



# MicroLogix 1200 Isolated Relay Output Module

Catalog Number 1762-OX6I

## Table of Contents

<b>Topic</b>	<b>Page</b>
Additional Resources	2
Description	3
Overview	3
Mounting	5
System Assembly	7
Field Wiring Connections	7
I/O Memory Mapping	10
Specifications	11
North American Hazardous Location Approval	15

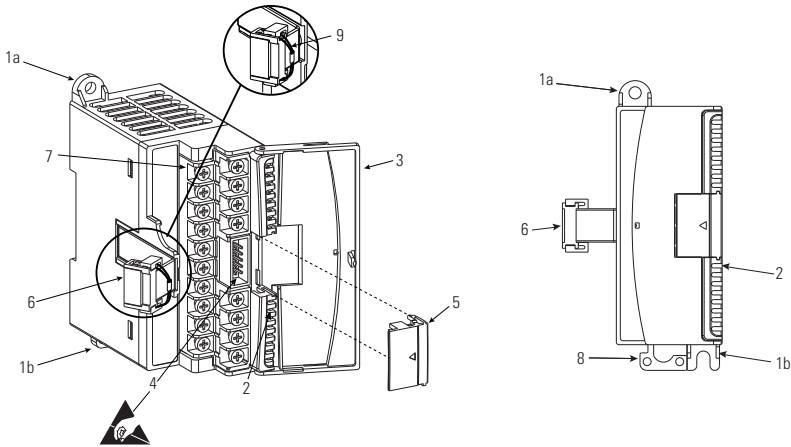
## Additional Resources

Publication	Description
MicroLogix™ 1200 Programmable Controllers User Manual, publication <a href="#">1762-UM001</a>	Information on installing, wiring, and operating a MicroLogix 1200 Programmable Controller
MicroLogix 1200 Programmable Controllers Installation Instructions, publication <a href="#">1762-IN006</a>	Installation guide for the MicroLogix 1200 Programmable Controller.
MicroLogix 1200 Memory Module and/or Real Time Clock Installation Instructions, publication <a href="#">1762-IN001</a>	Installation guide for the MicroLogix 1200 Memory Module and Real Time clock.
MicroLogix 1200 and MicroLogix 1500 Programmable Controllers Instruction Set Reference Manual, publication <a href="#">1762-BM001</a>	In-depth information on the MicroLogix 1200 controllers instruction set
Industrial Automation Wiring and Grounding Guidelines, publication <a href="#">1770-4.1</a>	More information on proper wiring and grounding techniques.

If you would like a manual, you can:

- download a free electronic version from the internet: <http://www.rockwellautomation.com/literature>
- purchase a printed manual by contacting your local Allen-Bradley distributor or Rockwell Automation representative.

## Description



Item	Description	Item	Description
1a	upper panel mounting tab	5	bus connector cover
1b	lower panel mounting tab	6	flat ribbon cable with bus connector (female)
2	power diagnostic LED	7	terminal block
3	module door with terminal identification label	8	DIN rail latch
4	bus connector with male pins	9	pull loop

## Overview

1762 I/O is suitable for use in an industrial environment when installed in accordance with these instructions. Specifically, this equipment is intended for use in clean, dry environments (Pollution degree 2<sup>(1)</sup>) and to circuits not exceeding Over Voltage Category II<sup>(2)</sup> (IEC 60664-1).<sup>(3)</sup>

(1) Pollution Degree 2 is an environment where, normally, only non-conductive pollution occurs except that occasionally a temporary conductivity caused by condensation shall be expected.

(2) Over Voltage Category II is the load level section of the electrical distribution system. At this level transient voltages are controlled and do not exceed the impulse voltage capability of the product's insulation.

(3) Pollution Degree 2 and Over Voltage Category II are International Electrotechnical Commission (IEC) designations.

## Prevent Electrostatic Discharge

### ATTENTION



Electrostatic discharge can damage integrated circuits or semiconductors if you touch bus connector pins. Follow these guidelines when you handle the module:

- Touch a grounded object to discharge static potential.
- Wear an approved wrist-strap grounding device.
- Do not touch the bus connector or connector pins.
- Do not touch circuit components inside the module.
- If available, use a static-safe work station.
- When not in use, keep the module in its static-shield box.

## Remove Power

### ATTENTION



Remove power before removing or installing this module. When you remove or install a module with power applied, an electrical arc may occur. An electrical arc can cause personal injury or property damage by:

- sending an erroneous signal to your system's field devices, causing unintended machine motion
- causing an explosion in a hazardous environment
- causing permanent damage to the module's circuitry

Electrical arcing causes excessive wear to contacts on both the module and its mating connector. Worn contacts may create electrical resistance.

## Mounting

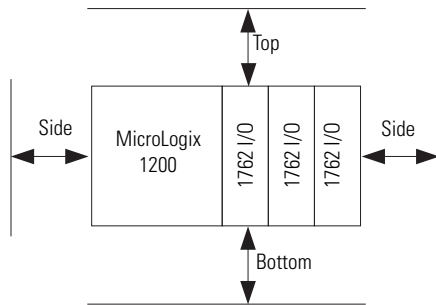
### ATTENTION



Do not remove protective debris strip until after the module and all other equipment near the module is mounted and wiring is complete. Once wiring is complete and the module is free of debris, carefully remove protective debris strip. Failure to remove strip before operating can cause overheating.

## Minimum Spacing

Maintain spacing from enclosure walls, wireways, adjacent equipment, etc. Allow 50.8 mm (2 in.) of space on all sides for adequate ventilation, as shown:



### TIP

1762 expansion I/O may be mounted horizontally only.

### ATTENTION



During panel or DIN rail 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 when power is applied to the module.

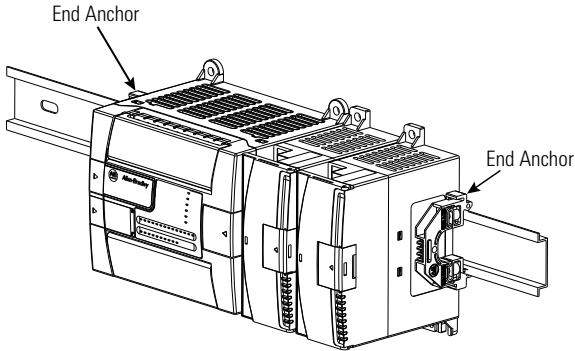
## DIN Rail Mounting

The module can be mounted using the following DIN rails: 35 x 7.5 mm (EN 50 022 - 35 x 7.5) or 35 x 15 mm (EN 50 022 - 35 x 15).

Before mounting the module on a DIN rail, close the DIN rail latch. Press the DIN rail mounting area of the module against the DIN rail. The latch will momentarily open and lock into place.

## 6 MicroLogix 1200 Isolated Relay Output Module

Use DIN rail end anchors (Allen-Bradley part number 1492-EA35 or 1492-EAH35) for environments with vibration or shock concerns.



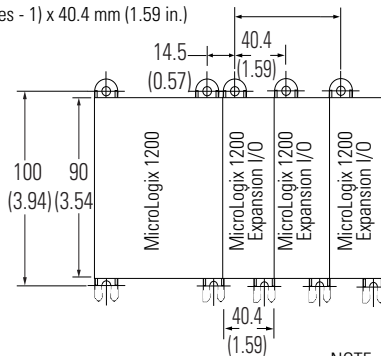
### TIP

For environments with extreme vibration and shock concerns, use the panel mounting method described below, instead of DIN rail mounting.

## Panel Mounting

Use the dimensional template shown below to mount the module. The preferred mounting method is to use two M4 or #8 panhead screws per module. M3.5 or #6 panhead screws may also be used, but a washer may be needed to ensure a good ground contact. Mounting screws are required on every module.

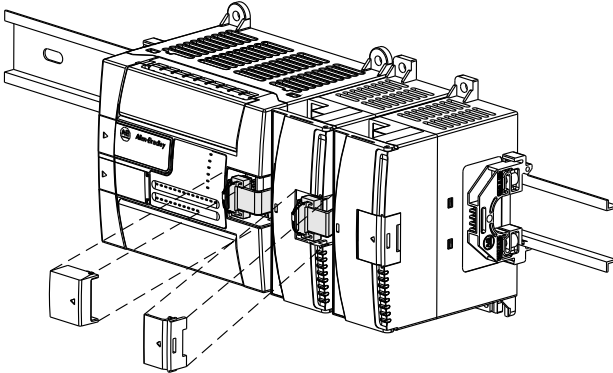
For more than 2 modules: (number of modules - 1) x 40.4 mm (1.59 in.)



NOTE:  
Hole spacing tolerance:  
±0.4 mm (0.016 in.).

## System Assembly

The expansion I/O module is attached to the controller or another I/O module by means of a ribbon cable *after* mounting as shown below.



### TIP

Use the pull loop on the connector to disconnect modules. Do not pull on the ribbon cable.

### WARNING



#### EXPLOSION HAZARD

- In Class I, Division 2 applications, the bus connector must be fully seated and the bus connector cover must be snapped in place.
- In Class I, Division 2 applications, all modules must be mounted in direct contact with each other as shown on page 5. If DIN rail mounting is used, an end stop must be installed ahead of the controller and after the last 1762 I/O module.

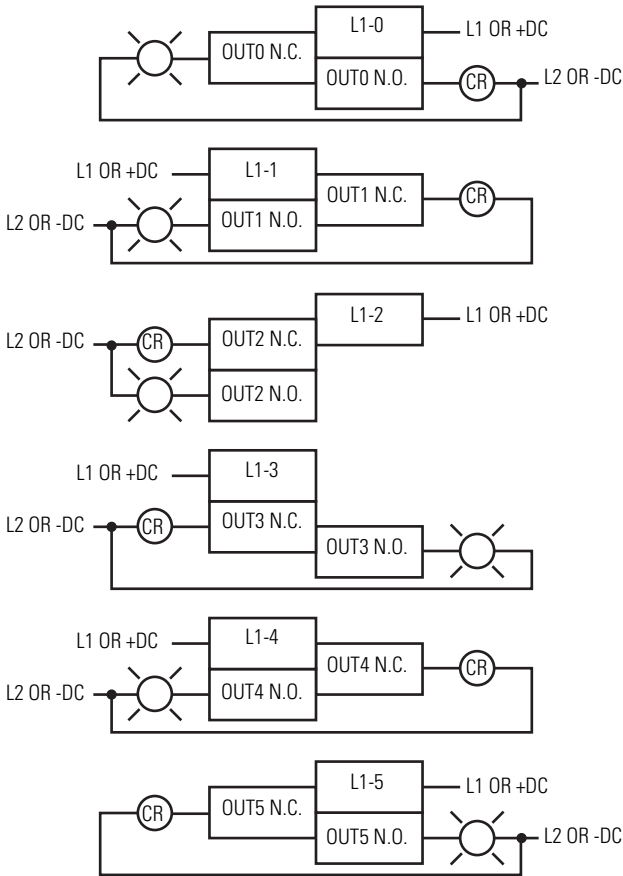
## Field Wiring Connections

### Grounding the Module

This product is intended to be mounted to a well-grounded mounting surface such as a metal panel. Additional grounding connections from the module's mounting tabs or DIN rail (if used) are not required unless the mounting surface cannot be grounded. Refer to *Industrial Automation Wiring and Grounding Guidelines*, Allen-Bradley publication 1770-4.1, for additional information.

## Output Wiring

Basic wiring<sup>(1)</sup> of the 1762-OX6I is shown below.

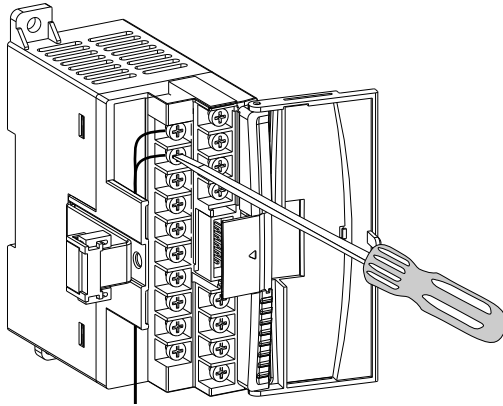


## Labeling the Terminals

A write-on label is provided with the module. Mark the identification of each terminal with permanent ink, and slide the label back into the door.

(1) **Surge Suppression** – Connecting surge suppressors across your external inductive load will extend the life of the relay contacts. For additional details, refer to *Industrial Automation Wiring and Grounding Guidelines*, publication 1770-4.1.





## Wiring the Finger-Safe Terminal Block

### ATTENTION



Be careful when stripping wires. Wire fragments that fall into a module could cause damage when power is applied. Once wiring is complete, ensure the module is free of all metal fragments.

When wiring the terminal block, keep the finger-safe cover in place.

1. Route the wire under the terminal pressure plate. You can use the stripped end of the wire or a spade lug. The terminals will accept a 6.35 mm (0.25 in.) spade lug.
2. Tighten the terminal screw making sure the pressure plate secures the wire. Recommended torque when tightening terminal screws is 0.904 Nm (8 in-lbs).
3. After wiring is complete, remove the debris shield.

### TIP

If you need to remove the finger-safe cover, insert a screw driver into one of the square wiring holes and gently pry the cover off. If you wire the terminal block with the finger-safe cover removed, you will not be able to put it back on the terminal block because the wires will be in the way.

## Wire Size and Terminal Screw Torque

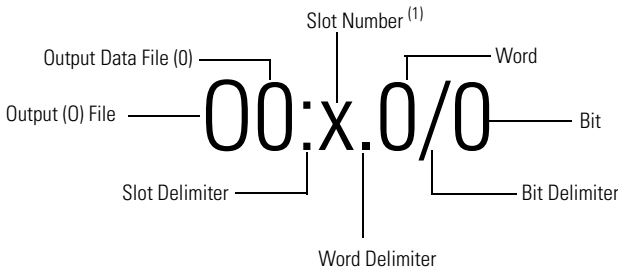
Each terminal accepts up to two wires with the following restrictions:

Wire Type		Wire Size	Terminal Screw Torque
Solid	Cu-90 °C (194 °F)	14...22 AWG	0.904 Nm (8 lb-in)
Stranded	Cu-90 °C (194 °F)	16...22 AWG	0.904 Nm (8 lb-in)

## I/O Memory Mapping

### Addressing

The addressing scheme for 1762-OX6I is shown below.



(1) I/O located on the controller (embedded I/O) is slot 0. I/O added to the controller (expansion I/O) begins with slot 1.

### Output Data File

Relay outputs are controlled using the bit positions in Word 0, as follows:

- 1 = relay energized (normally-open contact ON)
- 0 = relay not energized (normally-closed contact ON)

For each module, the output data file contains the controller-directed state of the discrete output points. Bit positions 0...5 correspond to output points 0...5.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	0	0	0	0	0	0	0	0	0	0	w	w	w	w	w	w

w = write only; 0 = always at 0 or OFF state

# Specifications

## General Specifications

Specification	Value
Dimensions, H x W x D	90 x 40 x 87 mm height including mounting tabs is 110 mm 3.54 x 1.58 x 3.43 in. height including mounting tabs is 4.33 in.
Approximate Shipping Weight (with carton)	220 g (0.485 lbs.)
Temperature, nonoperating	-40...85 °C (-40...185 °F)
Temperature, operating	0...55°C (-32...131°F)
Operating humidity	5...95% non-condensing
Operating altitude	2000 m (6561 ft)
Vibration	Operating: 10...500 Hz, 0.030 in. max. peak-to-peak DIN Rail Mounting: N.O. 2.5G, N.C. 2.5G Panel Mounting: N.O. 2.5G, N.C. 0.5G
Shock	Operating: 30 g
Module power LED	On: indicates power is applied.
Vendor ID Code	1
Product type code	7
Product code	124
Hazardous Environment Class	Class I, Division 2, Hazardous Location, Groups A, B, C, D ISA/ANSI12.12.01 (C-UL under CSA C22.2 No. 213)
Noise Immunity	NEMA standard ICS 2-230
Radiated and Conducted Emissions	EN50081-2 Class A
<i>Electrical /EMC:</i>	<i>The module has passed testing at the following levels:</i>
ESD Immunity (EN61000-4-2)	4 kV contact, 8 kV air, 4 kV indirect
Radiated Immunity (EN61000-4-3)	10 V/m, 80 to 1000 MHz, 80% amplitude modulation,
Fast Transient Burst (EN61000-4-4)	2 kV, 5 kHz
Surge Immunity (EN61000-4-5)	2 kV common mode, 1 kV differential mode
Conducted Immunity (EN61000-4-6)	10V, 0.15...80 MHz <sup>(1)</sup>

(1) Conducted Immunity frequency range may be 150 kHz to 30 MHz if the Radiated Immunity frequency range is 30 MHz to 1000 MHz.

## Certifications

Certification (when product is marked) <sup>(1)</sup>	Value
c-UL-us	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E322657  UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S and Canada. See UL File E334470.
CE	European Union 2004/108/EC EMC Directive, compliant with: EN 61326-1; Meas./Control/Lab., Industrial Requirements EN 61000-6-2; Industrial Immunity EN 61000-6-4; Industrial Emissions EN 61131-2; Programmable Controllers (Clause 8, Zone A & B)  European Union 2006/95/EC LVD, compliant with: EN 61131-2; Programmable Controllers (Clause 11)
C-Tick	Australian Radiocommunications Act, compliant with: AS/NZS CISPR 11; Industrial Emissions
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: Article 58-2 of Radio Waves Act, Clause 3

(1) See product certification link at <http://www.rockwellautomation.com/products/certification> for Declaration of Conformity, Certificates, and other certification details.

## Output Specifications

Specification	Value
Voltage Category	AC/DC Type C relay
Operating Voltage Range	5...265V AC 5...125V DC
Number of Outputs	6
Bus Current Draw (max.)	110 mA at 5V DC 110 mA at 24V DC
Heat Dissipation	2.8 W
Signal Delay (max.) -Resistive Load <sup>(1)</sup>	On Delay: 10 ms (max.), 6 ms (typical) Off Delay: 20 ms (max.), 12 ms (typical)
Off-State Leakage Current	0 mA
On-State Current	100 mA at 5V DC <sup>(2)</sup>
Continuous Current per Point	7 A max. (See Relay Contact Ratings below.)
Continuous Current Per Module (max.)	See Module Load Ratings on page 14.
Power Supply Distance Rating	6

## Output Specifications

Specification	Value
Isolated Groups	Outputs 0 to 5: Individually isolated
Output Group to Backplane Isolation	Verified by one of the following dielectric tests: 1836V AC for 1 second or 2596V DC for 2 seconds. 265V AC working voltage (IEC Class 2 reinforced insulation)
Output Group to Output Group Isolation	Verified by one of the following dielectric tests: 1836V AC for 1 second or 2596V DC for 2 seconds. 265V AC working voltage (basic insulation) 150V AC working voltage (IEC Class 2 reinforced insulation)

(1) Relay on-delay time does not include contact bounce time.

(2) This value is for reference only.

## Relay Contact Ratings

Volts (max.) (AC:50/60 Hz)	Maximum Amps per Point (Resistive) <sup>(1)</sup>	Pilot Duty <sup>(2)</sup>		Voltamperes	
		Make	Break	Make	Break
240V AC	5.0 A	15 A	1.5 A	3600 VA	360 VA
120V AC	7.0 A <sup>(3)</sup>	30 A	3.0 A		
125V DC	0.4 A	0.4 A		50 VA <sup>(4)</sup>	
24V DC	7.0 A <sup>(3)</sup>	3.0 A		72 VA <sup>(4)</sup>	

(1) The continuous current per module must be limited so the module power does not exceed 1440VA.

(2) **Surge Suppression** – Connecting surge suppressors across your external inductive load will extend the life of the relay contacts. For additional details, refer to *Industrial Automation Wiring and Grounding Guidelines*, publication 1770-4.1.

(3) 6 A in ambient temperatures above 40°C.

(4) DC Make/Break Voltamperes must be limited to 50 VA for DC voltages between 28V DC and 125V DC. DC Make/Break Voltamperes below 28V DC are limited by the 3 A Make/Break current limit.

### IMPORTANT

Controller must be operated within Relay Contact Ratings (above) *and* Module Load Ratings (page 14).

## Module Load Ratings

Volts (max.)	Controlled Load (Current) per Module (max.)
240V AC	12 A <sup>(1)</sup>
120V AC	12 A <sup>(1)</sup>
125V DC	2.4 A
24V DC	30 A <sup>(2)</sup>

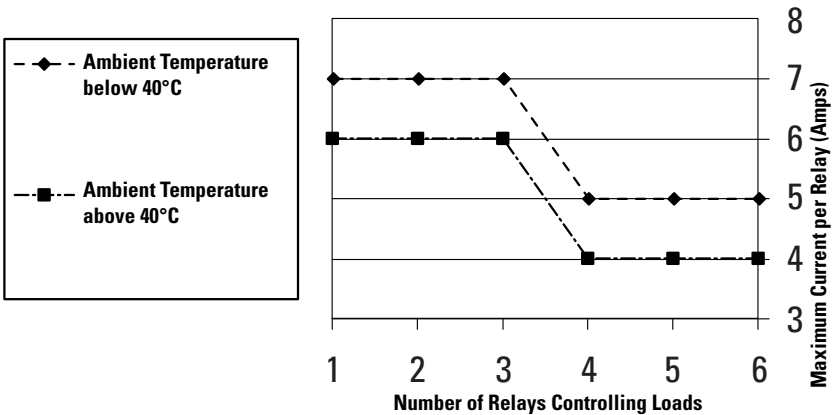
(1) Current per relay limited to 6A at ambient temperatures above 40°C.

(2) 24A in ambient temperatures above 40°C. Limited by ambient temperature and the number of relays controlling loads. See below.

### IMPORTANT

Controller must be operated within Relay Contact Ratings (page 13) *and* Module Load Ratings (above).



## Relays Used vs. Maximum Current per Relay (24V DC)



## North American Hazardous Location Approval

This equipment is suitable for use in Class I, Division 2, Groups A, B, C, D or non-hazardous locations only.

The following WARNING statement applies to use in hazardous locations.

<b>The following information applies when operating this equipment in hazardous locations:</b>	<b>Informations sur l'utilisation de cet équipement en environnements dangereux:</b>
<p>Products marked "CL I, DIV 2, GP A, B, C, D" are suitable for use in Class I Division 2 Groups A, B, C, D, Hazardous Locations and nonhazardous locations only. Each product is supplied with markings on the rating nameplate indicating the hazardous location temperature code. When combining products within a system, the most adverse temperature code (lowest "T" number) may be used to help determine the overall temperature code of the system. Combinations of equipment in your system are subject to investigation by the local Authority Having Jurisdiction at the time of installation.</p>	<p>Les produits marqués "CL I, DIV 2, GP A, B, C, D" ne conviennent qu'à une utilisation en environnements de Classe I Division 2 Groupes A, B, C, D dangereux et non dangereux. Chaque produit est livré avec des marquages sur sa plaque d'identification qui indiquent le code de température pour les environnements dangereux. Lorsque plusieurs produits sont combinés dans un système, le code de température le plus défavorable (code de température le plus faible) peut être utilisé pour déterminer le code de température global du système. Les combinaisons d'équipements dans le système sont sujettes à inspection par les autorités locales qualifiées au moment de l'installation.</p>
<p style="text-align: center;"><b>WARNING</b></p> 	<p style="text-align: center;"><b>EXPLOSION HAZARD</b></p> <ul style="list-style-type: none"> <li>• Substitution of components may impair suitability for Class I, Division 2.</li> <li>• Do not replace components or disconnect equipment unless power has been switched off.</li> <li>• Do not connect or disconnect components unless power has been switched off.</li> <li>• This product must be installed in an enclosure.</li> <li>• In Class I, Division 2 applications, the bus connector must be fully seated and the bus connector cover must be snapped in place.</li> <li>• In Class I, Division 2 applications, all modules must be mounted in direct contact with each other as shown on page 5. If DIN rail mounting is used, an end stop must be installed ahead of the controller and after the last 1762 I/O module.</li> <li>• All wiring must comply with N.E.C. article 501-4(b).</li> <li>• The interior of the enclosure must be accessible only by the use of a tool.</li> <li>• For applicable equipment (relay modules, etc.), exposure to some chemicals may degrade the sealing properties of materials used in the following devices: Relays, Epoxy. It is recommended that the User periodically inspect these devices for any degradation of properties and replace the module if degradation is found.</li> </ul>
<p style="text-align: center;"><b>AVERTISSEMENT</b></p> 	<p style="text-align: center;"><b>RISQUE D'EXPLOSION</b></p> <ul style="list-style-type: none"> <li>• La substitution de composants peut rendre cet équipement impropre à une utilisation en environnement de Classe 1, Division 2.</li> <li>• Ne pas remplacer de composants ou déconnecter l'équipement sans s'être assuré que l'alimentation est coupée.</li> <li>• Ne pas connecter ou déconnecter des composants sans s'être assuré que l'alimentation est coupée.</li> <li>• Ce produit doit être installé dans une armoire.</li> <li>• Pour les applications de Classe I, Division 2, le connecteur de bus doit être correctement installé et son couvercle enclenché.</li> <li>• Pour les applications de Classe 1, Division 2, tous les modules doivent être installés en contact direct les uns avec les autres, comme indiqué page 6. Si on utilise le montage sur rail DIN, une butée doit être placée à l'avant de l'automate et après la dernière unité d'E/S 1762.</li> </ul>

# Rockwell Automation Support

Rockwell Automation provides technical information on the Web to assist you in using its products. At <http://www.rockwellautomation.com/support/>, you can find technical manuals, a knowledge base of FAQs, technical and application notes, sample code and links to software service packs, and a MySupport feature that you can customize to make the best use of these tools.

For an additional level of technical phone support for installation, configuration and troubleshooting, we offer TechConnect support programs. For more information, contact your local distributor or Rockwell Automation representative, or visit <http://www.rockwellautomation.com/support/>.

## Installation Assistance

If you experience a problem within the first 24 hours of installation, please review the information that's contained in this manual. You can also contact a special Customer Support number for initial help in getting your product up and running.

United States or Canada	1.440.646.3434
Outside United States or Canada	Use the <a href="#">Worldwide Locator</a> at <a href="http://www.rockwellautomation.com/support/americas/phone_en.html">http://www.rockwellautomation.com/support/americas/phone_en.html</a> , or contact your local Rockwell Automation representative.

## New Product Satisfaction Return

Rockwell Automation tests all of its products to ensure that they are fully operational when shipped from the manufacturing facility. However, if your product is not functioning and needs to be returned, follow these procedures.

United States	Contact your distributor. You must provide a Customer Support case number (call the phone number above to obtain one) to your distributor to complete the return process.
Outside United States	Please contact your local Rockwell Automation representative for the return procedure.

## Documentation Feedback

Your comments will help us serve your documentation needs better. If you have any suggestions on how to improve this document, complete this form, publication [RA-DU002](#), available at <http://www.rockwellautomation.com/literature/>.

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