Installation Instructions

Original Instructions

Allen-Bradley

POINT I/O 24V DC Expansion Power Supply

Catalog Numbers 1734-EP24DC, 1734-EP24DCK, Series B

Catalog numbers with the suffix 'K' are conformal coated and their specifications are the same as non-conformal coated catalogs.

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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.rockwellautomation.com/literature/) 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 that are 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.
	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.
IMPORTANT	Identifies information that is critical for successful application and understanding of the product.

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 EN/IEC 60664-1), at altitudes up to 2000 m (6562 ft) without derating.

This equipment is not intended for use in residential environments and may not provide adequate protection to radio communication services in such environments.

This equipment is supplied as open-type equipment for indoor use. 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 or be approved for the application if nonmetallic. The interior of the enclosure must be accessible only by the use of a tool. Subsequent sections of this publication may contain more information regarding specific enclosure type ratings that are required to comply with certain product safety certifications.

In addition to this publication, see the following:

- Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1, for more installation requirements.
- NEMA Standard 250 and EN/IEC 60529, as applicable, for explanations of the degrees of protection provided by enclosures.

ATTENTION: Read this document and the documents listed in the Additional Resources section about installation, configuration, and operation of this equipment before you install, configure, operate, or maintain this product. Users are required to familiarize themselves with installation and wiring instructions in addition to requirements of all applicable codes, laws, and standards.

Installation, adjustments, putting into service, use, assembly, disassembly, and maintenance are required to be carried out by suitably trained personnel in accordance with applicable code of practice. In case of malfunction or damage, no attempts at repair should be made. The module should be returned to the manufacturer for repair. Do not dismantle the module.

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.	**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 I, Division 2.

WARNING: When used in a Class I, Division 2, hazardous location, this equipment must be mounted in a suitable enclosure with proper wiring method that complies with the governing electrical codes.

European Hazardous Location Approval

The following applies to products marked CE Ex

- Are intended for use in potentially explosive atmospheres as defined by European Union Directive 2014/34/EU and 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 Zone 2 potentially explosive atmospheres, given in Annex II to this Directive.
- Compliance with the Essential Health and Safety Requirements has been assured by compliance with EN 60079-15 and EN 60079-0.
- Are Equipment Group II, Equipment Category 3, and comply with the Essential Health and Safety Requirements relating to the design and construction of such equipment given in Annex II to Directive 2014/34/EU. See the EC Declaration of Conformity at http://www.rockwellautomation.com/global/certification/overview.page for details.
- The type of protection is II 3G Ex nA IIC T4 Gc according to EN 60079-15.
- Comply to Standards EN 60079-0:2012, EN 60079-15:2010, reference certificate number DEMKO04ATEX0330347X.
- Are intended for use in areas in which explosive atmospheres caused by gases, vapors, mists, or air are unlikely to occur, or are likely to occur only infrequently and for short periods. Such locations correspond to Zone 2 classification according to ATEX directive 2014/34/EU.
- May have catalog numbers followed by a "K" to indicate a conformal coating option.

WARNING:

- This equipment is not resistant to sunlight or other sources of UV radiation.
- This equipment shall be mounted in an ATEX/IECEx Zone 2 certified enclosure with a minimum ingress protection rating of at least IP54 (in accordance with EN/IEC 60079-15) and used in an environment of not more than Pollution Degree 2 (as defined in EN/IEC 60664-1) when applied in Zone 2 environments. The enclosure must be accessible only by the use of a tool.
- This equipment shall be used within its specified ratings defined by Rockwell Automation.
- Provision shall be made to prevent the rated voltage from being exceeded by transient disturbances of more than 140% of the peak rated voltage when applied in Zone 2 environments.
- The instructions in the user manual shall be observed.
- This equipment must be used only with ATEX certified Rockwell Automation backplanes.
- Earthing is accomplished through mounting of modules on rail.
- Devices shall be used in an environment of not more than Pollution Degree 2.

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.

Special Conditions for Safe Use

ATTENTION:

- This product is grounded through the DIN rail to chassis ground. Use zinc plated chromate-passivated steel DIN rail to assure proper grounding. The use of other DIN rail materials (for example, aluminum or 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. Be sure to ground the DIN rail properly. Refer to Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1, for more information.
- Do not remove or replace an Adapter Module while power is applied. Interruption of the backplane can result in unintentional operation or machine motion.
- 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.
- If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.
- Do not connect 120/240V AC power to this supply.
- Use the 1734-EP24DC and 1734-EP24DCK expansion power supply only with POINT I/O™ adapters, such as the 1734-ADN DeviceNet adapter.
- To comply with the CE Low Voltage Directive (LVD), field power and 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).
- To comply with UL restrictions, field power and all connected devices must be powered from a single source compliant with the following: Class 2.

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.

WARNING: If you connect or disconnect the communication cable with power applied to this module or any device on the network, an electrical arc can occur. This could cause an explosion in hazardous location installations.

Electrical Safety Considerations

ATTENTION:

- This equipment is certified for use only within the surrounding air temperature range of -20…+55 °C (-4…+131 °F). The equipment must not be used outside of this range.
- Use only a soft dry anti-static cloth to wipe down equipment. Do not use any cleaning agents.

At the end of its life, this equipment should be collected separately from any unsorted municipal waste.

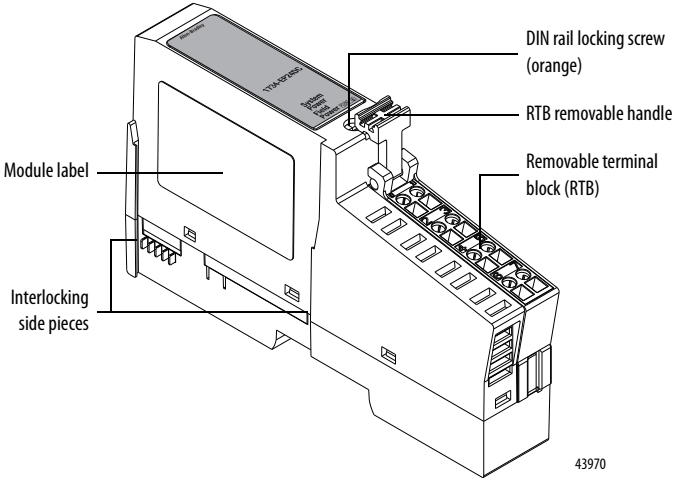
About the Power Supply

The expansion power supply passes 24V DC field power to the I/O modules to the right of it. The expansion power supply extends the backplane bus power for up to 17 I/O modules to the right of the supply and creates a new field voltage partition segment for driving field devices. The expansion power supply separates field power from I/O modules to the left of the unit, effectively providing functional and logical partitioning for the following.

- Separate field power between input and output modules.
- Separate field power to the analog and digital modules.
- Group modules to perform a specific task or function.

The dark-gray color of the expansion power supply allows for easy visual inspection and identification. Refer to the figure to identify external power supply components.

Use multiple expansion power supplies with POINT I/O™ adapters to assemble a full system. With any POINT I/O™ adapter, use an expansion power supply to add additional modules in 4...17 module increments, for a total of 63 I/O modules.



Install the Power Supply

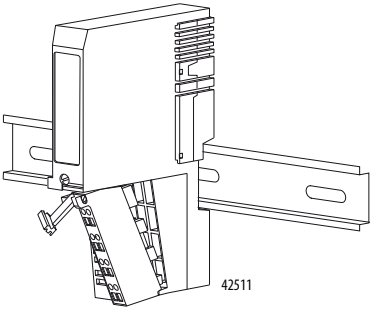
To install the expansion power supply on the DIN rail, proceed as follows.

1. Position the power supply vertically above the DIN rail.
2. Engage the interlocking side pieces with the unit on the left.
3. Press down firmly to install the power supply on the DIN rail. The locking mechanism locks the module to the DIN rail.

Remove the Power Supply

To remove an expansion power supply, proceed as follows.

1. Pull up on the RTB removal handle to remove the terminal block.



2. Remove the module to the right of the 1734-EP24DC or 1734-EP24DCK module from its base unit.
3. Use a small-bladed screwdriver to rotate the DIN rail locking screw to a vertical position. This releases the locking mechanism.
4. Lift straight up to remove.

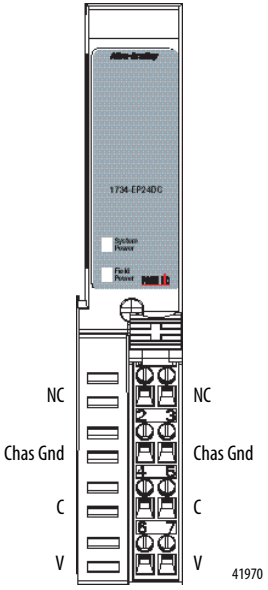
Replace the Power Supply

To install a replacement expansion power supply, proceed as follows.

1. Remove the module to the right of the power supply from its base unit.
2. Position the power supply vertically above the DIN rail.
3. Slide the power supply down allowing the interlocking side pieces to engage the adjacent modules (both left and right sides).
4. Press firmly to seat the power supply on the DIN rail. The power supply locking mechanism snaps into place.
5. Reinsert the module into the base next to the expansion power supply.

Wire the Power Supply

1734-EP24DC,
1734-EP24DCK



NC = No connection

Chas Gnd = Chassis Ground

C = Common

V = Supply

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.

ATTENTION: Use the 1734-EP24DC and 1734-EP24DCK expansion power supply only with adapter class products.

ATTENTION: Use the 1734-EP24DC and 1734-EP24DCK expansion power supply only with POINT I/O™ adapters, such as the 1734-ADN DeviceNet adapter.

12/24V DC Wiring

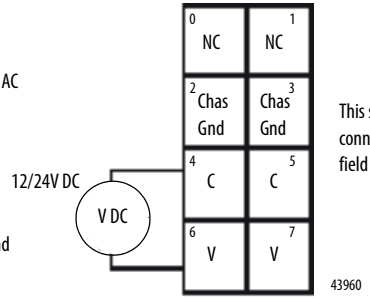
Do not connect 120/240V AC power to this supply.

NC = No connection

Chas Gnd = Chassis Ground

C= Common

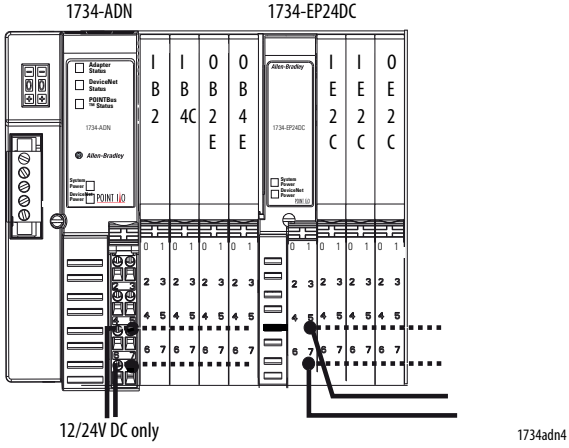
V = 12/24V DC



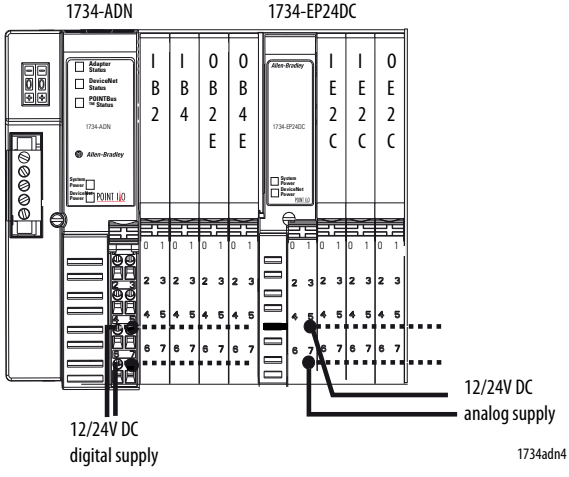
This supply will be connected to the internal field power bus.

Connect	Terminal	Terminals (for continuing power)
+V DC	6	7
-V DC	4	5
Chas Gnd	2	3
12/24V DC becomes the internal field power bus for modules to the right.		

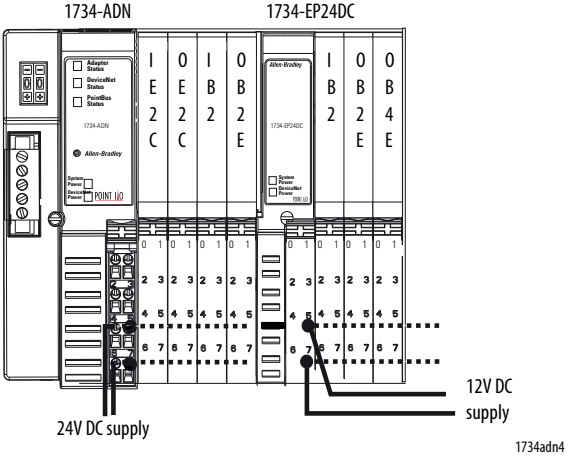
Example of Continuing Power



Example of Functional Partitioning



Example of Logical Partitioning



Specifications

POINT I/O™ 24V DC Expansion Power Supply – 1734-EP24DC, 1734-EP24DCK

Attribute	Value
I/O module capacity	4...17 modules, depending on current rating of each module
Input voltage rating	24V DC nominal 10…28.8V DC range
Field side power requirements	24V DC (+20% = 28.8V DC max) @ 400 mA max
Inrush current, max	6 A for 10 ms
Indicators	1 green field power status indicator 1 green 5V system power indicator
POINTBus™ output current	Horizontal mounting – 1 A @ 10…19.2V input; 1.3 A @ 19.2…28.8V input Vertical mounting – 1 A @ 10…28.8V input
Input overvoltage protection	Reverse polarity protected

POINT I/O™ 24V DC Expansion Power Supply – 1734-EP24DC, 1734-EP24DCK

Attribute	Value
Interruption	Output voltage will stay within specifications when input drops out for 10 ms @ 10V with maximum load.
Module location	Between I/O modules in 1734 system Breaks field power bus
Limitations	Use with POINT I/O™ Adapters only
Dimensions (H x W x D), approx	76.2 x 25.4x 133.4 mm (3.0 x 1.0 x 5.25 in)
Weight, approx	120 g (4.3 oz)
Terminal base screw torque	0.6 N•m (7 lb-in)

General Specifications

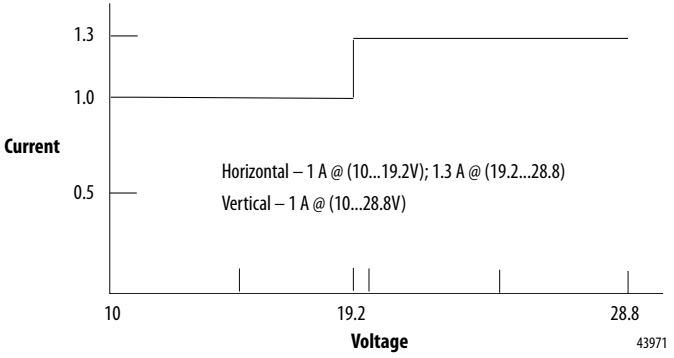
Attribute	Value
Power Consumption, max	9.8 W @ 28.8V DC
Power dissipation, max	3.0 W @ 28.8V DC
Thermal dissipation, max	10.0 BTU/hr @ 28.8V DC
Field power bus supply voltage, nom	24V DC
Field power bus voltage range	10...28.8V DC
Field power bus supply current, max	10 A
Isolation voltage	50V continuous, tested to withstand 2600V DC for 60 s
Enclosure type rating	None (open-style)
North American temp code	T4A
ATEX temp code	T4
Conductor size	0.324…2.08 mm^2 (22…14 AWG) solid or stranded copper wire rated @ 75 °C (167 °F) or greater 3/64 inch (1.2 mm) insulation maximum
Conductor category(1)	2 – on power ports

(1) Use this Conductor Category information for planning conductor routing as described in the appropriate System Level Installation Manual. Also refer to Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1, for more information.

Environmental Specifications

Attribute	Value
Temperature, operating	IEC 60068-2-1 (Test Ad, operating cold), IEC 60068-2-2 (Test Bd, operating dry heat), IEC 60068-2-14 (Test Nb, operating thermal shock): -20…+55 °C (-4…+131 °F)
Temperature, storage	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)
Temperature, surrounding air, max.	55 °C (131 °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	IEC 60068-2-27 (Test Ea, unpackaged shock): 30 g
Shock, nonoperating	IEC 60068-2-27 (Test Ea, unpackaged shock): 50 g
Emissions	IEC 61000-6-4
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 80...2000 MHz 10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz 10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz 10V/m with 1 kHz sine-wave 80% AM from 2000…2700 MHz
EFT/B immunity	IEC 61000-4-4: ±2 kV at 5 kHz on power ports ±2 kV at 5 kHz on signal ports
Surge transient immunity	IEC 61000-4-5: ±1 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports
Conducted RF immunity	IEC61000-4-6: 10V rms with 1 kHz sine-wave 80% AM from 150 kHz to 80 MHz

Current Derating for Mounting



Certifications

Certification (When Product Is Marked)(1)	Value
c-UL-us	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584. 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 2014/30/EU EMC Directive, compliant with: • EN 61326-1; Measurement/Control/Laboratory use, Industrial requirements • EN 61000-6-2; Industrial Immunity • EN 61000-6-4; Industrial Emissions • EN 61131-2; Programmable Controllers (Clause 8, Zone A & B) European Union 2011/65/EU RoHS, compliant with: • EN 50581; Technical documentation
RCM	Australian Radiocommunications Act, compliant with: AS/NZS CISPR 11; Industrial Emissions
Ex	European Union 2014/34/EU ATEX Directive, compliant with: • EN 60079-0:2012 + A11:2013; General Requirements • EN 60079-15; Potentially Explosive Atmospheres, Protection "n" • II 3G Ex nA IIC T4 Gc • DEMKO04ATEX0330347X
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: • Article 58-2 of Radio Waves Act, Clause 3
EAC	Russian Customs Union TR CU 020/2011 EMC Technical Regulation

(1) See the Product Certification link at http://www.rockwellautomation.com/global/certification/overview.page for Declaration of Conformity, Certificates, and other certification details.

Rockwell Automation Support

Use the following resources to access support information.

Technical Support Center	Knowledgebase Articles, How-to Videos, FAQs, Chat, User Forums, and Product Notification Updates.	https://rockwellautomation.custhelp.com/
Local Technical Support Phone Numbers	Locate the phone number for your country.	http://www.rockwellautomation.com/global/support/get-support-now.page
Direct Dial Codes	Find the Direct Dial Code for your product. Use the code to route your call directly to a technical support engineer.	http://www.rockwellautomation.com/global/support/direct-dial.page
Literature Library	Installation Instructions, Manuals, Brochures, and Technical Data.	http://www.rockwellautomation.com/global/literature-library/overview.page
Product Compatibility and Download Center (PCDC)	Get help determining how products interact, check features and capabilities, and find associated firmware.	http://www.rockwellautomation.com/global/support/pcdc.page

Documentation Feedback

Your comments will help us serve your documentation needs better. If you have any suggestions on how to improve this document, complete the How Are We Doing? form at http://literature.rockwellautomation.com/idc/groups/literature/documents/du/ra-du002_-en-e.pdf.

Notes:

Rockwell Automation maintains current product environmental information on its website at
http://www.rockwellautomation.com/rockwellautomation/about-us/sustainability-ethics/product-environmental-compliance.page.

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