



Installation Instructions

POINT I/O Protected Sink Output Module

Catalog Numbers 1734-OV2E, 1734-OV4E, and 1734-OV8E
Series C

Inside . . .

For	See Page
Important User Information	2
Prevent Electrostatic Discharge	3
Environment and Enclosure	4
North American Hazardous Location Approval	5
About the Module	6
Install the Mounting Base	7
Install the Module	8
Install the Removable Terminal Block (RTB)	11
Remove a Mounting Base	12
Wire the Module	14
Configure the Module	18
Troubleshoot the Module	21
Specifications	23

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://www.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 located on or inside the equipment (for example, drive or motor) to alert people that dangerous voltage may be present.
BURN HAZARD 	Labels may be located on or inside the equipment (for example, drive or motor) to alert people that surfaces may be dangerous temperatures.

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.
-

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 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 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.

Besides 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.
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North American Hazardous Location Approval

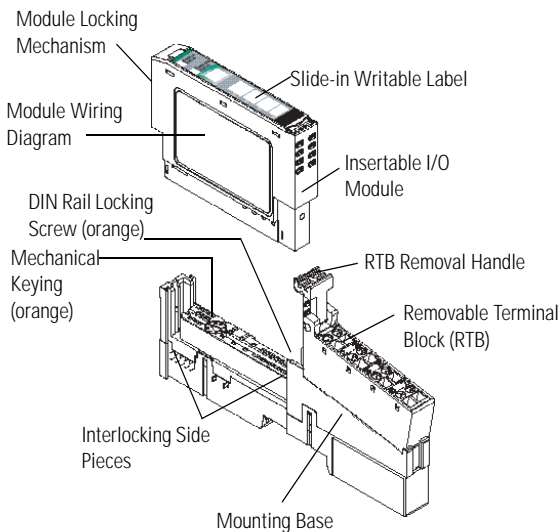
<p>The following information applies when operating this equipment in hazardous locations:</p>	<p>Informations sur l'utilisation de cet équipement en environnements dangereux:</p>
<p>Products marked "CL I, DIV 2, GP A, B, C, D" are suitable for use in Class I Division 2 Groups A, B, C, D, hazardous locations and nonhazardous locations only. Each product is supplied with markings on the rating nameplate indicating the hazardous location temperature code. When combining products within a system, the most adverse temperature code (lowest "T" number) may be used to help determine the overall temperature code of the system. Combinations of equipment in your system are subject to investigation by the local Authority Having Jurisdiction at the time of installation.</p>	<p>Les produits marqués "CL I, DIV 2, GP A, B, C, D" ne conviennent qu'à une utilisation en environnements de Classe I Division 2 Groupes A, B, C, D dangereux et non dangereux. Chaque produit est livré avec des marquages sur sa plaque d'identification qui indiquent le code de température pour les environnements dangereux. Lorsque plusieurs produits sont combinés dans un système, le code de température le plus défavorable (code de température le plus faible) peut être utilisé pour déterminer le code de température global du système. Les combinaisons d'équipements dans le système sont sujettes à inspection par les autorités locales qualifiées au moment de l'installation.</p>
<p>WARNING</p> 	<p>EXPLOSION HAZARD -</p> <ul style="list-style-type: none"> • Do not disconnect equipment unless power has been removed or the area is known to be nonhazardous. • Do not disconnect connections to this equipment unless power has been removed or the area is known to be nonhazardous. Secure any external connections that mate to this equipment by using screws, sliding latches, threaded connectors, or other means provided with this product. • Substitution of components may impair suitability for Class I, Division 2. • If this product contains batteries, they must only be changed in an area known to be nonhazardous.
<p>AVERTISSEMENT</p> 	<p>RISQUE D'EXPLOSION –</p> <ul style="list-style-type: none"> • Couper le courant ou s'assurer que l'environnement est classé non dangereux avant de débrancher l'équipement. • Couper le courant ou s'assurer que l'environnement est classé non dangereux avant de débrancher les connecteurs. Fixer tous les connecteurs externes reliés à cet équipement à l'aide de vis, loquets coulissants, connecteurs filetés ou autres moyens fournis avec ce produit. • La substitution de composants peut rendre cet équipement inadapté à une utilisation en environnement de Classe 1, Division 2. • S'assurer que l'environnement est classé non dangereux avant de changer les piles.

About the Module

Use this series C module with the following:

- ControlNet adapters with RSLogix 5000 software, version 11 or higher
- DeviceNet adapters
- EtherNet/IP adapters with RSLogix 5000 software, version 11 or higher
- PROFIBUS adapters

Refer to the figure to identify external features of the module.



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Install the Mounting Base

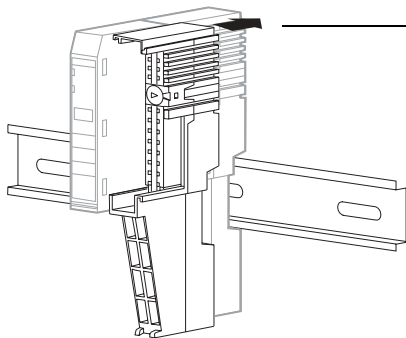
To install the mounting base on the DIN rail, proceed as follows.

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 material (for example, aluminum and 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.).

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.



Slide the mounting base to allow the interlocking side pieces to engage the adjacent module or adapter.

31586

3. Press firmly to seat the mounting base on the DIN rail.

The mounting base snaps into place.

Install the Module

ATTENTION



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.

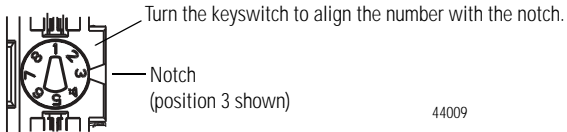
Be sure that power is removed or the area is nonhazardous before proceeding. Repeated electrical arcing causes excessive wear to contacts on both the module and its mating connector. Worn contacts may create electrical resistance that can affect module operation.

Install the module before or after base installation. Be sure that you complete the following.

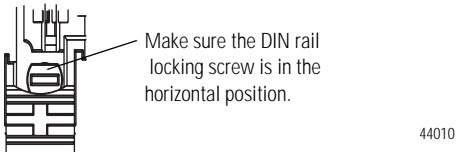
- Correctly key the mounting base before installing the module into the mounting base.
- Position the mounting base locking screw horizontal referenced to the base.

To install the module on the DIN rail, proceed as follows.

1. Use a bladed screwdriver to rotate the keyswitch on the mounting base clockwise until the number required for the type of module being installed aligns with the notch in the base.

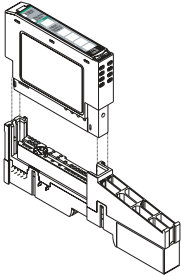


2. Be sure the DIN rail locking screw is in the horizontal position.



If you unlock the locking mechanism, you cannot insert the module.

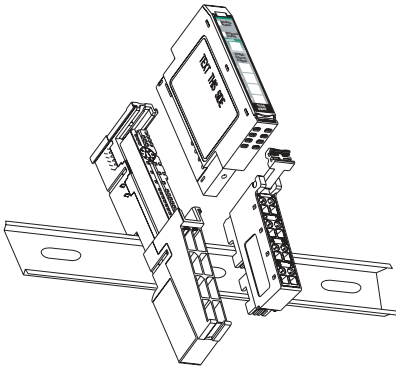
3. Insert the module straight down into the mounting base.



44012

4. Press to secure.

The module locks into place.



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Install the Removable Terminal Block (RTB)

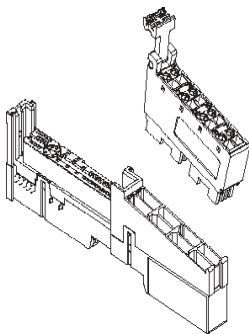
A removable terminal block comes with your wiring base. To remove, pull up on the RTB handle. Remove or replace the mounting base without removing any of the wiring.

WARNING

When you connect or disconnect the removable terminal block (RTB) with field-side power applied, 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. Insert the end opposite the handle into the base unit, noting that 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 you installed an I/O module, snap the RTB handle into place on the module.



44011

Remove a Mounting Base

To remove a module from the DIN rail, 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.

WARNING



When you connect or disconnect the removable terminal block (RTB) with field-side power applied, 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.

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

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

ATTENTION

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. Repeated electrical arcing causes excessive wear to contacts on both the module and its mating connector. Worn contacts may create electrical resistance that can affect module operation.

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 on the mounting base.

7. Lift straight up to remove the mounting base.

Wire the Module

Refer to the figures to wire the module.

WARNING



If you connect or disconnect wiring while the field-side 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.

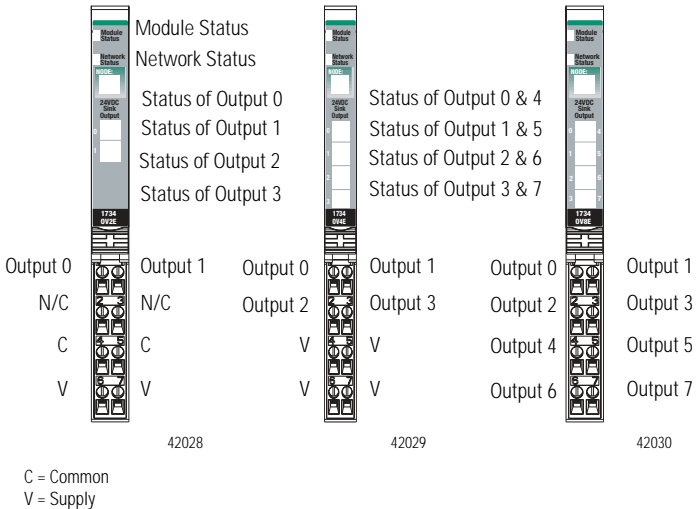
IMPORTANT

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

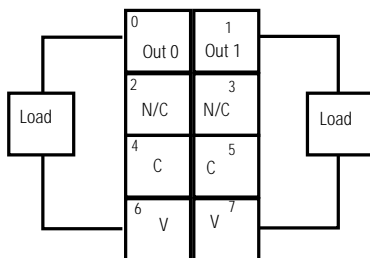
1734-OV2E

1734-OV4E

1734-OV8E



1734-OV2E



V = 12/24V dc, C = Common

Field power is supplied from internal power bus.

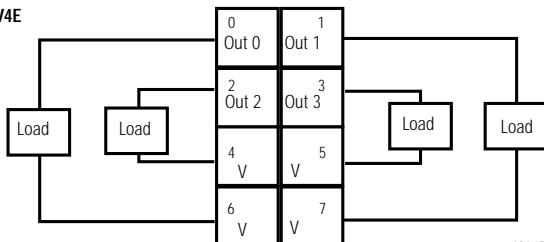
42014

	Output Terminal	Power	Common Terminal
Channel 0	0	6	4
Channel 1	1	7	5

Module power is supplied from the internal power bus.

16 POINT I/O Protected Sink Output Module

1734-OV4E



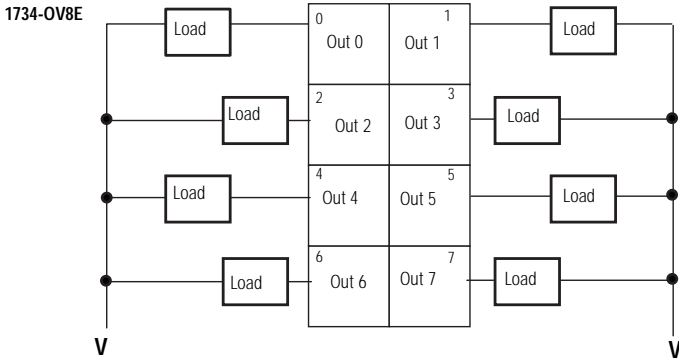
V = 12/24V dc, C = Common

Field power is supplied from internal power bus.

42015

	Output Terminal	Power	Common Terminal
Channel 0	0	6	
Channel 1	1	7	
Channel 2	2	4	
Channel 3	3	5	

Module power is supplied from the internal power bus.

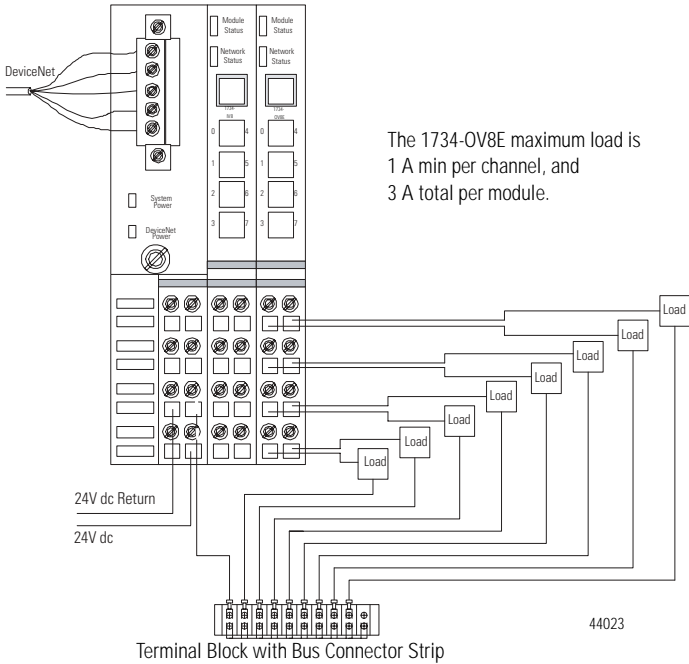


Common must be daisychained from a 1734 adapter, 1734-FPD, 1734-EP24DC, or from a user-supplied external terminal block. The 24V dc power to the module is supplied by the internal power bus and comes from the same 1734 adapter, 1734-FPD, or 1734-EP24DC as common. 42015

Channel Number	Output Terminal	Common Terminal	Power
Channel 0	0	Common is daisychained from either a 1734 adapter, 1734-FPD, 1734-EP24DC, or from a user-supplied external terminal block.	The 24V dc power for the module is supplied by the internal power bus and originates from the same adapter, 1734-FPD, or 1734-EP24DC as common.
Channel 1	1		
Channel 2	2		
Channel 3	3		
Channel 4	4		
Channel 5	5		
Channel 6	6		
Channel 7	7		

Module power is supplied from the internal power bus.

Example of Wiring for the 1734-OV8E Output Module



The 1734-OV8E maximum load is 1 A min per channel, and 3 A total per module.

Configure the Module

POINT I/O modules send (consume) and receive (produce) I/O messages. You map these messages into the processor memory. This POINT I/O output module produces 1 byte of input data (scanner Rx) (status). It consumes 1 byte of I/O data (scanner Tx).

Default Data Map for the 1734-OV2E Output Module

Message size: 1 Byte

	7	6	5	4	3	2	1	0	
Produces (scanner Rx)	Not used						Ch1	Ch0	Channel status
Where: 0 = no error, 1 = error									

Message size: 1 Byte

	7	6	5	4	3	2	1	0	
Consumes (scanner Tx)	Not used						Ch1	Ch0	Channel state
Where: 0 = Off, 1 = On									

Default Data Map for the 1734-OV4E Output Module

Message size: 1 Byte

	7	6	5	4	3	2	1	0	
Produces (scanner Rx)	Not used				Ch3	Ch2	Ch1	Ch0	Channel status
Where: 0 = no error, 1 = error									

Message size: 1 Byte

	7	6	5	4	3	2	1	0	
Consumes (scanner Tx)	Not used				Ch3	Ch2	Ch1	Ch0	Channel state
Where: 0 = Off, 1 = On									

Default Data Map for the 1734-OV8E Output Module

Message size: 1 Byte

	7	6	5	4	3	2	1	0	
Produces (scanner Rx)	Ch7	Ch6	Ch5	Ch4	Ch3	Ch2	Ch1	Ch0	Channel status
Where: 0 = no error, 1 = error									

Message size: 1 Byte

	7	6	5	4	3	2	1	0	
Consumes (scanner Tx)	Ch7	Ch6	Ch5	Ch4	Ch3	Ch2	Ch1	Ch0	Channel state
Where: 0 = no error, 1 = error									

Troubleshoot the Module

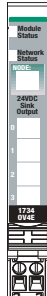
1734-OV2E



Module Status
Network Status

Status of Output 0
Status of Output 1
Status of Output 2
Status of Output 3

1734-OV4E



Status of Output 0 & 4
Status of Output 1 & 5
Status of Output 2 & 6
Status of Output 3 & 7

1734-OV8E



Indication	Probable Cause	Recommended Action
Module Status		
Off	No power applied to device.	Apply power applied to device.
Solid Green	Device is operating normally.	Device is operating normally.
Flashing Green	Device needs commissioning due to configuration missing, incomplete, or incorrect.	Configure device properly.
Flashing Red	Recoverable fault is present.	<ol style="list-style-type: none"> 1. Cycle power. 2. Configure device properly if needed. 3. If condition persists, replace device.
Solid Red	Unrecoverable fault may require device replacement.	Replace device.
Flashing Red/Green	Device is in self-test.	None

Indication	Probable Cause	Recommended Action
Network Status		
Off	Device is not online. - Device has not completed dup_MAC_id test. - Device not powered - check module status indicator.	Apply power to the device, wait for MAC-id to complete, and correct, if needed.
Flashing Green	Device is online but has no connections in the established state.	None - device is in Idle or Program mode.
Solid Green	Device is online and has connections in the established state.	None
Flashing Red	One or more I/O connections are in timed-out state.	Check for I/O module failure, and correct, as needed.
Solid Red	Critical link failure - failed communication device is present. Device detected error that prevents it communicating on the network.	<ol style="list-style-type: none"> 1. Reinstall adapter and terminal base, if improperly installed. 2. Correct duplicate MAC_id, if needed.
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.	Verify that adapter is properly installed, and reinstall, as needed.
I/O Status		
Off	All outputs are inactive.	None
Solid Yellow	One or more outputs are active and under control.	None
Solid Red	Overload, short circuit, or overtemperature detected (On-State only).	Remove overload, short circuit, or overtemperature condition.

Specifications

1734-OV2E/C, 1734-OV4E/C, and 1734-OV8E/C Protected Sink Output Modules

Specification	Value
Number of Outputs	1734-OV2E - 2 (1 group of 2) non-isolated, sinking 1734-OV4E - 4 (1 group of 4) non-isolated, sinking 1734-OV8E - 8 (1 group of 8) non-isolated, sinking
ON-State Voltage Range	10V dc min 24V dc nom 28.8V dc max
ON-State Voltage Drop	0.7V dc max (at 28.8V dc, 55 °C, full load condition)
ON-State Current	1.0 mA min per channel 1.0 A max per channel (electronically protected)
OFF-State Voltage	28.8V dc max
OFF-State Leakage	0.5 mA max
Output Signal Delay ⁽¹⁾ OFF to ON ON to OFF	0.1 ms max 0.1 ms max
Output Current Rating	1734-OV2E - 1.0 A per output, 2.0 A max per module 1734-OV4E and 1734-OV8E - 1.0 A per output, not to exceed 3.0 A max per module
Surge Current	2 A for 10 ms, repeatable every 3 s
Indicators (field side indication, logic driven)	1734-OV2E 2 yellow output status 2 red output fault 2 green/red module/network status 1734-OV4E 4 yellow output status 4 red output fault 2 green/red module/network status 1734-OV8E 8 yellow output status 8 red output fault 2 green/red module/network status
Keyswitch Position	1

**1734-OV2E/C, 1734-OV4E/C, and 1734-OV8E/C
Protected Sink Output Modules**

Specification	Value
Module Location	1734-TB or 1734-TBS wiring base assembly
POINTBus Current	75 mA max @ 5V dc
Power Dissipation	1734-OV2E - 0.8 W max @ 28.8V dc 1734-OV4E - 1.2 W max @ 28.8V dc 1734-OV8E - 2.0 W max @ 28.8V dc
Thermal Dissipation	1734-OV2E - 2.7 BTU/hr max @ 28.8V dc 1734-OV4E - 4.1 BTU/hr max @ 28.8V dc 1734-OV8E - 6.8 BTU/hr max @ 28.8V dc
Isolation (continuous-voltage rating)	240V, Basic Insulation Type, tested at 2550V dc for 60 seconds, output to system
External dc Power Supply Voltage Voltage Range Supply Current	24V dc nom 10...28.8V dc 1734-OV2E - 8 mA 1734-OV4E - 16 mA 1734-OV8E - 32 mA
Dimensions HxWxD, Approx.	56.0 x 12.0 x 75.5 mm (2.21 x 0.47 x 2.97 in.)
Weight	1734-OV2E - 32.60 g (1.15 oz) 1734-OV4E - 33.17 g (1.17 oz) 1734-OV8E - 35.4 g (1.25 oz)
Terminal Base Screw Torque	7 lb-in (0.6 Nm) max
Wire Size	22...14 AWG (0.25...2.5 mm ²) solid or stranded copper wire rated @ 75 °C or greater 1.2 mm (3/64 in.) insulation max
Wiring Category ⁽²⁾	1 - on signal ports

1734-OV2E/C, 1734-OV4E/C, and 1734-OV8E/C Protected Sink Output Modules

Specification	Value
Pilot Duty Rating	24V dc 1.0 A
North American Temperature Code	T4
Field Wiring Terminations	1734-OV2E 0 - Output 0 1 - Output 1 2 - Output 0 3 - Output 1 4 - Common 5 - Common 6 - Supply 7 - Supply 1734-OV4E 0 - Output 0 1 - Output 1 2 - Output 2 3 - Output 3 4 - Supply 5 - Supply 6 - Supply 7 - Supply 1734-OV8E 0 - Output 0 1 - Output 1 2 - Output 2 3 - Output 3 4 - Output 4 5 - Output 5 6 - Output 6 7 - Output 7

- (1) Off/on delay is time from a valid output on signal to output energization. On/off delay is time from a valid output off signal to output deenergization.
- (2) Use this conductor category information for planning conductor routing as described in Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1.

Environmental Specifications

Specification	Value
Operational Temperature	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)
Storage Temperature	IEC60068-2-1 (Test Ab, Unpackaged Non-operating Cold) IEC60068-2-2 (Test Bb, Unpackaged Non-operating Dry Heat) IEC60068-2-14 (Test Na, Unpackaged Non-operating Thermal Shock) -40...85 °C (-40...185 °F)
Relative Humidity	IEC60068-2-30 (Test Db, Unpackaged Damp Heat) 5...95% noncondensing
Vibration	IEC 60068-2-6 (Test Fc, Operating) 5 g @ 10...500 Hz
Shock Operating	IEC60068-2-27 (Test Ea, Unpackaged Shock) 30 g
Shock Non-operating	IEC60068-2-27 (Test Ea, Unpackaged Shock) 50 g
Emissions	CISPR 11: Group 1, Class A
ESD Immunity	IEC6100-4-2 6 kV contact discharges 8 kV air discharges
Radiated RF Immunity	IEC 61000-4-3 10V/m with 1 KHz sine-wave 80% AM 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 1V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz
EFT/B Immunity	IEC 61000-4-4 ±4 kV at 5 kHz on signal ports

Environmental Specifications

Surge Transient Immunity	IEC 61000-4-5 ± 1 kV line-line (DM) and ± 2 kV line-earth (CM) on signal ports
Conducted RF Immunity	IEC61000-4-6 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz
Enclosure Type Rating	None (open-style)

Certification

Certification	Value
Certification ⁽¹⁾ (when product is marked)	c-UL-us UL Listed Industrial Control Equipment, certified for U.S. and Canada. See UL File E65584. c-UL-us UL Listed for Class I, Division 2, Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810. CE European Union 89/336/EEC EMC Directive, compliant with: EN 50082-2; Industrial Immunity 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 and B) C-Tick Australian Radiocommunications Act, compliant with: AS/NZS CISPR11; Industrial Emissions

⁽¹⁾ See the Product Certification link at www.ab.com for Declarations of Conformity, Certificates, and other certification details.

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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 with a hardware module 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 module up and running:

United States	1.440.646.3223 Monday – Friday, 8am – 5pm EST
Outside United States	Please contact your local Rockwell Automation representative for any technical support issues.

New Product Satisfaction Return

Rockwell 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:

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 return procedure.

www.rockwellautomation.com

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