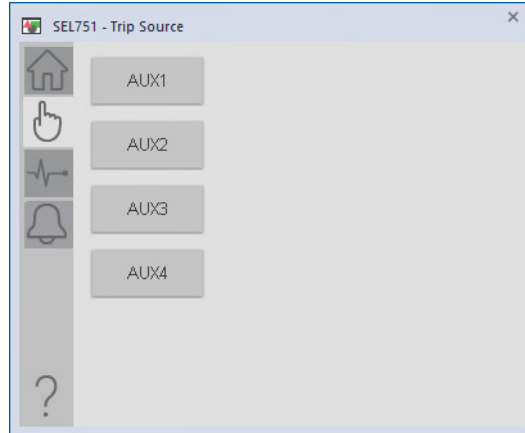


Table 64 - Operator Tab Description

Item	Description
1	Click to toggle the AUX input to the device. This input is configurable in the device vendor software.
2	Click to enable/disable the device. To issue the commands to the device, enable the device. If the device is disabled, you can only monitor data from the device.
3	Click to reset the device. The status of the device is indicated on the faceplate.
4	Status Indicators
5	Click to open the circuit breaker.
6	Click to close the circuit breaker.

Manual Control Tab

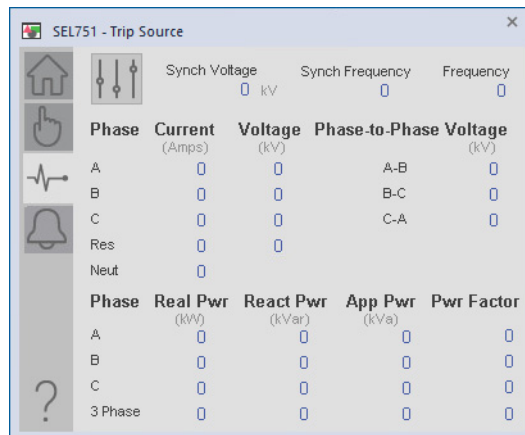


Diagnostics Tab

The diagnostics tab allows the operator to see the measurement values from the physical device.

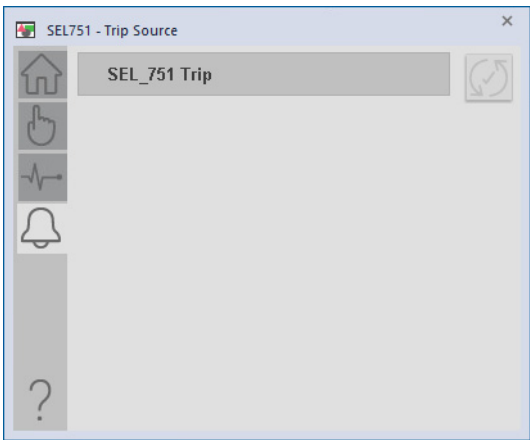
Diagnostics Tab

Readout of the measurement values from the SEL-751.



Alarms

The Alarm tab displays the trip source alarm. The icon on the tab for the alarms page has an outline that changes color to show the current active alarm status.



Advanced Properties


Click the advanced properties icon  on the diagnostics page to display the advanced properties. The following screen capture shows the tabs that are available in the advanced properties display



Table 65 - Advanced Properties Tab Descriptions

Item	Description
1	HMI Configuration
2	Diagnostics
3	Faults
4	Help

HMI Configuration Tab

The HMI configuration tab provides access to displayed text, and faceplate-to-faceplate navigation settings. Configure the description, label, tag, and security area for the device.

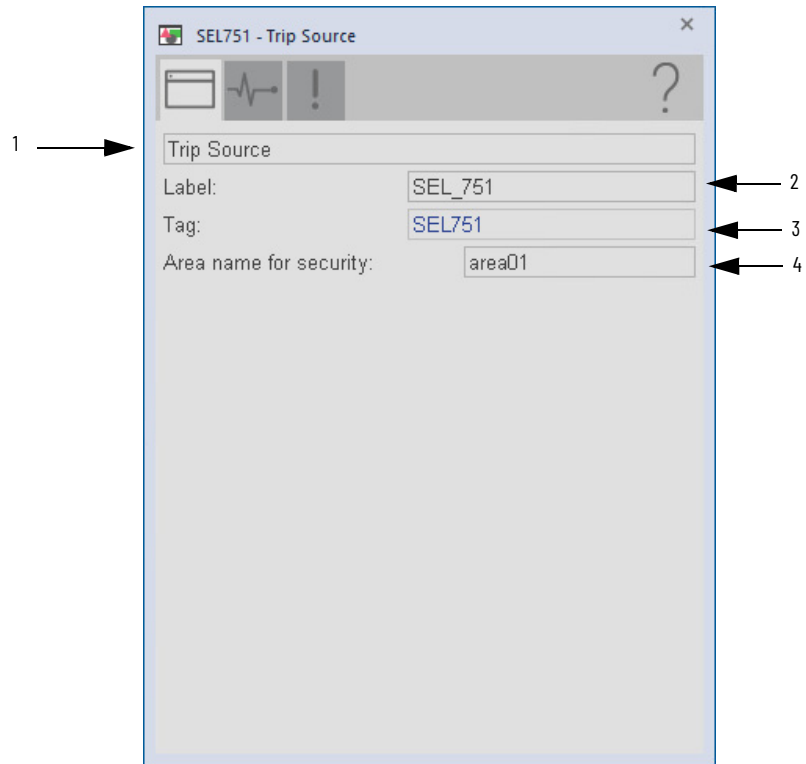
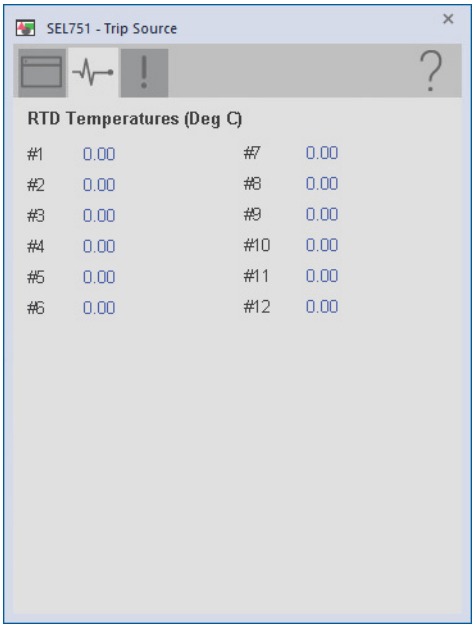


Table 66 - HMI Configuration Tab Description

Item	Action
1	Displays the device description to show on the faceplate title bar as configured for the extended tag property TripSourceA0ITag.@Description
2	The label to show on the graphic symbol as configured for the extended tag property TripSourceA0ITag.@Label.
3	The tag name to show on the faceplate and Tooltip.
4	The Area name for security based on the extended tag property TripSourceA0ITag.@Area.

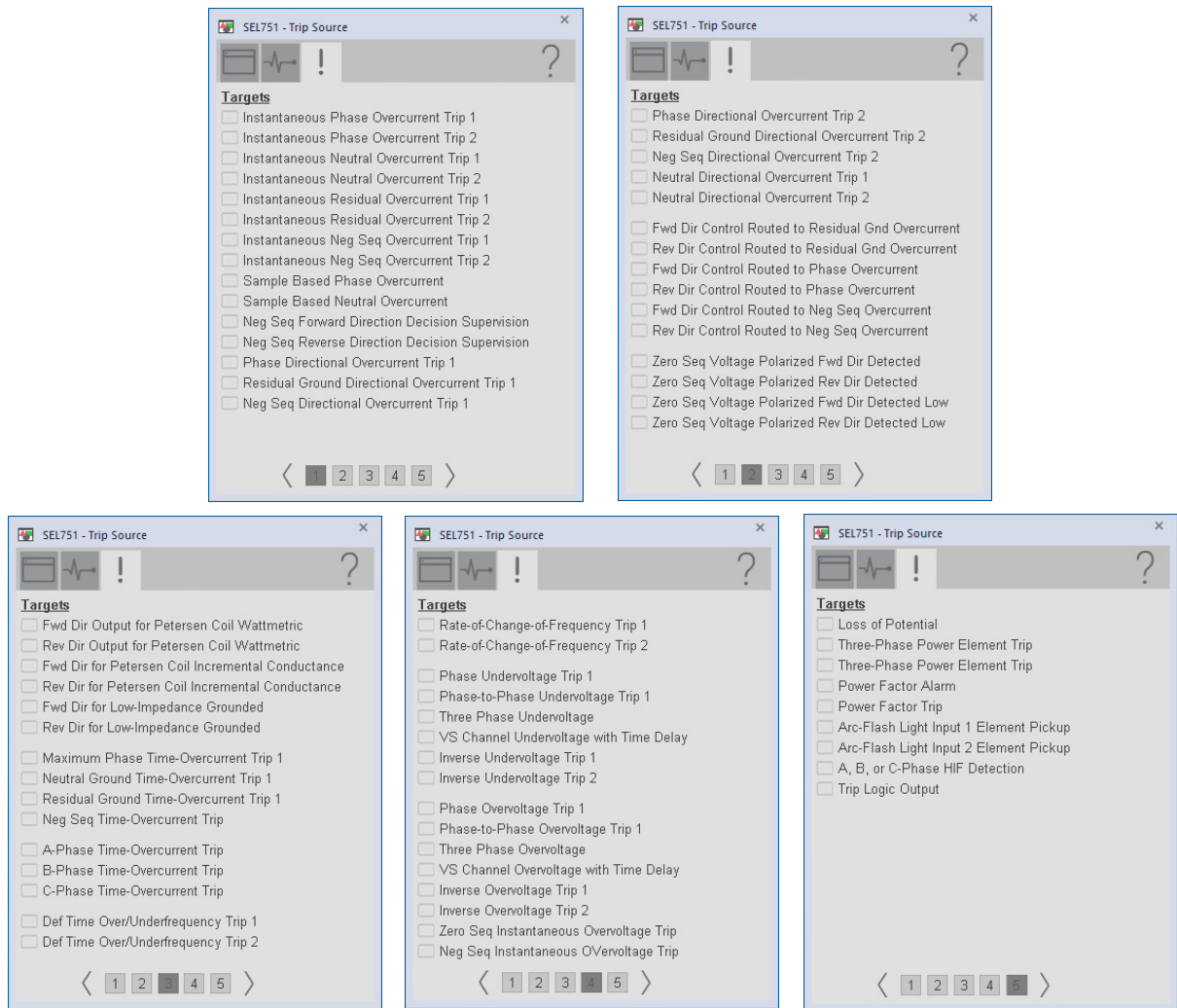
Advanced Diagnostics Tab

Readout of the temperatures from the 12 RTD inputs that are available in the SEL-751.



Faults Tab

The Faults tab shows which alarms are active from the physical device.

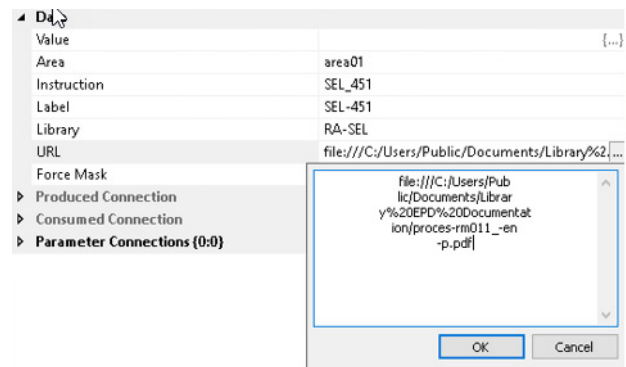


Help Button

Press the help button on the faceplates to access help for the faceplate.

The help file to launch is configurable using the URL extended tag property of the trip source AOI tag.

Note: Individual help files do not currently exist for the 61850 faceplates. The URL can be configured to launch this reference manual (or another reference document) using the following format:



SEL 751A Object

The Schweitzer Engineering Labs 751A is a feeder protection relay with arc flash protection. This device is used to help protect an electrical bus from conditions of over current, over voltage, under voltage, and so on. The device also provides multiple fundamental metering data including, voltage, current, frequency, and power. When retrofitted with RTD capability, the SEL 751A can also provide various temperature measurements at locations on the electrical bus.

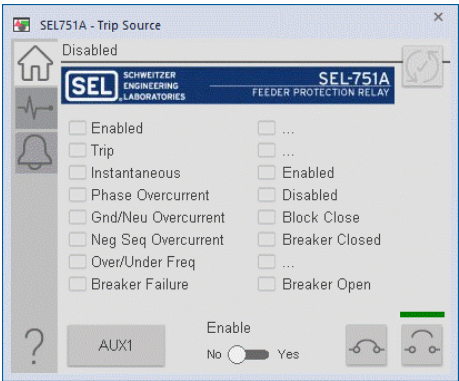
This instruction monitors one SEL751A relay. Alarms are provided when the device experiences a protection-related trip. The instruction also provides capabilities for locking, and to open and close the breaker.



Add-On Instruction

Faceplate

SEL751ATripSource	
SEL751ATripSource	SEL751A
Out_Enable	EN2TR118:1:0009.PlantPAx751A_CON_RBGGIO1_CO_SPCS002_Oper.ctfVal
Out_Reset	EN2TR118:1:0009.PlantPAx751A_CON_RBGGIO1_CO_SPCS002_Oper.ctfVal
Out_Close	EN2TR118:1:0009.PlantPAx751A_CON_RBGGIO1_CO_SPCS003_Oper.ctfVal
Out_Open	EN2TR118:1:0009.PlantPAx751A_CON_RBGGIO1_CO_SPCS004_Oper.ctfVal
Out_Aux1	EN2TR118:1:0009.PlantPAx751A_CON_RBGGIO1_CO_SPCS005_Oper.ctfVal
Ref_PlantPAx751A	PlantPAx751A
Ref_TargetTripText	SEL751AAlarmText
Ref_Tgt3Ttxt	Instantaneous
Ref_Tgt4Ttxt	PhaseOC
Ref_Tgt5Ttxt	GrdNeutOC
Ref_Tgt6Ttxt	NegSeq
Ref_Tgt7Ttxt	OverUnderFreq
Ref_Tgt8Ttxt	BreakerFailure



Controller Code

Two Add-On Instructions represent each physical device. The first is generated by the ProSoft Configuration Manager and is included in the program import. The second is the TripSource Add-On Instruction, which is available for download from the Rockwell Automation® Library of Electrical Protection Devices from the PCDC.

InOut Structure for Trip Source Add-On Instruction

InOut parameters in [Table 67](#) are used to link the Add-On Instruction to external tags that contain necessary data for the instruction to operate. These external tags must be of the data type shown. These tags are representative of

the tags that are required for each SEL-751A relay, which is configured in your system.

Table 67 - SEL751A Relay

Name	Data Type	Description
Ref_PlantPAxAOI	<Defined by device AOI>	Device Data from the ProSoft Add-On Instruction. This data type changes to match each device tag in the ProSoft Gateway.
Ref_TargetTripText	STRING	Alarm text to be displayed when active.
Ref_Tgt3Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt4Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt5Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt6Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt7Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt8Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.

Remote Bit Control Value Structure

Remote Bit Control Value parameters are used to link the Add-On Instruction to configurable input points in the physical device. Each bit is configurable via the vendor software of each device. [Table 68](#) has recommended uses for each bit.

Table 68 - Remote Bit Control - SEL751A Relay

Name	Description
CON_RBGGI01_CO_SPCS001_Oper_ctlVal	Lock/Unlock
CON_RBGGI01_CO_SPCS002_Oper_ctlVal	Target Reset
CON_RBGGI01_CO_SPCS003_Oper_ctlVal	Breaker Close
CON_RBGGI01_CO_SPCS004_Oper_ctlVal	Breaker Open
CON_RBGGI01_CO_SPCS005_Oper_ctlVal	AUX
CON_RBGGI01_CO_SPCS006_Oper_ctlVal	User Programmable
CON_RBGGI01_CO_SPCS007_Oper_ctlVal	User Programmable
CON_RBGGI01_CO_SPCS008_Oper_ctlVal	User Programmable

Mapping InOut Tags to Trip Source Add-On Instruction

Configure the SEL751A_TripSource Add-On Instruction.

1. Click the question mark next to Ref_PlantPAx751A and select the tag that was created by the ProSoft Configuration Manager for your device.
2. Click the question mark next to each Ref_Tgt#Txt and enter a string tag. These tags are intended to match the status indicators on the front panel of the device.
3. Once you type the tag name, if the tag is not already configured in the controller, you have to right-click and create a tag.
4. Click the question mark next to Ref_TargetTripText and select or create a String tag to be used for the final alarm message. The Trip Source AOI selects from the Ref_Tgt#Txt strings based on the active trip source and copies that reference string to this target string.
5. For Output parameters, click the question mark next to each Output parameter and select the tag to be used when using RLL. For FBD, add an ORef configured with the appropriate I/O tag and connect the associated output parameter to the ORef.

SEL751ATripSource		SEL751A
SEL751ATripSource		...
Out_Enable	EN2TR118:1:0009.PlantPAx751A_CON_RBGGIO1_CO_SPCS002_Oper.ctfVal	0
Out_Reset	EN2TR118:1:0009.PlantPAx751A_CON_RBGGIO1_CO_SPCS002_Oper.ctfVal	0
Out_Close	EN2TR118:1:0009.PlantPAx751A_CON_RBGGIO1_CO_SPCS003_Oper.ctfVal	0
Out_Open	EN2TR118:1:0009.PlantPAx751A_CON_RBGGIO1_CO_SPCS004_Oper.ctfVal	0
Out_Aux1	EN2TR118:1:0009.PlantPAx751A_CON_RBGGIO1_CO_SPCS005_Oper.ctfVal	0
Ref_PlantPAx751A		PlantPAx751A
Ref_TargetTripText		SEL751A.AlarmText
Ref_Tgt3Txt		Instantaneous
Ref_Tgt4Txt		PhaseOC
Ref_Tgt5Txt		GrdNeutOC
Ref_Tgt6Txt		NegSeq
Ref_Tgt7Txt		OverUnderFreq
Ref_Tgt8Txt		BreakerFailure

Using Visualization Files

See [Visualization Files on page 13](#) for detailed information.

Faceplates

The Operator tab is displayed when the faceplate is initially opened. Click the appropriate icon on the left of the faceplate to access a specific tab.

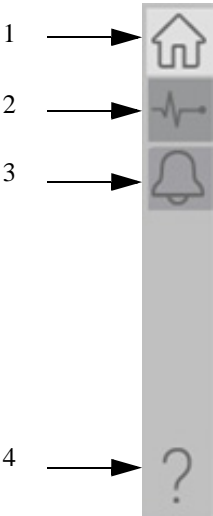


Table 69 - Tab Descriptions

Item	Description
1	Operator tab
2	Diagnostics tab
3	Alarms tab
4	Help

The faceplate provides the means for operators, maintenance workers, engineers, and others to interact with the instruction instance. This interaction provides a view of the status and values of the instruction instance and an ability to manipulate it through its commands and settings.

Operator Tab

The Faceplate initially opens to the Operator tab, sometimes called the Home tab. From here, an operator can monitor the device status and manually operate the device.

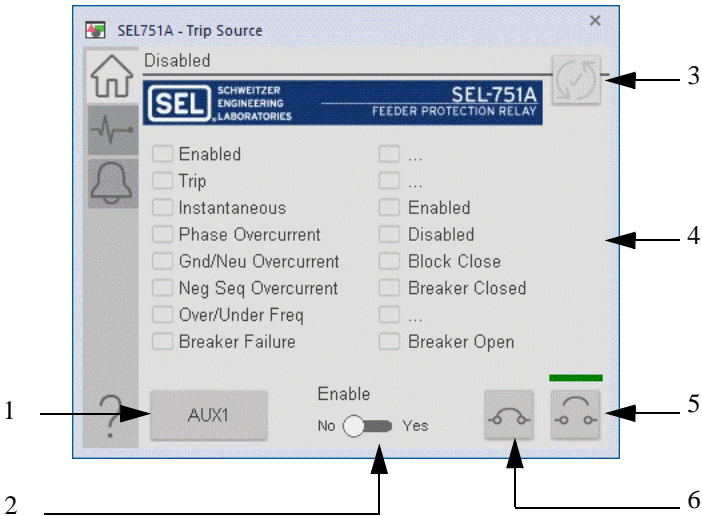


Table 70 - Operator Tab Description

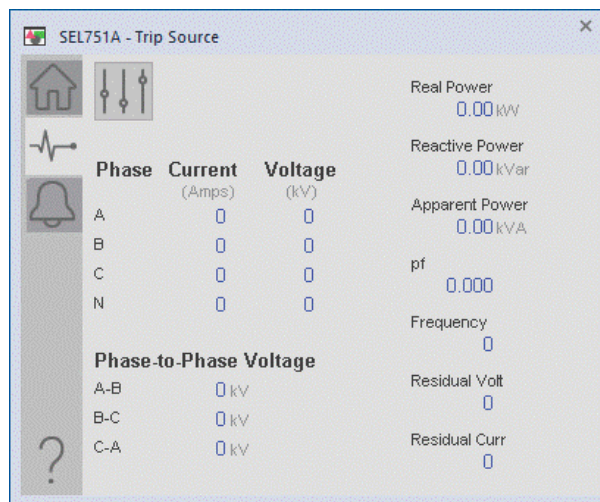
Item	Description
1	Click to toggle the AUX input to the device. This input is configurable in the device vendor software.
2	Click to enable/disable the device. To issue the commands to the device, enable the device. If the device is disabled, you can only monitor data from the device.
3	Click to reset the device. The status of the device is indicated on the faceplate.
4	Status Indicators
5	Click to open the circuit breaker.
6	Click to close the circuit breaker.

Diagnostics Tab

The diagnostics tab allows the operator to see the measurement values from the physical device.

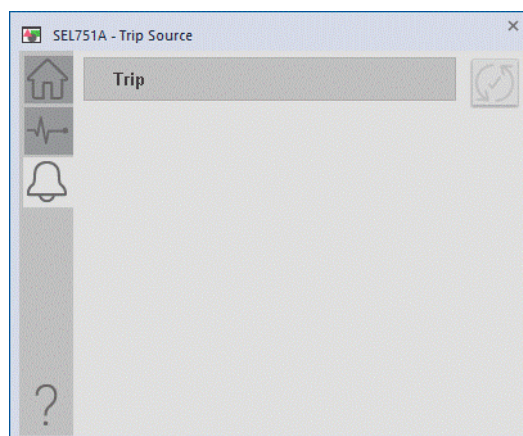
Diagnostics Tab

Readout of the measurement values from the SEL-751A.



Alarms

The Alarm tab displays the trip source alarm. The icon on the tab for the alarms page has an outline that changes color to show the current active alarm status.



Advanced Properties


Click the advanced properties icon  on the diagnostics page to display the advanced properties. The following screen capture shows the tabs that are available in the advanced properties display



Table 71 - Advanced Properties Tab Descriptions

Table 72 -

Item	Description
1	HMI Configuration
2	Diagnostics
3	Faults
4	Help

HMI Configuration Tab

The HMI configuration tab provides access to displayed text, and faceplate-to-faceplate navigation settings. Configure the description, label, tag, and security area for the device.

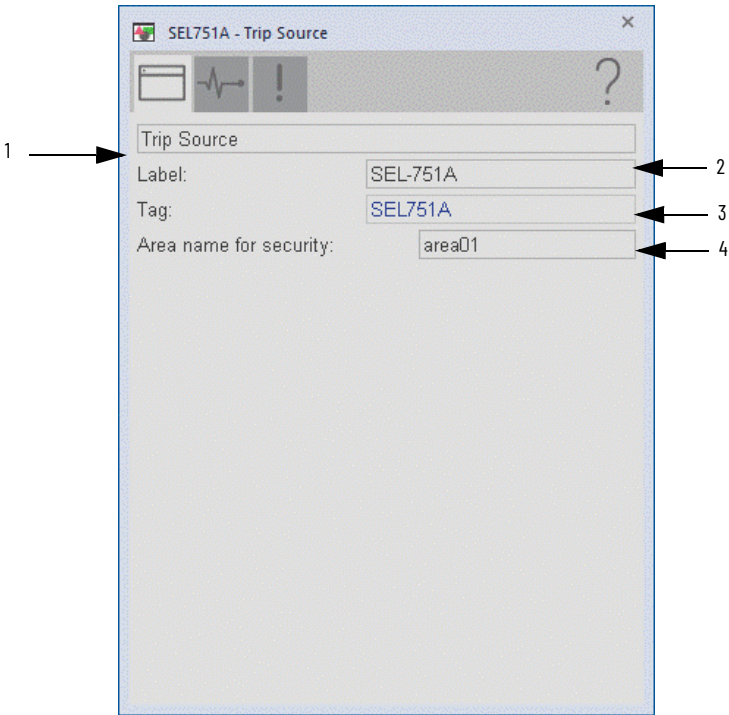


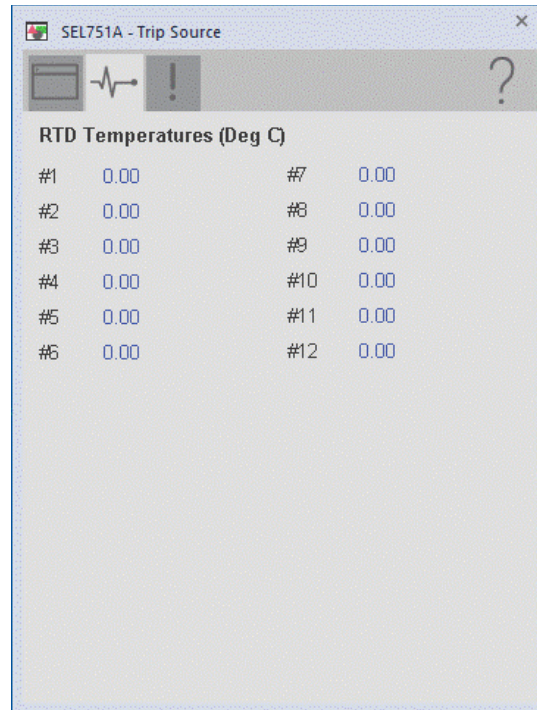
Table 73 - HMI Configuration Tab Description

Item	Action
1	Displays the device description to show on the faceplate title bar as configured for the extended tag property TripSourceA01Tag.@Description

Item	Action
2	The label to show on the graphic symbol as configured for the extended tag property TripSourceAOLTag.@Label.
3	The tag name to show on the faceplate and Tooltip.
4	The Area name for security based on the extended tag property TripSourceAOLTag.@Area.

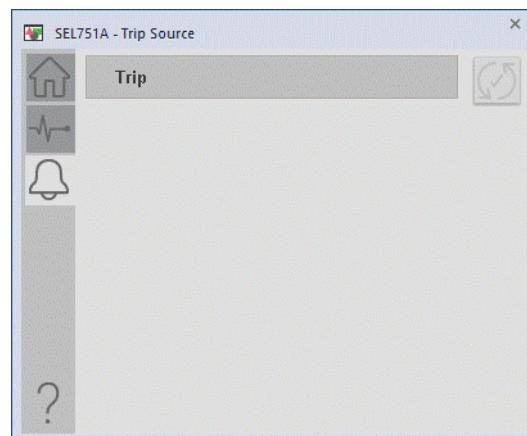
Diagnostics Tab

Readout of the temperatures from the 12 RTD inputs that are available in the SEL-751A.



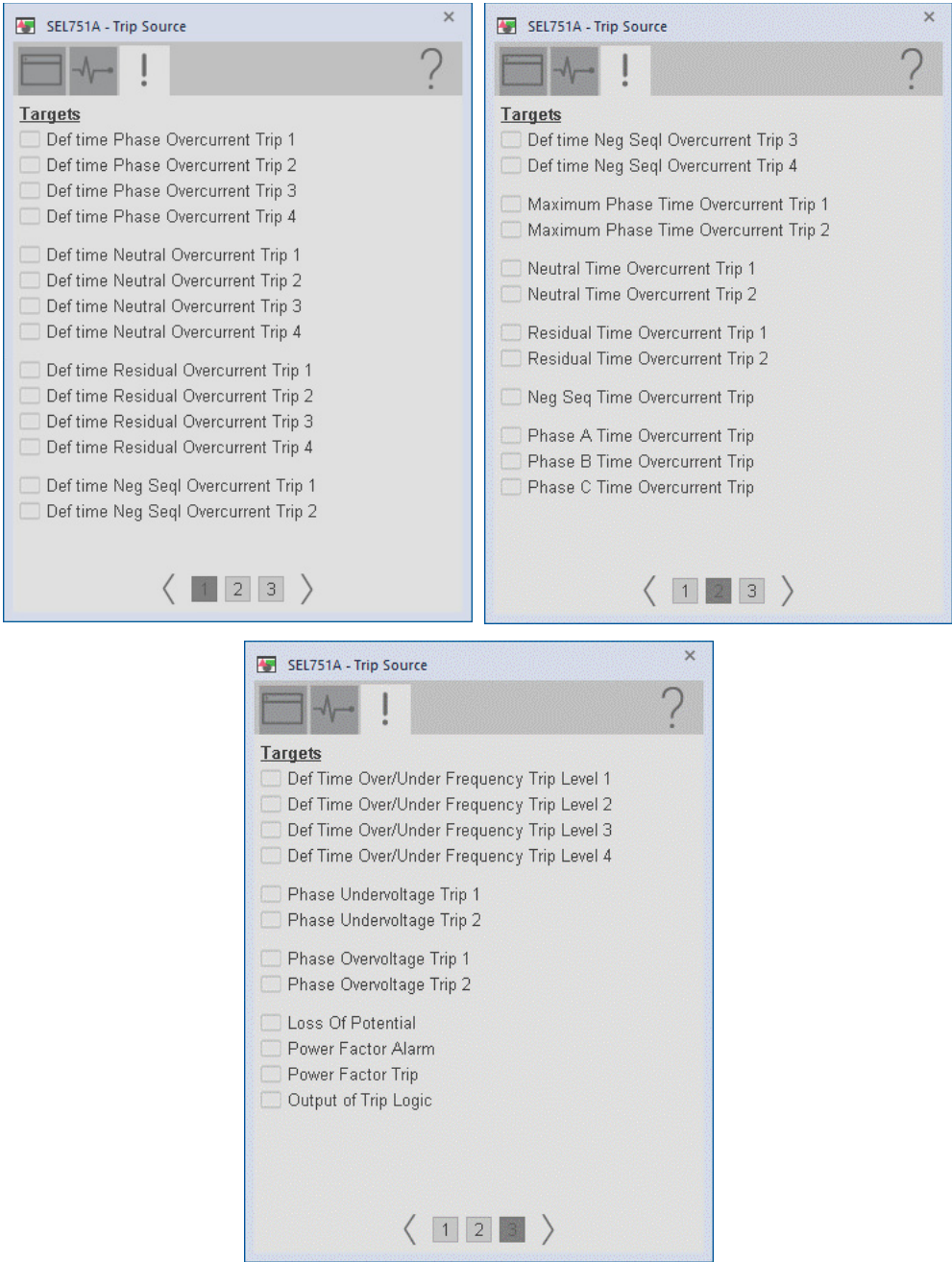
Alarms

The Alarm tab displays the trip source alarm. The icon on the tab for the alarms page has an outline that changes color to show the current active alarm status.



Faults Tab

The Faults tab shows which alarms are active from the physical device.

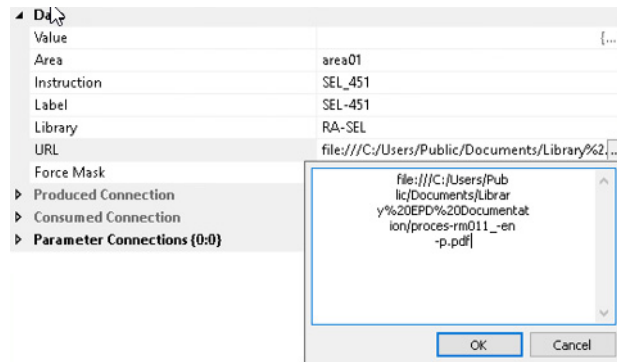


Help Button

Press the help button on the faceplates to access help for the faceplate.

The help file to launch is configurable using the URL extended tag property of the trip source AOI tag.

Note: Individual help files do not currently exist for the 61850 faceplates. The URL can be configured to launch this reference manual (or another reference document) using the following format:



Notes:

SEL 787 Object



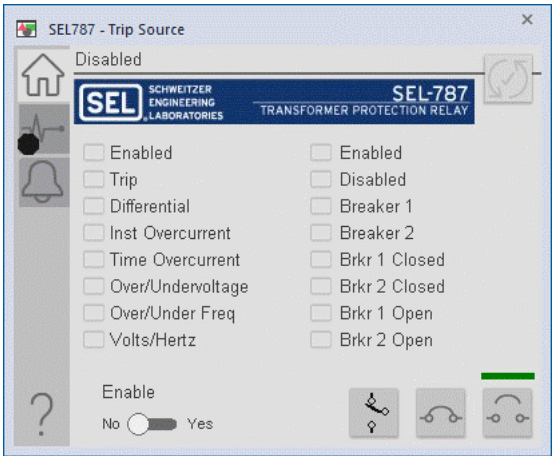
The Schweitzer Engineering Labs 787 is a transformer protection relay. This device provides comprehensive transformer protection for a three winding transformer. This device is able to provide indications of differential faults, winding overcurrent, over/under frequency, and more. The device also provides multiple fundamental metering data including, voltage, current, frequency, power, and so on.

This instruction monitors one SEL787 relay. Alarms are provided when the device experiences a protection-related trip. The instruction also provides capabilities for locking, and to open and close the breaker. It is also possible to switch between the two available breakers.

Add-On Instruction

SEL787TripSource	
SEL787TripSource	SEL787
Out_Enable	EN2TR118:1:0010.PlantPax787_CON_RBGGIO1_CO_SPCS001_Oper.ctlVal
Out_Reset	EN2TR118:1:0010.PlantPax787_CON_RBGGIO1_CO_SPCS002_Oper.ctlVal
Out_Close	EN2TR118:1:0011.PlantPax787_CON_RBGGIO1_CO_SPCS003_Oper.ctlVal
Out_Open	EN2TR118:1:0011.PlantPax787_CON_RBGGIO1_CO_SPCS004_Oper.ctlVal
Out_Select	EN2TR118:1:0011.PlantPax787_CON_RBGGIO1_CO_SPCS005_Oper.ctlVal
Ref_PlantPax787	PlantPax787
Ref_TargetTripText	SEL787AlarmText
Ref_Tgt3Txd	Differential
Ref_Tgt4Txd	Instantaneous
Ref_Tgt5Txd	Time
Ref_Tgt6Txd	OverUnderVoltage
Ref_Tgt7Txd	OverUnderFreq
Ref_Tgt8Txd	VoltsHertz

Faceplate



Controller Code

Two Add-On Instructions represent each physical device. The first is generated by the ProSoft Configuration Manager and is included in the program import. The second is the TripSource Add-On Instruction, which is available for download from the Rockwell Automation® Library of Electrical Protection Devices from the PCDC.

InOut Structure for Trip Source Add-On Instruction

InOut parameters in [Table 74](#) are used to link the Add-On Instruction to external tags that contain necessary data for the instruction to operate. These external tags must be of the data type shown. These tags are representative of

the tags that are required for each SEL-787 relay, which is configured in your system.

Table 74 - SEL787 Relay

Name	Data Type	Description
Ref_PlantPAxAOI	<Defined by device AOI>	Device Data from the ProSoft Add-On Instruction. This data type changes to match each device tag in the ProSoft Gateway.
Ref_TargetTripText	STRING	Alarm text to be displayed when active.
Ref_Tgt3Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt4Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt5Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt6Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt7Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt8Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.

Remote Bit Control Value Structure

Remote Bit Control Value parameters are used to link the Add-On Instruction to configurable input points in the physical device. Each bit is configurable via the vendor software of each device. The following table has recommended uses for each bit.

Name	Description
CON_RBGGI01_CO_SPCS001_Oper_ctlVal	Lock/Unlock
CON_RBGGI01_CO_SPCS002_Oper_ctlVal	Target Reset
CON_RBGGI01_CO_SPCS003_Oper_ctlVal	Breaker Close
CON_RBGGI01_CO_SPCS004_Oper_ctlVal	Breaker Open
CON_RBGGI01_CO_SPCS005_Oper_ctlVal	Breaker Select
CON_RBGGI01_CO_SPCS006_Oper_ctlVal	User Programmable
CON_RBGGI01_CO_SPCS007_Oper_ctlVal	User Programmable
CON_RBGGI01_CO_SPCS008_Oper_ctlVal	User Programmable

Mapping InOut Tags to Trip Source Add-On Instruction

Configure the SEL787_TripSource Add-On Instruction.

1. Click the question mark next to Ref_PlantPAx787 and select the tag that was created by the ProSoft Configuration Manager for your device.
2. Click the question mark next to each Ref_Tgt#Txt and enter a string tag. These tags are intended to match the status indicators on the front panel of the device.
3. Once you type the tag name, if the tag is not already configured in the controller, you have to right-click and create a tag.
4. Click the question mark next to Ref_TargetTripText and select or create a String tag to be used for the final alarm message. The Trip Source AOI selects from the Ref_Tgt#Txt strings based on the active trip source and copies that reference string to this target string.
5. For Output parameters, click the question mark next to each Output parameter and select the tag to be used when using RLL. For FBD, add an ORef configured with the appropriate I/O tag and connect the associated output parameter to the ORef.

SEL787TripSource		SEL787	...
Out_Enable	EN2TR118:1:0010.PlantPAx787_CON_RBGGIO1_CO_SPCSO01_Oper.ctiVal	0	+
Out_Reset	EN2TR118:1:0010.PlantPAx787_CON_RBGGIO1_CO_SPCSO02_Oper.ctiVal	0	+
Out_Close	EN2TR118:1:0011.PlantPAx787_CON_RBGGIO1_CO_SPCSO03_Oper.ctiVal	0	+
Out_Open	EN2TR118:1:0011.PlantPAx787_CON_RBGGIO1_CO_SPCSO04_Oper.ctiVal	0	+
Out_Select	EN2TR118:1:0011.PlantPAx787_CON_RBGGIO1_CO_SPCSO05_Oper.ctiVal	0	+
Ref_PlantPAx787		PlantPAx787	
Ref_TargetTripText		SEL787AlarmText	
Ref_Tgt3Txt		Differential	
Ref_Tgt4Txt		Instantaneous	
Ref_Tgt5Txt		Time	
Ref_Tgt6Txt		OverUnderVoltage	
Ref_Tgt7Txt		OverUnderFreq	
Ref_Tgt8Txt		VoltsHertz	

Using Visualization Files

See [Visualization Files on page 13](#) for detailed information.

Faceplates

The Operator tab is displayed when the faceplate is initially opened. Click the appropriate icon on the left of the faceplate to access a specific tab.

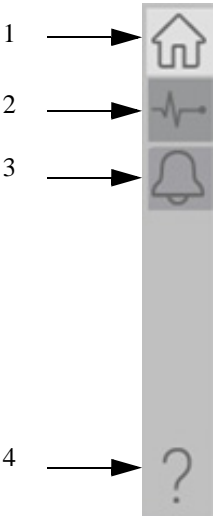


Table 75 - Tab Descriptions

Item	Description
1	Operator tab
2	Diagnostics tab
3	Alarms tab
4	Help

The faceplate provides the means for operators, maintenance workers, engineers, and others to interact with the instruction instance. This interaction provides a view of the status and values of the instruction instance and an ability to manipulate it through its commands and settings.

Operator Tab

The Faceplate initially opens to the Operator tab, sometimes called the Home tab. From here, an operator can monitor the device status and manually operate the device.

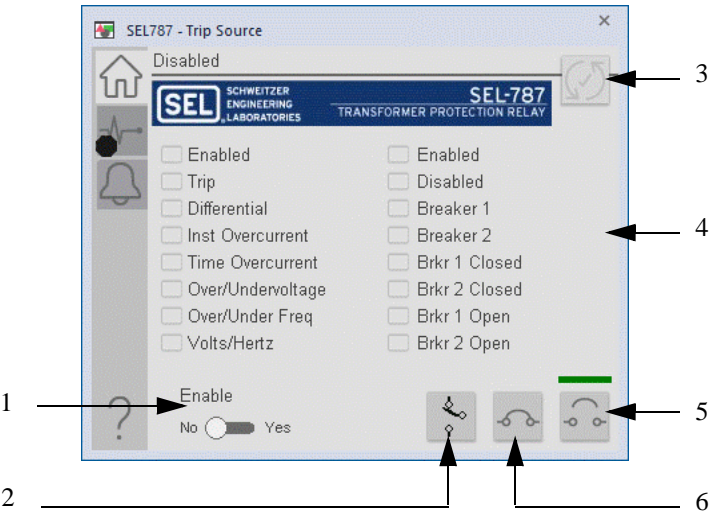


Table 76 - Operator Tab Description

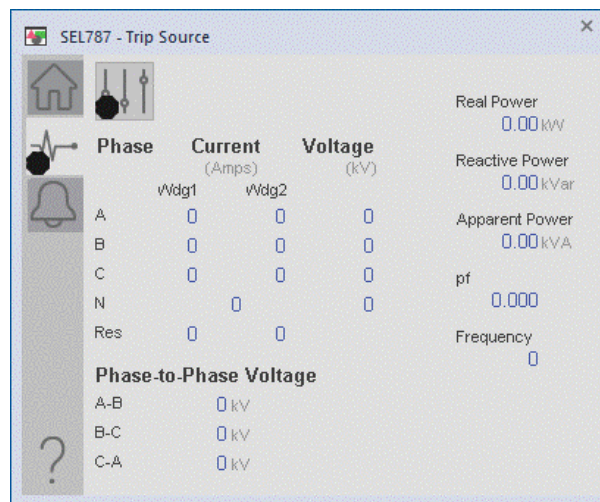
Item	Description
1	Click to enable/disable the device. To issue the commands to the device, enable the device. If the device is disabled, you can only monitor data from the device.
2	Click to toggle control between breaker 1 and breaker 2.
3	Click to reset the device. The status of the device is indicated on the faceplate.
4	Status Indicators
5	Click to open the circuit breaker.
6	Click to close the circuit breaker.

Diagnostics Tab

The diagnostics tab allows the operator to see the measurement values from the device.

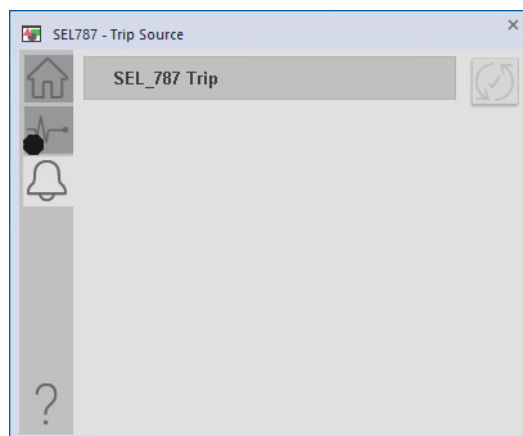
Diagnostics Tab

Readout of the measurement values from the SEL-787.



Alarms

The Alarm tab displays the trip source alarm. The icon on the tab for the alarms page has an outline that changes color to show the current active alarm status.



Advanced Properties


Click the advanced properties icon  on the diagnostics page to display the advanced properties. The following screen capture shows the tabs that are available in the advanced properties display



Table 77 - Advanced Properties Tab Descriptions

Item	Description
1	HMI Configuration
2	Diagnostics
3	Faults
4	Help

HMI Configuration Tab

The HMI configuration tab provides access to displayed text, and faceplate-to-faceplate navigation settings. Configure the description, label, tag, and security area for the device.

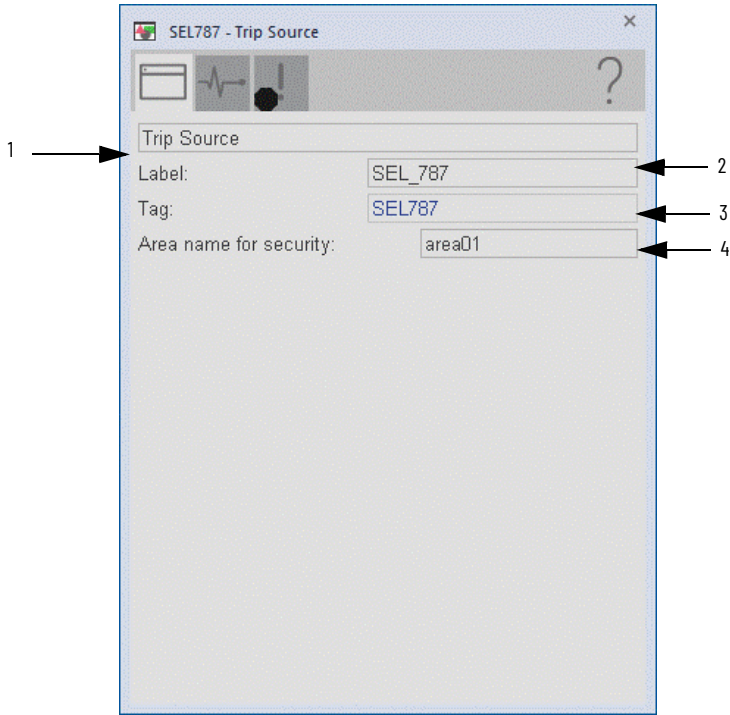
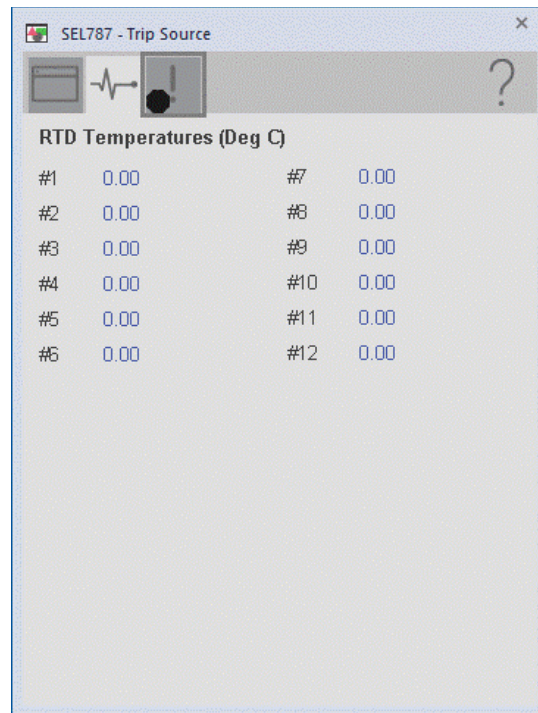


Table 78 - HMI Configuration Tab Description

Item	Action
1	Displays the device description to show on the faceplate title bar as configured for the extended tag property TripSourceA01Tag.@Description
2	The label to show on the graphic symbol as configured for the extended tag property TripSourceA01Tag.@Label.
3	The tag name to show on the faceplate and Tooltip.
4	The Area name for security based on the extended tag property TripSourceA01Tag.@Area.

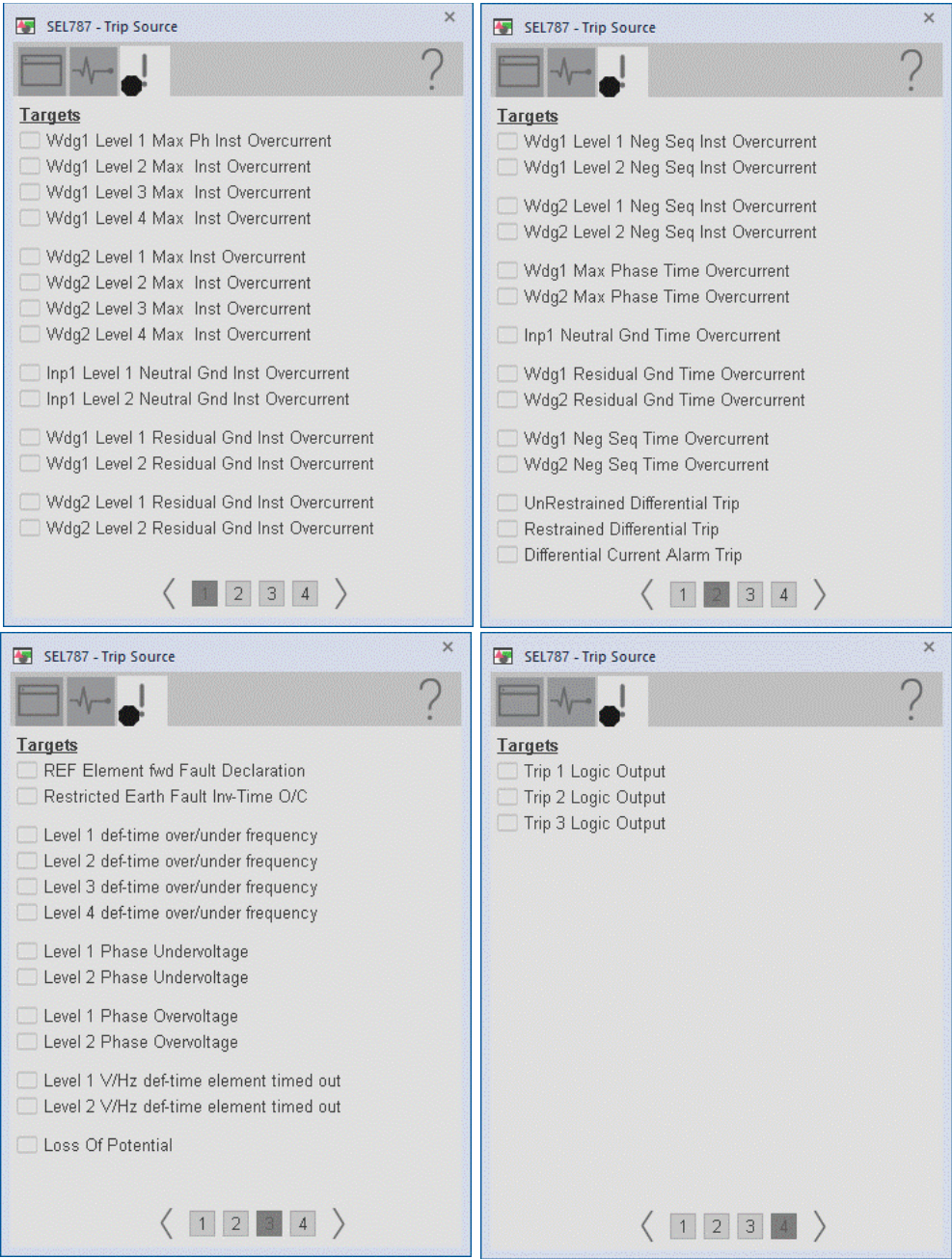
Diagnostics Tab

Readout of the 12 RTD inputs that are available in the SEL-787.



Faults Tab

The faults tab shows which alarms are active from the device.

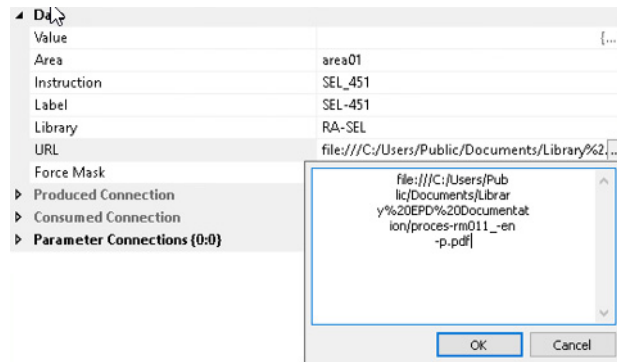


Help Button

Press the help button on the faceplates to access help for the faceplate.

The help file to launch is configurable using the URL extended tag property of the trip source AOI tag.

Note: Individual help files do not currently exist for the 61850 faceplates. The URL can be configured to launch this reference manual (or another reference document) using the following format:

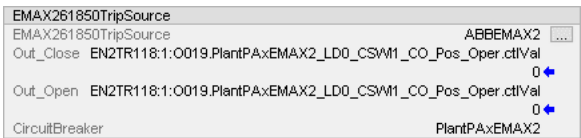


Notes:

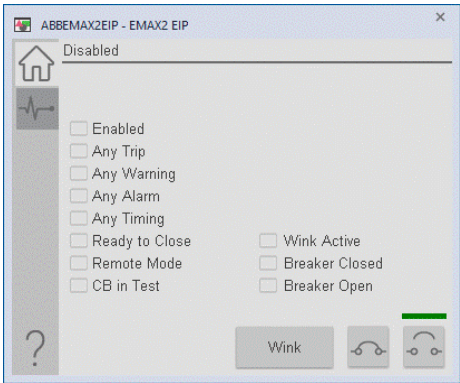
ABB EMAX2 Using EtherNet/IP Object



Add-On Instruction



Faceplate



Controller Code

Two Add-On Instructions represent each physical device. The first is generated by the ProSoft Configuration Manager and is included in the program import. The second is the TripSource Add-On Instruction, which is available for download from the Rockwell Automation® Library of Electrical Protection Devices from the PCDC.

InOut Structure for ProSoft Add-On Instruction

InOut parameters in [Table 79](#) are used to link the Add-On Instruction to external tags that contain necessary data for the instruction to operate. These external tags must be of the data type shown. These tags are representative of

the tags that are required for each ABB EMAX2 breaker, which is configured in your system.

Table 79 - EMAX2 Breaker

Name	Data Type	Description
CBWink	BOOL	Diagnostic to blink status indicator for CB location
CBClose	BOOL	Close Circuit Breaker
CBOpen	BOOL	Open Circuit Breaker

InOut Structure for Rockwell Automation Library Download

[Table 80](#) shows the InOut parameters that are available from the Rockwell Automation Library of Electrical Protection Devices Folder in the PCDC. These external tags must be of the data type shown.

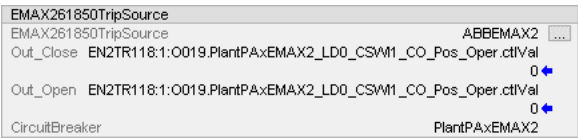
Table 80 - EMAX2 TripSource

Name	Data Type	Description
EMAX2CB	_0526:002B_0101_82C511B0:I:0	Device Input Data Structure
EMAX2CB	_0526:002B_0101_82C511B0:O:0	Device Output Data Structure

Mapping InOut Tags to Trip Source Add-On Instruction

Configure the EMAX2_TripSource Add-On Instruction.

1. Click the question mark next to Ref_PlantPAx857 and select the tag that was created by the ProSoft Configuration Manager for your device.
2. Click the question mark next to each Ref_Tgt#Txt and enter a string tag. These tags are intended to match the status indicators on the front panel of the device.
3. Once you type the tag name, if the tag is not already configured in the controller, you have to right-click and create a tag.
4. Click the question mark next to Ref_TargetTripText and select or create a String tag to be used for the final alarm message. The Trip Source AOI selects from the Ref_Tgt#Txt strings based on the active trip source and copies that reference string to this target string.
5. For Output parameters, click the question mark next to each Output parameter and select the tag to be used when using RLL. For FBD, add an ORef configured with the appropriate I/O tag and connect the associated output parameter to the ORef.



Using Visualization Files

See [Visualization Files on page 13](#) for detailed information.

Faceplates

The Operator tab is displayed when the faceplate is initially opened. Click the appropriate icon on the left of the faceplate to access a specific tab.

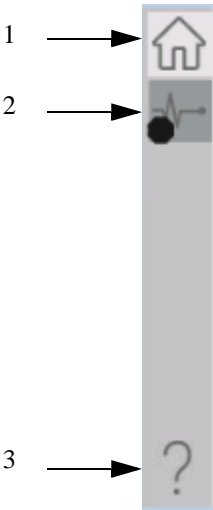


Table 81 - Tab Descriptions

Table 82 -

Item	Description
1	Operator tab
2	Diagnostics tab
3	Help

The faceplate provides the means for operators, maintenance workers, engineers, and others to interact with the instruction instance. This interaction provides a view of the status and values of the instruction instance and an ability to manipulate it through its commands and settings.

Operator Tab

The Faceplate initially opens to the Operator tab, sometimes called the Home tab. From here, an operator can monitor the device status and manually operate the device when it is in Operator mode.

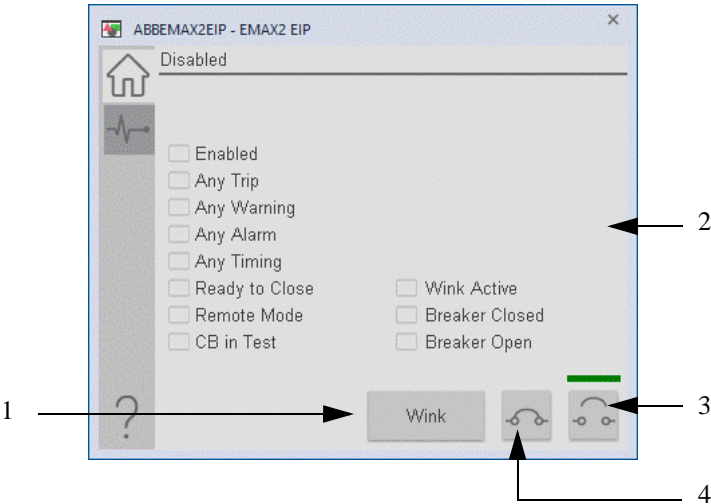


Table 83 - Operator Tab Description

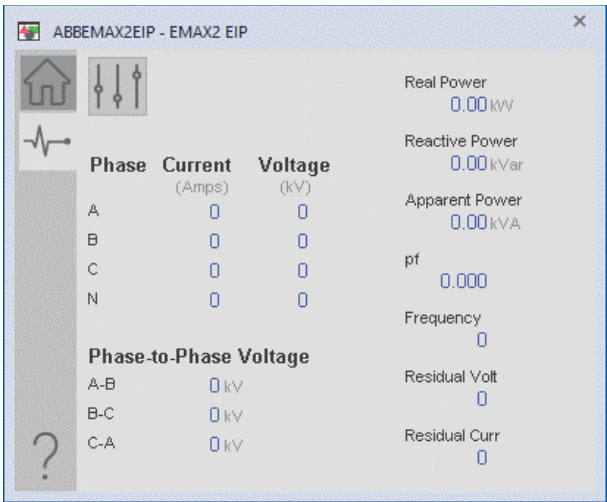
Item	Description
1	Click to activate the diagnostic wink function of the circuit breaker. Wink is an ABB diagnostic function that allows for blinking of status indicator to locate the device to which you're communicating. This activation allows for discovery of the breaker.
2	Status Indicators
3	Click to open the circuit breaker.
4	Click to close the circuit breaker.

Diagnostics Tab

The diagnostics tab allows the operator to see the measurement values from the physical device.

Diagnostics Tab

Readout of the measurement values from the EMAX2.



Advanced Properties


Click the advanced properties icon  on the diagnostics page to display the advanced properties. The following screen capture shows the tabs that are available in the advanced properties display



Table 84 - Advanced Properties Tab Descriptions

Table 85 -

Item	Description
1	HMI Configuration
2	Diagnostics
3	Faults
4	Help

HMI Configuration Tab

The HMI configuration tab provides access to displayed text, and faceplate-to-faceplate navigation settings. Configure the description, label, tag, and security area for the device.

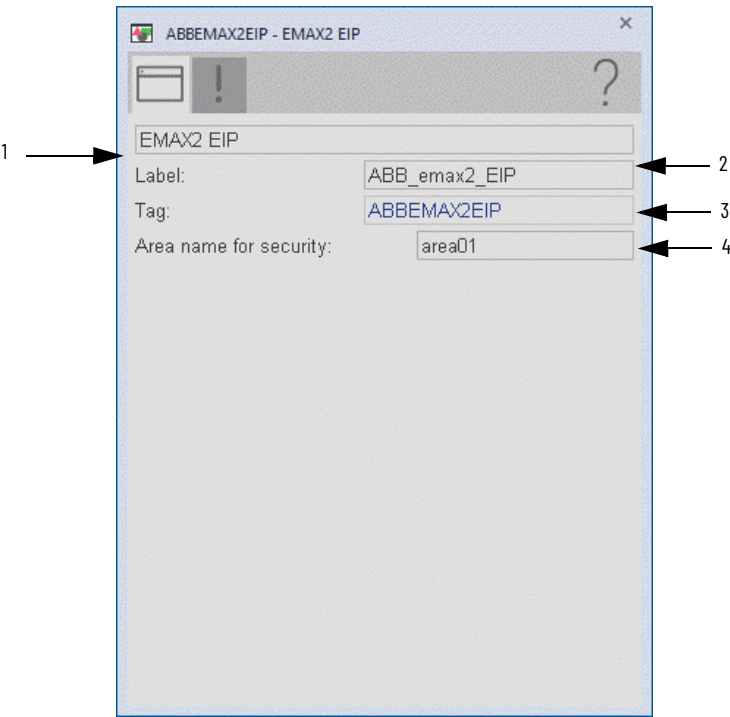
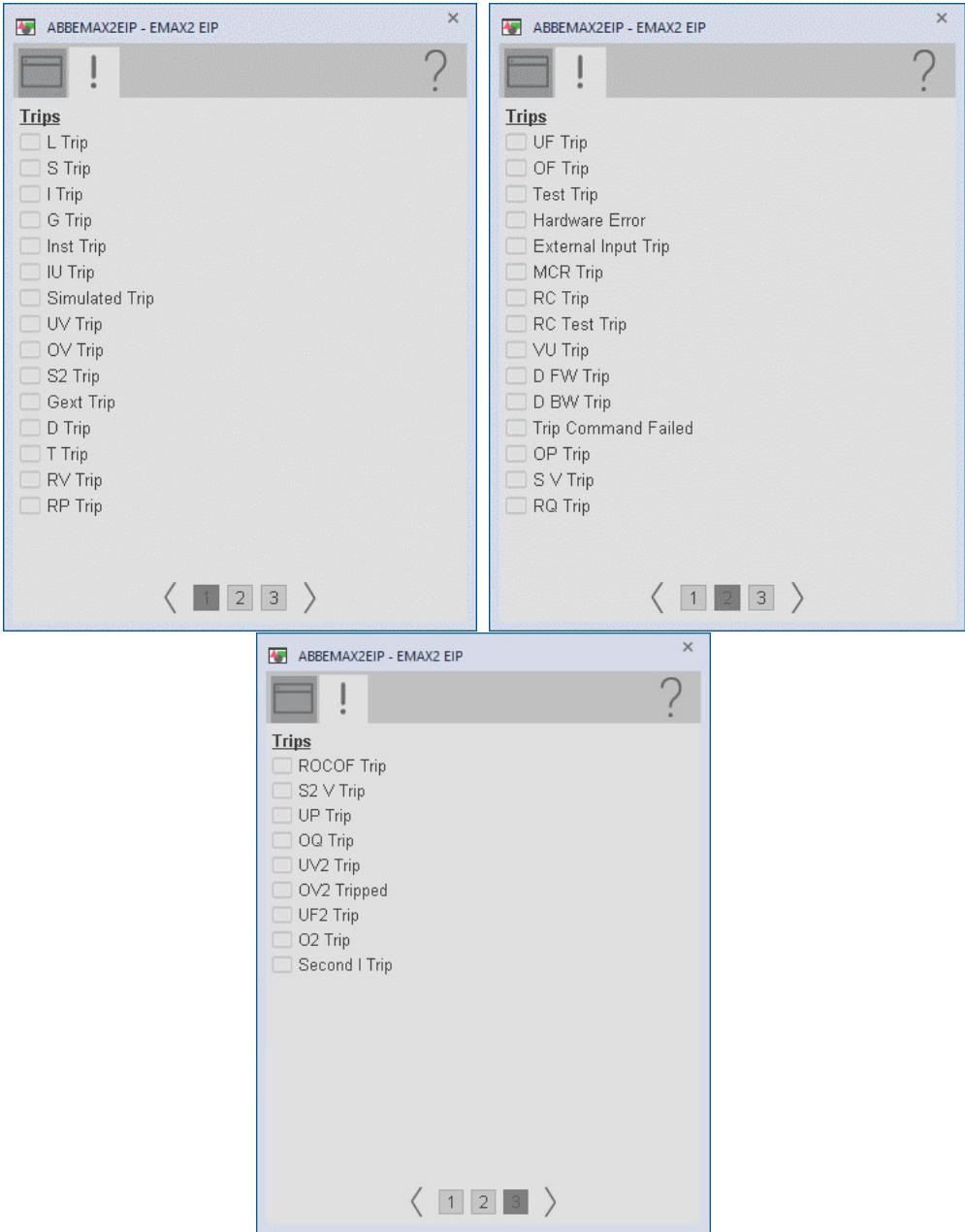


Table 86 - HMI Configuration Tab Description

Item	Action
1	Displays the device description to show on the faceplate title bar as configured for the extended tag property TripSourceA0ITag.@Description
2	The label to show on the graphic symbol as configured for the extended tag property TripSourceA0ITag.@Label.
3	The tag name to show on the faceplate and Tooltip.
4	The Area name for security based on the extended tag property TripSourceA0ITag.@Area.

Faults Tab

The faults tab shows which alarms are active from the physical device.



Help Button

Press the help button on the faceplates to access help for the faceplate.

The help file to launch is configurable using the URL extended tag property of the trip source AOI tag.

Note: Individual help files do not currently exist for the 61850 faceplates. The URL can be configured to launch this reference manual (or another reference document) using the following format:

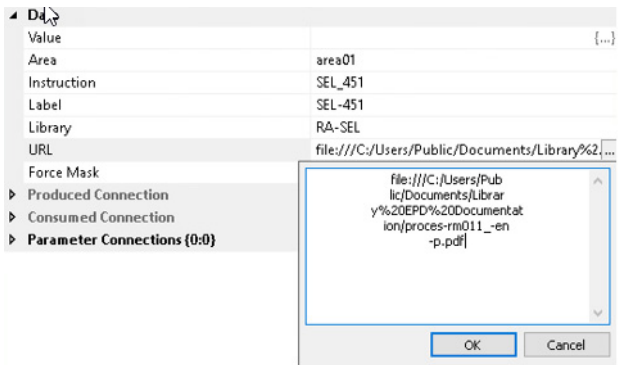


ABB EMAX2 Using IEC 61850 Object



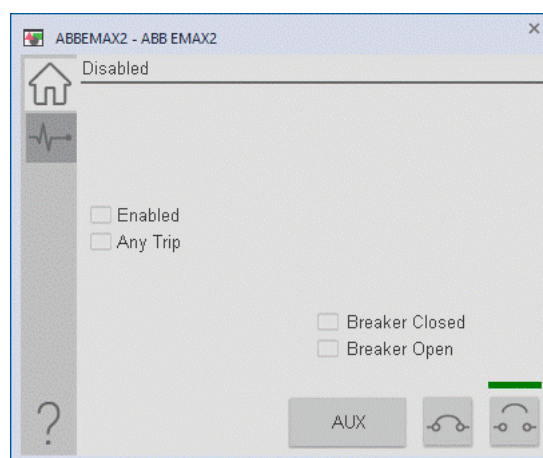
The ABB EMAX2 power circuit breaker provides a user the benefits of a power circuit breaker that is combined with the intelligence of a device. The ABB EMAX2 contains an electronic trip unit that can communicate with upstream control systems via a number of protocols and standards. When equipping the ABB EMAX2 with IEC 61850 communications, you can configure various MMS and GOOSE communications that allow SCADA/monitoring communications. Those communications also allow high speed interlocking. This chapter discusses how to integrate the EMAX2 that communicates via IEC 61850 for SCADA purposes to the PlantPax® system.

This instruction monitors one ABB EMAX2 breaker communication via the EtherNet/IP™ ABB. Alarms are provided when the device experiences a protection-related trip. The instruction also provides capabilities for opening, and to close the breaker.

Add-On Instruction

EMAX2EIPTripSource	
EMAX2EIPTripSource	ABBEMAX2EIP ...
EMAX2CB	EMAX2:I
EMAX2CBOOutput	EMAX2:O

Faceplate



Controller Code

Two Add-On Instructions represent each physical device. The first is generated by the ProSoft Configuration Manager and is included in the program import. The second is the TripSource Add-On Instruction, which is available for download from the Rockwell Automation® Library of Electrical Protection Devices from the PCDC.

InOut Structure for Trip Source Add-On Instruction

InOut parameters are used to link the Add-On Instruction to external tags that contain necessary data for the instruction to operate. These external tags must be of the data type shown.

Name	Data Type	Description
CircuitBreaker	<Defined by device AOI>	Device data from the device Add-On Instruction. This data type changes to match each device tag in the ProSoft Gateway.

Remote Command Structure

Remote Bit Control Value parameters are used to link the Add-On Instruction to configurable input points in the physical device. Each bit is configurable via the vendor software of each device. The following table has recommended uses for each bit.

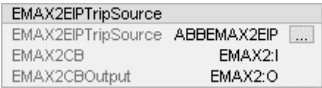
Table 87 - Remote Command Structure for IEC 61850

Control Bit	Function
PlantPaxEMAX2LDO_CSW11_CO_Pos_Oper_ctlVal	Issue Open/ Command via Toggle
PlantPaxEMAX2LDO_CSW11_CO_Pos_Cancel_ctlVal	Issue Command Canceled

Mapping InOut Tags to Trip Source Add-On Instruction

Configure the 61850 EMAX2_TripSource Add-On Instruction.

1. Click the question mark next to Ref_PlantPAx857 and select the tag that was created by the ProSoft Configuration Manager for your device.
2. Click the question mark next to each Ref_Tgt#Txt and enter a string tag. These tags are intended to match the status indicators on the front panel of the device.
3. Once you type the tag name, if the tag is not already configured in the controller, you have to right-click and create a tag.
4. Click the question mark next to Ref_TargetTripText and select or create a String tag to be used for the final alarm message. The Trip Source AOI selects from the Ref_Tgt#Txt strings based on the active trip source and copies that reference string to this target string.
5. For Output parameters, click the question mark next to each Output parameter and select the tag to be used when using RLL. For FBD, add an ORef configured with the appropriate I/O tag and connect the associated output parameter to the ORef.



Using Visualization Files

See [Visualization Files on page 13](#) for detailed information.

Faceplates

The Operator tab is displayed when the faceplate is initially opened. Click the appropriate icon on the left of the faceplate to access a specific tab.

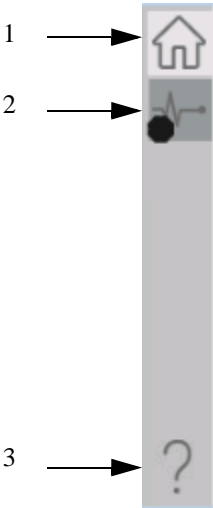


Table 88 - Tab Descriptions

Item	Description
1	Operator tab
2	Diagnostics tab
3	Help

The faceplate provides the means for operators, maintenance workers, engineers, and others to interact with the instruction instance. This interaction provides a view of the status and values of the instruction instance and an ability to manipulate it through its commands and settings.

Operator Tab

The Faceplate initially opens to the Operator tab, sometimes called the Home tab. From here, an operator can monitor the device status and manually operate the device when it is in Operator mode.

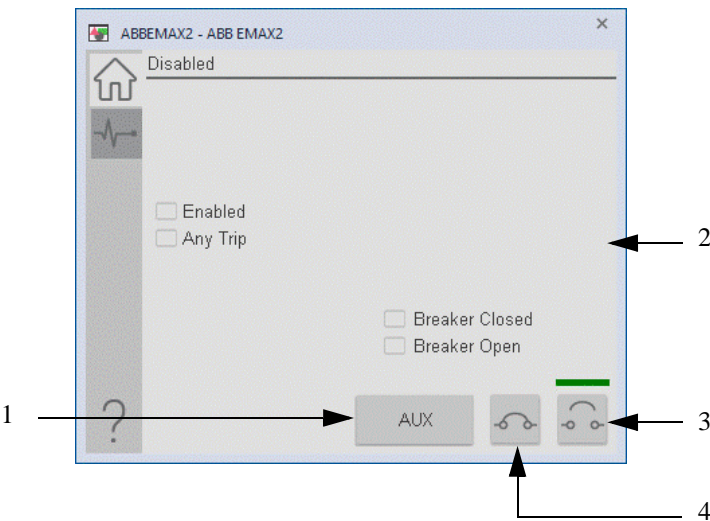


Table 89 - Operator Tab Description

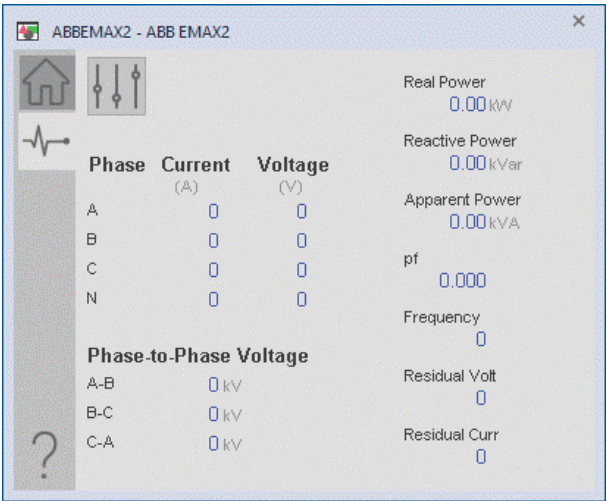
Item	Description
1	Click to control AUX input
2	Status Indicators
3	Click to open the circuit breaker.
4	Click to close the circuit breaker.

Diagnostics Tab

The diagnostics tab allows the operator to see the measurement values from the physical device.

Diagnostics Tab

Readout of the measurement values from the ABB EMAX2.



Advanced Properties


Click the advanced properties icon  on the diagnostics page to display the advanced properties. The following screen capture shows the tabs that are available in the advanced properties display



Table 90 - Advanced Properties Tab Descriptions

Item	Description
1	HMI Configuration
2	Faults
3	Help

HMI Configuration Tab

The HMI configuration tab provides access to displayed text, and faceplate-to-faceplate navigation settings. Configure the description, label, tag, and security area for the device.

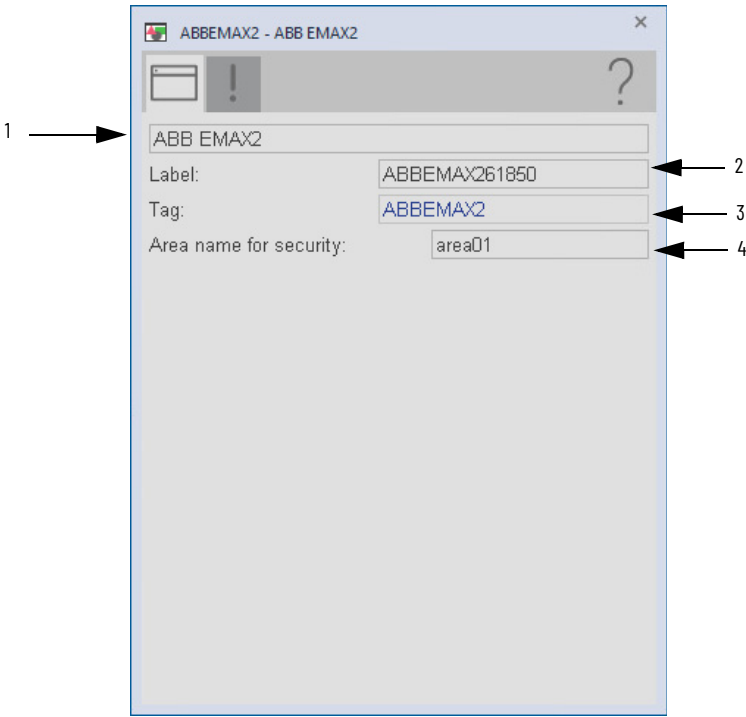


Table 91 - HMI Configuration Tab Description

Item	Action
1	Displays the device description to show on the faceplate title bar as configured for the extended tag property TripSourceA0ITag.@Description
2	The label to show on the graphic symbol as configured for the extended tag property TripSourceA0ITag.@Label.
3	The tag name to show on the faceplate and Tooltip.
4	The Area name for security based on the extended tag property TripSourceA0ITag.@Area.

Faults Tab

The Faults tab shows which alarms are active from the physical device.

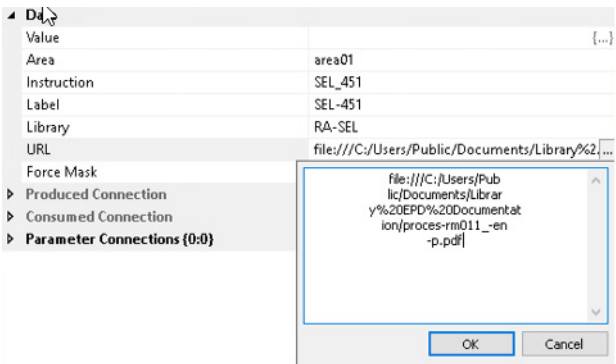


Help Button

Press the help button on the faceplates to access help for the faceplate.

The help file to launch is configurable using the URL extended tag property of the trip source AOI tag.

Note: Individual help files do not currently exist for the 61850 faceplates. The URL can be configured to launch this reference manual (or another reference document) using the following format:



GE Multilin 845 Object



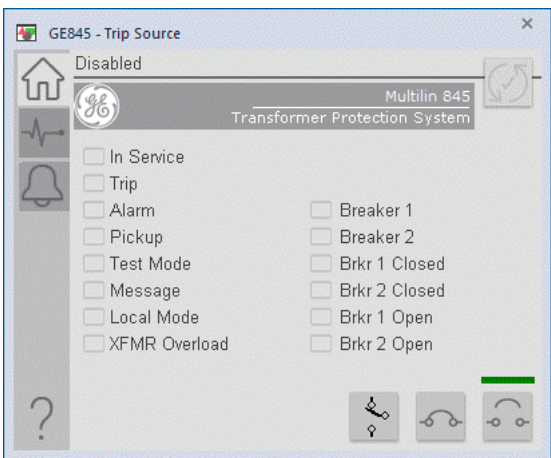
The General Electric (GE) 845 is a transformer differential protection relay with arc flash protection. This device provides comprehensive protection for multi-winding transformers. The GE 845 relay can provide indications of differential faults, winding overcurrent, over frequency, underfrequency, overvoltage, and various other protection features. The device also provides fundamental metering data, including (but not limited to) voltage, current, frequency, and power. The GE 845 can also provide various environmental measurements at its respective physical install location.

This Add-On Instruction monitors one GE 845 transformer protection relay. Alarms are provided when the device experiences a protection-related trip. The instruction also provides capabilities for opening and closing the breaker feature of the relay. The GE 845 provides two available breakers to switch between.

Add-On Instruction

GE845TripSource	GE845
GE845TripSource	GE845
Out_Reset	EN2TR118:1:0020.PlantPax845_Master_GGIO3_CO_SPCS02_Oper.ctiVal
Out_Close	EN2TR118:1:0020.PlantPax845_Master_GGIO3_CO_SPCS03_Oper.ctiVal
Out_Open	EN2TR118:1:0020.PlantPax845_Master_GGIO3_CO_SPCS04_Oper.ctiVal
Out_Select	EN2TR118:1:0020.PlantPax845_Master_GGIO3_CO_SPCS05_Oper.ctiVal
Ref_PlantPax845	PlantPax845
Ref_TargetTripText	GE845AlarmText
Ref_Tgt3Txt	TargetLED3
Ref_Tgt4Txt	TargetLED4
Ref_Tgt5Txt	TargetLED5
Ref_Tgt6Txt	TargetLED6
Ref_Tgt7Txt	TargetLED7
Ref_Tgt8Txt	TargetLED8
Ref_Tgt9Txt	TargetLED9
Ref_Tgt10Txt	TargetLED10
Ref_Tgt11Txt	TargetLED11
Ref_Tgt12Txt	TargetLED12
Ref_Tgt13Txt	TargetLED13
Ref_Tgt14Txt	TargetLED14

Faceplate



Controller Code

Two Add-On Instructions represent each physical device. The first is generated by the ProSoft Configuration Manager and is included in the program import. The second is the TripSource Add-On Instruction, which is available for download from the Rockwell Automation® Library of Electrical Protection Devices from the PCDC.

InOut Structure for Trip Source Add-On Instruction

InOut parameters in [Table](#) are used to link the Add-On Instruction to external tags that contain necessary data for the instruction to operate. These external tags must be of the data type shown in the following table. These tags are

representative of the tags that are required for each GE 845 relay, which is configured in your system.

GE 845 Add-On Instruction

Name	Data Type	Description
Ref_PlantPAxAOI	<Defined by device AOI>	Device Data from the ProSoft Add-On Instruction. This data type changes to match each device tag in the ProSoft Gateway.
Ref_TargetTripText	STRING	Alarm text to be displayed when active.
Ref_Tgt3Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt4Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt5Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt6Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt7Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt8Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt9Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt10Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt11Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt12Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt13Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt14Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.

Remote Bit Control Value Structure

Remote Bit Control Value parameters are used to link the Add-On Instruction to configurable input points in the physical device. Each bit is configurable via the vendor software of each device. [Table 92](#) has recommended uses for each bit.

Table 92 - Remote Bit Control - GE 845 Relay

Control Bit	Function
GGIO3_CO_SPCS01_Oper_ctlVal	Enable Relay Configuration
GGIO3_CO_SPCS02_Oper_ctlVal	Reset Relay
GGIO3_CO_SPCS03_Oper_ctlVal	Breaker Close
GGIO3_CO_SPCS04_Oper_ctlVal	Breaker Open
GGIO3_CO_SPCS05_Oper_ctlVal	Breaker Select

Mapping InOut Tags to Trip Source Add-On Instruction

Configure the GE 845_TripSource Add-On Instruction.

1. Click the question mark next to Ref_PlantPAx845 and select the tag that was created by the ProSoft Configuration Manager for your device.
2. Click the question mark next to each Ref_Tgt#Txt and enter a string tag. These tags are intended to match the status indicators on the front panel of the device.
3. Once you type the tag name, if the tag is not already configured in the controller, you have to right-click and create a tag.
4. Click the question mark next to Ref_TargetTripText and select or create a String tag to be used for the final alarm message. The Trip Source AOI selects from the Ref_Tgt#Txt strings based on the active trip source and copies that reference string to this target string.
5. For Output parameters, click the question mark next to each Output parameter and select the tag to be used when using RLL. For FBD, add an ORef configured with the appropriate I/O tag and connect the associated output parameter to the ORef.

GE845TripSource	
GE845TripSource	GE845
Out_Reset	EN2TR118:1:0020.PlantPAx845_Master_GGIO3_CO_SPCS02_Oper.ctlVal
Out_Close	EN2TR118:1:0020.PlantPAx845_Master_GGIO3_CO_SPCS03_Oper.ctlVal
Out_Open	EN2TR118:1:0020.PlantPAx845_Master_GGIO3_CO_SPCS04_Oper.ctlVal
Out_Select	EN2TR118:1:0020.PlantPAx845_Master_GGIO3_CO_SPCS05_Oper.ctlVal
Ref_PlantPAx845	PlantPAx845
Ref_TargetTripText	GE845AlarmText
Ref_Tgt3Txt	TargetLED3
Ref_Tgt4Txt	TargetLED4
Ref_Tgt5Txt	TargetLED5
Ref_Tgt6Txt	TargetLED6
Ref_Tgt7Txt	TargetLED7
Ref_Tgt8Txt	TargetLED8
Ref_Tgt9Txt	TargetLED9
Ref_Tgt10Txt	TargetLED10
Ref_Tgt11Txt	TargetLED11
Ref_Tgt12Txt	TargetLED12
Ref_Tgt13Txt	TargetLED13
Ref_Tgt14Txt	TargetLED14

Using Visualization Files

See [Visualization Files on page 13](#) for detailed information.

Faceplates

The Operator tab is displayed when the faceplate is initially opened. Click the appropriate icon on the left of the faceplate to access a specific tab.

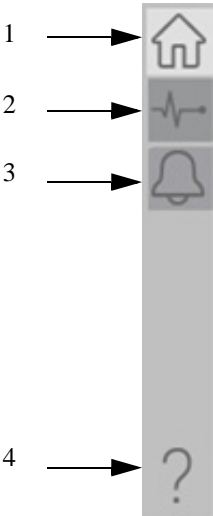


Table 93 - Tab Descriptions

Item	Description
1	Operator tab
2	Diagnostics tab
3	Alarm
4	Help

The faceplate provides the means for operators, maintenance workers, engineers, and others to interact with the instruction instance. This interaction provides a view of the status and values of the instruction instance and an ability to manipulate it through its commands and settings.

Operator Tab

The Faceplate initially opens to the Operator tab, sometimes called the Home tab. From here, an operator can monitor the device status and manually operate the device.

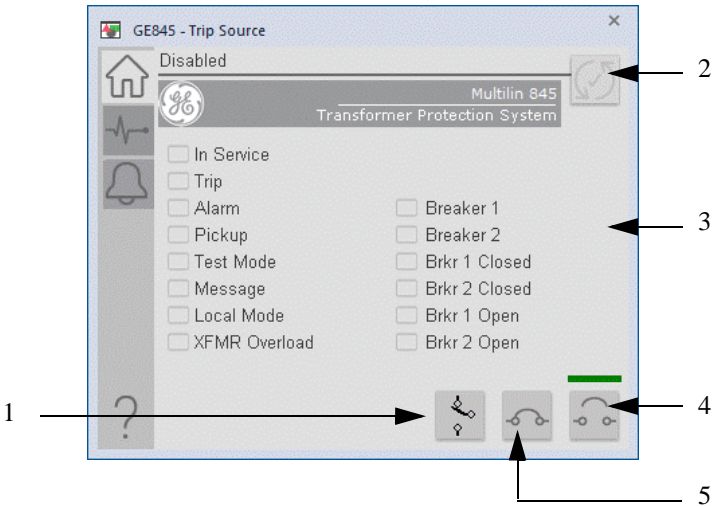


Table 94 - Operator Tab Description

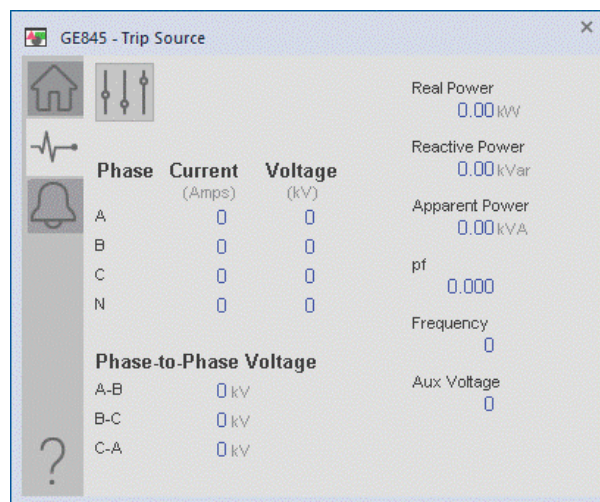
Item	Description
1	Click to toggle control between breaker 1 and breaker 2.
2	Click to reset the device. The status of the device is indicated on the faceplate.
3	Status Indicators
4	Click to open the circuit breaker.
5	Click to close the circuit breaker.

Diagnostics Tab

The Diagnostics tab allows the operator to see the measurement values from the physical device.

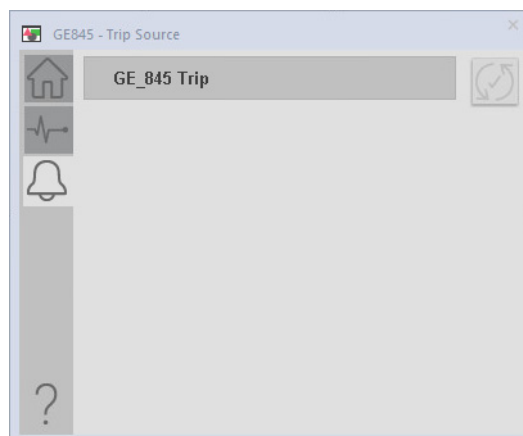
Diagnostics Tab

Readout of the measurement values from the GE 845.



Alarms

The Alarm tab displays the trip source alarm. The icon on the tab for the alarms page has an outline that changes color to show the current active alarm status.



Advanced Properties


Click the advanced properties icon  on the diagnostics page to display the advanced properties. The following screen capture shows the tabs that are available in the advanced properties display



Table 95 - Advanced Properties Tab Descriptions

Item	Description
1	HMI Configuration
2	Faults
3	Help

HMI Configuration Tab

The HMI configuration tab provides access to displayed text, and faceplate-to-faceplate navigation settings. Configure the description, label, tag, and security area for the device.

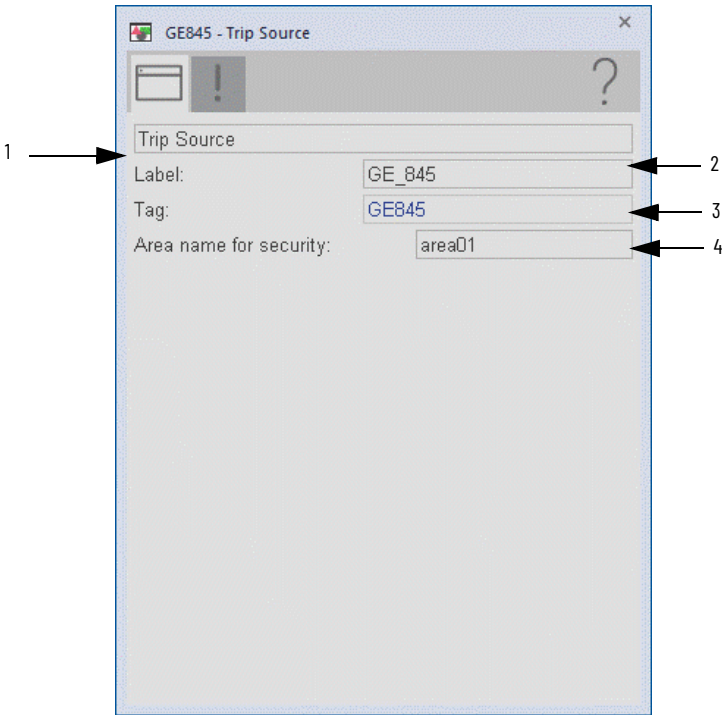
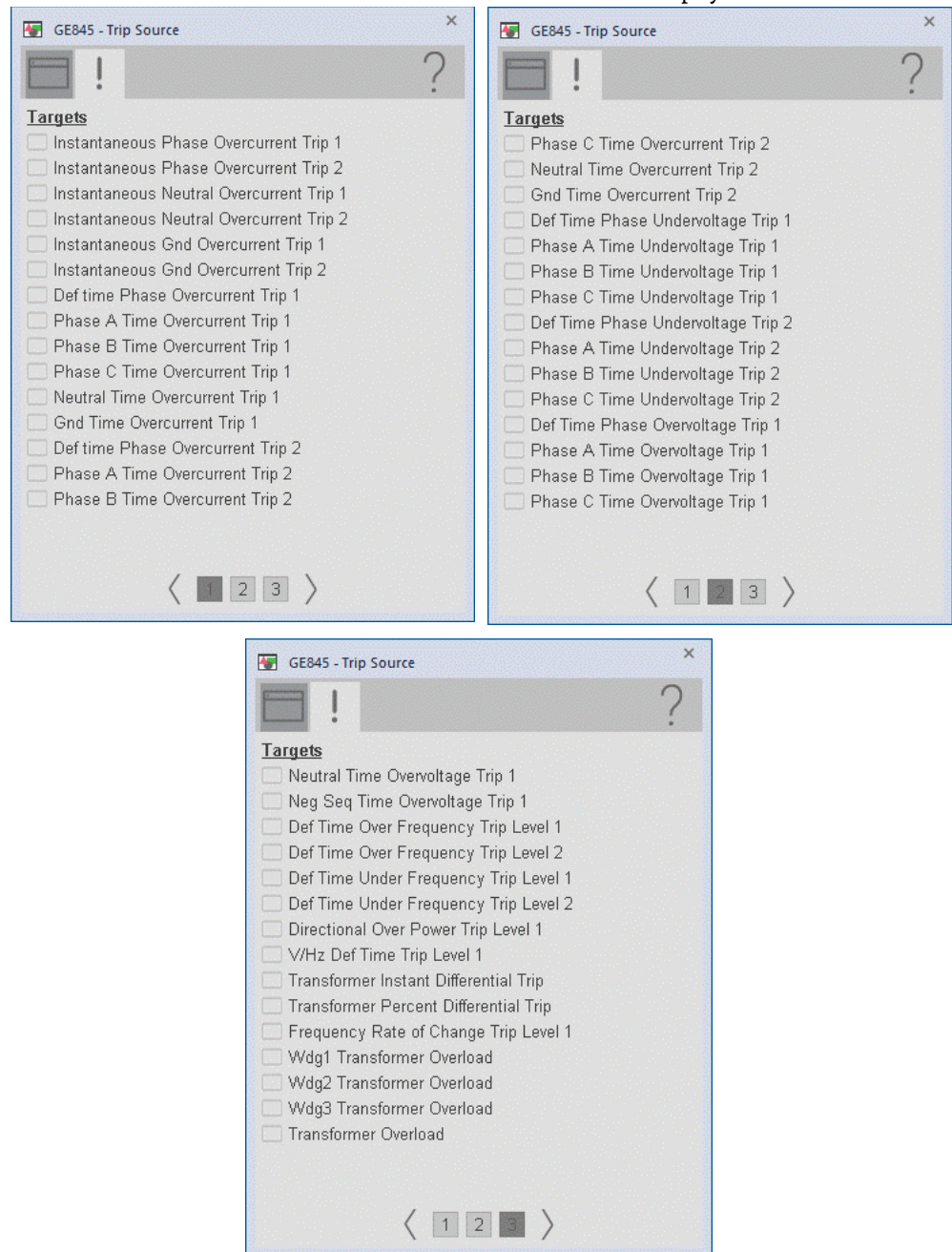


Table 96 - HMI Configuration Tab Description

Item	Action
1	Displays the device description to show on the faceplate title bar as configured for the extended tag property TripSourceA0ITag.@Description
2	The label to show on the graphic symbol as configured for the extended tag property TripSourceA0ITag.@Label.
3	The tag name to show on the faceplate and Tooltip.
4	The Area name for security based on the extended tag property TripSourceA0ITag.@Area.

Faults Tab

The Faults tab shows which alarms are active from the physical device.

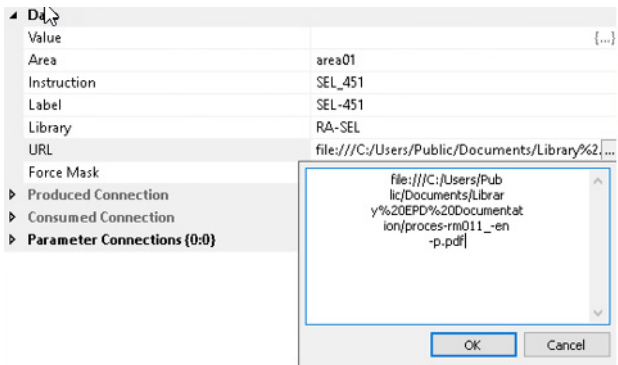


Help Button

Press the help button on the faceplates to access help for the faceplate.

The help file to launch is configurable using the URL extended tag property of the trip source AOI tag.

Note: Individual help files do not currently exist for the 61850 faceplates. The URL can be configured to launch this reference manual (or another reference document) using the following format:



GE Multilin 850 Object



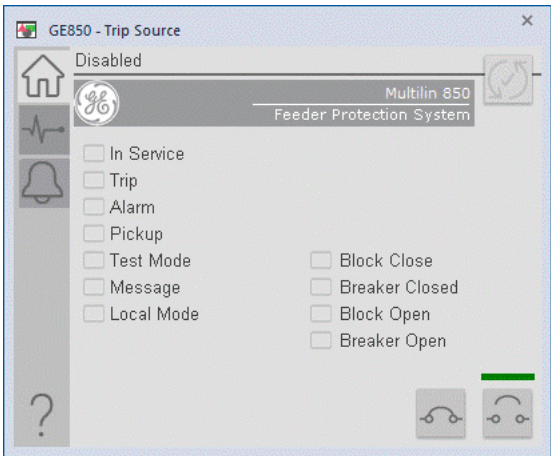
The General Electric (GE) 850 is a feeder protection relay with arc flash protection. This device is used to help protect an electrical bus from conditions of overcurrent, overvoltage, undervoltage, and other various protection features. The device also provides fundamental metering data, including (but not limited to) voltage, current, frequency, and power. The GE 850 can also provide various environmental measurements at its respective physical install location.

This Add-On Instruction monitors one GE 850 feeder protection relay. Alarms are provided when the device experiences a protection-related trip. The instruction also provides capabilities for opening and closing the breaker feature of the relay.

Add-On Instruction

GE850TripSource	
GE850TripSource	GE850
Out_Reset	EN2TR118:1:O021.PlantPAx850_Master_GGIO3_CO_SPCS02_Oper.ctfVal
	0
Out_Close	EN2TR118:1:O021.PlantPAx850_Master_GGIO3_CO_SPCS03_Oper.ctfVal
	0
Out_Open	EN2TR118:1:O021.PlantPAx850_Master_GGIO3_CO_SPCS04_Oper.ctfVal
	0
Ref_PlantPAx850	PlantPAx850
Ref_TargetTripText	GE850AlarmText
Ref_Tgt3Ttxt	TargetLED3
Ref_Tgt4Ttxt	TargetLED4
Ref_Tgt5Ttxt	TargetLED5
Ref_Tgt6Ttxt	TargetLED6
Ref_Tgt7Ttxt	TargetLED7
Ref_Tgt8Ttxt	TargetLED8
Ref_Tgt9Ttxt	TargetLED9

Faceplate



Controller Code

Two Add-On Instructions represent each physical device. The first is generated by the ProSoft Configuration Manager and is included in the program import. The second is the TripSource Add-On Instruction, which is available for download from the Rockwell Automation® Library of Electrical Protection Devices from the PCDC.

InOut Structure for Trip Source Add-On Instruction

InOut parameters are used to link the Add-On Instruction to external tags that contain necessary data for the instruction to operate. These external tags must be of the data type shown in the following table. These tags are representative

of the tags that are required for each GE 850 relay, which is configured in your system.

Table 97 - GE 850 Add-On Instruction

Name	Data Type	Description
Ref_PlantPAxAOI	<Defined by device AOI>	Device Data from the ProSoft Add-On Instruction. This data type changes to match each device tag in the ProSoft Gateway.
Ref_TargetTripText	STRING	Alarm text to be displayed when active.
Ref_Tgt3Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt4Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt5Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt6Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt7Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt8Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt9Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.

Remote Bit Control Value Structure

Remote Bit Control Value parameters are used to link the Add-On Instruction to configurable input points in the physical device. Each bit is configurable via the vendor software of each device. The following table has recommended uses for each bit.

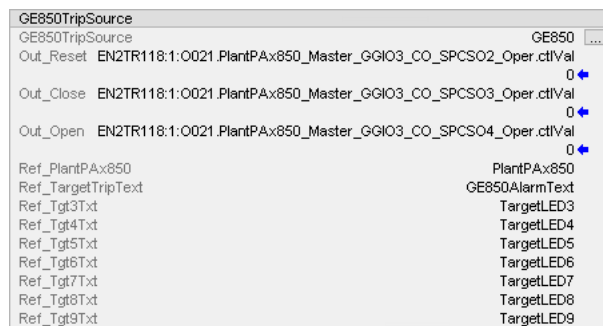
Table 98 - Remote Bit Control - GE 850 Relay

Control Bit	Function
GGIO3_CO_SPCS01_Oper_ctlVal	Enable Relay Configuration
GGIO3_CO_SPCS02_Oper_ctlVal	Reset Relay
GGIO3_CO_SPCS03_Oper_ctlVal	Breaker Close
GGIO3_CO_SPCS04_Oper_ctlVal	Breaker Open

Mapping InOut Tags to Trip Source Add-On Instruction

Configure the GE 850_TripSource Add-On Instruction.

1. Click the question mark next to Ref_PlantPAx850 and select the tag that was created by the ProSoft Configuration Manager for your device.
2. Click the question mark next to each Ref_Tgt#Txt and enter a string tag. These tags are intended to match the status indicators on the front panel of the device.
3. Once you type the tag name, if the tag is not already configured in the controller, you have to right-click and create a tag.
4. Click the question mark next to Ref_TargetTripText and select or create a String tag to be used for the final alarm message. The Trip Source AOI selects from the Ref_Tgt#Txt strings based on the active trip source and copies that reference string to this target string.
5. For Output parameters, click the question mark next to each Output parameter and select the tag to be used when using RLL. For FBD, add an ORef configured with the appropriate I/O tag and connect the associated output parameter to the ORef.



Using Visualization Files

See [Visualization Files on page 13](#) for detailed information.

Faceplates

The Operator tab is displayed when the faceplate is initially opened. Click the appropriate icon on the left of the faceplate to access a specific tab.

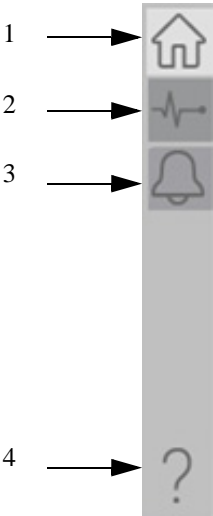


Table 99 - Tab Descriptions

Item	Description
1	Operator tab
2	Diagnostics tab
3	Alarms tab
4	Help

Operator Tab

The Faceplate initially opens to the Operator tab, sometimes called the Home tab. From here, an operator can monitor the device status.

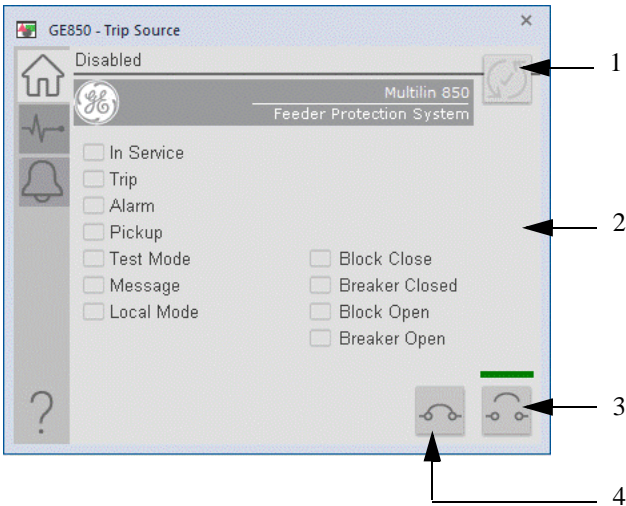


Table 100 - Operator Tab Description

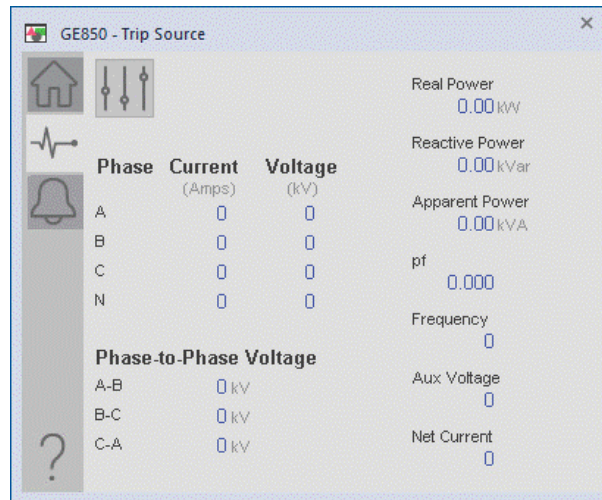
Item	Description
1	Click to reset the device. The status of the device is indicated on the faceplate.
2	Status Indicators
3	Click to open the circuit breaker.
4	Click to close the circuit breaker.

Diagnostics Tab

The diagnostics tab allows the operator to see the measurement values from the physical device.

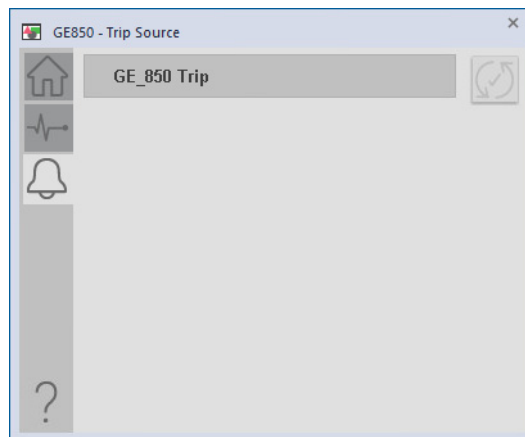
Diagnostics Tab

Readout of the measurement values from the GE 850.



Alarms

The Alarm tab displays the trip source alarm. The icon on the tab for the alarms page has an outline that changes color to show the current active alarm status.



Advanced Properties


Click the advanced properties icon  on the diagnostics page to display the advanced properties. The following screen capture shows the tabs that are available in the advanced properties display



Table 101 - Advanced Properties Tab Descriptions

Item	Description
1	HMI Configuration
2	Faults
3	Help

HMI Configuration Tab

The HMI configuration tab provides access to displayed text, and faceplate-to-faceplate navigation settings. Configure the description, label, tag, and security area for the device.

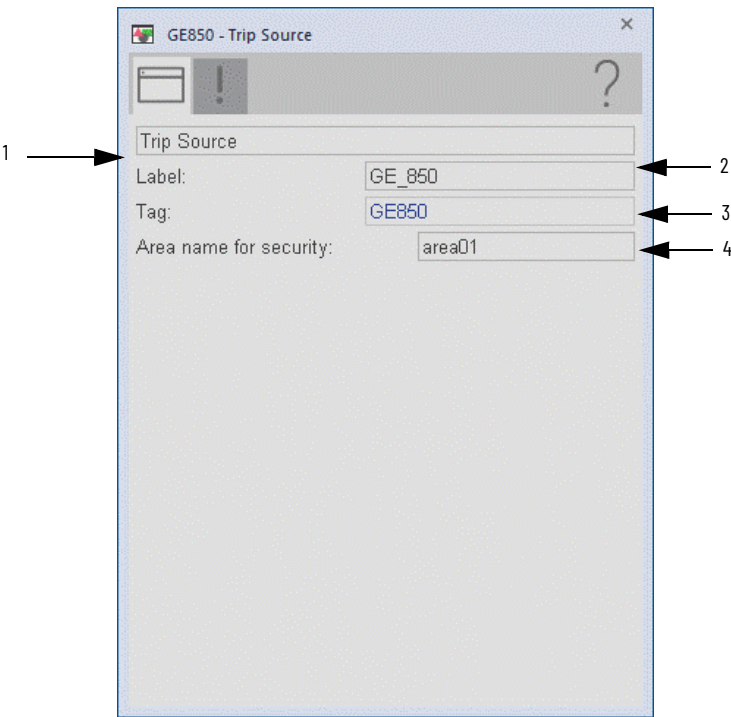
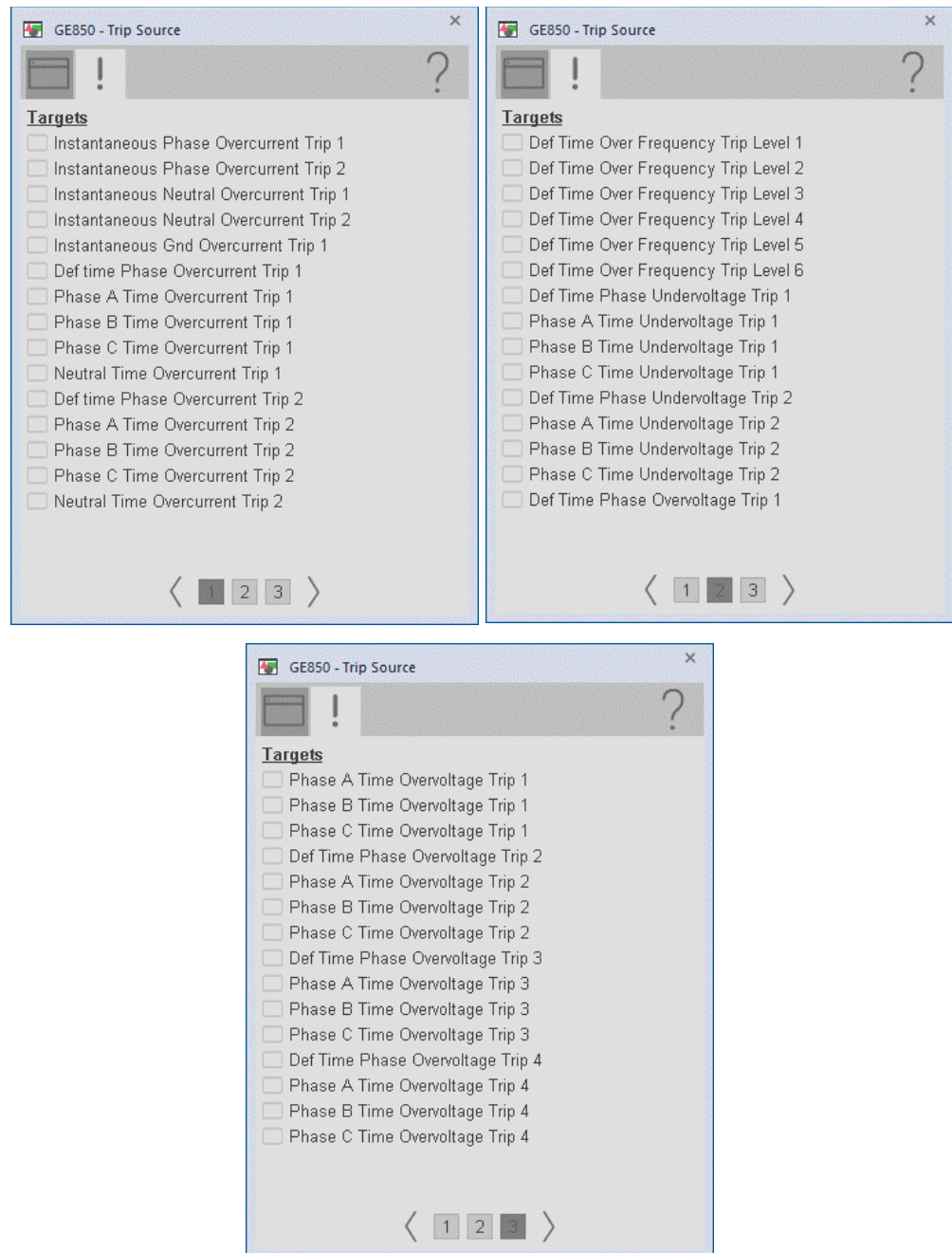


Table 102 - HMI Configuration Tab Description

Item	Action
1	Displays the device description to show on the faceplate title bar as configured for the extended tag property TripSourceA0ITag.@Description
2	The label to show on the graphic symbol as configured for the extended tag property TripSourceA0ITag.@Label.
3	The tag name to show on the faceplate and Tooltip.
4	The Area name for security based on the extended tag property TripSourceA0ITag.@Area.

Faults Tab

The faults tab shows which alarms are active from the physical device.

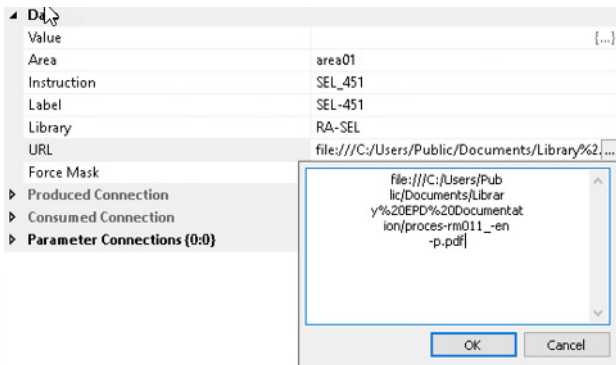


Help Button

Press the help button on the faceplates to access help for the faceplate.

The help file to launch is configurable using the URL extended tag property of the trip source AOI tag.

Note: Individual help files do not currently exist for the 61850 faceplates. The URL can be configured to launch this reference manual (or another reference document) using the following format:



GE Multilin 869 Object



The General Electric (GE) 869 is a motor protection relay with arc flash protection. This device is designed for the protection, control, and management of medium- and large-induction and synchronous motors. The GE 869 relay provides advanced condition-based monitoring and diagnostics with high-end fault and disturbance recording. The device also provides fundamental metering data, including (but not limited to) voltage, current, frequency, and power. The GE 869 can also provide various environmental measurements at its respective physical install location.

This Add-On Instruction monitors one GE 869 motor protection relay. Alarms are provided when the device experiences a protection-related trip. The instruction also provides capabilities for starting and stopping the motor feature of the relay.

Add-On Instruction

GE869TripSource	
GE869TripSource	GE869
Out_Reset	EN2TR118:1:0023 PlantPax869_Master_GGIO3_CO_SPCS02_Oper.ctiVal
	0
Out_Stop	EN2TR118:1:0023 PlantPax869_Master_GGIO3_CO_SPCS03_Oper.ctiVal
	0
Out_Start	EN2TR118:1:0023 PlantPax869_Master_GGIO3_CO_SPCS04_Oper.ctiVal
	0
Ref_PlantPax869	PlantPax869
Ref_TargetTripText	GE869AlarmText
Ref_Tgt3Txt	TargetLED3
Ref_Tgt4Txt	TargetLED4
Ref_Tgt5Txt	TargetLED5
Ref_Tgt6Txt	TargetLED6
Ref_Tgt7Txt	TargetLED7
Ref_Tgt8Txt	TargetLED8
Ref_Tgt9Txt	TargetLED9
Ref_Tgt10Txt	TargetLED10
Ref_Tgt11Txt	TargetLED11

Faceplate



Controller Code

Two Add-On Instructions represent each physical device. The first is generated by the ProSoft Configuration Manager and is included in the program import. The second is the TripSource Add-On Instruction, which is available for download from the Rockwell Automation® Library of Electrical Protection Devices from the PCDC.

InOut Structure for Trip Source Add-On Instruction

InOut parameters in [Table 103](#) are used to link the Add-On Instruction to external tags that contain necessary data for the instruction to operate. These external tags must be of the data type shown. These tags are representative of the tags that are required for each GE 869 relay, which is configured in your system.

Table 103 - GE 869 Add-On Instruction

Name	Data Type	Description
Ref_PlantPAxAOI	<Defined by device AOI>	Device Data from the ProSoft Add-On Instruction. This data type changes to match each device tag in the ProSoft Gateway.
Ref_TargetTripText	STRING	Alarm text to be displayed when active.
Ref_Tgt3Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt4Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt5Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt6Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt7Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt8Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt9Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt10Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt11Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.

Remote Bit Control Value Structure

Remote Bit Control Value parameters are used to link the Add-On Instruction to configurable input points in the physical device. Each bit is configurable via the vendor software of each device. [Table 104](#) has recommended uses for each bit.

Table 104 - Remote Bit Control - GE 869 Relay

Control Bit	Function
GGI03_CO_SPCS01_Oper_ctlVal	Reset Relay
GGI03_CO_SPCS02_Oper_ctlVal	Motor Start
GGI03_CO_SPCS03_Oper_ctlVal	Motor Stop

Mapping InOut Tags to Trip Source Add-On Instruction

Configure the GE 869_TripSource Add-On Instruction.

1. Click the question mark next to Ref_PlantPax869 and select the tag that was created by the ProSoft Configuration Manager for your device.
2. Click the question mark next to each Ref_Tgt#Txt and enter a string tag. These tags are intended to match the status indicators on the front panel of the device.
3. Once you type the tag name, if the tag is not already configured in the controller, you have to right-click and create a tag.
4. Click the question mark next to Ref_TargetTripText and select or create a String tag to be used for the final alarm message. The Trip Source AOI selects from the Ref_Tgt#Txt strings based on the active trip source and copies that reference string to this target string.
5. For Output parameters, click the question mark next to each Output parameter and select the tag to be used when using RLL. For FBD, add an ORef configured with the appropriate I/O tag and connect the associated output parameter to the ORef.

GE869TripSource	
GE869TripSource	GE869
Out_Reset	EN2TR118:1:0022.PlantPax869_Master_GGIO3_CO_SPCS02_Oper.ctlVal
	0
Out_Stop	EN2TR118:1:0023.PlantPax869_Master_GGIO3_CO_SPCS03_Oper.ctlVal
	0
Out_Start	EN2TR118:1:0023.PlantPax869_Master_GGIO3_CO_SPCS04_Oper.ctlVal
	0
Ref_PlantPax869	PlantPax869
Ref_TargetTripText	GE869AlarmText
Ref_Tgt3Txt	TargetLED3
Ref_Tgt4Txt	TargetLED4
Ref_Tgt5Txt	TargetLED5
Ref_Tgt6Txt	TargetLED6
Ref_Tgt7Txt	TargetLED7
Ref_Tgt8Txt	TargetLED8
Ref_Tgt9Txt	TargetLED9
Ref_Tgt10Txt	TargetLED10
Ref_Tgt11Txt	TargetLED11

Using Visualization Files

See [Visualization Files on page 13](#) for detailed information.

Faceplates

The Operator tab is displayed when the faceplate is initially opened. Click the appropriate icon on the left of the faceplate to access a specific tab.

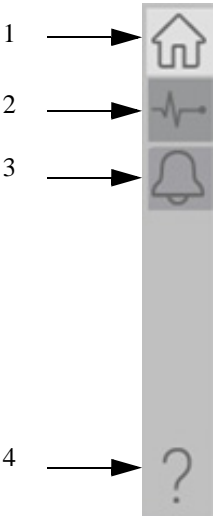


Table 105 - Tab Descriptions

Item	Description
1	Operator tab
2	Diagnostics tab
3	Alarms tab
4	Help

Operator Tab

The Faceplate initially opens to the Operator tab, sometimes called the Home tab. From here, an operator can monitor the device status and manually operate the device.

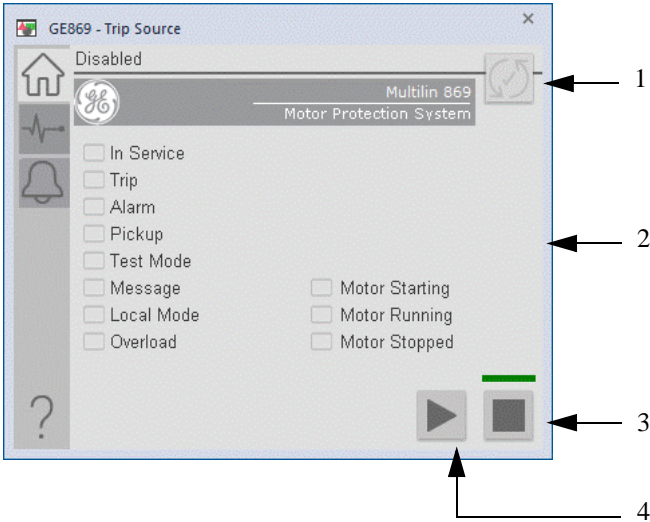


Table 106 - Operator Tab Description

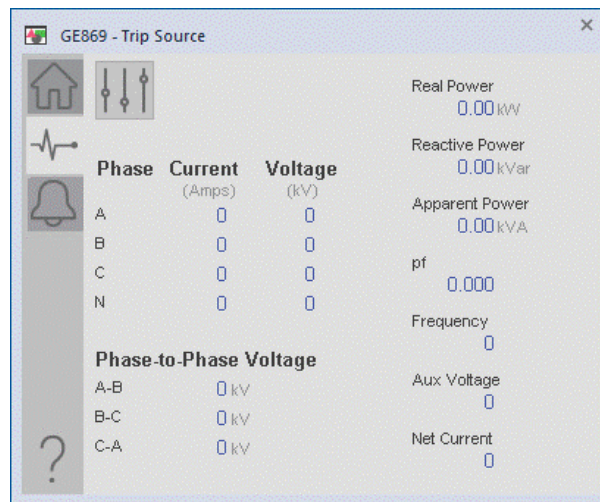
Item	Description
1	Click to reset the device. The status of the device is indicated on the faceplate.
2	Status Indicators
3	Click to stop the motor.
4	Click to start the motor.

Diagnostics Tab

The diagnostics tab allows the operator to see the measurement values from the physical device.

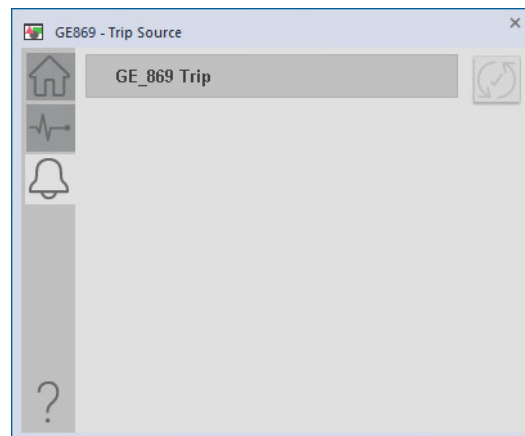
Diagnostics Tab

Readout of the measurement values from the GE 869.



Alarms

The Alarm tab displays the trip source alarm. The icon on the tab for the alarms page has an outline that changes color to show the current active alarm status.



Advanced Properties


Click the advanced properties icon  on the diagnostics page to display the advanced properties. The following screen capture shows the tabs that are available in the advanced properties display



Table 107 - Advanced Properties Tab Descriptions

Item	Description
1	HMI Configuration
2	Faults
3	Help

HMI Configuration Tab

The HMI configuration tab provides access to displayed text, and faceplate-to-faceplate navigation settings. Configure the description, label, tag, and security area for the device.

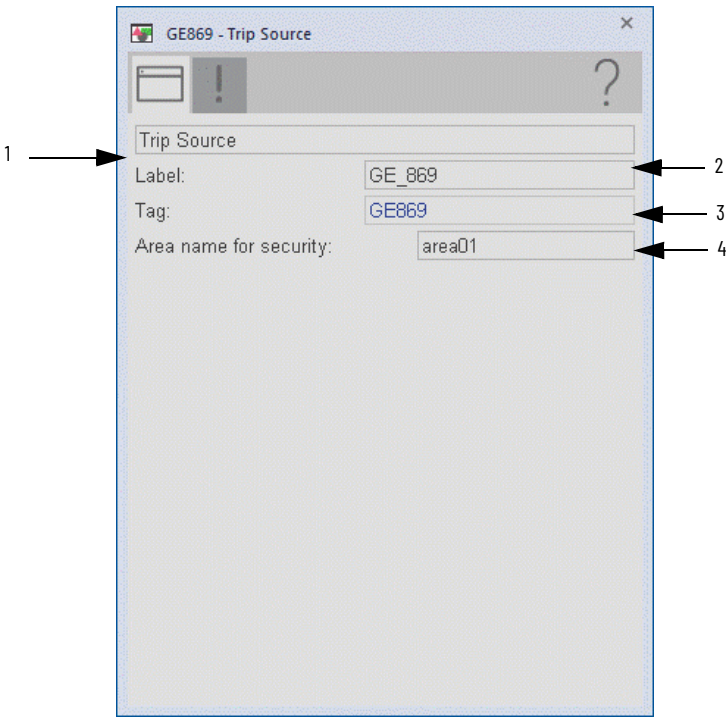
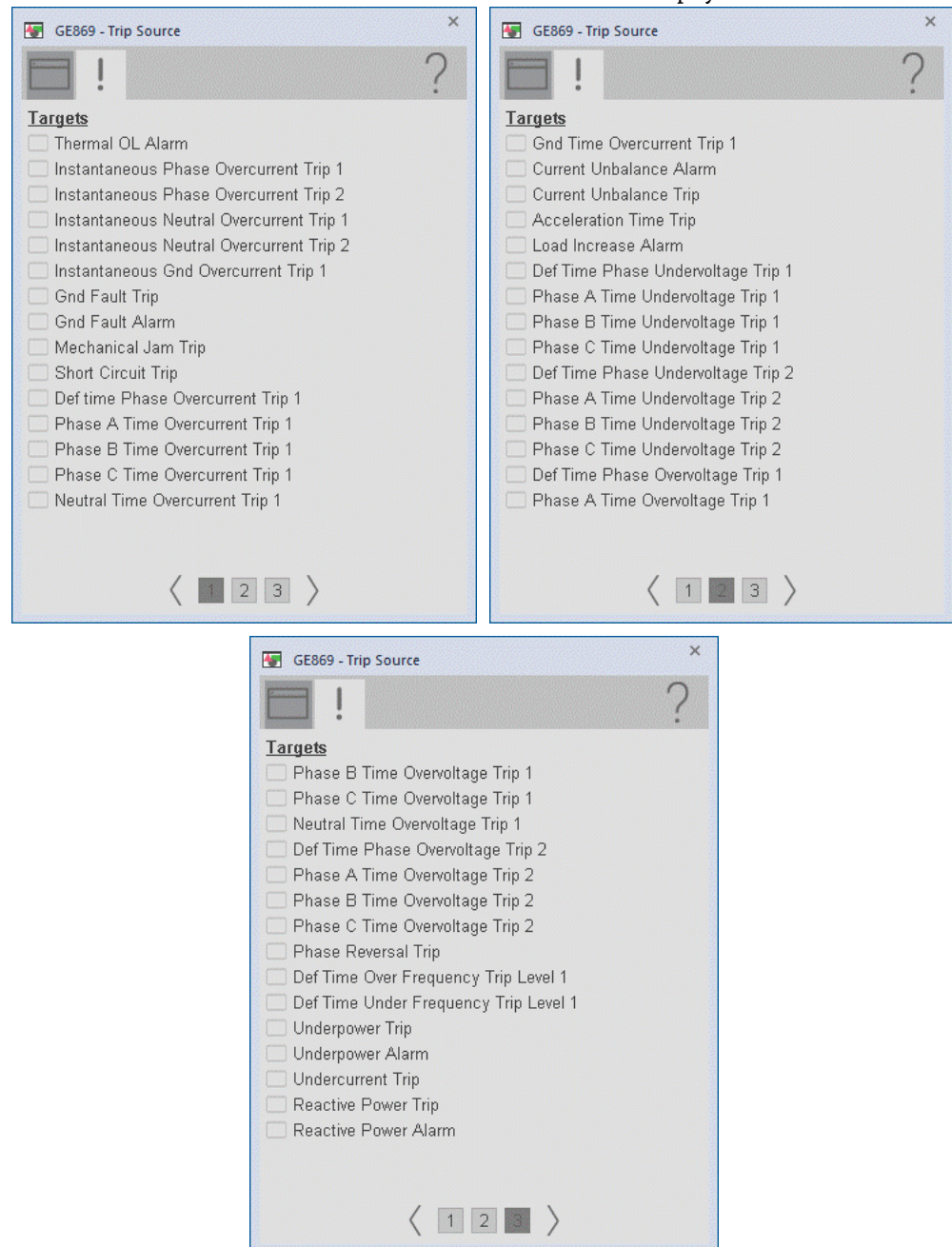


Table 108 - HMI Configuration Tab Description

Item	Action
1	Displays the device description to show on the faceplate title bar as configured for the extended tag property TripSourceA0ITag.@Description
2	The label to show on the graphic symbol as configured for the extended tag property TripSourceA0ITag.@Label.
3	The tag name to show on the faceplate and Tooltip.
4	The Area name for security based on the extended tag property TripSourceA0ITag.@Area.

Faults Tab

The faults tab shows which alarms are active from the physical device.

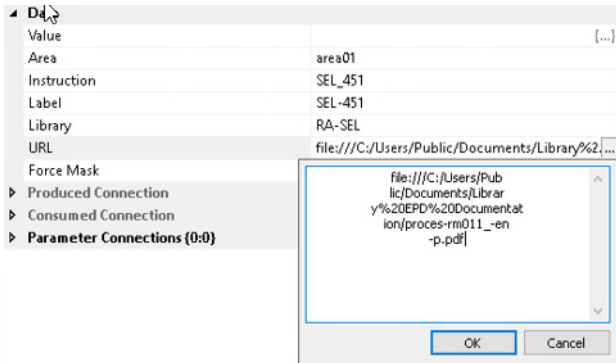


Help Button

Press the help button on the faceplates to access help for the faceplate.

The help file to launch is configurable using the URL extended tag property of the trip source AOI tag.

Note: Individual help files do not currently exist for the 61850 faceplates. The URL can be configured to launch this reference manual (or another reference document) using the following format:



GE Multilin 889 Object



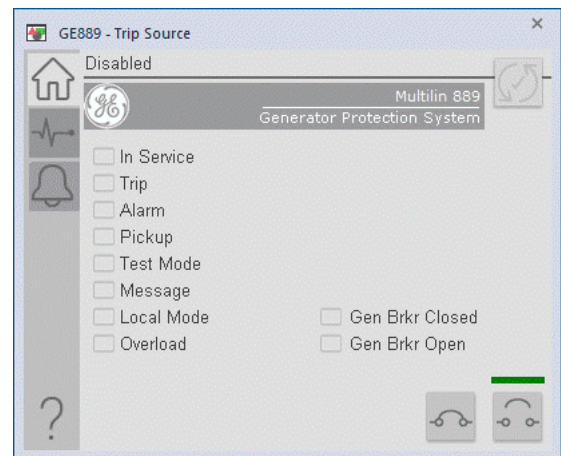
Add-On Instruction

The General Electric (GE) 889 is a generator protection relay with arc flash protection. This device is designed to provide subcycle differential protection, control, and monitoring of primary and back-up generation equipment. The device also provides fundamental metering data including (but not limited to) voltage, current, frequency, and power. The GE 889 can also provide various environmental measurements at its respective physical install location.

This Add-On Instruction monitors one GE 889 generator protection relay. Alarms are provided when the device experiences a protection-related trip. The instruction also provides capabilities for opening and closing the breaker feature of the relay.

Faceplate

GE889TripSource	GE889
GE889TripSource	
Out_Reset	EN2TR118:1:0024.PlantPax889_Master_GGIO3_CO_SPCS02_Oper.ctlVal
	0
Out_Close	EN2TR118:1:0024.PlantPax889_Master_GGIO3_CO_SPCS03_Oper.ctlVal
	0
Out_Open	EN2TR118:1:0024.PlantPax889_Master_GGIO3_CO_SPCS04_Oper.ctlVal
	0
Ref_PlantPax889	PlantPax889
Ref_TargetTripText	GE889AlarmText
Ref_Tgt3Txt	TargetLED3
Ref_Tgt4Txt	TargetLED4
Ref_Tgt5Txt	TargetLED5
Ref_Tgt6Txt	TargetLED6
Ref_Tgt7Txt	TargetLED7
Ref_Tgt8Txt	TargetLED8
Ref_Tgt9Txt	TargetLED9
Ref_Tgt10Txt	TargetLED10



Controller Code

Two Add-On Instructions represent each physical device. The first is generated by the ProSoft Configuration Manager and is included in the program import. The second is the TripSource Add-On Instruction, which is available for download from the Rockwell Automation® Library of Electrical Protection Devices from the PCDC.

InOut Structure for Trip Source Add-On Instruction

InOut parameters in [Table 109](#) are used to link the Add-On Instruction to external tags that contain necessary data for the instruction to operate. These external tags must be of the data type shown. These tags are representative of the tags that are required for each GE 889 relay, which is configured in your system.

Table 109 - GE 889 Add-On Instruction

Name	Data Type	Description
Ref_PlantPAxAOI	<Defined by device AOI>	Device Data from the ProSoft Add-On Instruction. This data type changes to match each device tag in the ProSoft Gateway.
Ref_TargetTripText	STRING	Alarm text to be displayed when active.
Ref_Tgt3Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt4Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt5Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt6Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt7Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt8Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt9Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.
Ref_Tgt10Txt	STRING	Alarm description for device front-plate status indicators, which is configurable through device vendor software.

Remote Bit Control Value Structure

Remote Bit Control Value parameters are used to link the Add-On Instruction to configurable input points in the physical device. Each bit is configurable via the vendor software of each device. [Table 110](#) has recommended uses for each bit.

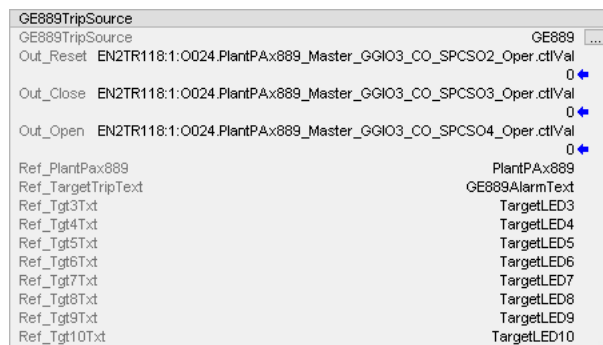
Table 110 - Remote Bit Control - GE 889 Relay

Control Bit	Function
GGIO3_CO_SPCS01_Oper_ctlVal	Enable Relay Configuration
GGIO3_CO_SPCS02_Oper_ctlVal	Reset Relay
GGIO3_CO_SPCS03_Oper_ctlVal	Breaker Close
GGIO3_CO_SPCS03_Oper_ctlVal	Breaker Open

Mapping InOut Tags to Trip Source Add-On Instruction

Configure the GE 889_TripSource Add-On Instruction.

1. Click the question mark next to Ref_PlantPax889 and select the tag that was created by the ProSoft Configuration Manager for your device.
2. Click the question mark next to each Ref_Tgt#Txt and enter a string tag. These tags are intended to match the status indicators on the front panel of the device.
3. Once you type the tag name, if the tag is not already configured in the controller, you have to right-click and create a tag.
4. Click the question mark next to Ref_TargetTripText and select or create a String tag to be used for the final alarm message. The Trip Source AOI selects from the Ref_Tgt#Txt strings based on the active trip source and copies that reference string to this target string.
5. For Output parameters, click the question mark next to each Output parameter and select the tag to be used when using RLL. For FBD, add an ORef configured with the appropriate I/O tag and connect the associated output parameter to the ORef.



Using Visualization Files

See [Visualization Files on page 13](#) for detailed information.

Faceplates

The Operator tab is displayed when the faceplate is initially opened. Click the appropriate icon on the left of the faceplate to access a specific tab.

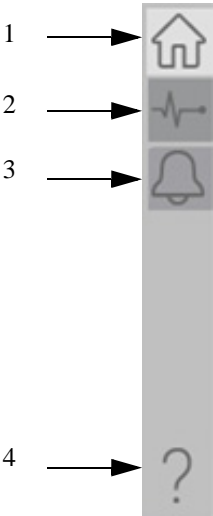


Table 111 - Tab Descriptions

Item	Description
1	Operator tab
2	Diagnostics tab
3	Alarms tab
4	Help

Operator Tab

The Faceplate initially opens to the Operator tab, sometimes called the Home tab. From here, an operator can monitor the device status and manually operate the device.

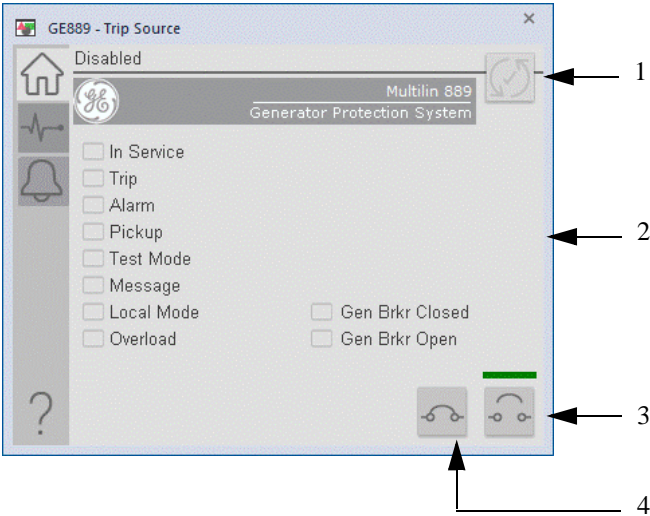


Table 112 - Operator Tab Description

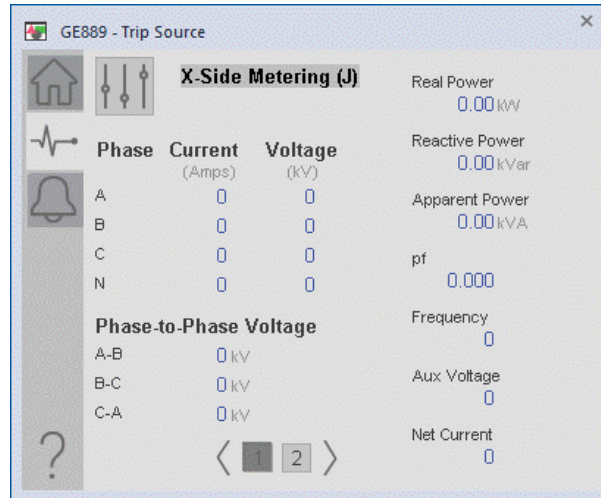
Item	Description
1	Click to reset the device. The status of the device is indicated on the faceplate.
2	Status Indicators
3	Click to open the circuit breaker.
4	Click to close the circuit breaker.

Diagnostics Tab

The diagnostics tab allows the operator to see the measurement values from the physical device.

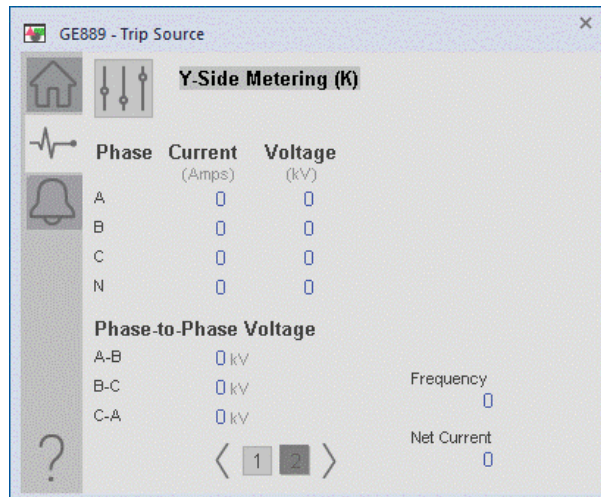
Diagnostics Tab Page 1

Readout of the X-side measurement values from the GE 889. This readout displays fundamental metering data that is associated with the X-side of the generator.



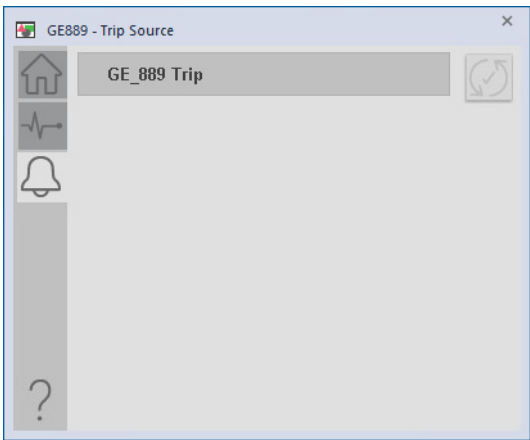
Diagnostics Tab Page 2

Readout of the Y-side measurement values from the GE 889. This readout displays fundamental metering data that is associated with the Y-side of the generator.



Alarms

The Alarm tab displays the trip source alarm. The icon on the tab for the alarms page has an outline that changes color to show the current active alarm status.



Advanced Properties


Click the advanced properties icon  on the diagnostics page to display the advanced properties. The following screen capture shows the tabs that are available in the advanced properties display

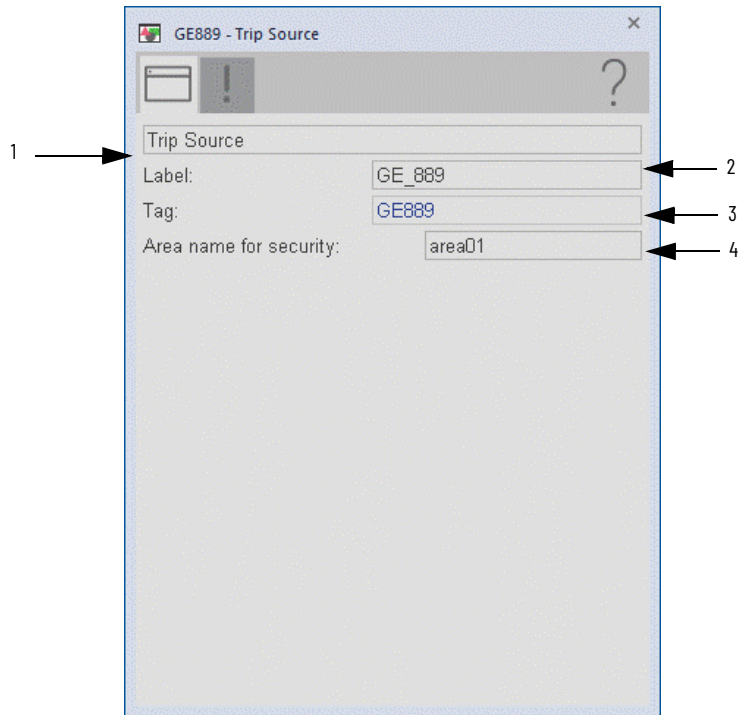


Table 113 - Advanced Properties Tab Descriptions

Item	Description
1	HMI Configuration
2	Faults
3	Help

HMI Configuration Tab

The HMI configuration tab provides access to displayed text, and faceplate-to-faceplate navigation settings. Configure the description, label, tag, and security area for the device.



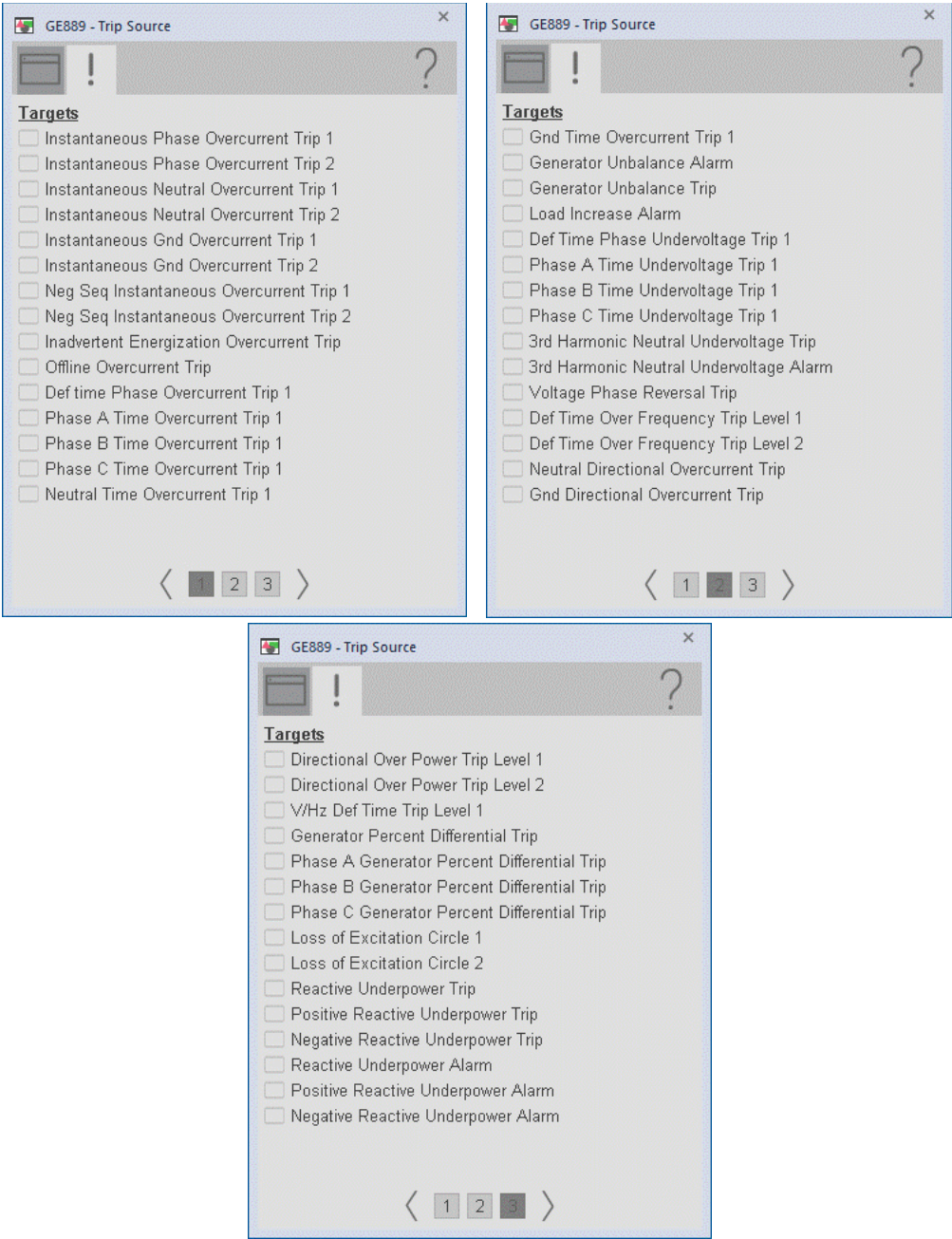
HMI Configuration Tab

Table 114 - HMI Configuration Tab Descriptions

Item	Action
1	Displays the device description to show on the faceplate title bar as configured for the extended tag property TripSourceA01Tag.@Description
2	The label to show on the graphic symbol as configured for the extended tag property TripSourceA01Tag.@Label.
3	The tag name to show on the faceplate and Tooltip.
4	The Area name for security based on the extended tag property TripSourceA01Tag.@Area.

Faults Tab

The faults tab shows which alarms are active from the physical device.

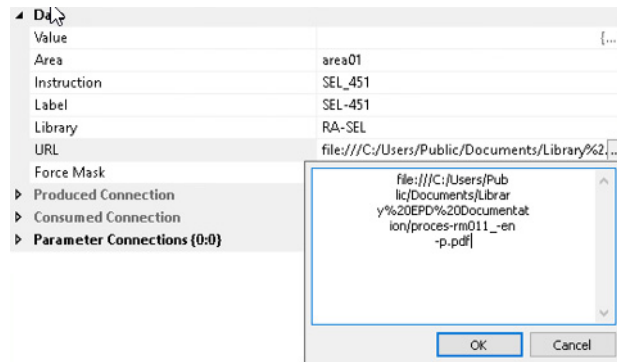


Help Button

Press the help button on the faceplates to access help for the faceplate.

The help file to launch is configurable using the URL extended tag property of the trip source AOI tag.

Note: Individual help files do not currently exist for the 61850 faceplates. The URL can be configured to launch this reference manual (or another reference document) using the following format:



Notes:

For definitions of terms not listed here, refer to the Allen-Bradley® Industrial Automation Glossary, publication [AG-7.1](#).

Add-On Instruction	Add-On Instructions are reusable code objects that contain encapsulated logic that can streamline the implementation of your system. The objects let you create your own instruction set for programming logic as a supplement to the instruction set provided natively in the ControlLogix® firmware. An Add-On Instruction is defined once in each controller project, and can be instantiated multiple times in your application code as needed.
address conflict detection (ACD)	Allows a device to detect if another device is using its IP address. This ACD is not to be confused with the .acd file extension, which is associated with the RSLogix 5000® software tool. The .acd file stores a programming project.
Address Resolution Protocol (ARP)	A broadcast message that asks who has this IP address; enables a network to learn and adapt to changes.
alarm	An audible or visible means of indicating to the operator an equipment malfunction, process deviation, or abnormal condition that requires a response.
alarm event	A push notification from the alarm object to the alarm subscriber that indicates a change in alarm state.
alarm management	The processes and practices to determine, document, design, operate, monitor, and maintain alarm systems.
alarm object	The alarm system element that owns the alarm; it is responsible to identify an alarm, manage its state, and generate an alarm event.
alarm priority	An attribute of In-Alarm event that informs you of the salience of the event.
alarm system	The collection of hardware and software that detects an alarm state, communicates the indication of that state to the operator, and records changes in the alarm state.
application objects	These objects define how device data is represented and accessed.
application server (AppServ)	The application server (AppServ) is also the Process Automation System Server (PASS) that is typically a FactoryTalk® Directory client of the PASS. Examples are AppServ-Batch for a FactoryTalk Batch application or AppServ-History for a Historian application.
architecture	An architecture is a representation of a control and software system, and the process and discipline for effectively implementing the designs for such a system. An architecture conveys the information content of the related elements that comprise a system, the relationships among those elements, and the rules that govern those relationships.
Automatic Device Configuration (ADC)	A Studio 5000® environment feature that supports the automatic download of configuration data into a Logix controller. The download establishes an EtherNet/IP™ network connection to a device.
Automatic Device Replacement (ADR)	A Studio 5000 environment feature that automatically commissions the original node address and downloads the original configured device parameters into the new device.
characterization	A characterization is the operation and collection of performance data for a representative process system to determine scalability, stability, and usability of a specific system configuration. A characterization:

- Aims to define a complete system
- Is used to determine if the system is performing at specified level
- Is used to identify usability issues
- Is used to check and create rules, relationships, limits, and recommendations for system elements

CIP connection Transfers data from an application that runs on one end node (transmitter) to an application that runs on another end node (receiver); uses explicit or implicit message types; connected message types are used to transfer data; connected message type can use implicit or explicit messages; unconnected messages are used temporarily and only use explicit messages.

CIP Sync™ Time synchronization service for CIP. Synchronizes clocks across devices on the network; an individual time master with multiple slaves.

client A client is hardware (personal computer) and software that provides an interface with a link into a system server application. In the Rockwell Automation® architecture, a client is a computer that is loaded with runtime software.

Common Industrial Protocol (CIP) Open, message-based, application-layer protocol.

control strategy A control strategy is a system footprint to show the complexity of the following:

- Data servers
- Information storage
- Operator interface (graphics, faceplates)
- Control code (sequence, procedure, phases)
- I/O

Control strategies are used to determine a set of comprehensive process system footprints that establish a representative system loading. The representative system loading can be measured to identify a process system's boundaries and limitations (implementation rules).

Configured IED Description (CID) An XML file that defines all information that can be communicated from the Intelligent Electronic Device (IED).

Converged Plant-wide Ethernet (CPwE) An architecture that provides standard network services to application devices and equipment in an Industrial Automation and Control System (IACS) application; integrates the devices and equipment into the wider enterprise.

critical system attribute (CSA) A critical system attribute (CSA) is a customer-facing characteristic that defines or identifies whether the system is performing as expected. CSAs are specific, visible indicators of overall system performance and usability.

CSAs have specified parameters that must be maintained and that set the base operational requirements for the system. These parameters determine pass or fail (follow up) of a system test. For example, screen paint time < 2 seconds and screen refresh < 1 second.

There are many other attributes that are associated with system elements such as controller loading, computer loading, and network settings that must be configured properly to maintain system CSAs.

datastore Represents a storage location for virtual machine files. A storage location can be a virtual machine file system volume, a local file system path, or a directory on Network Attached Storage.

development software	Development software is a program application that is used to configure various system components and not required at runtime. For example, Studio 5000 Logix Designer®, FactoryTalk View Studio software.
Device Level Ring (DLR)	An individual, fault-tolerant network for interconnection of automatic devices; Layer 2 protocol.
DHCP port-based allocation	Assigned automatically per physical switch port.
display object	A display object is a functional group of display elements with animations.
distributed control system (DCS)	A specially designed control system for complex and large applications in industrial processes wherein the control elements of the system are distributed geographically throughout the plant. In a DCS, a hierarchy of controllers is connected by communication networks for command and monitoring.
Domain Name System (DNS)	A name resolution protocol that enables identification of devices by name instead of IP address.
Dynamic Host Configuration Protocol (DHCP)	A server assigns IP addresses from a pool of addresses.
Electronic data sheet (EDS)	An ASCII text file that describes the features of an EtherNet/IP device and is used by software tools for device and network configuration.
engineering workstation (EWS)	The engineering workstation (EWS) provides system configuration, development, and maintenance functions of the PlantPAx® system. The EWS contains development software, including FactoryTalk View SE Studio and Studio 5000 Logix Designer.
ESXi hypervisor	Also called a 'bare metal' hypervisor, this virtual software is on top of the resources of a host server when the server does not have an operating system installed.
FactoryTalk Directory software	FactoryTalk Directory software defines where system data is stored for access. FactoryTalk Directory software provides a common address book of factory resources that are shared among FactoryTalk-enabled products.
FactoryTalk Services Platform	The FactoryTalk Services Platform (FTSP) is a service-oriented architecture (see SOA) that delivers value through FactoryTalk-enabled products. This platform reduces the customer learning curve and project engineering time through commonality and reuse. For example, activation, FactoryTalk Directory, security, diagnostics, audit, live data, and alarms and events.
flowchart	A formalized graphic representation of a logic sequence, work, or manufacturing process, organization chart, or similar formalized structure.
full-duplex mode	A data transmission mode that is deterministic, collision-free, and can transmit and receive simultaneously.
function block diagram	A graphical language for programmable logic controller design that describes the function between input variables and output variables.
gateway	Connects individual networks to a system of networks.
Generic Object-Oriented Substation Event (GOOSE)	A control strategy to collect and control devices remotely in a distributed system.
global object	An object that is created once and can be referenced multiple times on multiple displays in an application.

half-duplex mode	A data transmission that is non-deterministic, and transmits and receives at different times; collisions occur if a transmission and reception is attempted simultaneously.
historian	Historian is a data collection system with the following components: collection, storage, compression, retrieval, reports, and analysis. Historian functions include raw sampling, compression, storage, retrieval, reconstitute, analyze, summarize, and present (reports and displays).
hypervisor	A program that lets multiple operating systems share resources from an individual hardware host; also called a virtual machine manager. The hypervisor manages the host processor and resources, to allocate what is needed to each virtual machine to make sure they cannot negatively impact each other.
hypervisor client	A program that lets you remotely connect to a host server with a hypervisor from any workstation. From the hypervisor client, you can create, deploy, copy, and edit your virtual machines. When a hypervisor client connects to a vCenter server, additional features include management of your virtual machines.
IEEE-1588	Standard for Precision Clock Synchronization Protocol for Networked Measurement and Control Systems (Precision Time Protocol or PTP).
implicit connection	Time critical in nature. For example, I/O and produced/consumed tags.
Integrated Architecture (IA)	Integrated Architecture (IA) is the identifying name of Rockwell Automation group of products that use Rockwell Automation core-enabling technologies. The PlantPAx system is a defined set of IA products configured in a prescribed way to provide optimal performance as a distributed control system.
International Electrotechnical Commission (IEC)	A global standards body.
Internet Group Management Protocol (IGMP)	A protocol that manages the membership of IP multicast groups.
IP address	Identifies each node on the IP network or system of connected networks.
Knowledgebase	A Rockwell Automation online database of hardware and software solutions based on actual customer-support requests.
linear topology	End-user devices that are daisy-chained together; limited number of nodes are supported.
Manufacturing Message Specification (MMS)	A SCADA-like communication within the IEC 61850 standard.
Network Address Translation (NAT)	A service that translates one IP address to another IP address via a NAT-configured switch. NAT makes it possible for devices that share one IP address on a private subnet to be segmented into multiple identical private subnets while maintaining unique identities on the public subnet.
old computer name	The term 'old computer name' is used to refer to the computer name of the virtual machine before your changes. It could be the factory default computer name of the virtual machines or a computer name set by your organization. Once the computer name is changed, the previous computer name becomes the old computer name.
OPC	A set of industry-standard specifications that define interfaces for communicating with automation devices and services.
operator workstation (OWS)	The operator workstation (OWS) provides the graphical view and interface into the process. The workstation is a client of either a PASS or AppServ-HMI.

PlantPax Distributed Control System	The PlantPax system has all core capabilities that are expected in a world-class distributed control system (DCS). The system is built on a standards-based architecture by using Integrated Architecture® components that enable multi-disciplined control and premier integration with the Rockwell Automation® intelligent motor control portfolio.
Process Automation System Server (PASS)	The Process Automation System Server (PASS) is the core PlantPax system server that allows central administration throughout the PlantPax system. The PASS is a required component.
redundant star topology	Dual connections.
server	Software component that serves data to an application (for example, data server). Typically, server software components are installed on server-class computers.
SFC	A programming language in which individual machine operations within a process are organized into steps and transitions.
star topology	End-user devices are connected to each other via a switch.
static	A device that is hard-coded with an IP address.
subnet mask	Determines which of the 32 bits of the IP address are part of the network ID and which are part of the unique node identification.
Supervisory Control and Data Acquisition (SCADA)	A control strategy to collect and control devices remotely in a distributed system.
system attribute	A system attribute is an operational functionality that can be manipulated or measured and is used to establish the operational boundaries or system capability. For example workstation memory, number of parameters on a screen, and number of control loops. A system attribute can be independent or dependent.
system element	A system element is a distinctive system entity that is made up of a combination of hardware and software products that support an identifiable system function or role. A system element can be manipulated to vary system operation or capability. For example, engineering workstation (EWS), operator workstation (OWS), process automation system server (PASS), and controller.
system infrastructure	System infrastructure is the commercial hardware and software that is required to enable system elements to work together as a system. For example, network switches, computers.
system server	A system server expands the scope of a system as it provides support for additional system capacity or optional system functions. For example, the Process Automation System Server (PASS) is a required component for all centralized and distributed process systems. The PASS provides central name resolution and system-wide, FactoryTalk services. The PASS provides the capability to distribute information to the OWS and add to optional application servers to increase the scope of the process system.
TCP/IP	Abbreviation for Transmission Control Protocol/Internet Protocol. A transport-layer protocol (TCP) and a network-layer protocol (IP) used by Rockwell Automation Ethernet modules to support explicit messaging.
User -defined Data Type (UDT)	Tag types that you create once and reuse in multiple tag templates, multiple times.
virtual LAN (VLAN)	A display object is a functional group of display elements with animations.

- virtual machine** A virtual machine is a software implementation of a computer or workstation that executes programs like a physical computer or workstation. A virtual machine is the collection of dedicated resources a computer needs (for example, RAM, HDD, CPU). These resources are allocated to a virtual machine with the help of a hypervisor.
- virtualization** A switched network segment on a functional or organizational basis rather than physical or geographical.
- workstation** A workstation is a computer that runs development, configuration, and optional maintenance software. A workstation is not a server.

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Literature Library	Find installation instructions, manuals, brochures, and technical data publications.	rok.auto/literature
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