

POINT Guard I/O Safety Modules



Installation & User Manual
(Catalog Numbers 1734-IB8S, 1734-OB8S)

POINT Guard I/O Overview

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Introduction

Use the POINT Guard I/O Safety Modules in the POINT I/O platform to distribute Safety I/O on a GuardLogix or SmartGuard system. You can configure the modules by using the network configuration tool, RSNetWorx software, or the GuardLogix programming tool, RSLogix 5000 software, version 17 or later. GuardLogix systems are designed for the use of POINT Guard I/O modules with an EtherNet/IP adapter.

The mounting base assembly (catalog numbers 1734-TB or 1734-TBS) consists of a mounting base and a removable terminal block. Alternatively, you can use the POINT I/O one-piece mounting base (catalog numbers 1734-TOP, 1734-TOPS, 1734-TOP3, or 1734-TOP3S).

IMPORTANT

You need two mounting base assemblies for each 1734-IB8S or 1734-OB8S module. Do not use 1734-TB3 or 1734-TB3S mounting base assemblies.

Safety Inputs

Read this section for information about safety inputs and their associated test outputs. A safety input can optionally be used with test outputs. Safety inputs are used to monitor safety input devices.

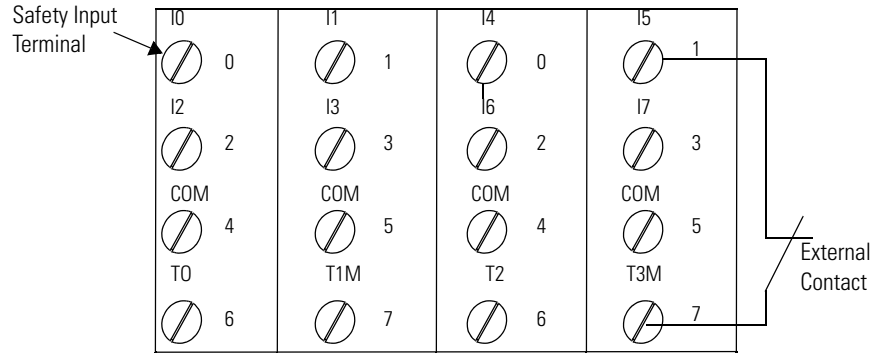
Using a Test Output with a Safety Input

A test output can be used in combination with a safety input for short circuit, cross-channel, and open-circuit fault detection. Configure the test output as a pulse test source and associate it to a specific safety input.

TIP

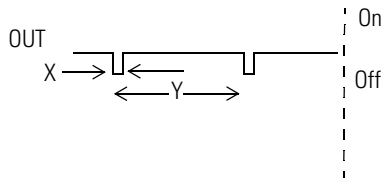
The test output can also be configured as a power supply to source 24V DC to an external device, for example, a light curtain.

Example Use of a POINT Guard I/O Input Module



Where:
T0 = Test Output 0
T1M = Test Output 1 with Muting
T2 = Test Output 2
T3M = Test Output 3 with Muting
I0...I7 = Safety Inputs

Test Pulse in a Cycle



For the 1734-IB8S module, the pulse width (X) is typically 525 μ s; the pulse period (Y) is typically 144 ms.

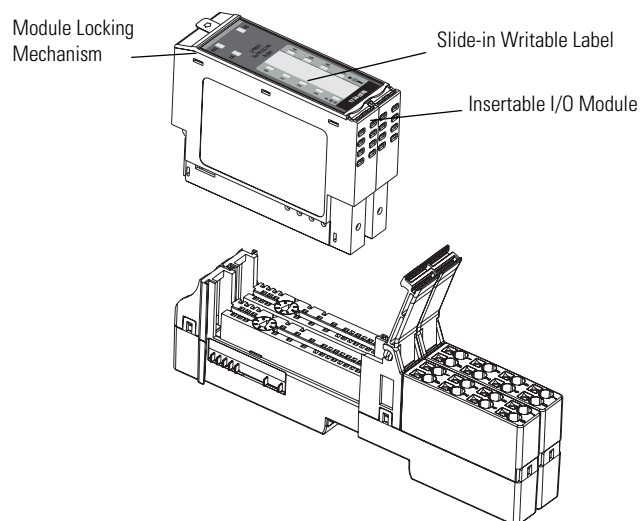
Install the Module

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Introduction

Follow these steps to install the modules.

1. [Install the Mounting Base.](#)
2. [Connect the Module to the Mounting Base.](#)
3. [Connect the Removable Terminal Block.](#)
4. [Wire Modules.](#)



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Connect the Module to the Mounting Base

Install the module before or after mounting base installation.

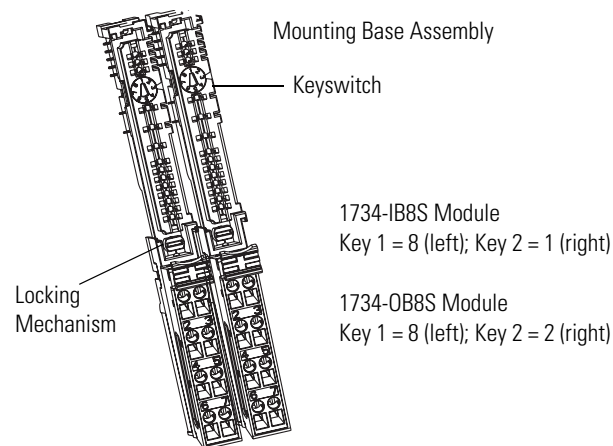
WARNING



When you insert or remove the module while backplane power is on, an electrical arc can occur. This could cause an explosion in hazardous location installations. Be sure that power is removed or the area is nonhazardous before proceeding.

1. Using a screwdriver, rotate the keyswitches on the mounting base clockwise until the number required for the type of module aligns with the notch in the base.

Keep track of which mounting base gets installed on the left and right of each module.



2. Make certain the DIN-rail (orange) locking screw is in the horizontal position, noting that you cannot insert the module if the mounting-base locking mechanism is unlocked.
3. Insert the module straight down into the two side-by-side mounting bases and press to secure, locking the module into place.

1734-IB8S Field Connections

I0	I1	I4	I5	1734-TOP and 1734-TB Bases Shown
 0	 1	 0	 1	
I2	I3	I6	I7	
 2	 3	 2	 3	
COM	COM	COM	COM	
 4	 5	 4	 5	
T0	T1M	T2	T3M	
 6	 7	 6	 7	

Where:
T0 = Test Output 0
T1M = Test Output 1 with Muting
T2 = Test Output 2
T3M = Test Output 3 with Muting
I0...I7 = Inputs 0...7

1734-OB8S Field Connections

O0	O1	O4	O5	1734-TOP and 1734-TB Bases Shown
 0	 1	 0	 1	
O2	O3	O6	O7	
 2	 3	 2	 3	
COM	COM	COM	COM	
 4	 5	 4	 5	
COM	COM	COM	COM	
 6	 7	 6	 7	

Where:
O0...O7 = Safety Outputs 0...7
COM = Supply Common

- The 1734-EP24DC and 1734-EPAC power supplies provide two services.
 - Breaks the field power distribution at the left of the power supply from the field power distribution to the right of it
 - Adds an additional 1.3 A of 5V current to the POINTBus backplane for I/O modules to the right of the power supply
- Use the 1734-FPD field power distributor with the 5V bus. The 1734-FPD field power distributor passes through all POINT I/O backplane signals including the 5V bus supplied to the left, but does not provide **additional** POINTBus backplane power. This lets you isolate field power segments.

Consider these recommendations when using the POINT Guard I/O modules:

- With the GuardLogix controllers, use the 1734-AENT adapter.
- With the SmartGuard controller, use the 1734-PDN adapter.

The adapters and power supplies differ in their amount of power supplied to the 5V and/or 24V bus.

Refer to the POINT I/O Selection Guide, publication [1734-SG001](#), for more information.

Power Supply Examples

Use these valid power-supply example configurations to help you understand various combinations of power supplies that may fit your system:

- [Example 1: POINT Guard I/O Used with 1734-EP24DC for Input, 1734-FPD for Output - 24V DC Only I/O on page 49](#)
- [Example 2: POINT Guard I/O Used with 1734-EP24DC for Input and Output, Plus AC I/O on page 50](#)

These examples are for illustrative purposes only, to understand various power sourcing concepts.

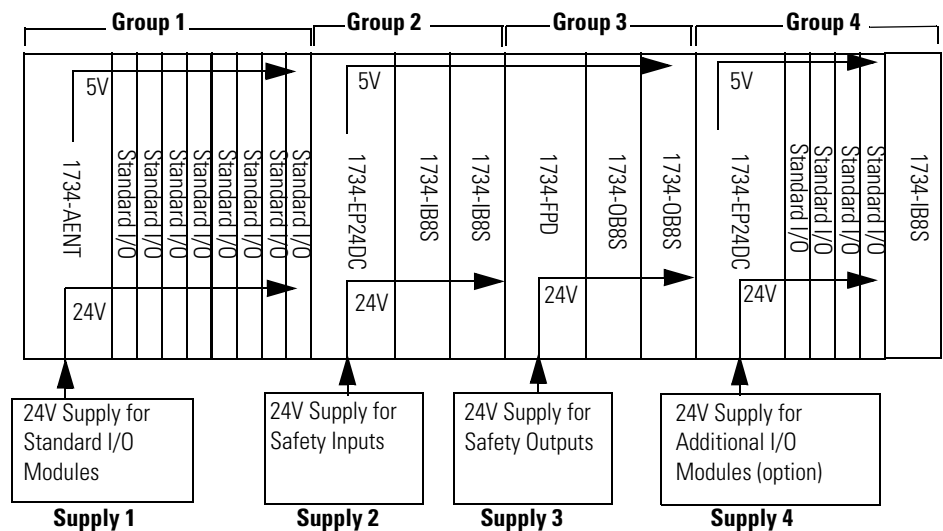
IMPORTANT

- You must define the requirements for your application, for segmenting field and bus power.
 - POINT Guard I/O does not require separate field-bus power usage, that is, separate power supplies for the 1734-IB8S and 1734-OB8S modules. This is optional.
 - POINT Guard I/O does not require separate POINTBus (communication) power-supply usage, separating it from any other POINT I/O modules, except when additional POINTBus power is required.
-

Example 1: POINT Guard I/O Used with 1734-EP24DC for Input, 1734-FPD for Output - 24V DC Only I/O

This power supply example uses a 1734-EP24DC expansion power supply and 1734-FPD field power distributor to power I/O with these properties:

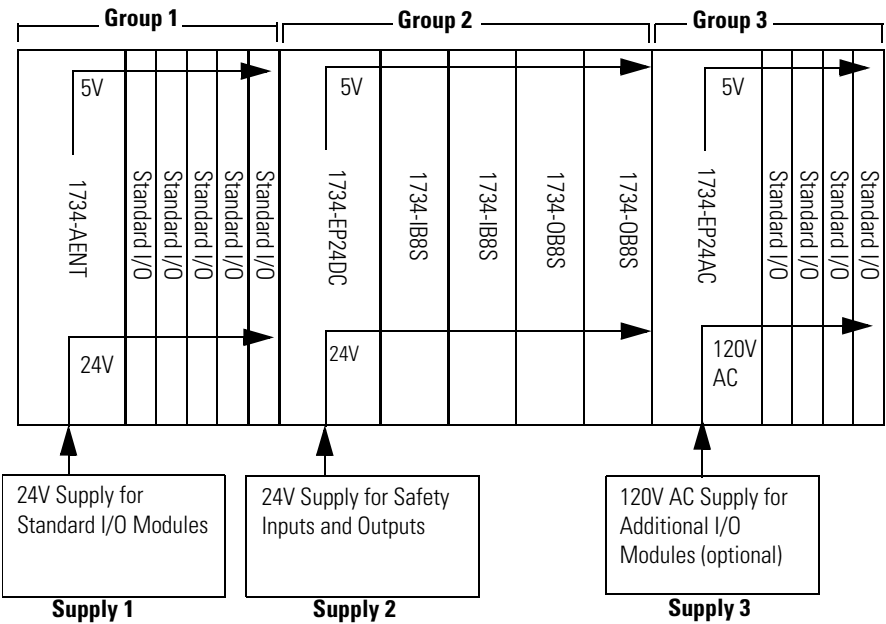
- Group 1 and Group 4 I/O have separate functioning groups of I/O, compared to the rest of the I/O.
- Field power for Group 3 is on a supply separate from bus communication power (Supply 3 loss is visible to the controller).
- Field power for Group 2 is on the same supply as bus communication power for Group 2 and Group 3 (Supply 2 loss causes broken connections to the controller for Group 2 and Group 3).



Example 2: POINT Guard I/O Used with 1734-EP24DC for Input and Output, Plus AC I/O

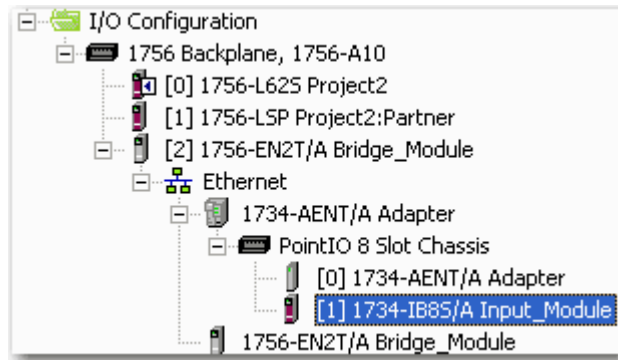
This power supply example uses a 1734-EP24DC input and output with these properties:

- Group 1 and Group 3 I/O have separate functioning groups of I/O, compared to Group 2.
- Field power for Group 2 outputs is on the same supply as bus communication (Supply 2 loss causes broken connections to the controller).
- Field power for Group 2 inputs is on the same supply as bus communication (Supply 2 loss causes broken connections to the controller).



17. Click OK to apply your changes.

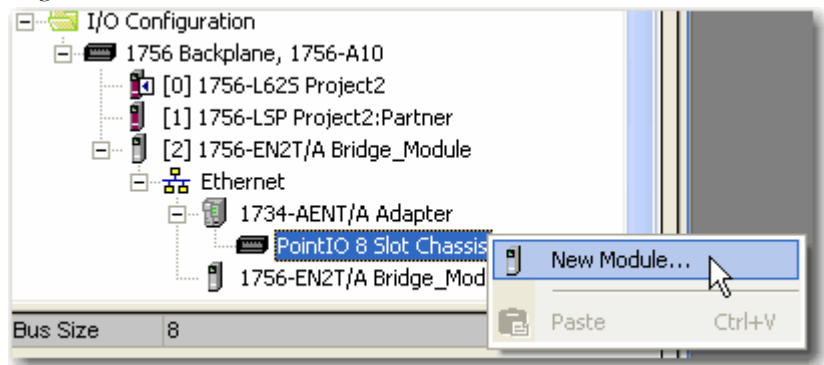
The I/O Configuration tree displays the 1734-IB8S module.



Add and Configure Safety Output Modules

Follow these steps to add and configure POINT Guard I/O safety modules.

1. Right-click the POINT I/O Chassis and choose New Module.



4. To add a safety connection, from the Connection Name pull-down menu, choose one of these options.

	Choose	Description
1734-IB8S	[IN] Safety	Control of safety inputs
	[IN] Safety + Combined Status ⁽¹⁾ - Muting	- Control of safety inputs - Status for one bit for all inputs - Muting status is available
	[IN] Safety + Pt. Status	- Control of safety inputs - Individual status for each input point
	[IN] Safety + Pt. Status - Muting	- Control of safety inputs - Individual status for each input point - Muting status available
	[IN] Safety + Pt. Status - Muting - Test Output	- Control of safety inputs - Individual status for each input point - Muting status available - Test output status available
	[OUT] Test	Control of test outputs
1734-OB8S	[IN] Safety Monitor - Combined Status - Power	- Monitor safety outputs - Status for one bit for all outputs - Power status available
	[IN] Safety Output Status	Individual status for each output point
	[IN] Safety Output Status + Monitor	- Individual status for each output point - Monitor safety outputs
	[OUT] Safety	Control of safety outputs

⁽¹⁾ Most input connections use Combined Status.

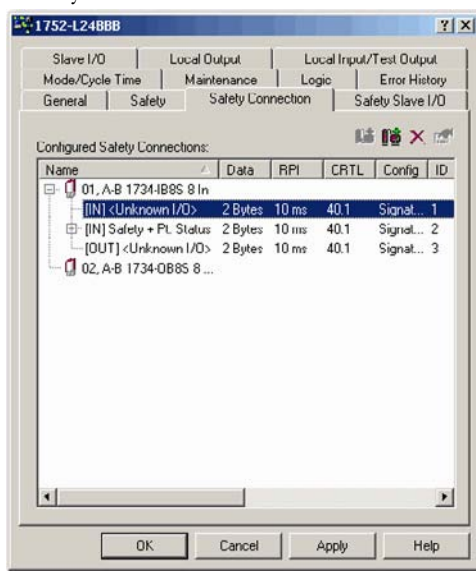
The more status that is read, the larger the packet size.

5. From the Connection Type pull-down menu, for this example choose Multicast.
6. From the Configuration pull-down menu, for this example choose Configuration signature must match.
7. In the Requested Packet Interval (RPI) box, enter 10 ms.
8. In the Connection Reaction Time Limit (CRTL), enter 40.1 ms.
9. Click Add.

This limits the packet size for normal communication. If detailed status is required when a fault occurs, that data can be read explicitly via MSG instructions.

10. Repeat steps [3...9](#) for each connection, being sure to assign input and output connections.

Notice that the connections for the 1734-IB8S module have 2 bytes. If you had selected individual point status, the input connection would be 5 bytes.



11. Click Apply.

For further details, see the SmartGuard 600 Controllers User Manual, publication [1752-UM001](#), and SmartGuard 600 Controllers Safety Reference Manual, publication [1752-RM001](#).

Configuration Lock

Indicator	Status	Description	Recommended Action
LK ⁽¹⁾	Off	No configuration or configured by a GuardLogix originator.	Validate configuration by a network configuration tool, such as RSNetWorx software.
		Invalid configuration data.	
	Solid yellow	Locked.	None.
		Valid configuration, locked by a network configuration tool, such as RSNetWorx software.	
	Flashing yellow	Not locked.	None.
		Valid configuration by a network configuration tool, such as RSNetWorx software.	

⁽¹⁾ Not applicable when used with GuardLogix controllers.

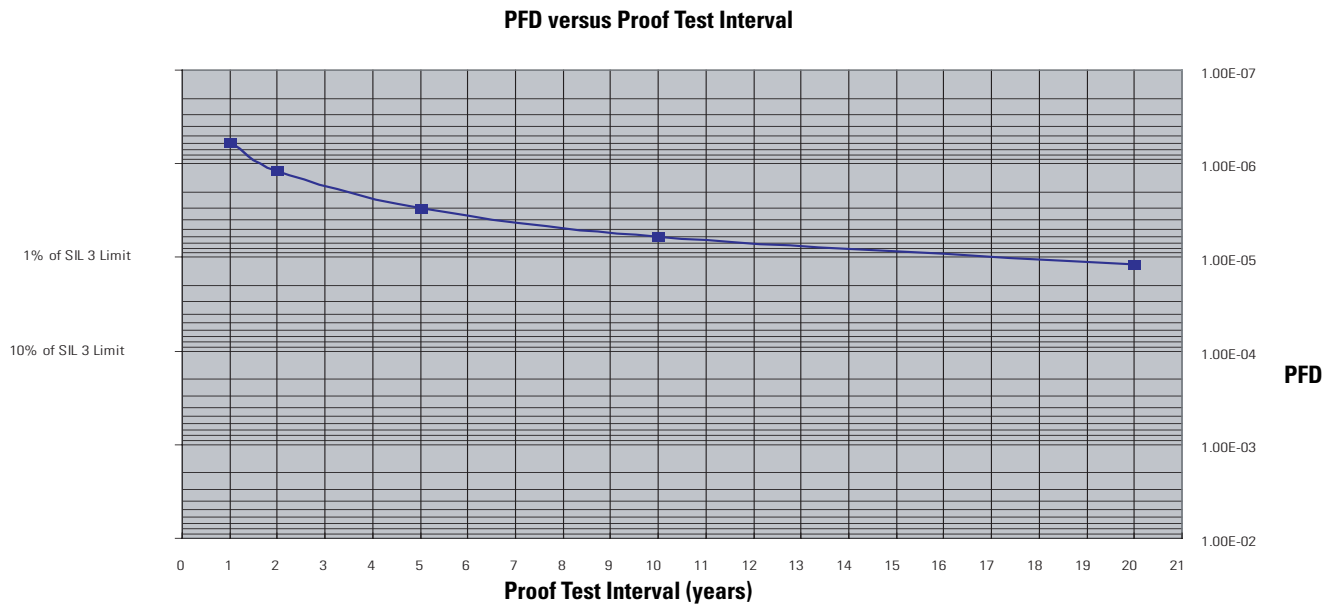
Power

Indicator	Status	Description	Recommended Action
PWR	Off	No field power applied.	Apply field power.
	Green	Normal condition, field power supplied and within specification.	None.
	Yellow	Field power out of specification.	Check your connectors, wiring, and voltages.

Safe Input Status (1734-IB8S module)

Indicator	Status	Description	Recommended Action
0...7	Off	Safety input is off, or module is being configured.	Turn the safety input on or reconfigure the channel, if desired.
	Yellow	Safety input is on.	None.
	Red	A fault in the external wiring or input circuit has been detected.	Check configuration, field wiring, and devices. If no problem found, replace module.
	Flashing red	A fault in the partner input circuit of a dual-input configuration has been detected.	Check the field wiring and verify your configuration for the partner circuit. If no problem found, replace module.

Calculated Values for Probability of Failure on Demand (PFD), Probability of Failure per Hour (PFH), and Mean Time Between Failure (MTBF)



Model	Proof Test Interval (Mission Time)		PFD (1/hour)	PFH (1/hour)	MTBF (hour)
	Year	Hour			
1734-IB8S	1	8760	5.85E-07	1.34E-10	5.76E+06
	2	17520	1.17E-06		
	5	43800	2.93E-06		
	10	87600	5.86E-06		
	20	175200	1.17E-05		
1734-OB8S	1	8760	6.05E-07	1.38E-10	4.57E+06
	2	17520	1.21E-06		
	5	43800	3.03E-06		
	10	87600	6.06E-06		
	20	175200	1.21E-05		

Specifications

Introduction

Refer to these module specifications as necessary.

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1734-IB8S - Technical Specifications

Attribute	Value
Safety Input	
Inputs per module	8
Input type	Current sinking
Voltage, on-state input, min	11V DC
Current, on-state input, min	3.3 mA
Voltage, off-state input, max	5V DC
Current, off-state, max	1.3 mA
IEC 61131-2 (input type)	Type 3
Reaction time	<16.2 ms

1734-IB8S - Technical Specifications

Attribute	Value															
Pulse Test Output																
Output type	Current sourcing															
Number of sources (T0, T1M, T2, T3M)	4															
Test output current (each output point)	0.7 A max															
Aggregate current of test outputs per module	2.8 A @ 40 °C (104 °F)															
1734-IB8S temperature versus current derating for both horizontal and vertical installations	<table><caption>1734-IB8S Temperature vs. Current Derating</caption><tr><th>Temperature (°C)</th><th>Temperature (°F)</th><th>Current (A)</th></tr><tr><td>-20</td><td>-4</td><td>2.8</td></tr><tr><td>40</td><td>104</td><td>2.8</td></tr><tr><td>60</td><td>140</td><td>2.0</td></tr><tr><td>60</td><td>140</td><td>0</td></tr></table>	Temperature (°C)	Temperature (°F)	Current (A)	-20	-4	2.8	40	104	2.8	60	140	2.0	60	140	0
Temperature (°C)	Temperature (°F)	Current (A)														
-20	-4	2.8														
40	104	2.8														
60	140	2.0														
60	140	0														
Residual voltage, max	1.2V															
Output leakage current, max	0.1 mA															
Short circuit protection	Yes															
Current, max (when used to control muting lamp)	25 mA Current, max (to avoid fault when used as a muted lamp output)															
Current, min (when used to control muting lamp)	5 mA Current, min (at which fault indication is generated when used as a muted lamp output)															

1734-IB8S and 1734-OB8S - Technical Specifications

Attribute	1734-IB8S	1734-OB8S
POINTBus		
POINTBus current, max	175 mA	190 mA
Power dissipation	1.4 W	1.9 W
Thermal dissipation	4.8 BTU/hr	6.5 BTU/hr
Isolation voltage	50V (continuous), Basic Insulation Type Type tested at 1206V DC for 60 s between field side and system No isolation between individual channels	
Power bus, operating supply voltage	24V DC nom	
Power bus, operating voltage range	19.2...28.8V DC	
Input filter time, OFF to ON ⁽¹⁾	0...126 ms (in 6 ms increments)	
Input filter time, ON to OFF ⁽¹⁾		
Terminal base screw torque	See terminal base specifications	
Indicators	1 yellow lock status indicator 1 green/yellow power status indicator 8 I/O channel status indicators	

⁽¹⁾ Input off-to-on filter time is the time from a valid input signal to recognition by the module. Input on-to-off time is the time from a valid input signal to recognition by the module.

1734-IB8S and 1734-OB8S Physical Specifications

Attribute	Value
Keyswitch positions (left and right)	1734-IB8S: Key 1 = 8 (left); Key 2 = 1 (right) 1734-OB8S: Key 1 = 8 (left); Key 2 = 2 (right)
Pilot duty rating	Not rated (1734-OB8S only)
North America temp code	T3
Enclosure type rating	None (open-style)
Enclosure type rating	None (open-style)
Wiring category ⁽¹⁾	2 - on signal ports
Wire size	Determined by installed terminal block
Weight, approx.	62.4 g (2.2 oz)
Dimensions (HxWxD), approx. (without terminal block)	77 x 25 x 55 mm (3.03 x 0.98 x 2.17 in.)

⁽¹⁾ Use this conductor category information for planning conductor routing. Refer to the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

1734-IB8S and 1734-OB8S Environmental Specifications

Attribute	Value
Temperature, operating	IEC 60068-2-1 (Test Ad, Operating Cold), IEC 60068-2-2 (Test Bd, Operating Dry Heat), IEC 60068-2-14 (Test Nb, Operating Thermal Shock): -20...60 °C (-4...140 °F)
Temperature, nonoperating	IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold), IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock): -40...85 °C (-40...185 °F)
Relative humidity	IEC 60068-2-30 (Test Db, Unpackaged Damp Heat): 5...95% noncondensing
Shock, operating	IEC 60068-2-27 (Test Ea, Unpackaged Shock) 30 g
Shock, nonoperating	IEC 60068-2-27 (Test Ea, Unpackaged Shock) 50 g
Vibration	IEC 60068-2-6, (Test Fc, Operating) 5 g @ 10...500 Hz
ESD immunity	IEC 61000-4-2: 6 kV contact discharges 8 kV air discharges
Radiated RF immunity	IEC 61000-4-3: 10V/m with 1kHz sine-wave 80% from 30...2000 MHz 10V/m with 200 Hz 50% Pulse 100%AM at 900 MHz 10V/m with 200 Hz 50% Pulse 100%AM at 1890 MHz 3V/m with 1 kHz sine-wave 80%AM from 2000...2700 MHz
EFT/B immunity	IEC 61000-4-4: ±3 kV at 5 kHz on signal ports
Surge transient immunity	IEC 61000-4-5: ±1 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports
Conducted RF immunity	IEC 61000-4-6: 10V rms with 1 kHz sine-wave 80%AM from 150 kHz...80 MHz
Emissions	CISPR 11: Group 1, Class A

1734-IB8S and 1734-OB8S Certifications

Certification	Value
Certifications: (when product is marked) ⁽¹⁾	CE European Union 2004/108/EC EMC Directive, compliant with: EN 61326; Meas./Control/Lab., Industrial Requirements EN 61000-6-4; Industrial Emissions EN 61131-2; Programmable Controllers (Clause 8, Zone A & B) C-Tick Australian Radiocommunications Act compliant with AS/NZS CISPR 11, Industrial Emissions TÜV TÜV Certified for Functional Safety up to and including SIL 3⁽²⁾/Category 4 and Performance Level e

⁽¹⁾ See the Product Certification link at <http://www.ab.com> for Declaration of Conformity, Certificates, and other certification details.

⁽²⁾ When used with specified firmware revisions.