Installation Instructions

POINT I/O 2 Current Output and 2 Voltage Output Analog Modules

Catalog Numbers 1734-OE2C and 1734-OE2V, Series C

Inside…

Publication 1734-IN002C-EN-E - April 2005

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 • recognize the consequence
SHOCK HAZARD 	Labels may be located on or inside the equipment (e.g., drive or motor) to alert people that dangerous voltage may be present.
BURN HAZARD 	Labels may be located on or inside the equipment (e.g., drive or motor) to alert people that surfaces may be dangerous temperatures.

ATTENTION

Preventing Electrostatic Discharge

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.
- If available, use a static-safe workstation.
- When not in use, store the equipment in appropriate static-safe packaging.

ATTENTION

Environment and Enclosure

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.

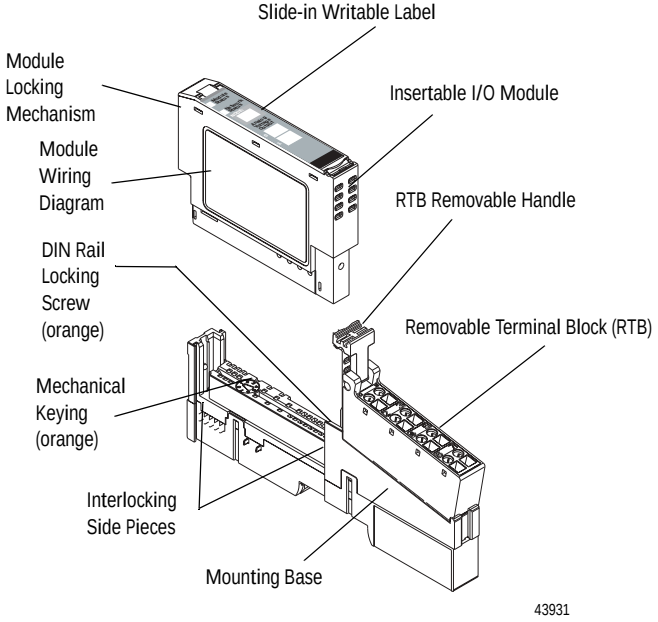
See NEMA Standards publication 250 and IEC publication 60529, as applicable, for explanations of the degrees of protection provided by different types of enclosure. Also, see the appropriate sections in this publication, as well as the Allen-Bradley publication 1770-4.1 (“Industrial Automation Wiring and Grounding Guidelines”), for additional installation requirements pertaining to this equipment.

Before You Begin

You can use these Series C modules with DeviceNet and PROFIBUS adapters. If you are using RSLogix 5000 software, version 11 or higher, you can also use the Series C modules with ControlNet and Ethernet adapters.

Identify Module Components

Use the figure to identify the external features of the modules.



The wiring base assembly includes terminal base, 1734-TB or 1734-TBS, which consists of mounting base, 1734-MB, and removable terminal block, 1734-RTB or 1734-RTBS.

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-chromated steel DIN rail to assure proper grounding. The use of DIN rail materials (e.g., aluminum, plastic, etc.) 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.

1. Position the mounting base vertically above the installed units (adapter, power supply, or existing module).
2. Slide the mounting base down to make the interlocking side pieces 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.

ATTENTION

Do not discard the end cap supplied with an adapter or communication interface module. Use this end cap to cover the exposed interconnections on the last mounting base on the DIN rail. Failure to do so could result in equipment damage or injury from electric shock.

Install the Module

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. 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. Make sure that you:

- correctly keyed the mounting base before installing the module into the mounting base
- positioned the mounting base locking screw horizontal with reference to the base

To install the module proceed as follows.

1. Using a bladed screwdriver, rotate the keyswitch on the mounting base clockwise until the number required for the type of module you are installing 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 you have unlocked the locking mechanism.

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 comes with your wiring base assembly. To remove, pull up on the RTB handle. You can now remove the mounting base and replace 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 th e RTB handle into place on the module.

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.

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.

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.

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. 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.

7. Lift straight up to remove.

Communicate with Your Module

POINT I/O modules send (consume) and receive (produce) I/O messages. You map these messages into the processor's memory.

These modules produce 2 bytes of input data (scanner Rx) (fault status). These modules consume 4 bytes of output data (scanner Tx).

Message size: 2 Bytes

	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
Produces (scanner Rx)	High Byte - Channel 1 Status								Low Byte - Channel 0 Status							
	Not used				HCA	LCA	CM	CF	Not used				HCA	LCA	CM	CF

Where:

CF = Channel Fault status; 0 = no error, 1 = fault
CM = Calibration Mode; 0 = normal, 1 = calibration mode
HCA = High Clamp Alarm; 0 = no error, 1 = fault
LCA = Low Clamp Alarm; 0 = no error, 1 = fault

Message size: 4 bytes

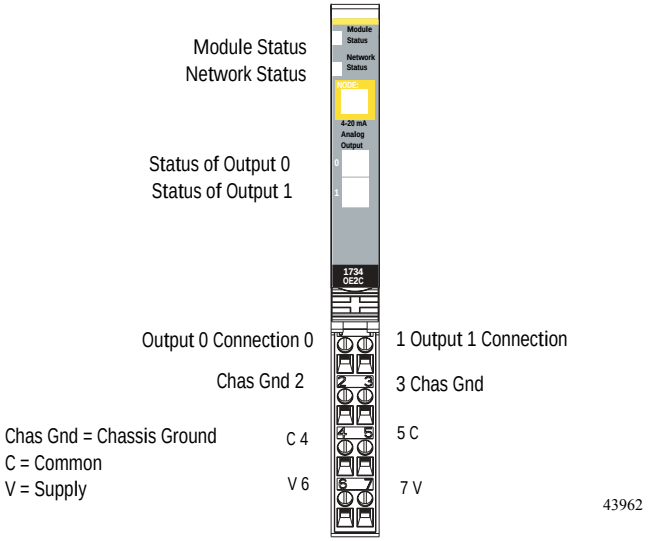
	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
Consumes (scanner Tx)	Output Channel 0 High Byte								Output Channel 0 Low Byte							
	Output Channel 1 High Byte								Output Channel 1 Low Byte							

Wire the Module

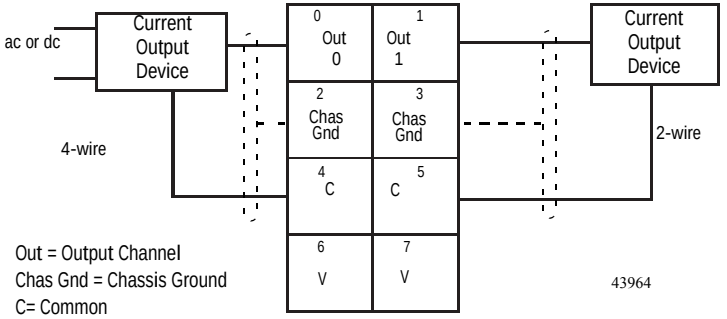
WARNING

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.

1734-OE2C POINT I/O 2 Current Output Analog Module



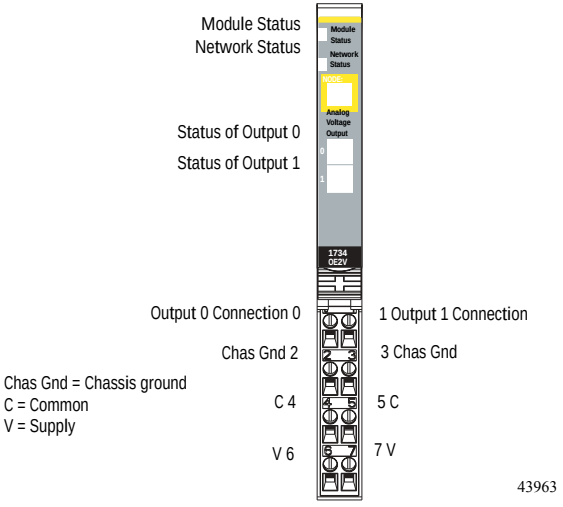
1734-OE2C POINT I/O 2 Current Output Analog Module



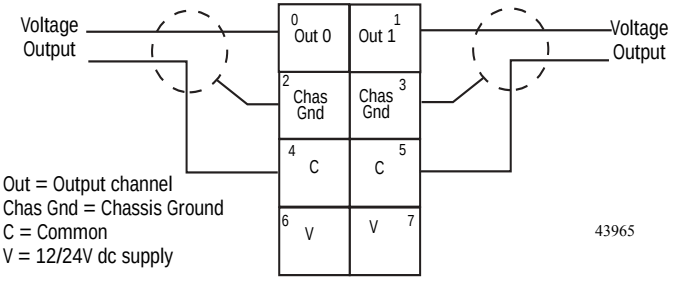
Out = Output Channel
Chas Gnd = Chassis Ground
C= Common
V = 12/24V dc supply

Channel	Current Output	Chassis Ground	Common	Supply
0	0	2	4	6
1	1	3	5	7
12/24V dc power is provided by the internal field power bus.				

1734-OE2V POINT I/O 2 Voltage Output Analog Module



1734-OE2V POINT I/O 2 Voltage Output Analog Module

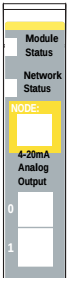


Channel	Voltage Output	Chassis Ground	Common	Supply
0	0	2	4	6
1	1	3	5	7
12/24V dc power is provided by the internal field power bus.				

Troubleshoot with Indicators

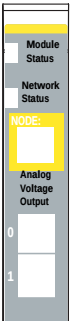
Use the status indicators and tables to troubleshoot your module.

1734-OE2C
POINT I/O 2 Current
Output Analog Module



Module Status
Network Status
Status of Output 0
Status of Output 1
43962

1734-OE2V
POINT I/O 2 Voltage
Output Analog Module



Module Status
Network Status
Status of Output 0
Status of Output 1
43963

Indication	Probable Cause
Module Status	
Off	No power is applied to device.
Green	Device is operating normally.
Flashing Green	Device needs commissioning due to configuration missing, incomplete, or incorrect.
Flashing Red	Recoverable fault is present.
Red	Unrecoverable fault may require device replacement.
Flashing Red/Green	Device is in self-test.

Indication	Probable Cause
Network Status	
Off	Device is not online. - Device has not completed dup_MAC_id test. - Device not powered. Check module status indicator.
Flashing Green	Device is online but has no connections in the established state.
Green	Device is online and has connections in the established state.
Flashing Red	One or more I/O connections are in timed-out state
Red	Critical link failure is present with failed communication device. Device detected error that prevents it communicating on the network.
Flashing Red/Green	Communication faulted device is present. The device detected a network access error and is in communication faulted state. Device received and accepted an Identify Communication Faulted Request - long protocol message.

Indication	**Probable Cause 1734-OE2C**	**Probable Cause 1734-OE2V**
Channel Status		
Off	Module is in CAL mode.	
Green	Normal operation is present with channel actively controlling outputs.	
Flashing Green	Channel is being calibrated.	
Flashing Red	Open wire or no field power is present.	A low or high clamp is present.
Red	-	No field power is present.

North American Hazardous Location Approval

The following information applies when operating this equipment in hazardous locations:	**Informations sur l'utilisation de cet équipement en environnements dangereux:**
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.	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.

WARNING 	**EXPLOSION HAZARD -** • 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.	**AVERTISSEMENT** 	**RISQUE D'EXPLOSION –** • 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.

European Hazardous Location Approval

European Zone 2 Certification (The following applies when the product bears the EEx marking)

This equipment is intended for use in potentially explosive atmospheres as defined by European Union Directive 94/9/EC.

DEMKO certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of Category 3 equipment intended for use in potentially explosive atmospheres, given in Annex II to this Directive. The examination and test results are recorded in confidential report No 03NK30347. Compliance with the Essential Health and Safety Requirements has been assured by compliance with EN 50021.

IMPORTANT

Observe the following additional Zone 2 certification requirements.

- This equipment is not resistant to sunlight or other sources of UV radiation.
- The secondary of a current transformer shall not be open-circuited when applied in Class I, Zone 2 environments.
- Equipment of lesser Enclosure Type Rating must be installed in an enclosure providing at least IP54 protection when applied in Class I, Zone 2 environments.
- This equipment shall be used within its specified ratings defined by Allen-Bradley.
- Provision shall be made to prevent the rated voltage from being exceeded by transient disturbances of more than 40% when applied in Class I, Zone 2 environments.

Specifications

Output Specifications	**1734-OE2C**	**1734-OE2V**
Number of Outputs	2 single-ended, non-isolated	
Resolution	13 bits - over 0-21mA 2.5µA/cnt (average value - typical range: 2.3...2.7µA/cnt)	14 bits (13 plus sign) 1.28mV/cnt in unipolar or bipolar mode
Output Current	0mA output until communication established 4-20mA user configurable 0-20mA user configurable	-
Output Voltage	-	0V output until communication established 0-10V (user configurable) (-0.0V under, +0.5V over) ±10V user configurable (-0.5V under, +0.5V over)
Absolute Accuracy[1]	Current Output 0.1% Full Scale @ 25°C	Voltage Output 0.1% Full Scale @ 25°C
Accuracy Drift w/Temp.	30ppm/°C	5ppm/°C
Step Response to 63% of FS	24 µs	
Current Load on Voltage Output	-	3mA
Resistive Load on Current Output	0...750Ω	-
Conversion Type	Digital to analog converter	
Conversion Rate	16µs	20µs
Data Format	Signed Integer	
Calibration	Factory Calibrated	

General Specifications	**1734-OE2C**	**1734-OE2V**
Module Location	1734-TB, 1734-TBS, 1734-TB3, 17340TB3S wiring base assembly	
POINTBus Current	75 mA @5V dc	
Power Dissipation - Maximum at 28.8V	750 Ω load on each output - 1.23 W 0Ω load on each output - 1.83 W	1.0W
Thermal Dissipation - Maximum at 28.8V	750Ω load on each output - 4.19 BTU/hr 0Ω load on each output - 6.24 BTU/hr	3.4BTU/hr
Isolation Voltage (Continuous-voltage Withstand Rating)	50V Continuous Tested to withstand 2200V dc for 60 s No isolation between individual channels	
External dc power Supply Voltage Voltage Range Supply Current	 24V dc nominal 10...28.8V dc 70 mA @ 24V dc (including outputs @20 mA)	 24V dc nominal 10...28.8V dc 35 mA @ 24V dc (including outputs @3 mA)
Indicators	1 green/red module status indicator, logic side 1 green/red network status indicator, logic side 2 green/red output status indicators, logic side	
Keyswitch Position	4	
Dimensions	H x W x L 56 x 12 x 75.5 mm (2.21 x 0.47 x 2.97 in)	

General Specifications (Continued)	**1734-OE2C**	**1734-OE2V**
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	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 Nonoperating Damp Heat): 5…95% noncondensing	
Vibration	IEC60068-2-6 (Test Fc, Operating) 5 g @ 10...500 Hz	
Shock Operating Non-Operating	IEC 60068-2-27 (Test Ea, Unpackaged Shock) 30 g 50 g	
Emissions	CISPR 11: Group 1, Class A	
ESD Immunity	IEC6100-4-2 6 kV contact discharges 8 kV air discharges	

General Specifications (Continued)	**1734-OE2C**	**1734-OE2V**
Radiated RF Immunity	IEC 61000-4-3: 10 V/m with 1kHz sine-wave 80%AM from 30 MHz to 2000 MHz 10 V/m with 200 Hz 50% Pulse 100%AM at 900 Mhz 10 V/m with 200 Hz 50% Pulse 100%AM at 1890 MHz	
EFT/B Immunity	IEC 61000-4-4: ±3 kV at 2.5 kHz on signal ports	
Surge Transient Immunity	IEC 61000-4-5: ±2 kV line-earth(CM) on shielded ports	
Conducted RF Immunity	IEC61000-4-6 10 Vrms with 1 kHz sine-wave 80%AM from 150 kHz to 80 MHz	
Enclosure Type Rating	None (open-style)	
Wire Size	14 AWG (2.5mm^2) - 22 AWG (0.25mm^2) solid or stranded copper wire rated at 75 ^{o}C or greater 3/64 inch (1.2 mm) insulation maximum	
Wire Category[2]	1 - on signal ports	
Terminal Base Screw Torque	0.6 Nm (7 lb-in)	
Weight	0.036 kg (0.08 lb)	
Publications - User Manual	1734-UM001	

Certification[3] (When Product is Marked)		1734-OE2C	1734-OE2V
c-UL-us	UL Listed Industrial Control Equipment, certified for U.S. and Canada	X	
c-UL-us	UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada	X	X
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	X	X
C-Tick	Australian Radiocommunications Act, compliant with: AS/NZS CISPR 11, Industrial Emissions	X	X
EEx	European Union 94/9/EC ATEX Directive, compliant with: EN 50021; Potentially Explosive Atmospheres, Protection “n” (Zone 2)	X	X

1. Includes offset, gain, non-linearity and repeatability error terms.
2. Use this Category information for planning routing. Refer to Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1.
3. See the Product Certification link at www.ab.com for Declarations of Conformity, Certificates, and other certification details.

www.rockwellautomation.com

Corporate Headquarters
Rockwell Automation, 777 East Wisconsin Avenue, Suite 1400, Milwaukee, WI, 53202-5302 USA, Tel: (1) 414.212.5200, Fax: (1) 414.212.5201

Headquarters for Allen-Bradley Products, Rockwell Software Products and Global Manufacturing Solutions
Americas: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444
Europe/Middle East/Africa: Rockwell Automation SA/NV, Vorstlaan/Boulevard du Souverain 36, 1170 Brussels, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640
Asia Pacific: Rockwell Automation, Level 14, Core F, Cyberport 3, 100 Cyberport Road, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846

Headquarters for Dodge and Reliance Electric Products
Americas: Rockwell Automation, 6040 Ponders Court, Greenville, SC 29615-4617 USA, Tel: (1) 864.297.4800, Fax: (1) 864.281.2433
Europe/Middle East/Africa: Rockwell Automation, Herman-Heinrich-Gossen-Strasse 3, 50858 Köln, Germany, Tel: 49 (0) 2234 379410, Fax: 49 (0) 2234 3794164
Asia Pacific: Rockwell Automation, 55 Newton Road, #11-01/02 Revenue House, Singapore 307987, Tel: (65) 6356 9077, Fax: (65) 6356 9011

Publication 1734-IN002C-EN-E - April 2005 PN 957955-48

Supersedes Publication 1734-IN002B-EN-P - April 2002 and

1734-IN054E-EN-P - September 2003