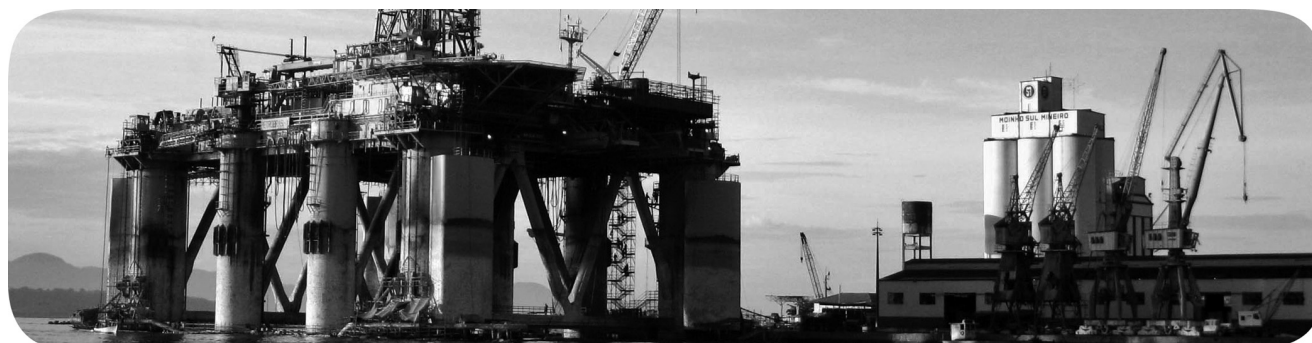


5000 Series Digital I/O Modules in Logix5000 Control Systems

Catalog Numbers 5069-IA16, 5069-IB16, 5069-IB16F, 5069-IB6F-3W, 5069-OA16, 5069-OB8, 5069-OB16, 5069-OB16F, 5069-OW4I, 5069-OW16, 5069-OX4I



Important User Information

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

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

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

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

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

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



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



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

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

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).

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This manual describes how to use 5000 series digital I/O modules in Logix5000™ control systems.

Make sure that you are familiar with the following:

- Use of a controller in a Logix5000 control system
- Use of an EtherNet/IP network, if the digital I/O modules are installed in a remote location from the controller that is accessible via the EtherNet/IP network
- Studio 5000 Logix Designer® environment

Summary of Changes

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

Topic	Page
Description of how to use 5069 Compact I/O™ modules as Local I/O Modules or Remote I/O Modules	12
Added description of new 5069 Compact I/O modules, that is, the 5069-IA16, 5069-OA16, 5069-OB8, and 5069-OW16	14
Indication which features the new 5069 Compact I/O digital input module supports	47
Indication of which features the new 5069 Compact I/O digital output modules support	59
Added description of configuration tasks for the new 5069 Compact I/O digital I/O modules	75
Added description of status indicators for the new 5069 Compact I/O digital I/O modules	113
Added descriptions of the module tags for the new 5069 Compact I/O digital I/O modules	127

Additional Resources

These resources contain information about related products from Rockwell Automation.

Table 1 - Additional Resources to Use with 5000 Series Digital I/O Modules

Resource	Description
5069 Compact I/O Digital 16-point Sinking Input Modules Installation Instructions, publication 5069-IN004	Describes how to install and wire the 5069-IB16 and 5069-IB16F digital input modules
5069 Compact I/O Digital 3-wire Sinking Input Module Installation Instructions, publication 5069-IN006	Describes how to install and wire the 5069-IB6F-3W digital input module
5069 Compact I/O Digital 16-point Sourcing Output Modules Installation Instructions, publication 5069-IN007	Describes how to install and wire the 5069-OB16 and 5069-OB16F digital output modules
5069 Compact I/O Digital 4-point Isolated Relay Output Module Installation Instructions, publication 5069-IN008	Describes how to install and wire the 5069-OW4I digital output module
5069 Compact I/O Digital 4-point Isolated Normally-open/Normally-closed Relay Output Module Installation Instructions, publication 5069-IN009	Describes how to install and wire the 5069-OX4I digital output module
5069 Compact I/O Analog 8-channel Current/Vole Input Module Installation Instructions, publication 5069-IN010	Describes how to install and wire the 5069-IF8 analog input module
5069 Compact I/O Analog 4-channel Current/Vole/RTD/Thermocouple Input Module Installation Instructions, publication 5069-IN011	Describes how to install and wire the 5069-IY4 analog input module
5069 Compact I/O Analog Current/Vole Output Modules Installation Instructions, publication 5069-IN012	Describes how to install and wire the 5069-OF4, 5069-OF8 analog output modules
5069 Compact I/O Digital 16-point 120/240V AC Input Module Installation Instructions, publication 5069-IN015	Describes how to install and wire the 5069-IA16 digital input module
5069 Compact I/O Digital 16-point 120/240V AC Output Module Installation Instructions, publication 5069-IN016	Describes how to install and wire the 5069-OA16 digital output module
5069 Compact I/O Digital 8-point 24V DC Output Module Installation Instructions, publication 5069-IN017	Describes how to install and wire the 5069-OB8 digital output module
5069 Compact I/O Digital 16-point Relay Output Module Installation Instructions, publication 5069-IN018	Describes how to install and wire the 5069-OW16 digital output module
5069 Compact I/O Field Potential Distributor Installation Instructions, publication 5069-IN001	Describes how to install and wire the 5069-FPD field potential distributor
5069 Compact I/O Address Reserve Module Installation Instructions, publication 5069-IN002	Describes how to install the 5069-ARM address reserve module
5069 Compact I/O EtherNet/IP Adapter Installation Instructions, publication 5069-IN003	Describes how to install and wire the 5069 Compact I/O EtherNet/IP adapters.
5069 Compact I/O Modules Specifications Technical Data, publication 5069-TD001	Provides specifications, wiring diagrams and module block diagrams 5069 Compact I/O modules
CompactLogix 5380 Controllers User Manual, publication 5069-UM001	Describes how to configure, operate, and troubleshoot CompactLogix 5380 controllers.
5000 Series Analog I/O Modules in Logix5000 Control Systems User Manual, publication 5000-UM005	Describes how to configure, operate, and troubleshoot 5000 Series analog I/O modules.
5000 Series High-speed Counter Modules in Logix5000 Control Systems User Manual, publication 5000-UM006	Describes how to configure, operate, and troubleshoot 5000 Series high-speed counter modules.
EtherNet/IP Communication Modules in 5000 Series Control Systems User Manual, publication ENET-UM004	Describes how to configure, operate, and troubleshoot the 5069 Compact I/O EtherNet/IP adapters.

Table 1 - Additional Resources to Use with 5000 Series Digital I/O Modules

Integrated Architecture and CIP Sync Configuration Application Technique, publication IA-AT003	Provides information about CIP Sync technology and how to synchronize clocks within the Rockwell Automation® Integrated Architecture® system.
Electronic Keying in Logix5000 Control Systems Application Technique, publication LOGIX-AT001	Describes how to use electronic keying in Logix5000 control system applications.
Logix5000 Controllers Tasks, Programs, and Routines Programming Manual, publication 1756-PM005	Provides more information on event tasks and event task configuration.
Position-based Output Control with the MAOC Instruction, publication 1756-AT017	Describes how to configure time-scheduled output control with the MAOC instruction.
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/rockwellautomation/certification/overview.page	Provides declarations of conformity, certificates, and other certification details.

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

Notes:

Digital I/O Module Operation in a Logix5000 Control System

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IMPORTANT You cannot use 5069 Compact I/O™ modules with all Logix5000™ controllers. For example, you can use 5069 Compact I/O modules with CompactLogix™ 5380 controllers but not CompactLogix 5370 controllers. The way that you use 5069 Compact I/O modules dictates the Logix5000 controllers with which you can use the I/O modules. Consider these examples:

- You can use 5069 Compact I/O modules with CompactLogix 5380 controllers as local or remote I/O modules.
- You can use 5069 Compact I/O modules with ControlLogix 5580 controllers only as remote I/O modules and not as local I/O modules.

Throughout this publication, the term **Logix5000 controller refers** to the controllers with which you can use 5069 Compact I/O modules in a given capacity. The term does not refer to all Logix5000 controllers.

For the most current information on the Logix5000 controllers with which you can use 5069 Compact I/O modules, see the product description at <http://www.ab.com>.

Logix5000 controllers use 5069 Compact I/O digital I/O modules to control devices in a control system.

5069 Compact I/O digital I/O modules use removable terminal blocks (RTBs) to connect field-side wiring. You use the Studio 5000 Logix Designer® application, version 28 or later, to configure the modules.

5069 Compact I/O digital I/O modules use the Producer/Consumer network communication model. This communication is an intelligent data exchange between modules and other system devices in which each module produces data without first being polled.

Local I/O Modules or Remote I/O Modules

You can use 5069 Compact I/O digital I/O modules as follows:

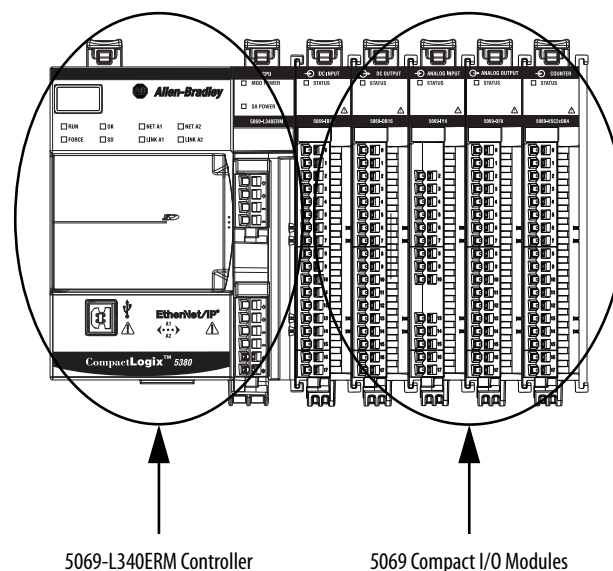
- Local I/O modules
- Remote I/O modules that are accessible over an EtherNet/IP network

Local I/O Modules

You can use 5069 Compact I/O digital I/O modules as local I/O modules in some Logix5000 controller systems.

The modules are installed to the right of the controller and exchange data with the controller over the system backplane. The modules execute logic based on their configuration and application conditions.

Figure 1 - 5069 Compact I/O Modules as Local I/O Modules



Remote I/O Modules

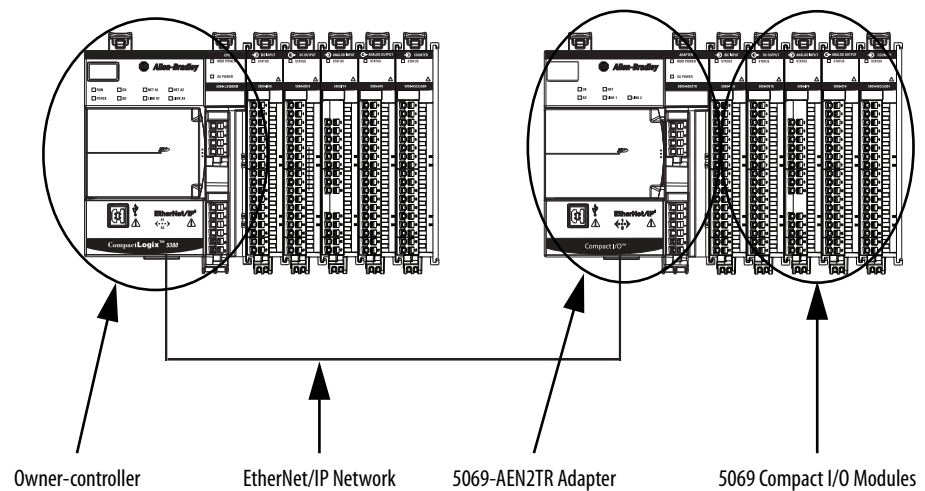
You can use 5069 Compact I/O digital I/O modules as remote I/O modules that are accessible via an EtherNet/IP network. The modules are installed to the right of a 5069 Compact I/O EtherNet/IP adapter.

Logix5000 controllers can exchange data with the modules over the network.

IMPORTANT You cannot use 5069 Compact I/O modules as remote I/O modules with all Logix5000 controllers. For example, you can use the 5069 Compact I/O modules with CompactLogix 5380 controllers but not with CompactLogix 5370 controllers.

For more information on which Logix5000 controllers that you can use with 5069 Compact I/O modules, see the product description at <http://www.ab.com>.

Figure 2 - 5069 Compact I/O Modules in a Logix5000 Control System



Before You Begin

Before you use your digital I/O module, you must complete tasks based on the way that you use the modules:

- Local I/O modules - Complete the following:
 - a. Install a Logix5000 controller that can use 5069 Compact I/O modules as local I/O modules.
 - b. Install the 5069 Compact I/O modules to the right of the controller.

- Remote I/O modules - Complete the following:
 - a. Install a 5069 Compact I/O EtherNet/IP adapter.
 - b. Install the 5069 Compact I/O modules to the right of the adapter.
 - c. Install an EtherNet/IP network.
 - d. Install the Logix5000 controller that accesses the 5069 Compact I/O modules via an EtherNet/IP network.

- Make sure that you have enough 5069 removable terminal blocks (RTBs) to satisfy your application needs.

IMPORTANT RTBs are not included with your module. You must purchase RTBs separately.

Types of Digital I/O Modules

[Table 2](#) describes the types of 5069 Compact I/O digital I/O modules.

Table 2 - 5069 Compact I/O Digital I/O Modules

Cat. No.	Description
5069-IA16	79...264V AC 16-point, input module
5069-IB16	10...32V DC 16-point, sink input module
5069-IB16F	10...32V DC 16-point, sink fast input module
5069-IB6F-3W	10...32V DC 6-point, 3-wire, sink fast input module
5069-OA16	85...264V AC 16-point, output module
5069-OB8	10...32V DC 8-point, sourcing high-current output module
5069-OB16	10...32V DC 16-point, sourcing output module
5069-OB16F	10...32V DC 16-point, sourcing fast output module
5069-OW4I	5...264V AC /125V DC 4-point, isolated normally open relay output module
5069-OW16	5...264V AC /125V DC 16-point, normally open relay output module
5069-OX4I	5...264V AC /125V DC 4-point, isolated normally open/normally closed relay output module

Module Overview

Figure 3 shows the parts of an example 5069 Compact I/O digital I/O module.

Figure 3 - Example 5069 Compact I/O Digital I/O Module

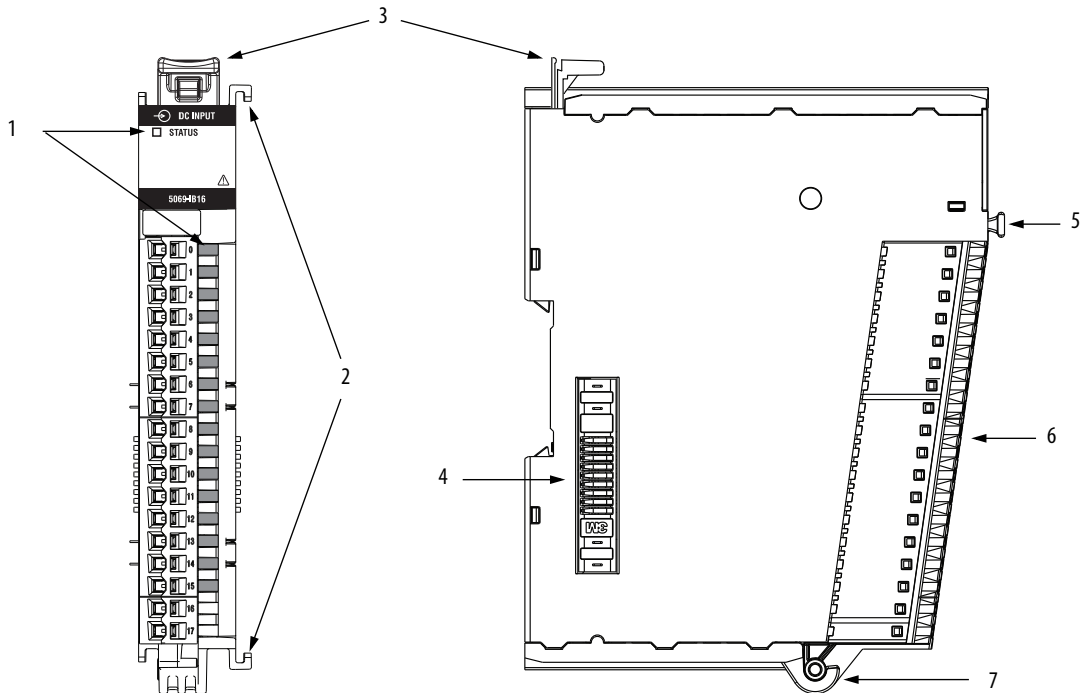


Table 3 - 5069 Compact I/O Digital I/O Module Parts

Item	Description
1	Status indicators - Displays the status of communication, module health, and input/output devices. Indicators help with troubleshooting anomalies.
2	Interlocking side pieces - Securely installs 5069 Compact I/O modules in the system.
3	DIN rail latch - Secures the module on the DIN rail.
4	MOD Power bus and SA Power bus connectors - Pass system-side and field-side power across the internal circuitry of the I/O modules in a 5069 Compact I/O system. The connectors are isolated from each other.
5	RTB handle - Anchors the RTB on the module.
6	RTB - Provides a wiring interface for the module.
7	RTB lower tab - Hooks RTB onto the module to begin installation.

Power 5069 Compact I/O Modules

5069 Compact I/O digital I/O modules receive the following power types:

- System-side power that powers the system and lets modules transfer data and execute logic. System-side power is also known as MOD power.
- Field-side power that powers field-side devices that are connected to some 5069 Compact I/O modules. Field-side power is also known as SA power.

Power begins at the left-most device in the system and passes across the 5069 Compact I/O module internal circuitry via power buses, that is, a MOD power bus and an SA power bus.

- When 5069 Compact I/O digital I/O modules are used as local I/O modules, power begins at the CompactLogix 5380 controller.

For more information on how to power local 5069 Compact I/O modules, see the CompactLogix 5380 Controllers Installation Instructions, publication [5069-UM001](#).

- When 5069 Compact I/O digital I/O modules are used as remote I/O modules, power begins at the 5069 Compact I/O EtherNet/IP adapter.

For more information on how to power remote 5069 Compact I/O digital I/O modules, see the EtherNet/IP Communication Modules in 5000 Series Systems User Manual, publication [ENET-UM004](#).

Multiple SA Power Buses in System

You can install a 5069-FPD field potential distributor to break field-side power distribution. When you install a field potential distributor, an SA power bus starts at the CompactLogix 5380 controller or 5069 Compact I/O EtherNet/IP adapter and continues to the field potential distributor.

The field potential distributor establishes a new SA power bus that passes across the 5069 Compact I/O modules to the right of the field potential distributor. The SA power buses in the system are isolated from each other.

-
- IMPORTANT** If you install modules in a 5069 Compact I/O system that use AC SA power and DC SA power, you must install them on separate SA Power buses. To keep the modules on separate SA Power buses, complete the following steps.
1. Install the modules that use one type of SA power, for example AC, to the right of the adapter or controller, that is, the first SA Power bus.
 2. Install the 5069-FPD field potential distributor to establish a second SA Power bus.
 3. Install the modules that use the other type of SA power, for example DC, on the second SA Power bus.
-

For more information on how to use a 5069-FPD field potential distributor, see [page 30](#).

Ownership

Every I/O module in a Logix5000 control system must be owned by a controller, also known as the owner-controller. When the 5069 Compact I/O digital I/O modules are used in a Logix5000 control system, the owner-controller performs the following:

- Stores configuration data for every module that it owns.
- Can reside in a location that differs from the 5069 Compact I/O system.
- Sends the I/O module configuration data to define module behavior and begin operation in the control system.

Each 5069 Compact digital I/O module must continuously maintain communication with its owner-controller during normal operation.

Typically, each I/O module in a 5069 Compact I/O system has only one owner-controller. Output modules are limited to one owner-controller.

Multiple Owners of 5069 Compact I/O Input Modules

While typically only one owner-controller is connected to a 5069 Compact I/O digital input module, multiple Logix5000 controller can own 5069 Compact I/O digital input modules as owner-controllers. In this case, the following conditions must exist:

- The controllers maintain the same configuration.
- The configuration in each controller uses a Data connection to the input module.
- The first controller to make a connection to the input module is the only controller that can change the connection. Therefore, it is 'owns' the module configuration.

IMPORTANT If the controller that owns the module configuration changes the configuration, the other controllers lose their connection until they have the updated configuration.

- The controllers that do maintain, but do not 'own', the module configuration are similar to Listen-only controllers. The difference between the controllers is that the controllers that maintain, but do not own, the module configuration can use a Multicast or Unicast connection over the EtherNet/IP network.

For more information on Listen-only controllers, see [Listen Only Mode on page 28](#).

Configure 5069 Compact I/O Digital I/O Modules

You must create a Logix Designer application project for the Logix5000 controller that owns the 5069 Compact I/O digital I/O modules. The project includes module configuration data for the 5069 Compact I/O digital I/O modules.

The Logix Designer application transfers the project to the owner-controller during the program download. Data is then transferred to the 5069 Compact I/O digital I/O modules over the EtherNet/IP network.

The 5069 Compact I/O digital I/O modules can operate immediately after receiving the configuration data.

Connections

During module configuration, you must define the module. Among the Module Definition parameters, you must choose a connection type for the module. A connection is a real-time data transfer link between the owner-controller and the module that occupies the slot that the configuration references.

When you download module configuration to a controller, the controller attempts to establish a connection to each module in the configuration.

Because part of module configuration includes a slot in the 5069 Compact I/O system, the owner-controller checks for the presence of a module there. If a module is detected, the owner-controller sends the configuration. One of the following occurs:

- If the configuration is appropriate to the module detected, a connection is made and operation begins.
- If the configuration is not appropriate to the module detected, the data is rejected and the Logix Designer application indicates that an error occurred.

The configuration can be inappropriate for many reasons. For example, a mismatch in electronic keying that helps prevents normal operation.

The owner-controller monitors its connection with a module. Any break in the connection, for example, the loss of power to the 5069 Compact I/O system, causes a fault. The Logix Designer application monitors the fault status tags to indicate when a fault occurs on a module.

Connection Types Available with 5069 Compact I/O Digital I/O Modules

When configuring a 5069 Compact I/O digital I/O module, you must define the module. Connection is a required parameter in the Module Definition. The choice determines what data is exchanged between the owner-controller and the module.

[Table 4](#) describes the connection types that you can use with 5069 Compact I/O digital I/O modules.

Table 4 - Connections - 5069 Compact I/O Digital I/O Modules

Connection Type	Description	
	5069 Compact I/O Digital Input Modules	5069 Compact I/O Digital Output Modules
Data	The module returns the following to the owner-controller: <ul style="list-style-type: none"> General fault data Input data 	The module returns the following to the owner-controller: <ul style="list-style-type: none"> General fault data Output data
Data with Events ⁽¹⁾	The module returns the following to the owner-controller: <ul style="list-style-type: none"> Event fault data Event input data Event output data 	N/A
Listen Only Data	A controller cannot make a Listen Only data with a local I/O module. When a Listen Only data connection is used, another controller owns the module. A controller that makes a Listen Only Data connection to the module does not write configuration for the module. It merely listens to the data exchanged with the owner-controller. <p>IMPORTANT: If a controller uses a Listen Only connection, the connection must use the Multicast option.</p> For more information on Listen Only connections, see Listen Only Mode on page 28 . In this case, all other connections to the module, for example, the connection to the owner-controller must also use the Multicast option.	

(1) Data with events is available on only the 5069-IB16F and 5069-IB6F-3W digital input modules.

Data Types Available with 5069 Compact I/O Digital I/O Modules

The Module Definition includes a Data parameter that matches the module type. Digital input modules use Input Data, and digital output modules use Output Data.

The module type and Connection choice determine the available Input Data or Output Data choices. For example, you can configure a 5069-IB16F digital input module to use the Connection choice Data with Events. The resulting Input Data choices are Data with Events include Data, Packed Data, or Timestamped Data.

The 5069-IB16 digital input module does not support the Connection choice Data with Events, however. As a result, the Input Data choice Timestamped Data is not available.

For more information on the Connection and Data parameter choices available with 5069 Compact I/O modules, see the Logix Designer application.

Requested Packet Interval

The Requested Packet Interval (RPI) is a configurable parameter that defines a specific rate at which data is exchanged between the owner-controller and the module.

You set the RPI value during initial module configuration and can adjust it as necessary after module operation has begun. Valid RPI values are 0.2...750 ms.

-
- IMPORTANT** If you change the RPI while the project is online, the connection to the module is closed and reopened in one of the following ways:
- You inhibit the connection to the module, change the RPI value, and uninhibit the connection.
 - You change the RPI value. In this case, the connection is closed and reopened immediately after you apply the change to the module configuration.
-

For more information on guidelines for specifying RPI rates, see the Logix5000 Controllers Design Considerations Reference Manual, publication [1756-RM094](#).

Connection Over an EtherNet/IP Network

During module configuration, you must configure the Connection over EtherNet/IP parameter. The configuration choice dictates how input data is broadcast over the network.

The 5069 Compact I/O digital I/O modules use one of the following methods to broadcast data:

- Multicast - Data is sent to all network devices
- Unicast - Data is sent to a specific controller depending on the module configuration

Unicast is the default setting. We recommend that you use Unicast because it reduces network bandwidth usage.

Input Module Operation

Logix5000 controllers do not poll the 5069 Compact I/O digital input modules for input data. Instead, the input modules send data at the RPI.

The data exchange process between a 5069 Compact I/O digital input modules and a controller differs based on whether the module is a local I/O module or remote I/O module.

Local 5069 Compact I/O Digital Input Modules

Local 5069 Compact I/O digital input modules reside in a Logix5000 control system. The input modules broadcast their input data, that is, channel and status data, to the system backplane at the time that is defined in the RPI.

At the RPI, the following events occur.

1. The local digital input module scans its channels for input data.
2. The module sends the data to the system CompactBus.
3. The controller receives the data immediately.

Trigger Events

Some 5069 Compact I/O digital input modules can trigger an event. For example, the modules can trigger the Event task. The event task lets you execute a section of logic immediately when an event, or receipt of new data, occurs.

The following can trigger events:

- An input state change.
- A counting input done bit change.
- A pattern of input state changes on multiple module inputs.

For more information on how to use a 5069 Compact I/O digital input module to trigger an event, see [Events on page 52](#).

Remote 5069 Compact I/O Digital Input Modules

Remote 5069 Compact I/O digital input modules reside in a 5069 Compact I/O system that is accessible to a Logix5000 controller over an EtherNet/IP network. A 5069 Compact I/O EtherNet/IP adapter is the first component in a 5069 Compact I/O system and connects the system to the EtherNet/IP network.

Remote 5069 Compact I/O digital input modules broadcast their input data to the 5069 Compact I/O system CompactBus at the time that is defined in the RPI. The input data consists of channel and status data.

At the RPI, the following events occur.

1. The remote digital input module scans its channels for input data.
2. The module sends the data to the 5069 Compact I/O system CompactBus.
3. The 5069 EtherNet/IP adapter in the 5069 Compact I/O system sends the data over the EtherNet/IP network.
4. One of the following:
 - If the controller is directly connected to the EtherNet/IP network, it receives the input data immediately.
 - If the controller is connected to the EtherNet/IP network through another communication module, the module sends the data to its backplane and the controller receives it.

Output Module Operation

The controller sends data to an output module at the RPI or after an Immediate Output (IOT) instruction is executed.

The RPI defines when the controller sends data to the 5069 Compact I/O digital output module and when the output module echoes data. The controller sends data to an output module only at the RPI.

At the RPI, not only does the controller send data to the output module, but also the output module sends data to the controller. For example, the output module sends an indication of the channel data quality.

The data exchange process between a 5069 Compact I/O digital output modules and a controller differs based on whether the module is a local I/O module or remote I/O module.

Local 5069 Compact I/O Digital Output Modules

Local 5069 Compact I/O digital output modules reside in a Logix5000 control system. The output modules receive output data from a controller. The output modules also send data to the controller. The data exchange occurs over the system CompactBus.

Controller to Local Digital Output Module Data Transmission

The controller broadcasts data to its local CompactBus at one of the following:

- RPI
- An IOT instruction is executed.

IMPORTANT An IOT instruction sends data to the output module immediately, and resets the RPI timer.

Based on the RPI rate and the length of the controller program scan, the output module can receive and echo data multiple times during one program scan.

When the RPI is less than the program scan length, the output channels can change values multiple times during a program scan. The owner-controller does not depend on the program scan to complete to send data.

These events occur when the controller sends data to a 5069 Compact I/O digital output module.

1. The controller sends data to system CompactBus at the RPI or when an IOT instruction is executed.
2. The local digital output module receives the data from the system CompactBus and behaves as dictated by its configuration.

Local Digital Output Module to Controller Data Transmission

When a local 5069 Compact I/O digital output module receives new data and the requested data value is present on the RTB, the output module sends, or 'echoes', a data value back to the controller and to the rest of the control system. The data value corresponds to the signal present at its terminals. This feature is called [Data Echo](#).

In addition to the Data Echo, the output module sends other data to the controller at the RPI. For example, the module alerts the controller if a short circuit condition exists on the module.

The following events occur when a local 5069 Compact I/O digital output module sends data to the controller at the RPI.

1. The module sends the data to the system CompactBus.
2. The controller receives the data immediately.

Remote 5069 Compact I/O Digital Output Modules

Remote 5069 Compact I/O digital output modules reside in a 5069 Compact I/O system that is accessible to a Logix5000 controller over an EtherNet/IP network. A 5069 Compact I/O EtherNet/IP adapter is the first component in a 5069 Compact I/O system and connects the system to the EtherNet/IP network.

Remote 5069 Compact I/O digital output modules receive output data from a controller. The output module also sends data to the controller.

Controller to Remote Digital Output Module Data Transmission

The controller broadcasts data to its local backplane at one of the following:

- RPI
- An IOT instruction is executed.

IMPORTANT An IOT instruction sends data to all of the output modules in the system immediately, and resets the RPI timer.

Based on the RPI rate and the length of the controller program scan, the output module can receive and echo data multiple times during one program scan.

When the RPI is less than the program scan length, the output channels can change values multiple times during a program scan. The owner-controller does not depend on the program scan to complete to send data.

These events occur when the controller sends data to a 5069 Compact I/O output module.

1. Data is sent in one of the following ways:
 - If the controller is directly connected to the EtherNet/IP network, it broadcasts data to the network.
In this case, skip to [step 3](#).
 - If the controller is connected to the EtherNet/IP network via a communication module, the controller transmits the data to the backplane.
In this case, proceed to [step 2](#).

2. The EtherNet/IP communication module transmits the data to the EtherNet/IP network.
3. The 5069 Compact I/O EtherNet/IP adapter in the 5069 Compact I/O system receives the data from the network and transmits it to the system CompactBus.
4. The remote digital output module receives the data from the backplane and behaves as dictated by its configuration.

Remote Digital Output Module to Controller Data Transmission

When a 5069 Compact I/O digital output module receives new data and the requested data value is present on the RTB, the output module sends, or 'echoes', a data value back to the controller and to the rest of the control system. The data value corresponds to the signal present at its terminals. This feature is called [Data Echo](#).

In addition to the Data Echo, the output module sends other data to the controller at the RPI. For example, the module alerts the controller if a short circuit condition exists on the module.

The following events occur when a remote 5069 Compact I/O digital output module sends data to the controller at the RPI.

1. The module sends the data to the system CompactBus.
2. The 5069 Compact I/O EtherNet/IP adapter in the 5069 Compact I/O system sends the data over the EtherNet/IP network.
3. One of the following:
 - If the controller is directly connected to the EtherNet/IP network, it receives the input data from the network without need for a communication module.
 - If the controller is connected to the EtherNet/IP network through another communication module, the module transmits the data to its backplane and the controller receives it.

Listen Only Mode

Any controller in the system can listen to the data from an I/O module. An owner-controller, as described in [Ownership on page 17](#), exchanges data with digital I/O modules.

Other controllers can use a Listen Only connection with the digital I/O module. In this case, the 'listening' controller can only listen to input data or 'echoed' output data. The listening controller does not own the module configuration or exchange other data with the module.

During the I/O configuration process, you can specify a Listen Only connection. For more information on Connection options, see [Module Definition on page 86](#).

IMPORTANT Remember the following:

- A CompactLogix 5380 controller cannot make a Listen Only connection to a local I/O module. The controller can make a Listen Only connection only to remote I/O modules.
- If a controller uses a Listen Only connection, the connection must use the Multicast option. In this case, all other connections to the module, for example, the connection of the owner-controller, must also use the Multicast option.
- If a controller attempts to use a Listen Only connection to a module but the owner-controller connection uses the Unicast option, the attempt at a Listen Only connection fails.

The 'Listen Only' controller receives data from the module as long as a connection between an owner-controller and module is maintained.

- If the connection between an owner-controller and the module is broken, the module stops sending data and connections to all 'listening controllers' are also broken.
-

5069-ARM and 5069-FPD Modules

The following 5069 modules are available for unique purposes in a 5069 Compact I/O system:

- [5069-ARM Address Reserve Module](#)
- [5069-FPD Field Potential Distributor](#)

5069-ARM Address Reserve Module

The 5069-ARM address reserve module reserves a node address in a 5069 Compact I/O system. The module remains installed until you insert another 5069 Compact I/O module into the same location.

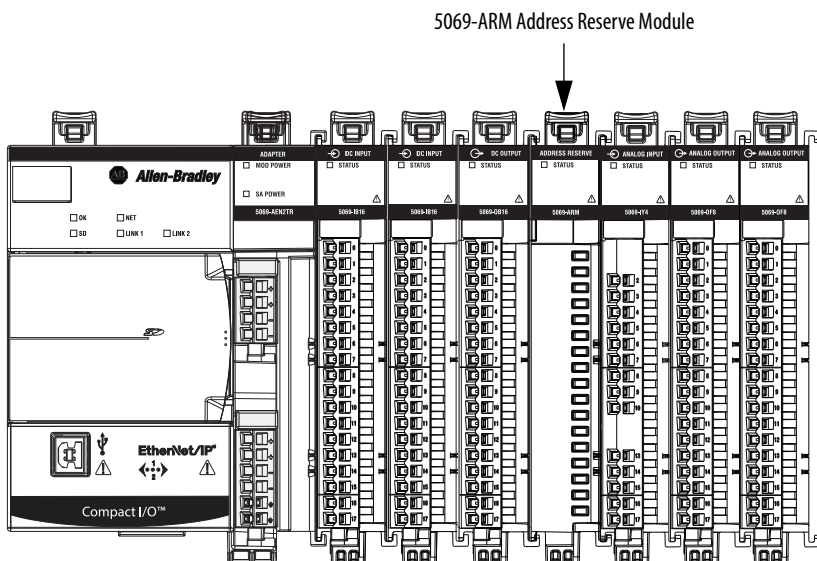
For example, your application can require the use of a 5069-IB16 module in a specific node location. The module is typically installed when you install the 5069 Compact I/O system. In this case, however, the required 5069-IB16 module is not available for insertion.

To install 5069 Compact I/O modules, you attach them to left-most device in the system. The node addresses increment as each module is installed. To make sure that the 5069-IB16 module is installed in the correct location later, you install a 5069-ARM address reserve module during initial system installation.

When the required 5069-IB16 module is available, you remove the 5069-ARM address reserve module and replace it with the 5069-IB16 module. Thus, you insert the module in the correct node address location.

[Figure 4](#) shows a 5069 Compact I/O system that uses a 5069-ARM address reserve module to reserve a node address.

Figure 4 - 5069 Compact I/O System with 5069-ARM Address Reserve Module



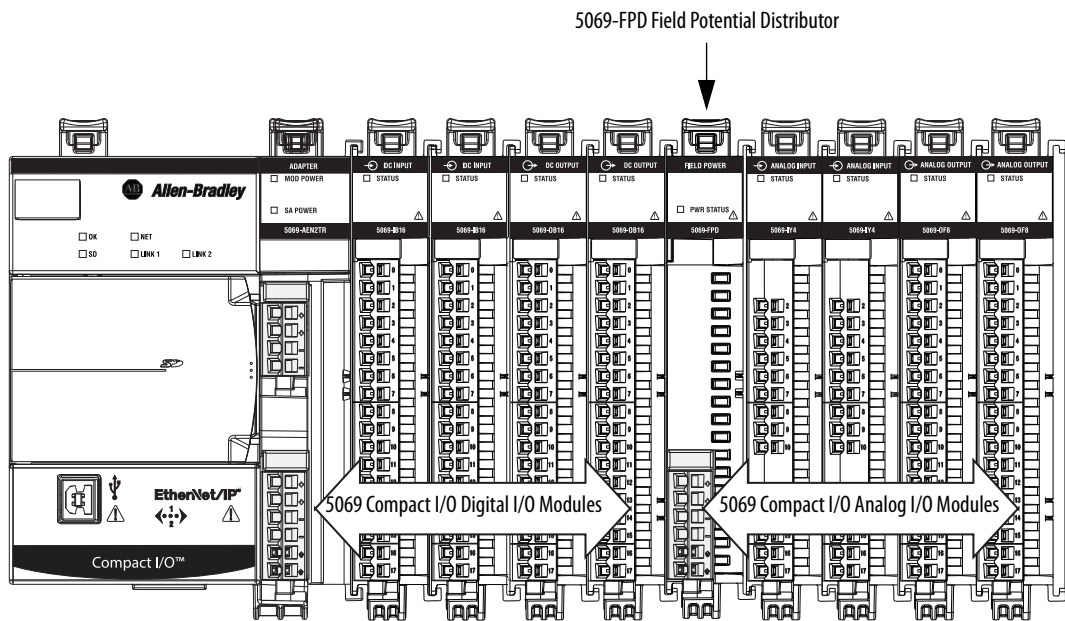
5069-FPD Field Potential Distributor

The 5069 Compact I/O EtherNet/IP adapter is the primary source of field-side power in the system. However, you can use a 5069-FPD field potential distributor to break field-side power distribution in a 5069 Compact I/O system.

Field-side power passes across the internal circuitry of the 5069 Compact I/O modules beginning with the adapter. The field potential distributor blocks the passage of field-side power to the left of the distributor and functions as a new field-side power source for the modules to the right.

Figure 5 shows a 5069 Compact I/O system that includes a field potential distributor. In this example, the field potential distributor is used to isolate digital I/O modules from analog I/O modules with respect to field-side power.

Figure 5 - 5069 Compact I/O System with 5069-FPD Field Potential Distributor



For more information on how to power a 5069 Compact I/O system, see the EtherNet/IP Communication Modules in 5000 Series Systems User Manual, publication [ENET-UM004](#)

Protected Operations

To maintain the secure operation of your 5069 Compact I/O digital I/O module, operations that can disrupt module operation are restricted based on the module operating mode. [Table 5](#) describes the restrictions.

Table 5 - Protected Operations on 5069 Compact I/O Digital I/O Modules

Current Module Operation	Activity						
	Firmware Update Request	Module Reset Request	Connection Request	Configuration Change	Connection or Data Format Change	Electronic Keying Change	RPI Change
Connection not running	Accepted						
Connection running	Rejected		Accepted ⁽¹⁾	Accepted ⁽²⁾	Not allowed ⁽³⁾		Accepted ⁽⁴⁾
Firmware update is in process	Rejected						

(1) Only requests for Listen Only connections are accepted.

(2) Configuration change is accepted in the following scenarios:

- Changes are made in the Module Properties dialog box and you click Apply.
- Changes are made in the Configuration tags and you send a Reconfigure Module MSG to the module.

(3) The difference between Rejected and Not allowed is that rejected activities can be attempted in the Logix Designer application but do not take effect. The activities that are not allowed, that is, attempts to change the Connection or Data Format used, do not occur in the Logix Designer application.

For example, if you attempt to reset a module that is connected to the owner-controller, the Logix Designer application executes the request and alerts you that it was rejected. If you attempt to change the data format on a module that is connected to an owner-controller, the Logix Designer application does not execute the attempted change. The application only alerts you that the change is not allowed. In the case, if the change is attempted online, the Module Definition dialog box field that changes the data format is disabled.

(4) The change occurs after the connection is closed and reopened. You can close and reopen the connection in the following ways:

- Change the project while it is offline and download the updated project before going online again.
- Change the project while it is online and click Apply or OK in the Module Properties dialog box. In this case, before the change is made, a dialog box alerts you of the ramifications before the change is made.

Notes:

Common Digital I/O Module Features

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This chapter describes module features that are available on all 5069 Compact I/O™ digital I/O modules.

Input Module Compatibility

5069 Compact I/O digital input modules interface to sensing devices and detect whether they are On or Off.

5069 Compact I/O digital input modules convert DC On/Off signals from user devices to appropriate logic level for use within the processor. Typical input devices include the following:

- Proximity switches
- Limit switches
- Selector switches
- Float switches
- Push button switches

When you design systems with 5069 Compact I/O digital input modules, consider these factors:

- Voltage necessary for your application
- Current leakage
- Whether you need a solid-state device
- Whether your application uses sinking or sourcing wiring

Output Module Capability

5069 Compact I/O digital output modules can be used to drive various output devices. Typical output devices compatible with 5069 Compact I/O digital output modules include these items:

- Motor starters
- Solenoids
- Indicators

Follow these guidelines when designing a system:

- Make sure that the 5069 Compact I/O digital output modules can supply the necessary surge and continuous current for proper operation.
- Make sure that the surge and continuous current are not exceeded. Damage to the module could result.

When you size output loads, refer to the documentation supplied with the output device for the surge and continuous current necessary to operate the device.

The 5069 Compact I/O digital outputs can directly drive the 5069 Compact I/O digital inputs.

Module Data Quality Reporting

The 5069 Compact I/O digital I/O modules indicate the quality of channel data that is returned to the owner-controller. Data quality represents accuracy. Levels of data quality are reported via module input tags.

The following inputs indicate the level of data quality.

- **I.Ptxx.Fault** - This tag indicates that the reported channel data is inaccurate and cannot be trusted for use in your application. Do not use the reported channel data for control.

If the tag is set to 1, you cannot trust the data reported. You must troubleshoot the module to correct the cause of the inaccuracy.

Example causes of inaccurate data include the following:

- Field Power Loss condition (output modules)
- No Load condition (output modules)
- Short Circuit condition (output modules)

We recommend that you troubleshoot the module for the typical causes first.

- **I.Ptxx.Uncertain** - This tag indicates that the reported channel data can be inaccurate but the degree of inaccuracy is unknown. We recommend that you do not use the reported channel data for control.

If the module sets this tag to 1, you know that the data can be inaccurate. You must troubleshoot the module to discover what degree of inaccuracy exists.

Example causes of uncertain data include the following:

- Module is operating outside its designed operating range
- Data is under manual or override control

We recommend that you monitor the tags in your program to make sure that the application is operating as expected with accurate channel input data.

IMPORTANT Once the condition that causes the Fault or Uncertain tag to change to 1 is removed, the tag automatically resets to 0. The Logix Designer application controls the tags. You cannot change the status of the tags.

Keep in mind that in some system configurations, the tag is not reset immediately after the condition is removed. The tag typically resets after a small delay.

Software Configurable

You use the Logix Designer application to configure the module, monitor system operation, and troubleshoot issues. You can also use the Logix Designer application to retrieve the following information from any module in the system:

- Serial number
- Firmware revision information
- Product code
- Vendor
- Error and fault information
- Diagnostic information

By minimizing the need for tasks, such as setting hardware switches and jumpers, the software makes module configuration easier and more reliable.

Fault and Status Reporting

The 5069 Compact I/O digital I/O modules report fault and status data along with channel data. Fault and status data is reported in the following ways:

- Logix Designer application
- Module status indicators

For more information on fault reporting, see the individual module feature chapters and Appendix A, [Troubleshoot Your Module on page 113](#).

Module Inhibiting

Module inhibiting lets you indefinitely suspend a connection, including Listen Only connections, between an owner-controller and a digital I/O module without removing the module from the configuration. This process lets you temporarily disable a module, such as to perform maintenance.

You can use module inhibiting in the following ways:

- You write a configuration for an I/O module but inhibit the module to help prevent it from communicating with the owner-controller. The owner does not establish a connection and the configuration is not sent to the module until the connection is uninhibited.

- In your application, a controller already owns a module, has downloaded the configuration to the module, and is exchanging data over the connection between the devices.

In this case, you can inhibit the module and the connection to the module does not exist.

IMPORTANT Whenever you inhibit an output module that is ProgMode enabled, it enters Program mode, and all outputs change to the state configured for Program mode.

For example, if an output module is configured so that the state of the outputs transition to zero during Program mode, whenever that module is inhibited, outputs transition to zero.

You can use module inhibiting in these instances:

- You want to update a digital I/O module, for example, update the module firmware revision. Use the following procedure.
 - a. Inhibit the module.
 - b. Perform the update.
 - c. Uninhibit the module.
- You use a program that includes a module that you do not physically possess yet. You do not want the controller to look for a module that does not yet exist. In this case, you can inhibit the module in your program until it physically resides in the proper slot.

To see how to inhibit a 5069 Compact I/O digital I/O module, see [page 88](#).

Electronic Keying

Electronic Keying reduces the possibility that you use the wrong device in a control system. It compares the device that is defined in your project to the installed device. If keying fails, a fault occurs. These attributes are compared.

Attribute	Description
Vendor	The device manufacturer.
Device Type	The general type of the product, for example, digital I/O module.
Product Code	The specific type of the product. The Product Code maps to a catalog number.
Major Revision	A number that represents the functional capabilities of a device.
Minor Revision	A number that represents behavior changes in the device.

The following Electronic Keying options are available.

Keying Option	Description
Compatible Module	<p>Lets the installed device accept the key of the device that is defined in the project when the installed device can emulate the defined device. With Compatible Module, you can typically replace a device with another device that has the following characteristics:</p> <ul style="list-style-type: none"> • Same catalog number • Same or higher Major Revision • Minor Revision as follows: <ul style="list-style-type: none"> – If the Major Revision is the same, the Minor Revision must be the same or higher. – If the Major Revision is higher, the Minor Revision can be any number.
Disable Keying	<p>Indicates that the keying attributes are not considered when attempting to communicate with a device. With Disable Keying, communication can occur with a device other than the type specified in the project.</p> <p>ATTENTION: Be extremely cautious when using Disable Keying; if used incorrectly, this option can lead to personal injury or death, property damage, or economic loss.</p> <p>We strongly recommend that you do not use Disable Keying.</p> <p>If you use Disable Keying, you must take full responsibility for understanding whether the device being used can fulfill the functional requirements of the application.</p>
Exact Match	<p>Indicates that all keying attributes must match to establish communication. If any attribute does not match precisely, communication with the device does not occur.</p>

Carefully consider the implications of each keying option when selecting one.

IMPORTANT Changing Electronic Keying parameters online interrupts connections to the device and any devices that are connected through the device. Connections from other controllers can also be broken.

If an I/O connection to a device is interrupted, the result can be a loss of data.

More Information

For more detailed information on Electronic Keying, see Electronic Keying in Logix5000 Control Systems Application Technique, publication [LOGIX-AT001](#).

Producer/Consumer Communication

5069 Compact I/O digital I/O modules use the Producer/Consumer communication model to produce data without a controller polling them first. The modules produce the data and controllers consume it. That is, the owner-controller and controllers with a Listen Only connection to the module can consume it.

When an input module produces data, the controllers can consume the data simultaneously. Simultaneous data consumption eliminates the need for one controller to send the data to other controllers.

Status Indicators

Each 5069 Compact I/O digital I/O module has a status indicator on the front of the module that lets you check the health and operational status of a module. The status indicator displays vary for each module.

For more information on status indicators, see Appendix A, [Troubleshoot Your Module on page 113](#).

Use Coordinated System Time with I/O Modules

This section describes how to use CST timestamps between standard I/O modules and the CIP Sync timestamps in fast I/O modules. Time masters generate a 64-bit coordinated system time (CST) for their respective chassis.

You can configure your digital input modules to access the CST and timestamp input data with a relative time reference of when that input data changes state.

IMPORTANT Because only one CST value is returned to the controller when any input point changes state, we recommend that you use timestamping on only one input point per module.

Table 6 describes how you can use CST timestamps.

Table 6 - CST Timestamp Options

Topic	Description
Timestamping for a sequence of events	<p>You can use the CST to establish a sequence of events occurring at a particular input module point by timestamping the input data. To determine a sequence of events, you must complete the following:</p> <ul style="list-style-type: none"> • Set the format of the input module to CST Timestamped Input Data. • Enable COS for the input where a sequence occurs, and disable COS for all other points on the module. <p>TIP If you configure multiple inputs for COS, your module generates a unique CST each time any of those inputs change state if the changes do not occur within 500 μs of each other.</p> <p>If multiple inputs that are configured for COS change state within 500 μs of each other, one CST value is generated for all state changes. As a result, it appears as if they changed simultaneously.</p>
Timestamping with scheduled outputs	<p>You can use timestamping with the scheduled outputs feature, so that after input data changes state and a timestamp occurs, an output point actuates at a specific time.</p> <p>You can schedule outputs into the future. Outputs that are sent in one packet can differ by approximately 2 seconds. Sending in multiple messages allows greater spacing between schedules. When you use timestamping of inputs and scheduled outputs, you must complete the following:</p> <ul style="list-style-type: none"> • Choose a connection format for each input and output module that enables timestamping. • Use a 5069 Compact I/O EtherNet/IP communication device to provide consistent time to modules in the same rack. • Disable COS for all input points on the input module except the point being timestamped. <p>TIP For scheduled outputs to work most effectively, remember the following:</p> <ul style="list-style-type: none"> • The schedule fires when it is configured to. You must make sure that there is enough time for the schedule to plan ahead. If you are using an MAOC instruction, you cannot control the schedule. • A system-level grandmaster synchronizes the times of the I/O modules.

Use CIP Sync Time with Fast I/O Modules

The following 5069 Compact I/O digital I/O modules use CIP Sync for timestamps and scheduling:

- 5069-IB16F
- 5069-IB6F-3W
- 5069-OB16F

CIP Sync is a CIP implementation of the IEEE 1588 PTP (Precision Time Protocol). CIP Sync provides accurate real-time (Real-World Time) or Universal Coordinated Time (UTC) synchronization of controllers and devices that are connected over CIP networks. This technology supports highly distributed applications that require timestamping, sequence of events recording, distributed motion control, and increased control coordination.

The 5069-IB16F, 5069-IB6F-3W, and 5069-OB16F modules are CIP Sync slave-only devices. There must be another module on the network that functions as a master clock. For more information on how to use CIP Sync technology, see the Integrated Architecture® and CIP Sync Configuration Application Technique, publication [IA-AT003](#).

Fast I/O modules can be used to capture timestamps and schedule outputs like CST-based modules while providing the following advantages:

- Fast I/O modules have much higher precision than CST-based modules.
- Inputs are timestamped by point, so multiple inputs can be configured for COS without losing timestamp data.
- CIP Sync is system-wide, so timestamp and schedule values are consistent across all modules in the system.

For example, if you use timestamps on a 5069-IB16F module to schedule outputs on a 5069-OB16F module, the controller, input module, and output module are not required to reside in the same chassis as is the case with CST-based I/O.

- Output modules use all 64 bits of the timestamp to schedule, so there are no limits on schedule ranges.

Mixing CST and CIP Sync Modules in a 5000 Series System

CST is automatically enabled for each chassis that has been configured to use CIP Sync. Therefore, you can include modules that use CST for their time base into systems that have been configured to use CIP Sync. Also, there is a direct correlation between CIP Sync system time and the local chassis CST time.

The CIP Sync system time and local chassis CST time are related by this equation:

$$\text{CIP Sync system time} = \text{CST time} + \text{offset}$$

The offset in the preceding equation is a value unique to each chassis and can be obtained by using one of these methods:

- CSTOffset from the Wall Clock Time (WCT) object of a controller in the chassis
- SystemOffset from the Time Synchronize object of a controller in the chassis
- LocalClockOffset returned in an I/O connection from a CIP Sync capable module in the chassis

The previously described relationship enables CST and CIP Sync-based I/O to interoperate as long as the offset in the chassis that contains the CST-based module is accessible.

5069 Compact I/O digital I/O modules require Time Synchronization with any devices, such as the controller and any intervening modules, in the path. The Download warning dialog box message accounts for cases where only the following are affected:

- Integrated Motion
- 5069 Compact I/O digital I/O modules
- Integrated Motion and 5069 Compact I/O digital I/O modules

You can enable Time Synchronization directly from the Download confirmation dialog box.

Timestamping

The control system uses a 64-bit system clock. The modules support CIP Sync timestamping by using the 1588 protocol that is passed throughout the system. The 1588 protocol is defined in the IEEE 1588-2002 standard, publication Standard for a Precision Clock Synchronization Protocol for Networked Measurement and Control Systems.

Each input channel scan or new output application is stamped with a CIP Sync timestamp. One timestamp is returned to the controller for the module with the input data transfer.

You can use this feature for the following:

- To identify the sequence of events in fault conditions or during normal operation.

You can use the system clock between multiple modules in the same chassis or throughout a system in which a common Time Master is used.

- To measure the change between samples and detect when a new sample is available for processing via the logic. The change between sample likely correlates closely with the RPI if no samples are missed in the logic.

You can also use the 1588 Protocol to synchronize sampling for modules across the entire system. By using the Synchronized Sampling feature, you can configure multiple modules to coordinate their input samples precisely with each other by using the same RPI.

Synchronized Sampling lets you configure a test stand, for example, and take many measurements simultaneously across many modules, if needed, while still precisely coordinating the sampling. With these modules, the synchronized sampling coordinates within approximately $\pm 10 \mu\text{s}$.

Use the System Clock to Timestamp Inputs and Schedule Outputs

This section describes how to use CST timestamps in standard and diagnostic I/O modules and the CIP Sync timestamps in fast I/O modules.

Use Coordinated System Time with Standard and Diagnostic I/O Modules

Time masters generate a 64-bit coordinated system time (CST) for their respective chassis.

You can configure your digital input modules to access the CST and timestamp input data with a relative time reference of when that input data changes state.

IMPORTANT Because only one CST value is returned to the controller when any input point changes state, we recommend that you use timestamping on only one input point per module.

[Table 7](#) describes how you can use CST timestamps.

Table 7 - CST Timestamp Options

Topic	Description
Timestamping for a sequence of events	<p>You can use the CST to establish a sequence of events occurring at a particular input module point by timestamping the input data. To determine a sequence of events, you must complete the following:</p> <ul style="list-style-type: none"> Set the format of the input module to CST Timestamped Input Data. Enable COS for the input where a sequence occurs, and disable COS for all other points on the module. <p>TIP If you configure multiple inputs for COS, your module generates a unique CST each time any of those inputs change state if the changes do not occur within 500 μs of each other.</p> <p>If multiple inputs that are configured for COS change state within 500 μs of each other, one CST value is generated for all state changes. As a result, it appears as if they changed simultaneously.</p>
Timestamping with scheduled outputs	<p>You can use timestamping with the scheduled outputs feature, so that after input data changes state and a timestamp occurs, an output point actuates at a specific time. You can schedule outputs into the future. Outputs that are sent in one packet can differ by approximately 2 seconds. Sending in multiple messages allows greater spacing between schedules. When you use timestamping of inputs and scheduled outputs, you must complete the following:</p> <ul style="list-style-type: none"> Choose a connection format for each input and output module that enables timestamping. When the 5069 Compact I/O digital I/O modules are remote I/O modules, use a 5069 Compact I/O EtherNet/IP adapter to provide consistent time to modules in the same rack. Disable COS for all input points on the input module except the point being timestamped. <p>TIP For scheduled outputs to work most effectively, remember the following:</p> <ul style="list-style-type: none"> The schedule fires when it is configured to. You must make sure that there is enough time for the schedule to plan ahead. If you are using an MAOC instruction, you cannot control the schedule. A system-level grandmaster synchronizes the times of the I/O modules.

Module Firmware

The 5069 Compact I/O digital I/O modules are manufactured with module firmware installed. If updated module firmware revisions are available in the future, you can update the firmware.

Updated firmware revisions are made available for various reasons, for example, to correct an anomaly that existed in previous module firmware revisions.

You access updated firmware files at the Rockwell Automation® Product Compatibility and Download Center (PCDC). A link to the PCDC is available at <http://www.ab.com>.

At the PCDC, you can use the module catalog number to check for firmware updates. If the catalog number is not available, no updates exist then.

Notes:

Digital Input Module Features

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Fault and Status Reporting	58

Module Features

The following features are specific to 5069 Compact I/O™ digital input modules.

- [Data Transfer at RPI or Change of State](#)
- [Software Configurable Filter Times](#)
- [Multiple Input Module Types](#)
- [Multiple Input Point Densities](#)
- [Module Health Diagnostic](#)
- [Simple Count Mode](#) - 5069-IB16 and 5069-IB16F modules only
- [Sequence of Events Per Point Timestamping](#) - 5069-IB16F and 5069-IB6F-3W modules only
- [Events](#) - 5069-IB16F and 5069-IB6F-3W modules only
- [Pulse Latching](#) - 5069-IB16F and 5069-IB6F-3W modules only

Data Transfer at RPI or Change of State

5069 Compact I/O digital input modules always send data at the RPI, but they send data at a change of state only if the COS feature is enabled.

The table describes the two ways a module sends data to the owner-controller.

Method	Description
RPI	A user-defined rate at which the module updates the information sent to its owner-controller.
COS	Configurable feature that, when enabled, instructs the module to update its owner-controller with new data whenever a specified input point transitions from On to Off and Off to On. The data is sent at the RPI rate when there is no change of state. By default, this setting is always enabled for input modules.

To see where to set the RPI, see [page 88](#).

Software Configurable Filter Times

You can adjust On to Off and Off to On filter times through the Logix Designer application for all 5069 Compact I/O digital input modules. These filters improve noise immunity within a signal.

A larger filter value affects the length of delay times for signals from these modules. The filter values are adjustable in the Points category of the Module Properties window.

- The input filter values the 5069-IB16, 5069-IB16F, 5069-IB6F-3W input modules range from 0 μ s...50 ms.
- The input signal that is connected to the **5069-IA16** input module dictates the **valid input filter values** that you can use.

IMPORTANT Logix Designer application lets you choose multiple filter values, including values that are invalid for some input signals.

For example, the only valid Off to On filter value when a 120V AC signal is connected to the module is 1 ms. However, you can choose 1 ms, 2 ms, or 5 ms.

Make sure that you select a valid input filter value when you configure the module. If you select an invalid input filter value, the module can read signal levels incorrectly.

Input Signal Value	Filter Time: Off to On - Valid Values	Filter Time: On to Off - Valid Values
120V AC	1 ms	<ul style="list-style-type: none"> • 10 ms • 20 ms
240V AC	<ul style="list-style-type: none"> • 1 ms • 2 ms • 5 ms 	<ul style="list-style-type: none"> • 5 ms • 10 ms • 20 ms

To see where to set the input filter values, see the following:

- 5069-IA16 module - [page 90](#)
- 5069-IB16 module - [page 91](#)
- 5069-IB16F module - [page 93](#)
- 5069-IB6F-3W module - [page 99](#)

Multiple Input Module Types

The 5069 Compact I/O module family offers AC and DC digital input modules. The module types are as follows:

- AC digital input module - 5069-IA16
- DC digital input modules - 5069-IB16, 5069-IB16F, 5069-IB6F-3W

Multiple Input Point Densities

5069 Compact I/O digital input modules use either 6-point or 16-point densities for greater flexibility in your application. A point is the termination where a wire attaches to the input module from a field device. The module receives information from the device to this designated point, thus signaling when activity occurs.

Module Health Diagnostic

Each digital input module has a status indicator on the front of the module that indicates module health. For more information on status indicators, see Appendix A, [Troubleshoot Your Module on page 113](#).

Simple Count Mode

Simple count mode is used to count input pulses.

IMPORTANT The following 5069 Compact I/O digital input modules are the only ones to support the Simple Count mode:

- 5069-IB16
 - 5069-IB16F
 - 5069-IB6F-3W
-

When using the simple counter function, the module counts input pulses up to the following frequencies:

- The simple counter maximum frequency for the 5069-IB16 module is: 500 Hz (inv. period 2 ms).
- The simple counter maximum frequency for the 5069-IB16F and 5069-IB6F-3W modules is: 30 kHz (inv. period 33.3 μ s).

The modules compare total count to previously programmed values and then can activate an associated output. The modules provide for count up functionality and counter overflow.

Sequence of Events Per Point Timestamping

Timestamping registers a time reference to a change in input data. The CST is used for timestamping.

IMPORTANT The following 5069 Compact I/O digital input modules are the only ones to support Per Point Timestamping:

- 5069-IB16F
 - 5069-IB6F-3W
-

The 5069-IB16F and 5069-IB6F-3W DC input modules offer submillisecond timestamping on a per point basis. Timestamp values have $\pm 10 \mu\text{s}$ accuracy and $\pm 1 \text{ ns}$ resolution.

You can use the CST to establish a sequence of events occurring at an input module point by timestamping the input data. To determine a sequence of events, you must perform the following:

- Set the Input Data parameter to Timestamp Data.
- Enable COS for the input point where a sequence occurs, and disable COS for all other points on the module.

To see where to set the Timestamping options, see the following:

- 5069-IB16F module - [page 95](#)
- 5069-IB6F-3W module - [page 101](#)

Events

You can use the Events feature to trigger events.

IMPORTANT The following 5069 Compact I/O digital input modules are the only one to support the Events feature:

- 5069-IB16F
- 5069-IB6F-3W

The modules support up to four event configurations.

The following can trigger events:

- An input state change.
- A counting input done bit change.
- A pattern of input state changes on multiple module inputs.

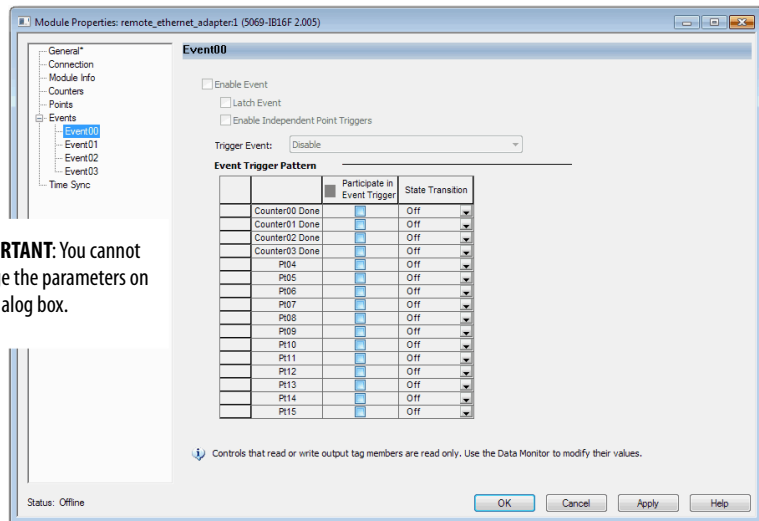
You must use the Data with Events connection type in the Module Definition to use the Events feature.

Event Definition

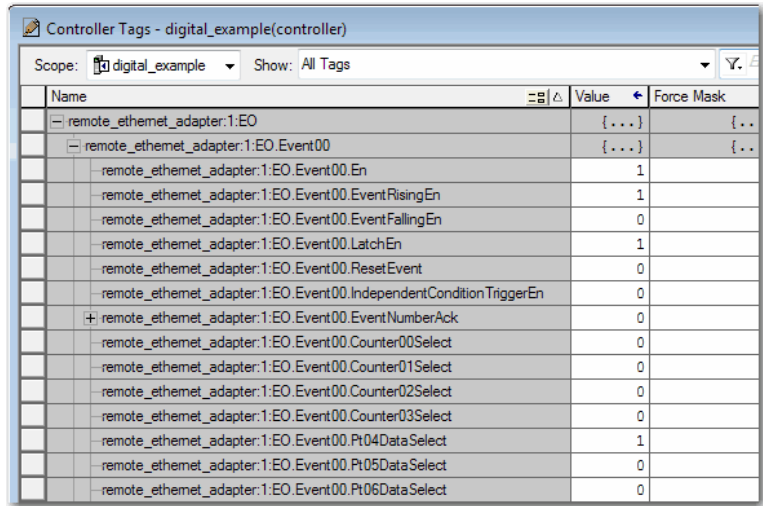
You define an event. When you define an event, remember the following:

- The event definition parameters are shown on Events $_{xx}$ category in the Module Properties dialog box. The parameters are read-only in the dialog box as shown in the following example.

IMPORTANT: You cannot change the parameters on this dialog box.



- The event definition parameters are configured in the Event Outputs as shown in the following example.



[Table 8](#) describes the tasks that are included in defining an event.

Table 8 - Event Definition

Task	Event Output Tag to Change	Valid Values
Enable the event.	EO.Eventxx.En	<ul style="list-style-type: none"> • 0 = Event is disabled • 1 = Event is enabled
Choose if an input state change or a pattern of input state changes triggers the event.	EO.Eventxx.IndependentConditionTriggerEn	<ul style="list-style-type: none"> • 0 = Pattern of input state changes triggers the event • 1 = Single input state change triggers the event
Select at least one point on the module to participate in the event.	<p>The tag name changes based on the input function. The following names are available:</p> <ul style="list-style-type: none"> • EO.Eventxx.PtxxDataSelect - This tag appears for any point on the module if no counters are used. • EO.Eventxx.CounterxxSelect - These tags begin at point00 and continue based on the number of counters that the module uses. 	<ul style="list-style-type: none"> • 0 = Point does not participate in the event trigger • 1 = Point participates in the event trigger

Table 8 - Event Definition

Task	Event Output Tag to Change	Valid Values
For all points that participate in the event, choose what constitutes an event state.	The tag name changes based on the input function. The following names are available: <ul style="list-style-type: none"> • EO.Eventxx.PtxxDataValue - This tag appears for any point on the module if no counters are used. • EO.Eventxx.CounterxxValue - The tags begin at point00 and continue based on the number of counters that the module uses. 	<ul style="list-style-type: none"> • 0 = On to Off state transition • 1 = Off to On state transition
Choose which edge of the event triggers the event. That is, if the rising edge, falling edge, or either edge of the event.	Both of the following: <ul style="list-style-type: none"> • EO.Eventxx.EventRisingEn • EO.Eventxx.EventFallingEn 	The combination of the tag settings determines which edge triggers the event: <ul style="list-style-type: none"> • Rising edge triggers the event set by the following combination: <ul style="list-style-type: none"> – EO.Eventxx.EventRisingEn = 1 – EO.Eventxx.EventFallingEn = 0 • Falling edge triggers the event set by the following combination: <ul style="list-style-type: none"> – EO.Eventxx.EventRisingEn = 0 – EO.Eventxx.EventFallingEn = 1 • Falling edge triggers the event set by the following combination: <ul style="list-style-type: none"> – EO.Eventxx.EventRisingEn = 1 – EO.Eventxx.EventFallingEn = 1
Latch the event. This task is optional.	EO.Eventxx.LatchEn	<ul style="list-style-type: none"> • 0 = Event is not latched • 1 = Event is latched

Independent Point Trigger

An input state change triggering an event is known as an independent point trigger.

To use this type of trigger, you must enable the Independent Point Trigger option in the event definition. You set the EO.Eventxx.IndependentConditionTriggerEn tag to 1.

Pattern Match Trigger

When a pattern of input state changes triggers an event, multiple points participate in the event trigger. To use this type of trigger, you must disable the Independent Point Trigger option in the event definition. You set the `EO.Eventxx.IndependentConditionTriggerEn` tag to 0.

Every point that participates in an event trigger is configured separately. Depending on the event definition, the collective status of all points triggers the event. The possible event triggers are as follows:

- Enter pattern match state - If the event is defined to trigger on the rising edge, the event is triggered when a state change on any participating point results in all point configuration conditions being met.

In the event definition dialog box, Trigger Event = On input transition to match pattern.

- Leave pattern match state - If the event is defined to trigger on the falling edge, the event is triggered when a state change on any participating point results in all point configuration conditions no longer being met.

In the event definition dialog box, Trigger Event = On input transition to not match pattern.

- Enter or leave pattern match state - If the event is defined to trigger on the rising or falling edge, the event is triggered when a state change on any participating point results in all point configuration conditions being met or no longer being met.

In the event definition dialog box, Trigger Event = On input transition to not match pattern.

Additional Event Considerations

When you use the Events feature, also consider the following:

- An Event task only actuates if an event occurs.

IMPORTANT Make sure that you link the Event task to the Event Input tag, not the Input tag.
Keep in mind that when the Event task executes, the input tag data can have the same data that was sent at the last RPI.

- An event is recognized only when it maintains the same state for at least the duration of the input filter time specified.
- Configure the event at a rate that stops task overlap conditions. If you enable COS for multiple points, a task overlap of the event can occur.
- Configure the event at a rate that is likely to succeed. A 2 ms signal width is the minimum pulse width that can be used at which the event succeeds.
- After the event executes, it does not execute again until the event occurs again.
- For more information on event tasks, see the Logix5000™ Controllers Tasks, Programs, and Routines Programming Manual, publication [1756-PM005](#).

To see where to configure the Events feature, see the following:

- 5069-IB16F module - [page 96](#)
- 5069-IB6F-3W module - [page 102](#)

Pulse Latching

You can use Pulse Latching to detect or latch short duration pulses. The module can detect incoming pulses with a duration as short as 10 μ s if the frequency is under 4 kHz (period of 250 μ s).

IMPORTANT The following 5069 Compact I/O digital input modules are the only ones to support Pulse Latching:

- 5069-IB16F
 - 5069-IB6F-3W
-

When the module detects a short duration pulse at an input point, it sets the corresponding bit for the I.Ptxx.NewDataOffOn or I.Ptxx.NewDataOnOff input tag. This bit remains latched until acknowledged. This bit can be used to detect a transition that is too fast for the program scan to detect. You can also determine how rapid the transition was by configuring the module to latch timestamps for the point.

To acknowledge the last captured pulse and reset the pulse latch, you set the rising edge of the corresponding bit in these output tags:

- O.Ptxx.NewDataOffOnAck — Acknowledges that the input point has transitioned to an On state and resets the pulse latch.
- O.Ptxx.NewDataOnOffAck — Acknowledges that the input point has transitioned to an Off state and resets the pulse latch.

Once a pulse latch is reset for an input point, the next pulse at that point sets the corresponding bit in the I.Ptxx.NewDataOffOn or I.Ptxx.NewDataOnOff input tags.

You can change output tag values in program logic while normal module operation continues or through the Logix Designer application tag editor. For more information about modules, see Appendix B, [Module Tag Definitions on page 127](#).

Fault and Status Reporting

The digital input modules multicast fault and status data with channel data to the owner and listening controllers. The data is returned via module s that you can monitor in your Logix Designer application.

With some exceptions, the 5069 Compact I/O digital input modules provide the fault and data status in a point-centric format. The tag names in the following table that include Ptxx represent point-centric data. The xx represents the point number.

For more information on fault reporting, see Appendix A, [Troubleshoot Your Module on page 113](#).

Table 9 - 5069 Compact I/O Digital Input Module - Fault and Data Status

Data Type	Name ⁽¹⁾	Triggering Event That Sets
Fault	ConnectionFaulted ⁽²⁾	The owner-controller loses its connection to the module.
	Counterxx.Fault	The counter data quality is bad.
	Ptxx.Fault	The point data quality is bad.
	Eventx.CounterxxFault	The corresponding counter had a fault indicated when the event occurred.
	Eventx.Fault	The signal connection is lost.
	Eventx.Ptxx.Fault	The signal connection is lost.
Status	RunMode	The module is in Run Mode.
	DiagnosticActive	
	DiagnosticSequenceCount	The count increments a diagnostic.
	Counterxx.Data	The counter data is scaled in engineering units.
	Counterxx.Uncertain	The counter data can be imperfect.
	Eventx.PtxxDData	The event point data is scaled in engineering units.
	Eventx.Uncertain	The event data can be imperfect.
	Ptxx.Data	The point data is scaled in engineering units.
	Ptxx.Uncertain	The point data can be imperfect.
	Uncertain ⁽²⁾	The module is operating outside its designed operating range if data is under manual or override control.

(1) Not all tag names apply to all 5069 Compact I/O digital input modules.

(2) This tag provides module-wide data an affects all channels simultaneously.

Digital Output Modules Features

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Module Features

The following features are specific to 5069 Compact I/O™ digital output modules.

- [Multiple Output Point Densities](#)
- [Output State Change Time](#)
- [Configurable Channel-level Output State in Program Mode or Fault Mode](#)
- [Connection Fault Handling](#)
- [Module Health Diagnostics](#)
- [Forcing](#)
- [Data Echo](#)
- [Field Power Loss Detection](#) - 5069-OA16, 5069-OB8, and 5069-OW16 modules only
- [No Load Detection](#) - 5069-OB8, 5069-OB16, and 5069-OB16F modules only
- [Short Circuit Protection](#) - 5069-OB8, 5069-OB16, and 5069-OB16F modules only
- [Thermal Shutoff](#) - 5069-OB8, 5069-OB16, and 5069-OB16F modules only
- [Time-scheduled Output Control](#) - 5069-OB16F module only
- [Isolated and Non-isolated Varieties of Output Modules](#) - 5069-OW4I and 5069-OX4I modules only

Multiple Output Module Types

The 5069 Compact I/O module family offers the following digital output module types:

- AC digital output module - 5069-OA16
- DC digital output modules - 5069-OB8, 5069-OB16, and 5069-OB16F
- Relay digital output modules - 5069-OW4I, 5069-OW16, 5069-OX4I

Multiple Output Point Densities

5069 Compact I/O digital output modules use either 4-point, 8-point, and 16-point densities. The module catalog number indicates the point density. For example, the 5069-OB16 module has 16 outputs, and the 5069-OW4I module has 4 outputs.

Output State Change Time

[Table 10](#) lists the time that it takes for 5069 Compact I/O digital output module outputs to change state after a command.

Table 10 - Time for a Module Output to Change States

Module	Time ⁽¹⁾
5069-OA16	1/2 cycle, typical For example, if the input uses a 50 Hz AC wave, 1 cycle = 1/50 or 20 ms. Because the typical time for the module output to change state is 1/2 cycle, in this example the time is 10 ms.
5069-OB8	100 µs
5069-OB16	100 µs
5069-OB16F	10 µs
5069-OW4I	10 ms
5069-OW16	10 ms
5069-OX4I	15 ms

(1) The times that are listed in [Table 10](#) are from the time the module receives the message.

Configurable Channel-level Output State in Program Mode or Fault Mode

You can configure individual output channels to specific states when the module is in Program mode or Fault mode. The following output states are available:

- Off
- On
- Hold last state

To see where to configure the output states in Program mode or Fault mode, see the following:

- 5069-OA16 - [page 105](#)
- 5069-OB8 - [page 106](#)
- 5069-OB16 module - [page 107](#)
- 5069-OB16F module - [page 108](#)
- 5069-OW4I module - [page 109](#)
- 5069-OW16 module - [page 110](#)
- 5069-OX4I module - [page 111](#)

Connection Fault Handling

You can configure 5069 Compact I/O digital output module behavior when a connection fault occurs, that is, the connection between the owner-controller and the output module breaks.

You must define the following:

- Immediate output behavior when the connection breaks.
- Length of time that the output behaves as defined.
- Output behavior if the connection remains broken when the length of time that is defined previously expires.

Output Behavior Immediately After a Connection Fault

When the connection between an owner-controller and output module breaks, the output can behave in the following ways, depending on how the Fault Mode parameter is configured:

- Turn off - Default
- Transition to a specific, user-defined value.
- Hold its last state.

If you configure the output to hold its last state, the output remains at that state value until the following occurs:

- The connection to the owner-controller is re-established.
- The output returns to normal operation, as defined in the module configuration.

The output state remains as commanded if Fault State Duration is set to Forever.

If the Fault State Duration is set to a value other than Forever, the output state changes to a user-configurable Final Fault State after the specified time period elapses. For more information, see [Final Fault State Value on page 63](#).

Fault State Duration After Connection Fault

If you configure the output to transition to a specific value after the connection breaks, you must define how long the output remains at the specified value before it transitions to a Final Fault State.

You can configure the output to remain at the specific value for the following times:

- Forever
- 1 second
- 2 seconds
- 5 seconds
- 10 seconds

After the Fault State Duration time expires, the output transitions to user-defined Final Fault State Value.

Final Fault State Value

The Final Fault State value defines the value to which the output goes after the Fault State Duration time expires.

You set the value in the C.Ptxx.FaultFinalState tag. For more information on module s, see Appendix B, [Module Tag Definitions on page 127](#).

Output State Once Connection is Re-established

Once the connection between the owner-controller and output module is re-established, the output resumes normal operation.

To see where to configure the Connection Fault Handling parameters, see the following:

- 5069-OA16 - [page 105](#)
- 5069-OB8 - [page 106](#)
- 5069-OB16 module - [page 107](#)
- 5069-OB16F module - [page 108](#)
- 5069-OW4I module - [page 109](#)
- 5069-OW16 module - [page 110](#)
- 5069-OX4I module - [page 111](#)

Module Health Diagnostics

Each digital output module has a status indicator on the front of the module that indicates module health. For more information on module health diagnostics, see Appendix A, [Troubleshoot Your Module on page 113](#).

Forcing

Use a force to override data that your logic either uses or produces.

- Test and debug your logic.
- Temporarily maintain normal system operations when an input device has failed.

Use forces only as a temporary measure. They are not intended to be a permanent part of your application.

Make sure that you understand the following before using forces.



ATTENTION: Forcing can cause unexpected machine motion that could injure personnel. Before you use a force, determine how the force affects your machine or process and keep personnel away from the machine area.

- Enabling I/O or SFC forces causes your machine or process to go to another state or phase.
 - Removing forces can still leave forces in the enabled state.
 - If forces are enabled and you install a force, the new force immediately takes effect.
-

Enable Forces

For a force to take effect, you enable forces. You can only enable and disable forces at the controller level.

- You can enable I/O forces and SFC forces separately or simultaneously.
- You cannot enable or disable forces for a specific module, tag collection, or tag element.

Disable or Remove a Force

To stop the effect of a force and let your project execute as programmed, disable or remove the force.

- You can disable or remove I/O and SFC forces simultaneously or separately.
- When you remove a force on an alias tag, you also remove the force on the base tag.



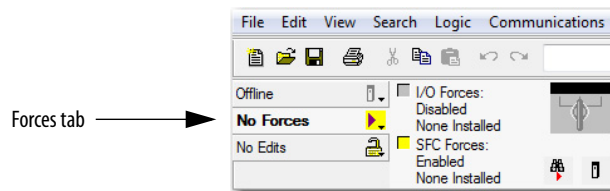
ATTENTION: Changes to forces can cause unexpected machine motion that could injure personnel. Before you disable or remove forces, determine how the change affects your machine or process and keep personnel away from the machine area.

Check Force Status

Before you use a force, determine the status of forces for the controller.

The Online toolbar shows the status of forces. It shows the status of I/O forces and SFC forces separately.

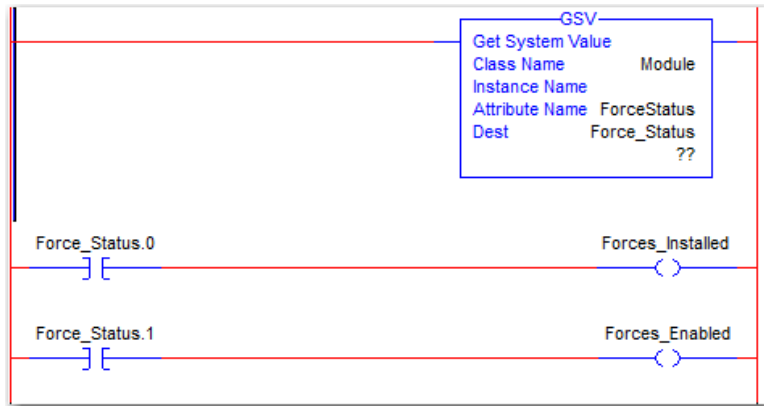
To determine the status of	Use any of the following
I/O forces	<ul style="list-style-type: none"> • Online toolbar • GSV instruction
SFC forces	Online toolbar



Forces Tab Status	Means
Enabled	<ul style="list-style-type: none"> • If the project contains any forces of this type, they are overriding your logic. • If you add a force of this type, the new force immediately takes effect
Disabled	Forces of this type are inactive. If the project contains any forces of this type, they are not overriding your logic.
Installed	At least one force of this type exists in the project.
None Installed	No forces of this type exist in the project.

GSV Instruction

This example shows how to use a GSV instruction to get the status of forces. For the purposes of this example, Force_Status is a DINT tag.



To determine the following	Examine this bit	For this value
Forces are installed	0	1
No forces are installed	0	0
Forces are enabled	1	1
Forces are disabled	1	0

Data Echo

Data Echo automatically multicasts point data values that match the digital value that was sent to the screw terminals of the module then.

A 5069 Compact I/O digital output module returns a value sent to it by the owner-controller. The echoed value is either On or Off.

Fault and status data are also sent. This data is sent at the RPI.

Field Power Loss Detection

The Field Power Loss Detection feature monitors for the loss of power at an output module point. When field power to the module is lost, a point-level fault is sent to the controller to identify the exact point faulted.

IMPORTANT The following 5069 Compact I/O digital output modules are the only ones to support Field Power Loss Detection:

- 5069-OA16
 - 5069-OB8
 - 5069-OW16
-

Field Power Loss Detection has a corresponding tag that can be examined in the user program if a fault occurs. For information on module s, see Appendix B, [Module Tag Definitions on page 127](#)

To see where to enable or disable field power detection, see the following:

- 5069-OA16 - [page 105](#)
- 5069-OB8 - [page 106](#)
- 5069-OW16 module - [page 110](#)

No Load Detection

No Load Detection detects when a wire is disconnected from the output or a missing load for each output point in the Off state.

The No Load Detection feature is disabled by default. You must enable the feature in your Logix Designer application project.

IMPORTANT The following 5069 Compact I/O digital output modules are the only ones to support No Load Detection:

- 5069-OB8
 - 5069-OB16
 - 5069-OB16F
-

The output modules support the following minimum load currents:

- No load detection current, max = 0.5 mA
- On-state current per channel, max = 1 mA

In the On state, the module must be connected to a load that draws a minimum current equal to these values.

IMPORTANT An output must remain in the off state a minimum of 250 ms for an open load to be detected.

The I.Ptxx.NoLoad tag indicates the presence of a no load condition when it is set to 1.

You can monitor a module tag in your program that corresponds to the No Load Detection to check for a fault. For more information on the tag, see Appendix B, [Module Tag Definitions on page 127](#).

To see where to configure the No Load Detection feature, see the following:

- 5069-OB8 module - [page 106](#)
- 5069-OB16 module - [page 107](#)
- 5069-OB16F module - [page 108](#)

Short Circuit Protection

Short Circuit Protection helps prevent damage to the output that can result when more current is present at the output than it can handle.

IMPORTANT The following 5069 Compact I/O digital output modules are the only ones to support the Short Circuit Detection feature:

- 5069-0B8
 - 5069-0B16
 - 5069-0B16F
-

When a short circuit condition is detected, the following occurs:

- The output turns off.
- The I/O status indicator for the output becomes steady red.
- The I.Ptxx.ShortCircuit tag is set to 1.

For more information on how to use the modules, see Appendix B, [Module Tag Definitions on page 127](#).

When the short circuit condition is removed, the following occurs:

- The output restarts in its commanded state.
- The I/O status indicator for the output turns off.
- The I.Ptxx.ShortCircuit tag is reset to 0.

For more information on the maximum current that you can apply to an output, see the 5069 Compact I/O Modules Specifications Technical Data, publication [5069-TD001](#).

Thermal Shutoff

Thermal Shutoff helps prevent damage to the output that can result when an output gets hotter than it can handle.

IMPORTANT The following 5069 Compact I/O digital output modules are the only ones to support the Thermal Shutoff feature:

- 5069-0B8
 - 5069-0B16
 - 5069-0B16F
-

This feature is **directly related to Short Circuit Protection** feature. The increased temperature at the output results from an excessive load at the output. That is, a load with high current is applied to the output. The high current heats the output beyond an acceptable temperature and the output turns off.

When conditions exist that cause Thermal Shutoff to turn off the output, the following occurs:

- The output turns off.
- The I/O status indicator for the output becomes solid red.
- The I.Ptxx.ShortCircuit tag is set to 1.

For more information on how to use the modules, see Appendix B, [Module Tag Definitions on page 127](#).

When the conditions that caused a Thermal Shutoff no longer exist, the following occurs:

- The output restarts in its commanded state.
- The I/O status indicator for the output turns off.
- The I.Ptxx.ShortCircuit tag is reset to 0.

Time-scheduled Output Control

You can schedule times for module outputs to turn On or Off. The time schedules use units in nanoseconds.

IMPORTANT This feature is available only on the 5069-OB16F module.

The timing of scheduled outputs for the 5069-OB16F module is as follows:

- $\pm 10 \mu\text{s}$ accuracy
- 1 ns resolution

The module must be time synced or schedules are not applied.

Time-scheduled output control is used with the Motion Arm Output Cam (MAOC) instruction. The MAOC instruction enables position-based output control in these ways:

- Uses the position of any motion axis in a Logix5000™ control system as the position reference
- Updates the outputs based on the motion axis position at the motion group coarse update rate, typically 1...32 ms.

The instruction can update standard digital output modules at the coarse update rate. However, some high-speed applications require a higher degree of accuracy.

The 5069-OB16F scheduled output module improves the accuracy of the MAOC instruction by supporting the ability to schedule output On and Off times. All scheduling configuration for the On and Off times of an output is completed through the MAOC instruction. The instruction then updates values in the outputs of the module that define the scheduled output behavior.

Table 11 - 5069-OB16F Digital Output Module Schedule Parameters

Feature	5069-OB16F
Number of schedules	32
Output points available for scheduling	16 (points 0...15)
Remote operation	N/A
Minimum schedule interval ⁽¹⁾	100 μs For schedules output the MAOC instruction, you can use 50 μs .

(1) The MAOC limits the minimum schedule interval (minimum pulse width) to 1/16 of the coarse update period.

Use an MAOC Instruction with a 5069-OB16F Output Module

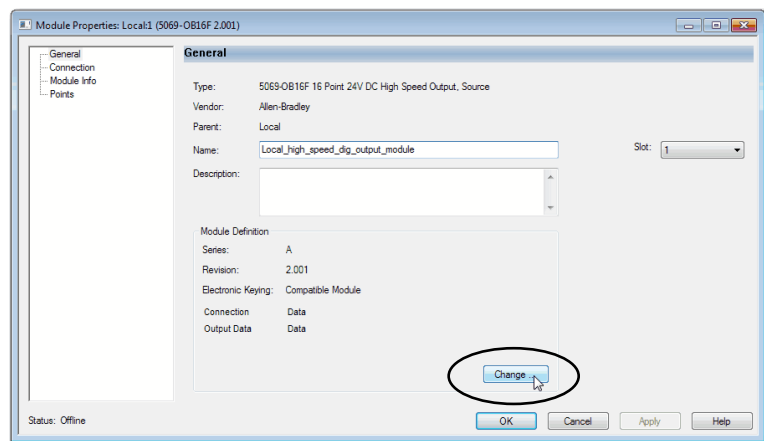
To use an MAOC instruction with schedule outputs on a 5069-OB16F output module, complete the following steps. The module can be a local I/O module or remote I/O module.

IMPORTANT Before you complete the steps, make sure that Time Synchronization is enabled in the controller and, if applicable, the Ethernet module, to use scheduled outputs.

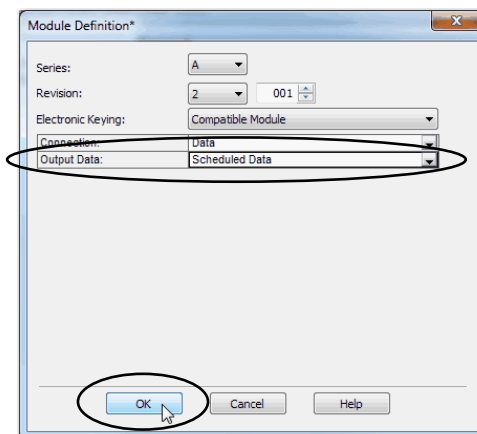
1. If necessary, add a 5069-OB16F output module to your Logix Designer application project.

For more information on how to add a 5069-OB16F output module to a Logix Designer application and configure the module, see Chapter 5, [Configure the Module on page 75](#).

2. From the Module Properties dialog box, click Change to access the Module Definition parameters.

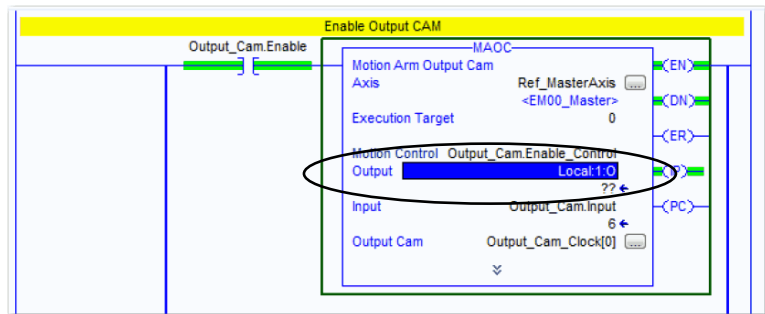


3. On the Module Definition dialog box, choose Scheduled Data for the Output Data and click OK.



4. Click OK to close the Module Properties dialog box.
5. Add an MAOC instruction to your logic.
6. In the MAOC instruction, use the module output tag in the Output operand, for example **Local:1:O** for a local output module and shown below.

The tag value displays as ???. This value is correct.



For more information on how to use an MAOC instruction in general, see the following:

- Logix5000 Controllers Motion Instructions Reference Manual, publication [MOTION-RM002](#)
- Position-based Output Control with the MAOC Instruction Application Technique, publication [1756-AT017](#)

Isolated and Non-isolated Varieties of Output Modules

The 5069-OW4I and 5069-OX4I digital output modules provide point-to-point wiring isolation.

IMPORTANT Although some 5069 Compact I/O digital I/O modules do not provide wiring isolation, all 5069 Compact I/O modules maintain internal electrical isolation between the system-side and field-side power buses.

Fault and Status Reporting

The digital output modules multicast fault and status data with channel data to the owner and listening controllers. The data is returned via module s that you can monitor in your Logix Designer application.

IMPORTANT For the 5069-OB16 and 5069-OB16F output modules only, an output must remain in the on state for a minimum of 250 ms for an overload or short circuit to be detected. However, if a short circuit condition exists long term, it is detected as long as the output is switching at a rate no faster than 1 ms.

For more information on fault reporting, see Appendix A, [Troubleshoot Your Module on page 113](#).

Table 12 - 5069 Compact I/O Digital Output Module - Fault and Data Status

Data Type	Name ⁽¹⁾	Triggering Event That Sets
Fault	ConnectionFaulted ⁽²⁾	The owner-controller loses its connection to the module.
	Ptxx.Fault	The point data quality is bad.
	Ptxx.NoLoad	A no load condition exists on the point.
	Ptxx.ShortCircuit	A short circuit condition exists on the point.
Status	RunMode	The module is in Run Mode.
	DiagnosticActive	
	DiagnosticSequenceCount	The count increments a diagnostic.
	Ptxx.Data	The point data is scaled in engineering units.
	Ptxx.Uncertain	The point data can be imperfect.
	Uncertain ⁽²⁾	The module is operating outside its designed operating range if data is under manual or override control.

(1) Not all tag names apply to all 5069 Compact I/O tag.digital I/O modules.

(2) This tag provides module-wide data an affects all channels simultaneously.

Configure the Module

Topic	Page
Before You Begin	76
Create a New Module	76
Edit the Module Configuration Common Categories	85
Edit 5069-IA16 Module Configuration Categories	90
Edit 5069-IB16 Module Configuration Categories	91
Edit 5069-IB16F Module Configuration Categories	93
Edit 5069-IB6F-3W Module Configuration Categories	99
Edit 5069-OA16 Module Configuration Categories	105
Edit 5069-OB8 Module Configuration Categories	106
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Edit 5069-OB16F Module Configuration Categories	108
Edit 5069-OW4I Module Configuration Categories	109
Edit 5069-OW16 Module Configuration Categories	110
Edit 5069-OX4I Module Configuration Categories	111
View the Module Tags	112

This chapter describes how to configure your 5069 Compact I/O™ digital I/O modules in a Logix Designer application project. You can use the default module configuration or edit the module configuration.

IMPORTANT Consider the following:

- You must use the Logix Designer application, version 28 or greater, to configure the 5069 Compact I/O modules. Version 28 or greater is slightly different from previous programming software versions. For example, in some cases, instead of tabs across the top of the Module Properties dialog box, the application uses categories on the left side of the dialog box.
- This chapter does not explain the user-configurable module features that you can edit on different screens in your Logix Designer application project.

For detailed information about module features, see the following:

- Chapter 2, [Common Digital I/O Module Features on page 33](#)
 - Chapter 3, [Digital Input Module Features on page 47](#)
 - Chapter 4, [Digital Output Modules Features on page 59](#)
-

Before You Begin

You must complete the following tasks before you can configure the module:

1. Create a Logix Designer application project.
2. If you use the 5069 Compact I/O modules as remote I/O modules, add a 5069 Compact I/O EtherNet/IP adapter to the project.

For more information on how to add a 5069 Compact I/O EtherNet/IP adapter to a Logix Designer application project, see the EtherNet/IP Communication Modules in 5000 Series Systems User Manual, publication [ENET-UM004](#).

Create a New Module

After you create a Logix Designer application project and, if necessary, add a 5069 Compact I/O EtherNet/IP adapter to the project, complete the following steps to create a module in the project.

There are two methods to add modules to your Logix Designer application project.

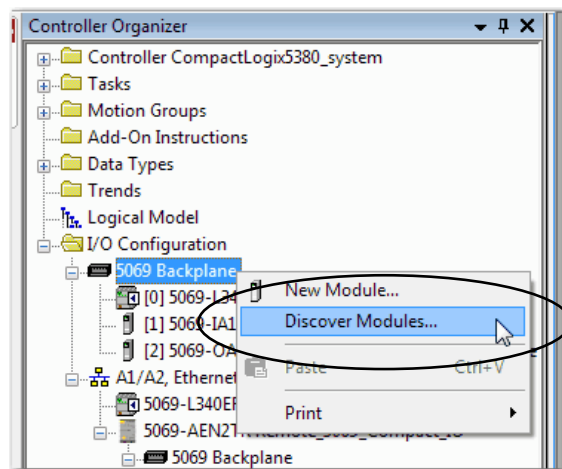
- Discover I/O modules
- New I/O modules

Discover Local I/O Modules

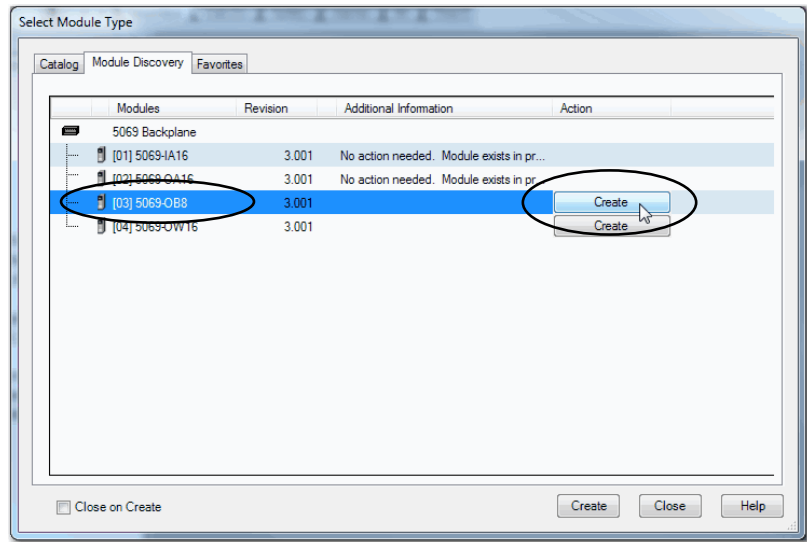
To use the Discover Modules method with local I/O modules, complete these steps.

1. Go online with your Logix Designer application.
2. Right-click the 5069 Backplane and choose Discover Modules.

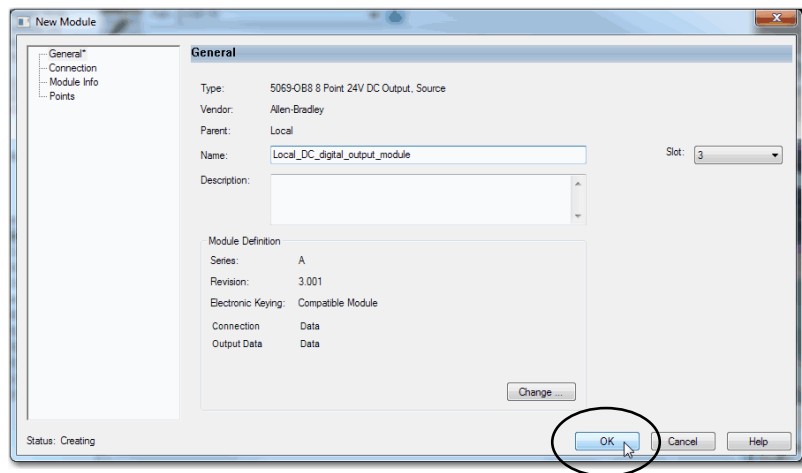
The Logix Designer application automatically detects available modules that are connected to the backplane.



- At the Select Module Type window, click Create to add the discovered module to your project.

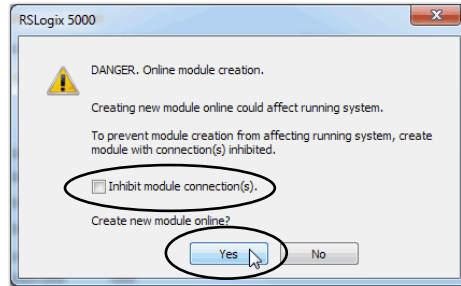


- At the New Module window, configure the module properties and click OK.



5. At the warning dialog box, click Yes.

TIP If you inhibit the module connection, you must remember to uninhibit the connection later.



6. Close the Select Module Type dialog box.

To add additional local I/O modules with this method, complete one of the following:

- If you cleared the Close on Create checkbox when you created the first I/O module, repeat steps [3...6](#).
- If you did not clear the Close on Create checkbox when you created the first I/O module, repeat steps [2...6](#).

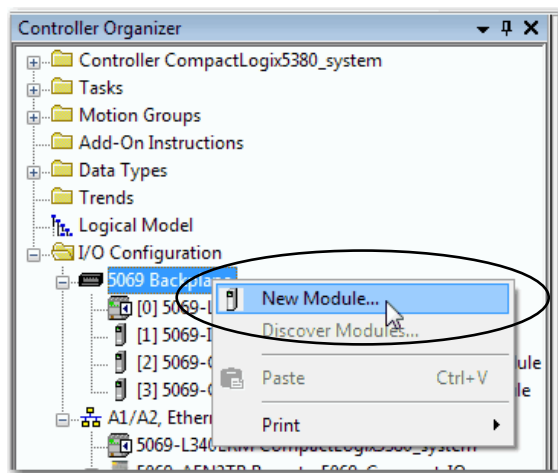
New Local I/O Modules

To use the New Module method with local I/O modules, complete these steps.

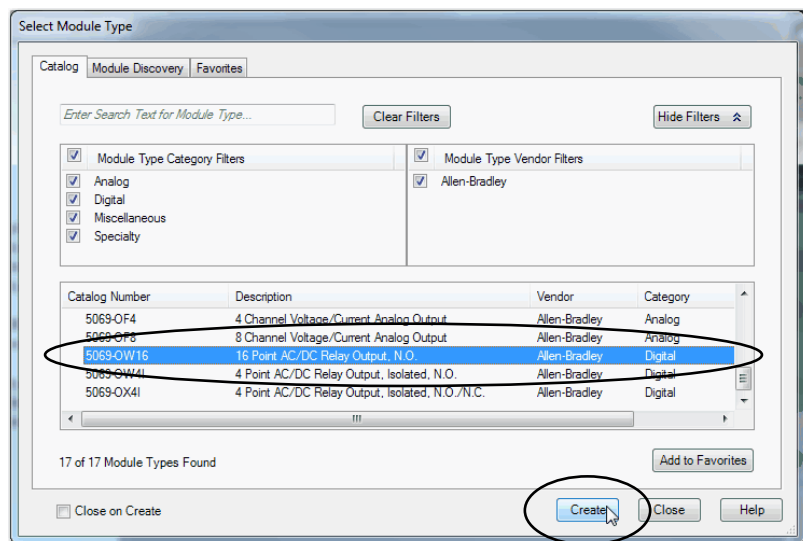
TIP This example shows how to add a local I/O module when the Logix Designer application project is offline.

You can add new modules when the project is online, if desired. In this case, the steps are similar to the steps described in [Discover Local I/O Modules on page 76](#). One exception is that, in step 1, you choose New Module instead of Discover Modules.

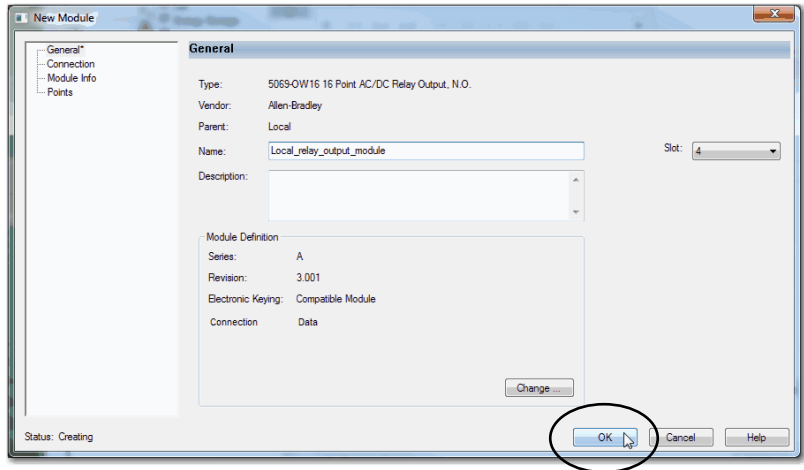
1. Right-click the 5069 Backplane and choose New Module.



2. At the Select Module Type window, click Create to add the discovered module to your project.



3. At the New Module window, configure the module properties and click OK.



To add additional local I/O modules with this method, complete one of the following:

- If you cleared the Close on Create checkbox when you created the first I/O module, repeat steps [2...3](#).
- If you did not clear the Close on Create checkbox when you created the first I/O module, repeat steps [1...3](#).

Discover Remote I/O Modules

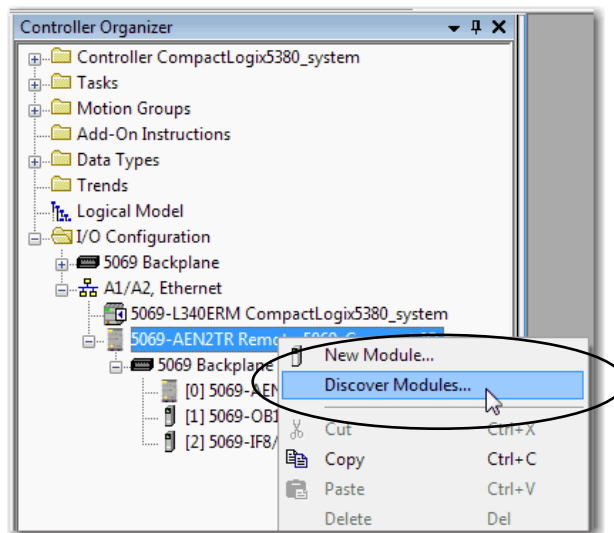
To use the Discover Modules method with remote I/O modules, complete these steps.

1. Go online with your Logix Designer application.

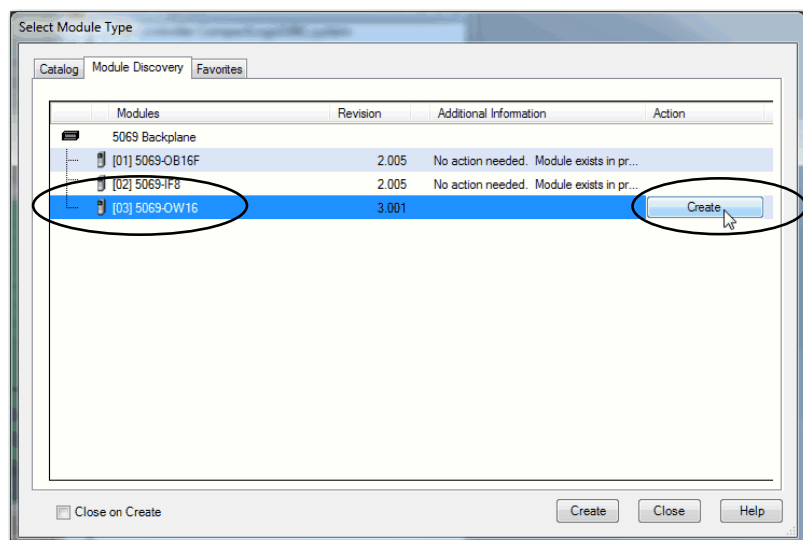
The project must include at 5069 Compact I/O EtherNet/IP adapter.

2. Right-click the 5069 Compact I/O EtherNet/IP adapter and choose Discover Modules.

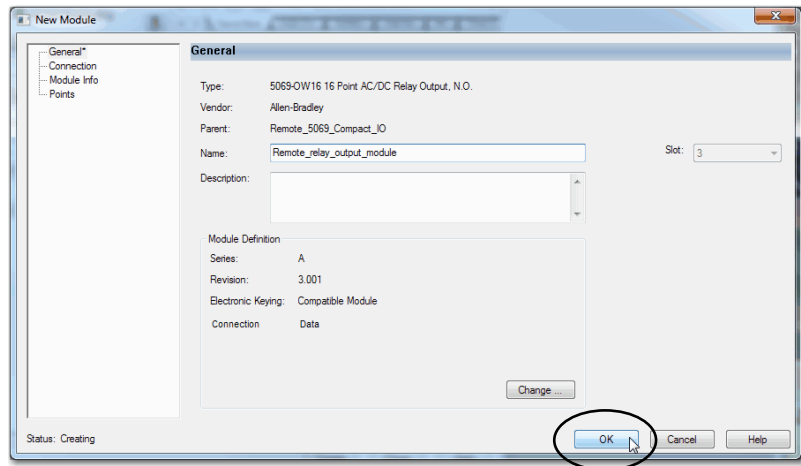
The Logix Designer application automatically detects available modules that are connected to the backplane.



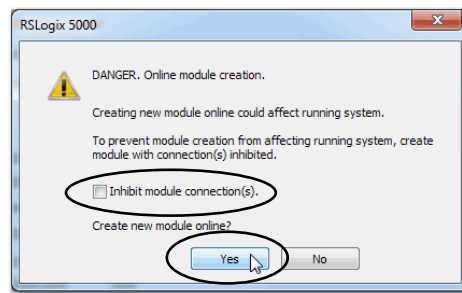
3. At the Select Module Type window, click Create to add the discovered module to your project.



4. At the New Module window, configure the module properties and click OK.



5. At the warning dialog box, make sure that Inhibit module connection is selected and click Yes.



6. Close the Select Module Type dialog box.

To add additional remote I/O modules with this method, complete one of the following:

- If you cleared the Close on Create check box when you created the first I/O module, repeat steps [3...6](#).
- If you did not clear the Close on Create checkbox when you created the first I/O module, repeat steps [2...6](#).

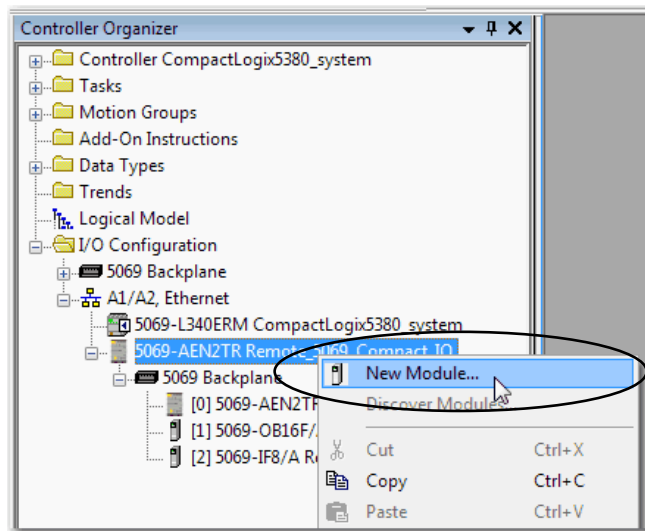
New Remote I/O Module

To use the New Module method with remote I/O modules, complete these steps.

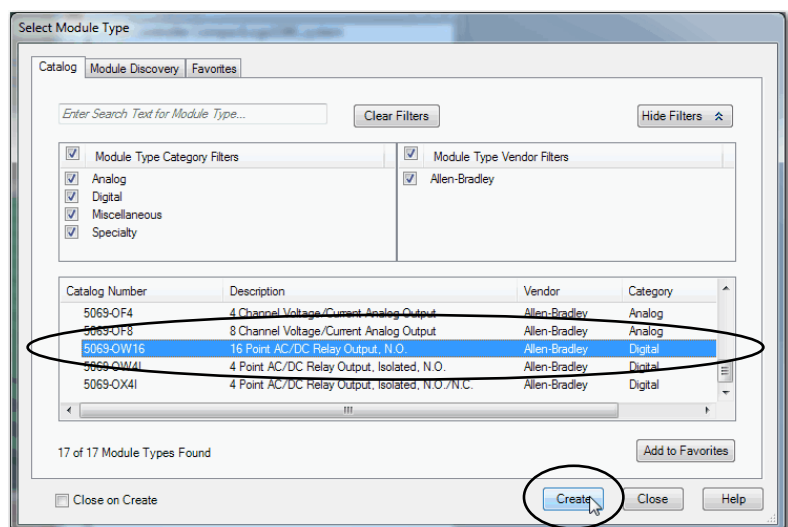
TIP This example shows how to add a local I/O module when the Logix Designer application project is offline.

You can add new modules when the project is online, if desired. In this case, the steps are similar to the steps described in [Discover Local I/O Modules on page 76](#). One exception is that, in step 1, you choose New Module instead of Discover Modules.

1. Right-click the 5069 Compact I/O EtherNet/IP adapter and choose New Module.

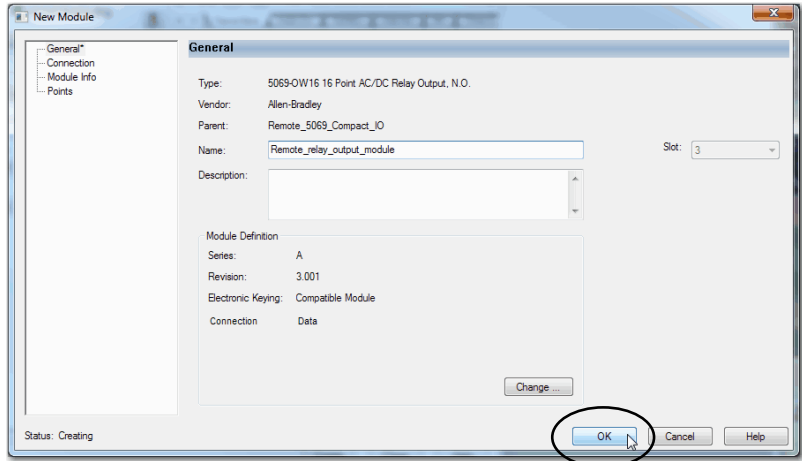


2. Select the module and click Create.



The New Module dialog box appears with a list of categories on the left side. The number and type of categories varies by module type.

3. You can click OK to use the default configuration as shown or edit the module configuration. The rest of this chapter describes how to edit module configuration categories.



To add additional remote I/O modules with this method, complete one of the following:

- If you cleared the Close on Create checkbox when you created the first I/O module, repeat steps [2...3](#).
- If you did not clear the Close on Create checkbox when you created the first I/O module, repeat steps [1...3](#).

Edit the Module Configuration Common Categories

You click the category names in the New Module dialog box to view and change the configuration parameters.

IMPORTANT This chapter shows how to edit configuration when you add the module to the Logix Designer application project.

If you access the module configuration after it is added to the project, the dialog box is named Module Properties. The same categories are displayed as the categories displayed on the New Module dialog box.

Some new module configuration categories apply to all 5069 Compact I/O digital I/O modules. Some categories are specific to the module type.

For example purposes, the figures in this section are from a 5069-IB16 module.

The following categories apply to all 5069 Compact I/O digital I/O modules and are described in this section.

- [General Category](#)
- [Connection Category](#)
- [Module Info Category](#)

General Category

The General category appears first when you create a module. The parameters in this category are the same for all 5069 Compact I/O digital I/O modules.

You use this category to complete the following optional tasks:

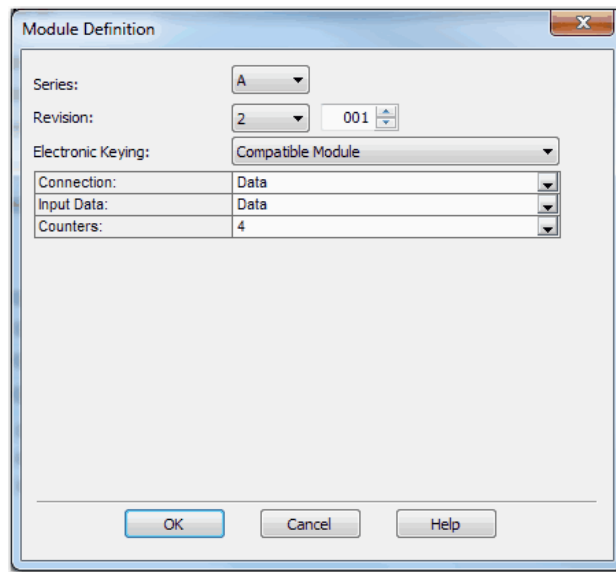
- Name the module.
- Assign a slot number. (required)
- Describe the module.
- Access the Module Definition.

Module Definition

Module Definition parameters are available on the General tab of the Module Properties dialog box in the Logix Designer application project.

[Table 13](#) describes the parameters on the Module Definition dialog box.

IMPORTANT The graphic is an example of a Module Definition dialog box. The same set off field and options are not available on all 5069 Compact I/O modules. For example, the 5069-IA16 input module does not support counters so the Counters parameter is not available on the Module Definition dialog box for that module.



[Table 13](#) describes the parameters that are available on the Module Definition dialog box.

Table 13 - Module Definition Parameters

Parameter	Definition	Available Choices ⁽¹⁾
Series	Module hardware series	Module-specific
Revision	Module firmware revision, including major and minor revision levels	Module-specific
Electronic Keying	Software method by which you reduce the possibility of using the wrong device in a control system. For more information, see the following: <ul style="list-style-type: none"> • View the Module Tags on page 112 • Electronic Keying in Logix5000 Control Systems Application Technique, publication LOGIX-AT001 	Exact Match Compatible Module Disable Keying
Connection	Determines the following for the module type you configure: <ul style="list-style-type: none"> • Available configuration parameters • Data type transferred between the module and the controller • Which tags are generated when configuration is complete 	Data Data with Events Listen Only Data ⁽²⁾
Input Data - Input modules only	All available configurations, input data. This connection type creates all controller tags specific to the module type being used.	Data Timestamped Data Packed Data
Counters - Input modules only	Determines the number of counters that are used for the module type.	None 2 4 8
Output Data - Output modules only	All available configurations, output data. This connection type creates all controller tags specific to the module type being used.	Data Scheduled Data Packed Data

(1) The choices that are available vary by module type and catalog number.

(2) Controller and module establish communication without the controller sending any configuration or output data to the module. A full input data connection is established but depends on the connection between the owner-controller and the module.

Connection Category

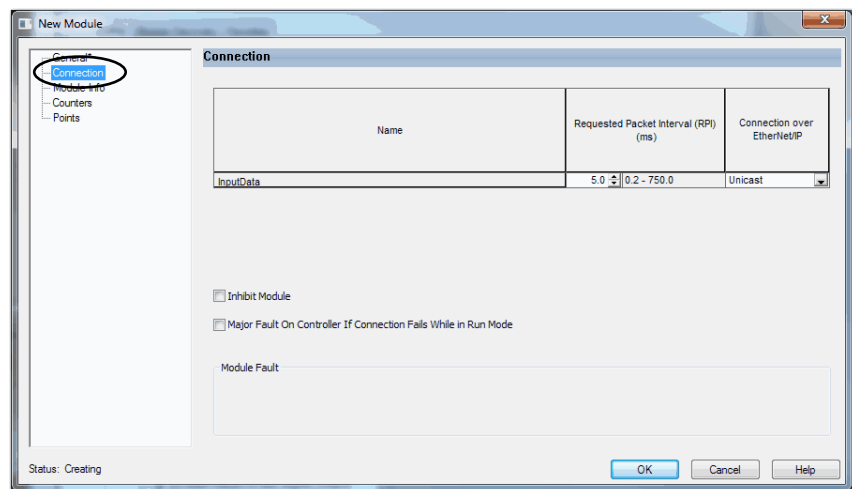
The Connection category lets you complete the following tasks:

- Set the RPI rate. For more information on the RPI, see [Requested Packet Interval on page 21](#).
- Set the Connection over the EtherNet/IP network type of connection.

For more information on unicast and multicast connections, see the EtherNet/IP Communication Modules in 5000 Series Systems User Manual, publication [ENET-UM004](#)

- Inhibit the module. For more information on inhibit the module, see [page 36](#).
- Configure whether a connection failure while the controller is in Run module causes a major or minor fault.

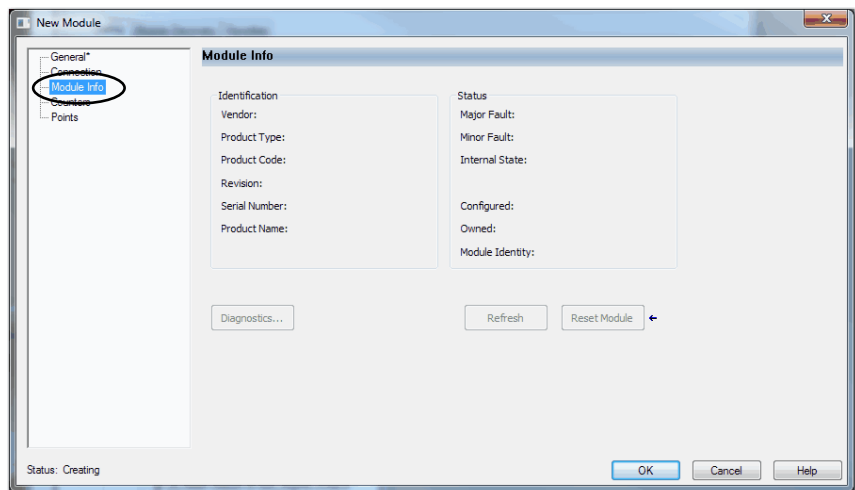
TIP The Module Fault area of the Connection category is useful during module troubleshooting. For more information on the Module Fault area, see [page 123](#).



Module Info Category

The Module Info category displays module and status information about the module when the project is online. You can use this category to complete the following:

- Determine the identity of the module.
- Access module diagnostics.
- Refresh the data on the screen.
- Reset the module.



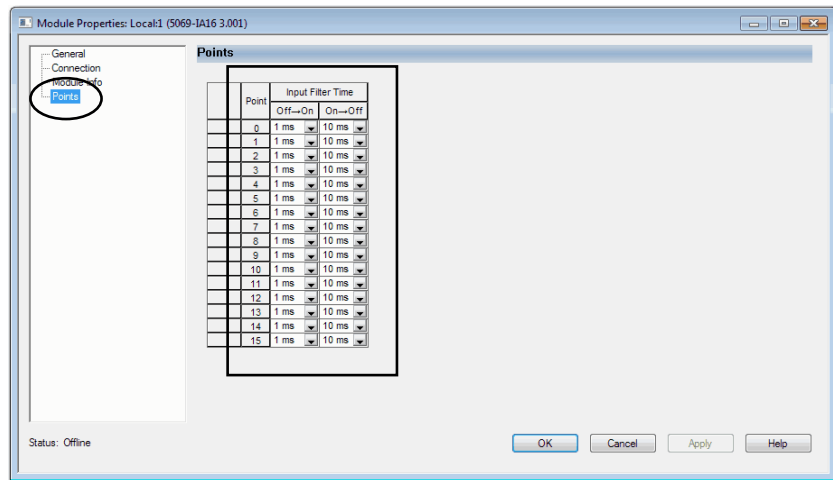
Edit 5069-IA16 Module Configuration Categories

In addition to the General, Connection, and Module Info categories, the Points category is available when you configure a 5069-IA16 module:

IMPORTANT If you use the Listen Only connection type, the Points category does not appear.

Points Category

The Points category shows the available input filter time values for the module points.



Edit 5069-IB16 Module Configuration Categories

In addition to the General, Connection, and Module Info categories, the following categories are available when you configure a 5069-IB16 module:

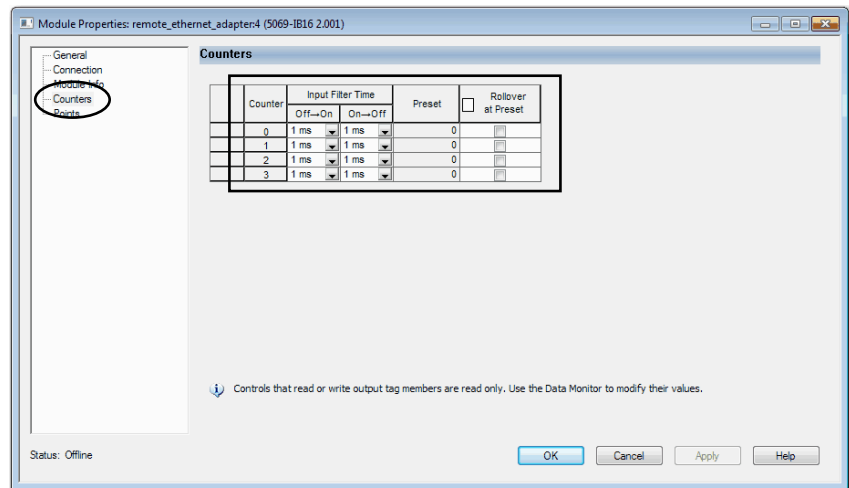
- [Counters Category](#)
- [Points Category](#)

IMPORTANT If you use the Listen Only connection type, the Points Category and Counters Category do not appear.

Counters Category

The Counters category is available only if you choose a value for Counters in the Module Definition dialog box.

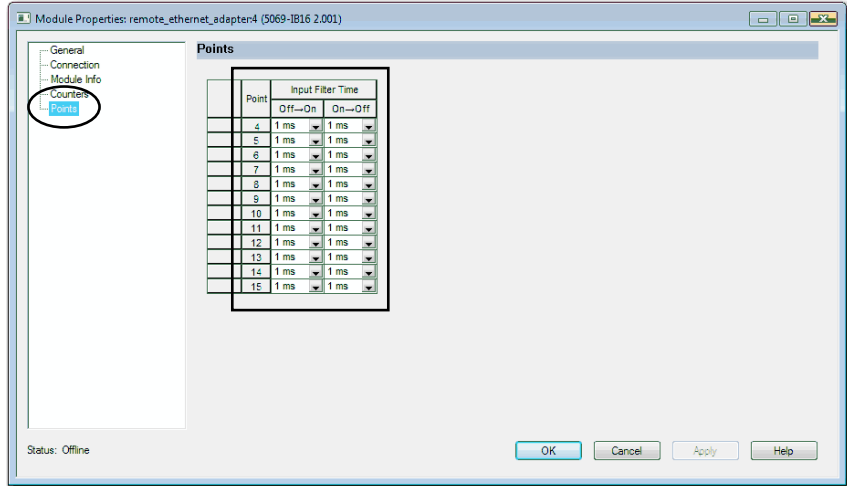
The Counters category shows the configuration options available for each counter. You can also configure the counter Preset value and enable Rollover at Preset.



IMPORTANT The total number of Counters subtracts from the available number of Points. For example, if you configure a 5069-IB16 module to use four counters, the first four terminals are not available to use as points. The number of points available on the module in this case is 12. That is, points 4 . . . 15.

Points Category

The Points category shows the available input filter time values for the module points.



Edit 5069-IB16F Module Configuration Categories

In addition to the General, Connection, and Module Info categories, the following categories are available when you configure a 5069-IB16F module:

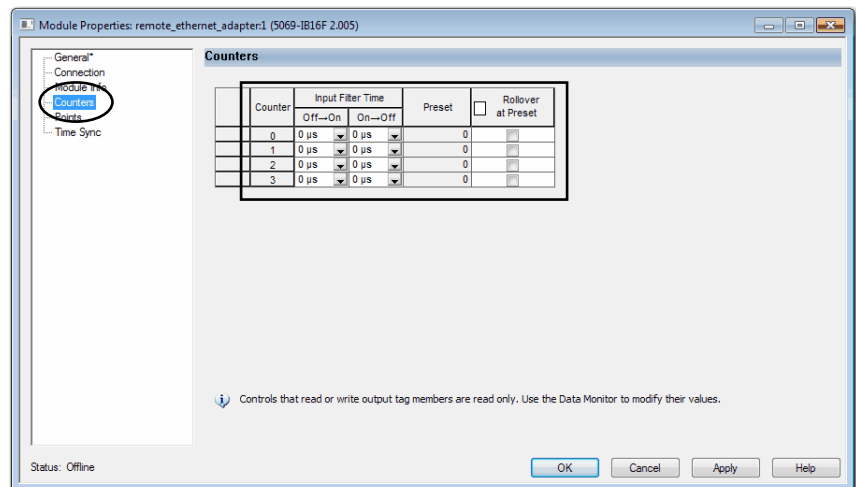
- [Counters Category](#)
- [Points Category](#)
- [Events Category](#)
- [Time Sync Category](#)

IMPORTANT If you use the Listen Only connection type, the Points Category, Counters Category, Events Category, and Time Sync Category do not appear.

Counters Category

The Counters category is available only if you choose a value for Counters in the Module Definition dialog box.

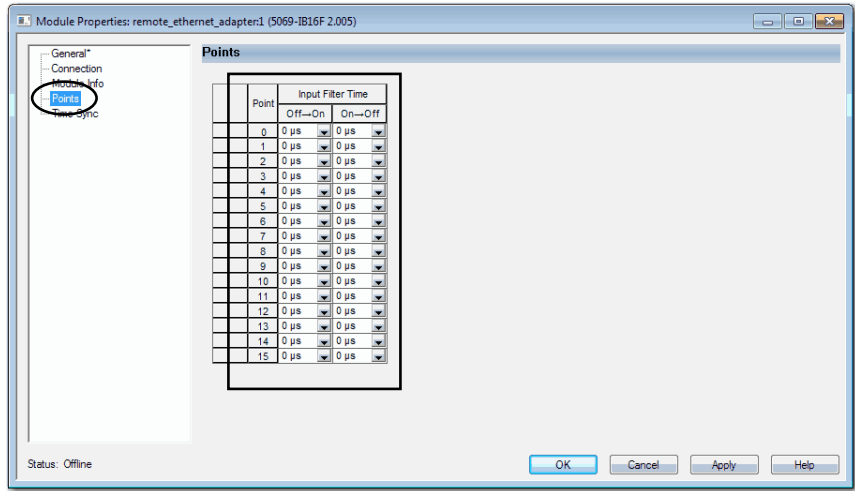
The Counters category shows the configuration options available for each counter. Based on your Input Filter Time selections, the Input Filter Time Off→On and On→Off times change. You can also configure the counter Preset value and enable Rollover at Preset.



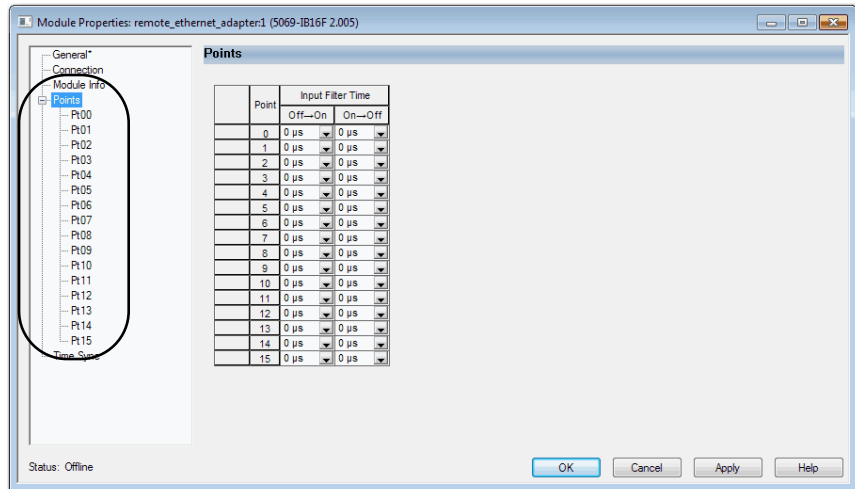
IMPORTANT The total number of Counters subtracts from the available number of Points. For example, if you configure a 5069-IB16F module to use four counters, the first four terminals are not available to use as points. The number of points available on the module in this case is 12. That is, points 4...15.

Points Category

The Points category shows the available input filter time values for the module points.



If you choose Timestamped Data for Input Data in the Module Definition dialog box, the Points category expands.

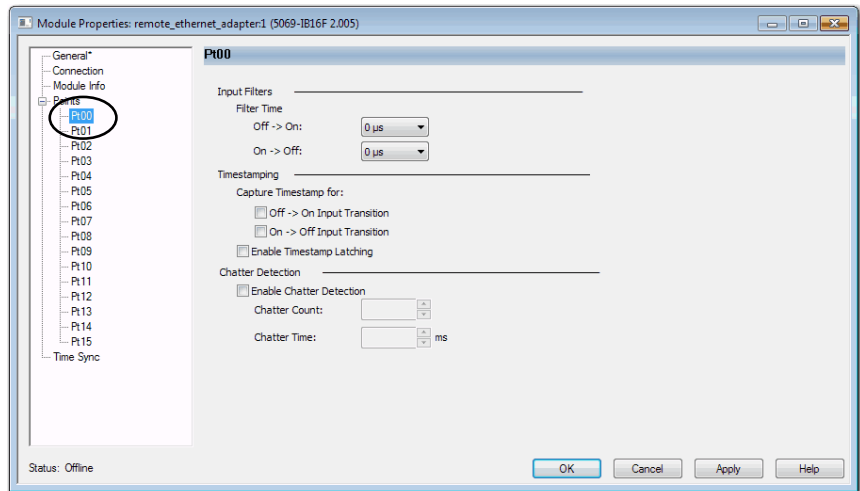


PTxx Category

The PTxx category shows the configuration options available when you use Timestamping on a point.

IMPORTANT You must choose the Input Data option Timestamp Data on the Module Definition dialog box to see this category in the Module Properties dialog box.

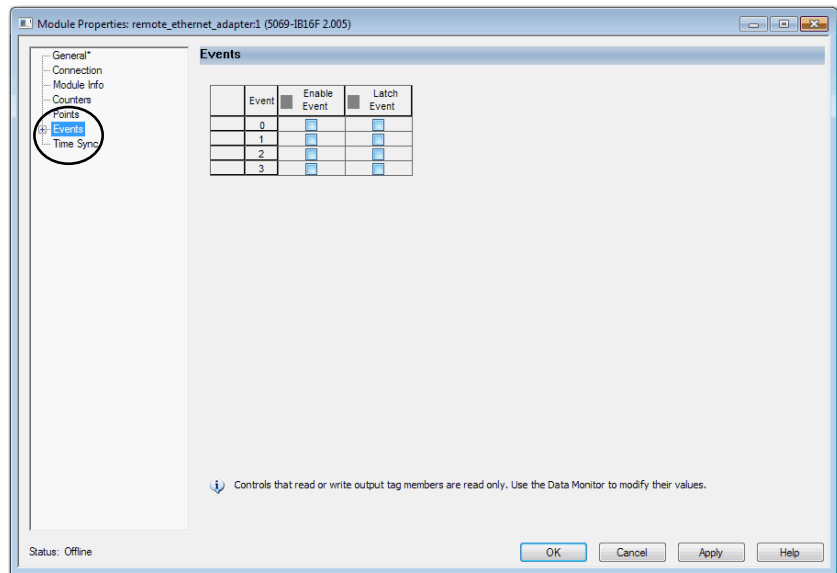
Click each Ptxx to configure it as necessary for your application.



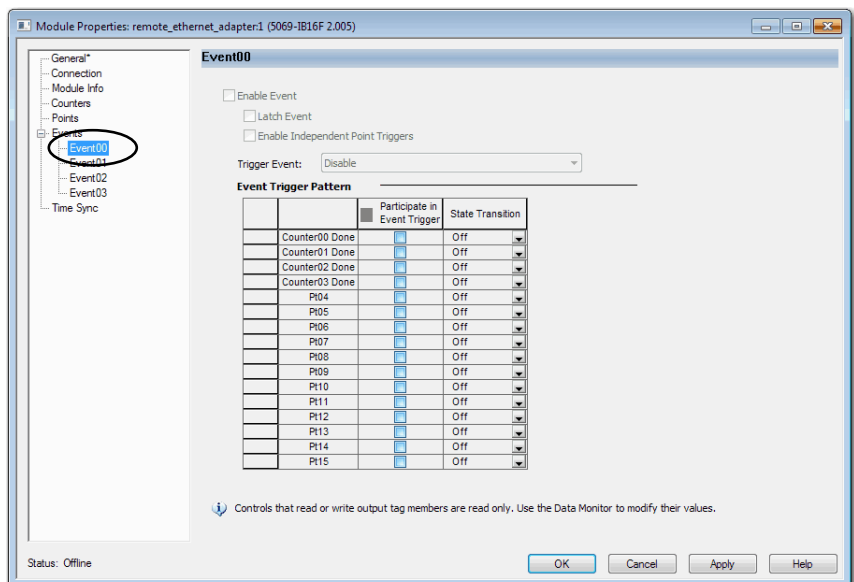
Events Category

The Events category is available only if you choose Data with Events for Connection in the Module Definition dialog box. Click the + sign next to the Events category to expand it.

IMPORTANT You cannot configure events on the Module Properties dialog box. The parameters that are displayed are read-only. You must use the Event Output tags to configure an event. For more information, see [Configure an Event in the Event Output Tags on page 97](#).



The Events subcategories show the configuration parameters for events.



Configure an Event in the Event Output Tags

To configure an event, you must change the Event Output tags for the affected module via the Tag Monitor in the Logix Designer application. When you change the tags, the change is reflected on the Module Properties dialog box.

The following graphics show how tag values are reflected on the Module Properties. The following conditions are shown:

- Event is enabled
- Point 4 is configured to trigger the event
- Event is latched
- Trigger Event is on input transition to match pattern

These changes in the Event Output tags configure the event. After the tags are changed, the related parameters on the Module Properties are updated automatically.

Name	Value	Force Mask
remote_ethernet_adapter:1:EO	{...}	{..
remote_ethernet_adapter:1:EO.Event00	{...}	{..
remote_ethernet_adapter:1:EO.Event00.En	1	
remote_ethernet_adapter:1:EO.Event00.EventRisingEn	1	
remote_ethernet_adapter:1:EO.Event00.EventFallingEn	0	
remote_ethernet_adapter:1:EO.Event00.LatchEn	1	
remote_ethernet_adapter:1:EO.Event00.ResetEvent	0	
remote_ethernet_adapter:1:EO.Event00.IndependentConditionTriggerEn	0	
remote_ethernet_adapter:1:EO.Event00.EventNumberAck	0	
remote_ethernet_adapter:1:EO.Event00.Counter00Select	0	
remote_ethernet_adapter:1:EO.Event00.Counter01Select	0	
remote_ethernet_adapter:1:EO.Event00.Counter02Select	0	
remote_ethernet_adapter:1:EO.Event00.Counter03Select	0	
remote_ethernet_adapter:1:EO.Event00.Pt04DataSelect	1	
remote_ethernet_adapter:1:EO.Event00.Pt05DataSelect	0	
remote_ethernet_adapter:1:EO.Event00.Pt06DataSelect	0	

Event00		
<input checked="" type="checkbox"/>	Enable Event	
<input checked="" type="checkbox"/>	Latch Event	
<input type="checkbox"/>	Enable Independent Point Triggers	
Trigger Event: On input transition to match pattern		
Event Trigger Pattern		
	Participate in Event Trigger	State Transition
Counter00 Done	<input type="checkbox"/>	Off
Counter01 Done	<input type="checkbox"/>	Off
Counter02 Done	<input type="checkbox"/>	Off
Counter03 Done	<input type="checkbox"/>	Off
Pt04	<input checked="" type="checkbox"/>	Off
Pt05	<input type="checkbox"/>	Off
Pt06	<input type="checkbox"/>	Off
Pt07	<input type="checkbox"/>	Off

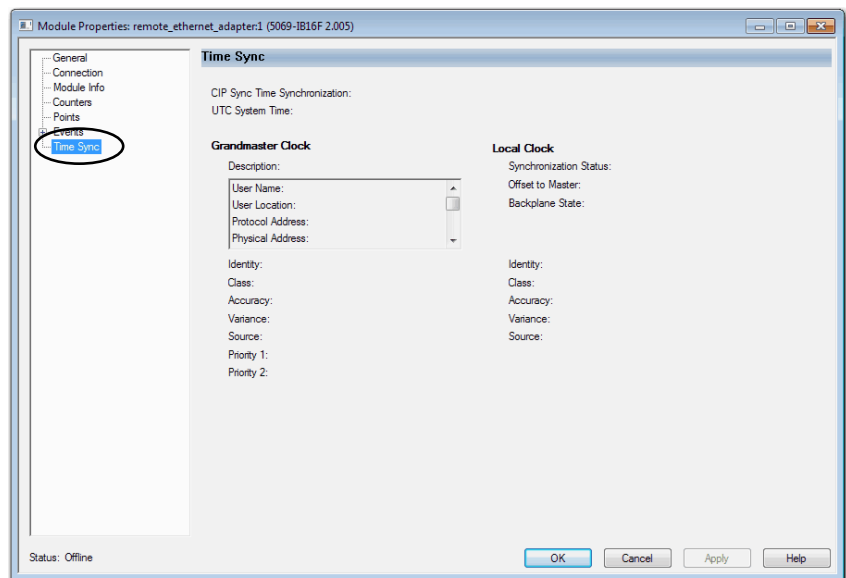
For more information on module tags, see the following:

- [View the Module Tags on page 112](#)
- Appendix B, [Module Tag Definitions on page 127](#)

Time Sync Category

The Time Sync category displays and status information about the module when the project is online. The Time Sync category displays the following information:

- CIP Sync Time Synchronization
- UTC System Time
- Grandmaster Clock information
- Local Clock information



Edit 5069-IB6F-3W Module Configuration Categories

In addition to the General, Connection, and Module Info categories, the following categories are available when you configure a 5069-IB6F-3W module:

- [Points Category](#)
- [Counters Category](#)
- [Events Category](#)
- [Time Sync Category](#)

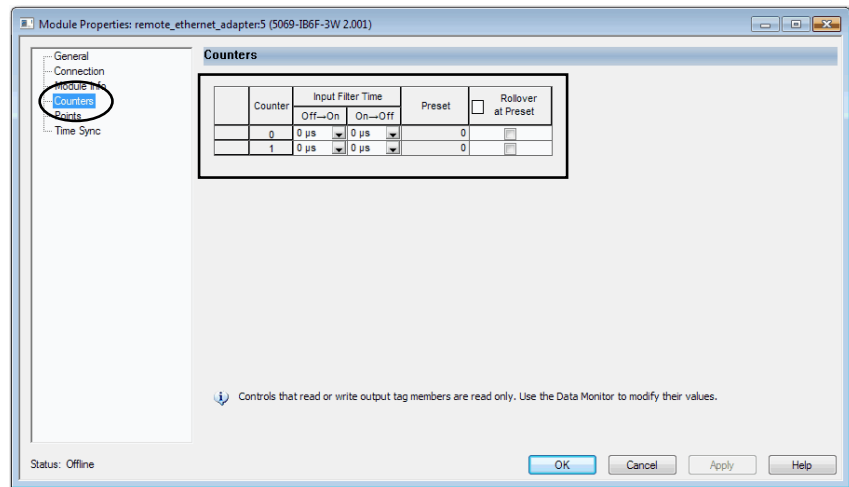
IMPORTANT If you use the Listen Only connection type, the Points Category, Counters Category, Events Category, and Time Sync Category do not appear.

Counters Category

The Counters category is available only if you choose a value for Counters in the Module Definition dialog box.

The Counters category for the 5069-IB6F-3W module functions the same as it does for the other 5069 Compact I/O digital input modules. The only difference is that the 5069-IB6F-3W module offers no more than four counters.

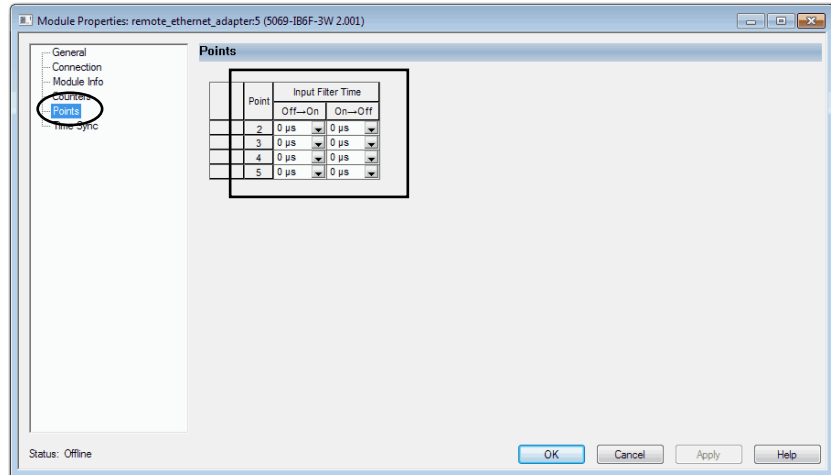
The Counters category shows the configuration options available for each counter. You can also configure the counter Preset value and enable Rollover at Preset.



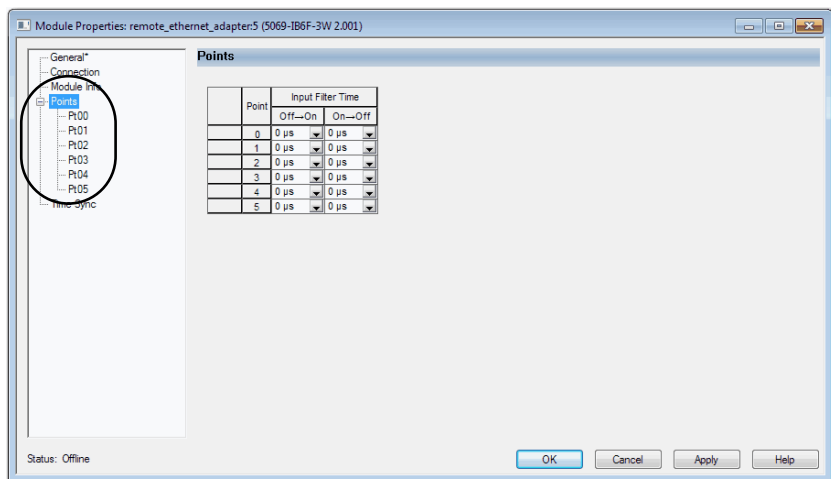
IMPORTANT The total number of Counters subtracts from the available number of Points. For example, if you configure a 5069-IB6F-3W module to use two counters, the number of points available on the module is 4. That is, points 2...5.

Points Category

The Points category shows the available input filter time values for the module points.



If you choose Timestamped Data for Input Data in the Module Definition dialog box, the Points category expands.

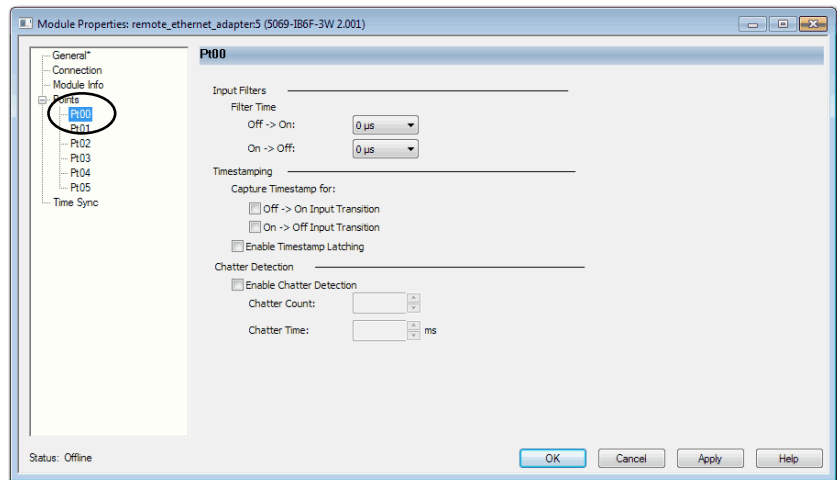


PTxx Category

The PTxx category shows the configuration options available when you use Timestamping on a point.

IMPORTANT You must choose the Input Data option Timestamp Data on the Module Definition dialog box to see this category in the Module Properties dialog box.

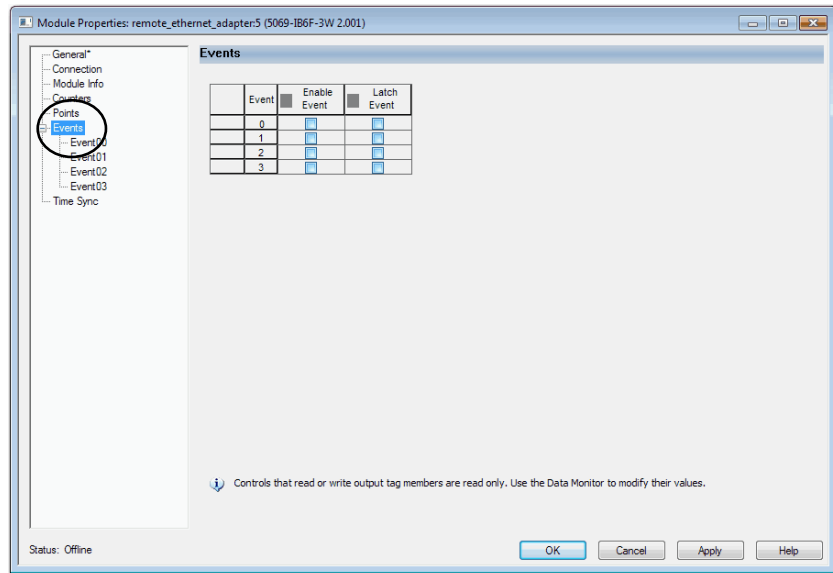
Click each PTxx to configure it as necessary for your application.



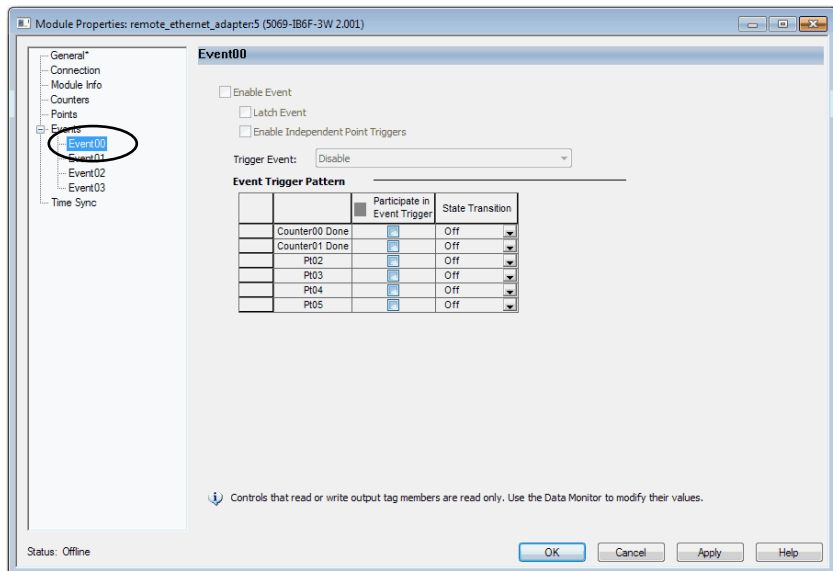
Events Category

The Events category is available only if you choose Data with Events for Connection in the Module Definition dialog box. Click the + sign next to the Events category to expand it.

IMPORTANT You cannot configure events on the Module Properties dialog box. The parameters that are displayed are read-only. You must use the Event Output tags to configure an event. For more information, see [Configure an Event in the Event Output Tags on page 103](#).



The Events subcategories show the configuration parameters for events.



Configure an Event in the Event Output Tags

To configure an event, you must change the Event Output tags for the affected module via the Tag Monitor in the Logix Designer application. When you change the tags, the change is reflected on the Module Properties dialog box.

The following graphics show how tag values are reflected on the Module Properties. The following conditions are shown:

- Event is enabled
- Point 4 is configured to trigger the event
- Event is latched
- Trigger Event is On input transition to match pattern

These changes in the Event Output tags configure the event. After the tags are changed, the related parameters on the Module Properties are updated automatically.

Name	Value	Force Mask	Style
+ remote_ethernet_adapter:5:C	{...}	{...}	
+ remote_ethernet_adapter:5:I	{...}	{...}	
+ remote_ethernet_adapter:5:O	{...}	{...}	
+ remote_ethernet_adapter:5:EI	{...}	{...}	
- remote_ethernet_adapter:5:EO	{...}	{...}	
- remote_ethernet_adapter:5:EO.Event00			
- remote_ethernet_adapter:5:EO.Event00.En	1		Dec
- remote_ethernet_adapter:5:EO.Event00.EventRisingEn	1		Dec
- remote_ethernet_adapter:5:EO.Event00.EventFallingEn	0		Dec
- remote_ethernet_adapter:5:EO.Event00.LatchEn	1		Dec
- remote_ethernet_adapter:5:EO.Event00.ResetEvent	0		Dec
- remote_ethernet_adapter:5:EO.Event00.IndependentConditionTriggerEn	0		Dec
+ remote_ethernet_adapter:5:EO.Event00.EventNumberAck	0		Dec
- remote_ethernet_adapter:5:EO.Event00.Counter00Select	0		Dec
- remote_ethernet_adapter:5:EO.Event00.Counter01Select	0		Dec
- remote_ethernet_adapter:5:EO.Event00.Pt02DataSelect	1		Dec

Event00

Enable Event

Latch Event

Enable Independent Point Triggers

Trigger Event: On input transition to match pattern

	Participate in Event Trigger	State Transition
Counter00 Done	<input type="checkbox"/>	Off
Counter01 Done	<input type="checkbox"/>	Off
Pt02	<input checked="" type="checkbox"/>	Off
Pt03	<input type="checkbox"/>	Off
Pt04	<input type="checkbox"/>	Off
Pt05	<input type="checkbox"/>	Off

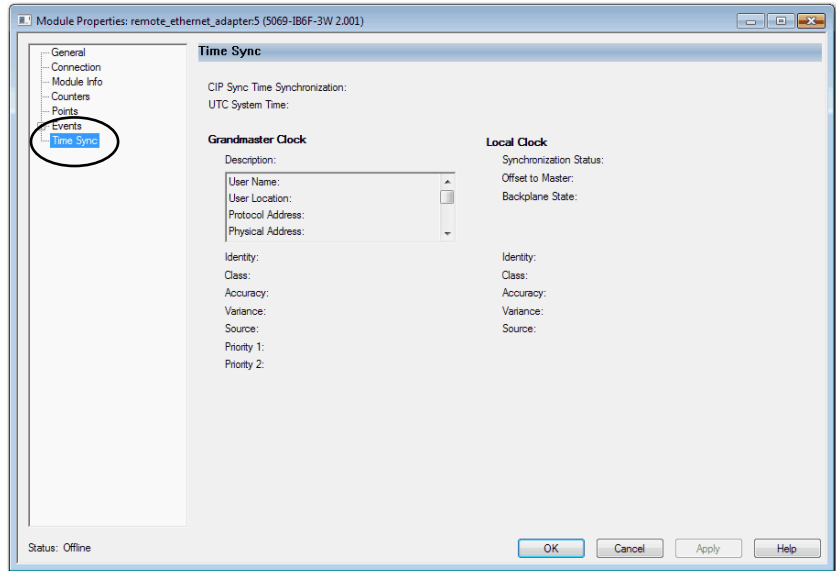
For more information on module tags, see the following:

- [View the Module Tags on page 112](#)
- Appendix B, [Module Tag Definitions on page 127](#)

Time Sync Category

The Time Sync category displays and status information about the module when the project is online. The Time Sync category displays the following information:

- CIP Sync Time Synchronization
- UTC System Time
- Grandmaster Clock information
- Local Clock information



Edit 5069-OA16 Module Configuration Categories

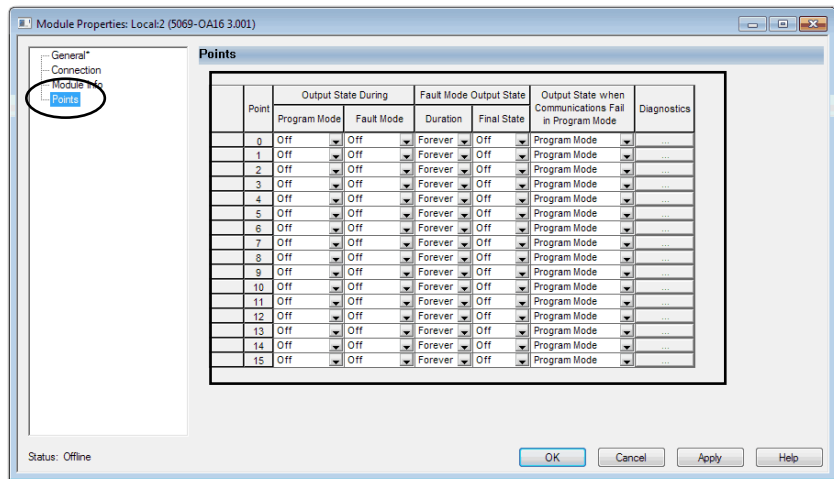
In addition to the General, Connection, and Module Info categories, the Points category is available when you configure a 5069-OA16 module.

IMPORTANT If you use the Listen Only connection type, the Points Category does not appear.

Points Category

The Points category shows the configuration options available for each point. You can configure the following parameters from the Points category:

- Output State During Program Mode
- Output State During Fault Mode
- Fault Mode Output State Duration
- Fault Mode Output State Final State
- Output State When Communications Fail in Program Mode



Edit 5069-OB8 Module Configuration Categories

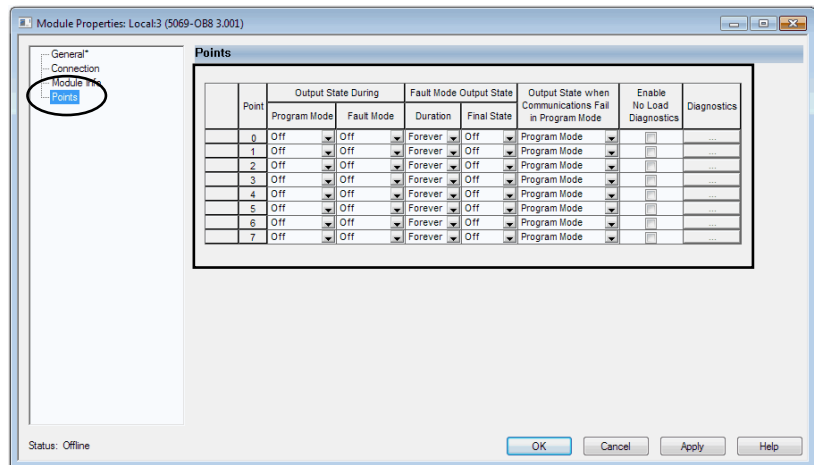
In addition to the General, Connection, and Module Info categories, the Points category is available when you configure a 5069-OB8 module.

IMPORTANT If you use the Listen Only connection type, the Points Category does not appear.

Points Category

The Points category shows the configuration options available for each point. You can configure the following parameters from the Points category:

- Output State During Program Mode
- Output State During Fault Mode
- Fault Mode Output State Duration
- Fault Mode Output State Final State
- Output State When Communications Fail in Program Mode
- Enable No Load Diagnostics



Edit 5069-OB16 Module Configuration Categories

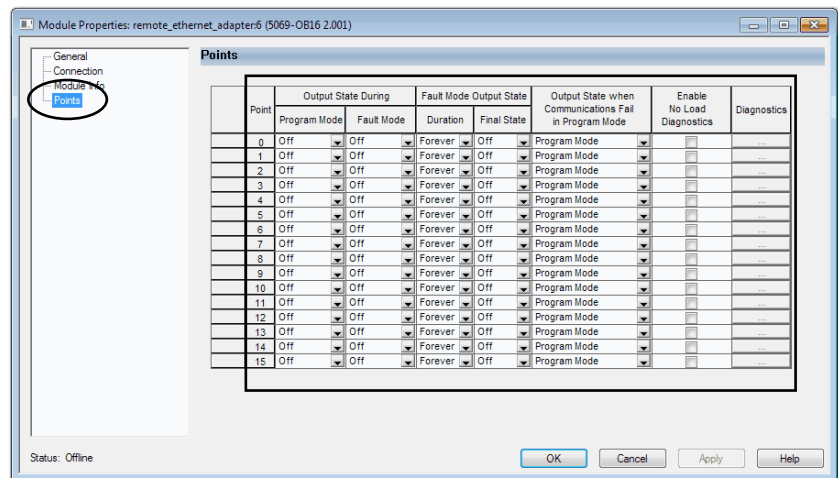
In addition to the General, Connection, and Module Info categories, the Points category is available when you configure a 5069-OB16 module.

IMPORTANT If you use the Listen Only connection type, the Points Category does not appear.

Points Category

The Points category shows the configuration options available for each point. You can configure the following parameters from the Points category:

- Output State During Program Mode
- Output State During Fault Mode
- Fault Mode Output State Duration
- Fault Mode Output State Final State
- Output State When Communications Fail in Program Mode
- Enable No Load Diagnostics



Edit 5069-OB16F Module Configuration Categories

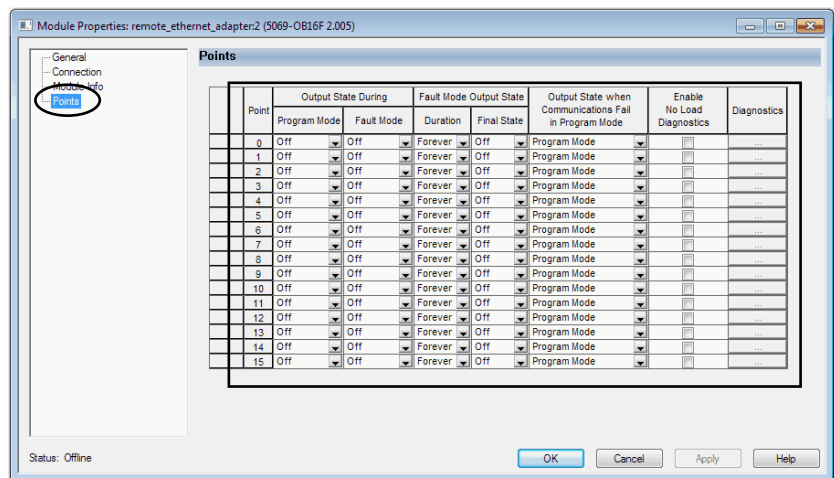
In addition to the General, Connection, and Module Info categories, the Points category is available when you configure a 5069-OB16F module.

IMPORTANT If you use the Listen Only connection type, the Points Category does not appear.

Points Category

The Points category shows the configuration options available for each point. You can configure the following parameters from the Points category:

- Output State During Program Mode
- Output State During Fault Mode
- Fault Mode Output State Duration
- Fault Mode Output State Final State
- Output State When Communications Fail in Program Mode
- Enable No Load Diagnostics



Edit 5069-OW4I Module Configuration Categories

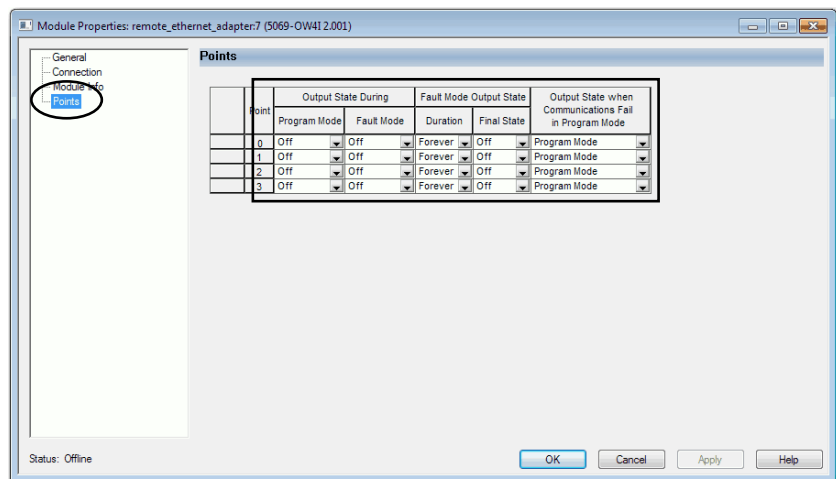
In addition to the General, Connection, and Module Info categories, the Points category is available when you configure a 5069-OW4I module.

IMPORTANT If you use the Listen Only connection type, the Points Category does not appear.

Points Category

The Points category shows the configuration options available for each point. You can configure the following parameters from the Points category:

- Output State During Program Mode
- Output State During Fault Mode
- Fault Mode Output State Duration
- Fault Mode Output State Final State
- Output State When Communications Fail in Program Mode



Edit 5069-OW16 Module Configuration Categories

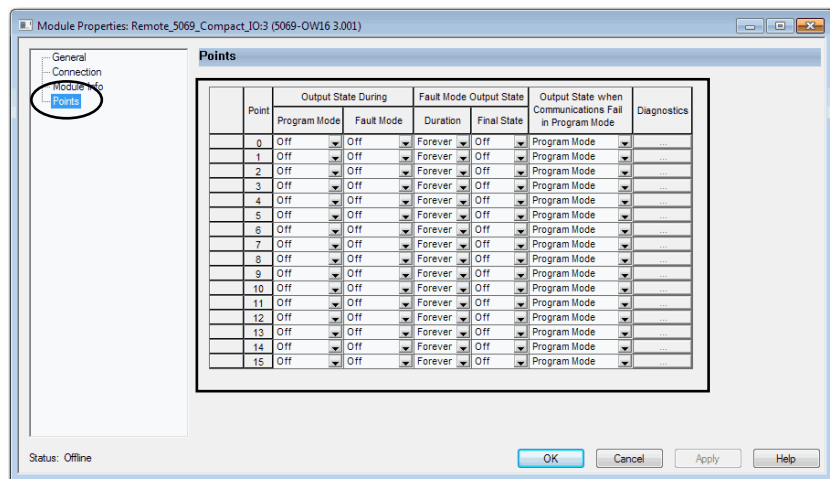
In addition to the General, Connection, and Module Info categories, the Points category is available when you configure a 5069-OW16 module.

IMPORTANT If you use the Listen Only connection type, the Points Category does not appear.

Points Category

The Points category shows the configuration options available for each point. You can configure the following parameters from the Points category:

- Output State During Program Mode
- Output State During Fault Mode
- Fault Mode Output State Duration
- Fault Mode Output State Final State
- Output State When Communications Fail in Program Mode



Edit 5069-OX4I Module Configuration Categories

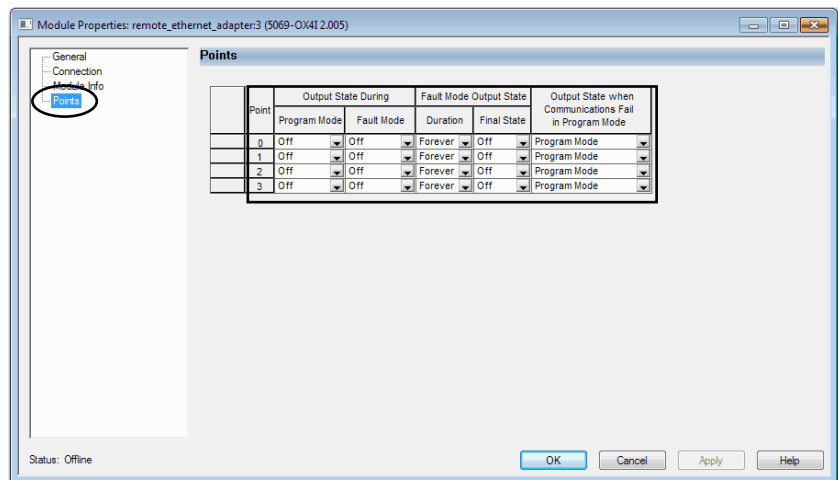
In addition to the General, Connection, and Module Info categories, the Points category is available when you configure a 5069-OX4I module.

IMPORTANT If you use the Listen Only connection type, the Points Category does not appear.

Points Category

The Points category shows the configuration options available for each point. You can configure the following parameters from the Points category:

- Output State During Program Mode
- Output State During Fault Mode
- Fault Mode Output State Duration
- Fault Mode Output State Final State
- Communication Failure Output State

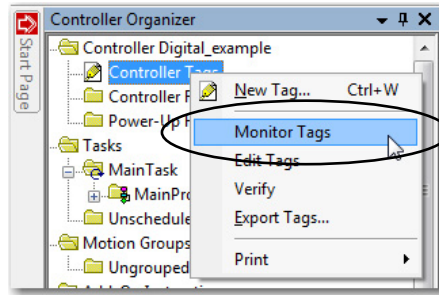


View the Module Tags

When you create a module, the Logix Designer application creates a set of tags that you can view in the Tag Editor. Each configured feature on your module has a distinct tag that is available for use in the controller program logic.

Complete the following steps to access the tags for a module.

1. In the Controller Organizer, right-click Controller Tags and choose Monitor Tags.



The Controller Tags dialog box appears with data.

2. To view the tags, click the + symbols as shown.

Name	Value	Force Mask	Style	Data Type
- remote_ethernet_adapter:1.C	{...}	{...}		AB:5000_DI16_IB16:C:0
+ remote_ethernet_adapter:1.C.P100	{...}	{...}		AB:5000_DI_Channel_IB16:C:0
- remote_ethernet_adapter:1.C.P101	{...}	{...}		AB:5000_DI_Channel_IB16:C:0
- remote_ethernet_adapter:1.C.P101.InputOffOnFilter	13		Decimal	SINT
- remote_ethernet_adapter:1.C.P101.InputOffOnFilter.0	1		Decimal	BOOL
- remote_ethernet_adapter:1.C.P101.InputOffOnFilter.1	0		Decimal	BOOL
- remote_ethernet_adapter:1.C.P101.InputOffOnFilter.2	1		Decimal	BOOL
- remote_ethernet_adapter:1.C.P101.InputOffOnFilter.3	1		Decimal	BOOL
- remote_ethernet_adapter:1.C.P101.InputOffOnFilter.4	0		Decimal	BOOL
- remote_ethernet_adapter:1.C.P101.InputOffOnFilter.5	0		Decimal	BOOL
- remote_ethernet_adapter:1.C.P101.InputOffOnFilter.6	0		Decimal	BOOL
- remote_ethernet_adapter:1.C.P101.InputOffOnFilter.7	0		Decimal	BOOL
+ remote_ethernet_adapter:1.C.P101.InputOffOnFilter	13		Decimal	SINT
+ remote_ethernet_adapter:1.C.P102	{...}	{...}		AB:5000_DI_Channel_IB16:C:0
+ remote_ethernet_adapter:1.C.P103	{...}	{...}		AB:5000_DI_Channel_IB16:C:0
+ remote_ethernet_adapter:1.C.P104	{...}	{...}		AB:5000_DI_Channel_IB16:C:0
+ remote_ethernet_adapter:1.C.P105	{...}	{...}		AB:5000_DI_Channel_IB16:C:0
+ remote_ethernet_adapter:1.C.P106	{...}	{...}		AB:5000_DI_Channel_IB16:C:0
+ remote_ethernet_adapter:1.C.P107	{...}	{...}		AB:5000_DI_Channel_IB16:C:0
+ remote_ethernet_adapter:1.C.P108	{...}	{...}		AB:5000_DI_Channel_IB16:C:0
+ remote_ethernet_adapter:1.C.P109	{...}	{...}		AB:5000_DI_Channel_IB16:C:0
+ remote_ethernet_adapter:1.C.P110	{...}	{...}		AB:5000_DI_Channel_IB16:C:0
+ remote_ethernet_adapter:1.C.P111	{...}	{...}		AB:5000_DI_Channel_IB16:C:0
+ remote_ethernet_adapter:1.C.P112	{...}	{...}		AB:5000_DI_Channel_IB16:C:0
+ remote_ethernet_adapter:1.C.P113	{...}	{...}		AB:5000_DI_Channel_IB16:C:0
+ remote_ethernet_adapter:1.C.P114	{...}	{...}		AB:5000_DI_Channel_IB16:C:0
+ remote_ethernet_adapter:1.C.P115	{...}	{...}		AB:5000_DI_Channel_IB16:C:0

For more information on module tags, see the following:

- [View the Module Tags on page 112](#)
- [Appendix B, Module Tag Definitions on page 127](#)

Troubleshoot Your Module

Topic	Page
Module Status Indicator	113
5069 Compact I/O Digital Input Modules Status Indicators	115
5069 Compact I/O Digital Output Modules Status Indicators	117
Use the Logix Designer Application for Troubleshooting	121

5069 Compact I/O™ digital I/O modules use the following status indicators:

- Module (MOD) Status Indicator - This indicator operates the same for all 5069 Compact I/O digital I/O modules.
- I/O Status Indicator - This indicator operates differently based on the module type.

Module Status Indicator

[Table 14](#) describes the Module (MOD) Status indicator on 5069 Compact I/O digital I/O modules.

Table 14 - Module Status Indicator - 5069 Compact I/O Digital I/O Modules

Indicator State	Description	Recommended Action
Off	The module is not powered.	None if your application does not use the module If your application uses the module and it is expected to be operating, complete the following: <ul style="list-style-type: none"> • Confirm that the system is powered. • Confirm that the module is installed properly.
Steady green	The module has a connection to the owner-controller and is operating normally.	None

Table 14 - Module Status Indicator - 5069 Compact I/O Digital I/O Modules

Indicator State	Description	Recommended Action
Flashing green	The following conditions exist: <ul style="list-style-type: none"> • The module is powering up. • The module has powered up successfully. • One of the following: <ul style="list-style-type: none"> – The module does not have a connection to the controller. A connection can result from missing, incomplete, or incorrect module configuration. – The module has a connection to the controller and the controller is in Program mode. 	Complete the following: <ul style="list-style-type: none"> • Troubleshoot your Logix Designer application to determine what is preventing a connection from the module to the controller and correct the issue. • Confirm that the system conditions require the controller to be in Remote Run mode or Run mode, transition the controller to one of those modes.
Steady red	The module experienced a nonrecoverable fault.	Complete the following actions: <ol style="list-style-type: none"> 1. Cycle power to the module. 2. If the status indicator remains in the steady red state, replace the module.
Flashing red	One of the following conditions exist: <ul style="list-style-type: none"> • A module firmware update is in progress. • A module firmware update attempt failed. • The device has experienced a recoverable fault. • A connection to the module has timed out. 	Complete one of the following: <ul style="list-style-type: none"> • Let the firmware update progress complete. • Reattempt a firmware update after one fails. • Use the Logix Designer application to determine the cause of the module fault. <p>The Connection and Module Info categories of the modules configuration indicate the fault type.</p> <p>To clear a recoverable fault, complete one of the following:</p> <ul style="list-style-type: none"> – Cycle module power. – Click Reset Module in the Logix Designer project via the Module Info category of the Module Properties dialog box. <p>If the fault does not clear after cycling power and clicking Reset Module, contact Rockwell Automation® Technical Support.</p> • Use the Logix Designer application to determine if a connection has timed out. The Connection category in the Module Properties for the module indicates the module state, including if a connection has timed out. <p>If a connection has timed out, determine the cause and correct it. For example, a cable failure can cause a connection timeout.</p>

5069 Compact I/O Digital Input Modules Status Indicators

Figure 6 shows the 5069 Compact I/O digital AC input module status indicators.

Figure 6 - 5069 Compact I/O Digital AC Input Module I/O Status Indicators

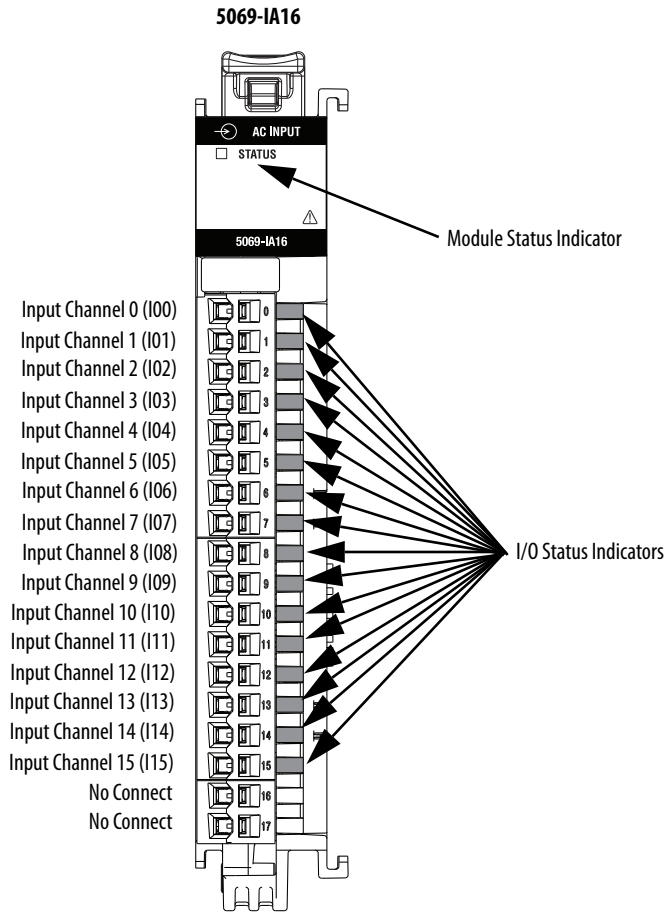


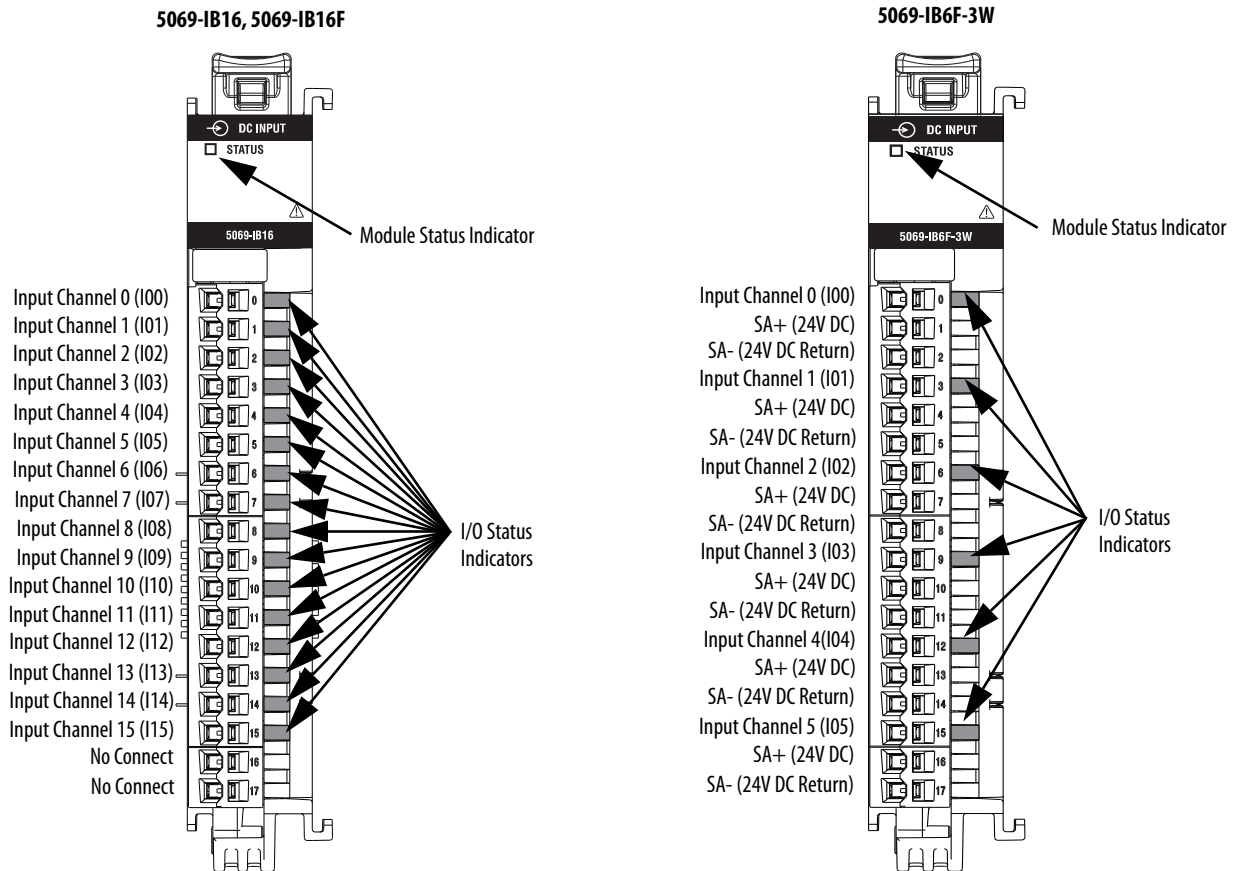
Table 15 describes the 5069 Compact I/O digital AC input module I/O status indicators.

Table 15 - I/O Status Indicators - 5069 Compact I/O Digital AC Input Module

Indicator State	Description	Recommended Action
Off	Input is Off, or no module power applied	None
Steady yellow	The input is On.	None
Steady red	The module experienced a hardware fault.	Cycle module power. If the status indicator remains in the steady red state, replace the module.

Figure 7 shows the 5069 Compact I/O digital DC input modules status indicators.

Figure 7 - 5069 Compact I/O Digital DC Input Module Status Indicators



IMPORTANT: The 5069-IB16F module status indicators appear the same as the indicators are shown on the 5069-IB16 module.

Table 16 describes the 5069 Compact I/O digital DC input modules I/O status indicators.

Table 16 - I/O Status Indicators - 5069 Compact I/O Digital DC Input Modules

Indicator State	Description	Recommended Action
Off	The input is Off, or no module power applied	None
Steady yellow	The input is On.	None
Steady red	The module experienced a hardware fault.	Cycle module power. If the status indicator remains in the steady red state, replace the module.

5069 Compact I/O Digital Output Modules Status Indicators

Figure 8 shows the status indicators on the 5069 Compact I/O digital AC output module.

Figure 8 - 5069 Compact I/O Digital AC Output Modules Status Indicators

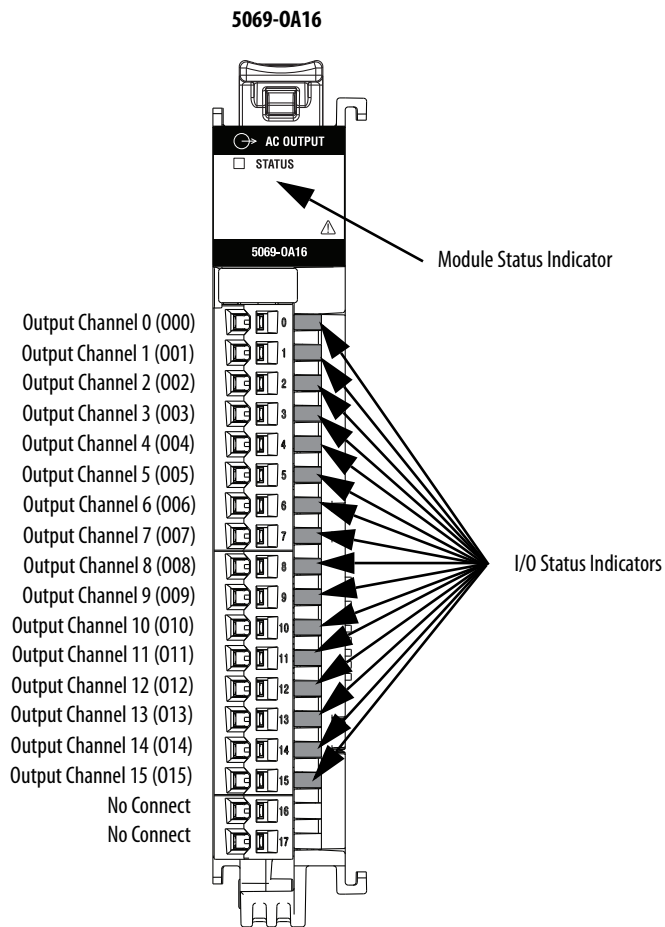


Table 17 describes the I/O Status indicators on 5069 Compact I/O digital AC output modules.

Table 17 - I/O Status Indicators - 5069 Compact I/O Digital AC Output Module

Indicator State	Description	Recommended Action
Off	Output is Off, or no module power applied.	None
Steady yellow	The output is On.	None
Flashing red	A Field Power Loss detection condition exists.	Reconnect power to the input.
Steady red	The module experienced a hardware fault.	Cycle module power. If the status indicator remains in the steady red state, replace the module.

Figure 9 show the status indicators on the 5069 Compact I/O digital DC output modules.

Figure 9 - 5069 Compact I/O Digital Output DC Modules Status Indicators

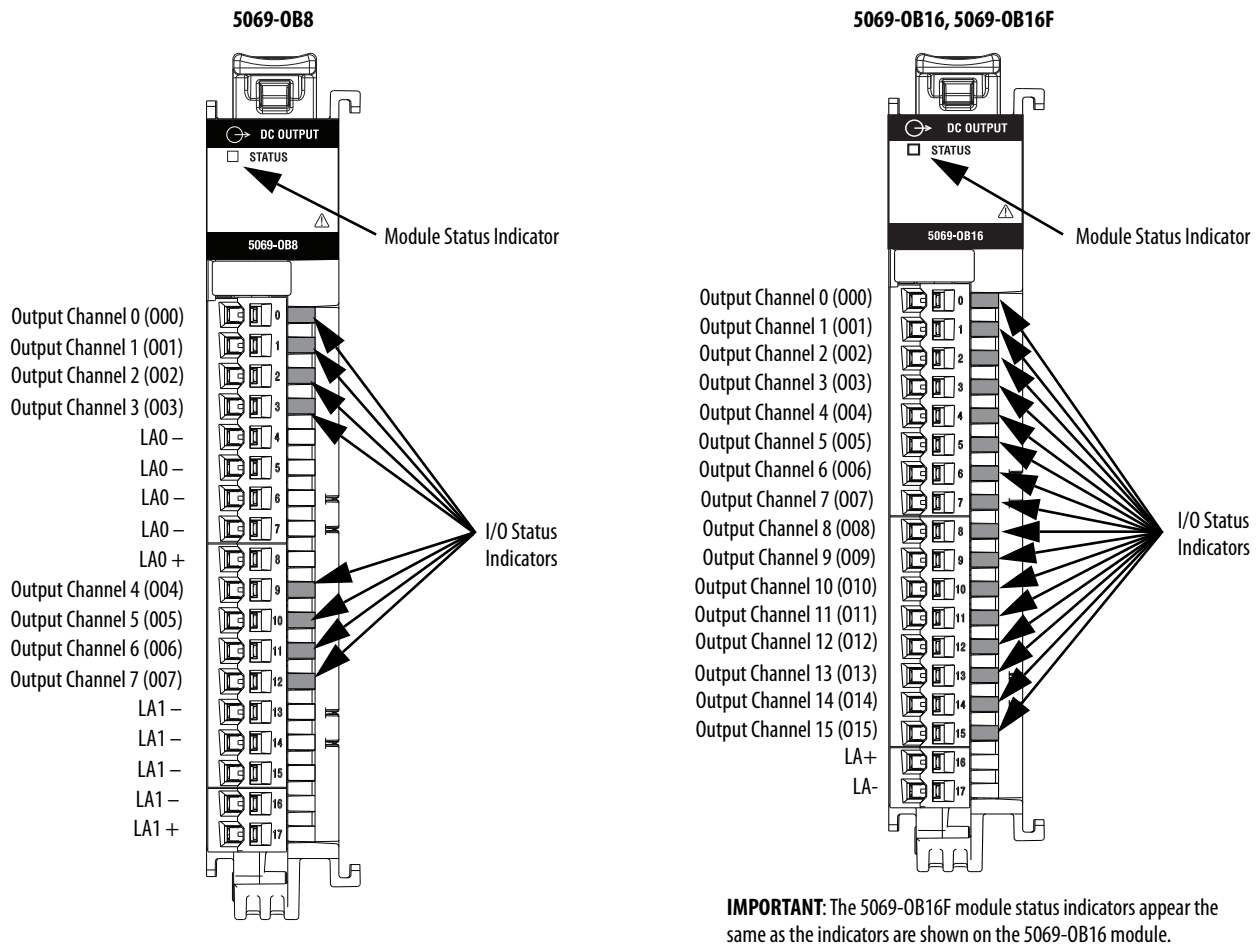
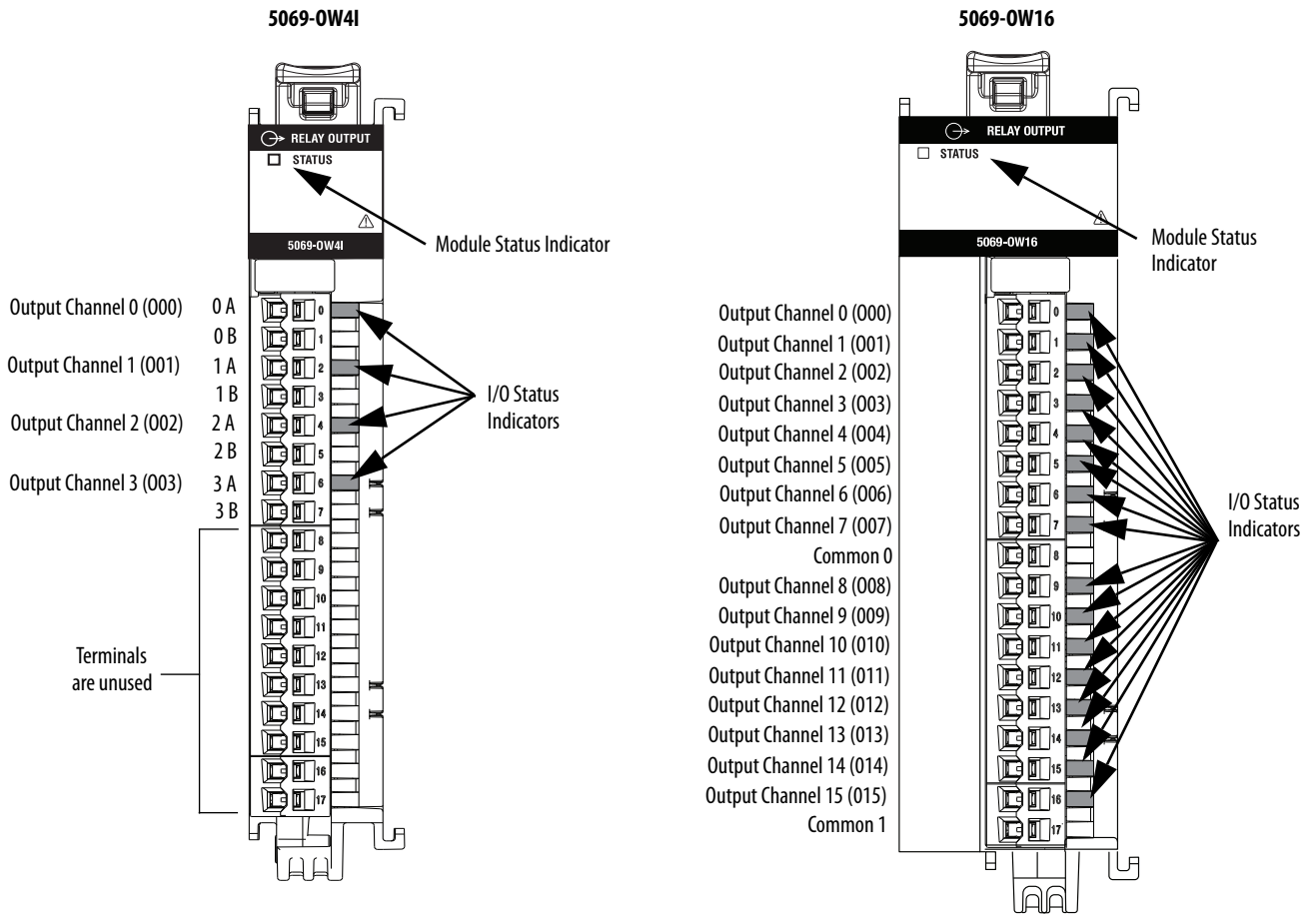


Table 18 describes the I/O Status indicators on 5069 Compact I/O digital DC output modules.

Table 18 - I/O Status Indicators - 5069 Compact I/O Digital DC Output Modules

Indicator State	Description	Recommended Action
Off	Output is Off, or no module power applied	None
Steady yellow	The output is On.	None
Flashing red	One of the following: <ul style="list-style-type: none"> A no load or short circuit condition is detected. 5069-0B8 only - A Field Power Loss condition exists. 	One of the following: <ul style="list-style-type: none"> Locate and correct the no load or short circuit condition. Locate and correct the cause of field power loss condition.
Steady red	The module experienced a hardware fault.	Cycle module power. If the status indicator remains in the steady red state, replace the module.

Figure 10 - 5069Compact I/O Digital Relay Output Module Status Indicators



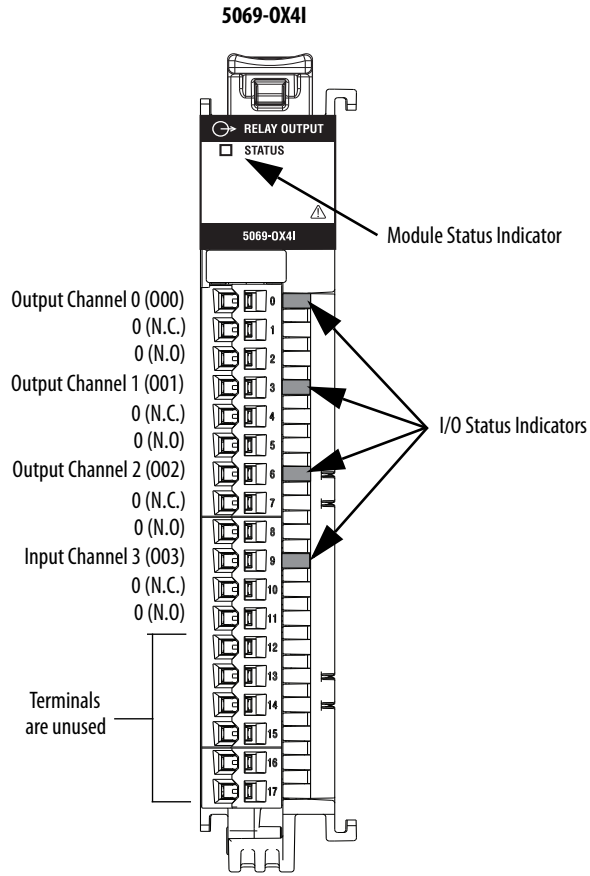


Table 19 describes the I/O Status indicators on 5069 Compact I/O digital relay output modules.

Table 19 - I/O Status Indicators - 5069 Compact I/O Digital Relay Output Modules

Indicator State	Description	Recommended Action
Off	Output is Off, or no module power applied	None
Steady yellow	The output is On.	None
Flashing red	5069-0W16 only - A Field Power Loss condition exists.	Locate and correct the cause of field power loss condition.
Steady red	The module experienced a hardware fault.	Cycle module power. If the status indicator remains in the steady red state, replace the module.

Use the Logix Designer Application for Troubleshooting

The Logix Designer application indicates the presence of fault conditions.

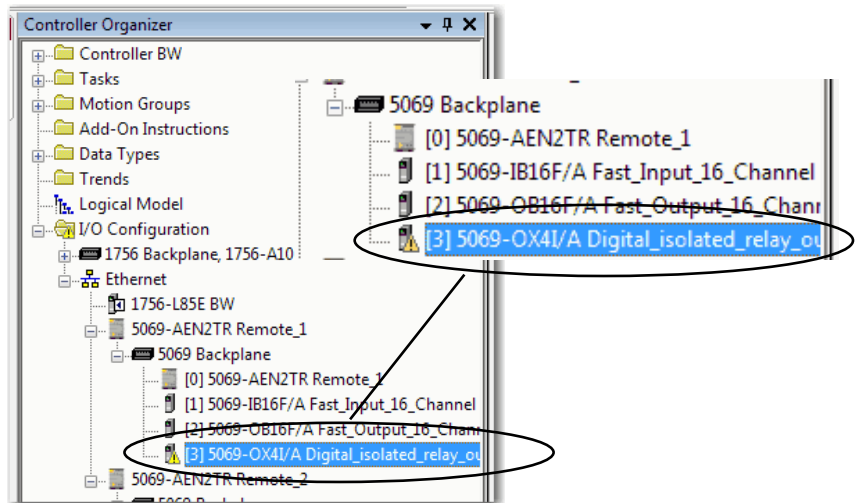
Fault conditions are reported in the following ways:

- [Warning Signal in the I/O Configuration Tree](#)
- [Status and Fault Information in Module Properties Categories](#)
- [Logix Designer Application Tag Editor](#)

Warning Signal in the I/O Configuration Tree

As shown in [Figure 11](#), a warning icon appears in the I/O Configuration tree when a fault occurs.

Figure 11 - Warning Icon in Controller Organizer



Status and Fault Information in Module Properties Categories

The Module Properties section in the Logix Designer application includes a series of categories. The numbers and types of categories varies by module type.

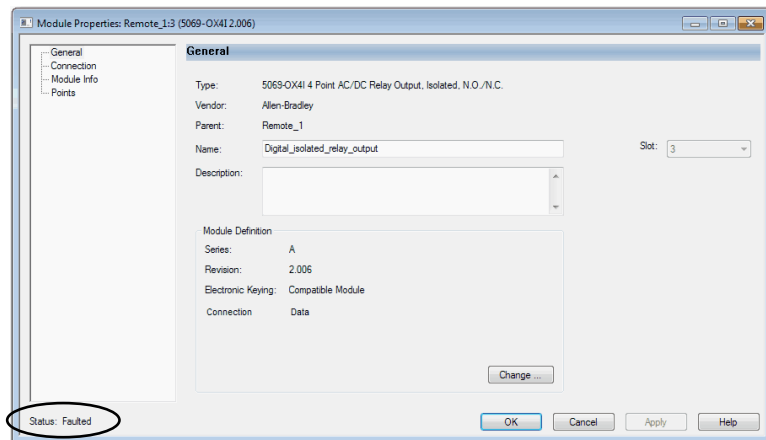
Each category includes options to configure the module or monitor the status of the module. The following are ways to monitor the state of a module for faults:

- [Module Status on General Category](#)
- [Module Fault Descriptions on Connection Category](#)
- [Module Fault Descriptions on Module Info Category](#)

Module Status on General Category

As shown in [Figure 12](#), the status of a module is indicated on the General category of the Modules Properties.

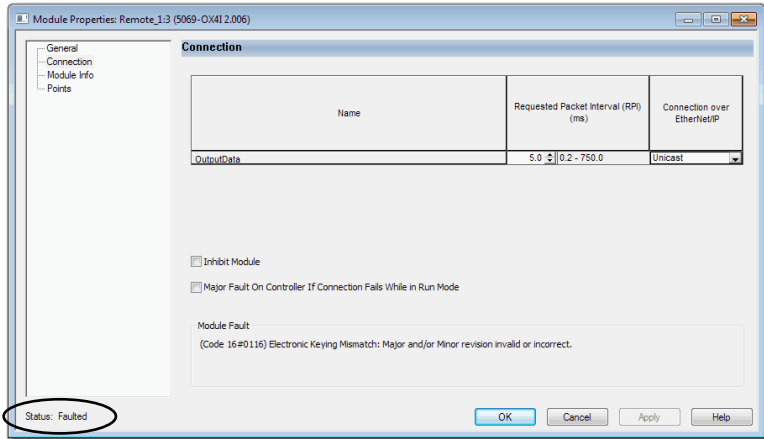
Figure 12 - Fault Message in Status Line



Module Fault Descriptions on Connection Category

As shown in [Figure 13](#), a module fault description that includes an error code that is associated with the specific fault type is listed on the Connection category.

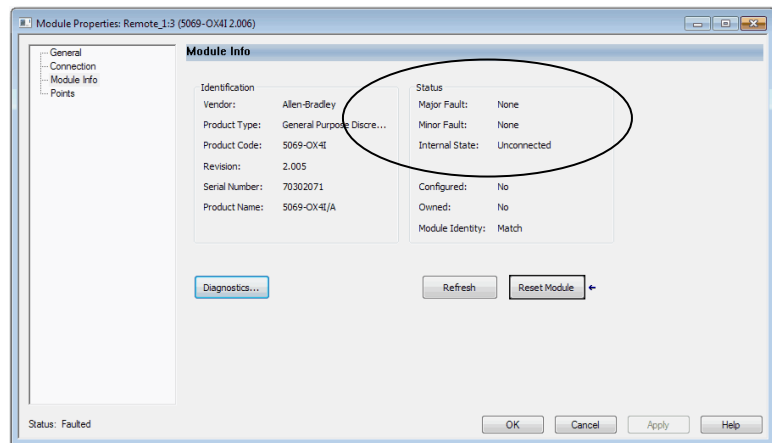
Figure 13 - Fault Description with Error Code



Module Fault Descriptions on Module Info Category

As shown in [Figure 14](#), major and minor fault information is listed on the Module Info tab in the Status section.

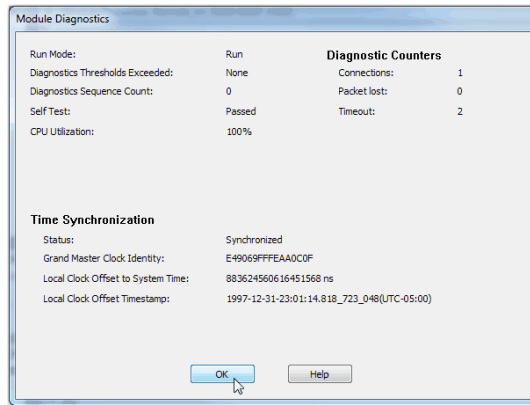
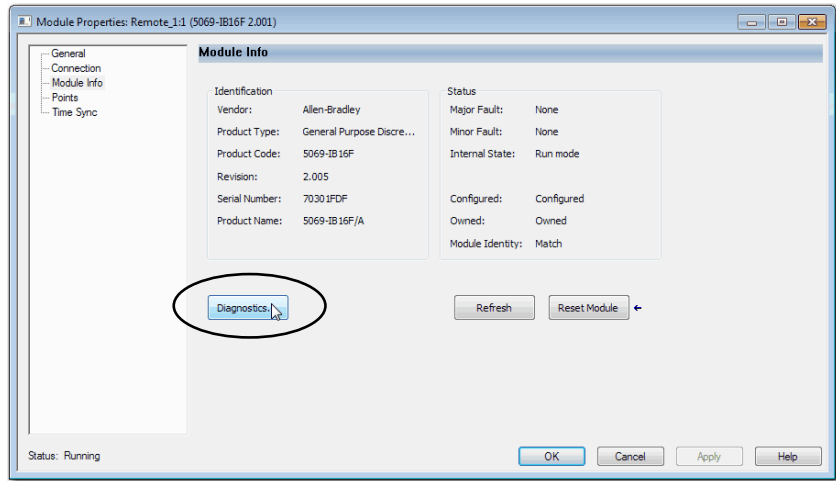
Figure 14 - Major and Minor Fault Information



Module Diagnostics Dialog Box

Module Diagnostics are accessible from the Module Properties dialog box, as shown in [Figure 15](#).

Figure 15 - Module Diagnostics



Logix Designer Application Tag Editor

Figure 16 show how fault conditions are indicated in the controller tags.

Figure 16 - Fault Indication in Controller Tags

Name	Value	Force Mask	Style	Data Type
MG_1	{...}	{...}		MOTION_GROUP
Remote_1:1:C	{...}	{...}		AB-5000_DI16:C:0
Remote_1:1:I	{...}	{...}		AB-5000_DI16:I:0
Remote_1:2:C	{...}	{...}		AB-5000_DO16:...
Remote_1:2:I	{...}	{...}		AB-5000_DO16:...
Remote_1:2:O	{...}	{...}		AB-5000_DO16:O:0
Remote_1:3:C	{...}	{...}		AB-5000_DO4:C:0
Remote_1:3:I	{...}	{...}		AB-5000_DO4:I:0
Remote_1:3:1.RunMode	0		Decimal	BOOL
Remote_1:3:1.ConnectionFaulted	1		Decimal	BOOL
Remote_1:3:1.DiagnosticActive	0		Decimal	BOOL
Remote_1:3:1.DiagnosticSequenceCount	0		Decimal	SINT
Remote_1:3:1.P00	{...}	{...}		CHANNEL_DO:1:0
Remote_1:3:1.P00 Data	0		Decimal	BOOL
Remote_1:3:1.P00 Fault	1		Decimal	BOOL
Remote_1:3:1.P00 Uncertain	0		Decimal	BOOL
Remote_1:3:1.P01	{...}	{...}		CHANNEL_DO:1:0

Notes:

Module Tag Definitions

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Module tags are created when you add a module to the Logix Designer application project.

The set of tags that are associated with any module depends on the choices that you make in the Module Definition dialog box. For example, if you use a Listen Only Connection, the Logix Designer application creates only Input tags for that module.

There are four sets of tags.

- Configuration
- Event Input - 5069-IB16F and 5069-IB6F-3W modules only
- Event Output - 5069-IB16F and 5069-IB6F-3W modules only
- Input
- Output

IMPORTANT The tables that are in this section list all tags available with a module. Not all tags in the list are used when that module type is added to a project. Tag use varies by module configuration.

Name Conventions

The module tags use defined naming conventions. The conventions are as follows: (example tag name = remote_ethernet_adapter_1:I.Pt00.Data).

The example module tag name is constructed as follows:

- remote_ethernet_adapter = name of the 5069 Compact I/O™ EtherNet/IP adapter in the 5069 Compact I/O system
- 1 = slot number
- I = tag type

The possible 5069 Compact I/O digital I/O tag types are C (configuration), EI (event input), EO (event output), I (input), O (output)

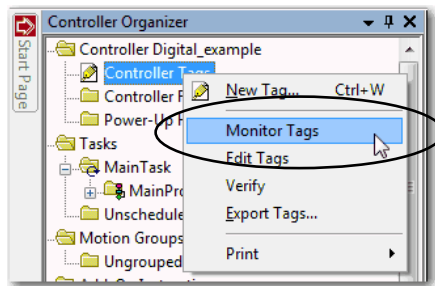
- Pt00 = module point number
- Data = function

In this case, Data represents the input data that is returned to the owner-controller.

Access the Tags

You can view tags from the Tag Editor.

1. Open your Logix Designer application project.
2. Right-click Controller Tags and choose Monitor Tags.



3. Open the tags as necessary to view specific tags.

Name	Value	Force Mask	Style	Data Type
remote_ethernet_adapter:1:C	[...]	[...]	[...]	AB:5000_DI16_IB16:C:0
remote_ethernet_adapter:1:C.Pt00	[...]	[...]	[...]	AB:5000_DI_Channel_IB16:C:0
remote_ethernet_adapter:1:C.Pt01	[...]	[...]	[...]	AB:5000_DI_Channel_IB16:C:0
remote_ethernet_adapter:1:C.Pt01.InputOnFilter	13			SINT
remote_ethernet_adapter:1:C.Pt01.InputOnFilter.0	1			Decimal
remote_ethernet_adapter:1:C.Pt01.InputOnFilter.1	0			Decimal
remote_ethernet_adapter:1:C.Pt01.InputOnFilter.2	1			Decimal
remote_ethernet_adapter:1:C.Pt01.InputOnFilter.3	1			Decimal
remote_ethernet_adapter:1:C.Pt01.InputOnFilter.4	0			Decimal
remote_ethernet_adapter:1:C.Pt01.InputOnFilter.5	0			Decimal
remote_ethernet_adapter:1:C.Pt01.InputOnFilter.6	0			Decimal
remote_ethernet_adapter:1:C.Pt01.InputOnFilter.7	0			Decimal
remote_ethernet_adapter:1:C.Pt01.InputOnFilter	13			Decimal
remote_ethernet_adapter:1:C.Pt02	[...]	[...]	[...]	AB:5000_DI_Channel_IB16:C:0

5069-IA16 Module Tags

This section describes the tags that are associated with the 5069-IA16 module.

Configuration Tags

[Table 20](#) describes the 5069-IA16 module configuration tags.

Table 20 - 5069-IA16 Module Configuration Tags

Name	Data Type	Definition	Valid Values
Ptxx.InputOffOnFilter	SINT	The amount of time that a signal must be in the on state before the input data indicates the on state. The amount of time is indicated using an enumeration. Not all products support all enumeration values.	The valid values are determined by the input signal. Input signal is 120V AC. <ul style="list-style-type: none"> 13 = 1 ms Input signal is 240V AC. <ul style="list-style-type: none"> 13 = 1 ms 14 = 2 ms 15 = 5 ms <p>IMPORTANT: Logix Designer application lets you enter tag values for filter values that are invalid for some input signals. Make sure that you select a valid input filter value. If you select an invalid input filter value, the module can read signal levels incorrectly.</p>
Ptxx.InputOnOffFilter	SINT	The amount of time that a signal must be in the off state before the input data indicates the off state. The amount of time is indicated using an enumeration. Not all products support all enumeration values.	Input signal is 120V AC: <ul style="list-style-type: none"> 16 = 10 ms 17 = 20 ms Input signal is 240V AC: <ul style="list-style-type: none"> 15 = 5 ms 16 = 10 ms 17 = 20 ms

Input Tags

[Table 21](#) describes the 5069-IA16 module input tags.

Table 21 - 5069-IA16 Module Input Tags

Name	Data Type	Definition	Valid Values
RunMode	BIT	Channel's operating state	<ul style="list-style-type: none"> 0 = Idle 1 = Run
ConnectionFaulted	BIT	Indicates if a connection is running. The module sets this tag to 0 when connected. If the module is not connected, it changes the tag to 1.	<ul style="list-style-type: none"> 0 = Connection running 1 = Connection not running
DiagnosticActive	BIT	Indicates if any diagnostics are active or if the prognostics threshold is reached.	<ul style="list-style-type: none"> 0 = No diagnostics active 1 = One or more diagnostics are active or the prognostics threshold is reached
DiagnosticSequenceCount	SINT	Increments for each time a distinct diagnostic condition is detected, and when a distinct diagnostic condition transitions from detected to not detected. Set to zero by product reset or power cycle. Wraps from 255 (-1) to 1 skipping zero.	<ul style="list-style-type: none"> -128...127 <p>The value of 0 is skipped except during module power-up.</p>
Ptxx.Data	BIT	Indicates the current digital input value.	<ul style="list-style-type: none"> 0 = Off 1 = On

Table 21 - 5069-IA16 Module Input Tags

Name	Data Type	Definition	Valid Values
Ptxx.Fault	BIT	Indicates that channel data is inaccurate and cannot be trusted for use in the application. For more information, see Module Data Quality Reporting on page 35 .	<ul style="list-style-type: none"> 0 = Good 1 = Bad, causing fault If the tag is set to 1, you must troubleshoot the module to correct the cause of the inaccuracy. IMPORTANT: Once the condition that causes the tag to change to 1 is removed, the tag automatically resets to 0.
Ptxx.Uncertain	BIT	Indicates that the channel data can be inaccurate but the degree of inaccuracy is not known. For more information, see Module Data Quality Reporting on page 35 .	<ul style="list-style-type: none"> 0 = Good data 1 = Uncertain data If the tag is set to 1, you must troubleshoot the module to correct the cause of the inaccuracy. IMPORTANT: Once the condition that causes the tag to change to 1 is removed, the tag automatically resets to 0.

5069-IB16 Module Tags

This section describes the tags that are associated with the 5069-IB16 module.

Configuration Tags

[Table 22](#) describes the 5069-IB16 module configuration tags.

Table 22 - 5069-IB16 Module Configuration Tags

Name	Data Type	Definition	Valid Values
Counterxx.InputOffOnFilter	SINT	The amount of time that a signal must be in the on state before the input data indicates the on state. The amount of time is indicated using an enumeration. Not all products support all enumeration values.	<ul style="list-style-type: none"> 9 = 0 µs 10 = 100 µs 11 = 200 µs 12 = 500 µs 13 = 1 ms 14 = 2 ms 15 = 5 ms 16 = 10 ms 17 = 20 ms 18 = 50 ms
Counterxx.InputOnOffFilter	SINT	The amount of time that a signal must be in the off state before the input data indicates the off state. The amount of time is indicated using an enumeration. Not all products support all enumeration values.	<ul style="list-style-type: none"> 9 = 0 µs 10 = 100 µs 11 = 200 µs 12 = 500 µs 13 = 1 ms 14 = 2 ms 15 = 5 ms 16 = 10 ms 17 = 20 ms 18 = 50 ms
Counterxx.RolloverAtPreset	BIT	Determines whether the simple counter will rollover to 0 when it reaches 0:Preset (1) or at 2147483647 (0).	<ul style="list-style-type: none"> 0 = Maximum value 1 = Preset value

Table 22 - 5069-IB16 Module Configuration Tags

Name	Data Type	Definition	Valid Values
Ptxx.InputOffOnFilter	SINT	The amount of time that a signal must be in the on state before the input data indicates the on state. The amount of time is indicated using an enumeration. Not all products support all enumeration values.	<ul style="list-style-type: none"> • 9 = 0 μs • 10 = 100 μs • 11 = 200 μs • 12 = 500 μs • 13 = 1 ms • 14 = 2 ms • 15 = 5 ms • 16 = 10 ms • 17 = 20 ms • 18 = 50 ms
Ptxx.InputOnOffFilter	SINT	The amount of time that a signal must be in the off state before the input data indicates the off state. The amount of time is indicated using an enumeration. Not all products support all enumeration values.	<ul style="list-style-type: none"> • 9 = 0 μs • 10 = 100 μs • 11 = 200 μs • 12 = 500 μs • 13 = 1 ms • 14 = 2 ms • 15 = 5 ms • 16 = 10 ms • 17 = 20 ms • 18 = 50 ms

Input Tags

[Table 23](#) describes the 5069-IB16 module input tags.

Table 23 - 5069-IB16 Module Input Tags

Name	Data Type	Definition	Valid Values
RunMode	BIT	Channel's operating state	<ul style="list-style-type: none"> • 0 = Idle • 1 = Run
ConnectionFaulted	BIT	Indicates if a connection is running. The module sets this tag to 0 when connected. If the module is not connected, it changes the tag to 1.	<ul style="list-style-type: none"> • 0 = Connection running • 1 = Connection not running
DiagnosticActive	BIT	Indicates if any diagnostics are active or if the prognostics threshold is reached.	<ul style="list-style-type: none"> • 0 = No diagnostics active • 1 = One or more diagnostics are active or the prognostics threshold is reached
Uncertain	BIT	Indicates if the module is operating outside is designed operating range of if data is under manual or override control.	<ul style="list-style-type: none"> • 0 = Good • 1 = Uncertain
DiagnosticSequenceCount	SINT	Increments for each time a distinct diagnostic condition is detected, and when a distinct diagnostic condition transitions from detected to not detected. Set to zero by product reset or power cycle. Wraps from 255 (-1) to 1 skipping zero.	-128...127 The value of 0 is skipped except during module power-up.
Counterxx.Data	BOOL	Indicates the current digital input value.	<ul style="list-style-type: none"> • 0 = Off • 1 = On
Counterxx.Fault	BOOL	Indicates that counter data is inaccurate and cannot be trusted for use in the application. For more information, see Module Data Quality Reporting on page 35 .	<ul style="list-style-type: none"> • 0 = Good • 1 = Bad, causing fault <p>If the tag is set to 1, you must troubleshoot the module to correct the cause of the inaccuracy. IMPORTANT: Once the condition that causes the tag to change to 1 is removed, the tag automatically resets to 0.</p>

Table 23 - 5069-IB16 Module Input Tags

Name	Data Type	Definition	Valid Values
Counterxx.Uncertain	BIT	Indicates that the counter data can be inaccurate but the degree of inaccuracy is not known. For more information, see Module Data Quality Reporting on page 35 .	<ul style="list-style-type: none"> • 0 = Good data • 1 = Uncertain data <p>If the tag is set to 1, you must troubleshoot the module to correct the cause of the inaccuracy.</p> <p>IMPORTANT: Once the condition that causes the tag to change to 1 is removed, the tag automatically resets to 0.</p>
Counterxx.Done	BOOL	When set, indicates the corresponding counter Done bit (rising or falling depending on configuration) triggered the event.	<ul style="list-style-type: none"> • 0 = Corresponding Done bit did not trigger the event • 1 = Corresponding Done bit triggered the event
Counterxx.Rollover	BIT	The counter counted up to Preset - 1 and continued counting from 0. The O:RolloverAck bit transitioning from 0 to 1 or the O:Reset transitioning from 0 to 1 clears this bit.	<ul style="list-style-type: none"> • 0 = Counter has not counted up to Preset - 1 and continued counting from 0 • 1 = Counter counted up to Preset - 1 and continued counting from 0
Counterxx.Count	DINT	The number of input transitions counted by a counter.	All values.
Ptxx.Data	BIT	Indicates the current digital input value.	<ul style="list-style-type: none"> • 0 = Off • 1 = On
Ptxx.Fault	BIT	Indicates that channel data is inaccurate and cannot be trusted for use in the application. For more information, see Module Data Quality Reporting on page 35 .	<ul style="list-style-type: none"> • 0 = Good • 1 = Bad, causing fault <p>If the tag is set to 1, you must troubleshoot the module to correct the cause of the inaccuracy.</p> <p>IMPORTANT: Once the condition that causes the tag to change to 1 is removed, the tag automatically resets to 0.</p>
Ptxx.Uncertain	BIT	Indicates that the channel data can be inaccurate but the degree of inaccuracy is not known. For more information, see Module Data Quality Reporting on page 35 .	<ul style="list-style-type: none"> • 0 = Good data • 1 = Uncertain data <p>If the tag is set to 1, you must troubleshoot the module to correct the cause of the inaccuracy.</p> <p>IMPORTANT: Once the condition that causes the tag to change to 1 is removed, the tag automatically resets to 0.</p>

Output Tags

[Table 24](#) describes the 5069-IB16 module output tags. The 5069-IB16 module output tags are only available if you have enabled counters in the Module Definition dialog box.

Table 24 - 5069-IB16 Module Output Tags

Name	Data Type	Definition	Valid Values
Counterxx.Reset	BIT	When this bit transitions from 0 to 1 I:Count and I:Rollover are set to zero.	<ul style="list-style-type: none"> 0 = I:Count and I:Rollover values are not set to 0 1 = I:Count and I:Rollover values are set to 0
Counterxx.RolloverAck	BIT	Clears the Rollover bit in the input tag when it transitions from 0 to 1.	<ul style="list-style-type: none"> 0 = I:Rollover bit is not cleared 1 = I:Rollover bit is cleared
Counterxx.Preset	DINT	<ul style="list-style-type: none"> If RolloverAtPreset is set, the counter counts to the Preset value and then rolls over to zero. If RolloverAtPreset is not set, the counter sets the Done bit and continues counting up to Max DINT. If C:RolloverAtPreset = 1, then if I:Count ≥ O:Preset, I:Count=0, else I:Done bit always = 0. Set I:Rollover bit when I:Count transitions from O:Preset – 1 to 0. If C:RolloverAtPreset = 0, then if I:Count ≥ O:Preset, I:Done = 1, else I:Done = 0. Set I:Rollover bit when I:Count transitions from 2,147,483,647 to 0. 	0...2,147,483,647

5069-IB16F Module Tags

This section describes the tags that are associated with the 5069-IB16F module.

Configuration Tags

[Table 25](#) describes the 5069-IB16F module configuration tags.

Table 25 - 5069-IB16F Module Configuration Tags

Name	Size	Definition	Valid Values
Counterxx.InputOffOnFilter	SINT	The amount of time that a signal must be in the on state before the input data indicates the on state. The amount of time is indicated using an enumeration. Not all products support all enumeration values.	5 = 0 μs 6 = 5 μs 7 = 10 μs 8 = 20 μs 9 = 50 μs 10 = 100 μs 11 = 200 μs 12 = 500 μs 13 = 1 ms 14 = 2 ms 15 = 5 ms 16 = 10 ms 17 = 20 ms 18 = 50 ms

Table 25 - 5069-IB16F Module Configuration Tags

Name	Size	Definition	Valid Values
Counterxx.InputOnOffFilter	SINT	The amount of time that a signal must be in the off state before the input data indicates the off state. The amount of time is indicated using an enumeration. Not all products support all enumeration values.	5 = 0 µs 6 = 5 µs 7 = 10 µs 8 = 20 µs 9 = 50 µs 10 = 100 µs 11 = 200 µs 12 = 500 µs 13 = 1 ms 14 = 2 ms 15 = 5 ms 16 = 10 ms 17 = 20 ms 18 = 50 ms
Counterxx.RolloverAtPreset	BIT	Determines whether the simple counter will rollover to 0 when it reaches 0:Preset (1) or at 2147483647 (0).	<ul style="list-style-type: none"> • 0 = Maximum value • 1 = Preset value
Ptxx.InputOffOnFilter	SINT	The amount of time that a signal must be in the on state before the input data indicates the on state. The amount of time is indicated using an enumeration. Not all products support all enumeration values.	5 = 0 µs 6 = 5 µs 7 = 10 µs 8 = 20 µs 9 = 50 µs 10 = 100 µs 11 = 200 µs 12 = 500 µs 13 = 1 ms 14 = 2 ms 15 = 5 ms 16 = 10 ms 17 = 20 ms 18 = 50 ms
Ptxx.InputOnOffFilter	SINT	The amount of time that a signal must be in the off state before the input data indicates the off state. The amount of time is indicated using an enumeration. Not all products support all enumeration values.	5 = 0 µs 6 = 5 µs 7 = 10 µs 8 = 20 µs 9 = 50 µs 10 = 100 µs 11 = 200 µs 12 = 500 µs 13 = 1 ms 14 = 2 ms 15 = 5 ms 16 = 10 ms 17 = 20 ms 18 = 50 ms
Ptxx.ChatterTime	INT	A value from 1...10000 ms in whole ms increments.	1...10000

Table 25 - 5069-IB16F Module Configuration Tags

Name	Size	Definition	Valid Values
Ptxx.ChatterCount	SINT	The number of input changes that are considered Chatter.	<ul style="list-style-type: none"> 0 = Disabled 2...127 = Enabled
Ptxx.CaptureOffOnEn	BIT	Enables capturing Off to On time stamps. If cleared, the point does not record Off to On time stamps.	<ul style="list-style-type: none"> 0 = Capture disabled for OFF to ON input transitions 1 = Capture enabled (default) for OFF to ON input transitions
Ptxx.CaptureOnOffEn	BIT	Enables capturing On to Off time stamps. If cleared, the point does not record On to Off time stamps.	<ul style="list-style-type: none"> 0 = Capture disabled for ON to OFF input transitions 1 = Capture enabled (default) for ON to OFF input transitions
Ptxx.TimestampLatchEn	BIT	When this bit is set, timestamps are latched; this means that a Timestamp is not overwritten until acknowledged. All subsequent transitions on that point are ignored until acknowledged/reset. If the bit is not set, the new LO Timestamp overwrites the first LO Timestamp immediately, even if the controller has yet to extract that data.	<ul style="list-style-type: none"> 0 = Timestamps are overridden with each successive COS transition. 1 = Timestamps are latched until acknowledged.

Event Input Tags

[Table 26](#) describes the 5069-IB16F module event input tags. The event input tags are displayed only if Data with Events is selected in the Module Definition window.

Table 26 - 5069-IB16F Module Event Input Tags

Name	Size	Definition	Valid Values
RunMode	BIT	Channel's operating state	<ul style="list-style-type: none"> 0 = Idle 1 = Run Mode
ConnectionFaulted	BIT	Indicates if a connection is running. The module sets this tag to 0 when connected. If the module is not connected, it changes the tag to 1.	<ul style="list-style-type: none"> 0 = Connection running 1 = Connection not running
Diagnostic Active	BIT	Indicates if any diagnostics are active or if the prognostics threshold is reached.	<ul style="list-style-type: none"> 0 = No diagnostics active 1 = One or more diagnostics are active or the prognostics threshold is reached
DiagnosticSequence Count	SINT	Increments for each time a distinct diagnostic condition is detected, and when a distinct diagnostic condition transitions from detected to not detected. Set to zero by product reset or power cycle. Wraps from 255 (-1) to 1 skipping zero.	-128...127 The value of 0 is skipped except during module power-up.
Eventx	BOOL	Indicates the number of the event.	0...3
Eventx.PtxxFault	BIT	Indicates that channel data is inaccurate and cannot be trusted for use in the application. For more information, see Module Data Quality Reporting on page 35 .	<ul style="list-style-type: none"> 0 = Good 1 = Bad, causing fault <p>If the tag is set to 1, you must troubleshoot the module to correct the cause of the inaccuracy.</p> <p>IMPORTANT: Once the condition that causes the tag to change to 1 is removed, the tag automatically resets to 0.</p>

Table 26 - 5069-IB16F Module Event Input Tags

Name	Size	Definition	Valid Values
Eventx.Uncertain	BIT	Indicates that the channel data can be inaccurate but the degree of inaccuracy is not known. For more information, see Module Data Quality Reporting on page 35 .	<ul style="list-style-type: none"> 0 = Good data 1 = Uncertain data <p>If the tag is set to 1, you must troubleshoot the module to correct the cause of the inaccuracy. IMPORTANT: Once the condition that causes the tag to change to 1 is removed, the tag automatically resets to 0.</p>
Eventx.EventDropped	BIT	Indicates when an event has been discarded because events are occurring faster than they are being acknowledged.	<ul style="list-style-type: none"> 0 = An event status has not been dropped. 1 = An event status has been dropped.
Eventx.EventRising	BIT	Indicates whether an event triggered when an input transition results in an event pattern being matched.	0 or 1
Eventx.EventFalling	BIT	Indicates whether an event triggered when an input transition resulted in an event pattern no longer being matched.	0 or 1
Eventx.CIPSyncValid	BIT	Indicates whether the module is synced with a 1588 master.	<ul style="list-style-type: none"> 0 = CIP Sync is not available 1 = CIP Sync is available
Eventx.CIPSyncTimeout	BIT	Indicates that the module was once synced with a 1588 master, but is not now due to a timeout.	<ul style="list-style-type: none"> 0 = A valid time master has not timed out. 1 = A valid time master was detected on the backplane, but the time master has timed out. The module is using its local clock and can be drifting away from the last known time master.
Eventx.EventsPending	SINT	The number of events currently queued in the modules. A value greater than 0 indicates that the controller is not currently keeping up with the rate of events.	All positive values.
Eventx.EventNumber	DINT	Running count of events, which increments by one each new time event. The originator sets the Event Number Ack to the Event Number to acknowledge receipt of the event. When the EventNumber reaches its maximum value and rolls over it is to roll over to 1, not 0.	All values.
Eventx.EventTimestamp	LINT	The time the event occurred.	All positive values.
Eventx.CounterxxDone	BIT	When set, indicates the corresponding counter Done bit (rising or falling depending on configuration) triggered the event.	<ul style="list-style-type: none"> 0 = Corresponding counter Done bit did not trigger the event 1 = Corresponding counter Done bit triggered the event
Eventx.PtxxData	BIT	When set, indicates the corresponding data value (rising or falling depending on configuration) triggered the event.	<ul style="list-style-type: none"> 0 = Corresponding data value did not trigger the event 1 = Corresponding data value triggered the event
Eventx.CounterxxFault	BIT	When set, indicates that the corresponding counter had a fault indicated when the event occurred.	<ul style="list-style-type: none"> 0 = Corresponding counter did not have a fault indicated when the event occurred 1 = Corresponding counter did have a fault indicated when the event occurred
Eventx.Fault	BIT	Detects whether the signal is good data. The fault is set to 1 by the originator when the connection is lost.	<ul style="list-style-type: none"> 0 = Good 1 = Bad

Event Output Tags

[Table 27](#) describes the 5069-IB16F module event output tags. The event output tags are displayed only if Data with Events is selected in the Module Definition window.

Table 27 - 5069-IB16F Module Event Output Tags

Name	Size	Definition	Valid Values
Eventxx.En	BIT	When set, the corresponding event trigger definition is active and events are triggered when conditions match the definition.	0 = Event trigger definition is not active and events are not triggered when conditions match the definition 1 = Event trigger definition is active and events are triggered when conditions match the definition
Eventxx.EventRisingEn	BIT	When set an event is to trigger each time a condition change results in conditions that match the event trigger definition.	0 or 1
Eventxx.EventFallingEn	BIT	When set an event is to trigger each time a condition change results in conditions that no longer match the event trigger definition.	0 or 1
Eventxx.LatchEn	BIT	When set, events are latched until acknowledged. A new event is lost if the previous event has not been acknowledged. When not set, new events overwrite old events.	<ul style="list-style-type: none"> • 0 = Not latched (default) • 1 = Latched
Eventxx.ResetEvent	BIT	When transitions from 0 to 1, resets all events and clears the event queue on the channel.	<ul style="list-style-type: none"> • 0 = Events are not cleared. • 1 = Events are cleared when a rising edge occurs.
Eventxx.IndependentConditionTriggerEn	BIT	For events, determines whether each condition that is indicated in the trigger definition can initiate an event independently.	<ul style="list-style-type: none"> • 0 = When all selected conditions achieve the configured values, an event is triggered. • 1 = When any selected condition achieves the configured value, an event is triggered.
Eventxx.EventNumberAck	DINT	The controller writes back the EI:Event[<n>].EventNumber into this EO:Event[<n>].EventNumberAck to indicate receipt of the event. All events with I:EventNumbers that occurred before EventNumberAck is acknowledged.	All values
Eventxx.CounterxxSelect	BIT	When set, indicates that the corresponding counter is to participate in the event trigger definition.	0 = Corresponding counter does not participate in the event trigger definition 1 = Corresponding counter participates in the event trigger definition
Eventxx.PtxxDataSelect	BIT	When set, indicates that the corresponding data value is to participate in the event trigger definition.	0 or 1
Eventxx.CounterxxValue	BIT	If the counter function is selected in the event trigger definition, this member indicates that value that is to trigger the event.	0 or 1
Eventxx.PtxxDataValue	BOOL	Indicates the input value of the event point data.	<ul style="list-style-type: none"> • 0 = Input inactive • 1 = Input active

Input Tags

Table 28 describes the 5069-IB16F module input tags.

Table 28 - 5069-IB16F Module Input Tags

Name	Size	Definition	Valid Values
RunMode	BIT	Channel's operating state	<ul style="list-style-type: none"> 0 = Idle 1 = Run Mode
ConnectionFaulted	BIT	Indicates if a connection is running. The module sets this tag to 0 when connected. If the module is not connected, it changes the tag to 1.	<ul style="list-style-type: none"> 0 = Connection running 1 = Connection not running
Diagnostic Active	BIT	Indicates if any diagnostics are active or if the prognostics threshold is reached.	<ul style="list-style-type: none"> 0 = No diagnostics active 1 = One or more diagnostics are active or the prognostics threshold is reached
CIPSyncValid	BIT	Indicates whether the module is synced with a 1588 master.	<ul style="list-style-type: none"> 0 = CIP Sync is not available 1 = CIP Sync is available
CIPSyncTimeout	BIT	Indicates that the module was once synced with a 1588 master, but is not now due to a timeout.	<ul style="list-style-type: none"> 0 = A valid time master has not timed out. 1 = A valid time master was detected on the backplane, but the time master has timed out. The module is using its local clock and can be drifting away from the last known time master.
DiagnosticSequence Count	SINT	Increments for each time a distinct diagnostic condition is detected, and when a distinct diagnostic condition transitions from detected to not detected. Set to zero by product reset or power cycle. Wraps from 255 (-1) to 1 skipping zero.	-128...127 The value of 0 is skipped except during module power-up.
Counterxx.Data	BIT	Current digital output data to be applied for normal (unscheduled) outputs.	<ul style="list-style-type: none"> 0 = Off 1 = On
Counterxx.Fault	BIT	Indicates that counter data is inaccurate and cannot be trusted for use in the application. For more information, see Module Data Quality Reporting on page 35 .	<ul style="list-style-type: none"> 0 = Good 1 = Bad, causing fault <p>If the tag is set to 1, you must troubleshoot the module to correct the cause of the inaccuracy. IMPORTANT: Once the condition that causes the tag to change to 1 is removed, the tag automatically resets to 0.</p>
Counterxx.Uncertain	BIT	Indicates that the channel data can be inaccurate but the degree of inaccuracy is not known. For more information, see Module Data Quality Reporting on page 35 .	<ul style="list-style-type: none"> 0 = Good data 1 = Uncertain data <p>If the tag is set to 1, you must troubleshoot the module to correct the cause of the inaccuracy. IMPORTANT: Once the condition that causes the tag to change to 1 is removed, the tag automatically resets to 0.</p>
Counterxx.Done	BIT	Indicates that the I:Count tag \geq O:Preset.G430.	0 or 1
Counterxx.Rollover	BIT	The counter counted up to RolloverValue - 1 (for HSC) or Preset - 1 (for simple counters) and then continued counting from the O:Rollunder (for HSC) or 0 (for simple counters). The O:RolloverAck bit transitioning from 0 to 1 or the O:Reset transitioning from 0 to 1 clears this bit.	0 or 1
Counterxx.Count	DINT	The number of input transitions counted by a counter.	All values
EventStatus[x].EventDropped	BIT	Indicates when an event has been discarded because events are occurring faster than they are being acknowledged.	<ul style="list-style-type: none"> 0 = An event status has not been dropped. 1 = An event status has been dropped.
EventStatus[x].CIPSyncValid	BIT	Indicates whether the module is synced with a 1588 master.	<ul style="list-style-type: none"> 0 = CIP Sync is not available 1 = CIP Sync is available

Table 28 - 5069-IB16F Module Input Tags

Name	Size	Definition	Valid Values
EventStatus[x].CIPSyncTimeout	BIT	Indicates that the module was once synced with a 1588 master, but is not now due to a timeout.	<ul style="list-style-type: none"> 0 = A valid time master has not timed out. 1 = A valid time master was detected on the backplane, but the time master has timed out. The module is using its local clock and can be drifting away from the last known time master.
EventStatus[x].EventReset	BIT	When E0.Event[<n>].ResetEvent transitions from 0 to 1, I.EventStatus[<n>].EventReset transitions to 1 to indicate that the reset was received and completed. It stays 1 until E0.Event[<n>].ResetEvent transition to zero.	<ul style="list-style-type: none"> 0 = Do not reset 1 = Reset
EventStatus[x].EventsPending	SINT	The number of events currently queued in the modules. A value greater than zero indicates that the controller is not currently keeping up with the rate of events.	All positive values.
EventStatus[x].EventNumber	DINT	Running count of events, which increments by one each new time event. The originator sets the Event Number Ack to the Event Number to acknowledge receipt of the event. When the EventNumber reaches its maximum value and rolls over it is to roll over to 1, not 0.	All values.
PtxxData	BIT	When set, indicates the corresponding data value (rising or falling depending on configuration) triggered the event.	0 or 1
PtxxFault	BIT	Indicates that channel data is inaccurate and cannot be trusted for use in the application. For more information, see Module Data Quality Reporting on page 35 .	<ul style="list-style-type: none"> 0 = Good 1 = Bad, causing fault <p>If the tag is set to 1, you must troubleshoot the module to correct the cause of the inaccuracy. IMPORTANT: Once the condition that causes the tag to change to 1 is removed, the tag automatically resets to 0.</p>
PtxxUncertain	BIT	Indicates that the channel data can be inaccurate but the degree of inaccuracy is not known. For more information, see Module Data Quality Reporting on page 35 .	<ul style="list-style-type: none"> 0 = Good data 1 = Uncertain data <p>If the tag is set to 1, you must troubleshoot the module to correct the cause of the inaccuracy. IMPORTANT: Once the condition that causes the tag to change to 1 is removed, the tag automatically resets to 0.</p>
PtxxChatter	BIT	Indicates if the input is chattering per the ChatterTime and ChatterCount settings.	<ul style="list-style-type: none"> 0 = Normal 1 = Input is chattering
Ptxx.TimestampOverflowOffOn	BIT	Indicates an Off to On time stamp was lost in a discrete product. If TimestampLatchEn is set then a new time stamp was not recorded because one is already latched. If TimestampLatchEn is clear a timestamp was overwritten.	0 or 1
Ptxx.TimestampOverflowOnOff	BIT	Indicates an On to Off time stamp was lost in a discrete product. If TimestampLatchEn is set then a new time stamp was not recorded because one is already latched. If TimestampLatchEn is clear a timestamp was overwritten.	0 or 1
Ptxx.CIPSyncValid	BIT	Indicates whether the module is synced with a 1588 master.	<ul style="list-style-type: none"> 0 = CIP Sync is not available 1 = CIP Sync is available
Ptxx.CIPSyncTimeout	BIT	Indicates that the module was once synced with a 1588 master, but is not now due to a timeout.	<ul style="list-style-type: none"> 0 = A valid time master has not timed out. 1 = A valid time master was detected on the backplane, but the time master has timed out. The module is using its local clock and can be drifting away from the last known time master.
Ptxx.TimestampOffOnNumber	INT	64 bit Timestamp corresponding to when a change of state Off to On was recorded at the input.	All values.

Table 28 - 5069-IB16F Module Input Tags

Name	Size	Definition	Valid Values
Ptxx.TimestampOnOffNumber	INT	64 bit Timestamp corresponding to when a change of state On to Off was recorded at the input.	All values.
Ptxx.TimestampOffOn	LINT	64 bit Timestamp corresponding to when a change of state Off to On was recorded at the input.	All values.
Ptxx.TimestampOnOff	LINT	64 bit Timestamp corresponding to when a change of state On to Off was recorded at the input.	All values.

Output Tags

[Table 29](#) describes the 5069-IB16F module output tags.

Table 29 - 5069-IB16F Module Output Tags

Name	Size	Definition	Valid Values
Counterxx.Reset	BIT	When this bit transitions from 0 to 1, I:Count, and I:Rollover are set to zero.	<ul style="list-style-type: none"> 0 = Do not reset 1 = Reset
Counterxx.RolloverAck	BIT	Clears the Rollunder tag in the input tag when it transitions from 0 to 1.	0 or 1
Counterxx.Preset	DINT	<ul style="list-style-type: none"> If RolloverAtPreset is set, the counter counts to the Preset value and then rolls over to zero. If RolloverAtPreset is not set, the counter sets the Done bit and continues counting up to Max DINT. If C:RolloverAtPreset = 1, then if I:Count ≥ 0:Preset, I:Count=0., else I:Done bit always = 0. Set I:Rollover bit when I:Count transitions from 0:Preset – 1 to 0. If C:RolloverAtPreset = 0, then if I:Count ≥ 0:Preset, I:Done = 1, else I:Done = 0. Set I:Rollover bit when I:Count transitions from 2,147,483,647 to 0. 	0...2,147,483,647
Ptxx.ResetTimestamps	BIT	Erases all recorded timestamps for the input channel when it transitions from 0 to 1.	<ul style="list-style-type: none"> 0 = Timestamps are not erased. 1 = Timestamps are erased.
Ptxx.TimestampOffOnNumberAck	INT	An Off to On timestamp identifier that is written by the controller to indicate that the identified timestamp has been seen and acted on. When Latching is enabled and the Timestamp Number that is received from the controller matches the most recent timestamp that is produced, the module is then allowed to produce a new timestamp.	All values.
Ptxx.TimestampOnOffNumberAck	INT	An On to Off timestamp identifier that is written by the controller to indicate that the identified timestamp has been seen and acted on. When Latching is enabled and the Timestamp Number that is received from the controller matches the most recent timestamp that is produced, the module is then allowed to produce a new timestamp.	All values.

5069-IB6F-3W Module Tags

This section describes the tags that are associated with the 5069-IB6F-3W module.

Configuration Tags

[Table 30](#) describes the 5069-IF6F-3W module configuration tags.

Table 30 - 5069-IB6F-3W Configuration Tags

Name	Size	Definition	Valid Values
Counterxx.InputOffOnFilter	SINT	The amount of time that a Tag signal must be in the on state before the input data indicates the on state. The amount of time is indicated using an enumeration. Not all products support all enumeration values.	<ul style="list-style-type: none"> • 5 = 0 μs • 6 = 5 μs • 7 = 10 μs • 8 = 20 μs • 9 = 50 μs • 10 = 100 μs • 11 = 200 μs • 12 = 500 μs • 13 = 1 ms • 14 = 2 ms • 15 = 5 ms • 16 = 10 ms • 17 = 20 ms • 18 = 50 ms
Counterxx.InputOnOffFilter	SINT	The amount of time that a signal must be in the off state before the input data indicates the off state. The amount of time is indicated using an enumeration. Not all products support all enumeration values.	<ul style="list-style-type: none"> • 5 = 0 μs • 6 = 5 μs • 7 = 10 μs • 8 = 20 μs • 9 = 50 μs • 10 = 100 μs • 11 = 200 μs • 12 = 500 μs • 13 = 1 ms • 14 = 2 ms • 15 = 5 ms • 16 = 10 ms • 17 = 20 ms • 18 = 50 ms
Counterxx.RolloverAtPreset	BIT	Determines whether the simple counter will rollover to 0 when it reaches 0:Preset (1) or at 2147483647 (0).	<ul style="list-style-type: none"> • 0 = Maximum value • 1 = Preset value
Ptxx.InputOffOnFilter	SINT	The amount of time that a signal must be in the on state before the input data indicates the on state. The amount of time is indicated using an enumeration. Not all products support all enumeration values.	<ul style="list-style-type: none"> • 5 = 0 μs • 6 = 5 μs • 7 = 10 μs • 8 = 20 μs • 9 = 50 μs • 10 = 100 μs • 11 = 200 μs • 12 = 500 μs • 13 = 1 ms • 14 = 2 ms • 15 = 5 ms • 16 = 10 ms • 17 = 20 ms • 18 = 50 ms

Table 30 - 5069-1B6F-3W Configuration Tags

Name	Size	Definition	Valid Values
Ptxx.InputOnOffFilter	SINT	The amount of time that a signal must be in the off state before the input data indicates the off state. The amount of time is indicated using an enumeration. Not all products support all enumeration values.	<ul style="list-style-type: none"> • 5 = 0 μs • 6 = 5 μs • 7 = 10 μs • 8 = 20 μs • 9 = 50 μs • 10 = 100 μs • 11 = 200 μs • 12 = 500 μs • 13 = 1 ms • 14 = 2 ms • 15 = 5 ms • 16 = 10 ms • 17 = 20 ms • 18 = 50 ms
Ptxx.ChatterTime	INT	A value from 1...10000 ms in whole ms increments.	1...10000
Ptxx.ChatterCount	SINT	The number of input changes that are considered Chatter.	<ul style="list-style-type: none"> • 0 = Disabled • 2...127 = Enabled
Ptxx.CaptureOffOnEn	BIT	Enables capturing Off to On time stamps. If cleared, point does not record Off to On time stamps.	<ul style="list-style-type: none"> • 0 = Capture disabled for OFF to ON input transitions • 1 = Capture enabled (default) for OFF to ON input transitions
Ptxx.CaptureOnOffEn	BIT	Enables capturing On to Off time stamps. If cleared, point does not record On to Off time stamps.	<ul style="list-style-type: none"> • 0 = Capture disabled for ON to OFF input transitions • 1 = Capture enabled (default) for ON to OFF input transitions
Ptxx.TimestampLatchEn	BIT	When this bit is set, timestamps are latched; this means that a Timestamp is not overwritten until acknowledged. All subsequent transitions on that point are ignored until acknowledged/reset. If the bit is not set, the new LO Timestamp overwrites the first LO Timestamp immediately, even if the controller has yet to extract that data.	<ul style="list-style-type: none"> • 0 = Timestamps are overridden with each successive COS transition. • 1 = Timestamps are latched until acknowledged.

Event Input Tags

[Table 31](#) describes the 5069-IB6F-3W module event input tags. The event input tags are displayed only if you select Data with Events in the Module Definition window.

Table 31 - 5069-IB6F-3W Module Event Input Tags

Name	Size	Definition	Valid Values
ConnectionFaulted	BIT	Indicates if a connection is running. The module sets this tag to 0 when connected. If the module is not connected, it changes the tag to 1.	<ul style="list-style-type: none"> 0 = Connection running 1 = Connection not running
DiagnosticActive	BIT	Indicates if any diagnostics are active or if the prognostics threshold is reached.	<ul style="list-style-type: none"> 0 = No diagnostics active 1 = One or more diagnostics are active or the prognostics threshold is reached
DiagnosticSequenceCount	SINT	Increments for each time a distinct diagnostic condition is detected, and when a distinct diagnostic condition transitions from detected to not detected. Set to zero by product reset or power cycle. Wraps from 255 (-1) to 1 skipping zero.	-128...127 The value of 0 is skipped except during module power-up.
RunMode	BIT	Channel's operating state	<ul style="list-style-type: none"> 0 = Idle 1 = Run Mode
Eventx	BOOL	Indicates the number of the event.	0...3
Eventx.Fault	BIT	Detects whether the signal is good data. The fault is set to 1 by the originator when the connection is lost.	<ul style="list-style-type: none"> 0 = Good 1 = Bad
Eventx.Uncertain	BIT	Indicates that the channel data can be inaccurate but the degree of inaccuracy is not known. For more information, see Module Data Quality Reporting on page 35 .	<ul style="list-style-type: none"> 0 = Good data 1 = Uncertain data <p>If the tag is set to 1, you must troubleshoot the module to correct the cause of the inaccuracy.</p> <p>IMPORTANT: Once the condition that causes the tag to change to 1 is removed, the tag automatically resets to 0.</p>
Eventx.EventDropped	BIT	Indicates when an event has been discarded because events are occurring faster than they are being acknowledged.	<ul style="list-style-type: none"> 0 = An event status has not been dropped. 1 = An event status has been dropped.
Eventx.EventRising	BIT	Indicates whether an event triggered when an input transition results in an event pattern being matched.	0 or 1
Eventx.EventFalling	BIT	Indicates whether an event triggered when an input transition resulted in an event pattern no longer being matched.	0 or 1
Eventx.CIPSyncValid	BIT	Indicates whether the module is synced with a 1588 master.	<ul style="list-style-type: none"> 0 = CIP Sync is not available 1 = CIP Sync is available
Eventx.CIPSyncTimeout	BIT	Indicates that the module was once synced with a 1588 master, but is not now due to a timeout.	<ul style="list-style-type: none"> 0 = A valid time master has not timed out. 1 = A valid time master was detected on the backplane, but the time master has timed out. The module is using its local clock and can be drifting away from the last known time master.
Eventx.EventsPending	SINT	The number of events currently queued in the modules. A value greater than 0 indicates that the controller is not currently keeping up with the rate of events.	All positive values.
Eventx.EventNumber	DINT	Running count of events, which increments by one each new time event. The originator sets the Event Number Ack to the Event Number to acknowledge receipt of the event. When the EventNumber reaches its maximum value and rolls over it is to roll over to 1, not 0.	All values.
Eventx.Timestamp	LINT	The time the event occurred.	All positive values.

Table 31 - 5069-IB6F-3W Module Event Input Tags

Name	Size	Definition	Valid Values
Eventx.CounterxxDone	BIT	When set, indicates the corresponding counter Done bit (rising or falling depending on configuration) triggered the event.	0 or 1
Eventx.PtxxData	BIT	When set, indicates the corresponding data value (rising or falling depending on configuration) triggered the event.	0 or 1
Eventx.CounterxxFault	BIT	When set, indicates that the corresponding counter had a fault indicated when the event occurred.	0 or 1
Eventx.PtxxFault	BIT	Indicates that channel data is inaccurate and cannot be trusted for use in the application. For more information, see Module Data Quality Reporting on page 35 .	<ul style="list-style-type: none"> • 0 = Good • 1 = Bad, causing fault If the tag is set to 1, you must troubleshoot the module to correct the cause of the inaccuracy. IMPORTANT: Once the condition that causes the tag to change to 1 is removed, the tag automatically resets to 0.

Event Output Tags

[Table 32](#) describes the 5069-IB6F-3W module event output tags. The event output tags are displayed only if you select Data with Events in the Module Definition window.

Table 32 - 5069-IB6F-3W Module Event Output Tags

Name	Size	Definition	Valid Values
Eventxx.En	BIT	When set the corresponding event trigger definition is active and events are triggered when conditions match the definition.	0 or 1
Eventxx.EventRisingEn	BIT	When set an event is to trigger each time a condition change results in conditions that match the event trigger definition.	0 or 1
Eventxx.EventFallingEn	BIT	When set an event is to trigger each time a condition change results in conditions that no longer match the event trigger definition.	0 or 1
Eventxx.LatchEn	BIT	When set, events are latched until acknowledged. A new event is lost if the previous event has not been acknowledged. When not set, new events overwrite old events.	<ul style="list-style-type: none"> • 0 = Not latched (default) • 1 = Latched
Eventxx.ResetEvent	BIT	When the value transitions from 0 to 1, resets all events and clears the event queue on the channel.	<ul style="list-style-type: none"> • 0 = Events are not cleared • 1 = Events are cleared when a rising edge occurs
Eventxx.IndependentConditionTriggerEn	BIT	For events, determines whether each condition that is indicated in the trigger definition can initiate an event independently.	<ul style="list-style-type: none"> • 0 = When all selected conditions achieve the configured values, an event is triggered. • 1 = When any selected condition achieves the configured value, an event is triggered.

Table 32 - 5069-IB6F-3W Module Event Output Tags

Name	Size	Definition	Valid Values
Eventxx.EventNumberAck	DINT	The controller writes back the E:Event[<n>].EventNumber into this E0:Event[<n>].EventNumberAck to indicate receipt of the event. All events with I:EventNumbers that occurred before EventNumberAck is acknowledged.	All values.
Eventxx.CounterxxSelect	BIT	When set, indicates that the corresponding counter is to participate in the event trigger definition.	0 or 1
Eventxx.PtxxDataSelect	BIT	When set, indicates that the corresponding data value is to participate in the event trigger definition.	0 or 1
Eventxx.CounterxxValue	BIT	If the counter function is selected in the event trigger definition, this member indicates that value that is to trigger the event.	0 or 1
Eventxx.PtxxDataValue	BOOL	Input value of the event point data.	<ul style="list-style-type: none"> • 0 = Input inactive • 1 = Input active

Input Tags

[Table 33](#) describes the 5069-IB6F-3W module input tags.

Table 33 - 5069-IB6F-3W Module Input Tags

Name	Size	Definition	Valid Values
RunMode	BIT	Channel's operating state	<ul style="list-style-type: none"> • 0 = Idle • 1 = Run Mode
ConnectionFaulted	BIT	Indicates if a connection is running. The module sets this tag to 0 when connected. If the module is not connected, it changes the tag to 1.	<ul style="list-style-type: none"> • 0 = Connection running • 1 = Connection not running
DiagnosticActive	BIT	Indicates if any diagnostics are active or if the prognostics threshold is reached.	<ul style="list-style-type: none"> • 0 = No diagnostics active • 1 = One or more diagnostics are active or the prognostics threshold is reached
CIPSyncValid	BIT	Indicates whether the module is synced with a 1588 master.	<ul style="list-style-type: none"> • 0 = CIP Sync is not available • 1 = CIP Sync is available
CIPSyncTimeout	BIT	Indicates that the module was once synced with a 1588 master, but is not now due to a timeout.	<ul style="list-style-type: none"> • 0 = A valid time master has not timed out. • 1 = A valid time master was detected on the backplane, but the time master has timed out. The module is using its local clock and can be drifting away from the last known time master.
DiagnosticSequenceCount	SINT	Increments for each time a distinct diagnostic condition is detected, and when a distinct diagnostic condition transitions from detected to not detected. Set to zero by product reset or power cycle. Wraps from 255 (-1) to 1 skipping zero.	-127...128 The value of 0 is skipped except during module power-up.
Uncertain	BIT	Indicates if the module is operating outside is designed operating range of if data is under manual or override control.	<ul style="list-style-type: none"> • 0 = Good • 1 = Uncertain
Counterxx.Data	BIT	Indicates the current digital input value.	<ul style="list-style-type: none"> • 0 = Off • 1 = On

Table 33 - 5069-IB6F-3W Module Input Tags

Name	Size	Definition	Valid Values
Counterxx.Fault	BIT	Indicates that channel data is inaccurate and cannot be trusted for use in the application. For more information, see Module Data Quality Reporting on page 35 .	<ul style="list-style-type: none"> 0 = Good 1 = Bad, causing fault If the tag is set to 1, you must troubleshoot the module to correct the cause of the inaccuracy. IMPORTANT: Once the condition that causes the tag to change to 1 is removed, the tag automatically resets to 0.
Counterxx.Uncertain	BIT	Indicates that the counter data can be inaccurate but the degree of inaccuracy is not known. For more information, see Module Data Quality Reporting on page 35 .	<ul style="list-style-type: none"> 0 = Good data 1 = Uncertain data If the tag is set to 1, you must troubleshoot the module to correct the cause of the inaccuracy. IMPORTANT: Once the condition that causes the tag to change to 1 is removed, the tag automatically resets to 0.
Counterxx.Done	BIT	Indicates that the I:Count tag \geq O:Preset.G430.	0 or 1
Counterxx.Rollover	BIT	The counter counted up to RolloverValue - 1 (for HSC) or Preset - 1 (for simple counters) and then continued counting from the O:Rollunder (for HSC) or 0 (for simple counters). The O:RolloverAck bit transitioning from 0 to 1 or the O:Reset transitioning from 0 to 1 clears the bit.	0 or 1
Counterxx.Count	DINT	The number of input transitions counted by a counter.	All values.
EventStatusx.CIPSyncTimeout	BIT	Indicates that the module was once synced with a 1588 master, but is not now due to a timeout.	<ul style="list-style-type: none"> 0 = A valid time master has not timed out. 1 = A valid time master was detected on the backplane, but the time master has timed out. The module is using its local clock and can be drifting away from the last known time master.
EventStatusx.CIPSyncValid	BIT	Indicates whether the module is synced with a 1588 master.	<ul style="list-style-type: none"> 0 = CIP Sync is not available 1 = CIP Sync is available
EventStatusx.EventDropped	BIT	Indicates when an event has been discarded because events are occurring faster than they are being acknowledged.	<ul style="list-style-type: none"> 0 = An event status has not been dropped 1 = An event status has been dropped
EventStatusx.EventNumber	DINT	Running count of events, which increments by one each new time event. The originator sets the Event Number Ack to the Event Number to acknowledge receipt of the event. When the EventNumber reaches its maximum value and rolls over it is to roll over to 1, not 0.	All values.
EventStatusx.EventReset	BIT	When E0.Event[<n>].ResetEvent transitions from 0 to 1, I.EventStatus[<n>].EventReset transitions to 1 to indicate that the reset was received and completed. It stays 1 until E0.Event[<n>].ResetEvent transition to zero.	<ul style="list-style-type: none"> 0 = Do not reset 1 = Reset
EventStatusx.EventsPending	SINT	The number of events currently queued in the modules. A value greater than zero indicates that the controller is not currently keeping up with the rate of events.	All positive values.

Table 33 - 5069-IB6F-3W Module Input Tags

Name	Size	Definition	Valid Values
Ptxx.Data	BIT	Indicates the current digital input value.	<ul style="list-style-type: none"> 0 = Off 1 = On
Ptxx.Fault	BIT	Indicates that channel data is inaccurate and cannot be trusted for use in the application. For more information, see Module Data Quality Reporting on page 35 .	<ul style="list-style-type: none"> 0 = Good 1 = Bad, causing fault <p>If the tag is set to 1, you must troubleshoot the module to correct the cause of the inaccuracy.</p> <p>IMPORTANT: Once the condition that causes the tag to change to 1 is removed, the tag automatically resets to 0.</p>
Ptxx.Uncertain	BIT	Indicates that the channel data can be inaccurate but the degree of inaccuracy is not known. For more information, see Module Data Quality Reporting on page 35 .	<ul style="list-style-type: none"> 0 = Good data 1 = Uncertain data <p>If the tag is set to 1, you must troubleshoot the module to correct the cause of the inaccuracy.</p> <p>IMPORTANT: Once the condition that causes the tag to change to 1 is removed, the tag automatically resets to 0.</p>
Ptxx.Chatter	BIT	1 = Shows that the input is chattering per the ChatterTime and ChatterCount settings. 0 = Normal	<ul style="list-style-type: none"> 0 = Normal 1 = Input is chattering
Ptxx.TimestampOverflowOnOff	BIT	Indicates an On to Off time stamp was lost in a discrete product. If TimestampLatchEn is set then a new time stamp was not recorded because one is already latched. If TimestampLatchEn is clear a timestamp was overwritten.	0 or 1
Ptxx.TimestampOverflowOffOn	BIT	Indicates an Off to On time stamp was lost in a discrete product. If TimestampLatchEn is set then a new time stamp was not recorded because one is already latched. If TimestampLatchEn is clear a timestamp was overwritten.	0 or 1
Ptxx.CIPSyncValid	BIT	Indicates whether the module is synced with a 1588 master.	<ul style="list-style-type: none"> 0 = CIP Sync is not available 1 = CIP Sync is available
Ptxx.CIPSyncTimeout	BIT	Indicates that the module was once synced with a 1588 master, but is not now due to a timeout.	<ul style="list-style-type: none"> 0 = A valid time master has not timed out. 1 = A valid time master was detected on the backplane, but the time master has timed out. The module is using its local clock and can be drifting away from the last known time master.
Ptxx.TimestampOffOnNumber	INT	64 bit Timestamp corresponding to when a change of state Off to On was recorded at the input.	All values.
Ptxx.TimestampOnOffNumber	INT	64 bit Timestamp corresponding to when a change of state On to Off was recorded at the input.	All values.
Ptxx.TimestampOffOn	LINT	64 bit Timestamp corresponding to when a change of state Off to On was recorded at the input.	All values.
Ptxx.TimestampOnOff	INT	64 bit Timestamp corresponding to when a change of state On to Off was recorded at the input.	All values.

Output Tags

Table 34 describes the 5069-IB6F-3W module output tags.

Table 34 - 5069-IB6F-3W Module Output Tags

Name	Size	Definition	Valid Values
Counterxx.Reset	BIT	When this bit transitions from 0 to 1, I:Count, and I:Rollover are set to zero.	<ul style="list-style-type: none"> 0 = Do not reset 1 = Reset
Counterxx.RolloverAck	BIT	Clears the Rollunder bit in the input tag when it transitions from 0 to 1.	0 or 1
Counterxx.Preset	DINT	<ul style="list-style-type: none"> If RolloverAtPreset is set, the counter counts to the Preset value and then rolls over to zero. If RolloverAtPreset is not set, the counter sets the Done bit and continues counting up to Max DINT. If C:RolloverAtPreset = 1, then if I:Count ≥ O:Preset, I:Count=0. I:Done bit always = 0. Set I:Rollover bit when I:Count transitions from O:Preset – 1 to 0. If C:RolloverAtPreset = 0, then if I:Count ≥ O:Preset, I:Done = 1, else I:Done = 0. Set I:Rollover bit when I:Count transitions from 2,147,483,647 to 0. 	0...2,147,483,647
Ptxx.ResetTimestamps	BIT	Erases all recorded timestamps for the input channel when it transitions from 0 to 1.	<ul style="list-style-type: none"> 0 = Timestamps are not erased 1 = Timestamps are erased
Ptxx.TimestampOffOnNumberAck	INT	An Off to On timestamp identifier that is written by the controller to indicate that the identified timestamp has been seen and acted on. When Latching is enabled and the Timestamp Number that is received from the controller matches the most recent timestamp that is produced, the module is then allowed to produce a new timestamp.	All values.
Ptxx.TimestampOnOffNumberAck	INT	An On to Off timestamp identifier that is written by the controller to indicate that the identified timestamp has been seen and acted on. When Latching is enabled and the Timestamp Number that is received from the controller matches the most recent timestamp that is produced, the module is then allowed to produce a new timestamp.	All values.

5069-OA16 Module Tags

This section describes the tags that are associated with the 5069-OA16 module.

Configuration Tags

[Table 35](#) describes the 5069-OA16 module configuration tags.

Table 35 - 5069-OA16 Module Configuration Tags

Name	Size	Definition	Valid Values
Ptxx.FaultMode	BIT	Selects the behavior the output channel takes if a communication fault occurs. FaultValue defines the value to go to when set to user-defined value.	<ul style="list-style-type: none"> 0 = Hold last state 1 = Go to a user-defined value
Ptxx.FaultValue	BIT	Defines the value that the discrete output should assume if a communication fault occurs when FaultMode = 0.	<ul style="list-style-type: none"> 0 = Off 1 = On
Ptxx.ProgMode	BIT	Selects the behavior the output channel should take when transitioned into Program mode. ProgValue defines the value to go to when set to user-defined value.	<ul style="list-style-type: none"> 0 = Hold last state 1 = Go to a user-defined value
Ptxx.ProgValue	BIT	Defines the value that the output should take when the connection transitions to Program mode if the ProgMode bit is set to "User-Defined Value".	<ul style="list-style-type: none"> 0 = The output state is Off during Program mode. 1 = The output state is On during Program mode.
Ptxx.FaultFinalState	BIT	If FaultValueStateDuration is nonzero determines the final Output state after the configured FaultValueStateDuration time out occurs.	<ul style="list-style-type: none"> 0 = The output state is Off after the FaultValueStateDuration time expires. 1 = The output state is On after the FaultValueStateDuration time expires.
Ptxx.ProgramToFaultEn	BIT	Determines if an output should transition to the Fault Mode if the connection faults while in Program Mode.	<ul style="list-style-type: none"> 0 = Stay in Program Mode 1 = Go to Fault mode
Ptxx.FaultValueStateDuration	SINT	This value determines the length of time the Fault Mode state is held before the FaultFinalState being applied.	<ul style="list-style-type: none"> 0 = Hold forever (default). 1, 2, 5, or 10 seconds

Input Tags

Table 36 describes the 5069-OA16 module input tags.

Table 36 - 5069-OA16 Module Input Tags

Name	Size	Definition	Valid Values
RunMode	BIT	Channel's operating state	<ul style="list-style-type: none"> 0 = Idle 1 = Run Mode
ConnectionFaulted	BIT	Indicates if a connection is running. The module sets this tag to 0 when connected. If the module is not connected, it changes the tag to 1.	<ul style="list-style-type: none"> 0 = Connection running 1 = Connection not running
DiagnosticActive	BIT	Indicates if any diagnostics are active or if the prognostics threshold is reached.	<ul style="list-style-type: none"> 0 = No diagnostics active 1 = One or more diagnostics are active or the prognostics threshold is reached
DiagnosticSequenceCount	SINT	Increments for each time a distinct diagnostic condition is detected, and when a distinct diagnostic condition transitions from detected to not detected. Set to zero by product reset or power cycle. Wraps from 255 (-1) to 1 skipping zero.	-128...127 The value of 0 is skipped except during module power-up.
Ptxx.Data	BIT	Indicates the current digital input value.	<ul style="list-style-type: none"> 0 = Off 1 = On
Ptxx.Fault	BIT	Indicates that channel data is inaccurate and cannot be trusted for use in the application. For more information, see Module Data Quality Reporting on page 35 .	<ul style="list-style-type: none"> 0 = Good 1 = Bad, causing fault <p>If the tag is set to 1, you must troubleshoot the module to correct the cause of the inaccuracy. IMPORTANT: Once the condition that causes the tag to change to 1 is removed, the tag automatically resets to 0.</p>
Ptxx.Uncertain	BIT	Indicates that the channel data can be inaccurate but the degree of inaccuracy is not known. For more information, see Module Data Quality Reporting on page 35 .	<ul style="list-style-type: none"> 0 = Good data 1 = Uncertain data <p>If the tag is set to 1, you must troubleshoot the module to correct the cause of the inaccuracy. IMPORTANT: Once the condition that causes the tag to change to 1 is removed, the tag automatically resets to 0.</p>

Output Tags

Table 37 describes the 5069-OA16 module output tags.

Table 37 - 5069-OA16 Module Output Tags

Name	Size	Definition	Valid Values
Ptxx.Data	BIT	Indicates the current digital output value.	<ul style="list-style-type: none"> 0 = Off 1 = On

5069-OB8 Module Tags

This section describes the tags that are associated with the 5069-OB8 module.

Configuration Tags

[Table 38](#) describes the 5069-OB8 module configuration tags.

Table 38 - 5069-OB8 Module Configuration Tags

Name	Size	Definition	Valid Values
Ptxx.FaultMode	BIT	Selects the behavior the output channel takes if a communication fault occurs. FaultValue defines the value to go to when set to user-defined value.	<ul style="list-style-type: none"> • 0 = Hold last state • 1 = Go to a user-defined value
Ptxx.FaultValue	BIT	Defines the value that the output should assume if a communication fault occurs when FaultMode = 0.	<ul style="list-style-type: none"> • 0 = Off • 1 = On
Ptxx.ProgMode	BIT	Selects the behavior the output channel should take when transitioned into Program mode. ProgValue defines the value to go to when set to user-defined value.	<ul style="list-style-type: none"> • 0 = Hold last state • 1 = Go to a user-defined value
Ptxx.ProgValue	BIT	Defines the value that the output should take when the connection transitions to Program mode if the ProgMode bit is set to "User-Defined Value".	<ul style="list-style-type: none"> • 0 = The output state is Off during Program mode. • 1 = The output state is On during Program mode.
Ptxx.FaultFinalState	BIT	If FaultValueStateDuration is nonzero determines the final Output state after the configured FaultValueStateDuration time out occurs.	<ul style="list-style-type: none"> • 0 = The output state is Off after the FaultValueStateDuration time expires. • 1 = The output state is On after the FaultValueStateDuration time expires.
Ptxx.ProgramToFaultEn	BIT	Determines if an output should transition to the Fault Mode if the connection faults while in Program Mode.	<ul style="list-style-type: none"> • 0 = Stay in Program Mode • 1 = Go to Fault mode
Ptxx.NoLoadEn	BIT	Enables no load detection for output channels.	<ul style="list-style-type: none"> • 0 = Disable • 1 = Enable
Ptxx.FaultValueStateDuration	SINT	This value determines the length of time the Fault Mode state is held before the FaultFinalState being applied.	<ul style="list-style-type: none"> • 0 = Hold forever (default). • 1, 2, 5, or 10 seconds

Input Tags

Table 39 describes the 5069-OB8 module input tags.

Table 39 - 5069-OB8 Module Input Tags

Name	Size	Definition	Valid Values
RunMode	BIT	Channel's operating state	<ul style="list-style-type: none"> 0 = Idle 1 = Run Mode
ConnectionFaulted	BIT	Indicates if a connection is running. The module sets this tag to 0 when connected. If the module is not connected, it changes the tag to 1.	<ul style="list-style-type: none"> 0 = Connection running 1 = Connection not running
DiagnosticActive	BIT	Indicates if any diagnostics are active or if the prognostics threshold is reached.	<ul style="list-style-type: none"> 0 = No diagnostics active 1 = One or more diagnostics are active or the prognostics threshold is reached
DiagnosticSequenceCount	SINT	Increments for each time a distinct diagnostic condition is detected, and when a distinct diagnostic condition transitions from detected to not detected. Set to zero by product reset or power cycle. Wraps from 255 (-1) to 1 skipping zero.	<ul style="list-style-type: none"> -128...127 The value of 0 is skipped except during module power-up.
Ptxx.Data	BIT	Indicates the current digital input value.	<ul style="list-style-type: none"> 0 = Off 1 = On
Ptxx.Fault	BIT	Indicates that channel data is inaccurate and cannot be trusted for use in the application. For more information, see Module Data Quality Reporting on page 35 .	<ul style="list-style-type: none"> 0 = Good 1 = Bad, causing fault The typical causes of uncertain data are the following: <ul style="list-style-type: none"> Field Power Loss condition No Load condition Short Circuit condition If the tag is set to 1, you must troubleshoot the module to correct the cause of the inaccuracy. <p>IMPORTANT: Once the condition that causes the tag to change to 1 is removed, the tag automatically resets to 0.</p>
Ptxx.Uncertain	BIT	Indicates that the channel data can be inaccurate but the degree of inaccuracy is not known . For more information, see Module Data Quality Reporting on page 35 .	<ul style="list-style-type: none"> 0 = Good data 1 = Uncertain data If the tag is set to 1, you must troubleshoot the module to correct the cause of the inaccuracy. <p>IMPORTANT: Once the condition that causes the tag to change to 1 is removed, the tag automatically resets to 0.</p>
Ptxx.NoLoad	BIT	Indicates that the signal wire has been disconnected from one of its terminals or the RTB has been removed. Used with Output channels.	<ul style="list-style-type: none"> 0 = No fault 1 = Fault
Ptxx.ShortCircuit	BIT	Indicates an output short circuit or overcurrent.	<ul style="list-style-type: none"> 0 = No short circuit 1 = Short circuit or overcurrent

Output Tags

Table 40 describes the 5069-OB8 module output tags.

Table 40 - 5069-OB8 Module Output Tags

Name	Size	Definition	Valid Values
Ptxx.Data	BIT	Indicates the current digital output value.	<ul style="list-style-type: none"> 0 = Off 1 = On

5069-OB16 Module Tags

This section describes the tags that are associated with the 5069-OB16 module.

Configuration Tags

[Table 41](#) describes the 5069-OB16 module configuration tags.

Table 41 - 5069-OB16 Module Configuration Tags

Name	Size	Definition	Valid Values
Ptxx.FaultMode	BIT	Selects the behavior the output channel takes if a communication fault occurs. FaultValue defines the value to go to when set to user-defined value.	<ul style="list-style-type: none"> 0 = Hold last state 1 = Go to a user-defined value
Ptxx.FaultValue	BIT	Defines the value that the discrete output should assume if a communication fault occurs when FaultMode = 0.	<ul style="list-style-type: none"> 0 = Off 1 = On
Ptxx.ProgMode	BIT	Selects the behavior the output channel should take when transitioned into Program mode. ProgValue defines the value to go to when set to user-defined value.	<ul style="list-style-type: none"> 0 = Hold last state 1 = Go to a user-defined value
Ptxx.ProgValue	BIT	Defines the value that the output should take when the connection transitions to Program mode if the ProgMode bit is set to "User-Defined Value".	<ul style="list-style-type: none"> 0 = The output state is Off during Program mode. 1 = The output state is On during Program mode.
Ptxx.FaultFinalState	BIT	If FaultValueStateDuration is nonzero determines the final Output state after the configured FaultValueStateDuration time out occurs.	<ul style="list-style-type: none"> 0 = The output state is Off after the FaultValueStateDuration time expires. 1 = The output state is On after the FaultValueStateDuration time expires.
Ptxx.ProgramToFaultEn	BIT	Determines if an output should transition to the Fault Mode if the connection faults while in Program Mode.	<ul style="list-style-type: none"> 0 = Stay in Program Mode 1 = Go to Fault mode
Ptxx.NoLoadEn	BIT	Enables no load detection for output channels.	<ul style="list-style-type: none"> 0 = Disable 1 = Enable
Ptxx.FaultValueStateDuration	SINT	This value determines the length of time the Fault Mode state is held before the FaultFinalState being applied.	<ul style="list-style-type: none"> 0 = Hold forever (default). 1, 2, 5, or 10 seconds

Input Tags

Table 42 describes the 5069-OB16 module input tags.

Table 42 - 5069-OB16 Module Input Tags

Name	Size	Definition	Valid Values
RunMode	BIT	Channel's operating state	<ul style="list-style-type: none"> 0 = Idle 1 = Run Mode
ConnectionFaulted	BIT	Indicates if a connection is running. The module sets this tag to 0 when connected. If the module is not connected, it changes the tag to 1.	<ul style="list-style-type: none"> 0 = Connection running 1 = Connection not running
DiagnosticActive	BIT	Indicates if any diagnostics are active or if the prognostics threshold is reached.	<ul style="list-style-type: none"> 0 = No diagnostics active 1 = One or more diagnostics are active or the prognostics threshold is reached
Uncertain	BIT	Indicates if the module is operating outside its designed operating range or if data is under manual or override control.	<ul style="list-style-type: none"> 0 = Good 1 = Uncertain
DiagnosticSequenceCount	SINT	Increments for each time a distinct diagnostic condition is detected, and when a distinct diagnostic condition transitions from detected to not detected. Set to zero by product reset or power cycle. Wraps from 255 (-1) to 1 skipping zero.	-128...127 The value of 0 is skipped except during module power-up.
Ptxx.Data	BIT	Indicates the current digital input value.	<ul style="list-style-type: none"> 0 = Off 1 = On
Ptxx.Fault	BIT	Indicates that channel data is inaccurate and cannot be trusted for use in the application. For more information, see Module Data Quality Reporting on page 35 .	<ul style="list-style-type: none"> 0 = Good 1 = Bad, causing fault <p>The typical causes of uncertain data are the following:</p> <ul style="list-style-type: none"> No Load condition Short Circuit condition <p>If the tag is set to 1, you must troubleshoot the module to correct the cause of the inaccuracy.</p> <p>IMPORTANT: Once the condition that causes the tag to change to 1 is removed, the tag automatically resets to 0.</p>
Ptxx.Uncertain	BIT	Indicates that the channel data can be inaccurate but the degree of inaccuracy is not known. For more information, see Module Data Quality Reporting on page 35 .	<ul style="list-style-type: none"> 0 = Good data 1 = Uncertain data <p>If the tag is set to 1, you must troubleshoot the module to correct the cause of the inaccuracy.</p> <p>IMPORTANT: Once the condition that causes the tag to change to 1 is removed, the tag automatically resets to 0.</p>
Ptxx.NoLoad	BIT	Indicates that the signal wire has been disconnected from one of its terminals or the RTB has been removed. Used with Output channels.	<ul style="list-style-type: none"> 0 = No fault 1 = Fault
Ptxx.ShortCircuit	BIT	Indicates an output short circuit or overcurrent.	<ul style="list-style-type: none"> 0 = No short circuit 1 = Short circuit or overcurrent

Output Tags

[Table 43](#) describes the 5069-OB16 module output tags.

Table 43 - 5069-OB16 Module Output Tags

Name	Size	Definition	Valid Values
Ptxx.Data	BIT	Indicates the current digital output value.	<ul style="list-style-type: none"> • 0 = Off • 1 = On

5069-OB16F Module Tags

This section describes the tags that are associated with the 5069-OB16F modules.

Configuration Tags

[Table 44](#) describes the 5069-OB16F module configuration tags.

Table 44 - 5069-OB16F Configuration Tags

Name	Size	Definition	Valid Values
Ptxx.FaultMode	BIT	Selects the behavior the output channel takes if a communication fault occurs. FaultValue defines the value to go to when set to user-defined value.	<ul style="list-style-type: none"> • 0 = Hold last state • 1 = Go to a user-defined value
Ptxx.FaultValue	BIT	Defines the value that the discrete output should assume if a communication fault occurs when FaultMode = 0.	<ul style="list-style-type: none"> • 0 = Off • 1 = On
Ptxx.ProgMode	BIT	Selects the behavior the output channel should take when transitioned into Program mode. ProgValue defines the value to go to when set to user-defined value.	<ul style="list-style-type: none"> • 0 = Hold last state • 1 = Go to a user-defined value
Ptxx.ProgValue	BIT	Defines the value that the output should take when the connection transitions to Program mode if the ProgMode bit is set to "User-Defined Value".	<ul style="list-style-type: none"> • 0 = The output state is Off during Program mode. • 1 = The output state is On during Program mode.
Ptxx.FaultFinalState	BIT	If FaultValueStateDuration is nonzero determines the final Output state after the configured FaultValueStateDuration time out occurs.	<ul style="list-style-type: none"> • 0 = The output state is Off after the FaultValueStateDuration time expires. • 1 = The output state is On after the FaultValueStateDuration time expires.
Ptxx.ProgramToFaultEn	BIT	Determines if an output should transition to the Fault Mode if the connection faults while in Program Mode.	<ul style="list-style-type: none"> • 0 = Stay in Program Mode • 1 = Go to Fault mode
Ptxx.NoLoadEn	BIT	Enables no load detection for output channels.	<ul style="list-style-type: none"> • 0 = Disable • 1 = Enable
Ptxx.FaultValueStateDuration	SINT	This value determines the length of time the Fault Mode state is held before the FaultFinalState being applied.	<ul style="list-style-type: none"> • 0 = Hold forever (default). • 1, 2, 5, or 10 seconds

Input Tags

Table 45 describes the 5069-OB16F module input tags.

Table 45 - 5069-OB16F Module Input Tags

Name	Size	Definition	Valid Values
RunMode	BIT	Channel's operating state	<ul style="list-style-type: none"> 0 = Idle 1 = Run Mode
ConnectionFaulted	BIT	Indicates if a connection is running. The module sets this tag to 0 when connected. If the module is not connected, it changes the tag to 1.	<ul style="list-style-type: none"> 0 = Connection running 1 = Connection not running
DiagnosticActive	BIT	Indicates if any diagnostics are active or if the prognostics threshold is reached.	<ul style="list-style-type: none"> 0 = No diagnostics active 1 = One or more diagnostics are active or the prognostics threshold is reached
Uncertain	BIT	Indicates if the module is operating outside its designed operating range or if data is under manual or override control.	<ul style="list-style-type: none"> 0 = Good 1 = Uncertain
DiagnosticSequenceCount	SINT	Increments for each time a distinct diagnostic condition is detected, and when a distinct diagnostic condition transitions from detected to not detected. Set to zero by product reset or power cycle. Wraps from 255 (-1) to 1 skipping zero.	-128...127 The value of 0 is skipped except during module power-up.
CIPSyncValid	BIT	Indicates whether the module is synced with a 1588 master.	<ul style="list-style-type: none"> 0 = CIP Sync is not available 1 = CIP Sync is available
CIPSyncTimeout	BIT	Indicates that the module was once synced with a 1588 master, but is not now due to a timeout.	<ul style="list-style-type: none"> 0 = A valid time master has not timed out. 1 = A valid time master was detected on the backplane, but the time master has timed out. The module is using its local clock and can be drifting away from the last known time master.
Ptxx.Data	BIT	Current digital input value.	<ul style="list-style-type: none"> 0 = Off 1 = On
Ptxx.Fault	BIT	Indicates that channel data is inaccurate and cannot be trusted for use in the application. For more information, see Module Data Quality Reporting on page 35 .	<ul style="list-style-type: none"> 0 = Good 1 = Bad, causing fault <p>The typical causes of uncertain data are the following:</p> <ul style="list-style-type: none"> No Load condition Short Circuit condition <p>If the tag is set to 1, you must troubleshoot the module to correct the cause of the inaccuracy. IMPORTANT: Once the condition that causes the tag to change to 1 is removed, the tag automatically resets to 0.</p>
Ptxx.Uncertain	BIT	Indicates that the channel data can be inaccurate but the degree of inaccuracy is not known. For more information, see Module Data Quality Reporting on page 35 .	<ul style="list-style-type: none"> 0 = Good data 1 = Uncertain data <p>If the tag is set to 1, you must troubleshoot the module to correct the cause of the inaccuracy. IMPORTANT: Once the condition that causes the tag to change to 1 is removed, the tag automatically resets to 0.</p>

Table 45 - 5069-0B16F Module Input Tags

Name	Size	Definition	Valid Values
Ptxx.NoLoad	BIT	Indicates that the signal wire has been disconnected from one of its terminals or the RTB has been removed. Used with Output channels.	<ul style="list-style-type: none"> • 0 = No fault • 1 = Fault
Ptxx.ShortCircuit	BIT	Indicates an output short circuit or overcurrent.	<ul style="list-style-type: none"> • 0 = No short circuit • 1 = Short circuit or overcurrent
Schedulex	SINT	Indicates which schedule to load from 32 available schedules.	<ul style="list-style-type: none"> • 1 . . . 32 = Valid schedule • 0, 129 . . . 255 = No schedule
Schedulex.State	SINT	Current state of the Tagschedule at index x.	<ul style="list-style-type: none"> • 0 = Inactive • 1 = Active – schedule is next to be applied to any of the outputs. • 2 = Current – schedule is not the next to be applied one of the outputs. • 3 = Expired – schedule has been applied. • 4 = Discarded – scheduled but mask was off, or the requested schedule was late (received after its scheduled application time) and a more recent schedule has already been applied to that output point. • 5 = Late – received schedule after the time it is to be applied.
Schedulex.ScheduleNumber	SINT	Echo of ScheduleNumber from the output image.	<ul style="list-style-type: none"> • 0 . . . 3
LateScheduleCount	INT	Count of schedules, which arrive late. i.e. arrival time is after scheduled time. Counter rolls over every 65535 late updates. Output should still be driven to new state if this is the most recent schedule for that point. Useful in indicating that network delays/losses are causing scheduling issues.	All values.
LostScheduleCount	INT	Increments whenever the schedule sequence number in the output tag skips a value, which may indicate a lost schedule. Counter rolls over every 65535 lost updates.	All values.

Output Tags

[Table 46](#) describes the 5069-OB16F module output tags.

Table 46 - 5069-OB16F Module Output Tags

Name	Size	Definition	Valid Values
TimeBase	LINT	Indicates the TimeBase for all schedule times in a scheduled output consumed assembly or channel. The TimeBase + The Schedule[n].TimeOffset determines the time for the schedule. Base/Offset scheme that is used to fit enough schedules into the assembly.	Any positive value.
Ptxx.Data	BIT	Current digital input value.	<ul style="list-style-type: none"> • 0 = Off • 1 = On
Ptxx.ScheduleEn	BIT	Specifies the use of normal output data or scheduled data.	<ul style="list-style-type: none"> • 0 = Normal output data • 1 = Scheduled data
Schedulex	SINT	Indicates which schedule to load from 32 available schedules.	<ul style="list-style-type: none"> • 1...32 = Valid schedule • 0, 129...255 = No schedule
Schedulex.ID	SINT	There are 32 schedules available (for Neo R1 products). Indicates which schedule to load.	<ul style="list-style-type: none"> • 1...32 = Valid schedule • 0 or 129...255 = No schedule
Schedulex.SequenceNumber	SINT	Indicates that the schedule information is valid and that this schedule should be processed.	All values.
Schedulex.OutputPointSelect	SINT	Selects the output point that this schedule applies to. 0xFF means no output point selected.	0...15
Schedulex.Data	BIT	Output data to be applied at time that is specified in schedule.	0 or 1
Schedulex.TimeOffset	DINT	Offset from schedule base time. Used for scheduled output consumed tags. Base/Offset scheme that is used to fit enough schedules in the assembly.	All values.

5069-OW4I, 5069-OW16, and 5069-OX4I Module Tags

This section describes the tags that are associated with the 5069-OW4I, 5069-OW16, and 5069-OX4I modules. The tags are the same for each module.

Configuration Tags

[Table 47](#) describes the 5069-OW4I and 5069-OX4I module configuration tags.

Table 47 - Relay Output High Current Module Configuration Tags

Name	Size	Definition	Valid Values
Ptxx.FaultMode	BIT	Selects the behavior the output channel takes if a communication fault occurs. FaultValue defines the value to go to when set to user-defined value.	<ul style="list-style-type: none"> 0 = Hold last state 1 = Go to a user-defined value
Ptxx.FaultValue	BIT	Defines the value that the discrete output should assume if a communication fault occurs when FaultMode = 0.	<ul style="list-style-type: none"> 0 = Off 1 = On
Ptxx.ProgMode	BIT	Selects the behavior the output channel should take when transitioned into Program mode. ProgValue defines the value to go to when set to user-defined value.	<ul style="list-style-type: none"> 0 = Hold last state 1 = Go to a user-defined value
Ptxx.ProgValue	BIT	Defines the value that the output should take when the connection transitions to Program mode if the ProgMode bit is set to "User-Defined Value".	<ul style="list-style-type: none"> 0 = The output state is Off during Program mode. 1 = The output state is On during Program mode.
Ptxx.FaultFinalState	BIT	If FaultValueStateDuration is nonzero determines the final Output state after the configured FaultValueStateDuration time out occurs.	<ul style="list-style-type: none"> 0 = The output state is Off after the FaultValueStateDuration time expires. 1 = The output state is On after the FaultValueStateDuration time expires.
Ptxx.ProgramToFaultEn	BIT	Determines if an output should transition to the Fault Mode if the connection faults while in Program Mode.	<ul style="list-style-type: none"> 0 = Stay in Program Mode 1 = Go to Fault mode
Ptxx.FaultValueStateDuration	SINT	This value determines the length of time the Fault Mode state is held before the FaultFinalState being applied.	<ul style="list-style-type: none"> 0 = Hold forever (default). 1, 2, 5, or 10 seconds

Input Tags

Table 48 describes the 5069-OW4I, 5069-OW16, 5069-OX4I module input tags.

Table 48 - Relay Output High Current Module Input Tags

Name	Size	Definition	Valid Values
RunMode	BIT	Channel's operating state	<ul style="list-style-type: none"> 0 = Idle 1 = Run Mode
ConnectionFaulted	BIT	Indicates if a connection is running. The module sets this tag to 0 when connected. If the module is not connected, it changes the tag to 1.	<ul style="list-style-type: none"> 0 = Connection running 1 = Connection not running
DiagnosticActive	BIT	Indicates if any diagnostics are active or if the prognostics threshold is reached.	<ul style="list-style-type: none"> 0 = No diagnostics active 1 = One or more diagnostics are active or the prognostics threshold is reached
DiagnosticSequenceCount	SINT	Increments for each time a distinct diagnostic condition is detected, and when a distinct diagnostic condition transitions from detected to not detected. Set to zero by product reset or power cycle. Wraps from 255 (-1) to 1 skipping zero.	-128...127 The value of 0 is skipped except during module power-up.
Ptxx.Data	BIT	Indicates the current digital input value.	<ul style="list-style-type: none"> 0 = Off 1 = On
Ptxx.Fault	BIT	Indicates that channel data is inaccurate and cannot be trusted for use in the application. For more information, see Module Data Quality Reporting on page 35 .	<ul style="list-style-type: none"> 0 = Good 1 = Bad, causing fault <p>The typical causes of uncertain data are the following:</p> <ul style="list-style-type: none"> Field Power Loss condition (5069-OW16 only) No Load condition Short Circuit condition <p>If the tag is set to 1, you must troubleshoot the module to correct the cause of the inaccuracy. IMPORTANT: Once the condition that causes the tag to change to 1 is removed, the tag automatically resets to 0.</p>
Ptxx.Uncertain	BIT	Indicates that the channel data can be inaccurate but the degree of inaccuracy is not known. For more information, see Module Data Quality Reporting on page 35 .	<ul style="list-style-type: none"> 0 = Good data 1 = Uncertain data <p>If the tag is set to 1, you must troubleshoot the module to correct the cause of the inaccuracy. IMPORTANT: Once the condition that causes the tag to change to 1 is removed, the tag automatically resets to 0.</p>

Output Tags

[Table 49](#) describes the 5069-OW4I, 5069-OW16, and 5069-OX4I module outputs tags.

Table 49 - Relay Output High Current Module Output Tags

Name	Size	Definition	Valid Values
Ptxx.Data	BIT	Indicates the current digital input value.	<ul style="list-style-type: none">• 0 = Off• 1 = On

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