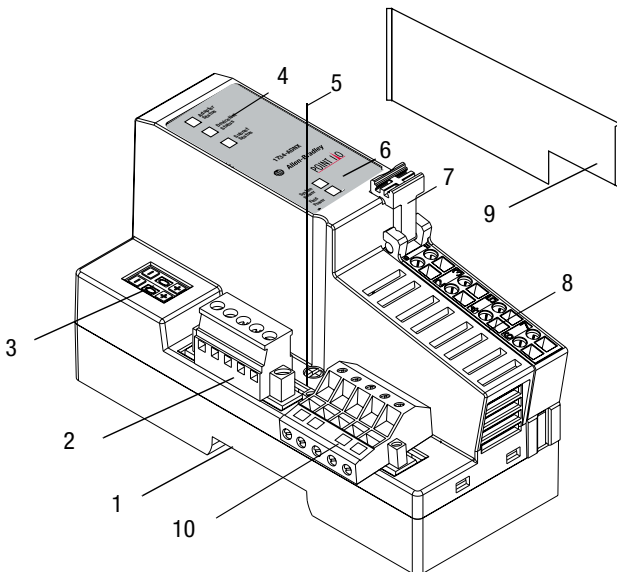




Installation Instructions

POINT I/O™ DeviceNet Adapter with Expansion

(Cat. No. 1734-ADNX)



1734adn.iso

	Description		Description
1	1734-ADNX DeviceNet Adapter Module	6	System Power and Field Power Indicators
2	DeviceNet Connector	7	RTB Removal Handle
3	Node Address Thumbwheel	8	Removable Terminal Block (RTB)
4	Status Indicators - Adapter, DeviceNet and Subnet	9	Safety End Cap
5	DIN Rail Locking Screw (orange)	10	Subnet Connector

POINT I/O is a trademark of Rockwell Automation

DeviceNet is a trademark of ODVA, Inc. Publication 1734-IN589A-EN-P - April 2003

Important User Information

Because of the variety of uses for the products described in this publication, those responsible for the application and use of these products must satisfy themselves that all necessary steps have been taken to assure that each application and use meets all performance and safety requirements, including any applicable laws, regulations, codes and standards. In no event will Rockwell Automation be responsible or liable for indirect or consequential damage resulting from the use or application of these products.

Any illustrations, charts, sample programs, and layout examples shown in this publication are intended solely for purposes of example. Since there are many variables and requirements associated with any particular installation, Rockwell Automation does not assume responsibility or liability (to include intellectual property liability) for actual use based upon the examples shown in this publication.

Allen-Bradley publication SGI-1.1, *Safety Guidelines for the Application, Installation and Maintenance of Solid-State Control* (available from your local Rockwell Automation office), describes some important differences between solid-state equipment and electromechanical devices that should be taken into consideration when applying products such as those described in this publication.

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Throughout this publication, notes may be used to make you aware of safety considerations. The following annotations and their accompanying statements help you to identify a potential hazard, avoid a potential hazard, and recognize the consequences of a potential hazard.

WARNING



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

ATTENTION

Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss.

IMPORTANT

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

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.

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. Using other DIN rail materials (e.g. aluminum, plastic, etc.) which can corrode, oxidize or are poor conductors can result in improper or intermittent platform grounding.

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.
-

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.
-

Installing the DeviceNet Adapter

To install the adapter on the DIN rail prior to installing other base units, proceed as follows.

1. Position the adapter vertically above the DIN rail.
2. Press down firmly to install the adapter on the DIN rail.
3. The locking mechanism will lock the adapter to the DIN rail.
4. Insert the DeviceNet connector plug and tighten the holding screws.
5. Insert the Subnet connector plug and tighten the holding screws.

IMPORTANT

The Subnet network must have termination resistors installed. Connect the termination resistors on the last Subnet connector in the network. Refer to “Connecting the Terminator Resistors” later in this document.

-
6. Set the node address on the node address thumbwheel.
 7. Slide the safety end cap (9) up to remove. This exposes the backplane and power interconnections.

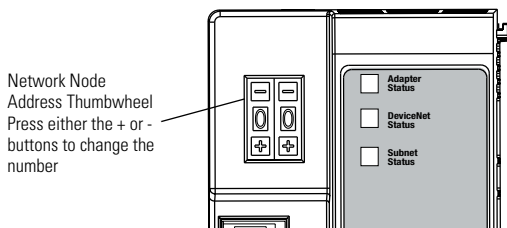
ATTENTION



Do not discard the end cap. 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.

Setting the Node Address

Set the node address using the 2-position thumbwheel switch. Valid settings range from 00 to 63. Press either the + or - buttons to change the number.



Network Node
Address Thumbwheel
Press either the + or -
buttons to change the
number

Installing a Replacement DeviceNet Adapter in an Existing System

1. Remove the existing adapter from the DIN rail as follows:
 - A. Pull up on the RTB removal handle (7) to remove the terminal block.

WARNING



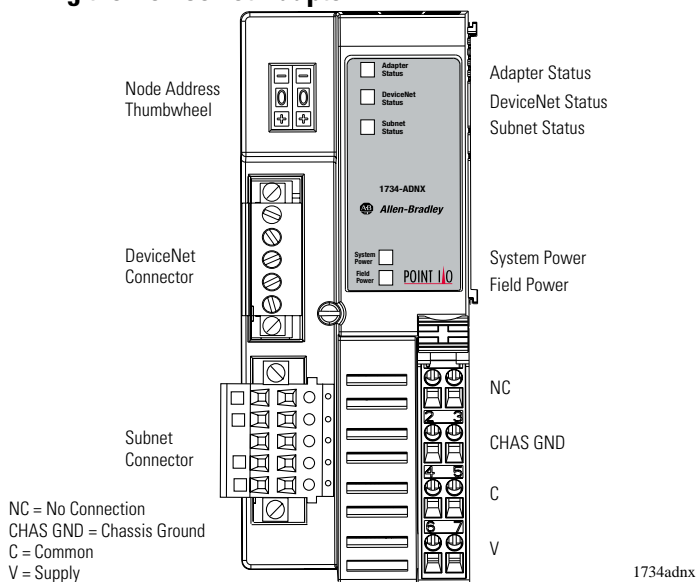
When you connect or disconnect the Removable Terminal Block (RTB) with field side power applied, an electrical arc can occur. This could cause an explosion in hazardous location installations.

Be sure that power is removed or the area is nonhazardous before proceeding.

- B. Loosen the screws holding the DeviceNet connector plug and pull up to remove.
- C. Loosen the screws holding the Subnet connector plug and pull up to remove.
- D. Remove the adjacent module from its base.

- E.** Use a small bladed screwdriver to rotate the DIN rail locking screw (5) to a vertical position. This releases the locking mechanism.
 - F.** Lift straight up to remove.
- 2.** On the replacement adapter, slide the safety end cap up to remove. This exposes the backplane and power connections.
 - 3.** Position the replacement adapter (1) vertically above the DIN rail. (Make certain the DIN rail lock is in the horizontal position.) Slide the adapter down, allowing the interlocking side pieces to engage the adjacent module.
 - 4.** Press firmly to seat the adapter (1) on the DIN rail. The adapter locking mechanism will snap into place.
 - 5.** Set the node address on the node address thumbwheel.
 - 6.** Insert the DeviceNet connector plug and tighten the holding screws.
 - 7.** Insert the Subnet connector plug and tighten the holding screws.
 - 8.** Install the removable terminal block by inserting the end opposite the handle into the base unit. This end has a curved section that engages with the wiring base.
 - 9.** Rotate the terminal block into the wiring base until it locks itself in place.
 - 10.** Replace the adjacent module in its base.

Wiring the DeviceNet Adapter

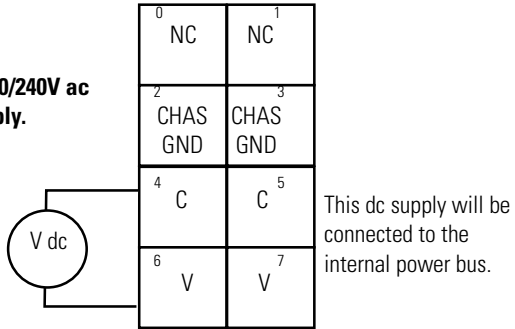


Terminal		Notes
0	No connection	Reserved
1	No connection	
2	Chassis Ground	
3	Chassis Ground	
4	Common	
5	Common	Apply 12/24V dc. Connects to the internal power bus.
6	Voltage Input	
7	Voltage Input	

Connecting Wiring

12/24V dc

Do not connect 120/240V ac power to this supply.

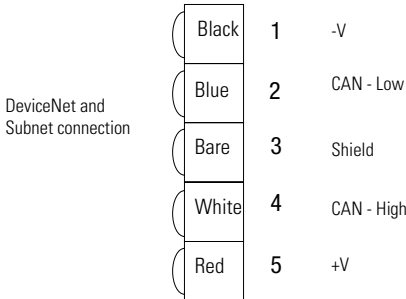


NC = No Connection
C = Common

CHAS GND = Chassis Ground
V = Supply

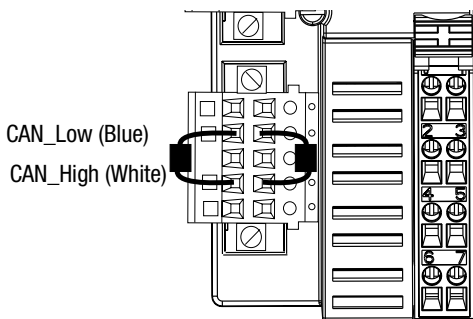
EP24

DeviceNet and Subnet Connector Plug Wiring

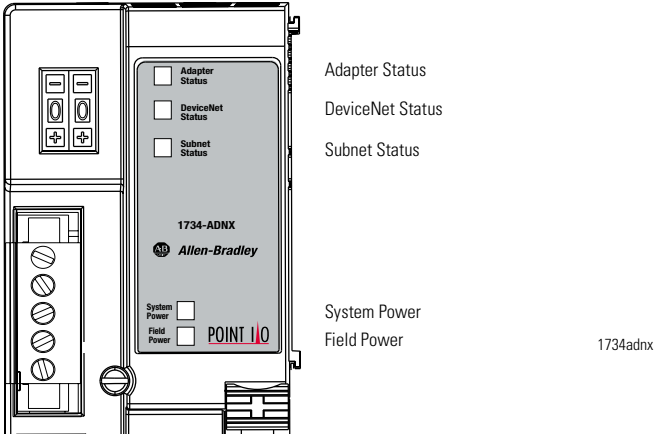


Connecting the Termination Resistors

If you are only using backplane modules, connect termination resistors on the Subnet connector on this 1794-ADNX adapter module. If continuing the Subnet, connect the termination resistors at the ends of the subnet trunkline. Connect the resistors across the blue (CAN_L) and white (CAN_H) wires as shown below.



Troubleshooting with the Indicators



Indicator	Indication	Probable Cause
System Power	Off	Not active. field power is off, or dc-dc converter problem.
	Green	System power on. dc-dc converter active (5V)
Field Power	Off	Not active. Field power is off.
	Green	Power on, 24V present

Indication	Probable Cause
Adapter Status	
Off	No power applied to device
Green	Device operating normally
Flashing Red	Recoverable fault.
Red	Unrecoverable fault may require device replacement
Flashing Red/Green	Device is in self-test
DeviceNet Status	
Off	Device is not on-line - Device attempting to Autobaud - 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. (Possible duplicate MAC ID or baud rate mismatch.)

Indication	Probable Cause
Subnet Status	
Off	No power applied to device Device not online Device has not completed Dup_MAC_ID test
Green	Subnet online and has connections in the established state
Flashing Red	Recoverable fault - no scanlist configured - problem with module in scanlist (missing, mismatch, etc.)
Red	Unrecoverable fault may require device replacement (Possible duplicate MAC ID or baud rate mismatch.)

Safety Approvals

The following information applies when operating this equipment in hazardous locations:	Informations sur l'utilisation de cet équipement en environnements dangereux:				
<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>				
<table border="1"> <tr> <td data-bbox="98 594 225 651"> <p>WARNING</p> </td> <td data-bbox="232 584 505 964"> <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. </td> </tr> </table>	<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. 	<table border="1"> <tr> <td data-bbox="511 594 639 651"> <p>AVERTISSEMENT</p> </td> <td data-bbox="645 584 935 964"> <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. </td> </tr> </table>	<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.
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Specifications - 1734-ADNX DeviceNet Adapter With Expansion

Communication Interface Specifications

Expansion I/O Capacity	<p>Up to 13 modules, dependent on PointBus current requirements (13 times 75mA = 0.975, just under the limit of 1.0A). The actual number of modules can vary. Add up the current requirements of the modules you want to use to make sure they do not exceed the amperage limit of the 1734-ADNX. (Note: Total expansion up to 63 modules - 13 modules maximum with 1734-ADNX - add 1734-EP24DC modules for an additional 17 modules (or less based on current requirements), up to 63 module maximum).</p> <table border="1"> <thead> <tr> <th data-bbox="408 589 505 618">Cat. No.</th> <th data-bbox="515 589 864 618">PointBus Current Requirements</th> </tr> </thead> <tbody> <tr><td>1734-IB2</td><td>75mA</td></tr> <tr><td>1734-IB4</td><td>75mA</td></tr> <tr><td>1734-IV2</td><td>75mA</td></tr> <tr><td>1734-IV4</td><td>75mA</td></tr> <tr><td>1734-OB2E</td><td>75mA</td></tr> <tr><td>1734-OB4E</td><td>75mA</td></tr> <tr><td>1734-OB2EP</td><td>75mA</td></tr> <tr><td>1734-OV2E</td><td>75mA</td></tr> <tr><td>1734-OV4E</td><td>75mA</td></tr> <tr><td>1734-OW2</td><td>80mA</td></tr> <tr><td>1734-OX2</td><td>100mA</td></tr> <tr><td>1734-IE2C</td><td>75mA</td></tr> <tr><td>1734-OE2C</td><td>75mA</td></tr> <tr><td>1734-IE2V</td><td>75mA</td></tr> <tr><td>1734-OE2V</td><td>75mA</td></tr> <tr><td>1734-IA2</td><td>75mA</td></tr> <tr><td>1734-IM2</td><td>75mA</td></tr> <tr><td>1734-OA2</td><td>75mA</td></tr> <tr><td>1734-IJ2</td><td>160mA</td></tr> <tr><td>1734-IK2</td><td>160mA</td></tr> <tr><td>1734-IR2</td><td>220mA</td></tr> <tr><td>1734-IT2I</td><td>175mA</td></tr> <tr><td>1734-SSI</td><td>110mA</td></tr> <tr><td>1734-VHSC5</td><td>180mA</td></tr> <tr><td>1734-VHSC24</td><td>180mA</td></tr> <tr><td>1734-232ASC</td><td>75mA</td></tr> <tr><td>1734-485ASC</td><td>75mA</td></tr> </tbody> </table>	Cat. No.	PointBus Current Requirements	1734-IB2	75mA	1734-IB4	75mA	1734-IV2	75mA	1734-IV4	75mA	1734-OB2E	75mA	1734-OB4E	75mA	1734-OB2EP	75mA	1734-OV2E	75mA	1734-OV4E	75mA	1734-OW2	80mA	1734-OX2	100mA	1734-IE2C	75mA	1734-OE2C	75mA	1734-IE2V	75mA	1734-OE2V	75mA	1734-IA2	75mA	1734-IM2	75mA	1734-OA2	75mA	1734-IJ2	160mA	1734-IK2	160mA	1734-IR2	220mA	1734-IT2I	175mA	1734-SSI	110mA	1734-VHSC5	180mA	1734-VHSC24	180mA	1734-232ASC	75mA	1734-485ASC	75mA
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DeviceNet Communication Rate	<p>125K bit/s (500m maximum) 250K bit/s (250m maximum) 500K bit/s (100m maximum)</p>																																																								
DeviceNet Cable	<p>Allen-Bradley part number 1485C-P1-Cxxx Refer to publication DN-2.5 for more information</p>																																																								

Module Location	Starter module - left side of 1734 system
DeviceNet Power Specifications	
Input Voltage Rating	24V dc nominal
DeviceNet Input Voltage Range	11-25V dc DeviceNet specification
Input Overvoltage Protection	Reverse polarity protected
DeviceNet Power Requirements	24V dc (+4% = 25V dc max) @ 30mA maximum
Power Supply Specifications	
Input Voltage Rating	24V dc nominal 10-28.8V dc range
Field Side Power Requirements	24V dc (+20% = 28.8V dc maximum) @ 400mA maximum
Inrush Current	6A maximum for 10ms
PointBus Output Current	1A maximum @ 5V dc \pm 5% (4.75 - 5.25)
Input Overvoltage Protection	Reverse polarity protected
Interruption	Output voltage will stay within specifications when input drops out for 10ms at 10V with maximum load.
General Specifications	
Indicators	3 red/green status indicators Adapter status DeviceNet status Subnet status 2 green power supply status indicators: System Power (PointBus 5V power) Field Power (24V from field supply)
Power Consumption	8.1W maximum @ 28.8V dc
Power Dissipation	2.8W maximum @ 28.8V
Thermal Dissipation	9.5 BTU/hr maximum @ 28.8V dc
Isolation Voltage	1250V rms/V ac
Field Power Bus Nominal Voltage Supply Voltage Range Supply Current	24V dc 10-28.8V dc range, 10A maximum
Dimensions Inches (Millimeters)	3.0H x 2.16W x 5.25L (76.2H x 54.9W x 133.4L)

Environmental Conditions	
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 to 55°C (-4 to 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 to 85°C (-40 to 185°F)
Relative Humidity	IEC 60068-2-30 (Test Db, Unpackaged Nonoperating Damp Heat): 5 to 95% noncondensing
Shock	IEC60068-2-27 (Test Ea, Unpackaged Shock) Operating - 30g Nonoperating - 50g
Vibration	IEC60068-2-6, (Test Fc, Operating) Tested 5g @ 10-500Hz
ESD Immunity	IEC 61000-4-2: 6kV contact discharges 8kV air discharges
Radiated RF Immunity	IEC 61000-4-3: 10V/m with 1kHz sine-wave 80%AM from 30MHz to 2000MHz 10V/m with 200Hz 50% Pulse 100%AM at 900Mhz
EFT/B Immunity	IEC 61000-4-4: ±2kV at 5kHz on signal ports ±4kV at 2.5kHz on power ports
Surge Transient Immunity	IEC 61000-4-5: ±1kV line-line(DM) and ±2kV line-earth(CM) on signal ports ±1kV line-line(DM) and ±2kV line-earth(CM) on power ports
Conducted RF Immunity	IEC 61000-4-6: 10Vrms with 1kHz sine-wave 80%AM from 150kHz to 80MHz
Emissions	CISPR 11 Group 1, Class A
Enclosure Type Rating	None (open-style)

Conductors	Wire Size	14 AWG (2.5mm ²) - 22 AWG (0.25mm ²) solid or stranded copper wire rated @ 75°C or greater	
	Category	3/64 inch (1.2mm) insulation maximum 2 ¹	
Terminal Base Screw Torque		7 pound-inches (0.8Nm)	
Field Wiring Terminations DeviceNet and SubNet		1 - Black Wire	-V
		2 - Blue Wire	CAN Low
		3 - Bare Wire	Shield
		4 - White Wire	CAN High
		5 - Red Wire	+V
Power Supply		0 - No Connection	1 - No Connection
		2 - Chassis Ground	3 - Chassis Ground
		4 - Common	5 - Common
		6 - Supply	7 - Supply
Mass		9.0 oz/255 grams	
Certifications (when product is marked)		c-UL-us - UL Listed Industrial Control Equipment, certified for US and Canada c-UL-us - UL Listed for Class I, Division 2, Groups A, B, C and D Hazardous locations, certified for US and Canada CE² - European Union 89/336/EEC EMC Directive, compliant with: EN 61000-6-2; Industrial Immunity EN 61000-6-4; Industrial Emissions EN 50082-2; Industrial Immunity EN 61326; Meas./Control/Lab., Industrial Requirements C-Tick² - Australian Radiocommunications Act compliant with AS/NZS CISPR 11 Industrial Emissions ODVA - ODVA Conformance tested to DeviceNet specifications	
1		Use this conductor category information for planning conductor routing. Refer to publication 1770-4.1, "Industrial Automation Wiring and Grounding Guidelines."	
2		See the Product Certification link at www.ab.com for Declaration of Conformity, Certificates, and other certification details.	

Reach us now at www.rockwellautomation.com

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