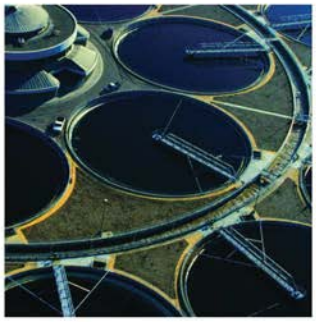
User Manual

Original Instructions

Allen-Bradley

OptiSIS Safety Instrumented System

Catalog Numbers 1711-P05SISID050S, 1711-P05SISID050T, 1711-P05SISOD050S, 1711-P05SISOD050T, 1711-P05SISID100S, 1711-P05SISID100T, 1711-P05SISOD100S, 1711-P05SISOD100T



Allen-Bradley • Rockwell Software

Rockwell Automation

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.

No patent liability is assumed by Rockwell Automation, Inc. with respect to use of information, circuits, equipment, or software described in this manual.

Reproduction of the contents of this manual, in whole or in part, without written permission of Rockwell Automation, Inc., is prohibited

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.

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).

Chapter 4

Connect Field Wiring

Chapter 5

Startup

Chapter 6

Configure I/O

Chapter 7

Configure Logic

Chapter 8

Communication

Chapter 9

Operation

Chapter 10

Maintenance

Appendix A

Offline Configuration Tool

Appendix B

Specifications

Appendix C

Spare Parts List

About This Publication

The OptiSIS® solution is a ready to install configurable logic solver for use in safety instrumented system (SIS) applications. Once installed and wired, it can be configured and tested to provide a complete SIS solution that can meet application requirements up to SIL 3.

This manual is intended for engineers or technicians that are directly involved in the installation, connection, use, and maintenance of the OptiSIS solution.

ATTENTION: To meet any claimed safety integrity level, the OptiSIS solution must be applied by following the Process Safety Lifecycle phases that are defined in these resources:

- IEC 61511
- Other applicable sector Functional Safety standards
- Any application sector codes
- This user manual

ATTENTION: To operate the touch screen, use a finger, gloved finger, or plastic stylus with a minimum tip radius of 1.3 mm (0.051 in.). Use of any other object or tool can damage the keypad or touch screen.

Summary of Changes

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

Topic	Page
Updated Table 1	8
Replaced Figure 7	23
Replaced image in Step 3	25
Updated screen captures in Navigation section	31
Updated screen captures in Connect Peripherals section	37
Updated screen captures in Configure I/O Points section	41
Updated screen captures in Configure an I/O section	43
Updated screen captures in Validate Configuration section	59
Updated screen captures in Monitor System State section	75
Updated Appendix D	117
Updated OptiSIS Solution Modbus Map section and Table 27	119

Terminology

This table defines the terms and abbreviations that are used in this manual.

Table 1 - Terms and Abbreviations

Term/ Abbreviation	Definition
AI	Analog input
AMS	Asset management system: A system that is used to manage (diagnose, configure, and maintain) smart field devices
AO	Analog output
AWG	American Wire Gauge: A standard system that is used for designating the size of electrical conductors.
C & E	Cause and effect
CommDTM	A communication driver that is installed as part of an AMS. This driver provides a specific communication interface between the FDT framework and the specific automation technology the AMS system is connected to
CPU	Processor module
DeviceDTM	A software driver that is installed into an AMS that is specific to the device of a manufacturer, which provides the data interface specific to that model
DI	Digital input
DO	Digital output
DTM	Device type manager. There are two types of DTM, a DeviceDTM and a CommDTM
F & G	Fire and gas
FDT	Field device tool: A technology for configuration and access of field devices. It allows field device data to be shared between different technologies. For more information, go to www.fdtgroup.org
HART	Highway addressable transducer protocol
HFT	Hardware fault tolerance
HMI	Human machine interface
I/O	Input/output
IP	Ingress protection
ISA	International Society of Automation
MOC	Management of change process
MTTR	Mean time to repair
NC	Normally closed
NEC	National Electrical Code: A set of regulations that govern the construction and installation of electrical wiring and apparatus.
NEMA	National Electrical Manufacturers Association
NO	Normally open
PCDC	Product Compatibility and Download Center
PFD	Probability of a dangerous failure on demand
PFH	Probability of dangerous failure per hour
PSAT	Pre-startup acceptance test: A functional test of the safety instrumented system
PST	Process safety time
PV	Process variable
RRF	Risk reduction factor
RTU	Remote terminal unit
SIF	Safety instrumented functions
SIL	Safety integrity level
SIS	Safety instrumented system
SRS	Safety requirements specification
TCP	Transmission control protocol
TCP/IP	Transmission control protocol/internet protocol
TMR	Triple modular redundancy
USB	Universal serial bus
UTC	Coordinated universal time

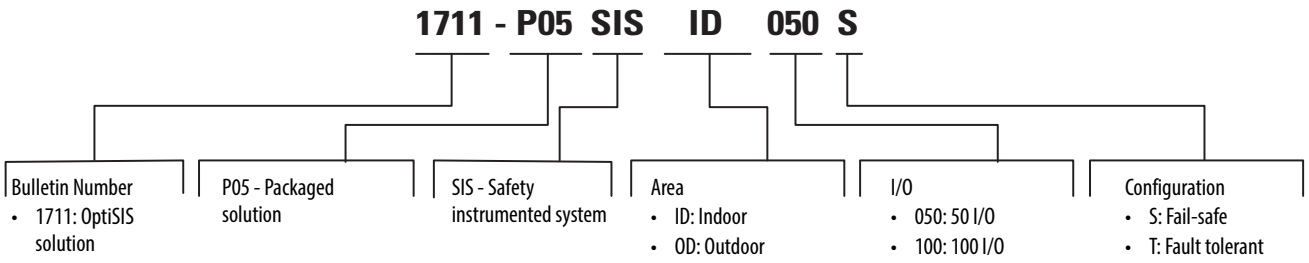
About the OptiSIS Solution

The OptiSIS solution is a packaged, pre-built, pre-programmed safety instrumented system (SIS) logic solver that you mount, wire, and configure as part of a complete SIS solution. The solution can meet application requirements up to SIL 3. The solution uses a Rockwell Automation® industrial computer, AADvance® controllers, and I/O modules.

Such applications include the following:

- Emergency shutdown systems/safety instrumented systems
- Burner management systems
- High-integrity pressure protection systems
- Energize-to-action systems

Catalog Numbers



I/O Configurations

The OptiSIS solution is available in two sizes:

- 50 I/O solution (see Table 15 on page 111 for a listing of I/O types)
- 100 I/O solution (see Table 16 on page 111 for a listing of I/O types)

IMPORTANT Screen captures in this manual show the 50 I/O solution. Screens for the 100 I/O solution differ.

Enclosure Options

The following enclosure options are available for the OptiSIS solution:

Location	Solution	Enclosure Material	Enclosure Rating
Indoor (ID)	50 I/O and 100 I/O	Powder-coated steel	IP66 and NEMA 4
Outdoor (OD)		ANSI 304 stainless steel	IP66 and NEMA 4X

Additional Resources

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

Resource	Description
Integrated Display Industrial Computers for Hazardous Locations User Manual, publication 6181X-UM001	Contains information on how to install, configure, operate, and troubleshoot the 6181X integrated display industrial computers.
Integrated Display Industrial Computers User Manual, publication 6181P-UM003	Contains information on how to install, configure, operate, and troubleshoot the 6181P integrated display industrial computers.
Power Supply reference manual, publication 1606-RM001	Provides installation, operation, and features information for switched mode power supplies.
Process Safebook 1 - Safety-related control systems in the process industry reference manual, publication SAFEBK-RM003	Provides information, guidance, and examples to understand and apply Functional Safety and Process Safety standards.
AADvance Safety Manual, publication ICSTT-RM446	Defines how to apply AADvance controllers for a Safety Instrument Function.
AADvance Troubleshooting Guide, ICSTT-RM406	Provides maintenance and troubleshooting information for AADvance controllers.
PFHavg and PFDavg Data Reference Manual, publication ICSTT-RM449	Provides information on AADvance controller reliability.
HART Protocol, www.fdtgroup.org.	Provides details on HART protocol.
Field Loop Configuration application note, publication AN-T80004	Provides information for line monitoring and includes advice for fire detectors, which are not simple volt-free contacts.
International Electrotechnical Commission http://www.iec.ch	Provides details on IEC 61511.
National Fire Protection Association (NFPA 72), http://www.nfpa.org	Provides details on NFPA 72.
International Society of Automation (ISA 84.00.01), https://www.isa.org/	Provides details on ISA 84.00.01.
National Electric Code, http://www.necconnect.org	Provides details on NEC Table 310.15(B)(16).
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.
Product Compatibility and Download Center (PCDC) http://www.rockwellautomation.com/global/support/pcdc.page?.	Provides help to find product-related downloads including firmware, release notes, associated software, drivers, tools, and utilities.

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

Safety Requirements

Introduction

The certification authority Technischer Überwachungs-Verein (TÜV) independently certifies that the AADvance control system meets the requirements of IEC 61508 SIL 3.

The OptiSIS solution is designed and implemented in accordance with the requirements of the AADvance Controller Safety Manual, publication ICSTT-RM446. See this manual for certifications as well.

ATTENTION: Personnel responsible for deploying a Process Safety solution must verify that the SIS is tested against the Safety Requirements Specification (SRS) before the introduction of Hazardous materials into the Process.

Safety Architecture

The OptiSIS solution is available in both fail-safe and fault tolerant configurations.

ATTENTION: The Safety Architecture defines how the system behaves under fault conditions. The correct architecture must be selected based on the requirements that are defined in the SRS.

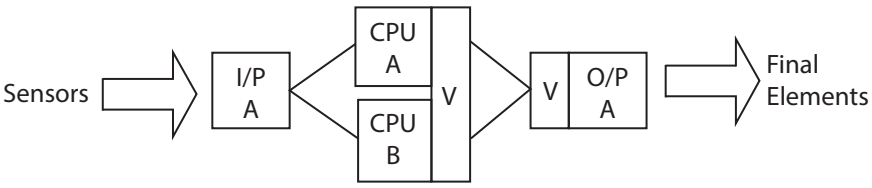
Fail-safe System

The fail-safe architecture option means that the failure of a channel or module can degrade the applied safety integrity level, or can result in the loss of function where the fail-safe system brings the process to the safe state.

The actual behavior under fault conditions is also dependent on configuration options.

Figure 1 - Fail-safe System

I/P = Input Module
CPU = Processor Modules
O/P = Output Modules
V = Vote



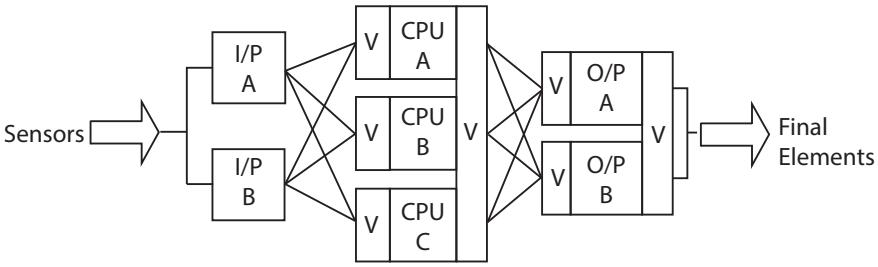
Fault Tolerant System

The fault tolerant architecture option means that the failure of a channel or module does not degrade the applied safety integrity level, or result in the loss of function and the resulting taking the process to the safe state.

The actual behavior under fault conditions is also dependent on configuration options.

Figure 2 - Fault Tolerant System

I/P = Input Module
CPU = Processor Modules
O/P = Output Modules
V = Vote



Safe State

The internal configuration of the AADvance system that is used in the OptiSIS solution is that the safe state is OFF (de-energize-to-action). De-energize-to-action is the state that an input or output assumes during a channel or module failure. The OptiSIS solution does however, let you configure digital inputs and digital outputs to operate in either a normally energized (de-energize-to-action) or a normally de-energized (energize-to-action).

See Configure I/O on page 41 for the configuration of the normal operating state.

ATTENTION: Use Energize-to-action configurations only if the following conditions apply:

- At least two independent power sources to the OptiSIS solution panel must be used.
- At least one of the power feeds to the panel must be a secure power source (for example, a UPS or a battery). The power supply hold-up time must provide power for long enough to bring the process to a safe state.
- OptiSIS solution power supplies generate an alarm when power is lost (either due to power feed failure or PSU failure). Any power failure alarm must be responded to and rectified within the mean time to repair (MTTR).
- For SIL 3 and high demand energize-to-action applications, the Fault Tolerant option must be used.

Process Safety Lifecycle, Functional Testing, and Validation

ATTENTION: Follow the Process Safety Lifecycle as described in the AADvance Controller Safety Manual, publication ICSTT-RM446.

Before putting the system into operation, perform a pre-startup acceptance test (PSAT) which is a functional test of the safety instrumented system (SIS). The PSAT must be a documented and recorded test procedure that includes (but is not limited to) the following:

- All power, signal, and ground wiring is checked and secure.
- All input/output loops are functionally exercised through their entire operating range (including field device calibration).
- All safety functions are tested, including timing properties.
- All functions such as bypasses, alarms, and communication interfaces (where appropriate) are tested and recorded.

It is recommended to evaluate your PSAT with the checklist in Appendix D on page 117. This evaluation helps you to meet safety requirements for the OptiSIS solution.

Safety Data

The OptiSIS solution has a process safety time (PST) of 1.5 seconds. The PST brings the system to its safe state (off) in the event a dangerous fault is detected. The PST of the safety functions the SIS performs must be greater than or equal to the OptiSIS PST of 1.5 seconds. This value is not configurable in the standard system.

Mean time to repair (MTTR) is the maximum allowed time between the occurrence of a failure and the completion of the repair of that failure, to maintain the assigned safety integrity level. The allowed time includes the time to detect the failure, complete the repair, and return the affected SIF back into service. This configurable parameter has a range of 0...168 hours (no decimals).

ATTENTION:

- Faulty output modules in a dual configuration that are used in energize to trip applications must be replaced within the MTTR to maintain SIL 3 performance.
- Faulty processors in a dual configuration must be replaced within the MTTR to maintain SIL 3 performance.
- The MTTR timer is provided in the human machine interface (HMI). You can configure the MTTR time according to your SIL level from the System Status display when you are logged in as the Engineer user in the HMI. If you want to maintain SIL 3 performance, act on the timer alarm. For more information on Maintenance displays, see Chapter 8 on page 71.

PFD/PFH Data

Reliability, PFD, and PFH data is published in the PFHavg and PFDavg Data for AADvance Controllers Reference Manual, publication ICSTT-RM449.

Password Protection

The HMI has a security model that is built in to restrict access to specific functions. The model relies on user roles as defined in this table. The password is case-sensitive.

ATTENTION: For security reasons, we recommend that you change the default passwords.

Table 2 - HMI User Roles and Passwords

User Role	Default Password	Force I/O	Apply Configurations	Acknowledge/Reset Alarms Remove Suppress and Force	Access Diagnostic Functions	Suppress I/O	Shutdown System
Default (not logged in)							
Operator	operator			X			
Supervisor	supervisor			X		X	
Maintenance	maintenance	X		X		X	
Engineer	engineer	X	X	X		X	
Administrator	administrator (1)	X	X	X		X	X
RA Administrator	raadmin	X	X	X	X	X	X

(1) For HMI version B10 and earlier, the password for Administrator is "password."

Table 3 - Windows User Passwords

User Role	Password
Administrator	1ADMINISTRATOR
Operator	1OPERATOR

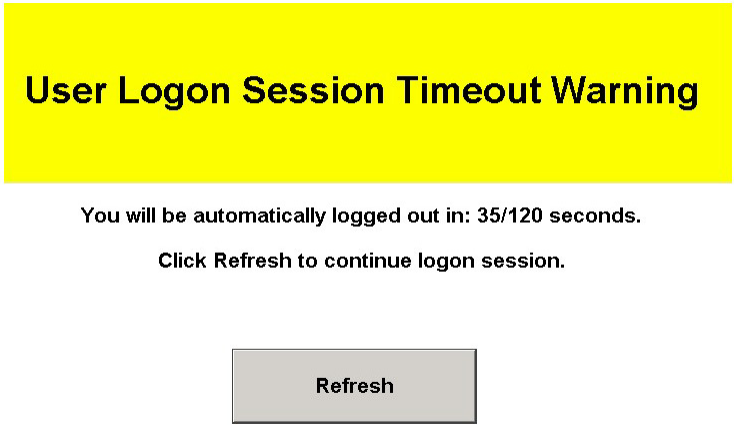
The Windows Administrator user has complete control over the industrial computer. They can change settings and access the files and programs that are stored in the computer.

The Windows Operator user has limited control over the industrial computer and its intended purpose is to execute the OptiSIS solution application.

See Application Accounts on page 37 for login and password information.

ATTENTION: The OptiSIS has an auto-logout feature. The User Logon Session Timeout Warning display automatically appears after 20 minutes of inactivity and lets you refresh the application before completing the automatic log-off process. If the Refresh button is not pressed within 2 minutes, the current user is automatically logged off and the default user is logged in.

Figure 3 - User Session Timeout Warning



Program Enable Key

The Program Enable Key is a security device that is required to be present in an OptiSIS solution when applying Rockwell Automation supplied application and firmware updates. The key is a 9-way D-type plug and is supplied with the processor base unit.

The key must be plugged into the processor base unit to allow upgrades to be performed. The key is installed if the controller appears in yellow on the Overview display (see Figure 36 on page 76).

IMPORTANT The Program Enable Key is shipped separately. Never leave the Program Enable Key in place. After use, remove the key and store it in a safe place with controlled access.

Diagnostics

The AADvance controller embodies sophisticated internal diagnostic systems to identify faults that may develop during operation and raise appropriate alarm and status indications. The diagnostic systems run automatically and check for system faults that are associated with the controller (processor and I/O modules) and field faults that are associated with field I/O circuits. The internal diagnostics detect and reveal both safe and dangerous failures.

ATTENTION: When the OptiSIS solution is in a normally unmanned area, a method for reporting diagnostic alarms into a normally manned area must be provided to make sure that the defined MTTR is met.

Certification

The OptiSIS solution does not carry a specific 'Product' certification as it is a Solution, which is composed of standard products. Each product that is used in the solution carries specific certifications. To find more information, go to the Rockwell Automation Product Certification website: http://www.rockwellautomation.com/global/certification/

Each of the products that are used to create the solution have been installed, wired, and programmed in accordance with the appropriate user manuals. Specifically, the AADvance equipment has been designed, installed, programmed, and tested according to both the AADvance Controller Safety Manual, publication ICSTT-RM446, and following the appropriate lifecycle phases of IEC61511.

Installation

This chapter provides basic background information about the solution and instructions for installation.

ATTENTION: You must use procedures to install and commission that comply with applicable standards of the country of installation. The applicable standards can include, for example, IEC 61511, NFPA72, and ISA 84.00.01, depending on the location.

ATTENTION: Radio frequency interference can influence most electronic equipment. Exercise caution regarding the use of portable communication equipment around such equipment. Post signs in the vicinity of the equipment to provide caution against the use of portable communications equipment.

IMPORTANT These guidelines are not intended to supersede local electrical codes.

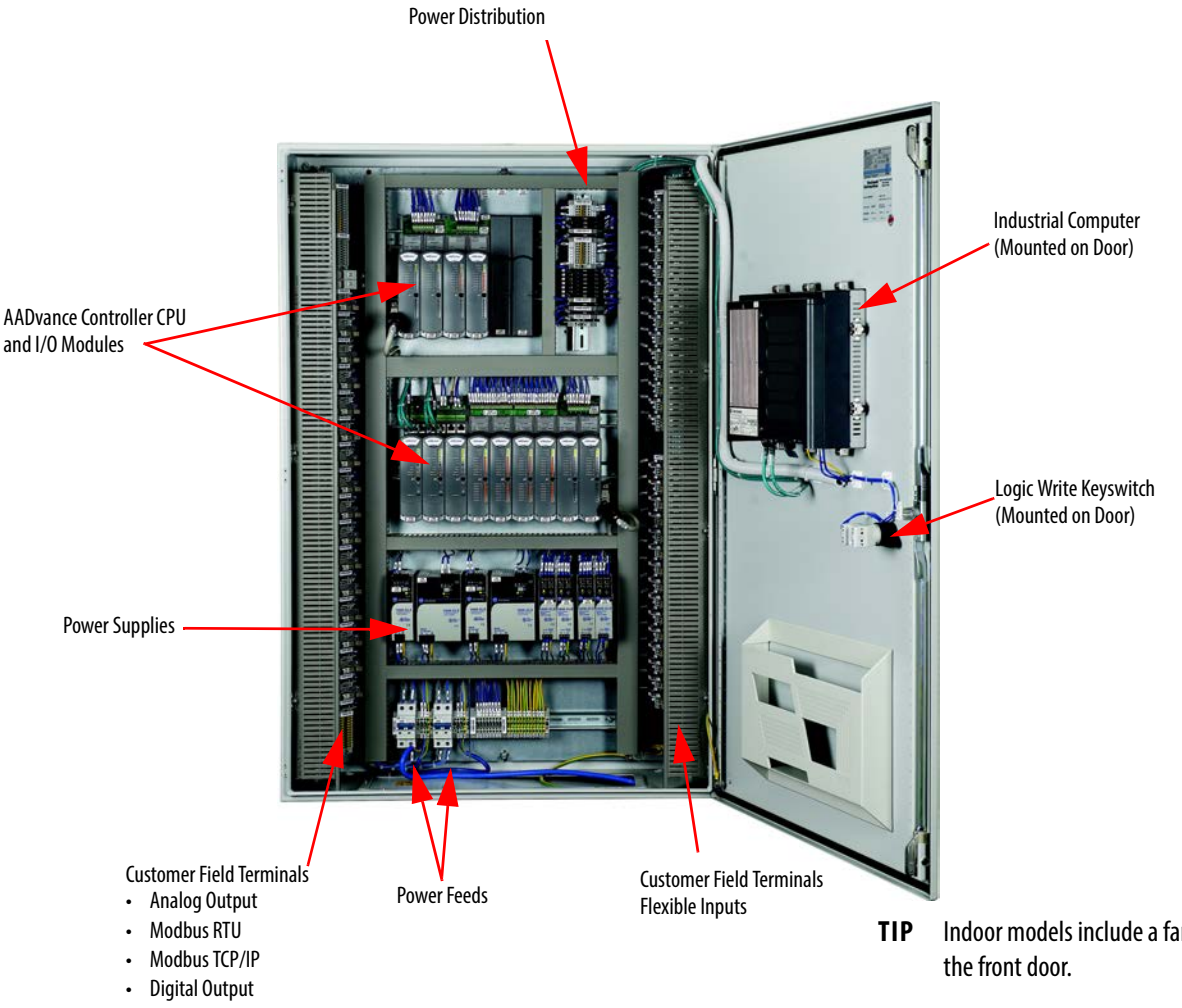
Introduction

Figure 4 (page 18), Figure 5 (page 18), and Figure 6 (page 19) show the solution and its components:

- AADvance controller CPU
- Flexible inputs (analog/digital)
- Analog outputs
- Digital outputs
- Industrial computer (HMI)
- Enclosure and accessories

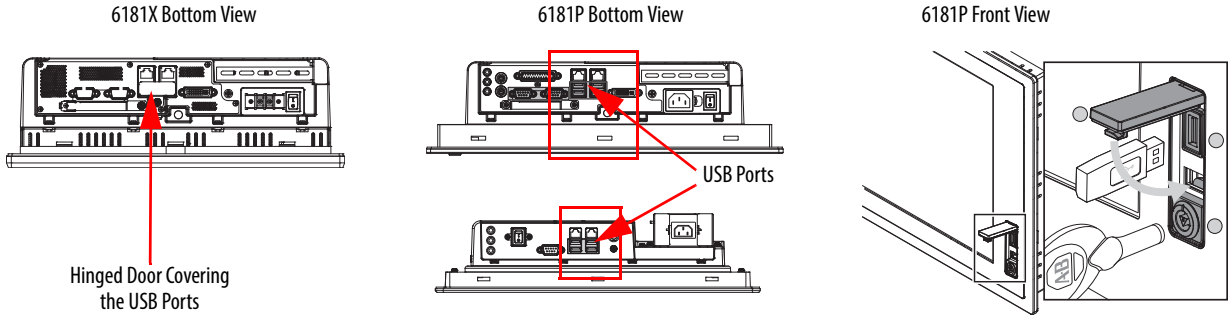
Figure 4 - OptiSIS Solution – External View

Figure 5 - OptiSIS Solution – Internal View



TIP Indoor models include a fan in the front door.

Figure 6 - HMI- USB Port Location



ATTENTION: The USB ports must not be used unless the area is known to be non-hazardous. All other ports or connections must not be disconnected unless the area is known to be non-hazardous.

All required components are mounted, wired, and installed inside the solution enclosure.

Installation

The 50 I/O system is contained within a wall-mounted cabinet. The 100 I/O system is contained within a floor-standing panel. See Table 23 on page 113 for enclosure dimensions.

Unpack

Before unpacking any items, the packaging must be inspected for damage that can occur during shipment.

If any packaging is damaged, the package identification marks (such as box number or crate number) must be noted and communicated to Rockwell Automation. The package must be stored in a suitable storage area in the condition it was received. Rockwell Automation then contacts the shipping agent who can request to inspect the damage. The package must not be opened without the express written permission of Rockwell Automation.

If packaging is not damaged, the OptiSIS solution must be removed from the packaging. Verify that all items on packing list are included. If any items are missing, contact Rockwell Automation.

Inspection

- Visually inspect the cabinets for mechanical damage. Check the paintwork for scratches and abrasions.
- Verify that the cabinet door opens and closes and that all latches operate smoothly.
- Verify that cable assemblies were not damaged during shipment and that they are appropriately dressed with cable ties and/or spiral wrap.
- Verify that all wire ducts are fitted with covers.
- Verify that the industrial computer is mounted securely and has not come loose during shipment.
- Verify that the internal components (AADvance modules, power supply units, terminals, and so on) are mounted securely and have not come loose during shipment.

Storage and Operation

Consider the environmental characteristics that are listed in Table 20 on page 113 when you select the device and the mounting location.

IMPORTANT The standard unit is meant to be installed in a nonhazardous environment. For additional environmental needs for your SIS, contact your local Allen-Bradley distributor or Rockwell Automation sales representative.

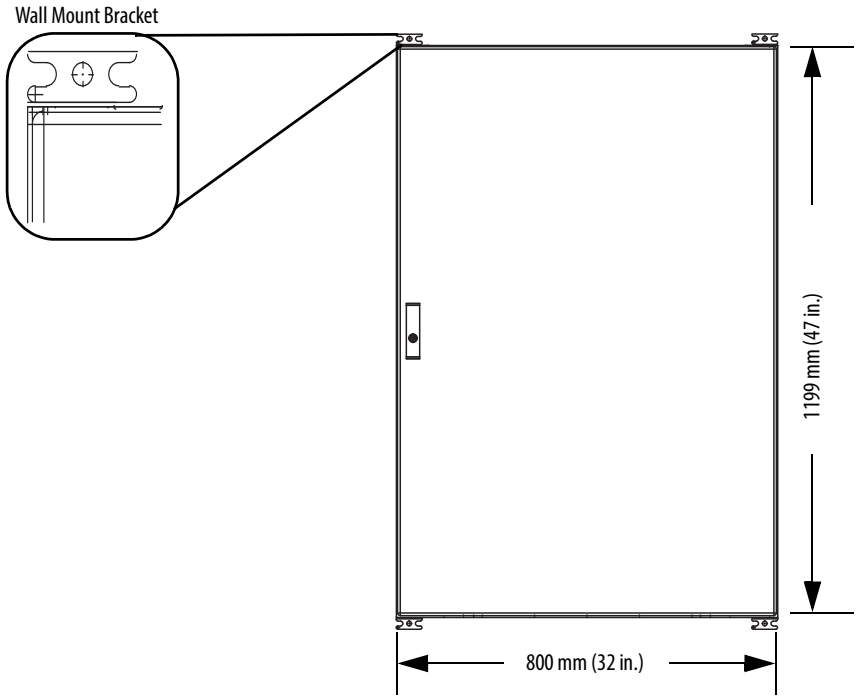
Wall Mount — 50 I/O Solution

ATTENTION: Crush hazard!
Dropping the unit can lead to personal injury and/or component damage. Always support the unit fully during installation. Use of mechanical lifting aids is recommended.

To mount the 50 I/O OptiSIS solution to the wall, follow these steps.

1. Determine the mounting location and verify that the location is suitable for the solution by checking the following:
   - The site is free from excessive dirt and moisture.
   - Sufficient room on all sides of the enclosure is available for the cable to exit the enclosure and to open the door.

     The door swing radius is 800 mm (32 in.) and extends to 110° without forcing.
2. Place the enclosure on the wall in the desired location and verify that it is level.



3. Secure the wall mount bracket.

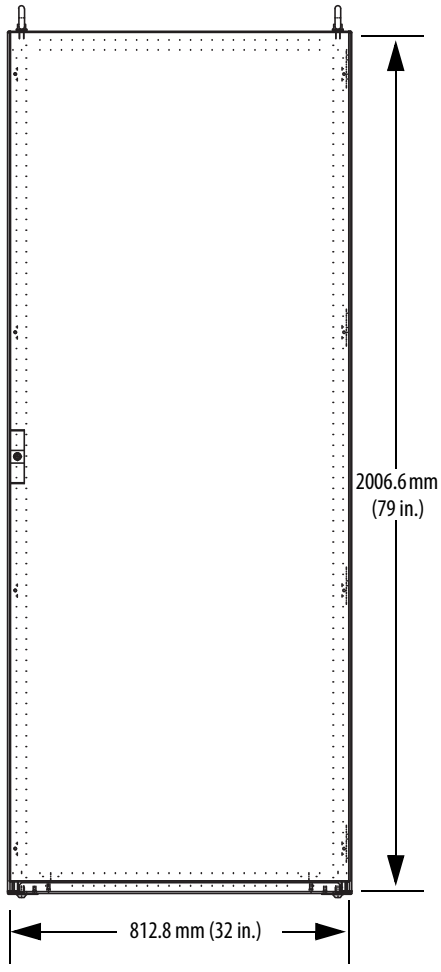
Floor Mount — 100 I/O Solution

ATTENTION: Crush hazard!
Dropping the unit can lead to personal injury and/or component damage. Always support the unit fully during installation. Use of mechanical lifting aids is recommended

1. Determine the mounting location and verify that the location is suitable for the solution by checking the following:
   - The site is free from excessive dirt and moisture.
   - The enclosure stands level after installation.
   - Sufficient room on all sides of the enclosure is available for the cable to exit the enclosure and to open the door.

     The door swing radius is 800 mm (32 in.) and extends to 110° without forcing.
2. Place the enclosure in the position where it is to operate and verify that the enclosure is level.

   Leveling feet allow you to fine-tune the level of the enclosure due to unevenness at the installation site.



Connect Power

Introduction

The OptiSIS solution uses standard Allen-Bradley® power supplies and redundancy modules. The OptiSIS solution accepts dual power feeds of the same, or different, voltages. See detailed power distribution drawings for power details.

IMPORTANT The A and B power feeds do not have to be the same voltage, but they must meet the requirements that are detailed in Power Layout on page 26.

IMPORTANT These guidelines are not intended to supersede local electrical codes.

Power Distribution and Grounding

Connect power to terminals shown in the supplied wiring drawings. Terminal locations are shown in Figure 7.

Figure 7 - Terminal Locations

There are two ground connections that must be connected before power is applied to the system.

- The AC safety ground is provided to help protect personnel from electric shock under fault conditions. Internally, all exposed metal surfaces, for example, cabinets, racks, and chassis ground connections, are connected to this termination point.

ATTENTION: The AC Safety Ground must be terminated to a suitable ground. The recommended/minimum wire size to use for the Protective (Safety) Earth is 6 mm^2 (10 AWG).

- The instrument ground is provided to minimize electrical noise for all DC analog/digital signals. The shields/screens for incoming and outgoing cables can be connected to the supplied ground termination, which are internally connected to this point.

  Connect to a clean (low noise) ground by using a minimum of 6 mm^2 (10 AWG) conductor.

ATTENTION: Good ground connections must be verified before any work is conducted. Failure to comply can cause serious injury.

Power Cable Types/ Recommendations

The following conditions and requirements must be considered when you select cable material and construction for your installation.

- Environment: moisture, temperature, and harsh or corrosive chemicals.
- Mechanical needs: geometry, shielding, flexibility, and crush resistance.
- Electrical characteristics: cable capacitance/charging current, resistance/ voltage drop, current rating, and insulation.
- Safety issues: electrical code requirements, grounding needs, and others. If the incorrect cabling is chosen, it can be costly and can adversely affect the performance of your installation.

Follow these temperature ratings for installations:

Surrounding Air Temperature	Recommended Wire
50 °C (122 °F)	90 °C (194 °F)
40 °C (104 °F)	75 °C (167 °F)

The OptiSIS solution is rated for use with 75 °C (167 °F) cable. Cable must be sized by using the 75 °C (167 °F) column in NEC Table 310.15(B)(16) (formerly Table 310.16). The temperature rating of the lugs is not relevant.

IMPORTANT The temperature rating of the wire affects the required gauge. Verify that your installation meets all applicable national, state, and local codes.

Cable Entry

Verify that cable sizes, wires, and cabinet penetrations for incoming cables are to local regulations, specifications, and requirements.

Bottom Entry Conduit

Cable entry is through the bottom gland plate (NEMA 4 models only) for both the 50 I/O and 100 I/O solutions. To route your cable through the bottom gland plate, follow these steps.

1. Prepare the installation site so the foundation is level.
2. Remove gland plate, drill holes.

IMPORTANT The outdoor NEMA 4X model does not come with a gland plate. Cable entry locations are placed at the time of installation.

3. Before the OptiSIS solution is installed, place and stub up conduit approximately 51 mm (2 in.) above floor level and confirm that all incoming conduit is clear of any internal components.

   For approximate section base dimensions and ground bus locations, see Installation on page 19, or elevation and floor plan drawings that are shipped with the solution.

Cable Installation

Verify that cabinet penetrations for incoming cables are to local regulations, specifications, and requirements. Size cables and wires per local codes, specifications, and requirements.

The OptiSIS solution is rated for use with 75 °C (167 °F) cable. Cable must be sized by using the 75 °C (167 °F) column in NEC Table 310.15(B)(16) (formerly Table 310.16). The temperature rating of the lugs is not relevant.

ATTENTION: Properly connect all line and load cables to avoid potential faults and equipment damage.

Lugs

Follow this procedure to install the lugs. The lug accepts a wire size from 2...50 mm2(14...2/0 AWG).

1. Verify the compatibility of wire size, type, and stranding versus the power lugs furnished.

   Use correct lugs in all applications.
2. Crimp compression lugs with manufacturer recommended tools.
3. To verify field wire connection points, use the electrical schematics.

Power Layout

The OptiSIS solution uses standard Allen-Bradley® power supplies and redundancy modules. The system design accommodates dual-inputs of 24V DC and/or 100...240V AC.

Connect Field Wiring

Grounding Requirements

IMPORTANT Analog and digital inputs support a signal ground and also provide a place to terminate a shield/screen to maintain signal quality.

When external field device power is used, it must be kept separate from the signal wiring to minimize signal noise.

Field input signals are individually referenced to the instrument ground (OptiSIS Field Power common, 0V), each has a removable link to allow them to float regarding instrument ground. The recommended/minimum wire size to use for the instrument ground (on the instrument ground busbar) is 6 mm2 (10 AWG).

See the Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1, for additional information.

Input Wiring

The device type and where the field wire lands determine whether the flexible inputs can be wired as analog or digital.

Figure 8 - Digital Input

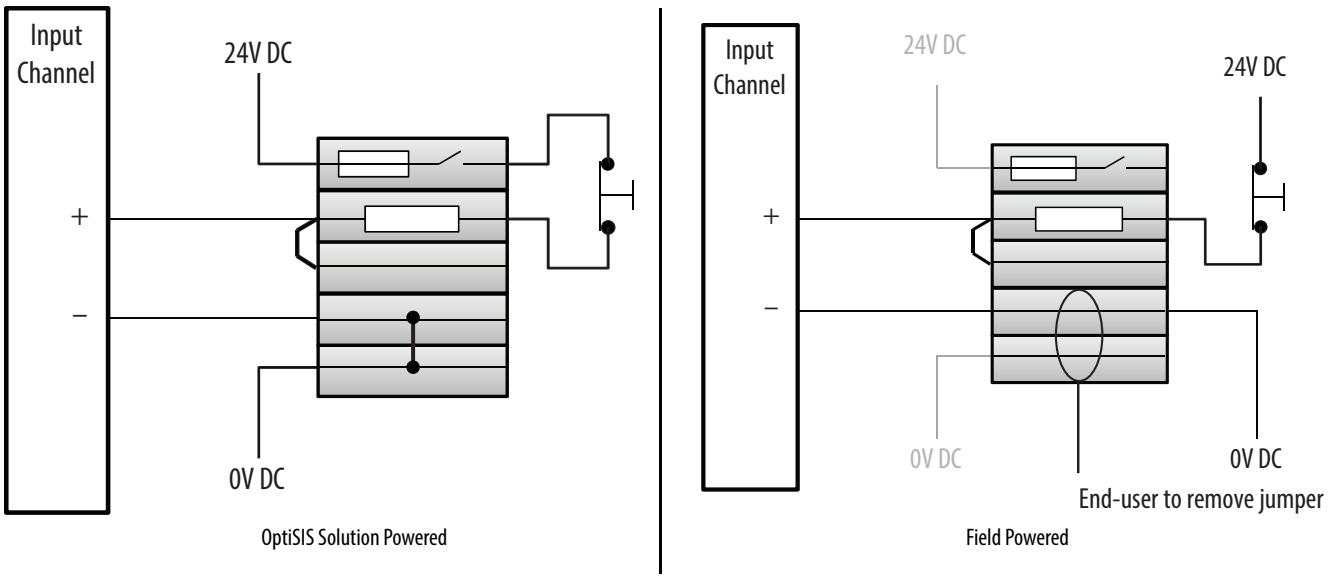


Figure 9 - Analog Input (OptiSIS Solution Powered)

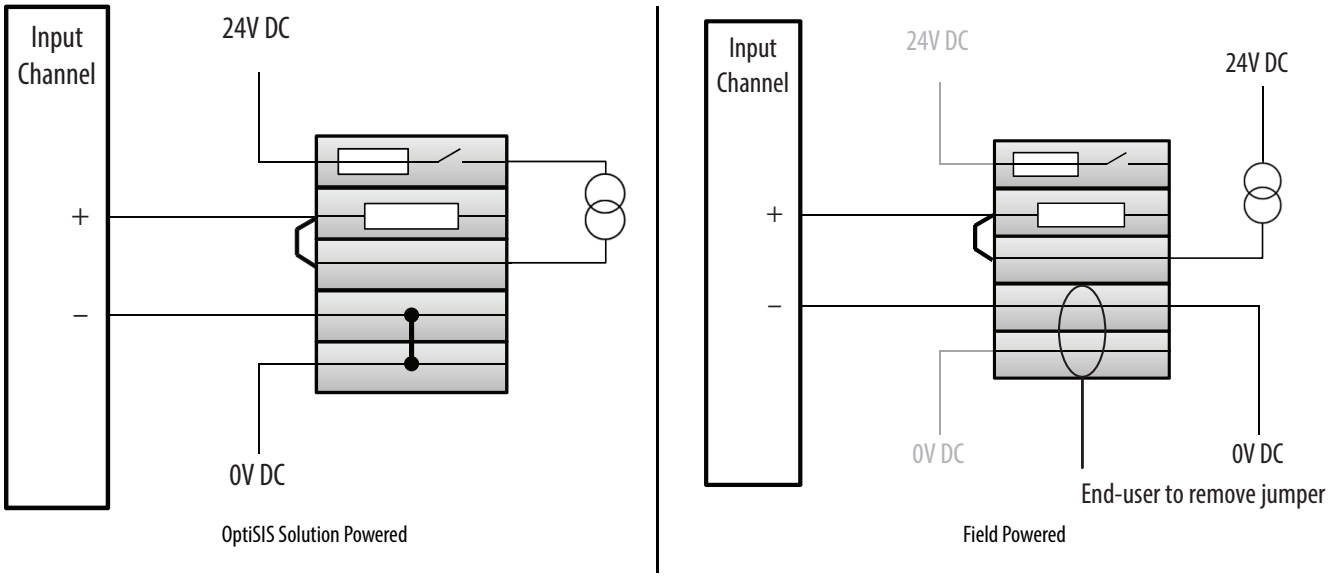


Figure 10 - Analog Input (OptiSIS Solution Powered, 3-wire Transmitter)

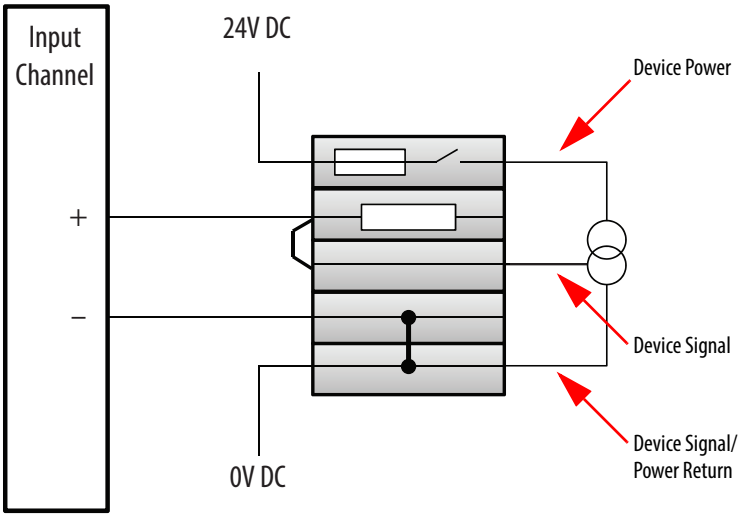
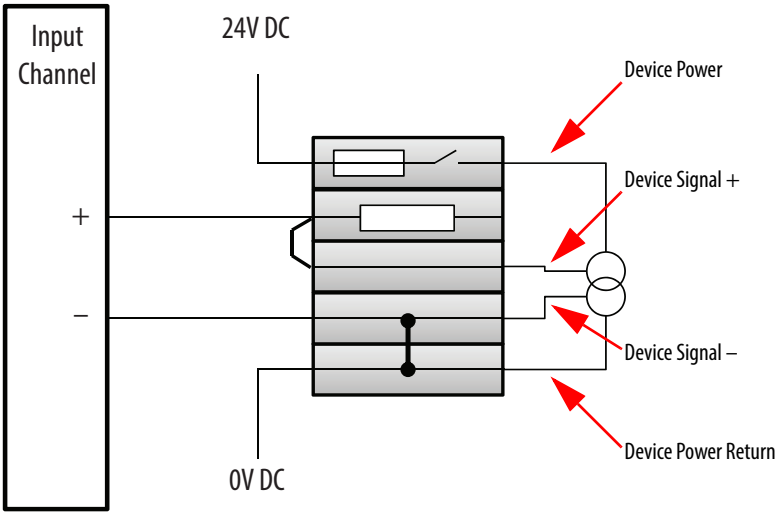
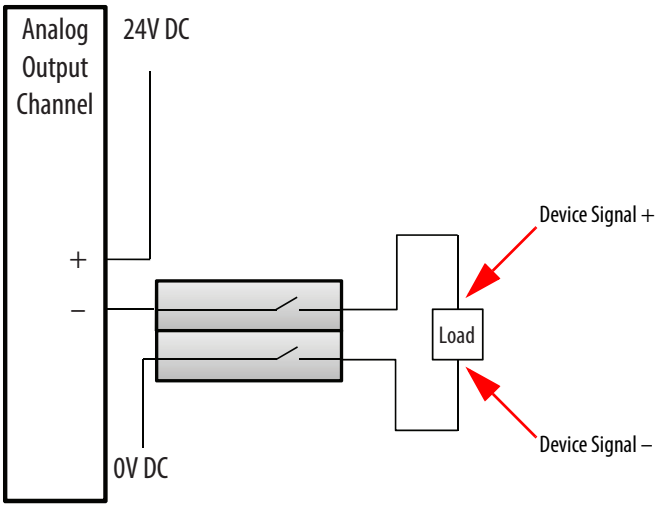


Figure 11 - Analog Input (OptiSIS Solution Powered, 4-wire Transmitter)



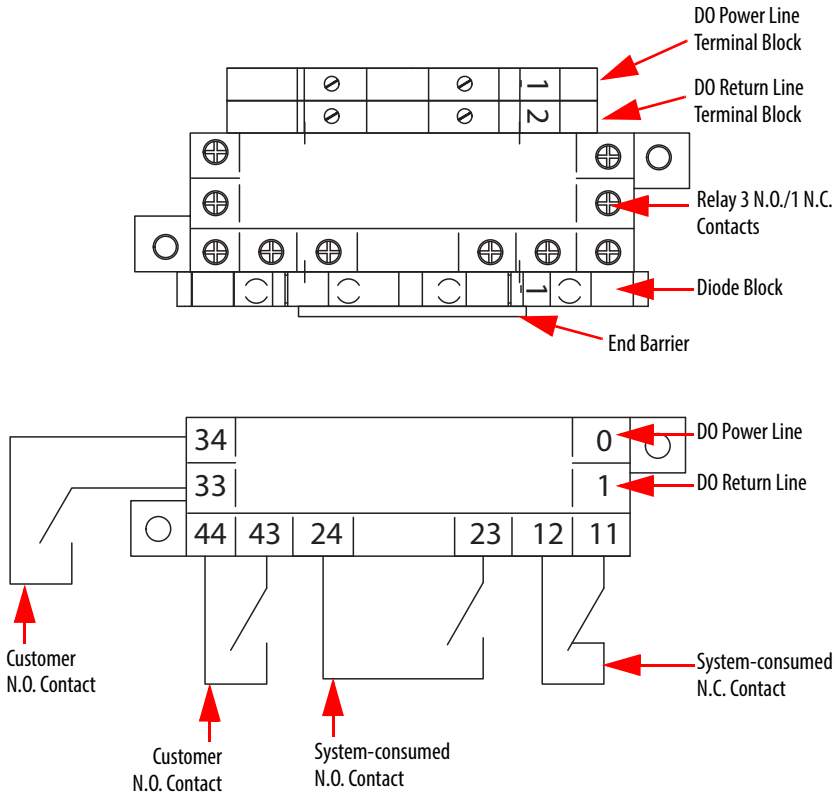
Analog Output Wiring

Figure 12 - Analog Output Wiring



Digital and Relay Output Wiring

Figure 13 - Relay Wiring Legend



ATTENTION: System contacts are used to detect failures in the relay output circuit. Wiring that is associated with these contacts, if modified, results in output fault alarms and reduce safety integrity of the output circuit.

Figure 14 - N.O. Contact for a Normally De-energized Output (Parallel Contacts, Energize to Trip)

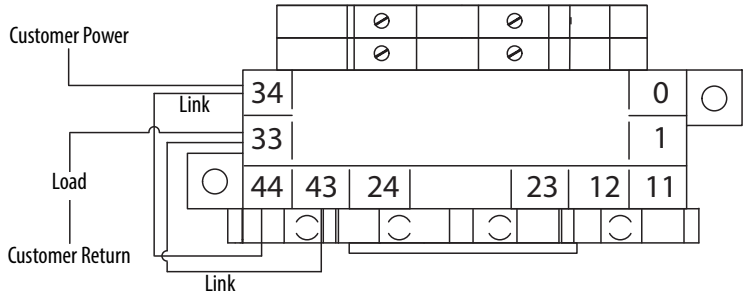


Figure 15 - N.C. Contact for a Normally Energized Output (Series Contacts, De-energize to Trip)

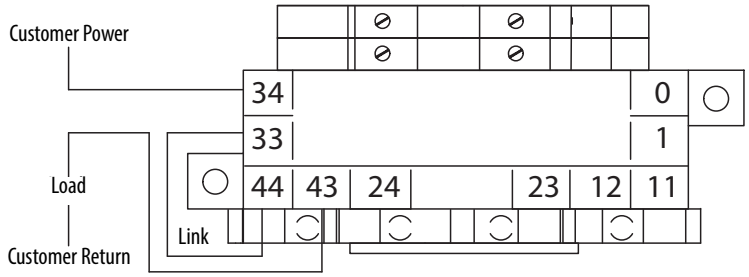
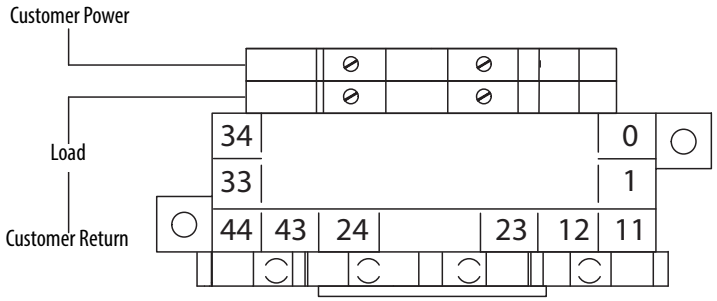


Figure 16 - 24V DC Powered Digital Output



ATTENTION: External power source must have circuit protection to avoid exceeding the current rating of the output relay contacts.

Contact Derating

Contact rating is 6 A at 250V AC/30V DC. Derate the maximum continuous current by 0.1 A for each 1 °C (1.8 °F) above 55 °C (131 °F).

Startup

First-time Powerup

Follow these steps the first time you apply power to the OptiSIS solution.

1. Switch all circuit breakers to the Off position and open all fuses.
2. Energize the power feed and verify voltage at main incoming terminals.
3. For DC power feeds, close each incoming 24V DC fuse and verify that the corresponding power terminals in the panel are receiving 24V DC.
4. For AC power feeds, close each circuit breaker one at a time and verify that the corresponding power supply is energized.

   Measure the output voltage of the power supply and verify that it is delivering 24V DC.
5. Close all 24V DC distribution fuses and check that the system powers up as expected.

Navigation

The HMI application facilitates user navigation through a centralized icon toolbar. The following are the main displays:

- Operator 
- Maintenance 
- Alarm 
- Warning 
- Help 

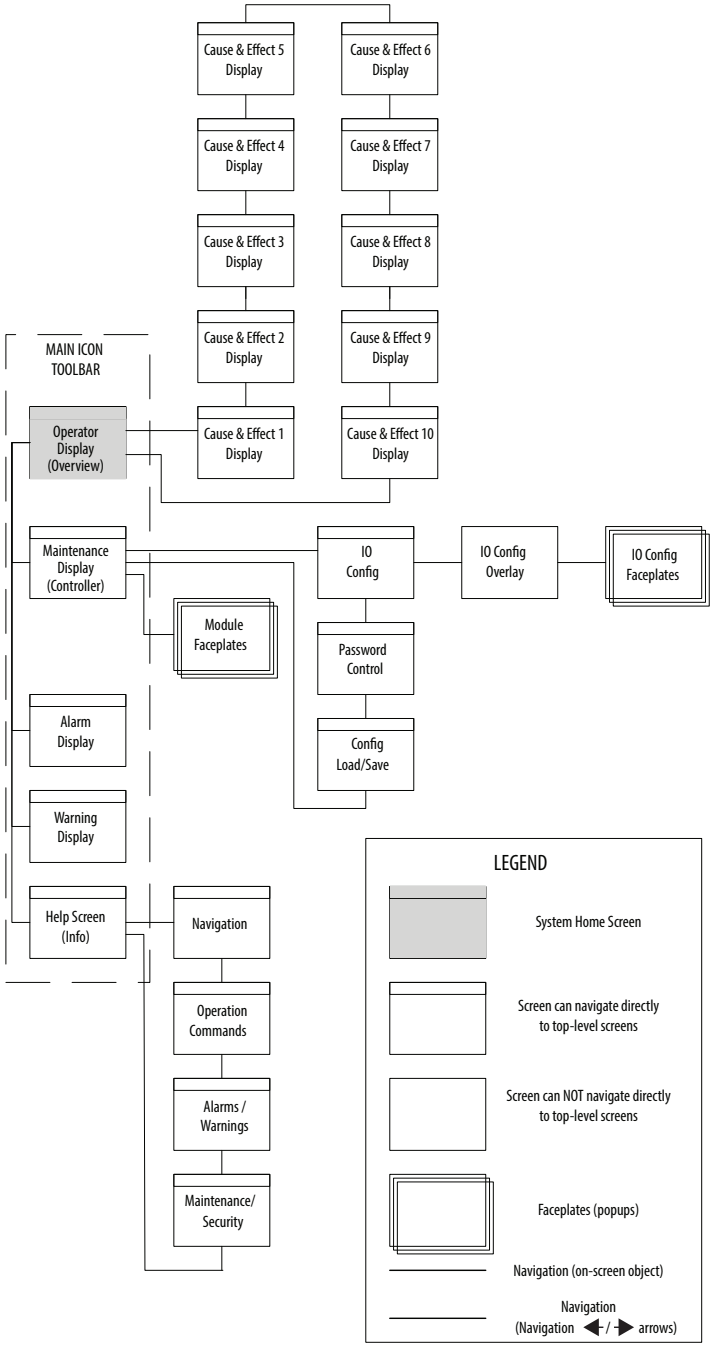
Each main display contains at least one page, where pages are equivalent to displays. To access a particular display, press the corresponding icon.

For simple and quick navigation, you can access and progress through multiple pages of a display by pressing the arrows at the bottom of the display. Notice the green dot at the center bottom of each display for orientation. Navigation arrows are available on most displays and loop at end of sequence.

Figure 17 - Navigation Arrows and Page Dots

Figure 18 is a navigational hierarchy structure of the basic displays.

Figure 18 - HMI Displays Navigational Hierarchy Structure



Operator

The Operator display is the first display that appears. You can access and progress through the Cause and Effect charts by pressing the arrows at the bottom of the display. You can also press a specific chart navigation button to go to that Cause and Effect chart.

Figure 19 - Operator Display

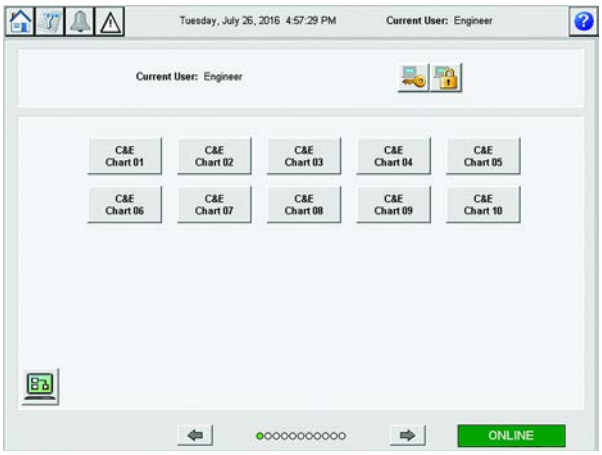
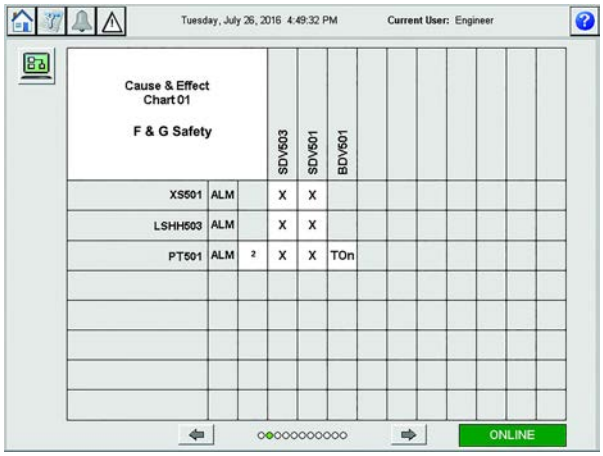
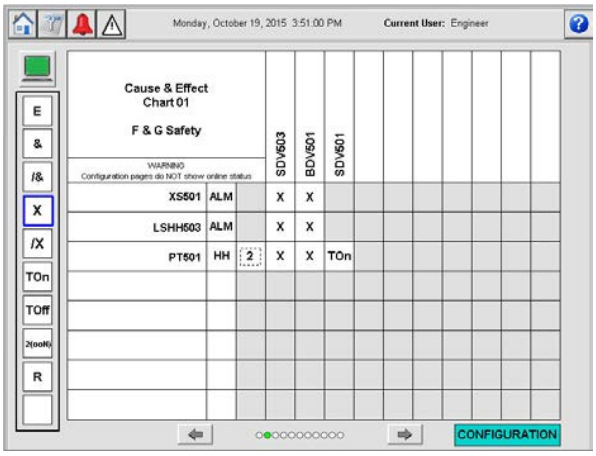


Figure 20 - Cause and Effect Chart



Online Mode

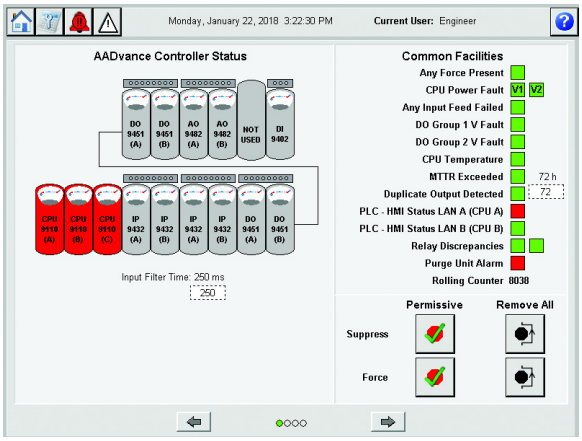


Configuration Mode

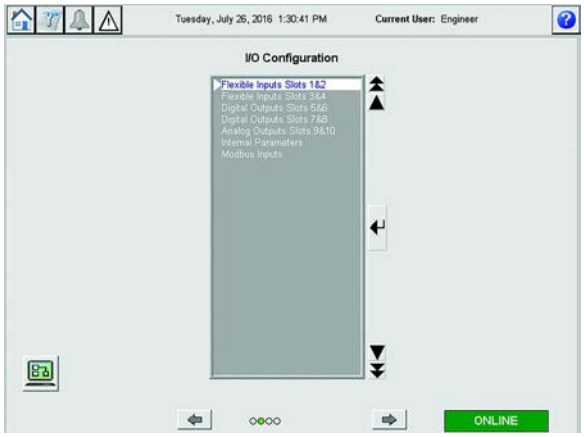
Maintenance

This Maintenance display has four pages. Access and progress through multiple pages of a display by pressing the arrows at the bottom of the display.

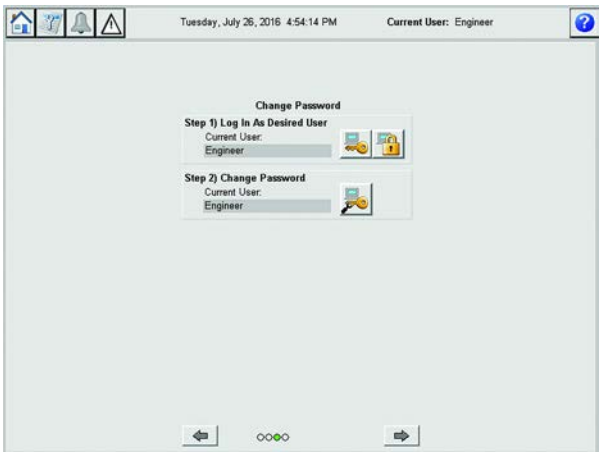
Figure 21 - Maintenance Display



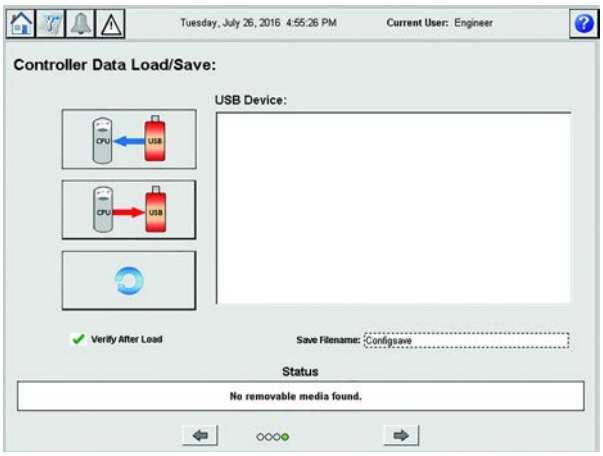
System Status



I/O Configuration



User Accounts

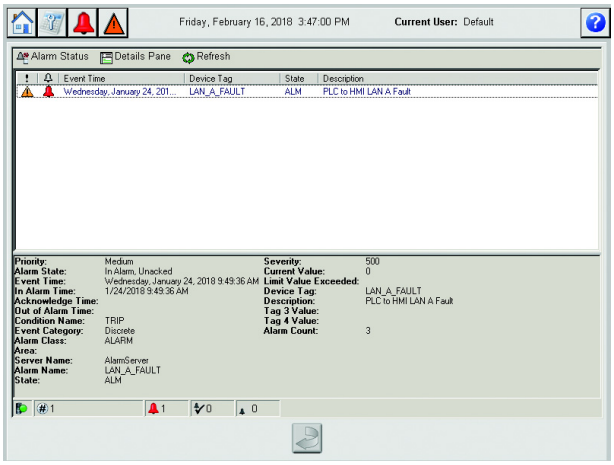


Configuration Load/Save

Alarm

Use the Alarm display to view the unit alarms.

Figure 22 - Alarm Display

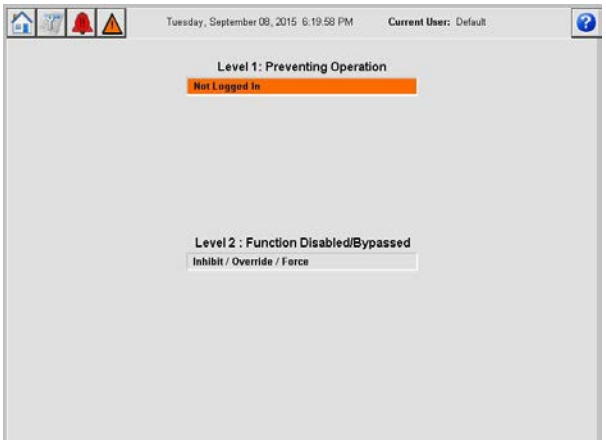


Warning

Use the Warning display to view a listing of all unit warnings.

- Level 1 Warnings: Conditions are preventing unit operation.
- Level 2 Warnings: Unit functions are disabled or bypassed. These include suppressed alarms and trips, forced inputs, and forced outputs.

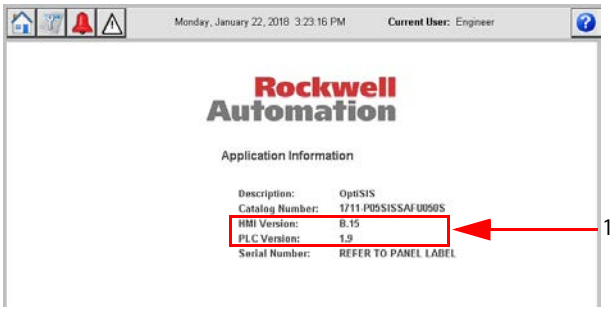
Figure 23 - Warning Display



Help

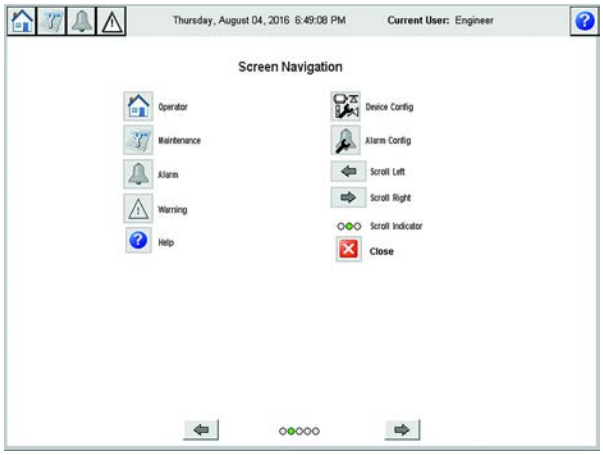
The Help display has five pages. You can progress through the pages of the Help display by pressing the arrows at the bottom of the display. The Help display pages provide information regarding application information, screen navigation, logic functions, color keys for system icons, and more.

Figure 24 - Help Display – Application Information

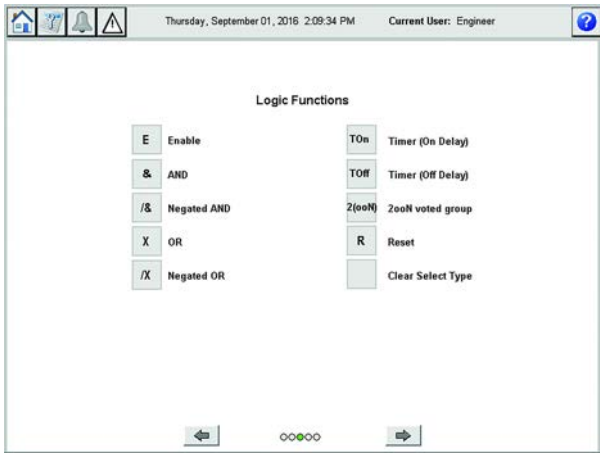


Item	Description
1	HMI Version - Currently loaded version of the OptiSIS HMI application.
	PLC Version - Currently loaded version of the OptiSIS controller application.

Figure 25 - Help Display

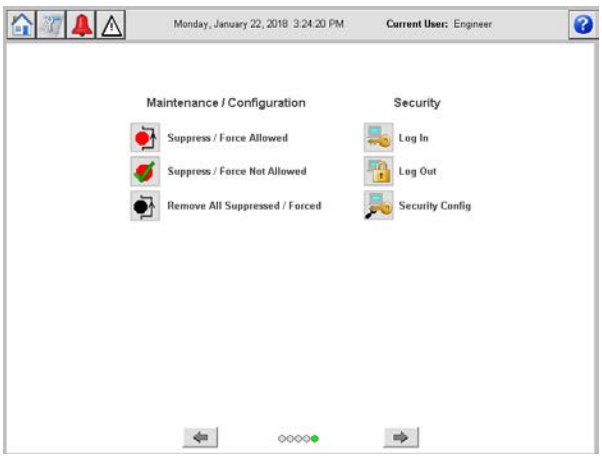


Screen Navigation



Logic Functions

Alarm and Warning Symbols



Maintenance and Security Symbols

Connect Peripherals

You can connect peripherals, such as a keyboard and mouse, to the corresponding USB ports on the bottom side of the HMI. The USB ports are covered by a hinged door. See Figure 6 on page 19.

ATTENTION: The USB ports must not be used unless the area is known to be non-hazardous. All other ports or connections must not be disconnected unless the area is known to be non-hazardous.

Application Accounts

The OptiSIS solution initially loads and is operational without logging in. On load, the initial user account is 'Default'.

TIP On the main icon toolbar, the Current User is listed.

See Configure User Accounts on page 39 for instructions on how to change your password. The user roles are defined in Table 2 on page 14.

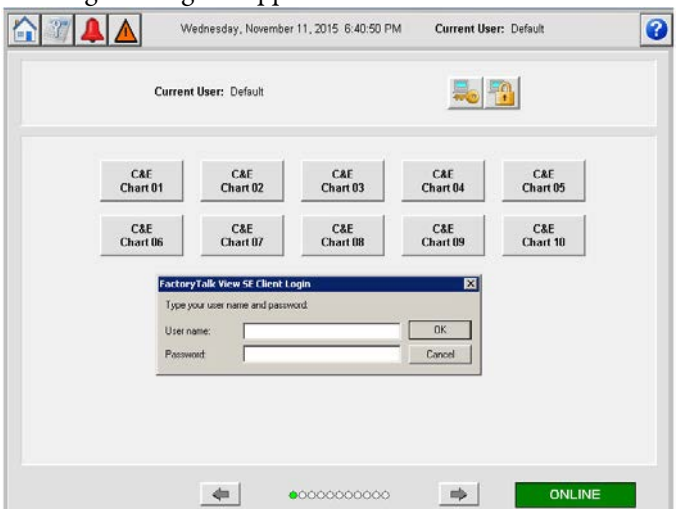
To change your current user login, follow these steps.

1. To navigate to the Operator display, press  .

   The Operator display appears.

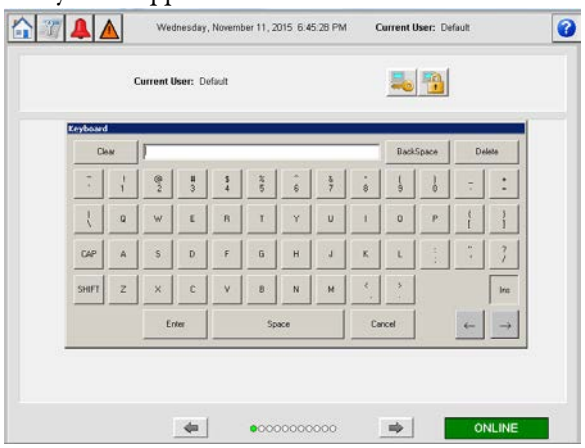
2. To log in, press  .

   The Login dialog box appears.



3. Press in the User name field.

   A keyboard appears.



4. Type the User name and press Enter on the keyboard.

   The keyboard disappears.

   TIP User names are not case-sensitive.

5. Press in the Password field.

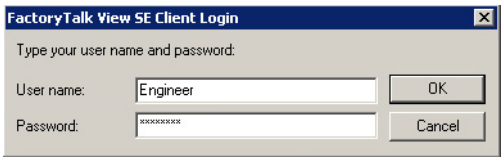
   A keyboard appears.

6. Type the Password and press Enter on the keyboard.

   The keyboard disappears.

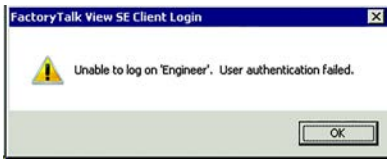
   TIP Passwords are case-sensitive.

7. Press OK.



   If the User name and password are incorrect, an error appears.

   TIP You are allowed unlimited login attempts.



   If you entered your account information correctly, the current user name appears in the header.

Configure User Accounts

The HMI application has default user account information, however, it is possible to change the password for a specific user role. To update the password, follow these steps.

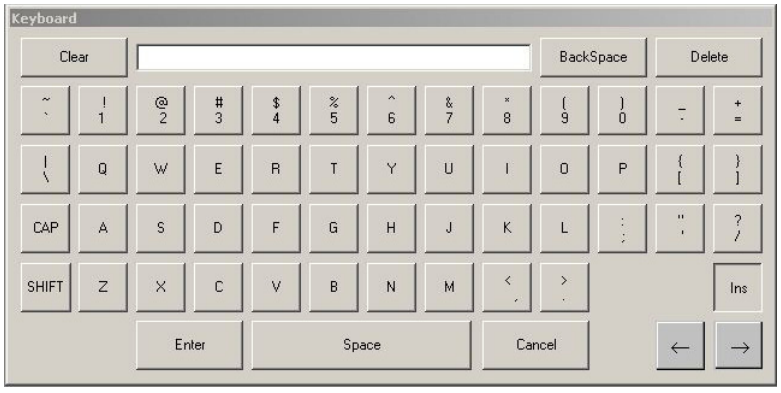
1. Navigate to the Maintenance display by pressing  .
2. On the Maintenance display, press  until you reach the User Accounts display.

3. To change the password, press  .

   The Change Password dialog box appears.

4. Press the Old password field.

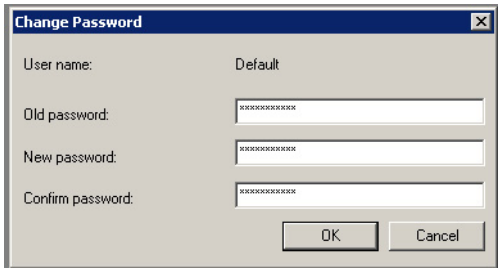
   A keyboard appears.



5. Type the old password and press Enter on the keyboard.
6. Press the New password field.

   A keyboard appears.
7. Type the new password and press Enter on the keyboard.
8. Press the Confirm password field.

   A keyboard appears.
9. Type the new password again and press Enter on the keyboard.
10. To confirm the password change, press OK.



Log Out Current User

To help prevent unauthorized access to your system, we recommend that you log out when you are done working with the system. To log out of a user account, follow these steps.

1. Navigate to the Maintenance display by pressing  .
2. On the Maintenance display, press  until you reach the User Accounts display.

3. To log off the current user, press  .
4. The Current User in the header reverts to Default.

Configure I/O

ATTENTION: If I/O configuration or Cause and Effect logic changes are performed while process is operational (online changes), then a formal Management of Change (MOC) process must be followed. The process includes, but is not limited to, an impact analysis of the change, documented implementation and test procedures, and identification of any additional measures that are required while the change is made.

Configure I/O Points

Configuration parameters are accessible on the HMI or by using the offline configuration tool (Appendix A on page 99) for initial development. Configuration parameters consist of the following items.

Table 4 - Configuration Parameters

Category	Item	Data Type	Description
Input Conditioning	Channel Enabled	Boolean	Channel enabled: 0 = disabled, 1 = enabled
	Description	String	Device description
	Tag Name	String	Tag name
	Channel Type	Boolean	Input mode: 0 = digital input, 1 = analog input
	Switching Level	Real	Digital switching level value (V) [Range = 0…23V (digital only)]
	Input Sense	Boolean	Digital input sense: 0 = normally closed, 1 = normally open (digital input only)
	Line Monitoring Fitted	Boolean	Monitored DI: 0 = not monitored, 1 = line monitored (digital input only)
	Units	String	Process variable engineering units (analog input only)
	Maximum PV	Real	Process variable maximum value [Range = -999999.9…999999.9 (analog input only)]
	Minimum PV	Real	Process variable minimum value [Range = -999999.9…999999.9 (analog input only)]
	Alarm Unlatched	Boolean	Unlatch alarms: 0 = latched, 1 = not latched
	Alarm on Fault	Boolean	Alarms on fault: 0 = no alarm on fault, 1 = alarm on fault
	Alarm Enable	4x Boolean (1 per analog alarm)	Analog alarm enabled: 0 = disabled, 1 = enabled
	Alarm Limits	4x Real (1 per analog alarm)	Analog alarm limit value (EU)
Digital Output Conditioning	Channel Enabled	Boolean	Channel enabled: 0 = disabled, 1 = enabled
	Description	String	Device description
	Tag Name	String	Tag name
	Output Sense	Boolean	Digital output sense: 0 = normally de-energized, 1 = normally energized
	Unlatch Output	Boolean	Output latch type: 0 = latched, 1 = not latched

Table 4 - Configuration Parameters

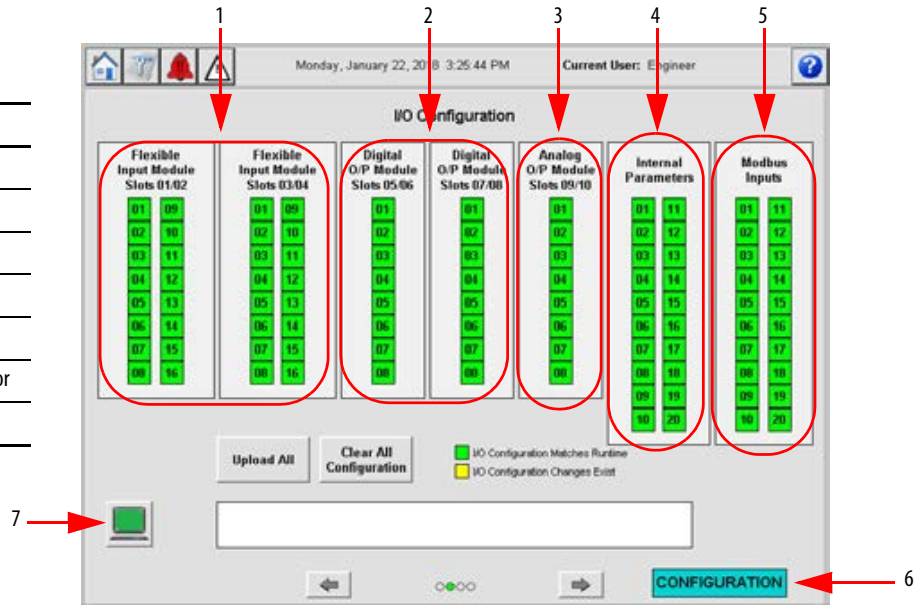
Category	Item	Data Type	Description
Analog Output Conditioning	Channel Enabled	Boolean	Channel enabled: 0 = disabled, 1 = enabled
	Description	String	Device description
	Tag Name	String	Tag name
	Channel Type	Boolean	Analog output mode: 0 = AI repeat, 1 = Cause and Effect output
	AI Repeat	DINT	AI channel to repeat
	High Current	Real	High current value (mA), max 20 mA
	Low Current	Real	Low current value (mA), min 0 mA
	Output Sense	Boolean	Digital output sense: 0 = normally de-energized, 1 = normally energized
Internal Parameters	Description	String	Description
	Tag Name	String	Tag name
Modbus Inputs	Description	String	Description
	Tag Name	String	Tag name

Figure 26 shows the I/O configuration display. The display shows a representation of each I/O card and its channels. The channels are either green to indicate that the channel configuration matches the runtime configuration, or yellow to indicate that there is a difference between the configured I/O and the runtime I/O. The Online/Configuration mode indicator shows if you are in Online mode (view current controller variables) or Configuration mode (configure then download configuration).

The configuration display is used to Enable, Disable, and Edit Channels. When you press on the colored box to the right of the channel number, the configuration display appears. Each configuration display is described later in the chapter (starting on page 46).

Users with a role other than Engineer can view status, but cannot edit the I/O configuration.

Figure 26 - I/O Configuration Display



Item	Description
1	Flexible inputs
2	Digital outputs
3	Analog outputs
4	Internal parameters
5	Modbus inputs
6	Online/Configuration mode indicator
7	Online/Configuration toggle

Configure an I/O

IMPORTANT To configure your I/O with the Offline Configuration Tool, see Appendix A on page 99.

These steps explain how to configure the fundamental characteristics for an input, output, internal parameter, or Modbus input.

TIP You must be in Configuration mode to change characteristics.

IMPORTANT Internal parameters and Modbus inputs are enabled by default and are selectable by the Cause and Effect charts. Modbus inputs are the only parameters that can be written through Modbus.

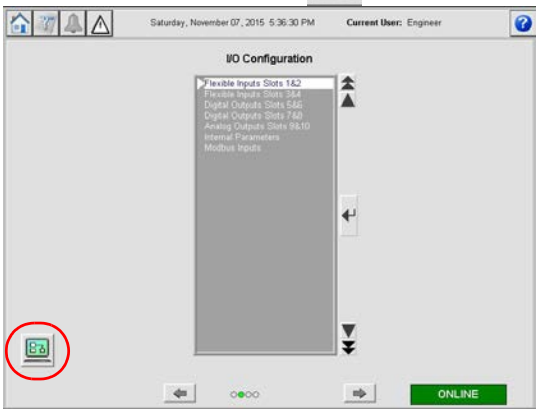
1. Log in as Engineer.

   See Application Accounts on page 37 for login procedure.

2. To go to the Maintenance display, press  .

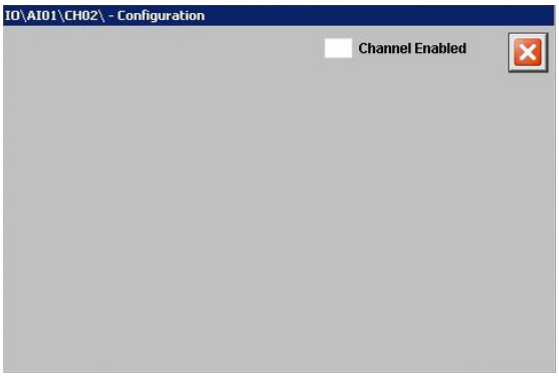
3. From the Maintenance display, press  until the I/O configuration display appears.

4. To configure the I/O, press  .



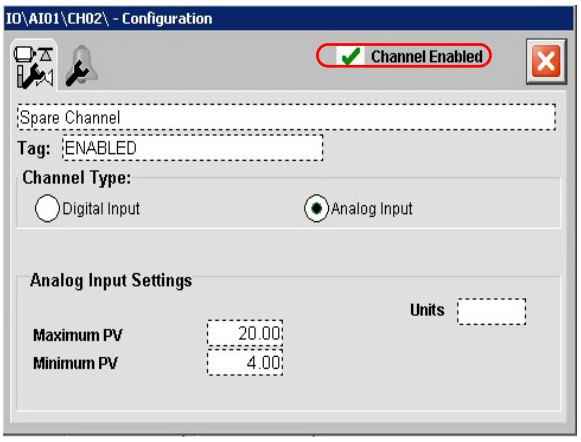
The I/O Configuration display appears.

5. To configure a particular channel, press the channel. A configuration faceplate opens.



6. To enable the channel, check Channel Enabled.

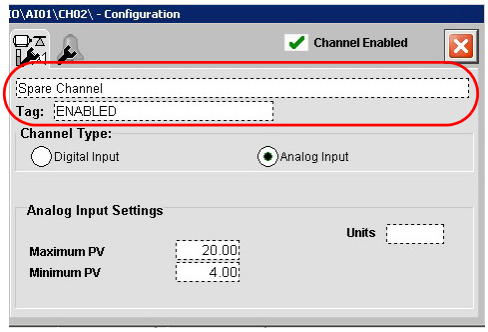
IMPORTANT If Channel Enabled is not selected, then all other parameters are not seen. If you clear and recheck Channel Enable, the parameters revert to a default state.

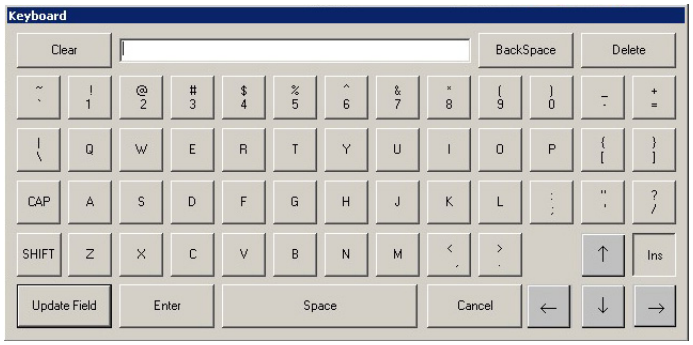


7. To configure a channel, follow these steps.
   a. Press in the description field.
      A keyboard appears.

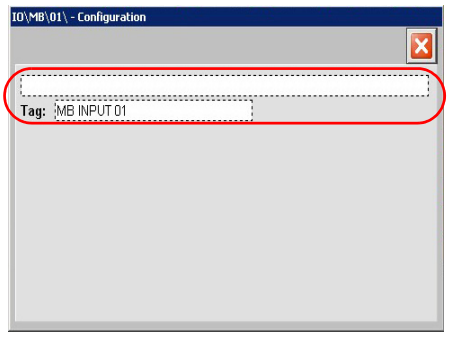
IMPORTANT The keyboard is a standard FactoryTalk® keyboard. Update Field is not configured for use in the OptiSIS solution. Press Enter to store parameter values.

I/O Configuration

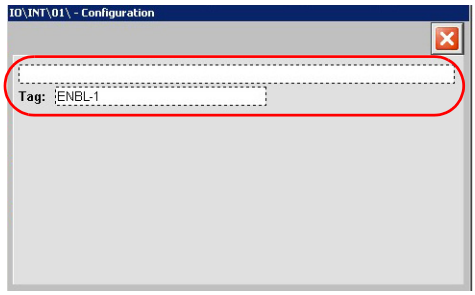




Modbus Input Configuration



Internal Parameters Configuration



   b. Type a description (maximum length 40 characters).
   c. Press Enter on the keyboard.
      The keyboard disappears. The field updates with the description.
   d. Repeat this process for Tag Name (maximum length 20 characters).

IMPORTANT For internal parameters and Modbus inputs, no further configuration is needed.

8. Continue to:
   - Configure Analog Input Characteristics
   - Configure Digital Input Characteristics
   - Configure Analog Output Characteristics
   - Configure Digital Output Characteristics.

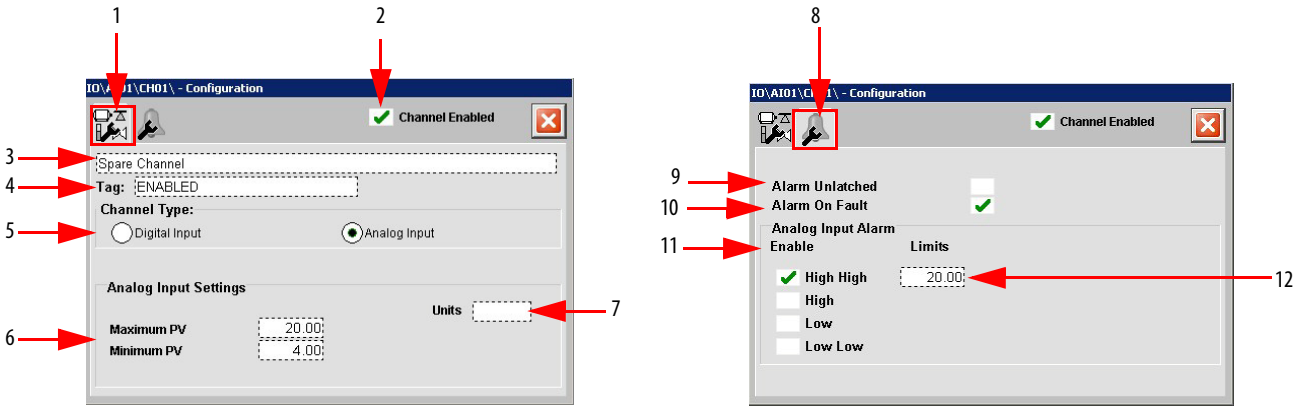
Configure Analog Input Characteristics

IMPORTANT I/O allocation on the 100 I/O module differs. See the wiring diagram before you commit I/O allocation.

After the input is created by enabling the channel, entering a description, and naming the tag, you can configure the characteristics of the analog input.

TIP Unconfigured points return a tag name of 'DISABLED' and a description of 'Spare Channel'. The tag name and descriptions reside in the HMI only.

Figure 27 - Analog Input Configuration Faceplates



Item	Description
1	Device Configuration tab.
2	Channel Enabled - This feature controls the channel parameters configuration.
3	Description (maximum length 40 characters) - The description is shown in the Module Type faceplate to describe the channel. Be descriptive for quick navigation and selection.
4	Tag Name (maximum length 20 characters) - The tag name is used in the Module Type faceplate to identify the channel. Use field device names for Cause and Effect selection/presentation.
5	Channel Type (Analog or Digital) - The Flexible Input channel can be wired to either an analog input or digital input (page 50). Required subparameters vary according to the option you choose here.
6	Process Variable (PV) Minimum/Maximum - Input process variable maximum and minimum value settings in engineering units, as corresponding to 20 mA and 4 mA respectively (range = -999999.9...999999.9).
7	Units (maximum length six characters) - Engineering units relevant to the input that is configured (for example, barg, degC, degF, %LEL, ppm).
8	Alarm Configuration tab.
9	Alarm Unlatched - With this box cleared, any configured input alarm latches when the alarm occurs. To unlatch, the input first has to return to a normal value and then be reset (either by the HMI or by the external Modbus Reset being toggled to 1). With this box checked, the analog input or digital input alarm resets once the input is at a normal value.
10	Alarm on Fault - With this box cleared, a field or module fault does not cause the input to generate any trip alarms (although faults are still reported). With this box checked, a field or module fault generates all trip alarms for the inputs affected.
11	Enable Alarms (High High, High, Low, and Low Low) - Enables (box checked)/disables (box cleared) the selected alarm for the analog input.
12	Limits (High High, High, Low, and Low Low) - Configure the required alarm limits, within the configured maximum and minimum process variable values, as defined on the Device Configuration tab.

To configure the analog input, follow these steps.

1. In Channel Type, press Analog Input.

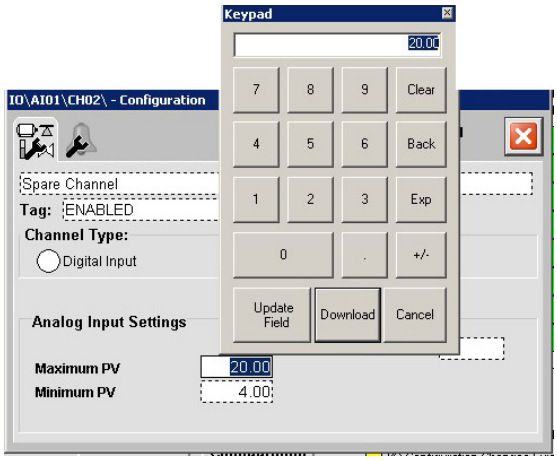
   The analog input characteristics appear.

2. Configure the values for the analog input settings.

   TIP Input Process Variable maximum and minimum settings correspond to 20 mA and 4 mA, respectively.

   a. Press in the Maximum PV field.

   A numeric keypad appears.



   b. Enter a value by using the keypad.

   c. Press Download.

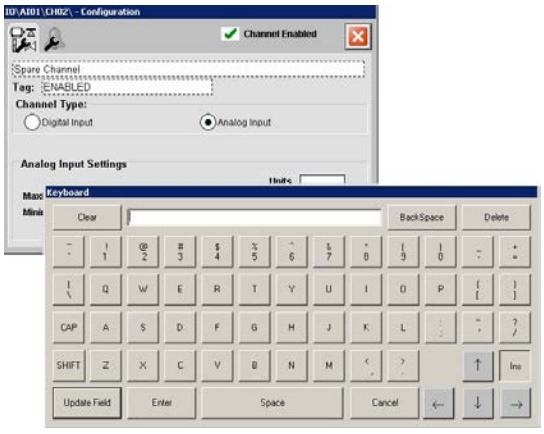
   d. Repeat steps a...c for Minimum PV.

   e. Press in the Units field.

   A keyboard appears.

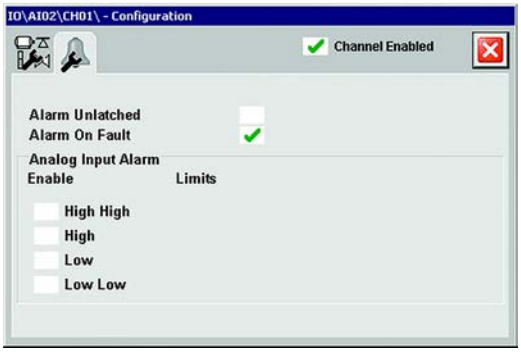
   f. Enter the units.

   g. Press Enter on the keyboard.



3. To open the Alarm configuration tab, press  .

4. Configure the Alarm Unlatched and Alarm On Fault settings as required by pressing the required checkboxes.



5. To set the limit values for the alarms, follow these steps.

IMPORTANT You have to check an Alarm Enable box first before setting a limit value.

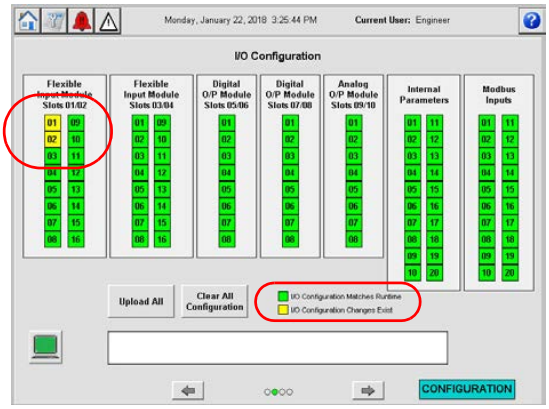
Four limits are available (High High, High, Low, and Low Low) to be used in your specific installation. These instructions describe how to configure one of these limits.

a. Under Enable, press the High High checkbox.
   A green check mark and Limits field appear.
b. Press the High High Limits field.
   A keypad appears.
c. Enter the limit.
d. Press Download.
   The keypad disappears.

6. To close the configuration faceplate, press  .

7. To make your changes to the controller, you can download configuration by using the logic write keyswitch at the front of the panel.

IMPORTANT On the I/O configuration display, the I/O channels that you configured or changed appear as yellow. The yellow box indicates that there are differences between what you configured and what the controller is running.



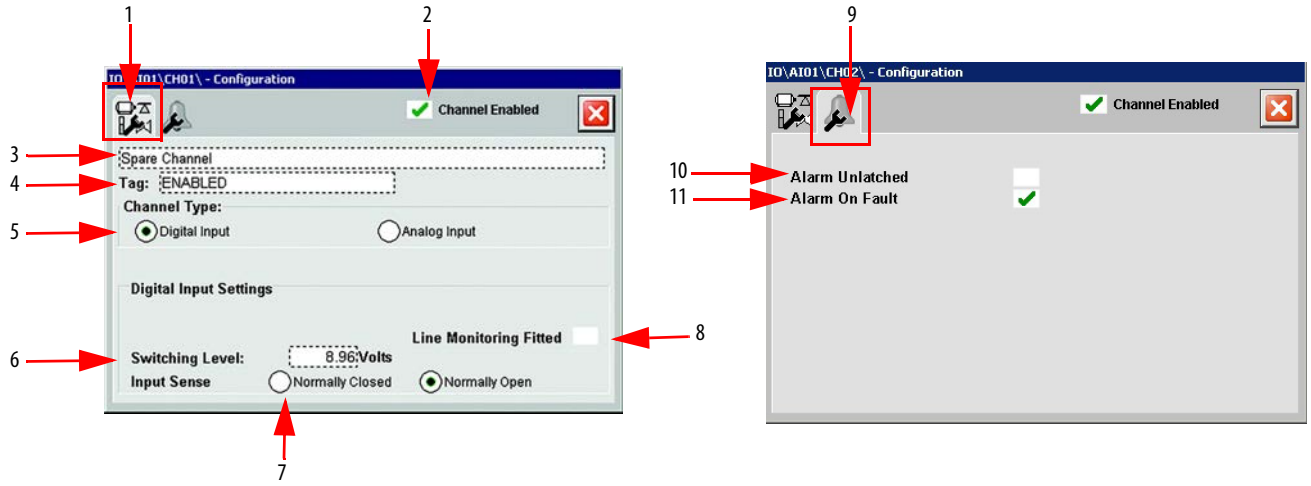
Configure Digital Input Characteristics

IMPORTANT I/O allocation on the 100 I/O module differs. See the wiring diagram before you commit I/O allocation.

After the input is created by enabling the channel, entering a description, and naming the tag, you can configure the digital input characteristics.

TIP Unconfigured points return a tag name of DISABLED and a description of Spare Channel. The tag name and descriptions reside in the HMI only.

Figure 28 - Digital Input Configuration Faceplates



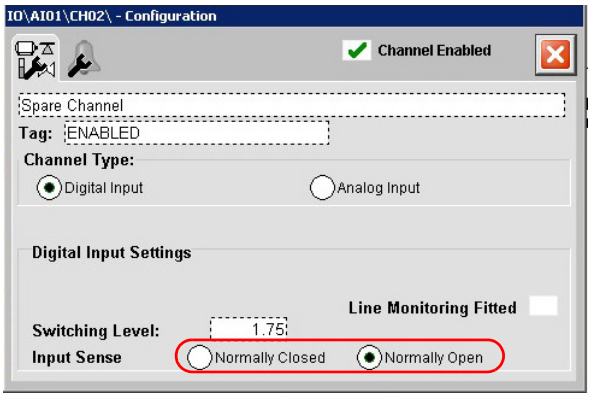
Item	Description
1	Device Configuration tab.
2	Channel Enabled - This feature controls the channel parameters configuration.
3	Description (maximum length 40 characters) - The description is shown in the Module Type faceplate to describe the channel. Be descriptive for quick navigation and selection.
4	Tag Name (maximum length 20 characters) - The tag name is used in the Module Type faceplate to identify the channel. Use field device names for Cause and Effect selection/presentation.
5	Channel Type (Analog or Digital) - The Flexible Input channel can be wired to either an analog input (page 46) or digital input. Required subparameters vary according to the option you choose here.
6	Switching Level (V) - The level across which the input is deemed to be energized (above this value) or de-energized (below this value). Typically the default value (8.96V) is sufficient. (Min 0V, max 23V)
7	Input Sense (Normally Open or Normally Closed) - Normal state of the field switch.
8	Line Monitoring Fitted - Check this box for line monitored switches/devices with End-of-Line (EOL) resistors installed. Clear this box for non-line monitored devices. With this box cleared, open circuit and short circuit faults are not generated. With this box checked, open circuit and short circuit faults are generated.
9	Alarm Configuration tab.
10	Alarm Unlatched - With this box cleared, any configured digital input alarm latches when the alarm occurs. To unlatch, the input first has to return to a normal value and then be reset (either by the HMI or by the external Modbus Reset being toggled to 1). With this box checked, the digital input alarm resets once the input is at a normal value.
11	Alarm on Fault - With this box cleared, a field or module fault does not cause the input to generate any trip alarms (although faults are still reported). With this box checked, a field or module fault generates the configured trip alarm for the digital input.

To configure the digital input, follow these steps.

1. In Channel Type, press Digital Input.

   The digital input characteristics appear.

2. Select the type of input sense required; press Normally Closed or Normally Open.



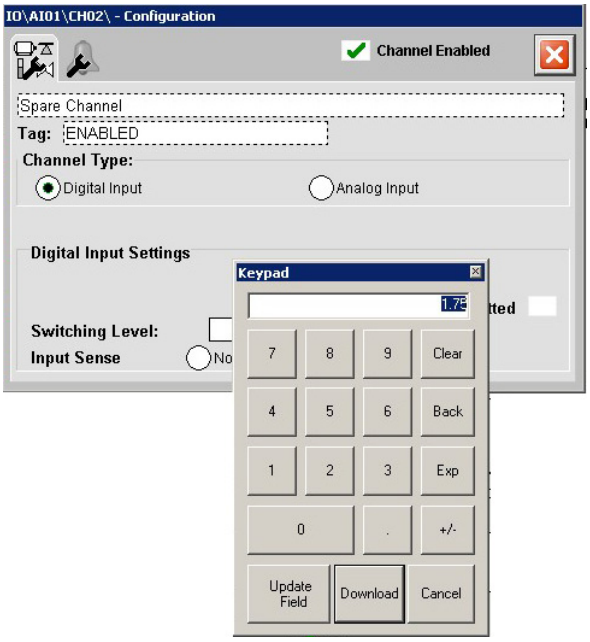
3. To set the switching level, follow these steps.
   a. Press the Switching Level field,

      A keypad appears.

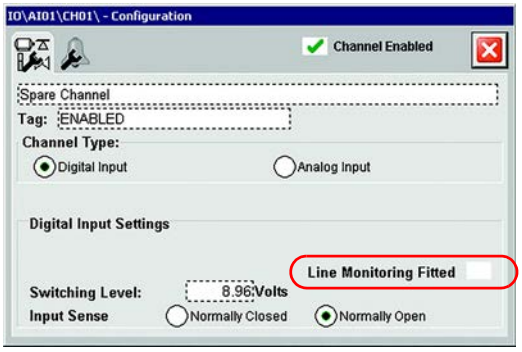
   b. Enter the value.

   c. Press Download.

      The keypad disappears.

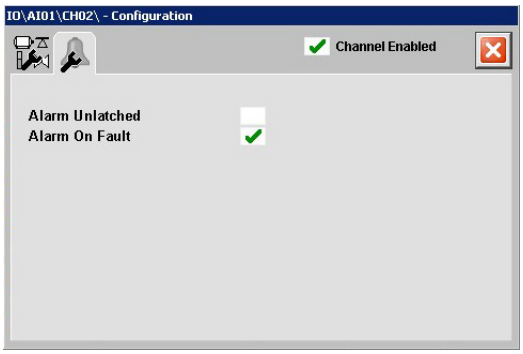


4. Specify if line monitoring is configured for this input.
   See Line Monitoring (Digital Inputs) on page 53 for more information.



5. To open the Alarm configuration tab, press  .

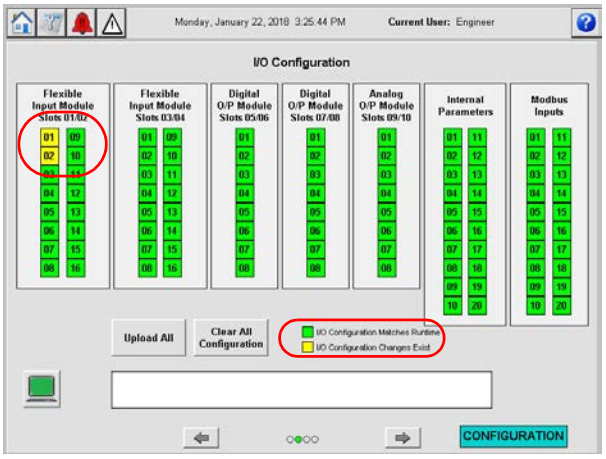
6. Configure the Alarm Unlatched and Alarm On Fault settings as required by pressing the required checkboxes.



7. To close the configuration faceplate, press  .

8. To make your changes to the controller, you can download configuration by using the logic write keyswitch at the front of the panel.

IMPORTANT On the I/O configuration display, the I/O channels that you configured appear as yellow. The yellow box indicates that there are differences between what you configured and what the controller is running.



Line Monitoring (Digital Inputs)

This section provides recommended line monitoring circuits and resistor values.

TIP You must verify that there is no crossover between channels.

Figure 29 - Field Loop Circuit for Digital Input

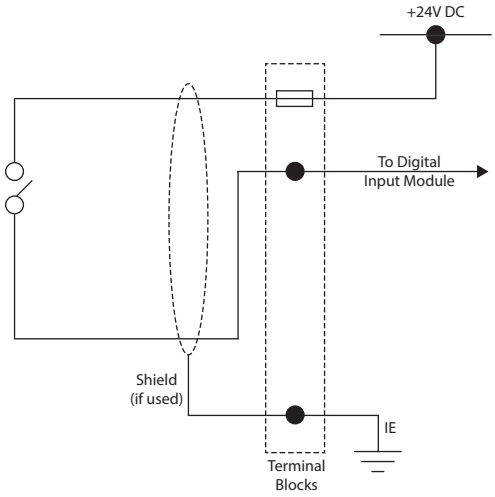
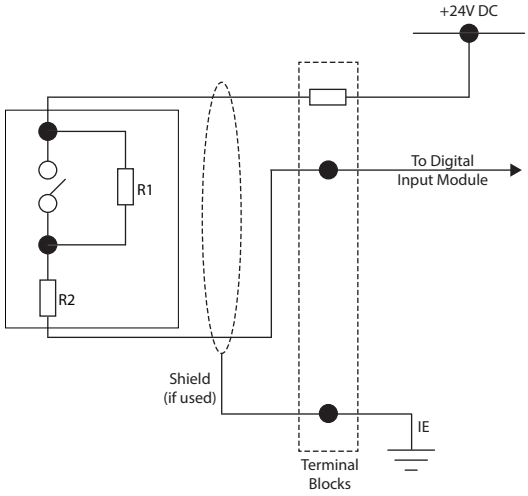


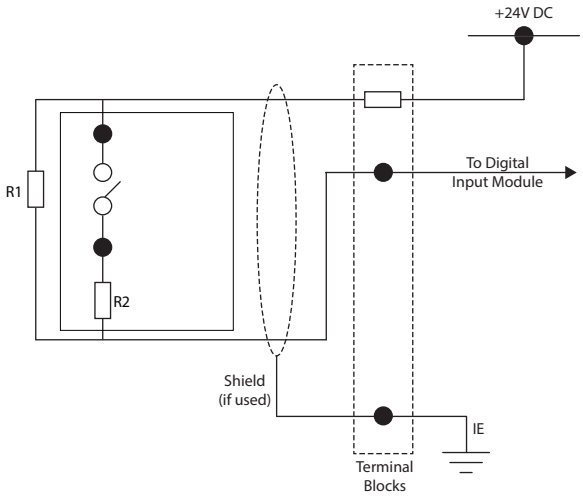
Figure 30 - Field Loop Circuit for Line Monitored Digital Input for Emergency Shutdown Systems (ESD)



The suggested values for R1 and R2 are as follows:

- R1 = 15 kΩ, 5%, 1 W (maximum power that is dissipated is 47 mW at 26.4V)
- R2 = 3.9 kΩ, 5%, 1 W (maximum power that is dissipated is 182 mW at 26.4V)

Figure 31 - Field Loop Circuit for Line Monitored Digital Input for Fire and Gas Systems (F & G)



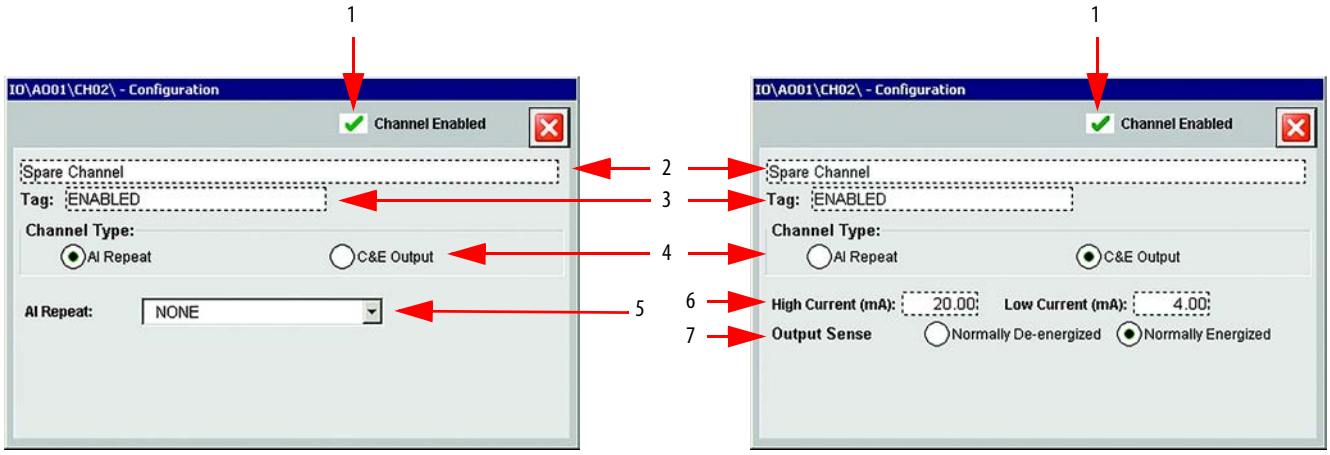
- The F&G circuit also allows two devices to be in alarm without reporting short circuit.
- All input circuits are suitable for simplex, dual, and TMR configurations.
- The F&G circuit assumes that the devices are volt-free contacts.
- For further information, see application note AN-T90001 Field Loop Configuration. This application note also includes advice for fire detectors, which are not simple volt-free contacts.

Configure Analog Output Characteristics

IMPORTANT I/O allocation on the 100 I/O module differs. See the wiring diagram before you commit I/O allocation.

After the output is created by entering a description, and tag name you can configure the analog output characteristics.

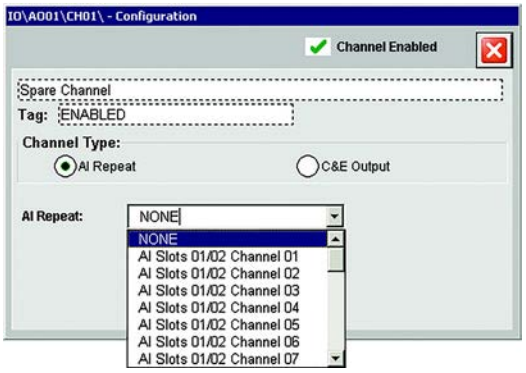
Figure 32 - Analog Output Configuration Faceplate



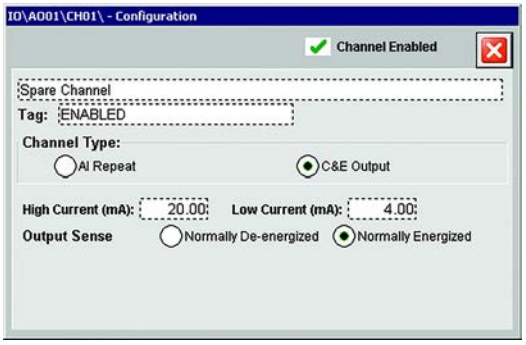
Item	Description
1	Channel Enabled - This feature controls the channel parameters configuration.
2	Description (maximum length 40 characters) - The description is shown in the Module Type Faceplate to describe the channel. Be descriptive for quick navigation and selection.
3	Tag Name (maximum length 20 characters) - The tag name is used in the Module Type faceplate to identify the channel. Use field device names for Cause and Effect selection/presentation.
4	Channel Type - The Analog Output channel can be set to either an AI Repeat or C&E Output. Required subparameters vary according to the option you choose here.
5	AI Repeat - A pull-down menu of the analog input channels. The selected analog input channel value is repeated out of the OptiSIS solution, typically to pass to another system or to display on a bar graph style display.
6	High/Low Current (mA) - Current value sent to the analog output when the Cause and Effect chart action requires the output to be energized (high - 20 mA, max) or de-energized (low - 0 mA, min).
7	Output Sense - Normal state of the output device.

To configure an analog output, follow these steps.

1. Select and configure the Channel Type.
   - AI Repeat allows you select which channel this output is able to repeat on the output.



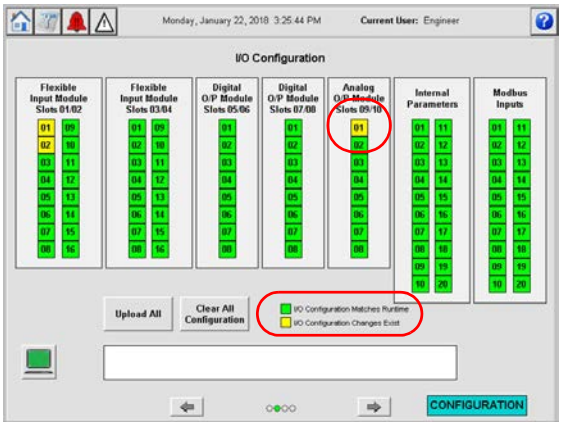
   - C&E Output makes the analog output available to the Cause and Effect charts. Configure Low/High Current (0...20 mA) and Output Sense as required.



2. Click  to close the configuration faceplate.

3. To make your changes to the controller, you can download configuration by using the turnkey at the front of the panel.

IMPORTANT On the I/O configuration display, the I/O channels that you configured or changed appear as yellow. The yellow box indicates that there are differences between what you configured and what the controller is running.

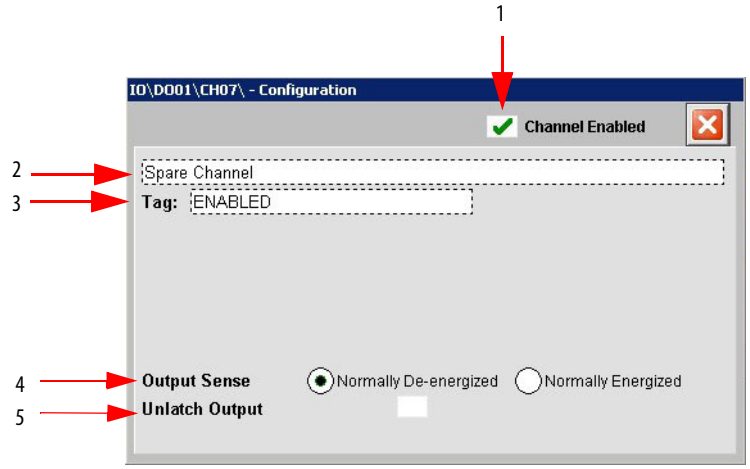


Configure Digital Output Characteristics

IMPORTANT I/O allocation on the 100 I/O module differs. See the wiring diagram before you commit I/O allocation.

After the output is created by entering a description and tag name, you can configure the digital output characteristics.

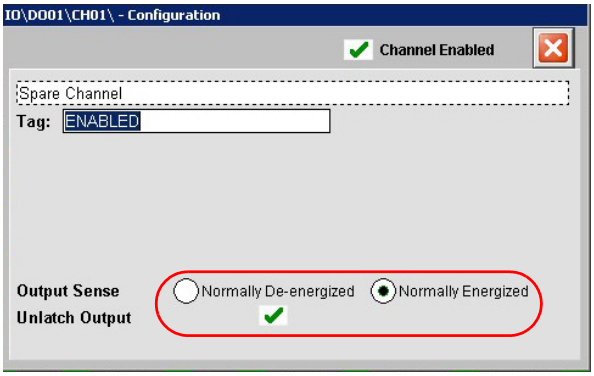
Figure 33 - Digital Output Configuration Faceplate



Item	Description
1	Channel Enabled - This feature controls the channel parameters configuration.
2	Description (maximum length 40 characters) - The description is shown in the Module Type faceplate to describe the channel. Be descriptive for quick navigation and selection.
3	Tag Name (maximum length 20 characters) - The tag name is used in the Module Type Faceplate to identify the channel. Use field device names for Cause and Effect selection/presentation.
4	Output Sense (normally de-energized or normally energized) - Normal state of the output device.
5	Unlatch Output - With this box cleared, the digital output latches. To unlatch, the logic demand first must return to Off and then be reset (either by the HMI, by the external Modbus Reset being toggled to 1, or - if applicable - by driving TRUE any configured Reset (R) inputs in the appropriate Cause and Effect column). With this box checked, the digital output resets automatically once the logic demand is Off.

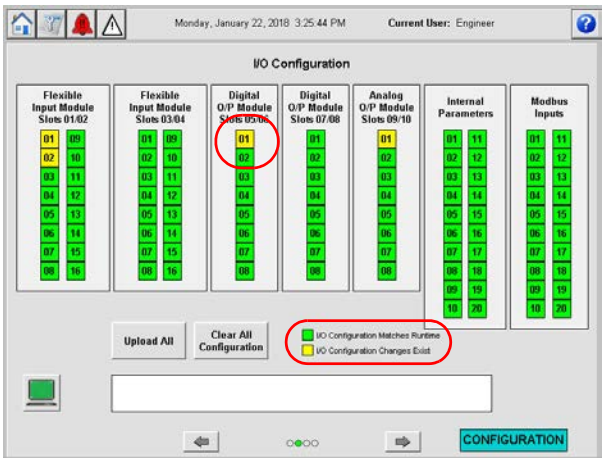
To configure the digital output, follow these steps.

1. Select the type of output sense required.
2. Configure the Unlatched Output setting as required.



3. Click  to close the configuration faceplate.
4. To make your changes to the controller, you can download configuration by using the turnkey at the front of the panel.

IMPORTANT On the I/O configuration display, the I/O channels that you configured or changed appear as yellow. The yellow box indicates that there are differences between what you configured and what the controller is running.



Validate Configuration

Once your system has been fully configured, check the design against your requirements specification.

Notes:

Configure Logic

The OptiSIS solution offers the ability to configure Cause and Effect logic that is based on a set of signals previously configured. Multiple Cause and Effect charts are available for configuration:

- 10 charts for the 50 I/O solution
- 20 charts for the 100 I/O solution

The Cause and Effect charts are configured by using two signal categories - inputs and outputs.

Inputs include the following:

- Physical input alarms (for example, AI HH, digital alarm)
- Internal parameters (for complex logic creation)
- Modbus inputs (for writing from external packages)

Outputs include the following:

- Physical outputs (for example, DO and AO)
- Internal parameters (for complex logic creation)

Internal parameters are available on preallocated, read-only Modbus addresses. Modbus inputs are available on preallocated writable Modbus addresses, and can be used on the Cause and Effect charts.

ATTENTION: When writing to a Modbus input, any effect on a safety-related function must follow the requirements on IEC61511.

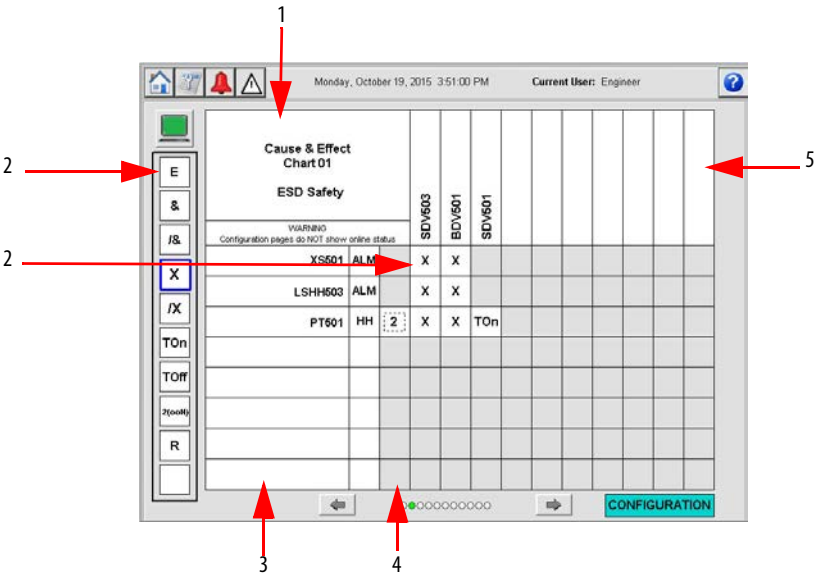
A logic expression is applied to the Causes (inputs) to generate the Effect (outputs).

ATTENTION: The OptiSIS solution is a critical part of your safety system and changes must follow formal Management of Change (MOC) process. Security measures have been taken to avoid unauthorized changes to the SIS configuration. The MOC process includes, but is not limited to, an impact analysis of the change, documented implementation and test procedures, and identification of any additional measures that are required while the change is made. An MOC example is not provided in this document.

Using Cause and Effect Charts

This section describes the Cause and Effect Chart display and the steps to configure the logic.

Figure 34 - Cause and Effect Chart Configuration



Item	Description
1	Cause and Effect Description (two lines)
2	Logical elements (for example, OR, AND, VOTED, and ENABLE)
3	Input tag name
4	Time delay (only used with TOn and TOff)
5	Output tag name

Cause and Effect charts allow the system to act on inputs to control outputs. To configure the chart, follow these steps.

1. Select the input that you want to monitor and select the details of the monitoring that takes place, such as alarm level.
2. Select the output that you want to control.
3. Select the type of logic that is used to control the desired output.

The OptiSIS solution is built with nine different logic functions for controlling outputs.

Table 5 - Logic Functions

Logic Function	Description
E ENABLE	For ENABLE functions, when the input condition is TRUE, then the remaining logic functions in the Cause and Effect column (OR, NOT OR, AND, NOT AND, TOn, TOff, and 2(ooN)) are enabled. If the ENABLE is present and not TRUE, then all other logic functions that are configured in the corresponding column do not affect the output state. **IMPORTANT:** When multiple ENABLE functions are present in a Cause and Effect column, only one TRUE ENABLE function is required to enable the remaining logic functions.
R RESET	For outputs configured as non-latching, once all other logic functions in the same Cause and Effect column are in the normal state, the output returns to its normal state when the Cause and Effect RESET function is TRUE. For outputs configured as latching, once all other logic functions in the same Cause and Effect column are in the normal state, the output returns to its normal state when one of the following conditions is present: • The Cause and Effect RESET function is TRUE • A RESET command is issued from the HMI Alarm display • The associated Modus bit is driven to TRUE
& AND	For AND logic functions, all inputs must be TRUE, and for NOT AND logic functions all inputs must be FALSE, to trip the output. If an ENABLE is present in the same column, the ENABLE must also be TRUE.
/& NOT AND	
X OR	For OR logic functions, any input made TRUE, and for NOT OR logic functions any input made FALSE, trips the corresponding output. If an ENABLE is present in the same column, the ENABLE must also be TRUE.
/X NOT OR	
TOn Timer (ON DELAY)	When the input is TRUE for longer than the configured time (in the corresponding row), then the corresponding output is tripped. If an ENABLE is present in the same column, the ENABLE must also be TRUE.
TOff Timer (OFF DELAY)	When the input is TRUE, the output trips immediately. Once the input returns to FALSE, the output is driven to the normal state after the configured time (in the corresponding row) has elapsed. A latched output can only be reset after the associated off-delay timers have expired. If an ENABLE is present in the same column, the ENABLE must also be TRUE to trip the output.
2(ooN) 2ooN Voting	For 2(ooN) voting functions, at least two input conditions must be TRUE to trip the corresponding output. If ENABLE is present in the same column, then the ENABLE must also be TRUE.

Configuration Methods

There are three methods you can use to configure the Cause and Effect charts:

- The HMI display
- Back up and restore
- The Offline Configuration Tool (see Configure Cause and Effect Charts on page 105)

Configure Cause and Effect Charts by Using the HMI Display

Follow these steps to use the HMI display to configure the different types of logic that can be used with OptiSIS solution.

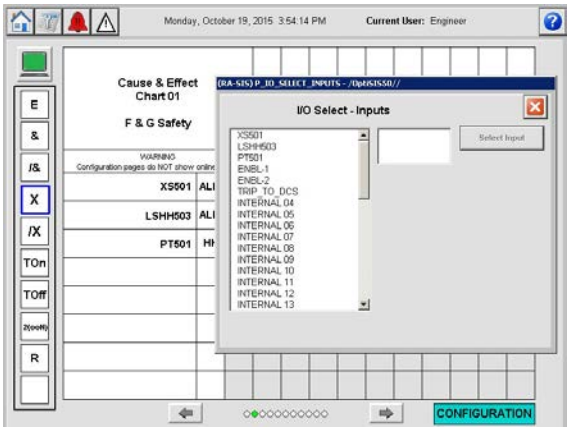
1. To go to the Operator display, press  .
2. Log in as Engineer.

   See Application Accounts on page 37.
3. Press Configuration  .
4. From the Operator display, press  .

   The first Cause and Effect chart opens. You can scroll through the Cause and Effect charts when you press either  or  .
5. Press an input field.

   The I/O Select - Inputs faceplate appears.
6. Select the Input and the Alarm Level.
7. Press Select Input.

   The I/O Select - Inputs faceplate disappears.



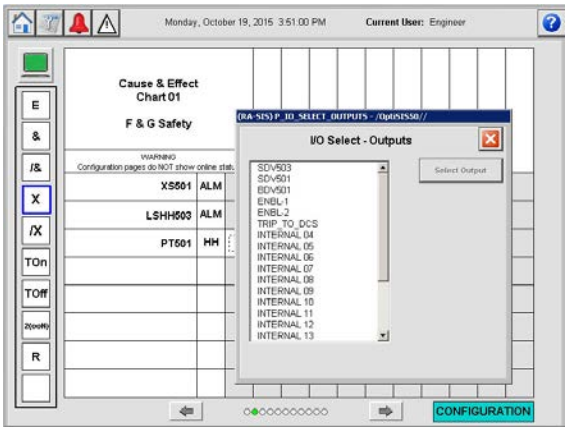
8. Press an output field.

   The I/O Select - Outputs faceplate appears.

9. Select the required output.

10. Press Select Output.

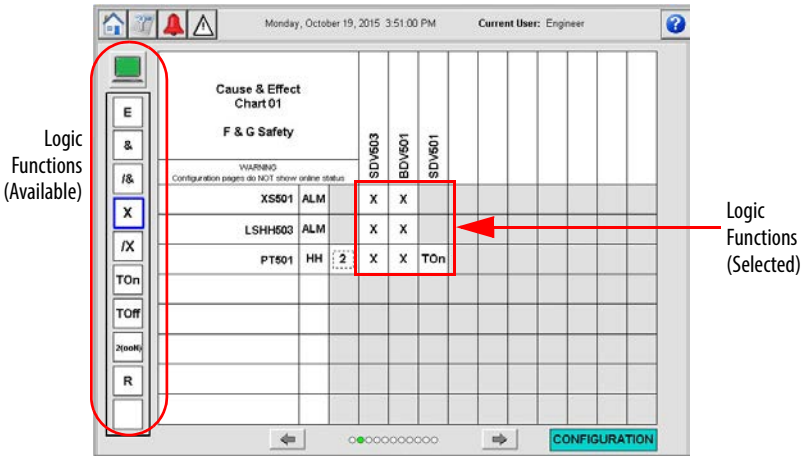
    The I/O Select - Outputs faceplate disappears.



11. Select the logic function that you want to use from the tools table.

12. To place the logic expression, press in the intersecting box for the input and output.

IMPORTANT An input and output must be selected before you can add the logic function.

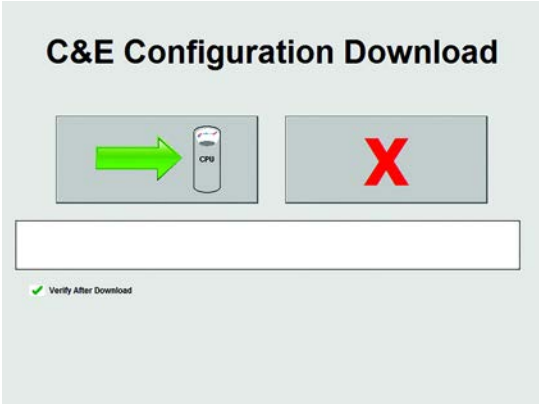


13. To configure the rest of the chart, repeat steps 5...12.

14. To configure the remaining Cause and Effect charts, repeat steps 1...12.

15. Turn the logic write keyswitch.

    The keyswitch is on the front of the door, below and to the left of the HMI display. The download display appears.



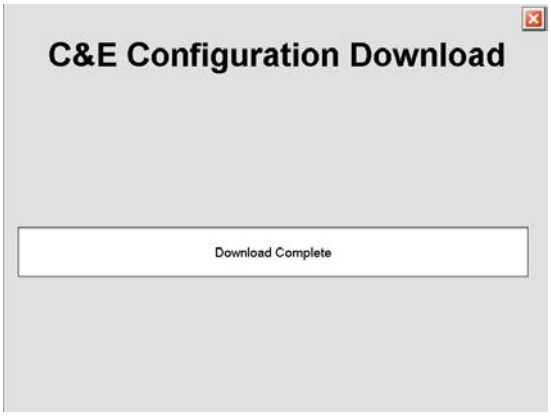
IMPORTANT The Verify After Download setting enables a verification process that compares the downloaded values with the configured values.

16. Press Download.

    The download process begins. The process status can be monitor download display.

ATTENTION: The download process can take up to 2 minutes. The system suspends operation during the download process.

17. When the download is complete, press  to close the faceplate.



Back up and Restore

The OptiSIS solution configuration can be backed up or restored from a USB drive. This function allows the operating system to be backed up for record and management of change (MOC) purposes. This function also aids in disaster recovery or when you revert to a previous version.

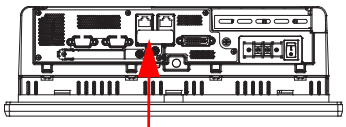
IMPORTANT The Save to USB feature copies the configuration from the controller to the USB drive. The Load from USB feature loads the configuration from the USB drive to the controller.

The following tips apply to all removable devices such as USB drives, external hard disks, and SD cards.

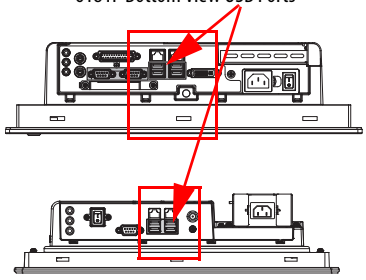
- Do not leave removable devices plugged in when not in use.
- Do not mix personal and business usage.
- Do not use personal USB drives in customer computers.
- Do not plug USB drives that contain customer information into your personal computer.
- Format the device before the first use.
- Virus scan USB drives.

Install the USB Drive

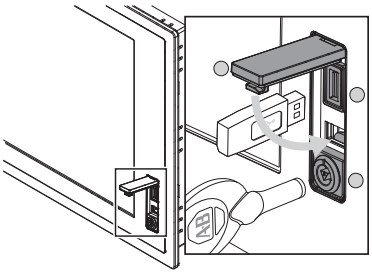
6181X Bottom View



6181P Bottom View USB Ports



6181P Front View



ATTENTION: The USB ports must not be used unless the area is known to be non-hazardous. All other ports or connections must not be disconnected unless the area is known to be non-hazardous.

Back up the Configuration

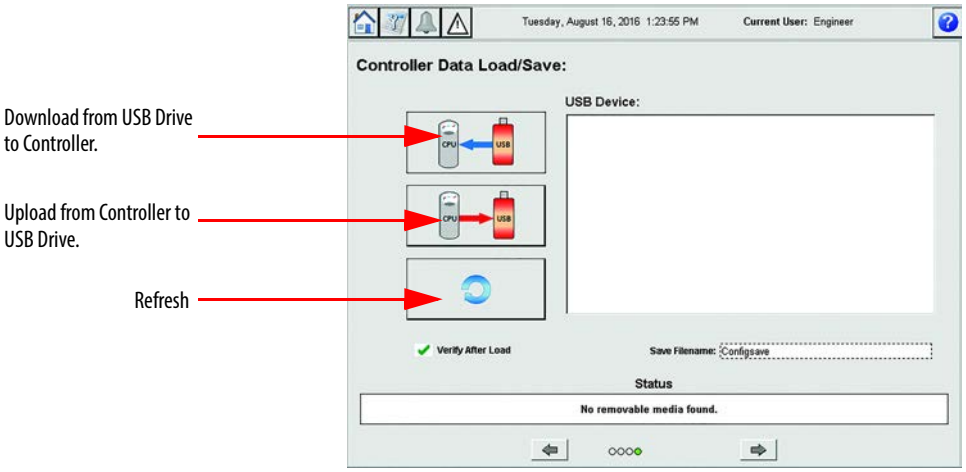
To upload the configuration files, follow these steps.

1. Log in as Engineer.

   See Application Accounts on page 37.

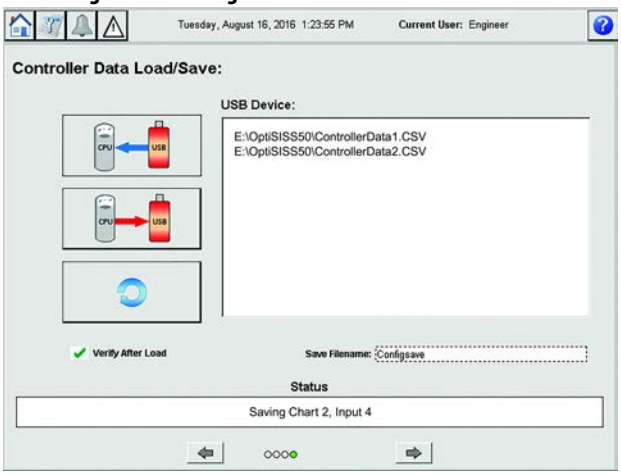
2. To go to the Maintenance display, press  .

3. From the Maintenance display, press → until the Configuration Load/Save display appears.



4. Specify a file name in the Save Filename field.
5. Press Upload from Controller to USB.

Figure 35 - Storing Current Configuration to Your USB Drive



IMPORTANT The upload process can take up to 2 minutes.

IMPORTANT The solution automatically creates a separate folder in the root folder of your USB drive to store the configuration as shown in Figure 35 (E:\OptiSIS50\ or E:\OptiSIS100\).

Load or Restore a Configuration

To download a configuration file to the controller, follow these steps.

1. Log in as Engineer.

   See Application Accounts on page 37.

2. To go to the Maintenance display, press  .

3. From the Maintenance display, press  until the Configuration Load/Save display appears.

4. Connect the USB drive.

5. Verify that the configuration file is listed in the USB Device field. If the file is not listed, press the Refresh button.

6. Select the configuration file. If multiple files are stored in the USB drive, confirm that the correct file is highlighted.

7. If verification is required, check the Verify After Load checkbox.

8. Turn the Logic Write keyswitch to enable the Load from USB to Controller button.

9. Press Download from USB to Controller button.

10. Once the download is complete, remove the USB device and close the enclosure door if the door was open during the procedure.

IMPORTANT The solution requires the configuration file to be stored in a separate folder in the root folder of your USB drive (E:\OptiSIS50\ or E:\OptiSIS100\). If the folder does not exist, you must create it.

IMPORTANT The Verify After Download setting enables a verification process that compares the downloaded values with the values in the configuration file.

Notes:

Communication

Introduction

The OptiSIS solution provides Ethernet and serial communication to external devices using Modbus RTU or Modbus TCP/IP. Additionally, it supports the integration of field devices via HART protocol. This chapter covers the details of these communication protocols.

IP Addresses

Table 6 - IP Addresses

IP Address	Description
192.168.0.1	Modbus TCP/IP and HART passthrough
192.168.2.1	HMI communication
192.168.1.1	Modbus TCP/IP
192.168.4.1	HMI communication
192.168.3.1	Not connected
192.168.5.1	Not connected

Using Modbus Communication

The OptiSIS solution has two serial ports and two Ethernet ports for external communication using Modbus RTU and Modbus TCP/IP, respectively. All configuration registers are read-only. Only a limited number of variables are read/write. See Appendix E on page 119 for Modbus RTU and MODBUS TCP/IP settings and addressable parameters and use.

HART Protocol

The OptiSIS solution supports HART protocol, which lets you integrate Field Device data into your safety application. Typical uses of this data include the following:

- To display, compare, and alarm (externally) the measured process variable from the analog input channel with the process variable value that is transmitted over HART from the field device to detect discrepancies.
- To monitor the field device status, report device status, and report diagnostic errors or manual configuration changes.

Based on your specific needs, you can configure your solution in one of two ways:

- HART Data over Modbus uses the HART command #03 to collect data automatically from any smart field device that is connected to either an input channel or analog output channel. The data is made available to read through Modbus (RTU or TCP) interface for display or for consumption by an outside system.
- HART Device management through an AMS (Asset Management System) lets you manage smart field devices by creating an Ethernet connection from your solution to your AMS.

HART Data Over Modbus Network

HART Data over Modbus is implemented by connecting input channels in your OptiSIS solution to smart transmitters or an analog output to a smart positioner. The devices are polled automatically using HART command #03 to collect data from the field device and made available to read by using Modbus if necessary (see Appendix E on page 119).

The data available from channels that are connected to HART enabled field devices provides the following information:

- Current in milliamps (mA)
- Process measurement in engineering units
- Second, third, and fourth variables where applicable to the field device
- Status of the field device
- Time in milliseconds since the last update

ATTENTION: HART command #03 provides different data depending on the specific device, which must be used in accordance with the published recommendations of the device manufacturer.

HART Device Management by Using an AMS

The OptiSIS solution is enabled to allow an FDT (version 1.0) compatible AMS to communicate with smart field devices. The AMS is enabled only on the first of the two customer ports.

The AMS requires that the AADvance CommDTM is installed, to allow any DeviceDTM to interface HART data between the AMS and the Field Device. The AADvance CommDTM can be downloaded from the Product Compatibility and Download Center (PCDC) http://www.rockwellautomation.com/global/support/pcdc.page?. The installation and use information is available from Rockwell Automation Literature Library http://www.rockwellautomation.com/literature/.

ATTENTION: When using HART Passthru, a field device can respond to commands from the AMS. This response can, in turn, disable a safety function or initiate a demand.

Notes:

Operation

Monitor System State

The OptiSIS solution provides diagnostics that allow you to monitor the system state.

On the Maintenance displays, you can view overall system status, configure inputs and outputs, change passwords, and handle configuration files, if necessary. Navigation to any of these aspects is accomplished by using the navigation arrows at the bottom of the display.

System Status

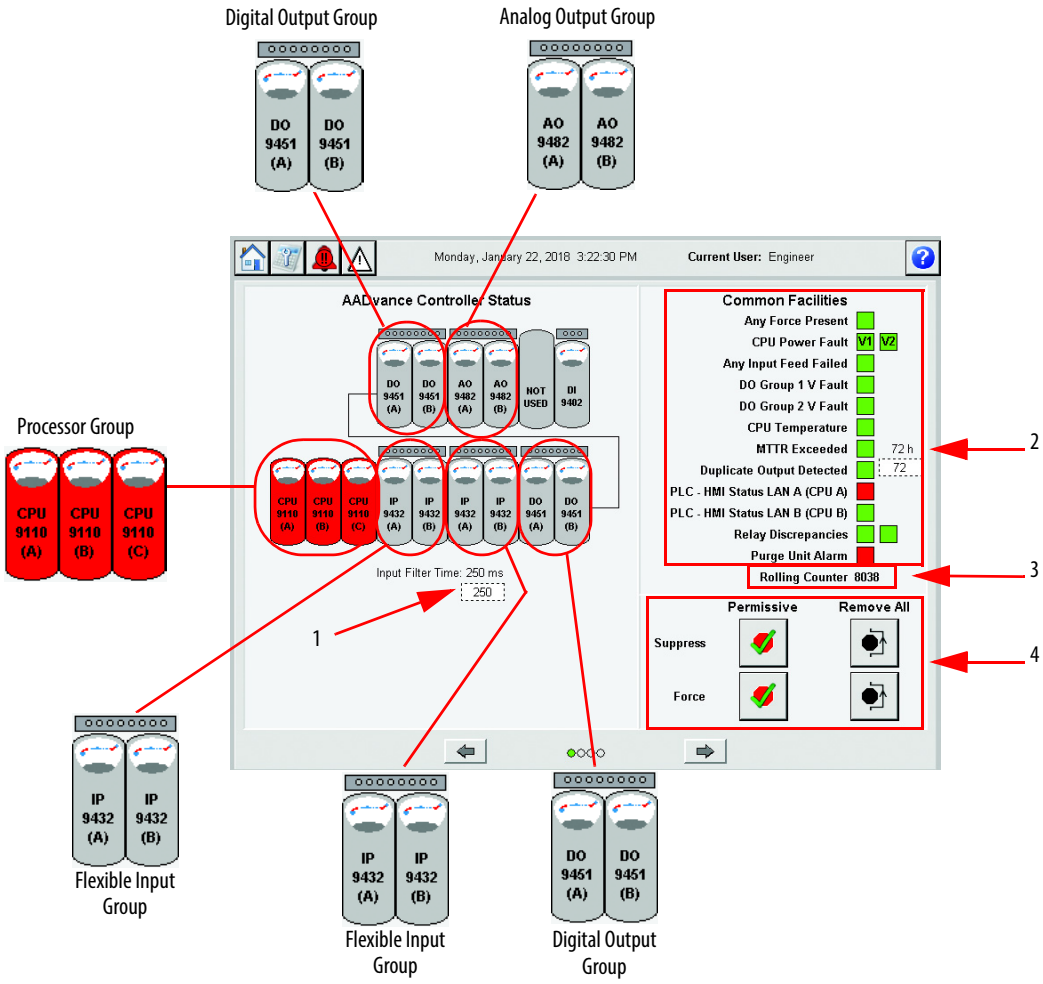
The system status display gives you a quick glance at information about overall system health. Based on the color of the modules in the system diagram, you can determine the overall status:

- Gray = healthy module
- Yellow = warning
- Red = faulted module

IMPORTANT When the Program Enable Key is inserted, the processors are shown in yellow. See Figure 36 on page 76.

To get a more detailed overview of the system, press the module that you are interested in to get that information. You can view steady-state operation, confirm that the wiring is correct, and troubleshoot inputs and outputs.

Figure 36 - System Status Display



Item	Description	Item	Description
1	Input Filter Time [ms] - Time that the inputs must remain in the alarm state before the alarm can be generated (0…500 ms)	2	Common Facilities, continued
2	Common Facilities		Duplicate Output Detected - An output has been used in two different columns of the Cause and Effect charts.
	Any Force Present - A force is active on an input or output device.		PLC - HMI Status LAN A (CPU A) - Status of the Ethernet communication link between the industrial computer and processor A.
	CPU Power Fault - At least one processor power feed is outside of the specified range (18…32V DC).		PLC - HMI Status LAN B (CPU B) - Status of the Ethernet communication link between the industrial computer and processor B.
	Any Input Power Feed Failed - Notification of complete Feed A/B failure.		
	DO Group 1 V Fault - Voltage from either field power supply for DO Group 1 is less than the minimum value (18V DC).		Relay Discrepancies - A discrepancy exists between the commanded output and the status of the output device. An indication is available for each DO Group present in the system.
	DO Group 2 V Fault - Voltage from either field power supply for DO Group 2 is less than the minimum value (18V DC).		Purge Unit Alarm - Notification that the Purge Unit (when installed) is reporting a fault.
	CPU Temperature - The temperature of any processor module is greater than the maximum value (80 °C [176 °F]).	3	Rolling Counter - Visual indication of successful communication.
	MTTR Exceeded - For a High Availability configuration, a system fault has exceeded the configured mean time to repair.	4	Suppress/Force, Permissive - Enable Permissive to suppress/force alarms/tags. Suppress/Force, Remove All - Reactivate all signals that are currently suppressed and remove all forces.

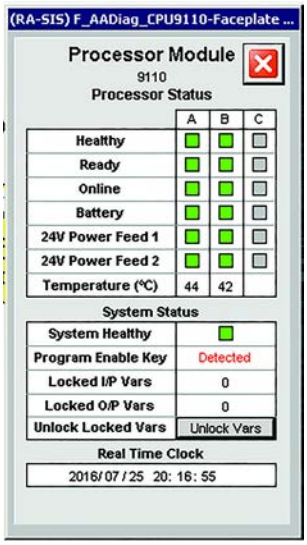
Processor Module Status

When in Operation mode, you can press the Processor group, to view the processor status. This view gives you information to identify issues with any of the system processor modules. This information includes the following:

- Health
- Ready/online state
- Battery status
- Processor power feeds status
- Temperature
- Program enable key
- Locked and unlocked variables
- Real-time clock (UTC)

There are separate columns for each processor in the system to give you individualized status monitoring.

Figure 37 - Processor Module Status



Flexible Input Module Status

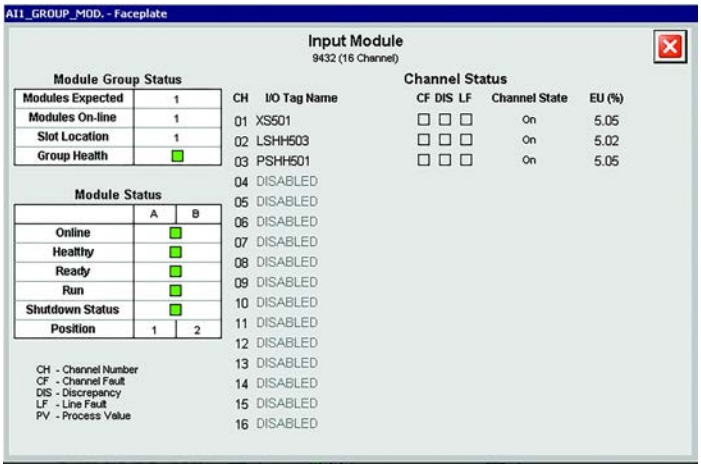
When you press a flexible input group, you can view the input module status. The Flexible Input module groups, and the dedicated Analog Input and Digital Input groups available in the 100 I/O solution, share similar displays. This view gives you information to identify issues with any of the system input modules. This information includes the following:

- Number of modules expected
- Number of modules online
- Slot location of the first module in the group
- Overall group health
- Online, Healthy, Ready, Run, and Shutdown status of each module
- Position of each module
- Current state, process variable value, and tag name for each channel

There is a legend that is provided in the lower left corner to explain the meaning of each of the abbreviations for channel status.

IMPORTANT All channels are displayed to help with setup whether the channel is enabled or not enabled.

Figure 38 - Flexible Input Module Status



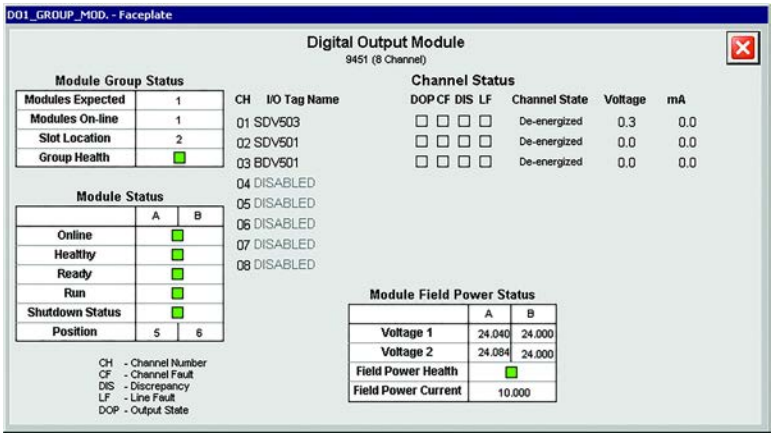
Digital Output Module Status

When you press the digital output group, you can view the digital output module status. This view gives you information to identify issues with any of the system digital output modules. This information includes the following:

- Number of modules expected
- Number of modules online
- Slot location of the first module in the group
- Overall group health
- Overall field power status and current value
- Field voltage of each module
- Online, Healthy, Ready, Run, and Shutdown status of each module
- Position of each module
- Current state, voltage and current values, and tag name for each channel

There is a legend that is provided in the lower left corner to explain the meaning of each of the abbreviations for channel status.

Figure 39 - Digital Output Module Status



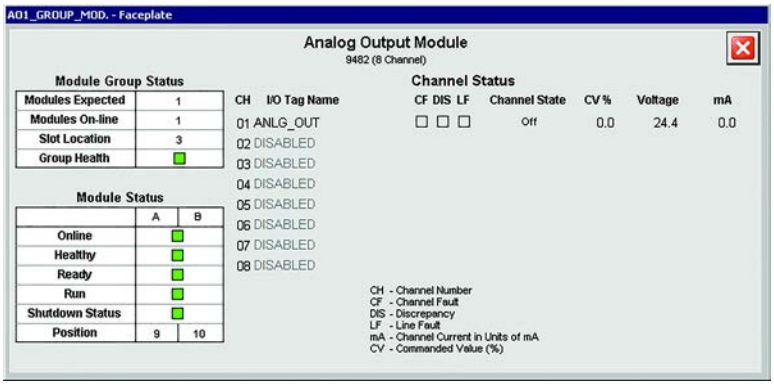
Analog Output Module Status

When you press an Analog Output group, you can view the analog output module status. This view gives you information to identify issues with any of the system analog output modules. This information includes the following:

- Number of modules expected
- Number of modules online
- Slot location of the first module in the group
- Overall group health
- Online, Healthy, Ready, Run, and Shutdown status of each module
- Position of each module
- Current state, output (%), voltage and current values, and tag name for each channel

There is a legend that is provided to explain the meaning of each of the abbreviations for channel status.

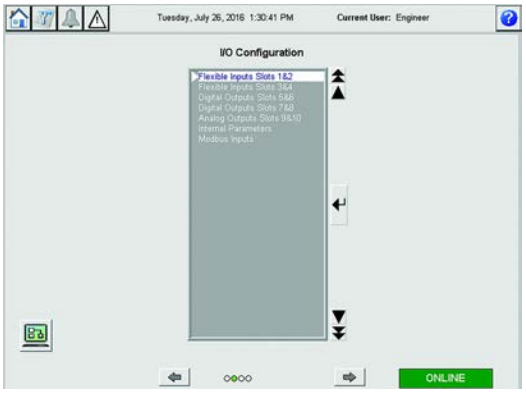
Figure 40 - Analog Output Module Status



I/O Status

To view I/O status, follow these steps.

1. To go to the Maintenance display, press  .
2. From the Maintenance display, press  until the I/O Configuration display appears.



3. To highlight the appropriate input or output, press  or  .
4. To view the status, press  .

Flexible Input Group

To access the flexible input status, follow steps 1...4 to view Flexible Inputs Slots (1 & 2 or 3 & 4) status. For an explanation of column colors, see Table 7.

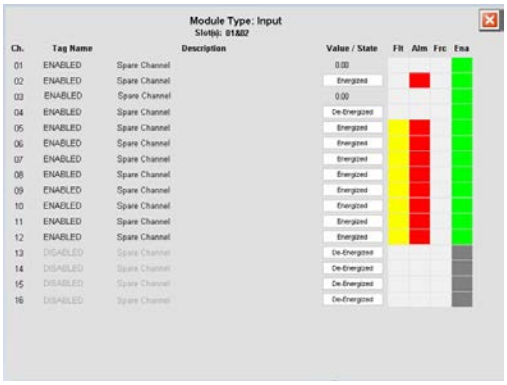


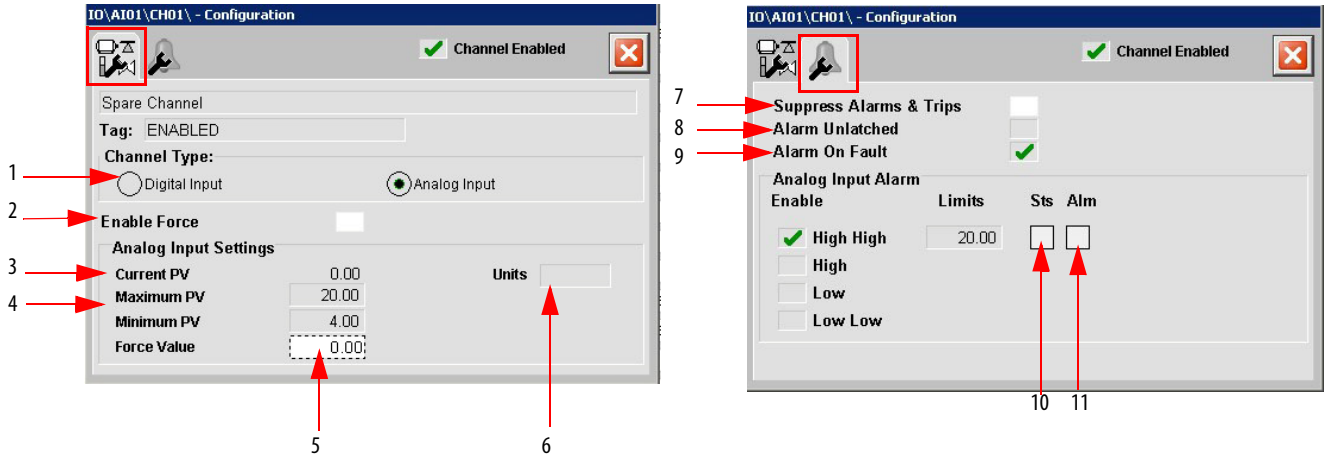
Table 7 - Column Colors

Color	Description
Gray	Normal (no fault, alarm, or force/suppress present)
Yellow	Fault indication
Red	Alarm indication - Text inside the rectangle indicates the active alarm: HIHI, LOLO, HI, or LO. (1)
Blue	Forced or Suppressed - Text inside rectangle indicates Forced (FRC) or Suppressed (SUP).

(1) If multiple alarms are active, only one is indicated (in the order of priority listed).

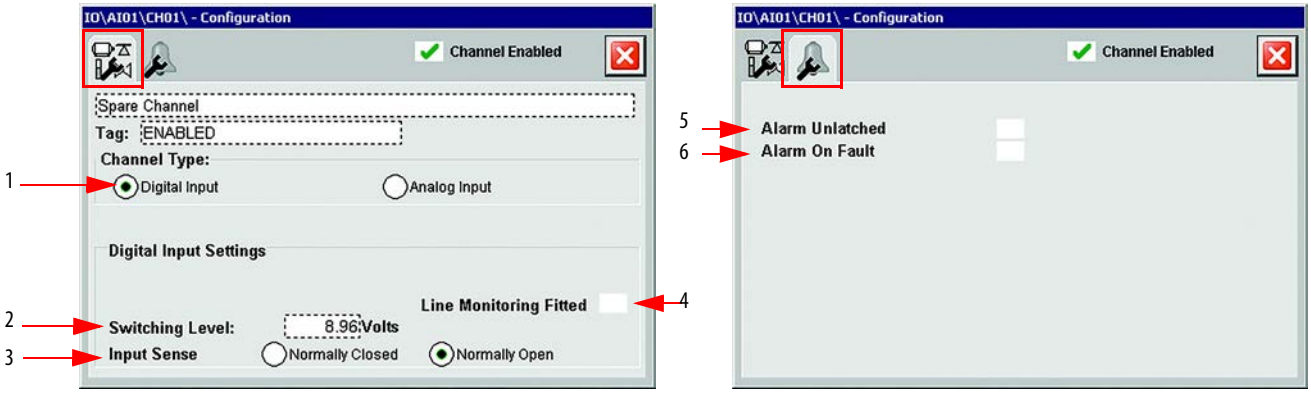
You can view the device configuration faceplate when you press anywhere on the channel row.

Figure 41 - Analog Input Configuration Faceplate



Item	Description
1	Channel Type - The Flexible Input channel can be wired to either an Analog Input or Digital Input (Figure 42). Required subparameters vary according to the option that you choose here.
2	Enable Force (maintenance action) - When checked, the value that is specified in the Force Value field is written to the analog input, which overrides the physical input value. The Enable Force setting can only be checked/unchecked when the Force Permissive is TRUE.
3	Current PV - The current Process Variable value (EU).
4	Maximum/Minimum PV - Input Process Variable maximum and minimum settings, as corresponding to 20 mA and 4 mA respectively.
5	Force Value (maintenance action) - When Enable Force is checked, this value overrides the physical input value. The Force Value must be within the minimum and maximum PV values.
6	Units (maximum length 6 characters) - Engineering units relevant to the input that is configured (for example, barg, degC, degF, %LEL, ppm).
7	Suppress Alarms and Trip (maintenance action) - When checked, the configured alarms and trips are not generated. This feature is typically used for testing or replacing field devices. The Suppress Alarms and Trips setting can only be checked/unchecked when the Suppress Permissive is TRUE.
8	Alarm Unlatched - With this box cleared, any configured input alarm latches when the alarm occurs. To unlatch, the input first has to return to a normal value and then be reset (either by the HMI or by the external Modbus Reset being toggled to 1). With this box checked, the analog input or digital input alarm resets once the input is at a normal value.
9	Alarm on Fault - With this box cleared, a field or module fault does not cause the input to generate any trip alarms (although faults are still reported). With this box checked, a field or module fault generates all trip alarms for the inputs affected.
10	Sts - Status of the associated condition, which is based on the physical input value or the forced value. This status is non-latching, and the Suppress Alarms and Trips function do not affect it. • Gray = Condition not active • Red = Condition active
11	Alm - Status of the alarm, which is used by the Cause and Effect charts logic. The Alarm Unlatched configuration setting affects the status. • Gray = Alarm not active • Red = Alarm active

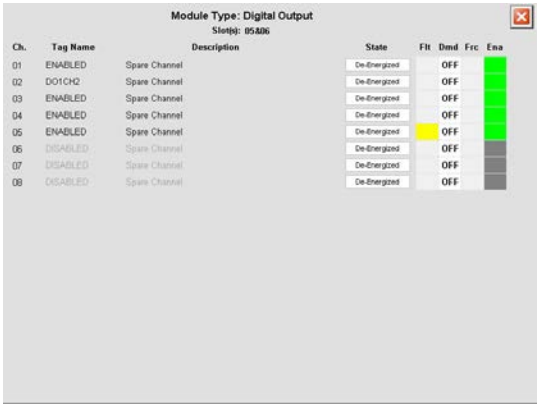
Figure 42 - Digital Input Configuration Faceplate



Item	Description
1	Channel Type - The Flexible Input channel can be wired to either an Analog Input (Figure 41) or Digital Input. Required subparameters vary according to the option that you choose here.
2	Switching level (V) - The level across which the input is deemed to be energized (above this value) or de-energized (below this value). Typically the default value (8.96V) is sufficient.
3	Input Sense (Normally Open or Normally Closed) - Normal state of the field switch.
4	Line Monitoring Fitted - Check this box for line monitored switches/devices with End-of-Line (EOL) resistors installed. Clear this box for non-line monitored devices. With this box cleared, open circuit and short circuit faults are not generated. With this box checked, open circuit and short circuit faults are generated.
5	Alarm Unlatched - With this box cleared, any configured digital input alarm latches when the alarm occurs. To unlatch, the input first has to return to a normal value and then be reset (either by the HMI or by the external Modbus Reset being toggled to 1). With this box checked, the digital input alarm resets once the input is at a normal value.
6	Alarm on Fault - With this box cleared, a field or module fault does not cause the input to generate any trip alarms (although faults are still reported). With this box checked, a field or module fault generates the configured trip alarm for the digital input.

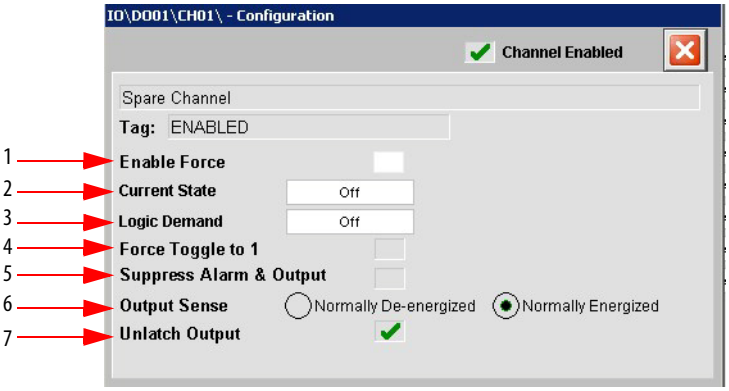
Digital Output Group

To access the digital output status, follow steps 1...4 (page 81) to view Digital Output Slots (5 and 6 or 7 and 8) status.



You can view the device configuration faceplate when you press anywhere on the channel row.

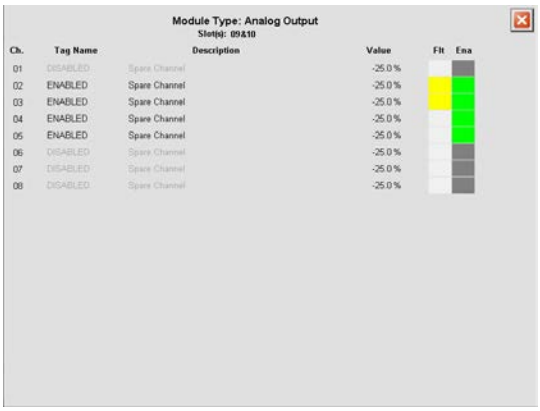
Figure 43 - Digital Output Configuration Faceplate



Item	Description
1	Enable Force (maintenance action) - When checked, the digital output state can be toggled using the Force Toggle to 1 checkbox, which overrides the logic demand. The Enable Force setting can only be checked/unchecked when the Force Permissive is TRUE.
2	Current State - Current state of the physical digital output (either 'On' [energized] or 'Off' [de-energized]). The current state can differ from the Logic Demand when Force Enable is TRUE.
3	Logic Demand - Status of the demand for the output from the Cause and Effect charts (either 'On' [tripped] or 'Off' [normal - no demand]).
4	Force Toggle to 1 (maintenance action) - When Enable Force is checked, this checkbox allows the output to be toggled on (Energized) and off (De-energized), which overrides the logic demand from the Cause and Effect charts. This option can be used, for example, during loop testing.
5	Suppress Alarm and Output (maintenance action) - When checked, the logic demand is overridden, and the physical output is driven to the normal operating state configured in the Output Sense setting. This feature is typically used for maintenance of field devices. The Suppress Alarm and Output setting can only be checked/unchecked when the Suppress Permissive is TRUE.
6	Output Sense (Normally De-energized or Normally Energized) - Normal state of the output device.
7	Unlatch Output - With this box cleared, the digital output latches. To unlatch, the logic demand first must return to 'Off' and then be reset (either by the HMI, by the external Modbus Reset being toggled to 1, or - if applicable - by driving TRUE any configured Reset (R) inputs in the appropriate Cause and Effect column). With this box checked, the digital output resets automatically once the logic demand is 'Off'.

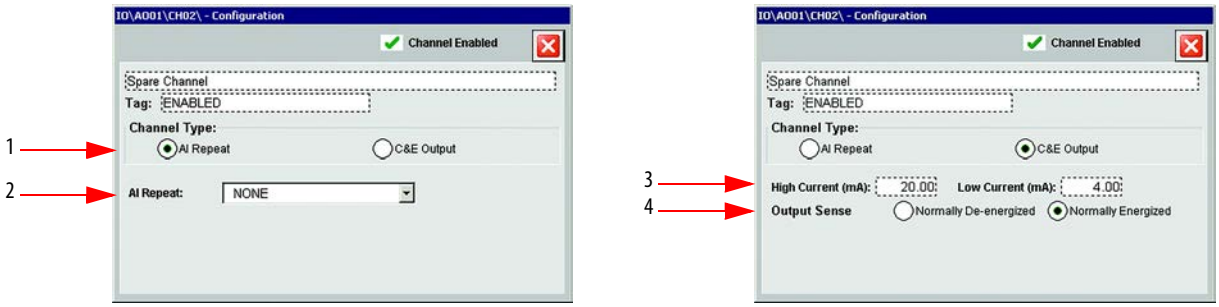
Analog Output Group

To access the analog output status, follow steps 1...4 (page 81) to view Analog Output Slots 9 and 10 status.



You can view the device configuration faceplate when you press anywhere on the channel row.

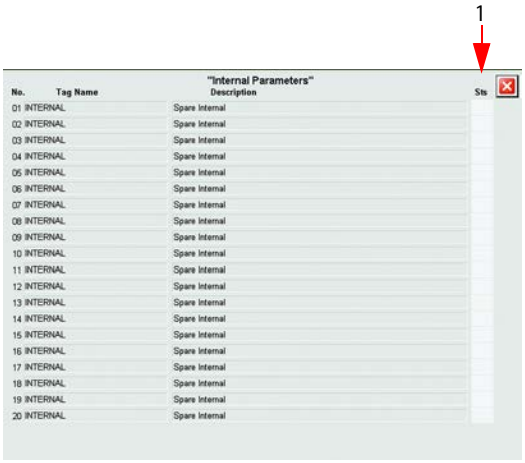
Figure 44 - Analog Output Configuration Faceplate



Item	Description
1	Channel Type - The Analog Output channel can be set to either an AI Repeat or C&E Output. Required subparameters vary according to the option you choose here.
2	AI Repeat - A pull-down menu of the analog input channels. The selected analog input channel value is repeated out of the OptiSIS solution, typically to pass to another system or to display on a bar graph style display.
3	High/Low Current (mA) - Current value sent to the analog output when the Cause and Effect chart action requires the output to be energized (high - 20 mA, max) or de-energized (low - 0 mA, min).
4	Output Sense (normally de-energized or normally energized) - Normal state of the output device.

Internal Parameters

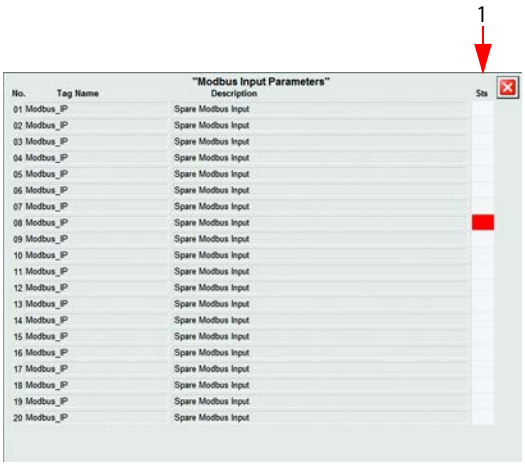
Follow steps 1...4 (page 81) to view Internal Parameter status.



Item	Description
1	Sts (Status) - Gray = False; Red = True

Modbus Input Status

Follow steps 1...4 (page 81) to view Modbus Input status.

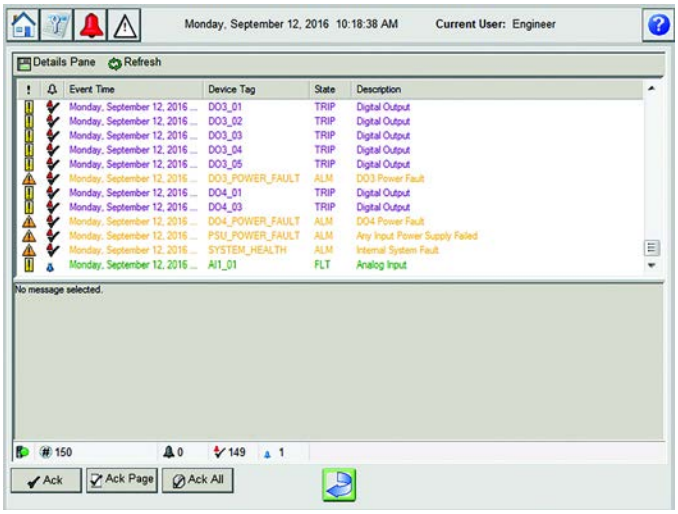


Item	Description
1	Sts (Status) - Gray = False; Red = True

View Alarms

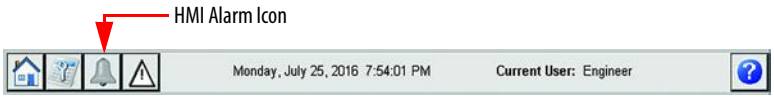
The Alarm display subscribes to and displays all alarms from the system. From this display, you can view a list of the active alarms, monitor alarm details, acknowledge one or multiple alarms and reset latched alarms.

Figure 45 - Alarm Status



1. To access the Alarm display, press the HMI Alarm icon on the main icon toolbar.

Figure 46 - HMI Alarm Icon



When an alarm is active and unacknowledged, the background color of the alarm flashes.

The HMI Alarm icon (Table 8) changes based on alarm priority and blinks if you must acknowledge an alarm.

Table 8 - Alarm Icon

Alarm Icon	Alarm Priority
	Urgent
	High
	Medium

Alarm Icon	Alarm Priority
	Low
	No alarm active

The appearance of the alarms in the Alarm display is based on the alarm priority (Table 9). Active and unacknowledged alarms blink until an acknowledge command is issued or the alarm returns to normal.

Table 9 - Alarm Priority

Alarm Priority	Description	Text Color
All priority levels	Alarm has returned to normal (unacknowledged)	
Low 	Line faults	
Medium 	System level alarms	
High 	High and Low alarms	
Urgent 	MTTR Exceeded, High High, Low Low, Digital Output Change of State, Digital Input Alarm	

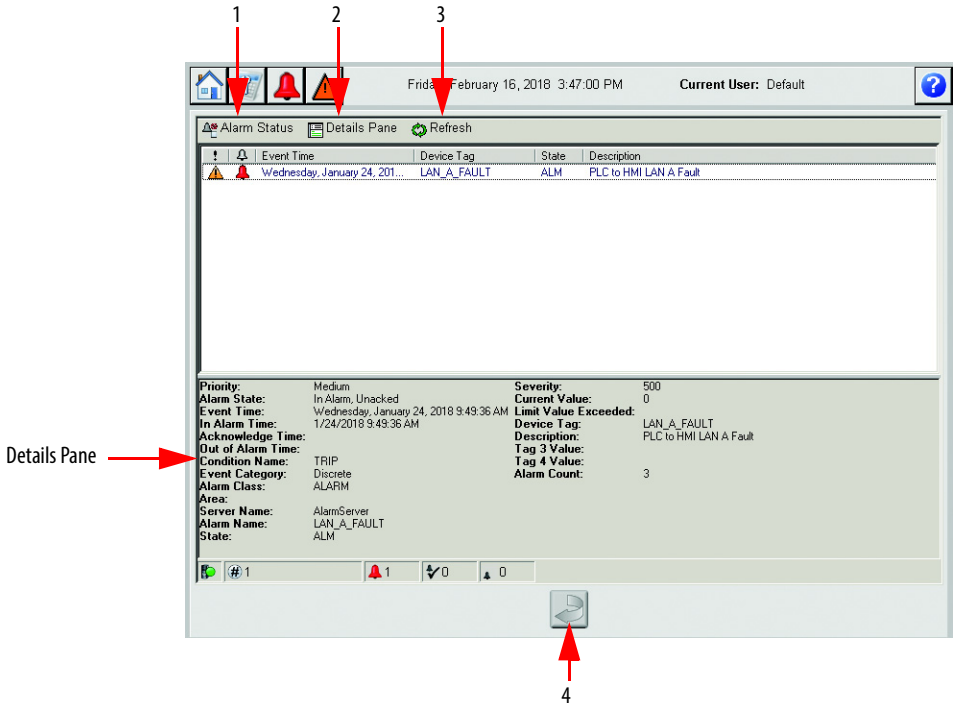
The alarm state represents the status of the alarm, as shown in Table 10.

Table 10 - Alarm State

Alarm Color	Alarm Definition
	In Alarm, Unacknowledged
	In Alarm, Acknowledged
	Normal, Unacknowledged

2. Use the Alarm display commands (Figure 47) to acknowledge, refresh, or reset alarms.
   - To acknowledge the alarm, select the specific alarm and press the appropriate command button to stop the message from flashing.
   - To reset the alarm, press  .

Figure 47 - Alarm Display Commands



Item	Description
1	Alarm Status - Display with FactoryTalk Alarm Status Explorer, which allows enable/disable, suppress/unsuppress, and shelve/unshelve actions.
2	Details Pane - Shows or hides the details pane at the bottom of the display.
3	Refresh - Refreshes your alarm display.
4	 - Reset latched alarms and trips

Table 11 - Alarm Types and Actions

Category	Description	Action
Common Facilities	Any force present	Alarm to HMI. Display on System Status display.
	AADvance controller system fault	
	AADvance controller I/O fault (for configured I/O)	
	AADvance controller fault (system healthy)	
	AADvance controller V1 / V2 faults	
	AADvance DO group 1 / 2 V faults	
	AADvance CPU temperature high	
	MTTR countdown/exceeded	
	Duplicate output detected	
	PLC - HMI LAN A connection	
	PLC - HMI LAN B connection	
	Power supply fault	
	Purge alarm	
	Rolling count	Display on System Status display.
	AADvance controller fault (controller/module/channel/field)	
Logic	AI trip (limit exceeded)	Alarm to HMI. Cause and Effect logic performs function. Cause and Effect to highlight tag.
	DI trip (input in alarm state)	Alarm to HMI. Cause and Effect logic performs function. Cause and Effect to highlight tag.
	DO state change (output in tripped state)	Alarm to HMI. Cause and Effect to highlight tag.
Operator action	Reset applied	Status to HMI.
	I/O suppress/force applied	Status to HMI. HMI to show suppression / force on I/O display.

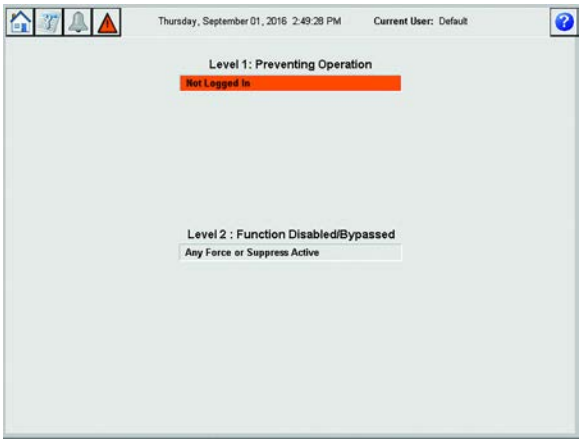
View Warnings

The Warning display lists active system warnings, such as restricted access level and active overrides/forces.

Table 12 - Warning Severity

Warning Level	Description	Color
0	No Warning	
1	Level 1: Prevents Operation	
2	Level 2 Function Disabled/Bypassed	

Figure 48 - Warning Status



Reset after Trip

If the logic, as configured, detects a trip condition (for example, pressure transmitter high level exceeded), the OptiSIS solution performs the configured actions, typically de-energizing valves, or fault contacts to other systems. No operator interaction is required. After trip conditions have cleared, a reset is required to return to a healthy state.

Reset by Using the HMI

Latched input alarms and tripped outputs can be reset from the HMI by using the Reset button available in the Alarm display. If all input conditions have returned to the healthy state, any latched trips unlatch and outputs revert to their healthy state. Follow these steps to reset from the HMI.

1. To go to the Alarm display, press  .
2. To reset input alarms and tripped outputs, press  .

Reset by Using Supplied Modbus Point

To reset the OptiSIS solution remotely, pulse Modbus Coil 1 (address 00001) to 1. A pulse time of 1...2 seconds is typically sufficient.

Pulsing Modbus Coil 1 has the same effect as pressing Reset () on the OptiSIS Alarms display. If all input conditions have returned to healthy state, any latched trips unlatch and outputs revert to their healthy state.

ATTENTION: Unlike the OptiSIS Alarms display reset, the Modbus reset can be activated regardless of the HMI user who is logged on. It is recommended that sufficient access controls are placed on this function to help prevent unauthorized interaction with the OptiSIS solution.

Maintenance

Introduction

The maintenance person must be experienced in working on electronic equipment and in particular safety-related systems. They must have knowledge and experience of local operating and safety standards. Failure to follow these recommendations can result in situations that can lead to system damage and even personal injury.

Technical Support Options

Technical Support is offered for your base OptiSIS solution and is available 8 a.m. to 5 p.m. in your local time, Monday through Friday. (1)

The Technical Support specialist requires the following information from your Welcome Kit (included in your OptiSIS solution package):

- Business partner (BP) ID number
- Direct dial code
- Equipment ID - found on the label on the enclosure

Use the following lines to note your OptiSIS solution information. This information helps when contacting technical support.

BP ID: _____

Direct Dial Code: _____

Equipment ID: _____

Opening the Enclosure

ATTENTION: When working on or near energized electrical equipment, follow established electrical safety-related work practices. See NFPA 70E Standard for Electrical Safety in the Workplace or local safety regulations.

(1) In locations where Technical Support is not available, contact your local Rockwell Automation sales office or Allen-Bradley distributor.

Repair Procedures

You can replace physical components. See the AADvance Maintenance and Troubleshooting Manual, publication ICSTT-RM406.

Electrostatic Precautions

The electronic components of these systems are susceptible to electrostatic discharge (ESD). Be sure to take the following precautions:

- Always wear an anti-static wriststrap (or equivalent) when handling any electrostatic sensitive components.
- Controller modules are especially sensitive to electrostatic discharge. Pay special attention not to touch the module connectors or any exposed printed circuit board components.

Processor Module Battery Replacement

TIP Battery design life is based on operating at a constant temperature of 25 °C (77 °F) and low humidity. High humidity/temperature and frequent power cycles are all factors that shorten the batteries operational life.

The battery has a design life of 10 years when the processor module is continually powered; for processor modules that are unpowered, the design life is up to 6 months.

ATTENTION: The OptiSIS solution uses the processor module battery backup feature to retain the I/O configuration parameters and the cause and effect logic configuration when power is lost.

ATTENTION: The battery can explode if mistreated. Do not attempt to recharge, disassemble, or dispose of in a fire.

This product contains a sealed lithium battery (recommended type BR2032), which can be replaced during the life of the product.

At the end of its life, collect the battery that is contained in this product separately from any unsorted municipal waste.

The collection and recycling of batteries helps protect the environment and contributes to the conservation of natural resources as valuable materials are recovered.

ATTENTION: Batteries must only be changed in an area that is known to be non-hazardous.

To replace a battery, do the following:

1. To remove the battery cover, use a small Phillips screwdriver to loosen the cover screw.

2. Remove the battery by pulling on the blue ribbon.

3. Insert a new battery with the positive (+) terminal to the right.
4. Trap the ribbon behind the new battery so it can be removed in the future and then push the battery into the holder.
5. Replace the cover and secure it with the screw.
6. Push Fault Reset on the processor module.

   The processor Healthy indicator turns green (applies if the module is part of a running system).

The functions that the battery maintains on complete power loss are:

- Real-time clock
- Retained variables: I/O and the Cause and Effect configuration parameters.
- Diagnostics logs: Backs up the internal processor diagnostic logs.

Reset OptiSIS Solution Default Settings

To clear all configured Cause and Effect information and (if necessary) configured I/O information, follow these steps.

1. On the Home display, log in as Engineer (in the FactoryTalk® application).
2. Press Configuration .
3. Press Clear All Configuration Clear All Configuration.
4. Press Maintenance .

   To clear the configured I/O, proceed to step 5. Otherwise, proceed to step 8.
5. Press or until the I/O configuration display appears.
6. Press Configuration .
7. Press Clear All Configuration Clear All Configuration.
8. Turn the keyswitch to initiate a download.
9. On the Cause and Effect Configuration Download display, press Download .

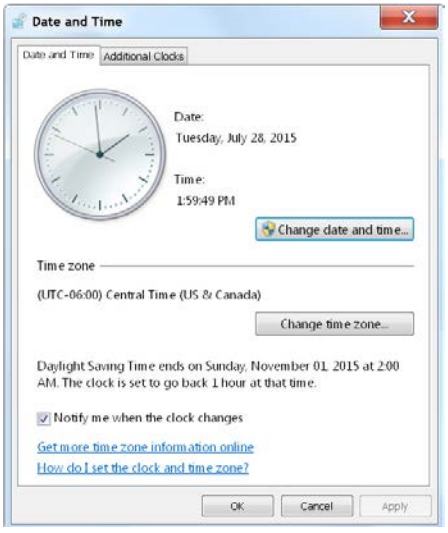
Change Date and Time

To modify the date and time that is displayed, follow these steps.

1. Log in as a Windows Administrator.

   The default password is 1ADMINISTRATOR.
2. From the Start menu, choose Control Panel.
3. In the Control Panel, press Date and Time.

   The Date and Time window appears.



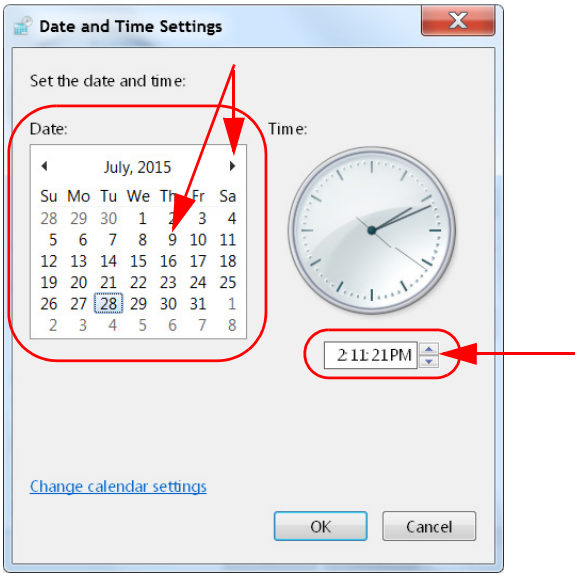
4. Press Change date and time... to adjust the Date or Time accordingly.

   The Date and Time Settings window appears.

   a. To adjust the time, press the arrows.

   b. To change the date, press the calendar or use the arrows to change the month.

   c. When you are finished, press OK.



IMPORTANT You can also change your time zone. If the time zone is changed, you must restart your computer.

5. Press OK in the Date and Time window.

   Your settings are saved.

Preparing Your OptiSIS Solution for Upgrades

You need the following items to upgrade your OptiSIS solution:

- USB drive with upgrade files that are available from the Product Compatibility and Download Center (PCDC)
- Detailed step-by-step upgrade instructions that are stored in the same USB drive
- Program Enable Key to allow access to subsystems

ATTENTION: The step-by-step upgrade instructions document also contains a summary of the optional and automatic upgrade feature, detailed release notes, and version details about the release. You must thoroughly review this document before performing an upgrade.

All updates to your OptiSIS solution are performed through the HMI display when you log in as Administrator.

Privileges are required to permit changes to the OptiSIS solution applications. The Program Enable Key is inserted to allow access to the subsystems as well. See Program Enable Key on page 15 for more information.

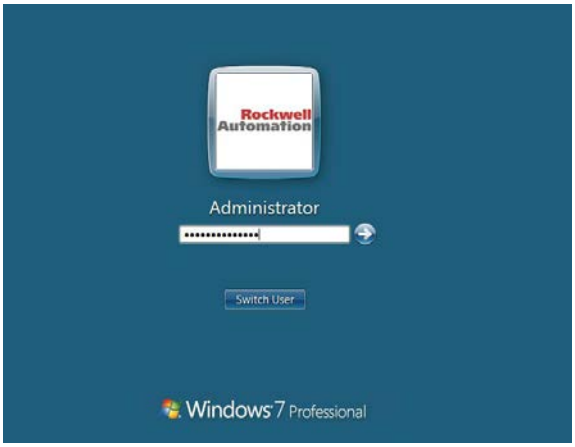
To open the content of your USB drive, follow these steps.

1. Close your OptiSIS solution application and restart your HMI by going to the Start Menu or by using the power switch.
2. Plug your USB drive into any of the ports that are provided in the HMI. See Figure 6 on page 19 for USB port locations.
3. Log off immediately after the application starts to load.

   After you log off, you can log in as Administrator instead of the default user. The following display appears.

4. Press Administrator and enter your Administrator password to log in to the HMI.

   The default password is “1ADMINISTRATOR” (case-sensitive).



5. Use Windows Explorer to open the contents of the USB drive.

   Upgrade files and detailed instructions for upgrade are provided.

Offline Configuration Tool

IMPORTANT The offline configuration tool is recommended to run with a screen resolution of 1920 x 1080.

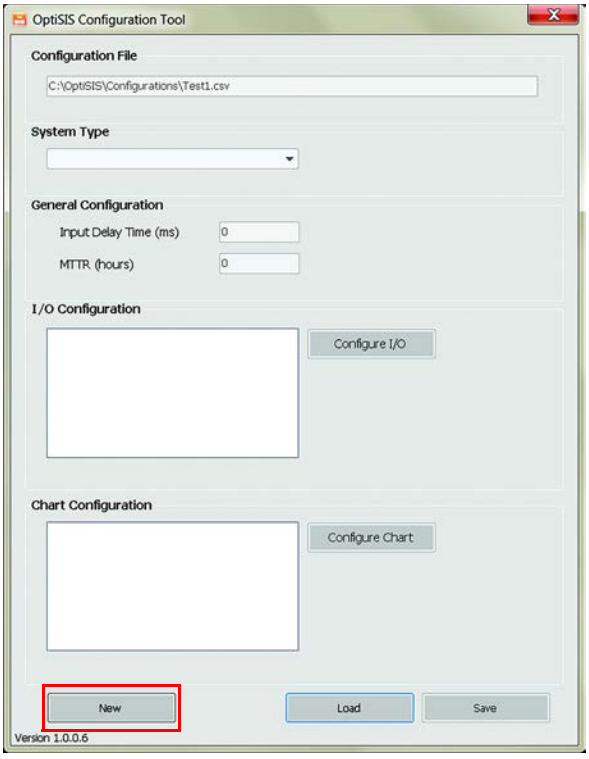
The OptiSIS offline configuration tool is available as a free download from the Product Compatibility and Download Center (PCDC) and is intended to be used to do the following:

- Evaluate the OptiSIS solution to confirm that it meets your needs before purchase.
- Configure your system while your order is in process (depending on your delivery option).
- Configure with your computer to reduce configuration time when compared to configuration with only the HMI touch display.
- Review, edit, and verify configuration settings from a safer, more comfortable location before loading at the installation site.

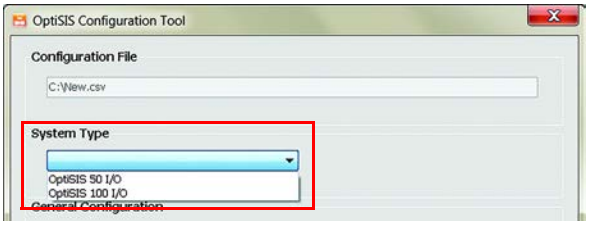
Begin Configuration

The following steps explain how to initiate a new configuration.

1. Open the Offline Configuration Tool.
2. Click New.

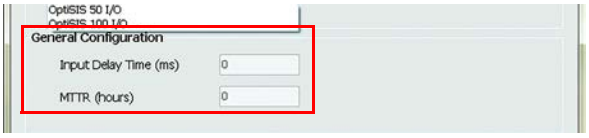


3. Click the System Type pull-down menu and select your system.



General Configuration

Enter the required values to set your Input Delay Time (0...500 ms) and MTTR (0...168 hr).

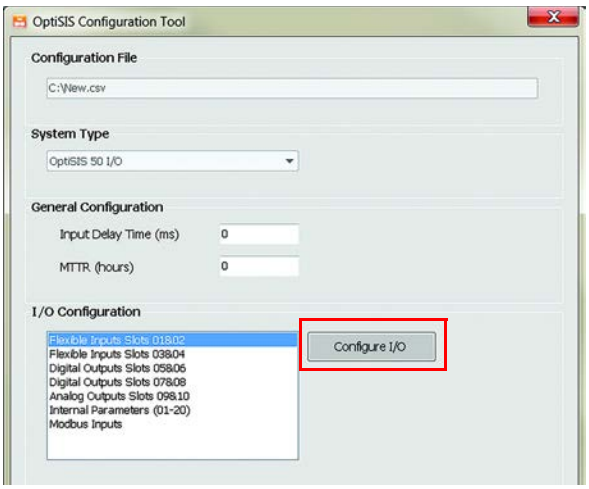


Configure Inputs

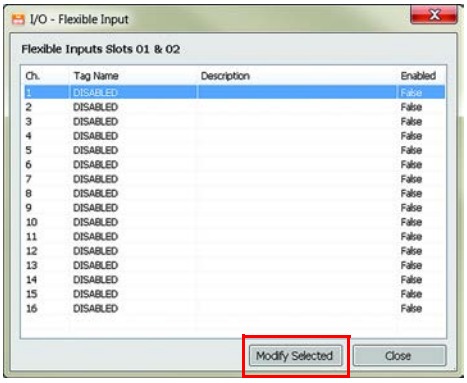
Follow these steps to configure the fundamental characteristics for an input.

IMPORTANT For a description of configuration parameters, see Table 4 on page 41.

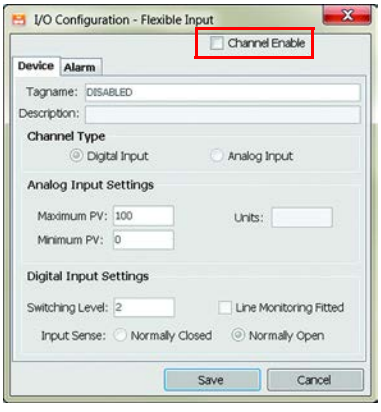
1. Under I/O Configuration, select an input and click Configure I/O.



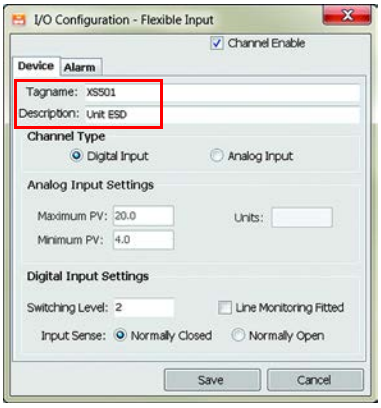
2. Select a channel and click Modify Selected.



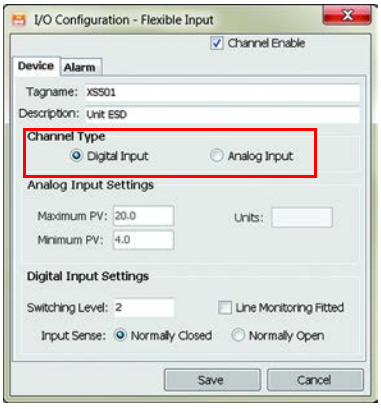
3. To enable the channel, check Channel Enable.



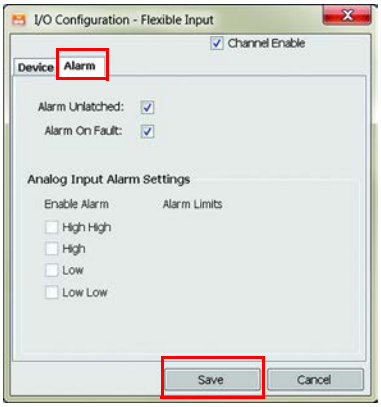
4. Enter a Tagname and Description



5. Select Digital Input or Analog Input.
   - Digital Input: Configure your Switching Level and select if your Input Sense is normally closed or normally open.
   - Analog Input: Configure your maximum and minimum process variable (PV) and enter the units.

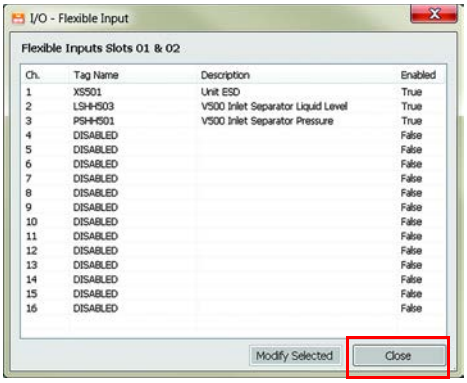


6. Select the Alarm tab and configure the alarms as required for your application. When complete, click Save.



7. Repeat steps 2...6 for all applicable input channels.

8. After you have configured all applicable input channels, click Close.

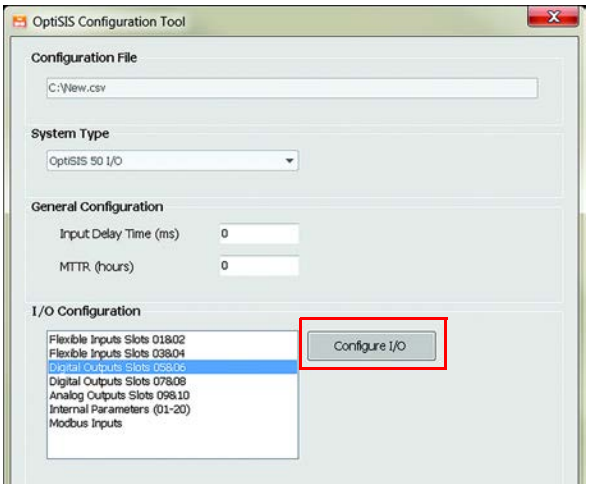


Configure Outputs

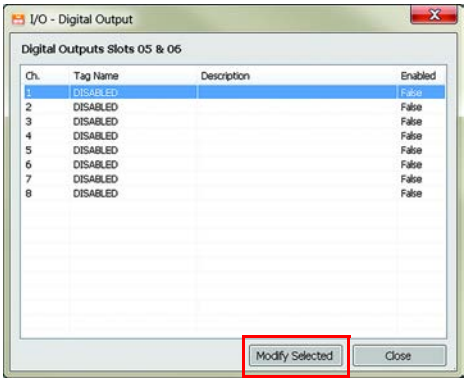
Follow these steps to configure the fundamental characteristics for an output.

IMPORTANT For a description of configuration parameters, see Table 4 on page 41,

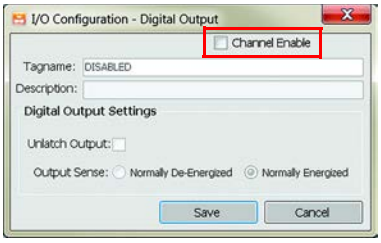
1. Under I/O Configuration, select an output and click Configure I/O.



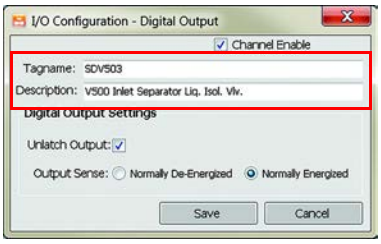
2. Select a channel and click Modify Selected.



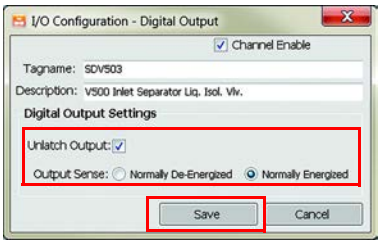
3. To enable the channel, check Channel Enable.



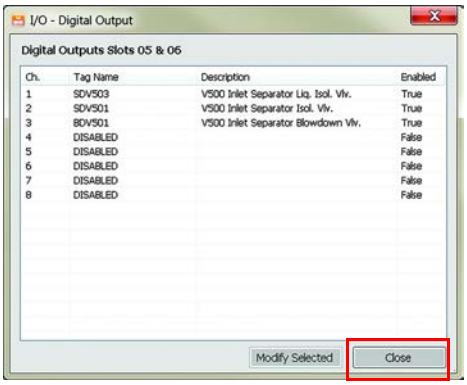
4. Enter a Tagname and Description



5. Configure your output settings and click Save.



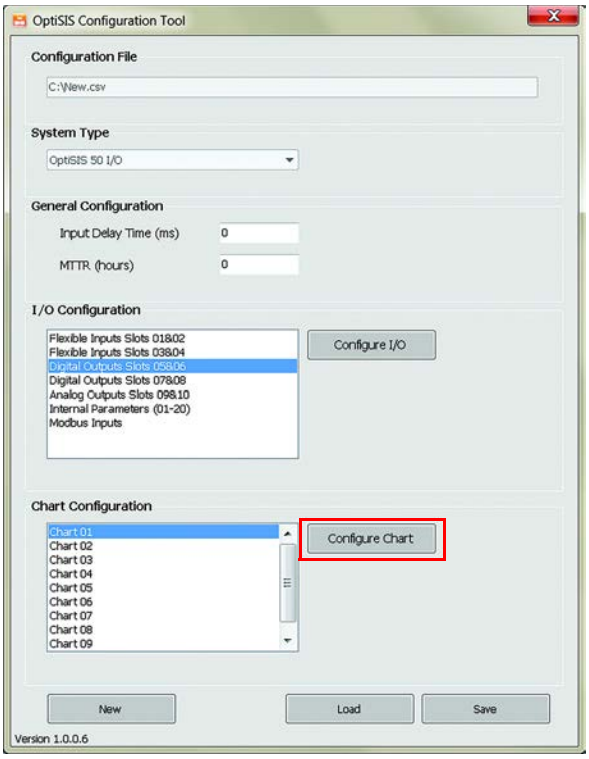
6. Repeat steps 2...5 for all applicable output channels.
7. After you have configured all applicable output channels, click Close.



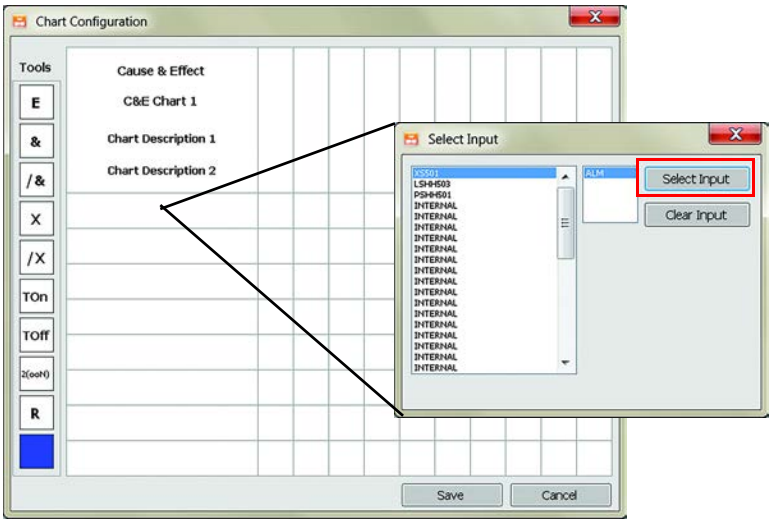
Configure Cause and Effect Charts

Cause and Effect charts allow the system to act on inputs to control outputs. Follow these steps to configure the chart.

1. Under Chart Configuration, select a chart and click Configure Chart.

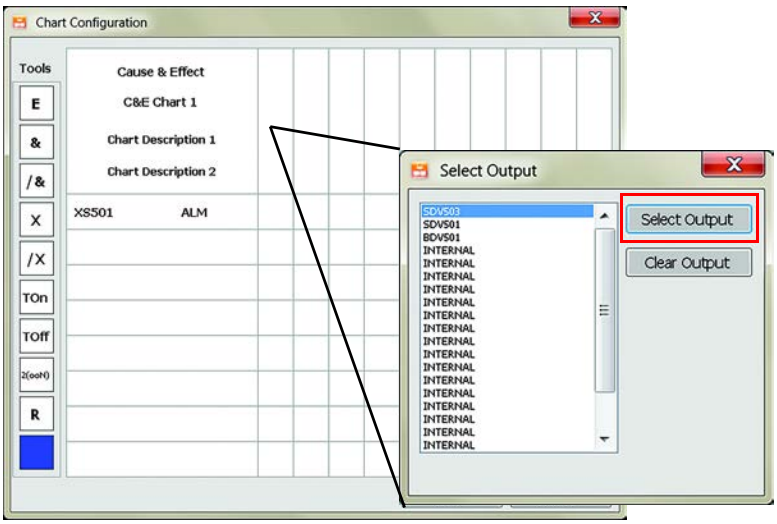


2. Select a row and choose an input from the list.
3. Click Select Input.



IMPORTANT For an explanation of the Tools (Logic Functions), see Table 5 on page 63.

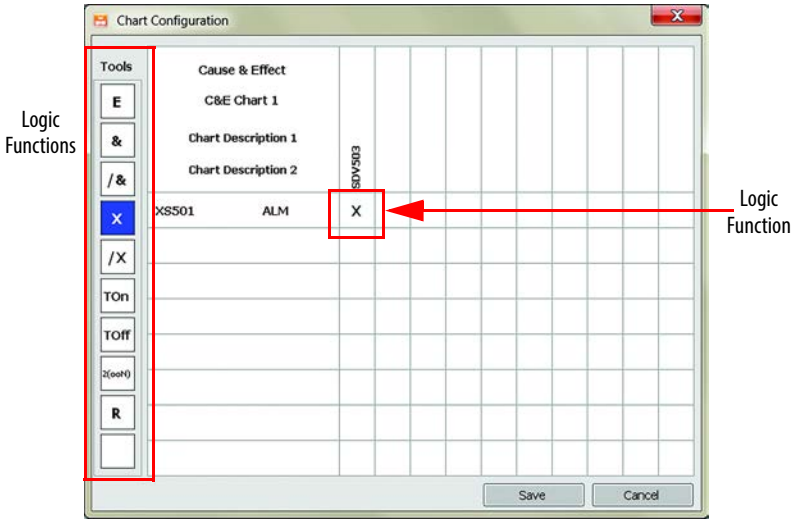
4. Select a column and choose an output from the list.
5. Click Select Output.



IMPORTANT For an explanation of the Tools (Logic Functions), see Table 5 on page 63.

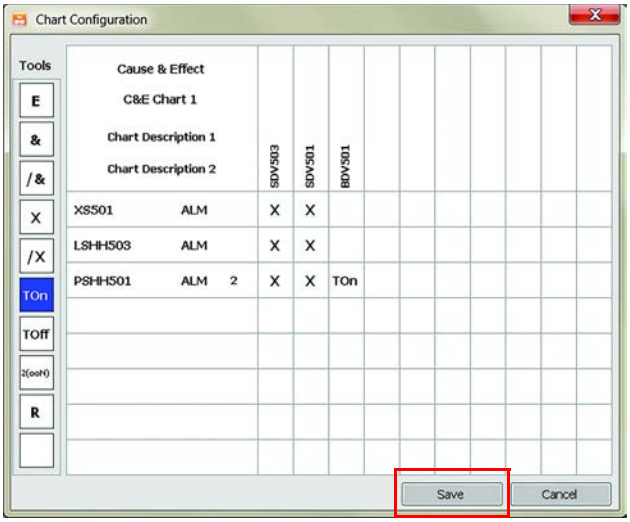
6. Click the type of logic you want to use from Tools.
7. To place the logic expression, click in the intersecting box for the input and output.

IMPORTANT An input and output must be selected before you can add the logic function.



8. Repeat steps 3...7 to configure the rest of this chart.

9. When your chart is complete, click Save.

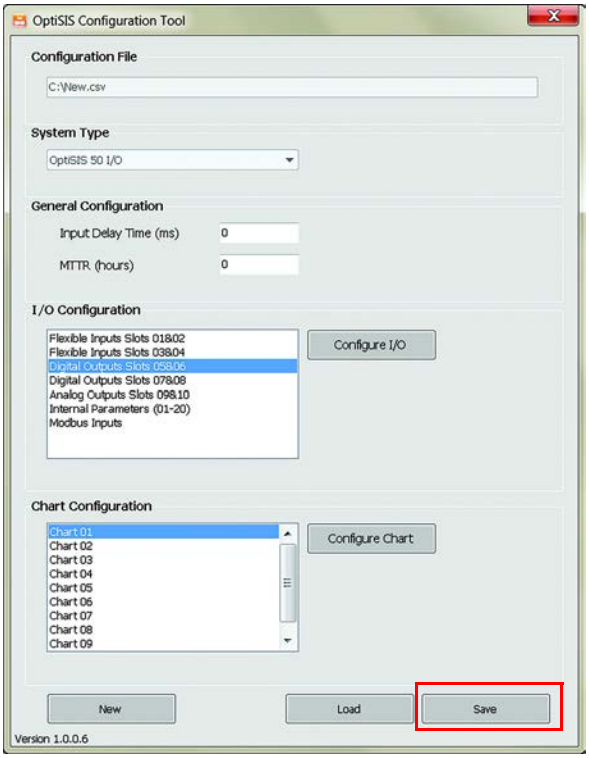


10. To configure the remaining Cause and Effect charts, repeat steps 1...9.

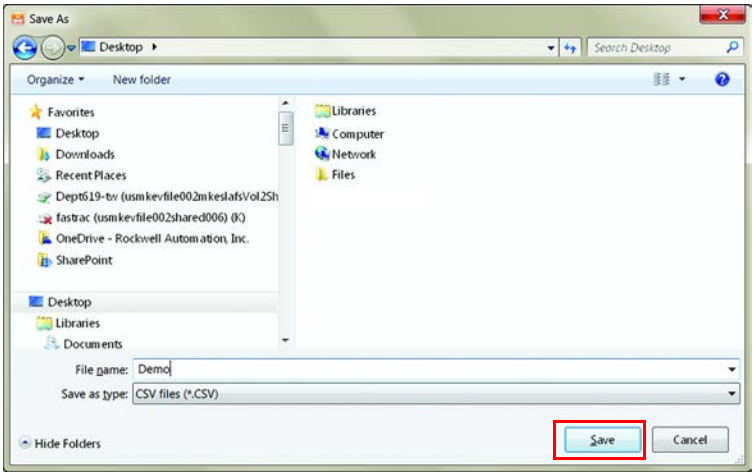
Save Configuration File

When you have completed your configuration, you must save it or the changes are lost.

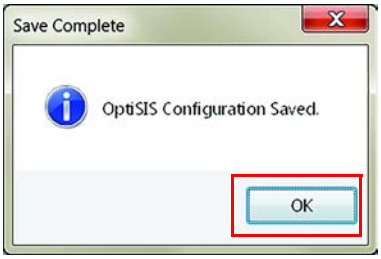
1. Click Save.



2. Type in a name for the file and click Save.

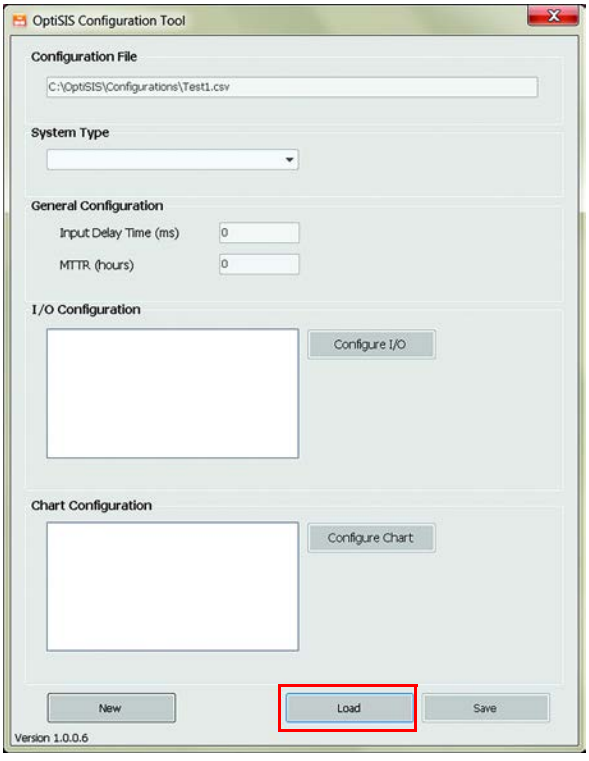


3. When the save is complete, click OK.

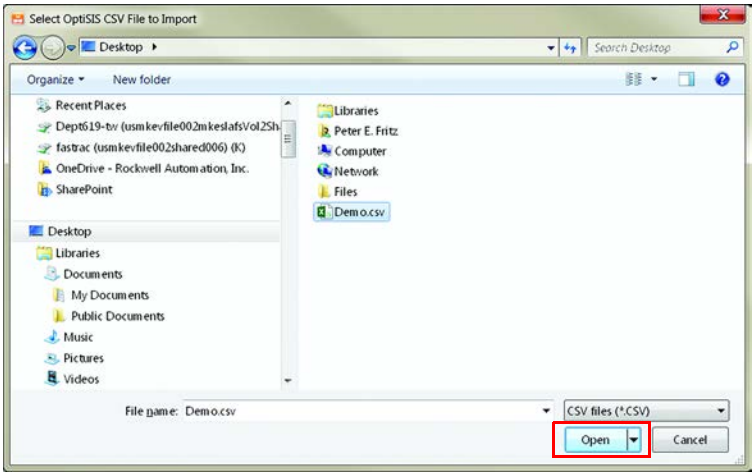


Edit a Configuration File

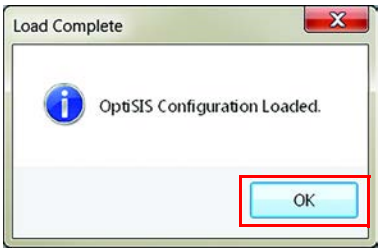
1. Open the Offline Configuration Tool.
2. Click Load.



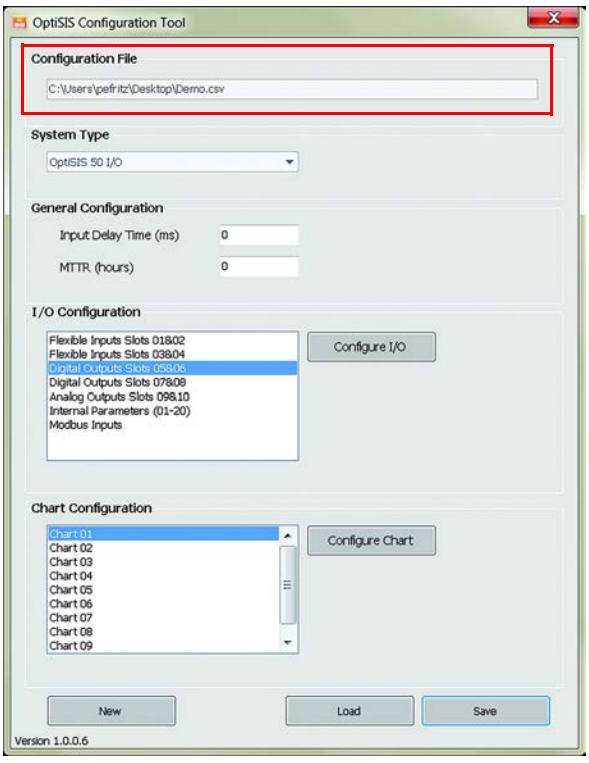
3. Select your configuration file (.csv) and click Open.



4. When the file has loaded, click OK.



5. Verify that your file has loaded by checking the Configuration File text box.



6. Reconfigure as necessary and save.

Load or Restore Configuration File

See Load or Restore a Configuration on page 69.

Specifications

SIL Capability

All OptiSIS solutions can achieve SIL 3. See Chapter 1 for safety requirements.

Hardware Architecture

Table 13 - 50 I/O Solution Hardware Architecture

Attribute	1711-P05SISID050S	1711-P05SISID050T	1711-P05SISOD050S	1711-P05SISOD050T
Processors	1oo2D fault tolerant	2oo3 fault tolerant	1oo2D fault tolerant	2oo3 fault tolerant
I/O	1oo1 fail-safe	1oo2D fault tolerant	1oo1 fail-safe	1oo2D fault tolerant

Table 14 - 100 I/O Solution Hardware Architecture

Attribute	1711-P05SISID100S	1711-P05SISID100T	1711-P05SISOD100S	1711-P05SISOD100T
Processors	1oo2D fault tolerant	2oo3 fault tolerant	1oo2D fault tolerant	2oo3 fault tolerant
I/O	1oo1 fail-safe	1oo2D fault tolerant	1oo1 fail-safe	1oo2D fault tolerant

I/O Configuration

Table 15 - 50 I/O Solution I/O Configuration

Attribute	1711-P05SISID050S	1711-P05SISID050T	1711-P05SISOD050S	1711-P05SISOD050T
Flexible Inputs (AI/DI)	32	32	32	32
Digital Inputs	0	0	0	0
Analog Inputs	0	0	0	0
Flexible Outputs	16	16	16	16
Powered Outputs	0	0	0	0
Relay Outputs	0	0	0	0
Analog Outputs	8	8	8	8
Total I/O	56	56	56	56

Table 16 - 100 I/O Solution I/O Configuration

Attribute	1711-P05SISID100S	1711-P05SISID100T	1711-P05SISOD100S	1711-P05SISOD100T
Flexible Inputs (AI/DI)	32	32	32	32
Digital Inputs	16	16	16	16
Analog Inputs	16	16	16	16
Flexible Outputs	16	16	16	16
Powered Outputs	8	8	8	8
Relay Outputs	8	8	8	8
Analog Outputs	8	8	8	8
Total I/O	104	104	104	104

I/O Characteristics

Table 17 - 50 and 100 I/O Solution I/O Characteristics

Attribute	1711-P05SISID050S/T	1711-P05SISOD050S/T	1711-P05SISID100S/T	1711-P05SISOD100S/T
Flexible Inputs (AI/DI)	• Analog input – 4…20 mA nominal (0…24 mA actual) – SIS or field powered – HART • Digital input – SIS powered - 24V DC at 4.5 mA – Field powered (up to 32V DC at 6 mA) (user-configurable setting for ON/OFF switching voltage)			
Digital Inputs (1)	24V DC SIS or field powered			
Analog Inputs (1)	4…20 mA SIS or field powered HART			
Flexible Outputs	• SIS powered - 24V DC at 0.5 A • Relay output - Dual N.O. 250V AC at 6 A For derating information, see Contact Derating on page 30.			
Powered Outputs (1)	SIS powered 24V DC @ 0.5 A			
Relay Outputs (1)	Dual N.O. dry contact 6.0 A @ 250V AC			
Analog Outputs	4…20 mA nominal (0.1…24 mA actual) SIS or field powered HART			

(1) 100 I/O solution only.

System Power

Table 18 - 50 I/O Solution System Power

Attribute	1711-P05SISID050S	1711-P05SISID050T	1711-P05SISOD050S	1711-P05SISOD050T
Power Feeds	2	2	2	2
Feeds A & B	690 W (single feed), 345 W each (separate feeds)	718 W (single feed), 359 W each (separate feeds)	560 W (single feed), 280 W each (separate feeds)	588 W (single feed), 294 W each (separate feeds)

Table 19 - 100 I/O Solution System Power

Attribute	1711-P05SISID100S	1711-P05SISID100T	1711-P05SISOD100S	1711-P05SISOD100T
Power Feeds	2	2	2	2
Feeds A & B	1040 W (single feed), 520 W each (separate feeds)	1083 W (single feed), 541.5 W each (separate feeds)	909 W (single feed), 454.5 W each (separate feeds)	952 W (single feed), 476 W each (separate feeds)

Environmental

Table 20 - 50 and 100 I/O Solution Environmental (1)

Attribute	1711-P05SISID050S/T	1711-P05SISOD050S/T	1711-P05SISID100S/T	1711-P05SISOD100S/T
Temperature, operating	Outdoor models: 0…+45 °C (32…113 °F) Indoor models: 0…25 °C (32…77 °F)			
Temperature, storage	Outdoor models: -20…+70 °C (-4…+158 °F) Indoor models: -20…+55 °C (-4…+131 °F)			
Relative humidity	10…90% noncondensing			
Area classification	Non-hazardous			

(1) Engineered-to-order can extend the stated environmental ratings.

Performance

Table 21 - 50 and 100 I/O Solution Performance

Attribute	1711-P05SISID050S/T	1711-P05SISOD050S/T	1711-P05SISID100S/T	1711-P05SISOD100S/T
Throughput, max [ms]	100	100	200	200

Communication

Table 22 - 50 and 100 I/O Solution Communication

Attribute	1711-P05SISID050S/T	1711-P05SISOD050S/T	1711-P05SISID100S/T	1711-P05SISOD100S/T
Modbus TCP/IP	Two 10/100 Base T-ports, Modbus Slave ID = 255, Port ID = 502			
Modbus RTU	Two RS-485 2-wire, Modbus Slave ID = 1, communication rate = 19,200, Stop Bits = 1, Parity = None			

Approximate Dimensions

Table 23 - 50 and 100 I/O Solution Approximate Dimensions

Attribute	1711-P05SISID050S/T	1711-P05SISOD050S/T	1711-P05SISID100S/T	1711-P05SISOD100S/T
Height [mm (in.)]	1199 (47)		2006 (79)	
Width [mm (in.)]	800 (32)		800 (32)	
Depth [mm (in.)]	300 (12)		600 (24)	
Weight [kg (lb)]	97 (213)		200 (441)	

Notes:

Spare Parts List

Recommended Spare Parts

The following items are the recommended spare parts for the OptiSIS solution.

Table 24 - Spare Parts List

Part Number	Description	Qty
T9110	Processor module	1
T9432	Analog input module, 16 channel	1
T9451	Digital output module, 24V DC, eight channel	1
T9482	Analog output module, eight channel	1
T9901	Replacement input fuse 50 mA for T9832, pack of 20	1
T9902	Replacement output fuse 10 A for T9852, pack of 20	1
T9905	Replacement processor 3V lithium cell, pack of 20	1
1606-XLS120E	Power supply (OptiSIS50 units only)	1
1606-XLS480E	Power supply	1
1606-XLERED	Redundancy module	1

Notes:

Safety Checklist

This section contains the specific checklist items that confirm that the OptiSIS solution is applied safely and within its design limits for use in Safety Functions up to, and including, SIL 3.

Checklist

	Yes	No
1. Are all operability, maintainability, and testability requirements defined in the SRS been documented and implemented in the SIF logic (where applicable)?	☐	☐
2. Have the training requirements for operations and maintenance staff been defined in the SRS been implemented?	☐	☐
3. Have the SIF reset requirements defined in the SRS been documented and implemented in the SIF logic (where applicable)?	☐	☐
4. Have the manual means for final element actuation defined in the SRS been implemented?	☐	☐
5. Have the independence requirements defined in the SRS been implemented?	☐	☐
6. Have the "Energize to Action" considerations defined in the SRS been implemented?	☐	☐
7. Have the requirements for SIS behavior under fault conditions been defined in the SRS been implemented?	☐	☐
8. Have the requirements for hardware fault tolerance (HFT) defined in the SRS been implemented?	☐	☐
9. Have the requirements of suitability of all SIS subcomponents been defined in the SRS been implemented?	☐	☐
10. Have the requirements for proof testing been defined in the SRS been documented and implemented?	☐	☐
11. Have the PFD (or RRF) calculations been verified for each SIF against the targets that are established in the SRS?	☐	☐
12. Have the installation and commissioning requirements been defined and implemented?	☐	☐
13. Have the SIS validation requirements been defined and implemented?	☐	☐
14. Have the operation and maintenance requirements been defined and implemented to confirm maintenance of the target SIL for each SIF?	☐	☐
15. Have the proof test and inspection requirements been defined and implemented?	☐	☐
16. Have the SIS modification requirements been defined and implemented?	☐	☐
17. Have the SIS decommissioning requirements been defined?	☐	☐
18. Have all appropriate documents been identified and produced with an effective system to control these documents for the SIS process safety lifecycle?	☐	☐

Notes:

Modbus Communication Address

Modbus RTU Settings

These settings are fixed and you cannot change them.

Table 25 - Modbus RTU

Setting	Value
Communication Rate	19,200
Data Bits	8
Parity	None
Stop Bits	1
Mode	RS485hdmux (half-duplex, 2-wire connection)
Slave address	1

Table 26 - Modbus TCP/IP

Setting	Value
ID	255
Port	502

OptiSIS Solution Modbus Map

Table 27 shows the available Modbus Register types in your OptiSIS solution:

- Coil type is used to control discrete output (read/write capabilities, 1 bit)
- Discrete Input type is used as inputs (read-only [RO] capabilities, 1 bit)
- Input Register type is used as inputs (read-only capabilities)
- Holding register type is used to control analog output (read/write [RW] capabilities)

Table 27 - Modbus Map

Modbus Type	ModbusBase Address	Coil/Register Number	Description	Value 1 Description	System	Access
Coil	1	1	External Reset	Reset		RW
Coil	11	11	Modbus Input 1 Status	Active		RW
Coil	12	12	Modbus Input 2 Status	Active		RW
Coil	13	13	Modbus Input 3 Status	Active		RW
Coil	14	14	Modbus Input 4 Status	Active		RW
Coil	15	15	Modbus Input 5 Status	Active		RW
Coil	16	16	Modbus Input 6 Status	Active		RW
Coil	17	17	Modbus Input 7 Status	Active		RW
Coil	18	18	Modbus Input 8 Status	Active		RW
Coil	19	19	Modbus Input 9 Status	Active		RW

Table 27 - Modbus Map

Modbus Type	ModbusBase Address	Coil/Register Number	Description	Value 1 Description	System	Access
Coil	20	20	Modbus Input 10 Status	Active		RW
Coil	21	21	Modbus Input 11 Status	Active		RW
Coil	22	22	Modbus Input 12 Status	Active		RW
Coil	23	23	Modbus Input 13 Status	Active		RW
Coil	24	24	Modbus Input 14 Status	Active		RW
Coil	25	25	Modbus Input 15 Status	Active		RW
Coil	26	26	Modbus Input 16 Status	Active		RW
Coil	27	27	Modbus Input 17 Status	Active		RW
Coil	28	28	Modbus Input 18 Status	Active		RW
Coil	29	29	Modbus Input 19 Status	Active		RW
Coil	30	30	Modbus Input 20 Status	Active		RW
Coil	31	31	Modbus Input 21 Status	Active	100 only	RW
Coil	32	32	Modbus Input 22 Status	Active	100 only	RW
Coil	33	33	Modbus Input 23 Status	Active	100 only	RW
Coil	34	34	Modbus Input 24 Status	Active	100 only	RW
Coil	35	35	Modbus Input 25 Status	Active	100 only	RW
Coil	36	36	Modbus Input 26 Status	Active	100 only	RW
Coil	37	37	Modbus Input 27 Status	Active	100 only	RW
Coil	38	38	Modbus Input 28 Status	Active	100 only	RW
Coil	39	39	Modbus Input 29 Status	Active	100 only	RW
Coil	40	40	Modbus Input 30 Status	Active	100 only	RW
Coil	41	41	Modbus Input 31 Status	Active	100 only	RW
Coil	42	42	Modbus Input 32 Status	Active	100 only	RW
Coil	43	43	Modbus Input 33 Status	Active	100 only	RW
Coil	44	44	Modbus Input 34 Status	Active	100 only	RW
Coil	45	45	Modbus Input 35 Status	Active	100 only	RW
Coil	46	46	Modbus Input 36 Status	Active	100 only	RW
Coil	47	47	Modbus Input 37 Status	Active	100 only	RW
Coil	48	48	Modbus Input 38 Status	Active	100 only	RW
Coil	49	49	Modbus Input 39 Status	Active	100 only	RW
Coil	50	50	Modbus Input 40 Status	Active	100 only	RW
Coil	113	113	System Reset Command	Reset Active		RW
Coil	114	114	Permit Substitute PVs	Permit Substitute PVs		RW
Coil	115	115	Remove Substitute PVs	Remove Substitute PVs		RW
Coil	116	116	Permit Suppression	Permit Suppression		RW
Coil	117	117	Remove Suppression	Remove Suppression		RW
Coil	121	121	Analog Output 1 Operator Substitute PV Command	Substitute PV active		RW
Coil	122	122	Analog Output 2 Operator Substitute PV Command	Substitute PV active		RW
Coil	123	123	Analog Output 3 Operator Substitute PV Command	Substitute PV active		RW
Coil	124	124	Analog Output 4 Operator Substitute PV Command	Substitute PV active		RW
Coil	125	125	Analog Output 5 Operator Substitute PV Command	Substitute PV active		RW
Coil	126	126	Analog Output 6 Operator Substitute PV Command	Substitute PV active		RW
Coil	127	127	Analog Output 7 Operator Substitute PV Command	Substitute PV active		RW
Coil	128	128	Analog Output 8 Operator Substitute PV Command	Substitute PV active		RW
Coil	131	131	Analog Input 1 Operator Substitute PV Command	Substitute PV active		RW
Coil	132	132	Analog Input 1 Operator Suppress Command	Suppress active		RW
Coil	133	133	Analog Input 1 Operator Boolean Toggle Command	Digital Substitute PV Active		RW
Coil	134	134	Analog Input 2 Operator Substitute PV Command	Substitute PV active		RW
Coil	135	135	Analog Input 2 Operator Suppress Command	Suppress active		RW
Coil	136	136	Analog Input 2 Operator Boolean Toggle Command	Digital Substitute PV Active		RW

Table 27 - Modbus Map

Modbus Type	ModbusBase Address	Coil/Register Number	Description	Value 1 Description	System	Access
Coil	137	137	Analog Input 3 Operator Substitute PV Command	Substitute PV active		RW
Coil	138	138	Analog Input 3 Operator Suppress Command	Suppress active		RW
Coil	139	139	Analog Input 3 Operator Boolean Toggle Command	Digital Substitute PV Active		RW
Coil	140	140	Analog Input 4 Operator Substitute PV Command	Substitute PV active		RW
Coil	141	141	Analog Input 4 Operator Suppress Command	Suppress active		RW
Coil	142	142	Analog Input 4 Operator Boolean Toggle Command	Digital Substitute PV Active		RW
Coil	143	143	Analog Input 5 Operator Substitute PV Command	Substitute PV active		RW
Coil	144	144	Analog Input 5 Operator Suppress Command	Suppress active		RW
Coil	145	145	Analog Input 5 Operator Boolean Toggle Command	Digital Substitute PV Active		RW
Coil	146	146	Analog Input 6 Operator Substitute PV Command	Substitute PV active		RW
Coil	147	147	Analog Input 6 Operator Suppress Command	Suppress active		RW
Coil	148	148	Analog Input 6 Operator Boolean Toggle Command	Digital Substitute PV Active		RW
Coil	149	149	Analog Input 7 Operator Substitute PV Command	Substitute PV active		RW
Coil	150	150	Analog Input 7 Operator Suppress Command	Suppress active		RW
Coil	151	151	Analog Input 7 Operator Boolean Toggle Command	Digital Substitute PV Active		RW
Coil	152	152	Analog Input 8 Operator Substitute PV Command	Substitute PV active		RW
Coil	153	153	Analog Input 8 Operator Suppress Command	Suppress active		RW
Coil	154	154	Analog Input 8 Operator Boolean Toggle Command	Digital Substitute PV Active		RW
Coil	155	155	Analog Input 9 Operator Substitute PV Command	Substitute PV active		RW
Coil	156	156	Analog Input 9 Operator Suppress Command	Suppress active		RW
Coil	157	157	Analog Input 9 Operator Boolean Toggle Command	Digital Substitute PV Active		RW
Coil	158	158	Analog Input 10 Operator Substitute PV Command	Substitute PV active		RW
Coil	159	159	Analog Input 10 Operator Suppress Command	Suppress active		RW
Coil	160	160	Analog Input 10 Operator Boolean Toggle Command	Digital Substitute PV Active		RW
Coil	161	161	Analog Input 11 Operator Substitute PV Command	Substitute PV active		RW
Coil	162	162	Analog Input 11 Operator Suppress Command	Suppress active		RW
Coil	163	163	Analog Input 11 Operator Boolean Toggle Command	Digital Substitute PV Active		RW
Coil	164	164	Analog Input 12 Operator Substitute PV Command	Substitute PV active		RW
Coil	165	165	Analog Input 12 Operator Suppress Command	Suppress active		RW
Coil	166	166	Analog Input 12 Operator Boolean Toggle Command	Digital Substitute PV Active		RW
Coil	167	167	Analog Input 13 Operator Substitute PV Command	Substitute PV active		RW
Coil	168	168	Analog Input 13 Operator Suppress Command	Suppress active		RW
Coil	169	169	Analog Input 13 Operator Boolean Toggle Command	Digital Substitute PV Active		RW
Coil	170	170	Analog Input 14 Operator Substitute PV Command	Substitute PV active		RW
Coil	171	171	Analog Input 14 Operator Suppress Command	Suppress active		RW
Coil	172	172	Analog Input 14 Operator Boolean Toggle Command	Digital Substitute PV Active		RW
Coil	173	173	Analog Input 15 Operator Substitute PV Command	Substitute PV active		RW
Coil	174	174	Analog Input 15 Operator Suppress Command	Suppress active		RW
Coil	175	175	Analog Input 15 Operator Boolean Toggle Command	Digital Substitute PV Active		RW
Coil	176	176	Analog Input 16 Operator Substitute PV Command	Substitute PV active		RW
Coil	177	177	Analog Input 16 Operator Suppress Command	Suppress active		RW
Coil	178	178	Analog Input 16 Operator Boolean Toggle Command	Digital Substitute PV Active		RW
Coil	179	179	Analog Input 17 Operator Substitute PV Command	Substitute PV active		RW
Coil	180	180	Analog Input 17 Operator Suppress Command	Suppress active		RW
Coil	181	181	Analog Input 17 Operator Boolean Toggle Command	Digital Substitute PV Active		RW
Coil	182	182	Analog Input 18 Operator Substitute PV Command	Substitute PV active		RW
Coil	183	183	Analog Input 18 Operator Suppress Command	Suppress active		RW
Coil	184	184	Analog Input 18 Operator Boolean Toggle Command	Digital Substitute PV Active		RW
Coil	185	185	Analog Input 19 Operator Substitute PV Command	Substitute PV active		RW
Coil	186	186	Analog Input 19 Operator Suppress Command	Suppress active		RW

Table 27 - Modbus Map

Modbus Type	ModbusBase Address	Coil/Register Number	Description	Value 1 Description	System	Access
Coil	187	187	Analog Input 19 Operator Boolean Toggle Command	Digital Substitute PV Active		RW
Coil	188	188	Analog Input 20 Operator Substitute PV Command	Substitute PV active		RW
Coil	189	189	Analog Input 20 Operator Suppress Command	Suppress active		RW
Coil	190	190	Analog Input 20 Operator Boolean Toggle Command	Digital Substitute PV Active		RW
Coil	191	191	Analog Input 21 Operator Substitute PV Command	Substitute PV active		RW
Coil	192	192	Analog Input 21 Operator Suppress Command	Suppress active		RW
Coil	193	193	Analog Input 21 Operator Boolean Toggle Command	Digital Substitute PV Active		RW
Coil	194	194	Analog Input 22 Operator Substitute PV Command	Substitute PV active		RW
Coil	195	195	Analog Input 22 Operator Suppress Command	Suppress active		RW
Coil	196	196	Analog Input 22 Operator Boolean Toggle Command	Digital Substitute PV Active		RW
Coil	197	197	Analog Input 23 Operator Substitute PV Command	Substitute PV active		RW
Coil	198	198	Analog Input 23 Operator Suppress Command	Suppress active		RW
Coil	199	199	Analog Input 23 Operator Boolean Toggle Command	Digital Substitute PV Active		RW
Coil	200	200	Analog Input 24 Operator Substitute PV Command	Substitute PV active		RW
Coil	201	201	Analog Input 24 Operator Suppress Command	Suppress active		RW
Coil	202	202	Analog Input 24 Operator Boolean Toggle Command	Digital Substitute PV Active		RW
Coil	203	203	Analog Input 25 Operator Substitute PV Command	Substitute PV active		RW
Coil	204	204	Analog Input 25 Operator Suppress Command	Suppress active		RW
Coil	205	205	Analog Input 25 Operator Boolean Toggle Command	Digital Substitute PV Active		RW
Coil	206	206	Analog Input 26 Operator Substitute PV Command	Substitute PV active		RW
Coil	207	207	Analog Input 26 Operator Suppress Command	Suppress active		RW
Coil	208	208	Analog Input 26 Operator Boolean Toggle Command	Digital Substitute PV Active		RW
Coil	209	209	Analog Input 27 Operator Substitute PV Command	Substitute PV active		RW
Coil	210	210	Analog Input 27 Operator Suppress Command	Suppress active		RW
Coil	211	211	Analog Input 27 Operator Boolean Toggle Command	Digital Substitute PV Active		RW
Coil	212	212	Analog Input 28 Operator Substitute PV Command	Substitute PV active		RW
Coil	213	213	Analog Input 28 Operator Suppress Command	Suppress active		RW
Coil	214	214	Analog Input 28 Operator Boolean Toggle Command	Digital Substitute PV Active		RW
Coil	215	215	Analog Input 29 Operator Substitute PV Command	Substitute PV active		RW
Coil	216	216	Analog Input 29 Operator Suppress Command	Suppress active		RW
Coil	217	217	Analog Input 29 Operator Boolean Toggle Command	Digital Substitute PV Active		RW
Coil	218	218	Analog Input 30 Operator Substitute PV Command	Substitute PV active		RW
Coil	219	219	Analog Input 30 Operator Suppress Command	Suppress active		RW
Coil	220	220	Analog Input 30 Operator Boolean Toggle Command	Digital Substitute PV Active		RW
Coil	221	221	Analog Input 31 Operator Substitute PV Command	Substitute PV active		RW
Coil	222	222	Analog Input 31 Operator Suppress Command	Suppress active		RW
Coil	223	223	Analog Input 31 Operator Boolean Toggle Command	Digital Substitute PV Active		RW
Coil	224	224	Analog Input 32 Operator Substitute PV Command	Substitute PV active		RW
Coil	225	225	Analog Input 32 Operator Suppress Command	Suppress active		RW
Coil	226	226	Analog Input 32 Operator Boolean Toggle Command	Digital Substitute PV Active		RW
Coil	227	227	Analog Input 33 Operator Substitute PV Command	Substitute PV active	100 only	RW
Coil	228	228	Analog Input 33 Operator Suppress Command	Suppress active	100 only	RW
Coil	229	229	Analog Input 33 Operator Boolean Toggle Command	Digital Substitute PV Active	100 only	RW
Coil	230	230	Analog Input 34 Operator Substitute PV Command	Substitute PV active	100 only	RW
Coil	231	231	Analog Input 34 Operator Suppress Command	Suppress active	100 only	RW
Coil	232	232	Analog Input 34 Operator Boolean Toggle Command	Digital Substitute PV Active	100 only	RW
Coil	233	233	Analog Input 35 Operator Substitute PV Command	Substitute PV active	100 only	RW
Coil	234	234	Analog Input 35 Operator Suppress Command	Suppress active	100 only	RW
Coil	235	235	Analog Input 35 Operator Boolean Toggle Command	Digital Substitute PV Active	100 only	RW
Coil	236	236	Analog Input 36 Operator Substitute PV Command	Substitute PV active	100 only	RW

Table 27 - Modbus Map

Modbus Type	ModbusBase Address	Coil/Register Number	Description	Value 1 Description	System	Access
Coil	237	237	Analog Input 36 Operator Suppress Command	Suppress active	100 only	RW
Coil	238	238	Analog Input 36 Operator Boolean Toggle Command	Digital Substitute PV Active	100 only	RW
Coil	239	239	Analog Input 37 Operator Substitute PV Command	Substitute PV active	100 only	RW
Coil	240	240	Analog Input 37 Operator Suppress Command	Suppress active	100 only	RW
Coil	241	241	Analog Input 37 Operator Boolean Toggle Command	Digital Substitute PV Active	100 only	RW
Coil	242	242	Analog Input 38 Operator Substitute PV Command	Substitute PV active	100 only	RW
Coil	243	243	Analog Input 38 Operator Suppress Command	Suppress active	100 only	RW
Coil	244	244	Analog Input 38 Operator Boolean Toggle Command	Digital Substitute PV Active	100 only	RW
Coil	245	245	Analog Input 39 Operator Substitute PV Command	Substitute PV active	100 only	RW
Coil	246	246	Analog Input 39 Operator Suppress Command	Suppress active	100 only	RW
Coil	247	247	Analog Input 39 Operator Boolean Toggle Command	Digital Substitute PV Active	100 only	RW
Coil	248	248	Analog Input 40 Operator Substitute PV Command	Substitute PV active	100 only	RW
Coil	249	249	Analog Input 40 Operator Suppress Command	Suppress active	100 only	RW
Coil	250	250	Analog Input 40 Operator Boolean Toggle Command	Digital Substitute PV Active	100 only	RW
Coil	251	251	Analog Input 41 Operator Substitute PV Command	Substitute PV active	100 only	RW
Coil	252	252	Analog Input 41 Operator Suppress Command	Suppress active	100 only	RW
Coil	253	253	Analog Input 41 Operator Boolean Toggle Command	Digital Substitute PV Active	100 only	RW
Coil	254	254	Analog Input 42 Operator Substitute PV Command	Substitute PV active	100 only	RW
Coil	255	255	Analog Input 42 Operator Suppress Command	Suppress active	100 only	RW
Coil	256	256	Analog Input 42 Operator Boolean Toggle Command	Digital Substitute PV Active	100 only	RW
Coil	257	257	Analog Input 43 Operator Substitute PV Command	Substitute PV active	100 only	RW
Coil	258	258	Analog Input 43 Operator Suppress Command	Suppress active	100 only	RW
Coil	259	259	Analog Input 43 Operator Boolean Toggle Command	Digital Substitute PV Active	100 only	RW
Coil	260	260	Analog Input 44 Operator Substitute PV Command	Substitute PV active	100 only	RW
Coil	261	261	Analog Input 44 Operator Suppress Command	Suppress active	100 only	RW
Coil	262	262	Analog Input 44 Operator Boolean Toggle Command	Digital Substitute PV Active	100 only	RW
Coil	263	263	Analog Input 45 Operator Substitute PV Command	Substitute PV active	100 only	RW
Coil	264	264	Analog Input 45 Operator Suppress Command	Suppress active	100 only	RW
Coil	265	265	Analog Input 45 Operator Boolean Toggle Command	Digital Substitute PV Active	100 only	RW
Coil	266	266	Analog Input 46 Operator Substitute PV Command	Substitute PV active	100 only	RW
Coil	267	267	Analog Input 46 Operator Suppress Command	Suppress active	100 only	RW
Coil	268	268	Analog Input 46 Operator Boolean Toggle Command	Digital Substitute PV Active	100 only	RW
Coil	269	269	Analog Input 47 Operator Substitute PV Command	Substitute PV active	100 only	RW
Coil	270	270	Analog Input 47 Operator Suppress Command	Suppress active	100 only	RW
Coil	271	271	Analog Input 47 Operator Boolean Toggle Command	Digital Substitute PV Active	100 only	RW
Coil	272	272	Analog Input 48 Operator Substitute PV Command	Substitute PV active	100 only	RW
Coil	273	273	Analog Input 48 Operator Suppress Command	Suppress active	100 only	RW
Coil	274	274	Analog Input 48 Operator Boolean Toggle Command	Digital Substitute PV Active	100 only	RW
Coil	275	275	Analog Input 49 Operator Substitute PV Command	Substitute PV active	100 only	RW
Coil	276	276	Analog Input 49 Operator Suppress Command	Suppress active	100 only	RW
Coil	277	277	Analog Input 49 Operator Boolean Toggle Command	Digital Substitute PV Active	100 only	RW
Coil	278	278	Analog Input 50 Operator Substitute PV Command	Substitute PV active	100 only	RW
Coil	279	279	Analog Input 50 Operator Suppress Command	Suppress active	100 only	RW
Coil	280	280	Analog Input 50 Operator Boolean Toggle Command	Digital Substitute PV Active	100 only	RW
Coil	281	281	Analog Input 51 Operator Substitute PV Command	Substitute PV active	100 only	RW
Coil	282	282	Analog Input 51 Operator Suppress Command	Suppress active	100 only	RW
Coil	283	283	Analog Input 51 Operator Boolean Toggle Command	Digital Substitute PV Active	100 only	RW
Coil	284	284	Analog Input 52 Operator Substitute PV Command	Substitute PV active	100 only	RW
Coil	285	285	Analog Input 52 Operator Suppress Command	Suppress active	100 only	RW
Coil	286	286	Analog Input 52 Operator Boolean Toggle Command	Digital Substitute PV Active	100 only	RW

Table 27 - Modbus Map

Modbus Type	ModbusBase Address	Coil/Register Number	Description	Value 1 Description	System	Access
Coil	287	287	Analog Input 53 Operator Substitute PV Command	Substitute PV active	100 only	RW
Coil	288	288	Analog Input 53 Operator Suppress Command	Suppress active	100 only	RW
Coil	289	289	Analog Input 53 Operator Boolean Toggle Command	Digital Substitute PV Active	100 only	RW
Coil	290	290	Analog Input 54 Operator Substitute PV Command	Substitute PV active	100 only	RW
Coil	291	291	Analog Input 54 Operator Suppress Command	Suppress active	100 only	RW
Coil	292	292	Analog Input 54 Operator Boolean Toggle Command	Digital Substitute PV Active	100 only	RW
Coil	293	293	Analog Input 55 Operator Substitute PV Command	Substitute PV active	100 only	RW
Coil	294	294	Analog Input 55 Operator Suppress Command	Suppress active	100 only	RW
Coil	295	295	Analog Input 55 Operator Boolean Toggle Command	Digital Substitute PV Active	100 only	RW
Coil	296	296	Analog Input 56 Operator Substitute PV Command	Substitute PV active	100 only	RW
Coil	297	297	Analog Input 56 Operator Suppress Command	Suppress active	100 only	RW
Coil	298	298	Analog Input 56 Operator Boolean Toggle Command	Digital Substitute PV Active	100 only	RW
Coil	299	299	Analog Input 57 Operator Substitute PV Command	Substitute PV active	100 only	RW
Coil	300	300	Analog Input 57 Operator Suppress Command	Suppress active	100 only	RW
Coil	301	301	Analog Input 57 Operator Boolean Toggle Command	Digital Substitute PV Active	100 only	RW
Coil	302	302	Analog Input 58 Operator Substitute PV Command	Substitute PV active	100 only	RW
Coil	303	303	Analog Input 58 Operator Suppress Command	Suppress active	100 only	RW
Coil	304	304	Analog Input 58 Operator Boolean Toggle Command	Digital Substitute PV Active	100 only	RW
Coil	305	305	Analog Input 59 Operator Substitute PV Command	Substitute PV active	100 only	RW
Coil	306	306	Analog Input 59 Operator Suppress Command	Suppress active	100 only	RW
Coil	307	307	Analog Input 59 Operator Boolean Toggle Command	Digital Substitute PV Active	100 only	RW
Coil	308	308	Analog Input 60 Operator Substitute PV Command	Substitute PV active	100 only	RW
Coil	309	309	Analog Input 60 Operator Suppress Command	Suppress active	100 only	RW
Coil	310	310	Analog Input 60 Operator Boolean Toggle Command	Digital Substitute PV Active	100 only	RW
Coil	311	311	Analog Input 61 Operator Substitute PV Command	Substitute PV active	100 only	RW
Coil	312	312	Analog Input 61 Operator Suppress Command	Suppress active	100 only	RW
Coil	313	313	Analog Input 61 Operator Boolean Toggle Command	Digital Substitute PV Active	100 only	RW
Coil	314	314	Analog Input 62 Operator Substitute PV Command	Substitute PV active	100 only	RW
Coil	315	315	Analog Input 62 Operator Suppress Command	Suppress active	100 only	RW
Coil	316	316	Analog Input 62 Operator Boolean Toggle Command	Digital Substitute PV Active	100 only	RW
Coil	317	317	Analog Input 63 Operator Substitute PV Command	Substitute PV active	100 only	RW
Coil	318	318	Analog Input 63 Operator Suppress Command	Suppress active	100 only	RW
Coil	319	319	Analog Input 63 Operator Boolean Toggle Command	Digital Substitute PV Active	100 only	RW
Coil	320	320	Analog Input 64 Operator Substitute PV Command	Substitute PV active	100 only	RW
Coil	321	321	Analog Input 64 Operator Suppress Command	Suppress active	100 only	RW
Coil	322	322	Analog Input 64 Operator Boolean Toggle Command	Digital Substitute PV Active	100 only	RW
Coil	331	331	Digital Output 1 Operator Substitute PV Command	Substitute PV active		RW
Coil	332	332	Digital Output 1 Operator Suppress Command	Suppress active		RW
Coil	333	333	Digital Output 1 Operator Output Toggle Command	Digital Substitute PV Active		RW
Coil	334	334	Digital Output 2 Operator Substitute PV Command	Substitute PV active		RW
Coil	335	335	Digital Output 2 Operator Suppress Command	Suppress active		RW
Coil	336	336	Digital Output 2 Operator Output Toggle Command	Digital Substitute PV Active		RW
Coil	337	337	Digital Output 3 Operator Substitute PV Command	Substitute PV active		RW
Coil	338	338	Digital Output 3 Operator Suppress Command	Suppress active		RW
Coil	339	339	Digital Output 3 Operator Output Toggle Command	Digital Substitute PV Active		RW
Coil	340	340	Digital Output 4 Operator Substitute PV Command	Substitute PV active		RW
Coil	341	341	Digital Output 4 Operator Suppress Command	Suppress active		RW
Coil	342	342	Digital Output 4 Operator Output Toggle Command	Digital Substitute PV Active		RW
Coil	343	343	Digital Output 5 Operator Substitute PV Command	Substitute PV active		RW
Coil	344	344	Digital Output 5 Operator Suppress Command	Suppress active		RW

Table 27 - Modbus Map

Modbus Type	ModbusBase Address	Coil/Register Number	Description	Value 1 Description	System	Access
Coil	345	345	Digital Output 5 Operator Output Toggle Command	Digital Substitute PV Active		RW
Coil	346	346	Digital Output 6 Operator Substitute PV Command	Substitute PV active		RW
Coil	347	347	Digital Output 6 Operator Suppress Command	Suppress active		RW
Coil	348	348	Digital Output 6 Operator Output Toggle Command	Digital Substitute PV Active		RW
Coil	349	349	Digital Output 7 Operator Substitute PV Command	Substitute PV active		RW
Coil	350	350	Digital Output 7 Operator Suppress Command	Suppress active		RW
Coil	351	351	Digital Output 7 Operator Output Toggle Command	Digital Substitute PV Active		RW
Coil	352	352	Digital Output 8 Operator Substitute PV Command	Substitute PV active		RW
Coil	353	353	Digital Output 8 Operator Suppress Command	Suppress active		RW
Coil	354	354	Digital Output 8 Operator Output Toggle Command	Digital Substitute PV Active		RW
Coil	355	355	Digital Output 9 Operator Substitute PV Command	Substitute PV active		RW
Coil	356	356	Digital Output 9 Operator Suppress Command	Suppress active		RW
Coil	357	357	Digital Output 9 Operator Output Toggle Command	Digital Substitute PV Active		RW
Coil	358	358	Digital Output 10 Operator Substitute PV Command	Substitute PV active		RW
Coil	359	359	Digital Output 10 Operator Suppress Command	Suppress active		RW
Coil	360	360	Digital Output 10 Operator Output Toggle Command	Digital Substitute PV Active		RW
Coil	361	361	Digital Output 11 Operator Substitute PV Command	Substitute PV active		RW
Coil	362	362	Digital Output 11 Operator Suppress Command	Suppress active		RW
Coil	363	363	Digital Output 11 Operator Output Toggle Command	Digital Substitute PV Active		RW
Coil	364	364	Digital Output 12 Operator Substitute PV Command	Substitute PV active		RW
Coil	365	365	Digital Output 12 Operator Suppress Command	Suppress active		RW
Coil	366	366	Digital Output 12 Operator Output Toggle Command	Digital Substitute PV Active		RW
Coil	367	367	Digital Output 13 Operator Substitute PV Command	Substitute PV active		RW
Coil	368	368	Digital Output 13 Operator Suppress Command	Suppress active		RW
Coil	369	369	Digital Output 13 Operator Output Toggle Command	Digital Substitute PV Active		RW
Coil	370	370	Digital Output 14 Operator Substitute PV Command	Substitute PV active		RW
Coil	371	371	Digital Output 14 Operator Suppress Command	Suppress active		RW
Coil	372	372	Digital Output 14 Operator Output Toggle Command	Digital Substitute PV Active		RW
Coil	373	373	Digital Output 15 Operator Substitute PV Command	Substitute PV active		RW
Coil	374	374	Digital Output 15 Operator Suppress Command	Suppress active		RW
Coil	375	375	Digital Output 15 Operator Output Toggle Command	Digital Substitute PV Active		RW
Coil	376	376	Digital Output 16 Operator Substitute PV Command	Substitute PV active		RW
Coil	377	377	Digital Output 16 Operator Suppress Command	Suppress active		RW
Coil	378	378	Digital Output 16 Operator Output Toggle Command	Digital Substitute PV Active		RW
Coil	379	379	Digital Output 17 Operator Substitute PV Command	Substitute PV active	100 only	RW
Coil	380	380	Digital Output 17 Operator Suppress Command	Suppress active	100 only	RW
Coil	381	381	Digital Output 17 Operator Output Toggle Command	Digital Substitute PV Active	100 only	RW
Coil	382	382	Digital Output 18 Operator Substitute PV Command	Substitute PV active	100 only	RW
Coil	383	383	Digital Output 18 Operator Suppress Command	Suppress active	100 only	RW
Coil	384	384	Digital Output 18 Operator Output Toggle Command	Digital Substitute PV Active	100 only	RW
Coil	385	385	Digital Output 19 Operator Substitute PV Command	Substitute PV active	100 only	RW
Coil	386	386	Digital Output 19 Operator Suppress Command	Suppress active	100 only	RW
Coil	387	387	Digital Output 19 Operator Output Toggle Command	Digital Substitute PV Active	100 only	RW
Coil	388	388	Digital Output 20 Operator Substitute PV Command	Substitute PV active	100 only	RW
Coil	389	389	Digital Output 20 Operator Suppress Command	Suppress active	100 only	RW
Coil	390	390	Digital Output 20 Operator Output Toggle Command	Digital Substitute PV Active	100 only	RW
Coil	391	391	Digital Output 21 Operator Substitute PV Command	Substitute PV active	100 only	RW
Coil	392	392	Digital Output 21 Operator Suppress Command	Suppress active	100 only	RW
Coil	393	393	Digital Output 21 Operator Output Toggle Command	Digital Substitute PV Active	100 only	RW
Coil	394	394	Digital Output 22 Operator Substitute PV Command	Substitute PV active	100 only	RW

Table 27 - Modbus Map

Modbus Type	ModbusBase Address	Coil/Register Number	Description	Value 1 Description	System	Access
Coil	395	395	Digital Output 22 Operator Suppress Command	Suppress active	100 only	RW
Coil	396	396	Digital Output 22 Operator Output Toggle Command	Digital Substitute PV Active	100 only	RW
Coil	397	397	Digital Output 23 Operator Substitute PV Command	Substitute PV active	100 only	RW
Coil	398	398	Digital Output 23 Operator Suppress Command	Suppress active	100 only	RW
Coil	399	399	Digital Output 23 Operator Output Toggle Command	Digital Substitute PV Active	100 only	RW
Coil	400	400	Digital Output 24 Operator Substitute PV Command	Substitute PV active	100 only	RW
Coil	401	401	Digital Output 24 Operator Suppress Command	Suppress active	100 only	RW
Coil	402	402	Digital Output 24 Operator Output Toggle Command	Digital Substitute PV Active	100 only	RW
Coil	403	403	Digital Output 25 Operator Substitute PV Command	Substitute PV active	100 only	RW
Coil	404	404	Digital Output 25 Operator Suppress Command	Suppress active	100 only	RW
Coil	405	405	Digital Output 25 Operator Output Toggle Command	Digital Substitute PV Active	100 only	RW
Coil	406	406	Digital Output 26 Operator Substitute PV Command	Substitute PV active	100 only	RW
Coil	407	407	Digital Output 26 Operator Suppress Command	Suppress active	100 only	RW
Coil	408	408	Digital Output 26 Operator Output Toggle Command	Digital Substitute PV Active	100 only	RW
Coil	409	409	Digital Output 27 Operator Substitute PV Command	Substitute PV active	100 only	RW
Coil	410	410	Digital Output 27 Operator Suppress Command	Suppress active	100 only	RW
Coil	411	411	Digital Output 27 Operator Output Toggle Command	Digital Substitute PV Active	100 only	RW
Coil	412	412	Digital Output 28 Operator Substitute PV Command	Substitute PV active	100 only	RW
Coil	413	413	Digital Output 28 Operator Suppress Command	Suppress active	100 only	RW
Coil	414	414	Digital Output 28 Operator Output Toggle Command	Digital Substitute PV Active	100 only	RW
Coil	415	415	Digital Output 29 Operator Substitute PV Command	Substitute PV active	100 only	RW
Coil	416	416	Digital Output 29 Operator Suppress Command	Suppress active	100 only	RW
Coil	417	417	Digital Output 29 Operator Output Toggle Command	Digital Substitute PV Active	100 only	RW
Coil	418	418	Digital Output 30 Operator Substitute PV Command	Substitute PV active	100 only	RW
Coil	419	419	Digital Output 30 Operator Suppress Command	Suppress active	100 only	RW
Coil	420	420	Digital Output 30 Operator Output Toggle Command	Digital Substitute PV Active	100 only	RW
Coil	421	421	Digital Output 31 Operator Substitute PV Command	Substitute PV active	100 only	RW
Coil	422	422	Digital Output 31 Operator Suppress Command	Suppress active	100 only	RW
Coil	423	423	Digital Output 31 Operator Output Toggle Command	Digital Substitute PV Active	100 only	RW
Coil	424	424	Digital Output 32 Operator Substitute PV Command	Substitute PV active	100 only	RW
Coil	425	425	Digital Output 32 Operator Suppress Command	Suppress active	100 only	RW
Coil	426	426	Digital Output 32 Operator Output Toggle Command	Digital Substitute PV Active	100 only	RW
Discrete Input	1	10001	Digital Output 1 Status	Energized		RO
Discrete Input	2	10002	Digital Output 2 Status	Energized		RO
Discrete Input	3	10003	Digital Output 3 Status	Energized		RO
Discrete Input	4	10004	Digital Output 4 Status	Energized		RO
Discrete Input	5	10005	Digital Output 5 Status	Energized		RO
Discrete Input	6	10006	Digital Output 6 Status	Energized		RO
Discrete Input	7	10007	Digital Output 7 Status	Energized		RO
Discrete Input	8	10008	Digital Output 8 Status	Energized		RO
Discrete Input	9	10009	Digital Output 9 Status	Energized		RO
Discrete Input	10	10010	Digital Output 10 Status	Energized		RO
Discrete Input	11	10011	Digital Output 11 Status	Energized		RO
Discrete Input	12	10012	Digital Output 12 Status	Energized		RO
Discrete Input	13	10013	Digital Output 13 Status	Energized		RO
Discrete Input	14	10014	Digital Output 14 Status	Energized		RO
Discrete Input	15	10015	Digital Output 15 Status	Energized		RO
Discrete Input	16	10016	Digital Output 16 Status	Energized		RO
Discrete Input	17	10017	Digital Output 17 Status	Energized	100 only	RO
Discrete Input	18	10018	Digital Output 18 Status	Energized	100 only	RO

Table 27 - Modbus Map

Modbus Type	ModbusBase Address	Coil/Register Number	Description	Value 1 Description	System	Access
Discrete Input	19	10019	Digital Output 19 Status	Energized	100 only	R0
Discrete Input	20	10020	Digital Output 20 Status	Energized	100 only	R0
Discrete Input	21	10021	Digital Output 21 Status	Energized	100 only	R0
Discrete Input	22	10022	Digital Output 22 Status	Energized	100 only	R0
Discrete Input	23	10023	Digital Output 23 Status	Energized	100 only	R0
Discrete Input	24	10024	Digital Output 24 Status	Energized	100 only	R0
Discrete Input	25	10025	Digital Output 25 Status	Energized	100 only	R0
Discrete Input	26	10026	Digital Output 26 Status	Energized	100 only	R0
Discrete Input	27	10027	Digital Output 27 Status	Energized	100 only	R0
Discrete Input	28	10028	Digital Output 28 Status	Energized	100 only	R0
Discrete Input	29	10029	Digital Output 29 Status	Energized	100 only	R0
Discrete Input	30	10030	Digital Output 30 Status	Energized	100 only	R0
Discrete Input	31	10031	Digital Output 31 Status	Energized	100 only	R0
Discrete Input	32	10032	Digital Output 32 Status	Energized	100 only	R0
Discrete Input	101	10101	Internal 1 Status	Active		R0
Discrete Input	102	10102	Internal 2 Status	Active		R0
Discrete Input	103	10103	Internal 3 Status	Active		R0
Discrete Input	104	10104	Internal 4 Status	Active		R0
Discrete Input	105	10105	Internal 5 Status	Active		R0
Discrete Input	106	10106	Internal 6 Status	Active		R0
Discrete Input	107	10107	Internal 7 Status	Active		R0
Discrete Input	108	10108	Internal 8 Status	Active		R0
Discrete Input	109	10109	Internal 9 Status	Active		R0
Discrete Input	110	10110	Internal 10 Status	Active		R0
Discrete Input	111	10111	Internal 11 Status	Active		R0
Discrete Input	112	10112	Internal 12 Status	Active		R0
Discrete Input	113	10113	Internal 13 Status	Active		R0
Discrete Input	114	10114	Internal 14 Status	Active		R0
Discrete Input	115	10115	Internal 15 Status	Active		R0
Discrete Input	116	10116	Internal 16 Status	Active		R0
Discrete Input	117	10117	Internal 17 Status	Active		R0
Discrete Input	118	10118	Internal 18 Status	Active		R0
Discrete Input	119	10119	Internal 19 Status	Active		R0
Discrete Input	120	10120	Internal 20 Status	Active		R0
Discrete Input	121	10121	Internal 21 Status	Active	100 only	R0
Discrete Input	122	10122	Internal 22 Status	Active	100 only	R0
Discrete Input	123	10123	Internal 23 Status	Active	100 only	R0
Discrete Input	124	10124	Internal 24 Status	Active	100 only	R0
Discrete Input	125	10125	Internal 25 Status	Active	100 only	R0
Discrete Input	126	10126	Internal 26 Status	Active	100 only	R0
Discrete Input	127	10127	Internal 27 Status	Active	100 only	R0
Discrete Input	128	10128	Internal 28 Status	Active	100 only	R0
Discrete Input	129	10129	Internal 29 Status	Active	100 only	R0
Discrete Input	130	10130	Internal 30 Status	Active	100 only	R0
Discrete Input	131	10131	Internal 31 Status	Active	100 only	R0
Discrete Input	132	10132	Internal 32 Status	Active	100 only	R0
Discrete Input	133	10133	Internal 33 Status	Active	100 only	R0
Discrete Input	134	10134	Internal 34 Status	Active	100 only	R0
Discrete Input	135	10135	Internal 35 Status	Active	100 only	R0
Discrete Input	136	10136	Internal 36 Status	Active	100 only	R0

Table 27 - Modbus Map

Modbus Type	ModbusBase Address	Coil/Register Number	Description	Value 1 Description	System	Access
Discrete Input	137	10137	Internal 37 Status	Active	100 only	R0
Discrete Input	138	10138	Internal 38 Status	Active	100 only	R0
Discrete Input	139	10139	Internal 39 Status	Active	100 only	R0
Discrete Input	140	10140	Internal 40 Status	Active	100 only	R0
Discrete Input	1011	11011	Analog Input 1 Alarm High High	Alarm Active		R0
Discrete Input	1012	11012	Analog Input 1 Alarm High	Alarm Active		R0
Discrete Input	1013	11013	Analog Input 1 Alarm Low	Alarm Active		R0
Discrete Input	1014	11014	Analog Input 1 Alarm Low Low	Alarm Active		R0
Discrete Input	1015	11015	Analog Input 1 Digital Alarm	Alarm Active		R0
Discrete Input	1016	11016	Analog Input 1 Line Fault	Line Fault		R0
Discrete Input	1021	11021	Analog Input 2 Alarm High High	Alarm Active		R0
Discrete Input	1022	11022	Analog Input 2 Alarm High	Alarm Active		R0
Discrete Input	1023	11023	Analog Input 2 Alarm Low	Alarm Active		R0
Discrete Input	1024	11024	Analog Input 2 Alarm Low Low	Alarm Active		R0
Discrete Input	1025	11025	Analog Input 2 Digital Alarm	Alarm Active		R0
Discrete Input	1026	11026	Analog Input 2 Line Fault	Line Fault		R0
Discrete Input	1031	11031	Analog Input 3 Alarm High High	Alarm Active		R0
Discrete Input	1032	11032	Analog Input 3 Alarm High	Alarm Active		R0
Discrete Input	1033	11033	Analog Input 3 Alarm Low	Alarm Active		R0
Discrete Input	1034	11034	Analog Input 3 Alarm Low Low	Alarm Active		R0
Discrete Input	1035	11035	Analog Input 3 Digital Alarm	Alarm Active		R0
Discrete Input	1036	11036	Analog Input 3 Line Fault	Line Fault		R0
Discrete Input	1041	11041	Analog Input 4 Alarm High High	Alarm Active		R0
Discrete Input	1042	11042	Analog Input 4 Alarm High	Alarm Active		R0
Discrete Input	1043	11043	Analog Input 4 Alarm Low	Alarm Active		R0
Discrete Input	1044	11044	Analog Input 4 Alarm Low Low	Alarm Active		R0
Discrete Input	1045	11045	Analog Input 4 Digital Alarm	Alarm Active		R0
Discrete Input	1046	11046	Analog Input 4 Line Fault	Line Fault		R0
Discrete Input	1051	11051	Analog Input 5 Alarm High High	Alarm Active		R0
Discrete Input	1052	11052	Analog Input 5 Alarm High	Alarm Active		R0
Discrete Input	1053	11053	Analog Input 5 Alarm Low	Alarm Active		R0
Discrete Input	1054	11054	Analog Input 5 Alarm Low Low	Alarm Active		R0
Discrete Input	1055	11055	Analog Input 5 Digital Alarm	Alarm Active		R0
Discrete Input	1056	11056	Analog Input 5 Line Fault	Line Fault		R0
Discrete Input	1061	11061	Analog Input 6 Alarm High High	Alarm Active		R0
Discrete Input	1062	11062	Analog Input 6 Alarm High	Alarm Active		R0
Discrete Input	1063	11063	Analog Input 6 Alarm Low	Alarm Active		R0
Discrete Input	1064	11064	Analog Input 6 Alarm Low Low	Alarm Active		R0
Discrete Input	1065	11065	Analog Input 6 Digital Alarm	Alarm Active		R0
Discrete Input	1066	11066	Analog Input 6 Line Fault	Line Fault		R0
Discrete Input	1071	11071	Analog Input 7 Alarm High High	Alarm Active		R0
Discrete Input	1072	11072	Analog Input 7 Alarm High	Alarm Active		R0
Discrete Input	1073	11073	Analog Input 7 Alarm Low	Alarm Active		R0
Discrete Input	1074	11074	Analog Input 7 Alarm Low Low	Alarm Active		R0
Discrete Input	1075	11075	Analog Input 7 Digital Alarm	Alarm Active		R0
Discrete Input	1076	11076	Analog Input 7 Line Fault	Line Fault		R0
Discrete Input	1081	11081	Analog Input 8 Alarm High High	Alarm Active		R0
Discrete Input	1082	11082	Analog Input 8 Alarm High	Alarm Active		R0
Discrete Input	1083	11083	Analog Input 8 Alarm Low	Alarm Active		R0
Discrete Input	1084	11084	Analog Input 8 Alarm Low Low	Alarm Active		R0

Table 27 - Modbus Map

Modbus Type	ModbusBase Address	Coil/Register Number	Description	Value 1 Description	System	Access
Discrete Input	1085	11085	Analog Input 8 Digital Alarm	Alarm Active		R0
Discrete Input	1086	11086	Analog Input 8 Line Fault	Line Fault		R0
Discrete Input	1091	11091	Analog Input 9 Alarm High High	Alarm Active		R0
Discrete Input	1092	11092	Analog Input 9 Alarm High	Alarm Active		R0
Discrete Input	1093	11093	Analog Input 9 Alarm Low	Alarm Active		R0
Discrete Input	1094	11094	Analog Input 9 Alarm Low Low	Alarm Active		R0
Discrete Input	1095	11095	Analog Input 9 Digital Alarm	Alarm Active		R0
Discrete Input	1096	11096	Analog Input 9 Line Fault	Line Fault		R0
Discrete Input	1101	11101	Analog Input 10 Alarm High High	Alarm Active		R0
Discrete Input	1102	11102	Analog Input 10 Alarm High	Alarm Active		R0
Discrete Input	1103	11103	Analog Input 10 Alarm Low	Alarm Active		R0
Discrete Input	1104	11104	Analog Input 10 Alarm Low Low	Alarm Active		R0
Discrete Input	1105	11105	Analog Input 10 Digital Alarm	Alarm Active		R0
Discrete Input	1106	11106	Analog Input 10 Line Fault	Line Fault		R0
Discrete Input	1111	11111	Analog Input 11 Alarm High High	Alarm Active		R0
Discrete Input	1112	11112	Analog Input 11 Alarm High	Alarm Active		R0
Discrete Input	1113	11113	Analog Input 11 Alarm Low	Alarm Active		R0
Discrete Input	1114	11114	Analog Input 11 Alarm Low Low	Alarm Active		R0
Discrete Input	1115	11115	Analog Input 11 Digital Alarm	Alarm Active		R0
Discrete Input	1116	11116	Analog Input 11 Line Fault	Line Fault		R0
Discrete Input	1121	11121	Analog Input 12 Alarm High High	Alarm Active		R0
Discrete Input	1122	11122	Analog Input 12 Alarm High	Alarm Active		R0
Discrete Input	1123	11123	Analog Input 12 Alarm Low	Alarm Active		R0
Discrete Input	1124	11124	Analog Input 12 Alarm Low Low	Alarm Active		R0
Discrete Input	1125	11125	Analog Input 12 Digital Alarm	Alarm Active		R0
Discrete Input	1126	11126	Analog Input 12 Line Fault	Line Fault		R0
Discrete Input	1131	11131	Analog Input 13 Alarm High High	Alarm Active		R0
Discrete Input	1132	11132	Analog Input 13 Alarm High	Alarm Active		R0
Discrete Input	1133	11133	Analog Input 13 Alarm Low	Alarm Active		R0
Discrete Input	1134	11134	Analog Input 13 Alarm Low Low	Alarm Active		R0
Discrete Input	1135	11135	Analog Input 13 Digital Alarm	Alarm Active		R0
Discrete Input	1136	11136	Analog Input 13 Line Fault	Line Fault		R0
Discrete Input	1141	11141	Analog Input 14 Alarm High High	Alarm Active		R0
Discrete Input	1142	11142	Analog Input 14 Alarm High	Alarm Active		R0
Discrete Input	1143	11143	Analog Input 14 Alarm Low	Alarm Active		R0
Discrete Input	1144	11144	Analog Input 14 Alarm Low Low	Alarm Active		R0
Discrete Input	1145	11145	Analog Input 14 Digital Alarm	Alarm Active		R0
Discrete Input	1146	11146	Analog Input 14 Line Fault	Line Fault		R0
Discrete Input	1151	11151	Analog Input 15 Alarm High High	Alarm Active		R0
Discrete Input	1152	11152	Analog Input 15 Alarm High	Alarm Active		R0
Discrete Input	1153	11153	Analog Input 15 Alarm Low	Alarm Active		R0
Discrete Input	1154	11154	Analog Input 15 Alarm Low Low	Alarm Active		R0
Discrete Input	1155	11155	Analog Input 15 Digital Alarm	Alarm Active		R0
Discrete Input	1156	11156	Analog Input 15 Line Fault	Line Fault		R0
Discrete Input	1161	11161	Analog Input 16 Alarm High High	Alarm Active		R0
Discrete Input	1162	11162	Analog Input 16 Alarm High	Alarm Active		R0
Discrete Input	1163	11163	Analog Input 16 Alarm Low	Alarm Active		R0
Discrete Input	1164	11164	Analog Input 16 Alarm Low Low	Alarm Active		R0
Discrete Input	1165	11165	Analog Input 16 Digital Alarm	Alarm Active		R0
Discrete Input	1166	11166	Analog Input 16 Line Fault	Line Fault		R0

Table 27 - Modbus Map

Modbus Type	ModbusBase Address	Coil/Register Number	Description	Value 1 Description	System	Access
Discrete Input	1171	11171	Analog Input 17 Alarm High High	Alarm Active		R0
Discrete Input	1172	11172	Analog Input 17 Alarm High	Alarm Active		R0
Discrete Input	1173	11173	Analog Input 17 Alarm Low	Alarm Active		R0
Discrete Input	1174	11174	Analog Input 17 Alarm Low Low	Alarm Active		R0
Discrete Input	1175	11175	Analog Input 17 Digital Alarm	Alarm Active		R0
Discrete Input	1176	11176	Analog Input 17 Line Fault	Line Fault		R0
Discrete Input	1181	11181	Analog Input 18 Alarm High High	Alarm Active		R0
Discrete Input	1182	11182	Analog Input 18 Alarm High	Alarm Active		R0
Discrete Input	1183	11183	Analog Input 18 Alarm Low	Alarm Active		R0
Discrete Input	1184	11184	Analog Input 18 Alarm Low Low	Alarm Active		R0
Discrete Input	1185	11185	Analog Input 18 Digital Alarm	Alarm Active		R0
Discrete Input	1186	11186	Analog Input 18 Line Fault	Line Fault		R0
Discrete Input	1191	11191	Analog Input 19 Alarm High High	Alarm Active		R0
Discrete Input	1192	11192	Analog Input 19 Alarm High	Alarm Active		R0
Discrete Input	1193	11193	Analog Input 19 Alarm Low	Alarm Active		R0
Discrete Input	1194	11194	Analog Input 19 Alarm Low Low	Alarm Active		R0
Discrete Input	1195	11195	Analog Input 19 Digital Alarm	Alarm Active		R0
Discrete Input	1196	11196	Analog Input 19 Line Fault	Line Fault		R0
Discrete Input	1201	11201	Analog Input 20 Alarm High High	Alarm Active		R0
Discrete Input	1202	11202	Analog Input 20 Alarm High	Alarm Active		R0
Discrete Input	1203	11203	Analog Input 20 Alarm Low	Alarm Active		R0
Discrete Input	1204	11204	Analog Input 20 Alarm Low Low	Alarm Active		R0
Discrete Input	1205	11205	Analog Input 20 Digital Alarm	Alarm Active		R0
Discrete Input	1206	11206	Analog Input 20 Line Fault	Line Fault		R0
Discrete Input	1211	11211	Analog Input 21 Alarm High High	Alarm Active		R0
Discrete Input	1212	11212	Analog Input 21 Alarm High	Alarm Active		R0
Discrete Input	1213	11213	Analog Input 21 Alarm Low	Alarm Active		R0
Discrete Input	1214	11214	Analog Input 21 Alarm Low Low	Alarm Active		R0
Discrete Input	1215	11215	Analog Input 21 Digital Alarm	Alarm Active		R0
Discrete Input	1216	11216	Analog Input 21 Line Fault	Line Fault		R0
Discrete Input	1221	11221	Analog Input 22 Alarm High High	Alarm Active		R0
Discrete Input	1222	11222	Analog Input 22 Alarm High	Alarm Active		R0
Discrete Input	1223	11223	Analog Input 22 Alarm Low	Alarm Active		R0
Discrete Input	1224	11224	Analog Input 22 Alarm Low Low	Alarm Active		R0
Discrete Input	1225	11225	Analog Input 22 Digital Alarm	Alarm Active		R0
Discrete Input	1226	11226	Analog Input 22 Line Fault	Line Fault		R0
Discrete Input	1231	11231	Analog Input 23 Alarm High High	Alarm Active		R0
Discrete Input	1232	11232	Analog Input 23 Alarm High	Alarm Active		R0
Discrete Input	1233	11233	Analog Input 23 Alarm Low	Alarm Active		R0
Discrete Input	1234	11234	Analog Input 23 Alarm Low Low	Alarm Active		R0
Discrete Input	1235	11235	Analog Input 23 Digital Alarm	Alarm Active		R0
Discrete Input	1236	11236	Analog Input 23 Line Fault	Line Fault		R0
Discrete Input	1241	11241	Analog Input 24 Alarm High High	Alarm Active		R0
Discrete Input	1242	11242	Analog Input 24 Alarm High	Alarm Active		R0
Discrete Input	1243	11243	Analog Input 24 Alarm Low	Alarm Active		R0
Discrete Input	1244	11244	Analog Input 24 Alarm Low Low	Alarm Active		R0
Discrete Input	1245	11245	Analog Input 24 Digital Alarm	Alarm Active		R0
Discrete Input	1246	11246	Analog Input 24 Line Fault	Line Fault		R0
Discrete Input	1251	11251	Analog Input 25 Alarm High High	Alarm Active		R0
Discrete Input	1252	11252	Analog Input 25 Alarm High	Alarm Active		R0

Table 27 - Modbus Map

Modbus Type	ModbusBase Address	Coil/Register Number	Description	Value 1 Description	System	Access
Discrete Input	1253	11253	Analog Input 25 Alarm Low	Alarm Active		R0
Discrete Input	1254	11254	Analog Input 25 Alarm Low Low	Alarm Active		R0
Discrete Input	1255	11255	Analog Input 25 Digital Alarm	Alarm Active		R0
Discrete Input	1256	11256	Analog Input 25 Line Fault	Line Fault		R0
Discrete Input	1261	11261	Analog Input 26 Alarm High High	Alarm Active		R0
Discrete Input	1262	11262	Analog Input 26 Alarm High	Alarm Active		R0
Discrete Input	1263	11263	Analog Input 26 Alarm Low	Alarm Active		R0
Discrete Input	1264	11264	Analog Input 26 Alarm Low Low	Alarm Active		R0
Discrete Input	1265	11265	Analog Input 26 Digital Alarm	Alarm Active		R0
Discrete Input	1266	11266	Analog Input 26 Line Fault	Line Fault		R0
Discrete Input	1271	11271	Analog Input 27 Alarm High High	Alarm Active		R0
Discrete Input	1272	11272	Analog Input 27 Alarm High	Alarm Active		R0
Discrete Input	1273	11273	Analog Input 27 Alarm Low	Alarm Active		R0
Discrete Input	1274	11274	Analog Input 27 Alarm Low Low	Alarm Active		R0
Discrete Input	1275	11275	Analog Input 27 Digital Alarm	Alarm Active		R0
Discrete Input	1276	11276	Analog Input 27 Line Fault	Line Fault		R0
Discrete Input	1281	11281	Analog Input 28 Alarm High High	Alarm Active		R0
Discrete Input	1282	11282	Analog Input 28 Alarm High	Alarm Active		R0
Discrete Input	1283	11283	Analog Input 28 Alarm Low	Alarm Active		R0
Discrete Input	1284	11284	Analog Input 28 Alarm Low Low	Alarm Active		R0
Discrete Input	1285	11285	Analog Input 28 Digital Alarm	Alarm Active		R0
Discrete Input	1286	11286	Analog Input 28 Line Fault	Line Fault		R0
Discrete Input	1291	11291	Analog Input 29 Alarm High High	Alarm Active		R0
Discrete Input	1292	11292	Analog Input 29 Alarm High	Alarm Active		R0
Discrete Input	1293	11293	Analog Input 29 Alarm Low	Alarm Active		R0
Discrete Input	1294	11294	Analog Input 29 Alarm Low Low	Alarm Active		R0
Discrete Input	1295	11295	Analog Input 29 Digital Alarm	Alarm Active		R0
Discrete Input	1296	11296	Analog Input 29 Line Fault	Line Fault		R0
Discrete Input	1301	11301	Analog Input 30 Alarm High High	Alarm Active		R0
Discrete Input	1302	11302	Analog Input 30 Alarm High	Alarm Active		R0
Discrete Input	1303	11303	Analog Input 30 Alarm Low	Alarm Active		R0
Discrete Input	1304	11304	Analog Input 30 Alarm Low Low	Alarm Active		R0
Discrete Input	1305	11305	Analog Input 30 Digital Alarm	Alarm Active		R0
Discrete Input	1306	11306	Analog Input 30 Line Fault	Line Fault		R0
Discrete Input	1311	11311	Analog Input 31 Alarm High High	Alarm Active		R0
Discrete Input	1312	11312	Analog Input 31 Alarm High	Alarm Active		R0
Discrete Input	1313	11313	Analog Input 31 Alarm Low	Alarm Active		R0
Discrete Input	1314	11314	Analog Input 31 Alarm Low Low	Alarm Active		R0
Discrete Input	1315	11315	Analog Input 31 Digital Alarm	Alarm Active		R0
Discrete Input	1316	11316	Analog Input 31 Line Fault	Line Fault		R0
Discrete Input	1321	11321	Analog Input 32 Alarm High High	Alarm Active		R0
Discrete Input	1322	11322	Analog Input 32 Alarm High	Alarm Active		R0
Discrete Input	1323	11323	Analog Input 32 Alarm Low	Alarm Active		R0
Discrete Input	1324	11324	Analog Input 32 Alarm Low Low	Alarm Active		R0
Discrete Input	1325	11325	Analog Input 32 Digital Alarm	Alarm Active		R0
Discrete Input	1326	11326	Analog Input 32 Line Fault	Line Fault		R0
Discrete Input	1331	11331	Analog Input 33 Alarm High High	Alarm Active	100 only	R0
Discrete Input	1332	11332	Analog Input 33 Alarm High	Alarm Active	100 only	R0
Discrete Input	1333	11333	Analog Input 33 Alarm Low	Alarm Active	100 only	R0
Discrete Input	1334	11334	Analog Input 33 Alarm Low Low	Alarm Active	100 only	R0

Table 27 - Modbus Map

Modbus Type	ModbusBase Address	Coil/Register Number	Description	Value 1 Description	System	Access
Discrete Input	1335	11335	Analog Input 33 Digital Alarm	Alarm Active	100 only	R0
Discrete Input	1336	11336	Analog Input 33 Line Fault	Line Fault	100 only	R0
Discrete Input	1341	11341	Analog Input 34 Alarm High High	Alarm Active	100 only	R0
Discrete Input	1342	11342	Analog Input 34 Alarm High	Alarm Active	100 only	R0
Discrete Input	1343	11343	Analog Input 34 Alarm Low	Alarm Active	100 only	R0
Discrete Input	1344	11344	Analog Input 34 Alarm Low Low	Alarm Active	100 only	R0
Discrete Input	1345	11345	Analog Input 34 Digital Alarm	Alarm Active	100 only	R0
Discrete Input	1346	11346	Analog Input 34 Line Fault	Line Fault	100 only	R0
Discrete Input	1351	11351	Analog Input 35 Alarm High High	Alarm Active	100 only	R0
Discrete Input	1352	11352	Analog Input 35 Alarm High	Alarm Active	100 only	R0
Discrete Input	1353	11353	Analog Input 35 Alarm Low	Alarm Active	100 only	R0
Discrete Input	1354	11354	Analog Input 35 Alarm Low Low	Alarm Active	100 only	R0
Discrete Input	1355	11355	Analog Input 35 Digital Alarm	Alarm Active	100 only	R0
Discrete Input	1356	11356	Analog Input 35 Line Fault	Line Fault	100 only	R0
Discrete Input	1361	11361	Analog Input 36 Alarm High High	Alarm Active	100 only	R0
Discrete Input	1362	11362	Analog Input 36 Alarm High	Alarm Active	100 only	R0
Discrete Input	1363	11363	Analog Input 36 Alarm Low	Alarm Active	100 only	R0
Discrete Input	1364	11364	Analog Input 36 Alarm Low Low	Alarm Active	100 only	R0
Discrete Input	1365	11365	Analog Input 36 Digital Alarm	Alarm Active	100 only	R0
Discrete Input	1366	11366	Analog Input 36 Line Fault	Line Fault	100 only	R0
Discrete Input	1371	11371	Analog Input 37 Alarm High High	Alarm Active	100 only	R0
Discrete Input	1372	11372	Analog Input 37 Alarm High	Alarm Active	100 only	R0
Discrete Input	1373	11373	Analog Input 37 Alarm Low	Alarm Active	100 only	R0
Discrete Input	1374	11374	Analog Input 37 Alarm Low Low	Alarm Active	100 only	R0
Discrete Input	1375	11375	Analog Input 37 Digital Alarm	Alarm Active	100 only	R0
Discrete Input	1376	11376	Analog Input 37 Line Fault	Line Fault	100 only	R0
Discrete Input	1381	11381	Analog Input 38 Alarm High High	Alarm Active	100 only	R0
Discrete Input	1382	11382	Analog Input 38 Alarm High	Alarm Active	100 only	R0
Discrete Input	1383	11383	Analog Input 38 Alarm Low	Alarm Active	100 only	R0
Discrete Input	1384	11384	Analog Input 38 Alarm Low Low	Alarm Active	100 only	R0
Discrete Input	1385	11385	Analog Input 38 Digital Alarm	Alarm Active	100 only	R0
Discrete Input	1386	11386	Analog Input 38 Line Fault	Line Fault	100 only	R0
Discrete Input	1391	11391	Analog Input 39 Alarm High High	Alarm Active	100 only	R0
Discrete Input	1392	11392	Analog Input 39 Alarm High	Alarm Active	100 only	R0
Discrete Input	1393	11393	Analog Input 39 Alarm Low	Alarm Active	100 only	R0
Discrete Input	1394	11394	Analog Input 39 Alarm Low Low	Alarm Active	100 only	R0
Discrete Input	1395	11395	Analog Input 39 Digital Alarm	Alarm Active	100 only	R0
Discrete Input	1396	11396	Analog Input 39 Line Fault	Line Fault	100 only	R0
Discrete Input	1401	11401	Analog Input 40 Alarm High High	Alarm Active	100 only	R0
Discrete Input	1402	11402	Analog Input 40 Alarm High	Alarm Active	100 only	R0
Discrete Input	1403	11403	Analog Input 40 Alarm Low	Alarm Active	100 only	R0
Discrete Input	1404	11404	Analog Input 40 Alarm Low Low	Alarm Active	100 only	R0
Discrete Input	1405	11405	Analog Input 40 Digital Alarm	Alarm Active	100 only	R0
Discrete Input	1406	11406	Analog Input 40 Line Fault	Line Fault	100 only	R0
Discrete Input	1411	11411	Analog Input 41 Alarm High High	Alarm Active	100 only	R0
Discrete Input	1412	11412	Analog Input 41 Alarm High	Alarm Active	100 only	R0
Discrete Input	1413	11413	Analog Input 41 Alarm Low	Alarm Active	100 only	R0
Discrete Input	1414	11414	Analog Input 41 Alarm Low Low	Alarm Active	100 only	R0
Discrete Input	1415	11415	Analog Input 41 Digital Alarm	Alarm Active	100 only	R0
Discrete Input	1416	11416	Analog Input 41 Line Fault	Line Fault	100 only	R0

Table 27 - Modbus Map

Modbus Type	ModbusBase Address	Coil/Register Number	Description	Value 1 Description	System	Access
Discrete Input	1421	11421	Analog Input 42 Alarm High High	Alarm Active	100 only	R0
Discrete Input	1422	11422	Analog Input 42 Alarm High	Alarm Active	100 only	R0
Discrete Input	1423	11423	Analog Input 42 Alarm Low	Alarm Active	100 only	R0
Discrete Input	1424	11424	Analog Input 42 Alarm Low Low	Alarm Active	100 only	R0
Discrete Input	1425	11425	Analog Input 42 Digital Alarm	Alarm Active	100 only	R0
Discrete Input	1426	11426	Analog Input 42 Line Fault	Line Fault	100 only	R0
Discrete Input	1431	11431	Analog Input 43 Alarm High High	Alarm Active	100 only	R0
Discrete Input	1432	11432	Analog Input 43 Alarm High	Alarm Active	100 only	R0
Discrete Input	1433	11433	Analog Input 43 Alarm Low	Alarm Active	100 only	R0
Discrete Input	1434	11434	Analog Input 43 Alarm Low Low	Alarm Active	100 only	R0
Discrete Input	1435	11435	Analog Input 43 Digital Alarm	Alarm Active	100 only	R0
Discrete Input	1436	11436	Analog Input 43 Line Fault	Line Fault	100 only	R0
Discrete Input	1441	11441	Analog Input 44 Alarm High High	Alarm Active	100 only	R0
Discrete Input	1442	11442	Analog Input 44 Alarm High	Alarm Active	100 only	R0
Discrete Input	1443	11443	Analog Input 44 Alarm Low	Alarm Active	100 only	R0
Discrete Input	1444	11444	Analog Input 44 Alarm Low Low	Alarm Active	100 only	R0
Discrete Input	1445	11445	Analog Input 44 Digital Alarm	Alarm Active	100 only	R0
Discrete Input	1446	11446	Analog Input 44 Line Fault	Line Fault	100 only	R0
Discrete Input	1451	11451	Analog Input 45 Alarm High High	Alarm Active	100 only	R0
Discrete Input	1452	11452	Analog Input 45 Alarm High	Alarm Active	100 only	R0
Discrete Input	1453	11453	Analog Input 45 Alarm Low	Alarm Active	100 only	R0
Discrete Input	1454	11454	Analog Input 45 Alarm Low Low	Alarm Active	100 only	R0
Discrete Input	1455	11455	Analog Input 45 Digital Alarm	Alarm Active	100 only	R0
Discrete Input	1456	11456	Analog Input 45 Line Fault	Line Fault	100 only	R0
Discrete Input	1461	11461	Analog Input 46 Alarm High High	Alarm Active	100 only	R0
Discrete Input	1462	11462	Analog Input 46 Alarm High	Alarm Active	100 only	R0
Discrete Input	1463	11463	Analog Input 46 Alarm Low	Alarm Active	100 only	R0
Discrete Input	1464	11464	Analog Input 46 Alarm Low Low	Alarm Active	100 only	R0
Discrete Input	1465	11465	Analog Input 46 Digital Alarm	Alarm Active	100 only	R0
Discrete Input	1466	11466	Analog Input 46 Line Fault	Line Fault	100 only	R0
Discrete Input	1471	11471	Analog Input 47 Alarm High High	Alarm Active	100 only	R0
Discrete Input	1472	11472	Analog Input 47 Alarm High	Alarm Active	100 only	R0
Discrete Input	1473	11473	Analog Input 47 Alarm Low	Alarm Active	100 only	R0
Discrete Input	1474	11474	Analog Input 47 Alarm Low Low	Alarm Active	100 only	R0
Discrete Input	1475	11475	Analog Input 47 Digital Alarm	Alarm Active	100 only	R0
Discrete Input	1476	11476	Analog Input 47 Line Fault	Line Fault	100 only	R0
Discrete Input	1481	11481	Analog Input 48 Alarm High High	Alarm Active	100 only	R0
Discrete Input	1482	11482	Analog Input 48 Alarm High	Alarm Active	100 only	R0
Discrete Input	1483	11483	Analog Input 48 Alarm Low	Alarm Active	100 only	R0
Discrete Input	1484	11484	Analog Input 48 Alarm Low Low	Alarm Active	100 only	R0
Discrete Input	1485	11485	Analog Input 48 Digital Alarm	Alarm Active	100 only	R0
Discrete Input	1486	11486	Analog Input 48 Line Fault	Line Fault	100 only	R0
Discrete Input	1491	11491	Analog Input 49 Alarm High High	Alarm Active	100 only	R0
Discrete Input	1492	11492	Analog Input 49 Alarm High	Alarm Active	100 only	R0
Discrete Input	1493	11493	Analog Input 49 Alarm Low	Alarm Active	100 only	R0
Discrete Input	1494	11494	Analog Input 49 Alarm Low Low	Alarm Active	100 only	R0
Discrete Input	1495	11495	Analog Input 49 Digital Alarm	Alarm Active	100 only	R0
Discrete Input	1496	11496	Analog Input 49 Line Fault	Line Fault	100 only	R0
Discrete Input	1501	11501	Analog Input 50 Alarm High High	Alarm Active	100 only	R0
Discrete Input	1502	11502	Analog Input 50 Alarm High	Alarm Active	100 only	R0

Table 27 - Modbus Map

Modbus Type	ModbusBase Address	Coil/Register Number	Description	Value 1 Description	System	Access
Discrete Input	1503	11503	Analog Input 50 Alarm Low	Alarm Active	100 only	R0
Discrete Input	1504	11504	Analog Input 50 Alarm Low Low	Alarm Active	100 only	R0
Discrete Input	1505	11505	Analog Input 50 Digital Alarm	Alarm Active	100 only	R0
Discrete Input	1506	11506	Analog Input 50 Line Fault	Line Fault	100 only	R0
Discrete Input	1511	11511	Analog Input 51 Alarm High High	Alarm Active	100 only	R0
Discrete Input	1512	11512	Analog Input 51 Alarm High	Alarm Active	100 only	R0
Discrete Input	1513	11513	Analog Input 51 Alarm Low	Alarm Active	100 only	R0
Discrete Input	1514	11514	Analog Input 51 Alarm Low Low	Alarm Active	100 only	R0
Discrete Input	1515	11515	Analog Input 51 Digital Alarm	Alarm Active	100 only	R0
Discrete Input	1516	11516	Analog Input 51 Line Fault	Line Fault	100 only	R0
Discrete Input	1521	11521	Analog Input 52 Alarm High High	Alarm Active	100 only	R0
Discrete Input	1522	11522	Analog Input 52 Alarm High	Alarm Active	100 only	R0
Discrete Input	1523	11523	Analog Input 52 Alarm Low	Alarm Active	100 only	R0
Discrete Input	1524	11524	Analog Input 52 Alarm Low Low	Alarm Active	100 only	R0
Discrete Input	1525	11525	Analog Input 52 Digital Alarm	Alarm Active	100 only	R0
Discrete Input	1526	11526	Analog Input 52 Line Fault	Line Fault	100 only	R0
Discrete Input	1531	11531	Analog Input 53 Alarm High High	Alarm Active	100 only	R0
Discrete Input	1532	11532	Analog Input 53 Alarm High	Alarm Active	100 only	R0
Discrete Input	1533	11533	Analog Input 53 Alarm Low	Alarm Active	100 only	R0
Discrete Input	1534	11534	Analog Input 53 Alarm Low Low	Alarm Active	100 only	R0
Discrete Input	1535	11535	Analog Input 53 Digital Alarm	Alarm Active	100 only	R0
Discrete Input	1536	11536	Analog Input 53 Line Fault	Line Fault	100 only	R0
Discrete Input	1541	11541	Analog Input 54 Alarm High High	Alarm Active	100 only	R0
Discrete Input	1542	11542	Analog Input 54 Alarm High	Alarm Active	100 only	R0
Discrete Input	1543	11543	Analog Input 54 Alarm Low	Alarm Active	100 only	R0
Discrete Input	1544	11544	Analog Input 54 Alarm Low Low	Alarm Active	100 only	R0
Discrete Input	1545	11545	Analog Input 54 Digital Alarm	Alarm Active	100 only	R0
Discrete Input	1546	11546	Analog Input 54 Line Fault	Line Fault	100 only	R0
Discrete Input	1551	11551	Analog Input 55 Alarm High High	Alarm Active	100 only	R0
Discrete Input	1552	11552	Analog Input 55 Alarm High	Alarm Active	100 only	R0
Discrete Input	1553	11553	Analog Input 55 Alarm Low	Alarm Active	100 only	R0
Discrete Input	1554	11554	Analog Input 55 Alarm Low Low	Alarm Active	100 only	R0
Discrete Input	1555	11555	Analog Input 55 Digital Alarm	Alarm Active	100 only	R0
Discrete Input	1556	11556	Analog Input 55 Line Fault	Line Fault	100 only	R0
Discrete Input	1561	11561	Analog Input 56 Alarm High High	Alarm Active	100 only	R0
Discrete Input	1562	11562	Analog Input 56 Alarm High	Alarm Active	100 only	R0
Discrete Input	1563	11563	Analog Input 56 Alarm Low	Alarm Active	100 only	R0
Discrete Input	1564	11564	Analog Input 56 Alarm Low Low	Alarm Active	100 only	R0
Discrete Input	1565	11565	Analog Input 56 Digital Alarm	Alarm Active	100 only	R0
Discrete Input	1566	11566	Analog Input 56 Line Fault	Line Fault	100 only	R0
Discrete Input	1571	11571	Analog Input 57 Alarm High High	Alarm Active	100 only	R0
Discrete Input	1572	11572	Analog Input 57 Alarm High	Alarm Active	100 only	R0
Discrete Input	1573	11573	Analog Input 57 Alarm Low	Alarm Active	100 only	R0
Discrete Input	1574	11574	Analog Input 57 Alarm Low Low	Alarm Active	100 only	R0
Discrete Input	1575	11575	Analog Input 57 Digital Alarm	Alarm Active	100 only	R0
Discrete Input	1576	11576	Analog Input 57 Line Fault	Line Fault	100 only	R0
Discrete Input	1581	11581	Analog Input 58 Alarm High High	Alarm Active	100 only	R0
Discrete Input	1582	11582	Analog Input 58 Alarm High	Alarm Active	100 only	R0
Discrete Input	1583	11583	Analog Input 58 Alarm Low	Alarm Active	100 only	R0
Discrete Input	1584	11584	Analog Input 58 Alarm Low Low	Alarm Active	100 only	R0

Table 27 - Modbus Map

Modbus Type	ModbusBase Address	Coil/Register Number	Description	Value 1 Description	System	Access
Discrete Input	1585	11585	Analog Input 58 Digital Alarm	Alarm Active	100 only	R0
Discrete Input	1586	11586	Analog Input 58 Line Fault	Line Fault	100 only	R0
Discrete Input	1591	11591	Analog Input 59 Alarm High High	Alarm Active	100 only	R0
Discrete Input	1592	11592	Analog Input 59 Alarm High	Alarm Active	100 only	R0
Discrete Input	1593	11593	Analog Input 59 Alarm Low	Alarm Active	100 only	R0
Discrete Input	1594	11594	Analog Input 59 Alarm Low Low	Alarm Active	100 only	R0
Discrete Input	1595	11595	Analog Input 59 Digital Alarm	Alarm Active	100 only	R0
Discrete Input	1596	11596	Analog Input 59 Line Fault	Line Fault	100 only	R0
Discrete Input	1601	11601	Analog Input 60 Alarm High High	Alarm Active	100 only	R0
Discrete Input	1602	11602	Analog Input 60 Alarm High	Alarm Active	100 only	R0
Discrete Input	1603	11603	Analog Input 60 Alarm Low	Alarm Active	100 only	R0
Discrete Input	1604	11604	Analog Input 60 Alarm Low Low	Alarm Active	100 only	R0
Discrete Input	1605	11605	Analog Input 60 Digital Alarm	Alarm Active	100 only	R0
Discrete Input	1606	11606	Analog Input 60 Line Fault	Line Fault	100 only	R0
Discrete Input	1611	11611	Analog Input 61 Alarm High High	Alarm Active	100 only	R0
Discrete Input	1612	11612	Analog Input 61 Alarm High	Alarm Active	100 only	R0
Discrete Input	1613	11613	Analog Input 61 Alarm Low	Alarm Active	100 only	R0
Discrete Input	1614	11614	Analog Input 61 Alarm Low Low	Alarm Active	100 only	R0
Discrete Input	1615	11615	Analog Input 61 Digital Alarm	Alarm Active	100 only	R0
Discrete Input	1616	11616	Analog Input 61 Line Fault	Line Fault	100 only	R0
Discrete Input	1621	11621	Analog Input 62 Alarm High High	Alarm Active	100 only	R0
Discrete Input	1622	11622	Analog Input 62 Alarm High	Alarm Active	100 only	R0
Discrete Input	1623	11623	Analog Input 62 Alarm Low	Alarm Active	100 only	R0
Discrete Input	1624	11624	Analog Input 62 Alarm Low Low	Alarm Active	100 only	R0
Discrete Input	1625	11625	Analog Input 62 Digital Alarm	Alarm Active	100 only	R0
Discrete Input	1626	11626	Analog Input 62 Line Fault	Line Fault	100 only	R0
Discrete Input	1631	11631	Analog Input 63 Alarm High High	Alarm Active	100 only	R0
Discrete Input	1632	11632	Analog Input 63 Alarm High	Alarm Active	100 only	R0
Discrete Input	1633	11633	Analog Input 63 Alarm Low	Alarm Active	100 only	R0
Discrete Input	1634	11634	Analog Input 63 Alarm Low Low	Alarm Active	100 only	R0
Discrete Input	1635	11635	Analog Input 63 Digital Alarm	Alarm Active	100 only	R0
Discrete Input	1636	11636	Analog Input 63 Line Fault	Line Fault	100 only	R0
Discrete Input	1641	11641	Analog Input 64 Alarm High High	Alarm Active	100 only	R0
Discrete Input	1642	11642	Analog Input 64 Alarm High	Alarm Active	100 only	R0
Discrete Input	1643	11643	Analog Input 64 Alarm Low	Alarm Active	100 only	R0
Discrete Input	1644	11644	Analog Input 64 Alarm Low Low	Alarm Active	100 only	R0
Discrete Input	1645	11645	Analog Input 64 Digital Alarm	Alarm Active	100 only	R0
Discrete Input	1646	11646	Analog Input 64 Line Fault	Line Fault	100 only	R0
Discrete Input	1971	11971	Analog Output 1 Logic Demand	Output Demanded from Cause and Effect		R0
Discrete Input	1972	11972	Analog Output 2 Logic Demand	Output Demanded from Cause and Effect		R0
Discrete Input	1973	11973	Analog Output 3 Logic Demand	Output Demanded from Cause and Effect		R0
Discrete Input	1974	11974	Analog Output 4 Logic Demand	Output Demanded from Cause and Effect		R0
Discrete Input	1975	11975	Analog Output 5 Logic Demand	Output Demanded from Cause and Effect		R0
Discrete Input	1976	11976	Analog Output 6 Logic Demand	Output Demanded from Cause and Effect		R0
Discrete Input	1977	11977	Analog Output 7 Logic Demand	Output Demanded from Cause and Effect		R0
Discrete Input	1978	11978	Analog Output 8 Logic Demand	Output Demanded from Cause and Effect		R0
Discrete Input	2011	12011	Digital Output 1 Demand	Output Demanded from Cause and Effect		R0
Discrete Input	2012	12012	Digital Output 1 Line Fault	Line Fault		R0
Discrete Input	2021	12021	Digital Output 2 Demand	Output Demanded from Cause and Effect		R0
Discrete Input	2022	12022	Digital Output 2 Line Fault	Line Fault		R0

Table 27 - Modbus Map

Modbus Type	ModbusBase Address	Coil/Register Number	Description	Value 1 Description	System	Access
Discrete Input	2031	12031	Digital Output 3 Demand	Output Demanded from Cause and Effect		R0
Discrete Input	2032	12032	Digital Output 3 Line Fault	Line Fault		R0
Discrete Input	2041	12041	Digital Output 4 Demand	Output Demanded from Cause and Effect		R0
Discrete Input	2042	12042	Digital Output 4 Line Fault	Line Fault		R0
Discrete Input	2051	12051	Digital Output 5 Demand	Output Demanded from Cause and Effect		R0
Discrete Input	2052	12052	Digital Output 5 Line Fault	Line Fault		R0
Discrete Input	2061	12061	Digital Output 6 Demand	Output Demanded from Cause and Effect		R0
Discrete Input	2062	12062	Digital Output 6 Line Fault	Line Fault		R0
Discrete Input	2071	12071	Digital Output 7 Demand	Output Demanded from Cause and Effect		R0
Discrete Input	2072	12072	Digital Output 7 Line Fault	Line Fault		R0
Discrete Input	2081	12081	Digital Output 8 Demand	Output Demanded from Cause and Effect		R0
Discrete Input	2082	12082	Digital Output 8 Line Fault	Line Fault		R0
Discrete Input	2091	12091	Digital Output 9 Demand	Output Demanded from Cause and Effect		R0
Discrete Input	2092	12092	Digital Output 9 Line Fault	Line Fault		R0
Discrete Input	2101	12101	Digital Output 10 Demand	Output Demanded from Cause and Effect		R0
Discrete Input	2102	12102	Digital Output 10 Line Fault	Line Fault		R0
Discrete Input	2111	12111	Digital Output 11 Demand	Output Demanded from Cause and Effect		R0
Discrete Input	2112	12112	Digital Output 11 Line Fault	Line Fault		R0
Discrete Input	2121	12121	Digital Output 12 Demand	Output Demanded from Cause and Effect		R0
Discrete Input	2122	12122	Digital Output 12 Line Fault	Line Fault		R0
Discrete Input	2131	12131	Digital Output 13 Demand	Output Demanded from Cause and Effect		R0
Discrete Input	2132	12132	Digital Output 13 Line Fault	Line Fault		R0
Discrete Input	2141	12141	Digital Output 14 Demand	Output Demanded from Cause and Effect		R0
Discrete Input	2142	12142	Digital Output 14 Line Fault	Line Fault		R0
Discrete Input	2151	12151	Digital Output 15 Demand	Output Demanded from Cause and Effect		R0
Discrete Input	2152	12152	Digital Output 15 Line Fault	Line Fault		R0
Discrete Input	2161	12161	Digital Output 16 Demand	Output Demanded from Cause and Effect		R0
Discrete Input	2162	12162	Digital Output 16 Line Fault	Line Fault		R0
Discrete Input	2171	12171	Digital Output 17 Demand	Output Demanded from Cause and Effect	100 only	R0
Discrete Input	2172	12172	Digital Output 17 Line Fault	Line Fault	100 only	R0
Discrete Input	2181	12181	Digital Output 18 Demand	Output Demanded from Cause and Effect	100 only	R0
Discrete Input	2182	12182	Digital Output 18 Line Fault	Line Fault	100 only	R0
Discrete Input	2191	12191	Digital Output 19 Demand	Output Demanded from Cause and Effect	100 only	R0
Discrete Input	2192	12192	Digital Output 19 Line Fault	Line Fault	100 only	R0
Discrete Input	2201	12201	Digital Output 20 Demand	Output Demanded from Cause and Effect	100 only	R0
Discrete Input	2202	12202	Digital Output 20 Line Fault	Line Fault	100 only	R0
Discrete Input	2211	12211	Digital Output 21 Demand	Output Demanded from Cause and Effect	100 only	R0
Discrete Input	2212	12212	Digital Output 21 Line Fault	Line Fault	100 only	R0
Discrete Input	2221	12221	Digital Output 22 Demand	Output Demanded from Cause and Effect	100 only	R0
Discrete Input	2222	12222	Digital Output 22 Line Fault	Line Fault	100 only	R0
Discrete Input	2231	12231	Digital Output 23 Demand	Output Demanded from Cause and Effect	100 only	R0
Discrete Input	2232	12232	Digital Output 23 Line Fault	Line Fault	100 only	R0
Discrete Input	2241	12241	Digital Output 24 Demand	Output Demanded from Cause and Effect	100 only	R0
Discrete Input	2242	12242	Digital Output 24 Line Fault	Line Fault	100 only	R0
Discrete Input	2251	12251	Digital Output 25 Demand	Output Demanded from Cause and Effect	100 only	R0
Discrete Input	2252	12252	Digital Output 25 Line Fault	Line Fault	100 only	R0
Discrete Input	2261	12261	Digital Output 26 Demand	Output Demanded from Cause and Effect	100 only	R0
Discrete Input	2262	12262	Digital Output 26 Line Fault	Line Fault	100 only	R0
Discrete Input	2271	12271	Digital Output 27 Demand	Output Demanded from Cause and Effect	100 only	R0
Discrete Input	2272	12272	Digital Output 27 Line Fault	Line Fault	100 only	R0

Table 27 - Modbus Map

Modbus Type	ModbusBase Address	Coil/Register Number	Description	Value 1 Description	System	Access
Discrete Input	2281	12281	Digital Output 28 Demand	Output Demanded from Cause and Effect	100 only	R0
Discrete Input	2282	12282	Digital Output 28 Line Fault	Line Fault	100 only	R0
Discrete Input	2291	12291	Digital Output 29 Demand	Output Demanded from Cause and Effect	100 only	R0
Discrete Input	2292	12292	Digital Output 29 Line Fault	Line Fault	100 only	R0
Discrete Input	2301	12301	Digital Output 30 Demand	Output Demanded from Cause and Effect	100 only	R0
Discrete Input	2302	12302	Digital Output 30 Line Fault	Line Fault	100 only	R0
Discrete Input	2311	12311	Digital Output 31 Demand	Output Demanded from Cause and Effect	100 only	R0
Discrete Input	2312	12312	Digital Output 31 Line Fault	Line Fault	100 only	R0
Discrete Input	2321	12321	Digital Output 32 Demand	Output Demanded from Cause and Effect	100 only	R0
Discrete Input	2322	12322	Digital Output 32 Line Fault	Line Fault	100 only	R0
Discrete Input	3001	13001	Any PSU/24Vdc Input Feed Failed	Any PSU/24Vdc Input Feed Failed		R0
Discrete Input	3002	13002	CPU 24V Input 1 Failed	CPU 24V Input 1 Failed		R0
Discrete Input	3003	13003	CPU 24V Input 2 Failed	CPU 24V Input 2 Failed		R0
Discrete Input	3004	13004	Any Bypass or Force present	Bypass or Force Present		R0
Discrete Input	3005	13005	Duplicate Output on Cause and Effect charts	Duplicate Output Detected		R0
Discrete Input	3008	13008	Program Enable Key installed	Program Enable Key installed		R0
Discrete Input	3009	13009	System Health Alarm	System Not Healthy		R0
Discrete Input	3011	13011	Processor A Online	Processor A Online		R0
Discrete Input	3012	13012	Processor A Healthy	Processor A Healthy		R0
Discrete Input	3013	13013	Processor A 24V Input 1 Healthy	Processor A 24V Input 1 Healthy		R0
Discrete Input	3014	13014	Processor A 24V Input 2 Healthy	Processor A 24V Input 2 Healthy		R0
Discrete Input	3015	13015	Processor A Ready	Processor A Ready		R0
Discrete Input	3016	13016	Processor A Battery Failure	Processor A Battery Failure		R0
Discrete Input	3021	13021	Processor B Online	Processor B Online		R0
Discrete Input	3022	13022	Processor B Healthy	Processor B Healthy		R0
Discrete Input	3023	13023	Processor B 24V Input 1 Healthy	Processor B 24V Input 1 Healthy		R0
Discrete Input	3024	13024	Processor B 24V Input 2 Healthy	Processor B 24V Input 2 Healthy		R0
Discrete Input	3025	13025	Processor B Ready	Processor B Ready		R0
Discrete Input	3026	13026	Processor B Battery Failure	Processor B Battery Failure		R0
Discrete Input	3031	13031	Processor C Online	Processor C Online		R0
Discrete Input	3032	13032	Processor C Healthy	Processor C Healthy		R0
Discrete Input	3033	13033	Processor C 24V Input 1 Healthy	Processor C 24V Input 1 Healthy		R0
Discrete Input	3034	13034	Processor C 24V Input 2 Healthy	Processor C 24V Input 2 Healthy		R0
Discrete Input	3035	13035	Processor C Ready	Processor C Ready		R0
Discrete Input	3036	13036	Processor C Battery Failure	Processor C Battery Failure		R0
Discrete Input	3045	13045	Any CPU High Temperature	Any CPU High Temperature		R0
Discrete Input	3060	13060	MTTR Countdown Started	MTTR Countdown Started		R0
Discrete Input	3061	13061	MTTR Exceeded	MTTR Exceeded		R0
Discrete Input	3062	13062	Purge Alarm	Purge Failure		R0
Input Registers	1	30001	Analog Input 1 Analog Process Variable			R0
Input Registers	3	30003	Analog Input 2 Analog Process Variable			R0
Input Registers	5	30005	Analog Input 3 Analog Process Variable			R0
Input Registers	7	30007	Analog Input 4 Analog Process Variable			R0
Input Registers	9	30009	Analog Input 5 Analog Process Variable			R0
Input Registers	11	30011	Analog Input 6 Analog Process Variable			R0
Input Registers	13	30013	Analog Input 7 Analog Process Variable			R0
Input Registers	15	30015	Analog Input 8 Analog Process Variable			R0
Input Registers	17	30017	Analog Input 9 Analog Process Variable			R0
Input Registers	19	30019	Analog Input 10 Analog Process Variable			R0
Input Registers	21	30021	Analog Input 11 Analog Process Variable			R0

Table 27 - Modbus Map

Modbus Type	ModbusBase Address	Coil/Register Number	Description	Value 1 Description	System	Access
Input Registers	23	30023	Analog Input 12 Analog Process Variable			R0
Input Registers	25	30025	Analog Input 13 Analog Process Variable			R0
Input Registers	27	30027	Analog Input 14 Analog Process Variable			R0
Input Registers	29	30029	Analog Input 15 Analog Process Variable			R0
Input Registers	31	30031	Analog Input 16 Analog Process Variable			R0
Input Registers	33	30033	Analog Input 17 Analog Process Variable			R0
Input Registers	35	30035	Analog Input 18 Analog Process Variable			R0
Input Registers	37	30037	Analog Input 19 Analog Process Variable			R0
Input Registers	39	30039	Analog Input 20 Analog Process Variable			R0
Input Registers	41	30041	Analog Input 21 Analog Process Variable			R0
Input Registers	43	30043	Analog Input 22 Analog Process Variable			R0
Input Registers	45	30045	Analog Input 23 Analog Process Variable			R0
Input Registers	47	30047	Analog Input 24 Analog Process Variable			R0
Input Registers	49	30049	Analog Input 25 Analog Process Variable			R0
Input Registers	51	30051	Analog Input 26 Analog Process Variable			R0
Input Registers	53	30053	Analog Input 27 Analog Process Variable			R0
Input Registers	55	30055	Analog Input 28 Analog Process Variable			R0
Input Registers	57	30057	Analog Input 29 Analog Process Variable			R0
Input Registers	59	30059	Analog Input 30 Analog Process Variable			R0
Input Registers	61	30061	Analog Input 31 Analog Process Variable			R0
Input Registers	63	30063	Analog Input 32 Analog Process Variable			R0
Input Registers	65	30065	Analog Input 33 Analog Process Variable		100 only	R0
Input Registers	67	30067	Analog Input 34 Analog Process Variable		100 only	R0
Input Registers	69	30069	Analog Input 35 Analog Process Variable		100 only	R0
Input Registers	71	30071	Analog Input 36 Analog Process Variable		100 only	R0
Input Registers	73	30073	Analog Input 37 Analog Process Variable		100 only	R0
Input Registers	75	30075	Analog Input 38 Analog Process Variable		100 only	R0
Input Registers	77	30077	Analog Input 39 Analog Process Variable		100 only	R0
Input Registers	79	30079	Analog Input 40 Analog Process Variable		100 only	R0
Input Registers	81	30081	Analog Input 41 Analog Process Variable		100 only	R0
Input Registers	83	30083	Analog Input 42 Analog Process Variable		100 only	R0
Input Registers	85	30085	Analog Input 43 Analog Process Variable		100 only	R0
Input Registers	87	30087	Analog Input 44 Analog Process Variable		100 only	R0
Input Registers	89	30089	Analog Input 45 Analog Process Variable		100 only	R0
Input Registers	91	30091	Analog Input 46 Analog Process Variable		100 only	R0
Input Registers	93	30093	Analog Input 47 Analog Process Variable		100 only	R0
Input Registers	95	30095	Analog Input 48 Analog Process Variable		100 only	R0
Input Registers	97	30097	Analog Input 49 Analog Process Variable		100 only	R0
Input Registers	99	30099	Analog Input 50 Analog Process Variable		100 only	R0
Input Registers	101	30101	Analog Input 51 Analog Process Variable		100 only	R0
Input Registers	103	30103	Analog Input 52 Analog Process Variable		100 only	R0
Input Registers	105	30105	Analog Input 53 Analog Process Variable		100 only	R0
Input Registers	107	30107	Analog Input 54 Analog Process Variable		100 only	R0
Input Registers	109	30109	Analog Input 55 Analog Process Variable		100 only	R0
Input Registers	111	30111	Analog Input 56 Analog Process Variable		100 only	R0
Input Registers	113	30113	Analog Input 57 Analog Process Variable		100 only	R0
Input Registers	115	30115	Analog Input 58 Analog Process Variable		100 only	R0
Input Registers	117	30117	Analog Input 59 Analog Process Variable		100 only	R0
Input Registers	119	30119	Analog Input 60 Analog Process Variable		100 only	R0
Input Registers	121	30121	Analog Input 61 Analog Process Variable		100 only	R0

Table 27 - Modbus Map

Modbus Type	ModbusBase Address	Coil/Register Number	Description	Value 1 Description	System	Access
Input Registers	123	30123	Analog Input 62 Analog Process Variable		100 only	R0
Input Registers	125	30125	Analog Input 63 Analog Process Variable		100 only	R0
Input Registers	127	30127	Analog Input 64 Analog Process Variable		100 only	R0
Input Registers	501	30501	Analog Output 1 Output Value			R0
Input Registers	503	30503	Analog Output 2 Output Value			R0
Input Registers	505	30505	Analog Output 3 Output Value			R0
Input Registers	507	30507	Analog Output 4 Output Value			R0
Input Registers	509	30509	Analog Output 5 Output Value			R0
Input Registers	511	30511	Analog Output 6 Output Value			R0
Input Registers	513	30513	Analog Output 7 Output Value			R0
Input Registers	515	30515	Analog Output 8 Output Value			R0
Input Registers	3011	33011	Analog Input 1 HART Information - Current			R0
Input Registers	3013	33013	Analog Input 1 HART Information - Primary Variable			R0
Input Registers	3015	33015	Analog Input 1 HART Information - Secondary Variable			R0
Input Registers	3017	33017	Analog Input 1 HART Information - Tertiary Variable			R0
Input Registers	3019	33019	Analog Input 1 HART Information - Quaternary Variable			R0
Input Registers	3021	33021	Analog Input 2 HART Information - Current			R0
Input Registers	3023	33023	Analog Input 2 HART Information - Primary Variable			R0
Input Registers	3025	33025	Analog Input 2 HART Information - Secondary Variable			R0
Input Registers	3027	33027	Analog Input 2 HART Information - Tertiary Variable			R0
Input Registers	3029	33029	Analog Input 2 HART Information - Quaternary Variable			R0
Input Registers	3031	33031	Analog Input 3 HART Information - Current			R0
Input Registers	3033	33033	Analog Input 3 HART Information - Primary Variable			R0
Input Registers	3035	33035	Analog Input 3 HART Information - Secondary Variable			R0
Input Registers	3037	33037	Analog Input 3 HART Information - Tertiary Variable			R0
Input Registers	3039	33039	Analog Input 3 HART Information - Quaternary Variable			R0
Input Registers	3041	33041	Analog Input 4 HART Information - Current			R0
Input Registers	3043	33043	Analog Input 4 HART Information - Primary Variable			R0
Input Registers	3045	33045	Analog Input 4 HART Information - Secondary Variable			R0
Input Registers	3047	33047	Analog Input 4 HART Information - Tertiary Variable			R0
Input Registers	3049	33049	Analog Input 4 HART Information - Quaternary Variable			R0
Input Registers	3051	33051	Analog Input 5 HART Information - Current			R0
Input Registers	3053	33053	Analog Input 5 HART Information - Primary Variable			R0
Input Registers	3055	33055	Analog Input 5 HART Information - Secondary Variable			R0
Input Registers	3057	33057	Analog Input 5 HART Information - Tertiary Variable			R0
Input Registers	3059	33059	Analog Input 5 HART Information - Quaternary Variable			R0
Input Registers	3061	33061	Analog Input 6 HART Information - Current			R0
Input Registers	3063	33063	Analog Input 6 HART Information - Primary Variable			R0
Input Registers	3065	33065	Analog Input 6 HART Information - Secondary Variable			R0
Input Registers	3067	33067	Analog Input 6 HART Information - Tertiary Variable			R0
Input Registers	3069	33069	Analog Input 6 HART Information - Quaternary Variable			R0
Input Registers	3071	33071	Analog Input 7 HART Information - Current			R0
Input Registers	3073	33073	Analog Input 7 HART Information - Primary Variable			R0
Input Registers	3075	33075	Analog Input 7 HART Information - Secondary Variable			R0
Input Registers	3077	33077	Analog Input 7 HART Information - Tertiary Variable			R0
Input Registers	3079	33079	Analog Input 7 HART Information - Quaternary Variable			R0
Input Registers	3081	33081	Analog Input 8 HART Information - Current			R0
Input Registers	3083	33083	Analog Input 8 HART Information - Primary Variable			R0
Input Registers	3085	33085	Analog Input 8 HART Information - Secondary Variable			R0
Input Registers	3087	33087	Analog Input 8 HART Information - Tertiary Variable			R0

Table 27 - Modbus Map

Modbus Type	ModbusBase Address	Coil/Register Number	Description	Value 1 Description	System	Access
Input Registers	3089	33089	Analog Input 8 HART Information - Quaternary Variable			R0
Input Registers	3091	33091	Analog Input 9 HART Information - Current			R0
Input Registers	3093	33093	Analog Input 9 HART Information - Primary Variable			R0
Input Registers	3095	33095	Analog Input 9 HART Information - Secondary Variable			R0
Input Registers	3097	33097	Analog Input 9 HART Information - Tertiary Variable			R0
Input Registers	3099	33099	Analog Input 9 HART Information - Quaternary Variable			R0
Input Registers	3101	33101	Analog Input 10 HART Information - Current			R0
Input Registers	3103	33103	Analog Input 10 HART Information - Primary Variable			R0
Input Registers	3105	33105	Analog Input 10 HART Information - Secondary Variable			R0
Input Registers	3107	33107	Analog Input 10 HART Information - Tertiary Variable			R0
Input Registers	3109	33109	Analog Input 10 HART Information - Quaternary Variable			R0
Input Registers	3111	33111	Analog Input 11 HART Information - Current			R0
Input Registers	3113	33113	Analog Input 11 HART Information - Primary Variable			R0
Input Registers	3115	33115	Analog Input 11 HART Information - Secondary Variable			R0
Input Registers	3117	33117	Analog Input 11 HART Information - Tertiary Variable			R0
Input Registers	3119	33119	Analog Input 11 HART Information - Quaternary Variable			R0
Input Registers	3121	33121	Analog Input 12 HART Information - Current			R0
Input Registers	3123	33123	Analog Input 12 HART Information - Primary Variable			R0
Input Registers	3125	33125	Analog Input 12 HART Information - Secondary Variable			R0
Input Registers	3127	33127	Analog Input 12 HART Information - Tertiary Variable			R0
Input Registers	3129	33129	Analog Input 12 HART Information - Quaternary Variable			R0
Input Registers	3131	33131	Analog Input 13 HART Information - Current			R0
Input Registers	3133	33133	Analog Input 13 HART Information - Primary Variable			R0
Input Registers	3135	33135	Analog Input 13 HART Information - Secondary Variable			R0
Input Registers	3137	33137	Analog Input 13 HART Information - Tertiary Variable			R0
Input Registers	3139	33139	Analog Input 13 HART Information - Quaternary Variable			R0
Input Registers	3141	33141	Analog Input 14 HART Information - Current			R0
Input Registers	3143	33143	Analog Input 14 HART Information - Primary Variable			R0
Input Registers	3145	33145	Analog Input 14 HART Information - Secondary Variable			R0
Input Registers	3147	33147	Analog Input 14 HART Information - Tertiary Variable			R0
Input Registers	3149	33149	Analog Input 14 HART Information - Quaternary Variable			R0
Input Registers	3151	33151	Analog Input 15 HART Information - Current			R0
Input Registers	3153	33153	Analog Input 15 HART Information - Primary Variable			R0
Input Registers	3155	33155	Analog Input 15 HART Information - Secondary Variable			R0
Input Registers	3157	33157	Analog Input 15 HART Information - Tertiary Variable			R0
Input Registers	3159	33159	Analog Input 15 HART Information - Quaternary Variable			R0
Input Registers	3161	33161	Analog Input 16 HART Information - Current			R0
Input Registers	3163	33163	Analog Input 16 HART Information - Primary Variable			R0
Input Registers	3165	33165	Analog Input 16 HART Information - Secondary Variable			R0
Input Registers	3167	33167	Analog Input 16 HART Information - Tertiary Variable			R0
Input Registers	3169	33169	Analog Input 16 HART Information - Quaternary Variable			R0
Input Registers	3171	33171	Analog Input 17 HART Information - Current			R0
Input Registers	3173	33173	Analog Input 17 HART Information - Primary Variable			R0
Input Registers	3175	33175	Analog Input 17 HART Information - Secondary Variable			R0
Input Registers	3177	33177	Analog Input 17 HART Information - Tertiary Variable			R0
Input Registers	3179	33179	Analog Input 17 HART Information - Quaternary Variable			R0
Input Registers	3181	33181	Analog Input 18 HART Information - Current			R0
Input Registers	3183	33183	Analog Input 18 HART Information - Primary Variable			R0
Input Registers	3185	33185	Analog Input 18 HART Information - Secondary Variable			R0
Input Registers	3187	33187	Analog Input 18 HART Information - Tertiary Variable			R0

Table 27 - Modbus Map

Modbus Type	ModbusBase Address	Coil/Register Number	Description	Value 1 Description	System	Access
Input Registers	3189	33189	Analog Input 18 HART Information - Quaternary Variable			R0
Input Registers	3191	33191	Analog Input 19 HART Information - Current			R0
Input Registers	3193	33193	Analog Input 19 HART Information - Primary Variable			R0
Input Registers	3195	33195	Analog Input 19 HART Information - Secondary Variable			R0
Input Registers	3197	33197	Analog Input 19 HART Information - Tertiary Variable			R0
Input Registers	3199	33199	Analog Input 19 HART Information - Quaternary Variable			R0
Input Registers	3201	33201	Analog Input 20 HART Information - Current			R0
Input Registers	3203	33203	Analog Input 20 HART Information - Primary Variable			R0
Input Registers	3205	33205	Analog Input 20 HART Information - Secondary Variable			R0
Input Registers	3207	33207	Analog Input 20 HART Information - Tertiary Variable			R0
Input Registers	3209	33209	Analog Input 20 HART Information - Quaternary Variable			R0
Input Registers	3211	33211	Analog Input 21 HART Information - Current			R0
Input Registers	3213	33213	Analog Input 21 HART Information - Primary Variable			R0
Input Registers	3215	33215	Analog Input 21 HART Information - Secondary Variable			R0
Input Registers	3217	33217	Analog Input 21 HART Information - Tertiary Variable			R0
Input Registers	3219	33219	Analog Input 21 HART Information - Quaternary Variable			R0
Input Registers	3221	33221	Analog Input 22 HART Information - Current			R0
Input Registers	3223	33223	Analog Input 22 HART Information - Primary Variable			R0
Input Registers	3225	33225	Analog Input 22 HART Information - Secondary Variable			R0
Input Registers	3227	33227	Analog Input 22 HART Information - Tertiary Variable			R0
Input Registers	3229	33229	Analog Input 22 HART Information - Quaternary Variable			R0
Input Registers	3231	33231	Analog Input 23 HART Information - Current			R0
Input Registers	3233	33233	Analog Input 23 HART Information - Primary Variable			R0
Input Registers	3235	33235	Analog Input 23 HART Information - Secondary Variable			R0
Input Registers	3237	33237	Analog Input 23 HART Information - Tertiary Variable			R0
Input Registers	3239	33239	Analog Input 23 HART Information - Quaternary Variable			R0
Input Registers	3241	33241	Analog Input 24 HART Information - Current			R0
Input Registers	3243	33243	Analog Input 24 HART Information - Primary Variable			R0
Input Registers	3245	33245	Analog Input 24 HART Information - Secondary Variable			R0
Input Registers	3247	33247	Analog Input 24 HART Information - Tertiary Variable			R0
Input Registers	3249	33249	Analog Input 24 HART Information - Quaternary Variable			R0
Input Registers	3251	33251	Analog Input 25 HART Information - Current			R0
Input Registers	3253	33253	Analog Input 25 HART Information - Primary Variable			R0
Input Registers	3255	33255	Analog Input 25 HART Information - Secondary Variable			R0
Input Registers	3257	33257	Analog Input 25 HART Information - Tertiary Variable			R0
Input Registers	3259	33259	Analog Input 25 HART Information - Quaternary Variable			R0
Input Registers	3261	33261	Analog Input 26 HART Information - Current			R0
Input Registers	3263	33263	Analog Input 26 HART Information - Primary Variable			R0
Input Registers	3265	33265	Analog Input 26 HART Information - Secondary Variable			R0
Input Registers	3267	33267	Analog Input 26 HART Information - Tertiary Variable			R0
Input Registers	3269	33269	Analog Input 26 HART Information - Quaternary Variable			R0
Input Registers	3271	33271	Analog Input 27 HART Information - Current			R0
Input Registers	3273	33273	Analog Input 27 HART Information - Primary Variable			R0
Input Registers	3275	33275	Analog Input 27 HART Information - Secondary Variable			R0
Input Registers	3277	33277	Analog Input 27 HART Information - Tertiary Variable			R0
Input Registers	3279	33279	Analog Input 27 HART Information - Quaternary Variable			R0
Input Registers	3281	33281	Analog Input 28 HART Information - Current			R0
Input Registers	3283	33283	Analog Input 28 HART Information - Primary Variable			R0
Input Registers	3285	33285	Analog Input 28 HART Information - Secondary Variable			R0
Input Registers	3287	33287	Analog Input 28 HART Information - Tertiary Variable			R0

Table 27 - Modbus Map

Modbus Type	ModbusBase Address	Coil/Register Number	Description	Value 1 Description	System	Access
Input Registers	3289	33289	Analog Input 28 HART Information - Quaternary Variable			R0
Input Registers	3291	33291	Analog Input 29 HART Information - Current			R0
Input Registers	3293	33293	Analog Input 29 HART Information - Primary Variable			R0
Input Registers	3295	33295	Analog Input 29 HART Information - Secondary Variable			R0
Input Registers	3297	33297	Analog Input 29 HART Information - Tertiary Variable			R0
Input Registers	3299	33299	Analog Input 29 HART Information - Quaternary Variable			R0
Input Registers	3301	33301	Analog Input 30 HART Information - Current			R0
Input Registers	3303	33303	Analog Input 30 HART Information - Primary Variable			R0
Input Registers	3305	33305	Analog Input 30 HART Information - Secondary Variable			R0
Input Registers	3307	33307	Analog Input 30 HART Information - Tertiary Variable			R0
Input Registers	3309	33309	Analog Input 30 HART Information - Quaternary Variable			R0
Input Registers	3311	33311	Analog Input 31 HART Information - Current			R0
Input Registers	3313	33313	Analog Input 31 HART Information - Primary Variable			R0
Input Registers	3315	33315	Analog Input 31 HART Information - Secondary Variable			R0
Input Registers	3317	33317	Analog Input 31 HART Information - Tertiary Variable			R0
Input Registers	3319	33319	Analog Input 31 HART Information - Quaternary Variable			R0
Input Registers	3321	33321	Analog Input 32 HART Information - Current			R0
Input Registers	3323	33323	Analog Input 32 HART Information - Primary Variable			R0
Input Registers	3325	33325	Analog Input 32 HART Information - Secondary Variable			R0
Input Registers	3327	33327	Analog Input 32 HART Information - Tertiary Variable			R0
Input Registers	3329	33329	Analog Input 32 HART Information - Quaternary Variable			R0
Input Registers	3331	33331	Analog Input 33 HART Information - Current		100 only	R0
Input Registers	3333	33333	Analog Input 33 HART Information - Primary Variable		100 only	R0
Input Registers	3335	33335	Analog Input 33 HART Information - Secondary Variable		100 only	R0
Input Registers	3337	33337	Analog Input 33 HART Information - Tertiary Variable		100 only	R0
Input Registers	3339	33339	Analog Input 33 HART Information - Quaternary Variable		100 only	R0
Input Registers	3341	33341	Analog Input 34 HART Information - Current		100 only	R0
Input Registers	3343	33343	Analog Input 34 HART Information - Primary Variable		100 only	R0
Input Registers	3345	33345	Analog Input 34 HART Information - Secondary Variable		100 only	R0
Input Registers	3347	33347	Analog Input 34 HART Information - Tertiary Variable		100 only	R0
Input Registers	3349	33349	Analog Input 34 HART Information - Quaternary Variable		100 only	R0
Input Registers	3351	33351	Analog Input 35 HART Information - Current		100 only	R0
Input Registers	3353	33353	Analog Input 35 HART Information - Primary Variable		100 only	R0
Input Registers	3355	33355	Analog Input 35 HART Information - Secondary Variable		100 only	R0
Input Registers	3357	33357	Analog Input 35 HART Information - Tertiary Variable		100 only	R0
Input Registers	3359	33359	Analog Input 35 HART Information - Quaternary Variable		100 only	R0
Input Registers	3361	33361	Analog Input 36 HART Information - Current		100 only	R0
Input Registers	3363	33363	Analog Input 36 HART Information - Primary Variable		100 only	R0
Input Registers	3365	33365	Analog Input 36 HART Information - Secondary Variable		100 only	R0
Input Registers	3367	33367	Analog Input 36 HART Information - Tertiary Variable		100 only	R0
Input Registers	3369	33369	Analog Input 36 HART Information - Quaternary Variable		100 only	R0
Input Registers	3371	33371	Analog Input 37 HART Information - Current		100 only	R0
Input Registers	3373	33373	Analog Input 37 HART Information - Primary Variable		100 only	R0
Input Registers	3375	33375	Analog Input 37 HART Information - Secondary Variable		100 only	R0
Input Registers	3377	33377	Analog Input 37 HART Information - Tertiary Variable		100 only	R0
Input Registers	3379	33379	Analog Input 37 HART Information - Quaternary Variable		100 only	R0
Input Registers	3381	33381	Analog Input 38 HART Information - Current		100 only	R0
Input Registers	3383	33383	Analog Input 38 HART Information - Primary Variable		100 only	R0
Input Registers	3385	33385	Analog Input 38 HART Information - Secondary Variable		100 only	R0
Input Registers	3387	33387	Analog Input 38 HART Information - Tertiary Variable		100 only	R0

Table 27 - Modbus Map

Modbus Type	ModbusBase Address	Coil/Register Number	Description	Value 1 Description	System	Access
Input Registers	3389	33389	Analog Input 38 HART Information - Quaternary Variable		100 only	RO
Input Registers	3391	33391	Analog Input 39 HART Information - Current		100 only	RO
Input Registers	3393	33393	Analog Input 39 HART Information - Primary Variable		100 only	RO
Input Registers	3395	33395	Analog Input 39 HART Information - Secondary Variable		100 only	RO
Input Registers	3397	33397	Analog Input 39 HART Information - Tertiary Variable		100 only	RO
Input Registers	3399	33399	Analog Input 39 HART Information - Quaternary Variable		100 only	RO
Input Registers	3401	33401	Analog Input 40 HART Information - Current		100 only	RO
Input Registers	3403	33403	Analog Input 40 HART Information - Primary Variable		100 only	RO
Input Registers	3405	33405	Analog Input 40 HART Information - Secondary Variable		100 only	RO
Input Registers	3407	33407	Analog Input 40 HART Information - Tertiary Variable		100 only	RO
Input Registers	3409	33409	Analog Input 40 HART Information - Quaternary Variable		100 only	RO
Input Registers	3411	33411	Analog Input 41 HART Information - Current		100 only	RO
Input Registers	3413	33413	Analog Input 41 HART Information - Primary Variable		100 only	RO
Input Registers	3415	33415	Analog Input 41 HART Information - Secondary Variable		100 only	RO
Input Registers	3417	33417	Analog Input 41 HART Information - Tertiary Variable		100 only	RO
Input Registers	3419	33419	Analog Input 41 HART Information - Quaternary Variable		100 only	RO
Input Registers	3421	33421	Analog Input 42 HART Information - Current		100 only	RO
Input Registers	3423	33423	Analog Input 42 HART Information - Primary Variable		100 only	RO
Input Registers	3425	33425	Analog Input 42 HART Information - Secondary Variable		100 only	RO
Input Registers	3427	33427	Analog Input 42 HART Information - Tertiary Variable		100 only	RO
Input Registers	3429	33429	Analog Input 42 HART Information - Quaternary Variable		100 only	RO
Input Registers	3431	33431	Analog Input 43 HART Information - Current		100 only	RO
Input Registers	3433	33433	Analog Input 43 HART Information - Primary Variable		100 only	RO
Input Registers	3435	33435	Analog Input 43 HART Information - Secondary Variable		100 only	RO
Input Registers	3437	33437	Analog Input 43 HART Information - Tertiary Variable		100 only	RO
Input Registers	3439	33439	Analog Input 43 HART Information - Quaternary Variable		100 only	RO
Input Registers	3441	33441	Analog Input 44 HART Information - Current		100 only	RO
Input Registers	3443	33443	Analog Input 44 HART Information - Primary Variable		100 only	RO
Input Registers	3445	33445	Analog Input 44 HART Information - Secondary Variable		100 only	RO
Input Registers	3447	33447	Analog Input 44 HART Information - Tertiary Variable		100 only	RO
Input Registers	3449	33449	Analog Input 44 HART Information - Quaternary Variable		100 only	RO
Input Registers	3451	33451	Analog Input 45 HART Information - Current		100 only	RO
Input Registers	3453	33453	Analog Input 45 HART Information - Primary Variable		100 only	RO
Input Registers	3455	33455	Analog Input 45 HART Information - Secondary Variable		100 only	RO
Input Registers	3457	33457	Analog Input 45 HART Information - Tertiary Variable		100 only	RO
Input Registers	3459	33459	Analog Input 45 HART Information - Quaternary Variable		100 only	RO
Input Registers	3461	33461	Analog Input 46 HART Information - Current		100 only	RO
Input Registers	3463	33463	Analog Input 46 HART Information - Primary Variable		100 only	RO
Input Registers	3465	33465	Analog Input 46 HART Information - Secondary Variable		100 only	RO
Input Registers	3467	33467	Analog Input 46 HART Information - Tertiary Variable		100 only	RO
Input Registers	3469	33469	Analog Input 46 HART Information - Quaternary Variable		100 only	RO
Input Registers	3471	33471	Analog Input 47 HART Information - Current		100 only	RO
Input Registers	3473	33473	Analog Input 47 HART Information - Primary Variable		100 only	RO
Input Registers	3475	33475	Analog Input 47 HART Information - Secondary Variable		100 only	RO
Input Registers	3477	33477	Analog Input 47 HART Information - Tertiary Variable		100 only	RO
Input Registers	3479	33479	Analog Input 47 HART Information - Quaternary Variable		100 only	RO
Input Registers	3481	33481	Analog Input 48 HART Information - Current		100 only	RO
Input Registers	3483	33483	Analog Input 48 HART Information - Primary Variable		100 only	RO
Input Registers	3485	33485	Analog Input 48 HART Information - Secondary Variable		100 only	RO
Input Registers	3487	33487	Analog Input 48 HART Information - Tertiary Variable		100 only	RO

Table 27 - Modbus Map

Modbus Type	ModbusBase Address	Coil/Register Number	Description	Value 1 Description	System	Access
Input Registers	3489	33489	Analog Input 48 HART Information - Quaternary Variable		100 only	RO
Input Registers	3491	33491	Analog Input 49 HART Information - Current		100 only	RO
Input Registers	3493	33493	Analog Input 49 HART Information - Primary Variable		100 only	RO
Input Registers	3495	33495	Analog Input 49 HART Information - Secondary Variable		100 only	RO
Input Registers	3497	33497	Analog Input 49 HART Information - Tertiary Variable		100 only	RO
Input Registers	3499	33499	Analog Input 49 HART Information - Quaternary Variable		100 only	RO
Input Registers	3501	33501	Analog Input 50 HART Information - Current		100 only	RO
Input Registers	3503	33503	Analog Input 50 HART Information - Primary Variable		100 only	RO
Input Registers	3505	33505	Analog Input 50 HART Information - Secondary Variable		100 only	RO
Input Registers	3507	33507	Analog Input 50 HART Information - Tertiary Variable		100 only	RO
Input Registers	3509	33509	Analog Input 50 HART Information - Quaternary Variable		100 only	RO
Input Registers	3511	33511	Analog Input 51 HART Information - Current		100 only	RO
Input Registers	3513	33513	Analog Input 51 HART Information - Primary Variable		100 only	RO
Input Registers	3515	33515	Analog Input 51 HART Information - Secondary Variable		100 only	RO
Input Registers	3517	33517	Analog Input 51 HART Information - Tertiary Variable		100 only	RO
Input Registers	3519	33519	Analog Input 51 HART Information - Quaternary Variable		100 only	RO
Input Registers	3521	33521	Analog Input 52 HART Information - Current		100 only	RO
Input Registers	3523	33523	Analog Input 52 HART Information - Primary Variable		100 only	RO
Input Registers	3525	33525	Analog Input 52 HART Information - Secondary Variable		100 only	RO
Input Registers	3527	33527	Analog Input 52 HART Information - Tertiary Variable		100 only	RO
Input Registers	3529	33529	Analog Input 52 HART Information - Quaternary Variable		100 only	RO
Input Registers	3531	33531	Analog Input 53 HART Information - Current		100 only	RO
Input Registers	3533	33533	Analog Input 53 HART Information - Primary Variable		100 only	RO
Input Registers	3535	33535	Analog Input 53 HART Information - Secondary Variable		100 only	RO
Input Registers	3537	33537	Analog Input 53 HART Information - Tertiary Variable		100 only	RO
Input Registers	3539	33539	Analog Input 53 HART Information - Quaternary Variable		100 only	RO
Input Registers	3541	33541	Analog Input 54 HART Information - Current		100 only	RO
Input Registers	3543	33543	Analog Input 54 HART Information - Primary Variable		100 only	RO
Input Registers	3545	33545	Analog Input 54 HART Information - Secondary Variable		100 only	RO
Input Registers	3547	33547	Analog Input 54 HART Information - Tertiary Variable		100 only	RO
Input Registers	3549	33549	Analog Input 54 HART Information - Quaternary Variable		100 only	RO
Input Registers	3551	33551	Analog Input 55 HART Information - Current		100 only	RO
Input Registers	3553	33553	Analog Input 55 HART Information - Primary Variable		100 only	RO
Input Registers	3555	33555	Analog Input 55 HART Information - Secondary Variable		100 only	RO
Input Registers	3557	33557	Analog Input 55 HART Information - Tertiary Variable		100 only	RO
Input Registers	3559	33559	Analog Input 55 HART Information - Quaternary Variable		100 only	RO
Input Registers	3561	33561	Analog Input 56 HART Information - Current		100 only	RO
Input Registers	3563	33563	Analog Input 56 HART Information - Primary Variable		100 only	RO
Input Registers	3565	33565	Analog Input 56 HART Information - Secondary Variable		100 only	RO
Input Registers	3567	33567	Analog Input 56 HART Information - Tertiary Variable		100 only	RO
Input Registers	3569	33569	Analog Input 56 HART Information - Quaternary Variable		100 only	RO
Input Registers	3571	33571	Analog Input 57 HART Information - Current		100 only	RO
Input Registers	3573	33573	Analog Input 57 HART Information - Primary Variable		100 only	RO
Input Registers	3575	33575	Analog Input 57 HART Information - Secondary Variable		100 only	RO
Input Registers	3577	33577	Analog Input 57 HART Information - Tertiary Variable		100 only	RO
Input Registers	3579	33579	Analog Input 57 HART Information - Quaternary Variable		100 only	RO
Input Registers	3581	33581	Analog Input 58 HART Information - Current		100 only	RO
Input Registers	3583	33583	Analog Input 58 HART Information - Primary Variable		100 only	RO
Input Registers	3585	33585	Analog Input 58 HART Information - Secondary Variable		100 only	RO
Input Registers	3587	33587	Analog Input 58 HART Information - Tertiary Variable		100 only	RO

Table 27 - Modbus Map

Modbus Type	ModbusBase Address	Coil/Register Number	Description	Value 1 Description	System	Access
Input Registers	3589	33589	Analog Input 58 HART Information - Quaternary Variable		100 only	RO
Input Registers	3591	33591	Analog Input 59 HART Information - Current		100 only	RO
Input Registers	3593	33593	Analog Input 59 HART Information - Primary Variable		100 only	RO
Input Registers	3595	33595	Analog Input 59 HART Information - Secondary Variable		100 only	RO
Input Registers	3597	33597	Analog Input 59 HART Information - Tertiary Variable		100 only	RO
Input Registers	3599	33599	Analog Input 59 HART Information - Quaternary Variable		100 only	RO
Input Registers	3601	33601	Analog Input 60 HART Information - Current		100 only	RO
Input Registers	3603	33603	Analog Input 60 HART Information - Primary Variable		100 only	RO
Input Registers	3605	33605	Analog Input 60 HART Information - Secondary Variable		100 only	RO
Input Registers	3607	33607	Analog Input 60 HART Information - Tertiary Variable		100 only	RO
Input Registers	3609	33609	Analog Input 60 HART Information - Quaternary Variable		100 only	RO
Input Registers	3611	33611	Analog Input 61 HART Information - Current		100 only	RO
Input Registers	3613	33613	Analog Input 61 HART Information - Primary Variable		100 only	RO
Input Registers	3615	33615	Analog Input 61 HART Information - Secondary Variable		100 only	RO
Input Registers	3617	33617	Analog Input 61 HART Information - Tertiary Variable		100 only	RO
Input Registers	3619	33619	Analog Input 61 HART Information - Quaternary Variable		100 only	RO
Input Registers	3621	33621	Analog Input 62 HART Information - Current		100 only	RO
Input Registers	3623	33623	Analog Input 62 HART Information - Primary Variable		100 only	RO
Input Registers	3625	33625	Analog Input 62 HART Information - Secondary Variable		100 only	RO
Input Registers	3627	33627	Analog Input 62 HART Information - Tertiary Variable		100 only	RO
Input Registers	3629	33629	Analog Input 62 HART Information - Quaternary Variable		100 only	RO
Input Registers	3631	33631	Analog Input 63 HART Information - Current		100 only	RO
Input Registers	3633	33633	Analog Input 63 HART Information - Primary Variable		100 only	RO
Input Registers	3635	33635	Analog Input 63 HART Information - Secondary Variable		100 only	RO
Input Registers	3637	33637	Analog Input 63 HART Information - Tertiary Variable		100 only	RO
Input Registers	3639	33639	Analog Input 63 HART Information - Quaternary Variable		100 only	RO
Input Registers	3641	33641	Analog Input 64 HART Information - Current		100 only	RO
Input Registers	3643	33643	Analog Input 64 HART Information - Primary Variable		100 only	RO
Input Registers	3645	33645	Analog Input 64 HART Information - Secondary Variable		100 only	RO
Input Registers	3647	33647	Analog Input 64 HART Information - Tertiary Variable		100 only	RO
Input Registers	3649	33649	Analog Input 64 HART Information - Quaternary Variable		100 only	RO
Input Registers	4011	34011	Analog Output 1 HART Information - Current			RO
Input Registers	4013	34013	Analog Output 1 HART Information - Primary Variable			RO
Input Registers	4015	34015	Analog Output 1 HART Information - Secondary Variable			RO
Input Registers	4017	34017	Analog Output 1 HART Information - Tertiary Variable			RO
Input Registers	4019	34019	Analog Output 1 HART Information - Quaternary Variable			RO
Input Registers	4021	34021	Analog Output 2 HART Information - Current			RO
Input Registers	4023	34023	Analog Output 2 HART Information - Primary Variable			RO
Input Registers	4025	34025	Analog Output 2 HART Information - Secondary Variable			RO
Input Registers	4027	34027	Analog Output 2 HART Information - Tertiary Variable			RO
Input Registers	4029	34029	Analog Output 2 HART Information - Quaternary Variable			RO
Input Registers	4031	34031	Analog Output 3 HART Information - Current			RO
Input Registers	4033	34033	Analog Output 3 HART Information - Primary Variable			RO
Input Registers	4035	34035	Analog Output 3 HART Information - Secondary Variable			RO
Input Registers	4037	34037	Analog Output 3 HART Information - Tertiary Variable			RO
Input Registers	4039	34039	Analog Output 3 HART Information - Quaternary Variable			RO
Input Registers	4041	34041	Analog Output 4 HART Information - Current			RO
Input Registers	4043	34043	Analog Output 4 HART Information - Primary Variable			RO
Input Registers	4045	34045	Analog Output 4 HART Information - Secondary Variable			RO
Input Registers	4047	34047	Analog Output 4 HART Information - Tertiary Variable			RO

Table 27 - Modbus Map

Modbus Type	ModbusBase Address	Coil/Register Number	Description	Value 1 Description	System	Access
Input Registers	4049	34049	Analog Output 4 HART Information - Quaternary Variable			R0
Input Registers	4051	34051	Analog Output 5 HART Information - Current			R0
Input Registers	4053	34053	Analog Output 5 HART Information - Primary Variable			R0
Input Registers	4055	34055	Analog Output 5 HART Information - Secondary Variable			R0
Input Registers	4057	34057	Analog Output 5 HART Information - Tertiary Variable			R0
Input Registers	4059	34059	Analog Output 5 HART Information - Quaternary Variable			R0
Input Registers	4061	34061	Analog Output 6 HART Information - Current			R0
Input Registers	4063	34063	Analog Output 6 HART Information - Primary Variable			R0
Input Registers	4065	34065	Analog Output 6 HART Information - Secondary Variable			R0
Input Registers	4067	34067	Analog Output 6 HART Information - Tertiary Variable			R0
Input Registers	4069	34069	Analog Output 6 HART Information - Quaternary Variable			R0
Input Registers	4071	34071	Analog Output 7 HART Information - Current			R0
Input Registers	4073	34073	Analog Output 7 HART Information - Primary Variable			R0
Input Registers	4075	34075	Analog Output 7 HART Information - Secondary Variable			R0
Input Registers	4077	34077	Analog Output 7 HART Information - Tertiary Variable			R0
Input Registers	4079	34079	Analog Output 7 HART Information - Quaternary Variable			R0
Input Registers	4081	34081	Analog Output 8 HART Information - Current			R0
Input Registers	4083	34083	Analog Output 8 HART Information - Primary Variable			R0
Input Registers	4085	34085	Analog Output 8 HART Information - Secondary Variable			R0
Input Registers	4087	34087	Analog Output 8 HART Information - Tertiary Variable			R0
Input Registers	4089	34089	Analog Output 8 HART Information - Quaternary Variable			R0
Input Registers	5011	35011	Analog Input 1 High High Alarm Limit			R0
Input Registers	5013	35013	Analog Input 1 High Alarm Limit			R0
Input Registers	5015	35015	Analog Input 1 Low Alarm Limit			R0
Input Registers	5017	35017	Analog Input 1 Low Low Alarm Limit			R0
Input Registers	5021	35021	Analog Input 2 High High Alarm Limit			R0
Input Registers	5023	35023	Analog Input 2 High Alarm Limit			R0
Input Registers	5025	35025	Analog Input 2 Low Alarm Limit			R0
Input Registers	5027	35027	Analog Input 2 Low Low Alarm Limit			R0
Input Registers	5031	35031	Analog Input 3 High High Alarm Limit			R0
Input Registers	5033	35033	Analog Input 3 High Alarm Limit			R0
Input Registers	5035	35035	Analog Input 3 Low Alarm Limit			R0
Input Registers	5037	35037	Analog Input 3 Low Low Alarm Limit			R0
Input Registers	5041	35041	Analog Input 4 High High Alarm Limit			R0
Input Registers	5043	35043	Analog Input 4 High Alarm Limit			R0
Input Registers	5045	35045	Analog Input 4 Low Alarm Limit			R0
Input Registers	5047	35047	Analog Input 4 Low Low Alarm Limit			R0
Input Registers	5051	35051	Analog Input 5 High High Alarm Limit			R0
Input Registers	5053	35053	Analog Input 5 High Alarm Limit			R0
Input Registers	5055	35055	Analog Input 5 Low Alarm Limit			R0
Input Registers	5057	35057	Analog Input 5 Low Low Alarm Limit			R0
Input Registers	5061	35061	Analog Input 6 High High Alarm Limit			R0
Input Registers	5063	35063	Analog Input 6 High Alarm Limit			R0
Input Registers	5065	35065	Analog Input 6 Low Alarm Limit			R0
Input Registers	5067	35067	Analog Input 6 Low Low Alarm Limit			R0
Input Registers	5071	35071	Analog Input 7 High High Alarm Limit			R0
Input Registers	5073	35073	Analog Input 7 High Alarm Limit			R0
Input Registers	5075	35075	Analog Input 7 Low Alarm Limit			R0
Input Registers	5077	35077	Analog Input 7 Low Low Alarm Limit			R0
Input Registers	5081	35081	Analog Input 8 High High Alarm Limit			R0

Table 27 - Modbus Map

Modbus Type	ModbusBase Address	Coil/Register Number	Description	Value 1 Description	System	Access
Input Registers	5083	35083	Analog Input 8 High Alarm Limit			R0
Input Registers	5085	35085	Analog Input 8 Low Alarm Limit			R0
Input Registers	5087	35087	Analog Input 8 Low Low Alarm Limit			R0
Input Registers	5091	35091	Analog Input 9 High High Alarm Limit			R0
Input Registers	5093	35093	Analog Input 9 High Alarm Limit			R0
Input Registers	5095	35095	Analog Input 9 Low Alarm Limit			R0
Input Registers	5097	35097	Analog Input 9 Low Low Alarm Limit			R0
Input Registers	5101	35101	Analog Input 10 High High Alarm Limit			R0
Input Registers	5103	35103	Analog Input 10 High Alarm Limit			R0
Input Registers	5105	35105	Analog Input 10 Low Alarm Limit			R0
Input Registers	5107	35107	Analog Input 10 Low Low Alarm Limit			R0
Input Registers	5111	35111	Analog Input 11 High High Alarm Limit			R0
Input Registers	5113	35113	Analog Input 11 High Alarm Limit			R0
Input Registers	5115	35115	Analog Input 11 Low Alarm Limit			R0
Input Registers	5117	35117	Analog Input 11 Low Low Alarm Limit			R0
Input Registers	5121	35121	Analog Input 12 High High Alarm Limit			R0
Input Registers	5123	35123	Analog Input 12 High Alarm Limit			R0
Input Registers	5125	35125	Analog Input 12 Low Alarm Limit			R0
Input Registers	5127	35127	Analog Input 12 Low Low Alarm Limit			R0
Input Registers	5131	35131	Analog Input 13 High High Alarm Limit			R0
Input Registers	5133	35133	Analog Input 13 High Alarm Limit			R0
Input Registers	5135	35135	Analog Input 13 Low Alarm Limit			R0
Input Registers	5137	35137	Analog Input 13 Low Low Alarm Limit			R0
Input Registers	5141	35141	Analog Input 14 High High Alarm Limit			R0
Input Registers	5143	35143	Analog Input 14 High Alarm Limit			R0
Input Registers	5145	35145	Analog Input 14 Low Alarm Limit			R0
Input Registers	5147	35147	Analog Input 14 Low Low Alarm Limit			R0
Input Registers	5151	35151	Analog Input 15 High High Alarm Limit			R0
Input Registers	5153	35153	Analog Input 15 High Alarm Limit			R0
Input Registers	5155	35155	Analog Input 15 Low Alarm Limit			R0
Input Registers	5157	35157	Analog Input 15 Low Low Alarm Limit			R0
Input Registers	5161	35161	Analog Input 16 High High Alarm Limit			R0
Input Registers	5163	35163	Analog Input 16 High Alarm Limit			R0
Input Registers	5165	35165	Analog Input 16 Low Alarm Limit			R0
Input Registers	5167	35167	Analog Input 16 Low Low Alarm Limit			R0
Input Registers	5171	35171	Analog Input 17 High High Alarm Limit			R0
Input Registers	5173	35173	Analog Input 17 High Alarm Limit			R0
Input Registers	5175	35175	Analog Input 17 Low Alarm Limit			R0
Input Registers	5177	35177	Analog Input 17 Low Low Alarm Limit			R0
Input Registers	5181	35181	Analog Input 18 High High Alarm Limit			R0
Input Registers	5183	35183	Analog Input 18 High Alarm Limit			R0
Input Registers	5185	35185	Analog Input 18 Low Alarm Limit			R0
Input Registers	5187	35187	Analog Input 18 Low Low Alarm Limit			R0
Input Registers	5191	35191	Analog Input 19 High High Alarm Limit			R0
Input Registers	5193	35193	Analog Input 19 High Alarm Limit			R0
Input Registers	5195	35195	Analog Input 19 Low Alarm Limit			R0
Input Registers	5197	35197	Analog Input 19 Low Low Alarm Limit			R0
Input Registers	5201	35201	Analog Input 20 High High Alarm Limit			R0
Input Registers	5203	35203	Analog Input 20 High Alarm Limit			R0
Input Registers	5205	35205	Analog Input 20 Low Alarm Limit			R0

Table 27 - Modbus Map

Modbus Type	ModbusBase Address	Coil/Register Number	Description	Value 1 Description	System	Access
Input Registers	5207	35207	Analog Input 20 Low Low Alarm Limit			R0
Input Registers	5211	35211	Analog Input 21 High High Alarm Limit			R0
Input Registers	5213	35213	Analog Input 21 High Alarm Limit			R0
Input Registers	5215	35215	Analog Input 21 Low Alarm Limit			R0
Input Registers	5217	35217	Analog Input 21 Low Low Alarm Limit			R0
Input Registers	5221	35221	Analog Input 22 High High Alarm Limit			R0
Input Registers	5223	35223	Analog Input 22 High Alarm Limit			R0
Input Registers	5225	35225	Analog Input 22 Low Alarm Limit			R0
Input Registers	5227	35227	Analog Input 22 Low Low Alarm Limit			R0
Input Registers	5231	35231	Analog Input 23 High High Alarm Limit			R0
Input Registers	5233	35233	Analog Input 23 High Alarm Limit			R0
Input Registers	5235	35235	Analog Input 23 Low Alarm Limit			R0
Input Registers	5237	35237	Analog Input 23 Low Low Alarm Limit			R0
Input Registers	5241	35241	Analog Input 24 High High Alarm Limit			R0
Input Registers	5243	35243	Analog Input 24 High Alarm Limit			R0
Input Registers	5245	35245	Analog Input 24 Low Alarm Limit			R0
Input Registers	5247	35247	Analog Input 24 Low Low Alarm Limit			R0
Input Registers	5251	35251	Analog Input 25 High High Alarm Limit			R0
Input Registers	5253	35253	Analog Input 25 High Alarm Limit			R0
Input Registers	5255	35255	Analog Input 25 Low Alarm Limit			R0
Input Registers	5257	35257	Analog Input 25 Low Low Alarm Limit			R0
Input Registers	5261	35261	Analog Input 26 High High Alarm Limit			R0
Input Registers	5263	35263	Analog Input 26 High Alarm Limit			R0
Input Registers	5265	35265	Analog Input 26 Low Alarm Limit			R0
Input Registers	5267	35267	Analog Input 26 Low Low Alarm Limit			R0
Input Registers	5271	35271	Analog Input 27 High High Alarm Limit			R0
Input Registers	5273	35273	Analog Input 27 High Alarm Limit			R0
Input Registers	5275	35275	Analog Input 27 Low Alarm Limit			R0
Input Registers	5277	35277	Analog Input 27 Low Low Alarm Limit			R0
Input Registers	5281	35281	Analog Input 28 High High Alarm Limit			R0
Input Registers	5283	35283	Analog Input 28 High Alarm Limit			R0
Input Registers	5285	35285	Analog Input 28 Low Alarm Limit			R0
Input Registers	5287	35287	Analog Input 28 Low Low Alarm Limit			R0
Input Registers	5291	35291	Analog Input 29 High High Alarm Limit			R0
Input Registers	5293	35293	Analog Input 29 High Alarm Limit			R0
Input Registers	5295	35295	Analog Input 29 Low Alarm Limit			R0
Input Registers	5297	35297	Analog Input 29 Low Low Alarm Limit			R0
Input Registers	5301	35301	Analog Input 30 High High Alarm Limit			R0
Input Registers	5303	35303	Analog Input 30 High Alarm Limit			R0
Input Registers	5305	35305	Analog Input 30 Low Alarm Limit			R0
Input Registers	5307	35307	Analog Input 30 Low Low Alarm Limit			R0
Input Registers	5311	35311	Analog Input 31 High High Alarm Limit			R0
Input Registers	5313	35313	Analog Input 31 High Alarm Limit			R0
Input Registers	5315	35315	Analog Input 31 Low Alarm Limit			R0
Input Registers	5317	35317	Analog Input 31 Low Low Alarm Limit			R0
Input Registers	5321	35321	Analog Input 32 High High Alarm Limit			R0
Input Registers	5323	35323	Analog Input 32 High Alarm Limit			R0
Input Registers	5325	35325	Analog Input 32 Low Alarm Limit			R0
Input Registers	5327	35327	Analog Input 32 Low Low Alarm Limit			R0
Input Registers	5331	35331	Analog Input 33 High High Alarm Limit		100 only	R0

Table 27 - Modbus Map

Modbus Type	ModbusBase Address	Coil/Register Number	Description	Value 1 Description	System	Access
Input Registers	5333	35333	Analog Input 33 High Alarm Limit		100 only	R0
Input Registers	5335	35335	Analog Input 33 Low Alarm Limit		100 only	R0
Input Registers	5337	35337	Analog Input 33 Low Low Alarm Limit		100 only	R0
Input Registers	5341	35341	Analog Input 34 High High Alarm Limit		100 only	R0
Input Registers	5343	35343	Analog Input 34 High Alarm Limit		100 only	R0
Input Registers	5345	35345	Analog Input 34 Low Alarm Limit		100 only	R0
Input Registers	5347	35347	Analog Input 34 Low Low Alarm Limit		100 only	R0
Input Registers	5351	35351	Analog Input 35 High High Alarm Limit		100 only	R0
Input Registers	5353	35353	Analog Input 35 High Alarm Limit		100 only	R0
Input Registers	5355	35355	Analog Input 35 Low Alarm Limit		100 only	R0
Input Registers	5357	35357	Analog Input 35 Low Low Alarm Limit		100 only	R0
Input Registers	5361	35361	Analog Input 36 High High Alarm Limit		100 only	R0
Input Registers	5363	35363	Analog Input 36 High Alarm Limit		100 only	R0
Input Registers	5365	35365	Analog Input 36 Low Alarm Limit		100 only	R0
Input Registers	5367	35367	Analog Input 36 Low Low Alarm Limit		100 only	R0
Input Registers	5371	35371	Analog Input 37 High High Alarm Limit		100 only	R0
Input Registers	5373	35373	Analog Input 37 High Alarm Limit		100 only	R0
Input Registers	5375	35375	Analog Input 37 Low Alarm Limit		100 only	R0
Input Registers	5377	35377	Analog Input 37 Low Low Alarm Limit		100 only	R0
Input Registers	5381	35381	Analog Input 38 High High Alarm Limit		100 only	R0
Input Registers	5383	35383	Analog Input 38 High Alarm Limit		100 only	R0
Input Registers	5385	35385	Analog Input 38 Low Alarm Limit		100 only	R0
Input Registers	5387	35387	Analog Input 38 Low Low Alarm Limit		100 only	R0
Input Registers	5391	35391	Analog Input 39 High High Alarm Limit		100 only	R0
Input Registers	5393	35393	Analog Input 39 High Alarm Limit		100 only	R0
Input Registers	5395	35395	Analog Input 39 Low Alarm Limit		100 only	R0
Input Registers	5397	35397	Analog Input 39 Low Low Alarm Limit		100 only	R0
Input Registers	5401	35401	Analog Input 40 High High Alarm Limit		100 only	R0
Input Registers	5403	35403	Analog Input 40 High Alarm Limit		100 only	R0
Input Registers	5405	35405	Analog Input 40 Low Alarm Limit		100 only	R0
Input Registers	5407	35407	Analog Input 40 Low Low Alarm Limit		100 only	R0
Input Registers	5411	35411	Analog Input 41 High High Alarm Limit		100 only	R0
Input Registers	5413	35413	Analog Input 41 High Alarm Limit		100 only	R0
Input Registers	5415	35415	Analog Input 41 Low Alarm Limit		100 only	R0
Input Registers	5417	35417	Analog Input 41 Low Low Alarm Limit		100 only	R0
Input Registers	5421	35421	Analog Input 42 High High Alarm Limit		100 only	R0
Input Registers	5423	35423	Analog Input 42 High Alarm Limit		100 only	R0
Input Registers	5425	35425	Analog Input 42 Low Alarm Limit		100 only	R0
Input Registers	5427	35427	Analog Input 42 Low Low Alarm Limit		100 only	R0
Input Registers	5431	35431	Analog Input 43 High High Alarm Limit		100 only	R0
Input Registers	5433	35433	Analog Input 43 High Alarm Limit		100 only	R0
Input Registers	5435	35435	Analog Input 43 Low Alarm Limit		100 only	R0
Input Registers	5437	35437	Analog Input 43 Low Low Alarm Limit		100 only	R0
Input Registers	5441	35441	Analog Input 44 High High Alarm Limit		100 only	R0
Input Registers	5443	35443	Analog Input 44 High Alarm Limit		100 only	R0
Input Registers	5445	35445	Analog Input 44 Low Alarm Limit		100 only	R0
Input Registers	5447	35447	Analog Input 44 Low Low Alarm Limit		100 only	R0
Input Registers	5451	35451	Analog Input 45 High High Alarm Limit		100 only	R0
Input Registers	5453	35453	Analog Input 45 High Alarm Limit		100 only	R0
Input Registers	5455	35455	Analog Input 45 Low Alarm Limit		100 only	R0

Table 27 - Modbus Map

Modbus Type	ModbusBase Address	Coil/Register Number	Description	Value 1 Description	System	Access
Input Registers	5457	35457	Analog Input 45 Low Low Alarm Limit		100 only	RO
Input Registers	5461	35461	Analog Input 46 High High Alarm Limit		100 only	RO
Input Registers	5463	35463	Analog Input 46 High Alarm Limit		100 only	RO
Input Registers	5465	35465	Analog Input 46 Low Alarm Limit		100 only	RO
Input Registers	5467	35467	Analog Input 46 Low Low Alarm Limit		100 only	RO
Input Registers	5471	35471	Analog Input 47 High High Alarm Limit		100 only	RO
Input Registers	5473	35473	Analog Input 47 High Alarm Limit		100 only	RO
Input Registers	5475	35475	Analog Input 47 Low Alarm Limit		100 only	RO
Input Registers	5477	35477	Analog Input 47 Low Low Alarm Limit		100 only	RO
Input Registers	5481	35481	Analog Input 48 High High Alarm Limit		100 only	RO
Input Registers	5483	35483	Analog Input 48 High Alarm Limit		100 only	RO
Input Registers	5485	35485	Analog Input 48 Low Alarm Limit		100 only	RO
Input Registers	5487	35487	Analog Input 48 Low Low Alarm Limit		100 only	RO
Input Registers	5491	35491	Analog Input 49 High High Alarm Limit		100 only	RO
Input Registers	5493	35493	Analog Input 49 High Alarm Limit		100 only	RO
Input Registers	5495	35495	Analog Input 49 Low Alarm Limit		100 only	RO
Input Registers	5497	35497	Analog Input 49 Low Low Alarm Limit		100 only	RO
Input Registers	5501	35501	Analog Input 50 High High Alarm Limit		100 only	RO
Input Registers	5503	35503	Analog Input 50 High Alarm Limit		100 only	RO
Input Registers	5505	35505	Analog Input 50 Low Alarm Limit		100 only	RO
Input Registers	5507	35507	Analog Input 50 Low Low Alarm Limit		100 only	RO
Input Registers	5511	35511	Analog Input 51 High High Alarm Limit		100 only	RO
Input Registers	5513	35513	Analog Input 51 High Alarm Limit		100 only	RO
Input Registers	5515	35515	Analog Input 51 Low Alarm Limit		100 only	RO
Input Registers	5517	35517	Analog Input 51 Low Low Alarm Limit		100 only	RO
Input Registers	5521	35521	Analog Input 52 High High Alarm Limit		100 only	RO
Input Registers	5523	35523	Analog Input 52 High Alarm Limit		100 only	RO
Input Registers	5525	35525	Analog Input 52 Low Alarm Limit		100 only	RO
Input Registers	5527	35527	Analog Input 52 Low Low Alarm Limit		100 only	RO
Input Registers	5531	35531	Analog Input 53 High High Alarm Limit		100 only	RO
Input Registers	5533	35533	Analog Input 53 High Alarm Limit		100 only	RO
Input Registers	5535	35535	Analog Input 53 Low Alarm Limit		100 only	RO
Input Registers	5537	35537	Analog Input 53 Low Low Alarm Limit		100 only	RO
Input Registers	5541	35541	Analog Input 54 High High Alarm Limit		100 only	RO
Input Registers	5543	35543	Analog Input 54 High Alarm Limit		100 only	RO
Input Registers	5545	35545	Analog Input 54 Low Alarm Limit		100 only	RO
Input Registers	5547	35547	Analog Input 54 Low Low Alarm Limit		100 only	RO
Input Registers	5551	35551	Analog Input 55 High High Alarm Limit		100 only	RO
Input Registers	5553	35553	Analog Input 55 High Alarm Limit		100 only	RO
Input Registers	5555	35555	Analog Input 55 Low Alarm Limit		100 only	RO
Input Registers	5557	35557	Analog Input 55 Low Low Alarm Limit		100 only	RO
Input Registers	5561	35561	Analog Input 56 High High Alarm Limit		100 only	RO
Input Registers	5563	35563	Analog Input 56 High Alarm Limit		100 only	RO
Input Registers	5565	35565	Analog Input 56 Low Alarm Limit		100 only	RO
Input Registers	5567	35567	Analog Input 56 Low Low Alarm Limit		100 only	RO
Input Registers	5571	35571	Analog Input 57 High High Alarm Limit		100 only	RO
Input Registers	5573	35573	Analog Input 57 High Alarm Limit		100 only	RO
Input Registers	5575	35575	Analog Input 57 Low Alarm Limit		100 only	RO
Input Registers	5577	35577	Analog Input 57 Low Low Alarm Limit		100 only	RO
Input Registers	5581	35581	Analog Input 58 High High Alarm Limit		100 only	RO

Table 27 - Modbus Map

Modbus Type	ModbusBase Address	Coil/Register Number	Description	Value 1 Description	System	Access
Input Registers	5583	35583	Analog Input 58 High Alarm Limit		100 only	RO
Input Registers	5585	35585	Analog Input 58 Low Alarm Limit		100 only	RO
Input Registers	5587	35587	Analog Input 58 Low Low Alarm Limit		100 only	RO
Input Registers	5591	35591	Analog Input 59 High High Alarm Limit		100 only	RO
Input Registers	5593	35593	Analog Input 59 High Alarm Limit		100 only	RO
Input Registers	5595	35595	Analog Input 59 Low Alarm Limit		100 only	RO
Input Registers	5597	35597	Analog Input 59 Low Low Alarm Limit		100 only	RO
Input Registers	5601	35601	Analog Input 60 High High Alarm Limit		100 only	RO
Input Registers	5603	35603	Analog Input 60 High Alarm Limit		100 only	RO
Input Registers	5605	35605	Analog Input 60 Low Alarm Limit		100 only	RO
Input Registers	5607	35607	Analog Input 60 Low Low Alarm Limit		100 only	RO
Input Registers	5611	35611	Analog Input 61 High High Alarm Limit		100 only	RO
Input Registers	5613	35613	Analog Input 61 High Alarm Limit		100 only	RO
Input Registers	5615	35615	Analog Input 61 Low Alarm Limit		100 only	RO
Input Registers	5617	35617	Analog Input 61 Low Low Alarm Limit		100 only	RO
Input Registers	5621	35621	Analog Input 62 High High Alarm Limit		100 only	RO
Input Registers	5623	35623	Analog Input 62 High Alarm Limit		100 only	RO
Input Registers	5625	35625	Analog Input 62 Low Alarm Limit		100 only	RO
Input Registers	5627	35627	Analog Input 62 Low Low Alarm Limit		100 only	RO
Input Registers	5631	35631	Analog Input 63 High High Alarm Limit		100 only	RO
Input Registers	5633	35633	Analog Input 63 High Alarm Limit		100 only	RO
Input Registers	5635	35635	Analog Input 63 Low Alarm Limit		100 only	RO
Input Registers	5637	35637	Analog Input 63 Low Low Alarm Limit		100 only	RO
Input Registers	5641	35641	Analog Input 64 High High Alarm Limit		100 only	RO
Input Registers	5643	35643	Analog Input 64 High Alarm Limit		100 only	RO
Input Registers	5645	35645	Analog Input 64 Low Alarm Limit		100 only	RO
Input Registers	5647	35647	Analog Input 64 Low Low Alarm Limit		100 only	RO
Input Registers	6001	36001	Rolling Counter value			RO
Holding Register	101	40101	Analog Output 1 Operator Set Substitute PV			RW
Holding Register	103	40103	Analog Output 2 Operator Set Substitute PV			RW
Holding Register	105	40105	Analog Output 3 Operator Set Substitute PV			RW
Holding Register	107	40107	Analog Output 4 Operator Set Substitute PV			RW
Holding Register	109	40109	Analog Output 5 Operator Set Substitute PV			RW
Holding Register	111	40111	Analog Output 6 Operator Set Substitute PV			RW
Holding Register	113	40113	Analog Output 7 Operator Set Substitute PV			RW
Holding Register	115	40115	Analog Output 8 Operator Set Substitute PV			RW
Holding Register	117	40117	Analog Input 1 Operator Set Substitute PV			RW
Holding Register	119	40119	Analog Input 2 Operator Set Substitute PV			RW
Holding Register	121	40121	Analog Input 3 Operator Set Substitute PV			RW
Holding Register	123	40123	Analog Input 4 Operator Set Substitute PV			RW
Holding Register	125	40125	Analog Input 5 Operator Set Substitute PV			RW
Holding Register	127	40127	Analog Input 6 Operator Set Substitute PV			RW
Holding Register	129	40129	Analog Input 7 Operator Set Substitute PV			RW
Holding Register	131	40131	Analog Input 8 Operator Set Substitute PV			RW
Holding Register	133	40133	Analog Input 9 Operator Set Substitute PV			RW
Holding Register	135	40135	Analog Input 10 Operator Set Substitute PV			RW
Holding Register	137	40137	Analog Input 11 Operator Set Substitute PV			RW
Holding Register	139	40139	Analog Input 12 Operator Set Substitute PV			RW
Holding Register	141	40141	Analog Input 13 Operator Set Substitute PV			RW
Holding Register	143	40143	Analog Input 14 Operator Set Substitute PV			RW

Table 27 - Modbus Map

Modbus Type	ModbusBase Address	Coil/Register Number	Description	Value 1 Description	System	Access
Holding Register	145	40145	Analog Input 15 Operator Set Substitute PV			RW
Holding Register	147	40147	Analog Input 16 Operator Set Substitute PV			RW
Holding Register	149	40149	Analog Input 17 Operator Set Substitute PV			RW
Holding Register	151	40151	Analog Input 18 Operator Set Substitute PV			RW
Holding Register	153	40153	Analog Input 19 Operator Set Substitute PV			RW
Holding Register	155	40155	Analog Input 20 Operator Set Substitute PV			RW
Holding Register	157	40157	Analog Input 21 Operator Set Substitute PV			RW
Holding Register	159	40159	Analog Input 22 Operator Set Substitute PV			RW
Holding Register	161	40161	Analog Input 23 Operator Set Substitute PV			RW
Holding Register	163	40163	Analog Input 24 Operator Set Substitute PV			RW
Holding Register	165	40165	Analog Input 25 Operator Set Substitute PV			RW
Holding Register	167	40167	Analog Input 26 Operator Set Substitute PV			RW
Holding Register	169	40169	Analog Input 27 Operator Set Substitute PV			RW
Holding Register	171	40171	Analog Input 28 Operator Set Substitute PV			RW
Holding Register	173	40173	Analog Input 29 Operator Set Substitute PV			RW
Holding Register	175	40175	Analog Input 30 Operator Set Substitute PV			RW
Holding Register	177	40177	Analog Input 31 Operator Set Substitute PV			RW
Holding Register	179	40179	Analog Input 32 Operator Set Substitute PV			RW
Holding Register	181	40181	Analog Input 33 Operator Set Substitute PV		100 only	RW
Holding Register	183	40183	Analog Input 34 Operator Set Substitute PV		100 only	RW
Holding Register	185	40185	Analog Input 35 Operator Set Substitute PV		100 only	RW
Holding Register	187	40187	Analog Input 36 Operator Set Substitute PV		100 only	RW
Holding Register	189	40189	Analog Input 37 Operator Set Substitute PV		100 only	RW
Holding Register	191	40191	Analog Input 38 Operator Set Substitute PV		100 only	RW
Holding Register	193	40193	Analog Input 39 Operator Set Substitute PV		100 only	RW
Holding Register	195	40195	Analog Input 40 Operator Set Substitute PV		100 only	RW
Holding Register	197	40197	Analog Input 41 Operator Set Substitute PV		100 only	RW
Holding Register	199	40199	Analog Input 42 Operator Set Substitute PV		100 only	RW
Holding Register	201	40201	Analog Input 43 Operator Set Substitute PV		100 only	RW
Holding Register	203	40203	Analog Input 44 Operator Set Substitute PV		100 only	RW
Holding Register	205	40205	Analog Input 45 Operator Set Substitute PV		100 only	RW
Holding Register	207	40207	Analog Input 46 Operator Set Substitute PV		100 only	RW
Holding Register	209	40209	Analog Input 47 Operator Set Substitute PV		100 only	RW
Holding Register	211	40211	Analog Input 48 Operator Set Substitute PV		100 only	RW
Holding Register	213	40213	Analog Input 49 Operator Set Substitute PV		100 only	RW
Holding Register	215	40215	Analog Input 50 Operator Set Substitute PV		100 only	RW
Holding Register	217	40217	Analog Input 51 Operator Set Substitute PV		100 only	RW
Holding Register	219	40219	Analog Input 52 Operator Set Substitute PV		100 only	RW
Holding Register	221	40221	Analog Input 53 Operator Set Substitute PV		100 only	RW
Holding Register	223	40223	Analog Input 54 Operator Set Substitute PV		100 only	RW
Holding Register	225	40225	Analog Input 55 Operator Set Substitute PV		100 only	RW
Holding Register	227	40227	Analog Input 56 Operator Set Substitute PV		100 only	RW
Holding Register	229	40229	Analog Input 57 Operator Set Substitute PV		100 only	RW
Holding Register	231	40231	Analog Input 58 Operator Set Substitute PV		100 only	RW
Holding Register	233	40233	Analog Input 59 Operator Set Substitute PV		100 only	RW
Holding Register	235	40235	Analog Input 60 Operator Set Substitute PV		100 only	RW
Holding Register	237	40237	Analog Input 61 Operator Set Substitute PV		100 only	RW
Holding Register	239	40239	Analog Input 62 Operator Set Substitute PV		100 only	RW
Holding Register	241	40241	Analog Input 63 Operator Set Substitute PV		100 only	RW
Holding Register	243	40243	Analog Input 64 Operator Set Substitute PV		100 only	RW

E

F

G

H

I

S

T

U

V

W

Rockwell Automation Support

Use the following resources to access support information.

Technical Support Center	Knowledgebase Articles, How-to Videos, FAQs, Chat, User Forums, and Product Notification Updates.	https://rockwellautomation.custhelp.com/
Local Technical Support Phone Numbers	Locate the phone number for your country.	http://www.rockwellautomation.com/global/support/get-support-now.page
Direct Dial Codes	Find the Direct Dial Code for your product. Use the code to route your call directly to a technical support engineer.	http://www.rockwellautomation.com/global/support/direct-dial.page
Literature Library	Installation Instructions, Manuals, Brochures, and Technical Data.	http://www.rockwellautomation.com/global/literature-library/overview.page
Product Compatibility and Download Center (PCDC)	Get help determining how products interact, check features and capabilities, and find associated firmware.	http://www.rockwellautomation.com/global/support/pcdc.page

Documentation Feedback

Your comments will help us serve your documentation needs better. If you have any suggestions on how to improve this document, complete the How Are We Doing? form at http://literature.rockwellautomation.com/idc/groups/literature/documents/du/ra-du002_-en-e.pdf.

Rockwell Otomasyon Ticaret A.Ş., Kar Plaza İş Merkezi E Blok Kat:6 34752 İçerenköy, İstanbul, Tel: +90 (216) 5698400

www.rockwellautomation.com

Power, Control and Information Solutions Headquarters

Americas: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444
Europe/Middle East/Africa: Rockwell Automation NV, Pegasus Park, De Kleetlaan 12a, 1831 Diegem, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640
Asia Pacific: Rockwell Automation, Level 14, Core F, Cyberport 3, 100 Cyberport Road, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846

Publication 1711-UM004C-EN-P - April 2018
Supersedes Publication 1711-UM004B-EN-P - September 2016