Installation Instructions

POINT I/O 8 Channel High Density Current Input Modules

Catalog Number 1734-IE8C

Important User Information

Solid state equipment has operational characteristics differing from those of electromechanical equipment. Safety Guidelines for the Application, Installation and Maintenance of Solid State Controls (Publication SGI-1.1 available from your local Rockwell Automation sales office or online at http://literature.rockwellautomation.com) describes some important differences between solid state equipment and hard-wired electromechanical devices. Because of this difference, and also because of the wide variety of uses for solid state equipment, all persons responsible for applying this equipment must satisfy themselves that each intended application of this equipment is acceptable.

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

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

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

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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.
IMPORTANT	Identifies information that is critical for successful application and understanding of the product.
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 consequences.
SHOCK HAZARD	Labels may be on or inside the equipment (for example, drive or motor) to alert people that dangerous voltage may be present.
BURN HAZARD	Labels may be on or inside the equipment (for example, drive or motor) to alert people that surfaces may reach dangerous temperatures.

Environment and Enclosure

ATTENTION

⚠️

This equipment is intended for use in a Pollution Degree 2 industrial environment, in overvoltage Category II applications (as defined in IEC publication 60664-1), at altitudes up to 2000 meters (6562 ft) without derating.

This equipment is considered Group 1, Class A industrial equipment according to IEC/CISPR Publication 11. Without appropriate precautions, there may be potential difficulties ensuring electromagnetic compatibility in other environments due to conducted as well as radiated disturbance.

This equipment is supplied as open-type equipment. It must be mounted within an enclosure that is suitably designed for those specific environmental conditions that will be present and appropriately designed to prevent personal injury resulting from accessibility to live parts. The enclosure must have suitable flame-retardant properties to prevent or minimize the spread of flame, complying with a flame spread rating of 5VA, V2, V1, V0 (or equivalent) if non-metallic. The interior of the enclosure must be accessible only by the use of a tool. Subsequent sections of this publication may contain additional information regarding specific enclosure type ratings that are required to comply with certain product safety certifications.

In addition to this publication, see:
- Industrial Automation Wiring and Grounding Guidelines, Allen-Bradley publication 1770-4.1, for additional installation requirements.
- NEMA Standards publication 250 and IEC publication 60529, as applicable, for explanations of the degrees of protection provided by different types of enclosure

Prevent Electrostatic Discharge

ATTENTION ⚠	This equipment is sensitive to electrostatic discharge, which can cause internal damage and affect normal operation. Follow these guidelines when you handle this equipment.

- Touch a grounded object to discharge potential static.
- Wear an approved grounding wriststrap.
- Do not touch connectors or pins on component boards.
- Do not touch circuit components inside the equipment.
- Use a static-safe workstation, if available.
- Store the equipment in appropriate static-safe packaging when not in use.

ATTENTION ⚠	POINT I/O is grounded through the DIN rail to chassis ground. Use zinc plated yellow-chromate steel DIN rail to assure proper grounding. The use of other DIN rail materials (for example, aluminum, plastic) that can corrode, oxidize, or are poor conductors, can result in improper or intermittent grounding. Secure DIN rail to mounting surface approximately every 200 mm (7.8 in.) and use end-anchors appropriately.

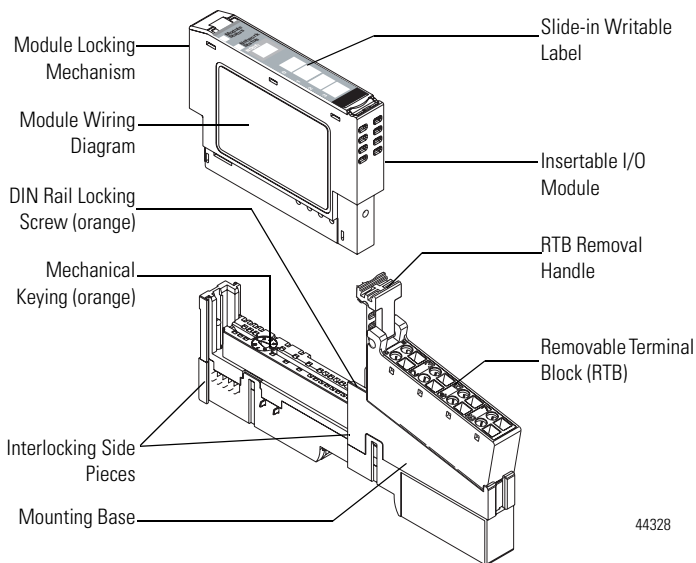| **ATTENTION** ⚠	To comply with the CE Low Voltage Directive (LVD), all connected I/O must be powered from a source compliant with the following: Safety Extra Low Voltage (SELV) or Protected Extra Low Voltage (PELV).

Before You Begin

Note that this series C product can be used with the following:

- DeviceNet and PROFIBUS adapters
- ControlNet and EtherNet/IP adapters, using RSLogix 5000 software, version 11 or later

See the figures to familiarize yourself with major parts of the module, noting that the wiring base assembly is one of the following:

- 1734-TB or 1734-TBS POINT I/O two-piece terminal base, which includes the 1734-RTB removable terminal block and 1734-MB mounting base
- 1734-TOP or 1734-TOPS POINT I/O one-piece terminal base

Module Locking Mechanism

Module Wiring Diagram

DIN Rail Locking Screw (orange)

Mechanical Keying (orange)

Interlocking Side Pieces

Mounting Base

Slide-in Writable Label

Insertable I/O Module

RTB Removal Handle

Removable Terminal Block (RTB)

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Module Locking Mechanism

Slide-in Writable Label

Module Wiring Diagram

Insertable I/O Module

DIN Rail Locking Screw (orange)

Handle

Mechanical Keying (orange)

Interlocking Side Pieces

1734-TOP or 1734-TOPS One-piece Terminal Base with Screw or Spring Clamp

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Install the Mounting Base

To install the mounting base on the DIN rail, proceed as follows:

1. Position the mounting base vertically above the installed units (adapter, power supply or existing module.

2. Slide the mounting base down allowing the interlocking side pieces to engage the adjacent module or adapter.

3. Press firmly to seat the mounting base on the DIN rail. The mounting base will snap into place.

4. To remove the mounting base from the DIN rail, remove the module, and use a small bladed screwdriver to rotate the base locking screw to a vertical position. This releases the locking mechanism. Then lift straight up to remove.

Install the I/O Module

The module can be installed before, or after base installation. Make sure that the mounting base is correctly keyed before installing the module into the mounting base. In addition, make sure the mounting base locking screw is positioned horizontal referenced to the base.

1734-TB Base

Turn the keyswitch to align the number with the notch. Notch position 3 is shown.
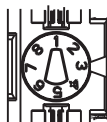
44009
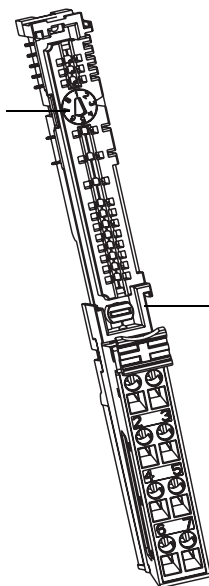
Be sure the DIN-rail locking screw is in the horizontal position.

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1734-TOP Base

Be sure the DIN-rail locking screw is in the horizontal position.

Turn the keyswitch to align the number with the notch. Notch position 1 is shown.
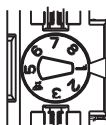
44325
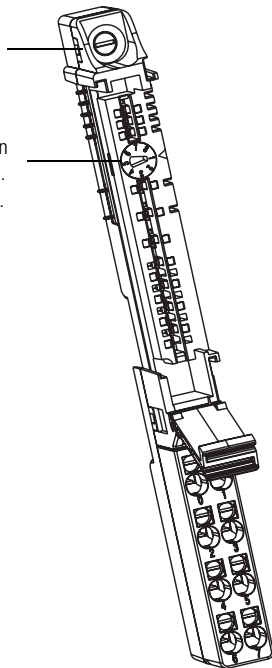
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1. Using a bladed screwdriver, rotate the keyswitch on the mountingbase clockwise until the number required for the type of module being installed aligns with the notch in the base.

2. Make certain the DIN rail locking screw is in the horizontal position. (You cannot insert the module if the locking mechanism is unlocked.)

3. Insert the module straight down into the mounting base and press to secure. The module will lock into place.

Install the Removable Terminal Block (RTB)

A removable terminal block is supplied with your wiring base assembly. To remove the terminal block, pull up on the RTB handle. This allows the mounting base to be removed and replaced as necessary without removing any of the wiring. To reinsert the removable terminal block, proceed as follows.

1. Insert the end opposite the handle into the base unit. This end has a curved section that engages with the wiring base.

2. Rotate the terminal block into the wiring base until it locks itself in place.

3. If an I/O module is installed, snap the RTB handle into place on the module.

Remove a Mounting Base

To remove a mounting base, you must remove any installed module, and the module installed in the base to the right. Remove the removable terminal block (if wired).

1. Unlatch the RTB handle on the I/O module.

2. Pull on the RTB handle to remove the removable terminal block.

3. Press on the module lock on the top of the module.

4. Pull on the I/O module to remove from the base.

5. Repeat steps 1, 2, 3 and 4 for the module to the right.

6. Use a small bladed screwdriver to rotate the orange base locking screw to a vertical position.

   This releases the locking mechanism.

7. Lift straight up to remove.

Install a 1734-TOPS Base

1. Position the base vertically above the installed units, such as an adapter, power supply, or existing module.

2. Slide the base down, allowing the interlocking side pieces to engage the adjacent installed unit.

3. Press firmly to seat the base on the DIN rail until the base snaps into place.

4. Verify that the DIN-rail locking screw is in a horizontal, locked position before inserting an I/O module.

Remove a 1734-TOPS Base

To remove a wiring base from the DIN rail, you must remove the module installed to the right of the base.

1. Squeeze the module locking mechanism of the module to the right of the base, pulling up to remove the module.

2. Turn the orange locking screw to a vertical position to unlock the base from the DIN rail.

3. Slide the base up to release it from its mating units.

Communicating with Your Module

I/O messages are sent to (consumed) and received from (produced) the POINT I/O modules. These messages are mapped into the processor's memory. This POINT I/O input module produces 24 bytes of input data (scanner Rx) and fault status data. It does not consume I/O data (scanner Tx).

Default Data Map for the 1734-IE8C Analog Input Module
Message size: 24 Bytes

Byte	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
Produces (scanner Rx)	Input Channel 0 High Byte								Input Channel 0 Low Byte							
	Input Channel 1 High Byte								Input Channel 1 Low Byte							
	Input Channel 2 High Byte								Input Channel 2 Low Byte							
	Input Channel 3 High Byte								Input Channel 3 Low Byte							
	Input Channel 4 High Byte								Input Channel 4 Low Byte							
	Input Channel 5 High Byte								Input Channel 5 Low Byte							
	Input Channel 6 High Byte								Input Channel 6 Low Byte							
	Input Channel 7 High Byte								Input Channel 7 Low Byte							
	Status Byte for Channel 1								Status Byte for Channel 0							
	OR	UR	HHA	LLA	HA	LA	CM	CF	OR	UR	HHA	LLA	HA	LA	CM	CF
	Status Byte for Channel 3								Status Byte for Channel 2							
	OR	UR	HHA	LLA	HA	LA	CM	CF	OR	UR	HHA	LLA	HA	LA	CM	CF
	Status Byte for Channel 5								Status Byte for Channel 4							
	OR	UR	HHA	LLA	HA	LA	CM	CF	OR	UR	HHA	LLA	HA	LA	CM	CF
	Status Byte for Channel 7								Status Byte for Channel 6							
	OR	UR	HHA	LLA	HA	LA	CM	CF	OR	UR	HHA	LLA	HA	LA	CM	CF

Default Data Map for the 1734-IE8C Analog Input Module
Message size: 24 Bytes

Byte	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
Consumes (scanner Tx)	No consumed data															

Where:

CF = Channel Fault status; 0 = no error, 1 = fault
CM = Calibration Mode; 0 = normal, 1 = calibration mode
LA = Low Alarm; 0 = no error, 1 = fault
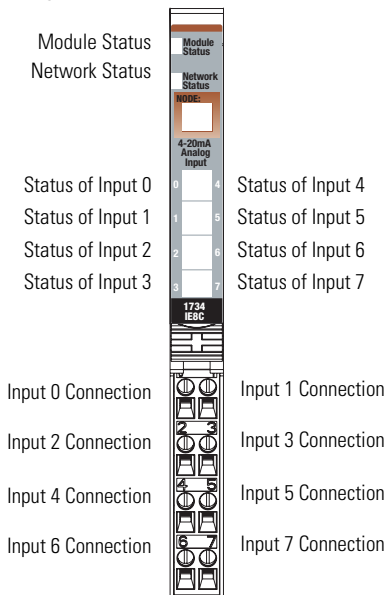HA = High Alarm; 0 = no error, 1 = fault
LLA = Low/Low Alarm: 0 = no error, 1 = fault
HHA = High/High Alarm; 0 = no error, 1 = fault
UR = Underrange; 0 = no error, 1 = fault
OR = Overrange; 0 = no error, 1 = fault

Wiring the Input Analog Module

Module Status
Network Status

Status of Input 0 — Status of Input 4
Status of Input 1 — Status of Input 5
Status of Input 2 — Status of Input 6
Status of Input 3 — Status of Input 7

Input 0 Connection — Input 1 Connection

Input 2 Connection — Input 3 Connection

Input 4 Connection — Input 5 Connection

Input 6 Connection — Input 7 Connection

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Wiring Diagram

In = Input channel
Chas Gnd = Chassis Ground
C = Common
V = 12/24V dc supply

Interpret the Indicators
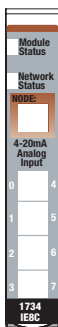
Module Status	
Network Status	
Status of Input 0	Status of Input 4
Status of Input 1	Status of Input 5
Status of Input 2	Status of Input 6
Status of Input 3	Status of Input 7

Indicator	State	Description
Module status	Off	No power applied to device
	Green	Device operating normally
	Flashing Green	Device needs commissioning due to configuration missing, incomplete or incorrect.
	Flashing Red	Recoverable fault.
	Red	Unrecoverable fault may require device replacement
	Flashing Red/Green	Device is in self-test
Network status	Off	Device is not on-line - Device has not completed dup_MAC_id test. - Device not powered - check module status indicator
	Flashing Green	Device is on-line but has no connections in the established state.
	Green	Device on-line and has connections in the established state.
	Flashing Red	One or more I/O connections in timed-out state
	Red	Critical link failure - failed communication device. Device detected error that prevents it communicating on the network.
	Flashing Red/Green	Communication faulted device - the device has detected a network access error and is in communication faulted state. Device has received and accepted an Identify Communication Faulted Request - long protocol message.
Channel status	Off	Module in CAL mode
	Solid Green	Normal (channel scanning inputs)
	Flashing Green	Channel being calibrated
	Solid Red	No power or major channel fault
	Flashing Red	Channel at end of range (0 mA or 21 mA)

Specifications

IMPORTANT	Note that the Input update rate and Step response for 1734-IE8C differs from that of catalog number 1734-IE2C.

Input

Attribute	Value
Number of inputs	8 single-ended, non-isolated
Resolution	16 bits - over 0…21 mA 0.32μA/cnt
Input current terminal	4…20 mA 0…20 mA
Absolute accuracy[1] Current terminal	0.1% Full Scale @ 25 °C
Accuracy drift w/temp. Current terminal	30 ppm/°C
Input update rate (per module)	200 ms @ Notch = 60 Hz (default) 240 ms @ Notch = 50 Hz 120 ms @ Notch = 100 Hz 100 ms @ Notch = 120 Hz 60 ms @ Notch = 200 Hz 50 ms @ Notch = 240 Hz 40 ms @ Notch = 300 Hz 30 ms @ Notch = 400 Hz 25 ms @ Notch = 480 Hz
Step response (per channel)	50 ms @ Notch = 60 Hz (default) 60 ms @ Notch = 50 Hz 30 ms @ Notch = 100 Hz 25 ms @ Notch = 120 Hz 15 ms @ Notch = 200 Hz 12.5 ms @ Notch = 240 Hz 10 ms @ Notch = 300 Hz 7.5 ms @ Notch = 400 Hz 6.25 ms @ Notch = 480 Hz

Input

Attribute	Value
Input impedance/resistance conversion type	60 Ω Sigma Delta
Common mode rejection ratio	120 dB
Normal mode rejection ratio	-60 dB Notch Filter 15.7 Hz @ Notch = 60 Hz (default) 13.1 Hz @ Notch = 50 Hz 26.2 Hz @ Notch = 100 Hz 31.4 Hz @ Notch = 120 Hz 52.4 Hz @ Notch = 200Hz 62.9 Hz @ Notch = 240 Hz 78.6 Hz @ Notch = 300 Hz 104.8 Hz @ Notch = 400 Hz 125.7 Hz @ Notch = 480Hz
Data format	Signed integer
Maximum overload	Fault protected to 28.8V dc
Calibration	Factory calibrated
Indicators	1 green/red network status indicator, logic side 1 green/red module status indicator, logic side 8 green/red input status indicators, logic side

[1] Includes offset, gain, non-linearity and repeatability error terms

General

Attribute	Value
Module location	1734-TB/TBS/RTB/RTBS wiring base assembly
Pointbus current	75 mA @ 5V dc
Power dissipation	0.6 W maximum @ 28.8V dc
Thermal dissipation	2.0 BTU/hr maximum @ 28.8V dc

General

Attribute	Value
Isolation voltage	50V (continuous), Basic Insulation Type No isolation between individual channels

External dc power
    Supply Voltage
    Voltage Range
    Supply Current
	24V dc nominal
	10…28.8V dc
	20 mA @ 24V dc

Dimensions (HxWxD), approx.	56 x 12 x 75.5 mm (2.21 x 0.47 x 2.97 in.)
Keyswitch position	3
Enclosure type rating	None (open-style)
Wire size	Determined by installed terminal block
Wiring category[1]	2 - on signal ports
Wire type	Shielded
Terminal base screw torque	Determined by installed terminal block
Weight, approx.	35 g (1.235 oz)

[1]   Use this conductor category information for planning conductor routing as described in Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1.

Environmental

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…55 °C (-4…131 °F)
Temperature, nonoperating	IEC 60068-2-1 (Test Ab, Unpackaged Non-operating Cold), IEC 60068-2-2 (Test Bb, Unpackaged Non-operating Dry Heat), IEC 60068-2-14 (Test Na, Unpackaged Non-operating Thermal Shock): -40…85 °C (-40…185 °F)
Relative humidity	IEC 60068-2-30 (Test Db, Unpackaged Damp Heat): 5…95% non-condensing
Vibration	IEC 60068-2-6 (Test Fc, Operating): 5 g @ 10…500 Hz
Shock, operating	IEC 60068-2-27 (Test Ea, Unpackaged Shock): 30 g
Shock, nonoperating	IEC 60068-2-27 (Test Ea, Unpackaged Shock): 50 g
Emissions	CISPR 11: Group 1, Class A
ESD immunity	IEC 61000-4-2: 6 kV contact discharges 8 kV air discharges
Radiated RF immunity	IIEC 61000-4-3: 10V/m with 1 kHz sine-wave 80% AM from 80…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

Environmental

Attribute	Value
EFT/B immunity	IEC 61000-4-4: ±3 kV at 5 kHz on signal ports
Surge transient immunity	IEC 61000-4-5: ±2 kV line-earth(CM) on shielded ports
Conducted RF immunity	IEC 61000-4-6: 10V rms with 1 kHz sine-wave 80% AM from 150 kHz…80 MHz

Certifications

Certification (when product is marked)[1]	Value
CE	European Union 2004/108/EC EMC Directive, compliant with: EN 61326; Meas./Control/Lab., Industrial Requirements EN 61000-6-2; Industrial Immunity 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 CISPR11; Industrial Emissions

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

Rockwell Automation Support

Rockwell Automation provides technical information on the Web to assist you in using its products. At http://support.rockwellautomation.com, you can find technical manuals, a knowledge base of FAQs, technical and application notes, sample code and links to software service packs, and a MySupport feature that you can customize to make the best use of these tools.

For an additional level of technical phone support for installation, configuration, and troubleshooting, we offer TechConnect support programs. For more information, contact your local distributor or Rockwell Automation representative, or visit http://support.rockwellautomation.com.

Installation Assistance

If you experience a problem within the first 24 hours of installation, please review the information that's contained in this manual. You can also contact a special Customer Support number for initial help in getting your product up and running.

United States	1.440.646.3434 Monday – Friday, 8 a.m. – 5 p.m. EST
Outside United States	Please contact your local Rockwell Automation representative for any technical support issues.

New Product Satisfaction Return

Rockwell Automation tests all of its products to ensure that they are fully operational when shipped from the manufacturing facility. However, if your product is not functioning and needs to be returned, follow these procedures.

United States	Contact your distributor. You must provide a Customer Support case number (see phone number above to obtain one) to your distributor in order to complete the return process.
Outside United States	Please contact your local Rockwell Automation representative for the return procedure.