



## FLEX I/O DeviceNet Adapter Module

Cat. No. 1794-ADN Series B

### 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.

#### WARNING



When you insert or remove the module while backplane power is on, or connect or disconnect the DeviceNet 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. Be sure that power is removed or the area is nonhazardous before proceeding.

#### ATTENTION



FLEX I/O is grounded through the DIN rail to chassis ground. Use zinc plated yellow-chromate steel DIN rail to assure proper grounding. The use of other DIN rail materials (e.g. aluminum, plastic, etc.) that can corrode, oxidize, or are poor conductors, can result in improper or intermittent grounding.

#### 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.

### European Hazardous Location Approval

The following adapter is European Zone 2 approved: 1794-ADN series B adapter.

### European Zone 2 Certification

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

The LCIE (Laboratoire Central des Industries Electriques) 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. 28 682 010.

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.

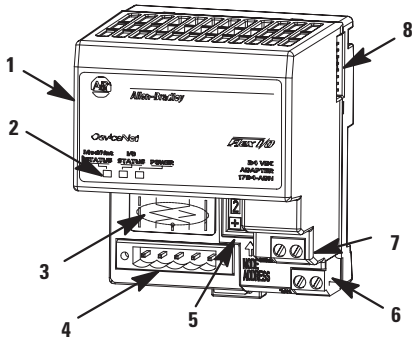
- This equipment is not resistant to sunlight or other sources of UV radiation.
- The secondary of a current transformer shall not be open-circuited when applied in Class I, Zone 2 environments.
- Equipment of lesser Enclosure Type Rating must be installed in an enclosure providing at least IP54 protection 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

## North American Hazardous Location Approval

The following adapter is North American Hazardous Location approved: 1794-ADN series B adapter.

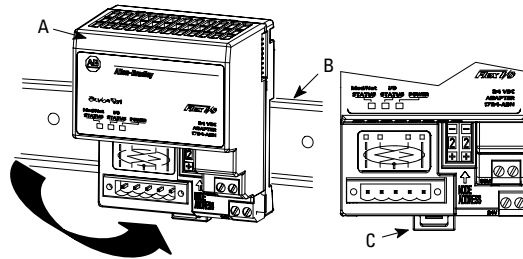
| The following information applies when operating this equipment in hazardous locations:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 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. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>WARNING</b><br>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>EXPLOSION HAZARD</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>AVERTISSEMENT</b><br>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>RISQUE D'EXPLOSION</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <ul style="list-style-type: none"> <li>Do not disconnect equipment unless power has been removed or the area is known to be nonhazardous.</li> <li>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.</li> <li>Substitution of components may impair suitability for Class I, Division 2.</li> <li>If this product contains batteries, they must only be changed in an area known to be nonhazardous.</li> </ul> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <ul style="list-style-type: none"> <li>Couper le courant ou s'assurer que l'environnement est classé non dangereux avant de débrancher l'équipement.</li> <li>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.</li> <li>La substitution de composants peut rendre cet équipement inadapte à une utilisation en environnement de Classe I, Division 2.</li> <li>S'assurer que l'environnement est classé non dangereux avant de changer les piles.</li> </ul> |

## DeviceNet Adapter, Cat. No. 1794-ADN/B



| Component Identification |                                                  |
|--------------------------|--------------------------------------------------|
| 1                        | DeviceNet Adapter Module                         |
| 2                        | Indicators                                       |
| 3                        | Wiring label                                     |
| 4                        | DeviceNet network cable (plug-in, screw-secured) |
| 5                        | DeviceNet Node selection thumbwheel switches     |
| 6                        | +24V dc connections                              |
| 7                        | 24V common connections                           |
| 8                        | Flexbus connector                                |

## Installing Your DeviceNet Adapter Module



During mounting of all devices, be sure that all debris (metal chips, wire strands, etc.) is kept from falling into the module. Debris that falls into the module could cause damage on power up.

## Mounting on a DIN rail before installing the Terminal Base Units

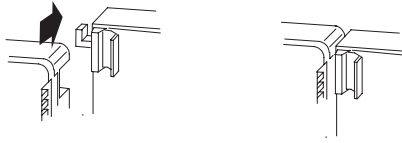
- Position the DeviceNet adapter module (A) on a 35 x 7.5mm DIN rail (B) at a slight angle.
- Hook the lip on the rear of the adapter onto the top of the DIN rail, and rotate the adapter module onto the rail.
- Press the adapter module down onto the DIN rail until flush. Locking tab C will snap into position and lock the adapter module to the DIN rail.
- If the adapter module does not lock in place, use a screwdriver or similar device to move the locking tab down while pressing the adapter module flush onto the DIN rail, and release the locking tab to lock the adapter module in place. If necessary, push up on the locking tab to lock.
- Connect the adapter wiring as shown under "Connecting Wiring" later in this document.

## Panel/Wall Mounting

If mounting this adapter to a panel or wall, refer to publication 1794-5.13, "Panel Mounting Kit, Cat. No. 1794-NM1."

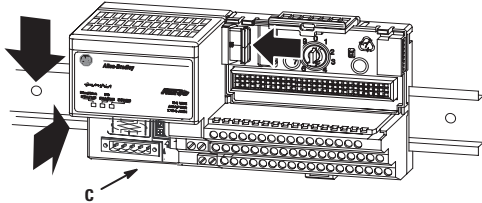
## Mounting (or Replacing) the Adapter on an Existing System

- Remove the DeviceNet plug-in connector from the front of the adapter.
- Disconnect any wiring jumpered to the adjacent terminal base.
- Open the module latching mechanism and remove the module from the base unit to which the adapter will be attached.
- Push the flexbus connector toward the right side of the terminal base to unplug the backplane connection.
- Release the locking tab and remove the adapter module.
- Before installing the new adapter, notice the notch on the right rear of the adapter. This notch accepts the hook on the terminal base unit. The notch is open at the bottom. The hook and adjacent connection point keep the terminal base and the adapter tight together, reducing the possibility of a break in communication over the backplane.



7. Complete the adapter mounting as shown below.

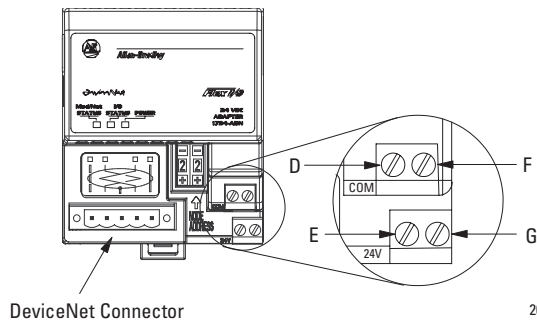
Push down and in at the same time to lock the adapter to the DIN rail. If the adapter does not lock in place, use a screwdriver or similar device to move the locking tab down while pressing the adapter flush onto the DIN rail, and release the locking tab to lock the adapter module in place. If necessary, push up on the locking tab to lock.



When the adapter is locked onto the DIN rail, gently push the flexbus connector into the adapter to complete the backplane

8. Reinstall the module in the adjacent terminal base unit.
9. Reconnect adapter wiring as described in "Connecting Wiring."

## Connecting Wiring



DeviceNet Connector

20131

1. Connect the DeviceNet cable to the removable connector as shown.

| Connect   | To       |
|-----------|----------|
| BLK wire  | -V       |
| BLU wire  | CAN* low |
| Bare wire | Drain    |
| WHT wire  | CAN high |
| RED wire  | +V       |

\* CAN = Controller Area Network

### ATTENTION

When connecting wiring, torque terminal screws D, E, F and G to 7 pound-inches (0.8Nm).



2. Insert connector into mating connector on the DeviceNet adapter module.

3. Connect +V dc power to the left side of the lower connector, terminal E.

### ATTENTION

Power wiring must be less than 3 meters (9.8 ft) in length.

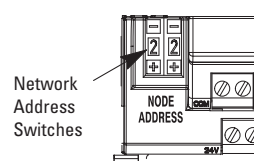


4. Connect -V common to the left side of the upper connector, terminal D.
5. Connections G and F are used to pass +V dc power (G) and -V common (F) to the next module in the series (if required).

**NOTE:** Cable colors are shown on the wiring label on the front of the adapter module.

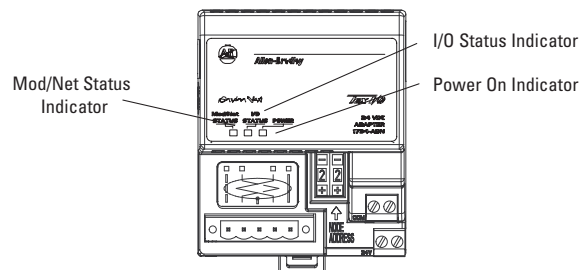
## Setting the Node Address

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



**NOTE:** The baud rate for the adapter is set by way of "baud detection" at power-up.

## Diagnostic Indicators



### Power Indicator

|     |                                                                   |
|-----|-------------------------------------------------------------------|
| On  | Power applied to module                                           |
| Off | No power applied to module. Check power wiring to adapter module. |

### ModeNet Status Indicator

| Indication       | Status                         |
|------------------|--------------------------------|
| Off              | No power, or no network access |
| Flashing GRN/OFF | On-line, but not connected     |
| Solid GRN        | On-line, link okay, connected  |
| Flashing RED     | Recoverable fault              |
| Solid RED        | Critical adapter failure       |

### I/O Status Indicator

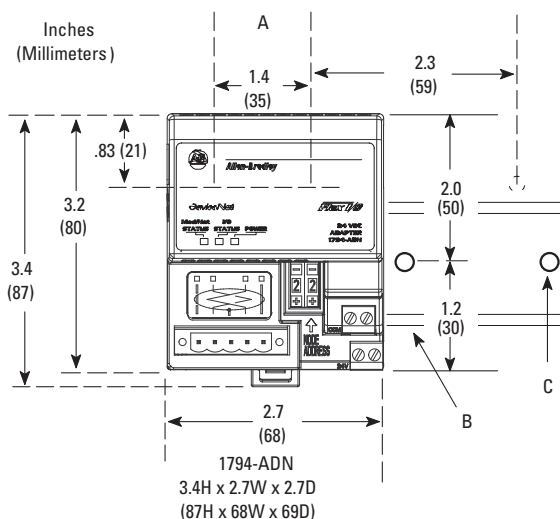
| Indication       | Status                                  |
|------------------|-----------------------------------------|
| Off              | No power, or outputs off                |
| Flashing RED     | Recoverable fault - outputs in fault    |
| Flashing GRN/OFF | Idle program mode - outputs in idle     |
| Solid GRN        | Device operational - outputs live - run |
| Solid RED        | Critical adapter fault - unrecoverable  |

## Specifications

| Specifications - Cat. No. 1794-ADN Series B |                                                                                                                                                                                                                              |
|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| I/O Capacity                                | 8 modules                                                                                                                                                                                                                    |
| Power Supply                                | The 24V dc power supply must be capable of providing a turn-on inrush surge current of 23A for 2ms for each adapter connected to this supply.                                                                                |
| Input Voltage Rating                        | 24V dc nominal<br>19.2V to 31.2 V dc (includes 5% ac ripple)                                                                                                                                                                 |
| Current Draw                                | 450mA maximum; 330mA at 24V dc                                                                                                                                                                                               |
| Communication Rate                          | 125KB<br>250KB<br>500KB                                                                                                                                                                                                      |
| Indicators                                  | Power - on/off<br>ModNet Status - red/green<br>I/O Status - red/green                                                                                                                                                        |
| Flexbus Output Current                      | 640mA maximum at 5V dc                                                                                                                                                                                                       |
| Isolation Voltage                           | Tested at 850V dc for 1s between user power and flexbus                                                                                                                                                                      |
| Power Dissipation                           | 7.6W maximum @ 19.2V dc                                                                                                                                                                                                      |
| Thermal Dissipation                         | 26 BTU/hr @ 19.2V dc                                                                                                                                                                                                         |
| DeviceNet Power Requirements                | 24V dc (±4%) at 90mA maximum                                                                                                                                                                                                 |
| Dimensions                                  | 3.4H x 2.7W x 2.7D inches<br>87H x 68W x 69D mm                                                                                                                                                                              |
| Environmental Conditions                    |                                                                                                                                                                                                                              |
| Operating Temperature                       | IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock):<br>0 to 55°C (32 to 131°F)                                                    |
| Storage Temperature                         | IEC 60068-2-1 (Test Ab, Un-packaged Non-operating Cold),<br>IEC 60068-2-2 (Test Bb, Un-packaged Non-operating Dry Heat),<br>IEC 60068-2-14 (Test Na, Un-packaged Non-operating Thermal Shock):<br>-40 to 85°C (-40 to 185°F) |
| Relative Humidity                           | IEC 60068-2-30 (Test Db, Un-packaged Non-operating Damp Heat):<br>5 to 95% non-condensing                                                                                                                                    |
| Vibration                                   | IEC60068-2-6 (Test Fc, Operating):<br>5g @ 10-500Hz                                                                                                                                                                          |
| Shock                                       | IEC60068-2-27 (Test Ea, Unpackaged shock):<br>Operating 30g<br>Non-operating 50g                                                                                                                                             |
| ESD Immunity                                | IEC 61000-4-2:<br>8kV air discharges                                                                                                                                                                                         |
| Radiated RF Immunity                        | IEC 61000-4-3:<br>10V/m with 1kHz sine-wave 80%AM from 30MHz to 1000MHz                                                                                                                                                      |
| EFT/B Immunity                              | IEC 61000-4-4:<br>±2kV at 5kHz on communication ports                                                                                                                                                                        |
| Surge Transient Immunity                    | IEC 61000-4-5:<br>±2kV line-earth(CM) on shielded ports                                                                                                                                                                      |
| Conducted RF Immunity                       | IEC 61000-4-6:<br>10Vrms with 1kHz sine-wave 80%AM from 150kHz to 30MHz                                                                                                                                                      |
| Emissions                                   | CISPR 11:<br>Group 1, Class A (with appropriate enclosure)                                                                                                                                                                   |
| Enclosure Type Rating                       | None (open-style)                                                                                                                                                                                                            |
| Conductors Wire Size                        | 12AWG (4mm <sup>2</sup> ) stranded copper wire rated at 75°C or higher<br>3/64 inch (1.2mm) insulation maximum                                                                                                               |
| Category <sup>1</sup>                       | 2                                                                                                                                                                                                                            |
| Terminal Screw Torque                       | 7 pound-inches (0.8Nm)                                                                                                                                                                                                       |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Certifications (when product is marked) <sup>2</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>UL</b> UL Listed Industrial Control Equipment<br><b>CSA</b> CSA certified Process Control Equipment<br><b>CSA</b> CSA certified for Class I, Division 2, Groups A, B, C and D Hazardous locations<br><b>EEx<sup>2</sup></b> European Union 94/9/EEC ATEX Directive, compliant with: EN 50021; Potentially Explosive Atmospheres, Protection "n" (Zone 2)<br><b>CE<sup>2</sup></b> European Union 89/336/EEC EMC Directive, compliant with: EN 61000-6-4; Industrial Emissions<br>EN 50082-2; Industrial Immunity<br>EN 61326; Meas./Control/Lab., Industrial Requirements<br>EN 61000-6-2; Industrial Immunity<br><b>C-Tick<sup>2</sup></b> Australian Radiocommunications Act compliant with AS/NZS CISPR 11, Industrial Emissions |
| Publications                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | User Manual 1794-UM005                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <sup>1</sup> You use this category information for planning conductor routing as described in Allen-Bradley publication 1770-4.1, Industrial Automation Wiring and Grounding Guidelines.<br><sup>2</sup> For the latest up-to-date information, see the Product Certification link at <a href="http://www.ab.com">www.ab.com</a> for Declarations of Conformity, Certificates and other certification details. For notification of any additional release notes, refer to <a href="http://www.ab.com/manuals/">www.ab.com/manuals/</a> . |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

## Mounting Dimensions



- A = Mounting hole dimensions for optional mounting kit  
B = DIN rail  
C = Secure DIN rail approximately every 200mm

[www.rockwellautomation.com](http://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: Rockwell Automation SA/NV, Vorstlaan/Boulevard du Souverain 36-BP 3A/B, 1170 Brussels, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640  
Asia Pacific: Rockwell Automation, 27/F Citicorp Centre, 18 Whitfield Road, Causeway Bay, 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: Rockwell Automation, Brühlstraße 22, D-74834 Elztal-Dallau, Germany, Tel: (49) 6261 9410, Fax: (49) 6261 17741  
Asia Pacific: Rockwell Automation, 55 Newton Road, #11-01/02 Revenue House, Singapore 307987, Tel: (65) 351 6723, Fax: (65) 355 1733

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