

Installation Instructions

Original Instructions



Allen-Bradley

by ROCKWELL AUTOMATION

MicroLogix 1200 Solid-state 24V DC Source Output Module

Catalog Number 1762-0B8

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Summary of Changes

This publication contains the following new or updated information. This list includes substantive updates only and is not intended to reflect all changes.

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Product Overview

The 1762-0B8 MicroLogix™ 1200 expansion I/O module 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^(a)) and to circuits not exceeding Over Voltage Category II^(b) (IEC 60664-1)^(c).

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

(b) 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.

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

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 are present and appropriately designed to help prevent personal injury resulting from accessibility to live parts. The enclosure must have suitable flame-retardant properties to help 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.

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.

North American Hazardous Location Approval

The following information applies when operating this equipment in hazardous locations.	Informations sur l'utilisation de cet équipement en environnements dangereux.
Products marked "CL I, DIV 2, GP A, B, C, D" are suitable for use in Class I Division 2 Groups A, B, C, D, Hazardous Locations and nonhazardous locations only. Each product is supplied with markings on the rating nameplate indicating the hazardous location temperature code. When combining products within a system, the most adverse temperature code (lowest "T" number) may be used to help determine the overall temperature code of the system. Combinations of equipment in your system are subject to investigation by the local Authority Having Jurisdiction at the time of installation.	Les produits marqués "CL I, DIV 2, GP A, B, C, D" ne conviennent qu'à une utilisation en environnements de Classe I Division 2 Groupes A, B, C, D dangereux et non dangereux. Chaque produit est livré avec des marquages sur sa plaque d'identification qui indiquent le code de température pour les environnements dangereux. Lorsque plusieurs produits sont combinés dans un système, le code de température le plus défavorable (code de température le plus faible) peut être utilisé pour déterminer le code de température global du système. Les combinaisons d'équipements dans le système sont sujettes à inspection par les autorités locales qualifiées au moment de l'installation.
 WARNING: Explosion Hazard - - Do not disconnect equipment unless power has been removed or the area is known to be nonhazardous. - Do not disconnect connections to this equipment unless power has been removed or the area is known to be nonhazardous. Secure any external connections that mate to this equipment by using screws, sliding latches, threaded connectors, or other means provided with this product. - Substitution of components may impair suitability for Class I Division 2. - If this product contains batteries, they must only be changed in an area known to be nonhazardous.	 AVERTISSEMENT: Risque d'explosion - - Couper le courant ou s'assurer que l'environnement est classé non dangereux avant de débrancher l'équipement. - Couper le courant ou s'assurer que l'environnement est classé non dangereux avant de débrancher les connecteurs. Fixer tous les connecteurs externes reliés à cet équipement à l'aide de vis, loquets coulissants, connecteurs filetés ou autres moyens fournis avec ce produit. - La substitution de composants peut rendre cet équipement inadapté à une utilisation en environnement de Classe I Division 2. - S'assurer que l'environnement est classé non dangereux avant de changer les piles.



WARNING: Special Conditions for Safe Use

- This product must be installed in an enclosure. All cables connected to the product must remain in the enclosure or be protected by conduit or other means.
- The local programming terminal port is intended for temporary use only and must not be connected or disconnected unless the area is free of ignitable, concentrations of flammable gases or vapors.



ATTENTION:

Remove power before removing or installing this module. When you remove or install a module with power applied, an electric arc may occur. An electric 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 electric arcing causes excessive wear to contacts on both the module and its mating connector. Worn contacts may create electrical resistance.
- 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.
 - During panel or DIN rail mounting of all devices, be sure that all debris (metal chips, wire strands, and so on) is kept from falling into the module. Debris that falls into the module could cause damage when power is applied to the module.

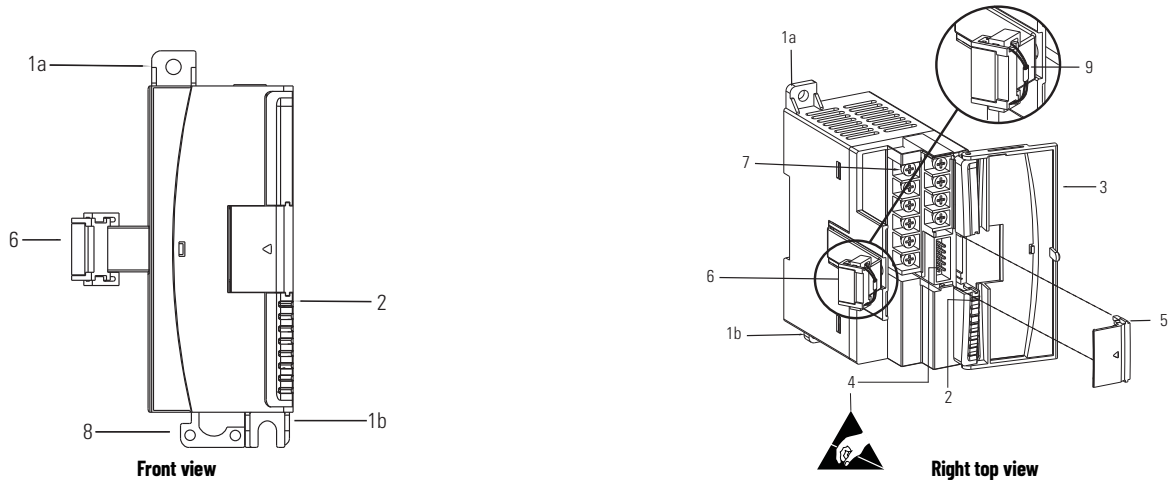
IMPORTANT

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



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

Figure 1 - 1762-0B8 Module Overview



Module Description

	Description		Description
1 a	Upper panel mounting tab	5	Bus connector cover
1 b	Lower panel mounting tab	6	Flat ribbon cable with bus connector (female pins)
2	I/O diagnostic status indicators	7	Terminal block
3	Module door with terminal identification label	8	DIN rail latch
4	Bus connector with male pins	9	Pull loop



This equipment is sensitive to electrostatic discharge (ESD).
Follow ESD prevention guidelines when handling this equipment.

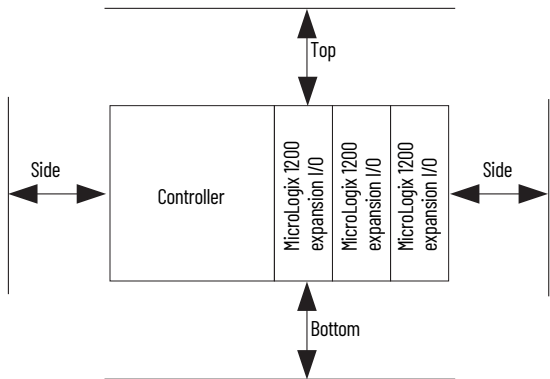
Mount the Module

For more information on proper grounding guidelines, see the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

Module Spacing

Maintain spacing from objects such as enclosure walls, wireways, and adjacent equipment. Allow 50.8 mm (2 in.) of space on all sides for adequate ventilation, as shown in [Figure 2](#).

Figure 2 - Mounting Dimensions and DIN Rail Mounting



IMPORTANT MicroLogix 1200 expansion I/O can be mounted horizontally only.

DIN Rail Mounting

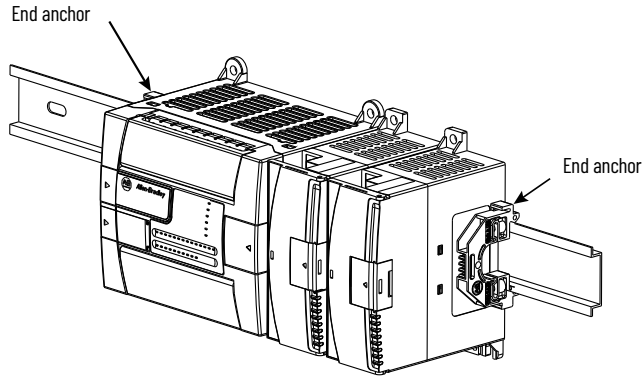
The module can be mounted using the following DIN rails: 35 x 7.5 mm (EN 50 022 - 35 x 7.5) or 35 x 15 mm (EN 50 022 - 35 x 15).



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

Before mounting the module on a DIN rail, close the DIN rail latch.

1. Press the DIN rail mounting area of the module against the DIN rail. The latch opens momentarily and locks into place.
2. Use DIN rail end anchors (Allen-Bradley® part number 1492-EAJ35 or 1492-EAHJ35) for vibration or shock environments.

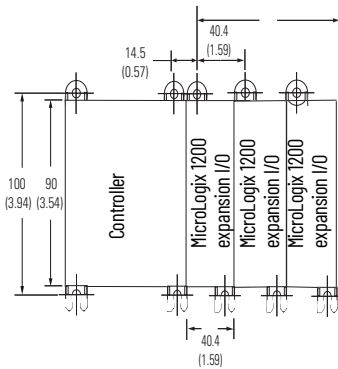


Panel Mounting

Use the dimensional template shown in [Figure 3](#) to mount the module. The preferred mounting method is to use two M4 or #8 pan head screws per module. You can also use M3.5 or #6 pan head screws, but you may need a washer to achieve a good ground current. Mounting screws are required on every module.

Figure 3 - Dimensional Template

For more than two modules:
(number of modules - 1) x 40 mm (1.58 in.)

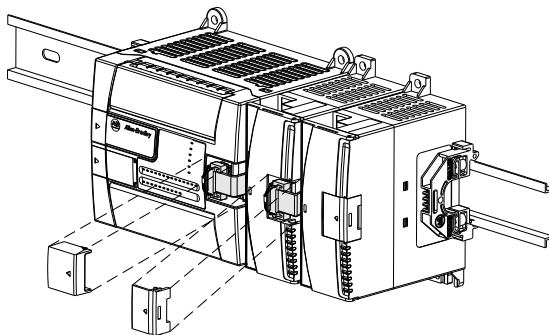


NOTE: All dimensions are in mm (inches). Hole spacing tolerance: ± 0.4 mm (0.016 in.).

System Assembly

The expansion I/O module is attached to the controller or another I/O module with a flat ribbon cable after mounting as shown in [Figure 4](#).

Figure 4 - Expansion I/O Assembly



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

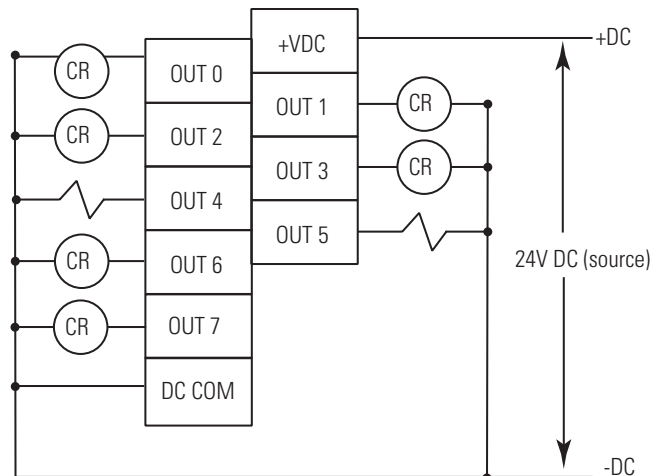
Field Wiring Connections

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. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#) for additional information.

Wire the Module

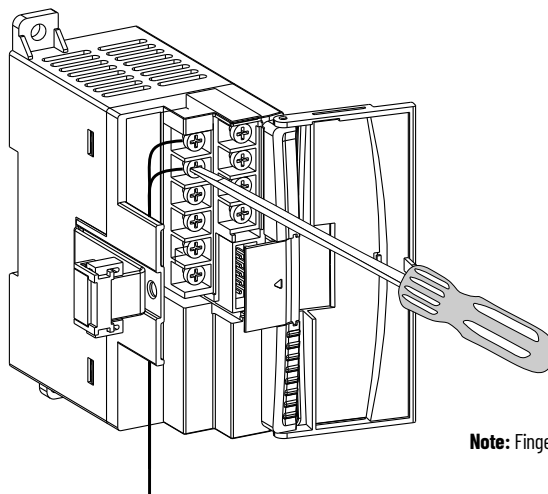
Basic wiring^(a) of input devices to the 1762-0B8 is shown in [Figure 5](#).

Figure 5 - Basic Wiring to the Module



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.

Wire the Fingersafe Terminal Block



Note: Fingersafe cover not shown.

When wiring the terminal block, keep the fingersafe 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 accept a 6.35 mm (0.25 in.) spade lug.
2. Tighten the terminal screw making sure that the pressure plate secures the wire. Recommended torque for terminal screws is 0.904 N•m (8 lb•in).



If you must remove the fingersafe cover, insert a screwdriver into one of the square wiring holes and gently pry the cover off. If you wire the terminal block with the fingersafe cover removed, you cannot put it back on the terminal block because the wires are in the way.

(a) Surge Suppression – Connecting surge suppressors across your external inductive load extends the life of the relay contacts. For additional details, see the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

I/O Memory Mapping

Input Data File

For each output module, the output data file contains the controller-directed state of the discrete output points. Bit positions 0...7 correspond to output terminals 0...7.

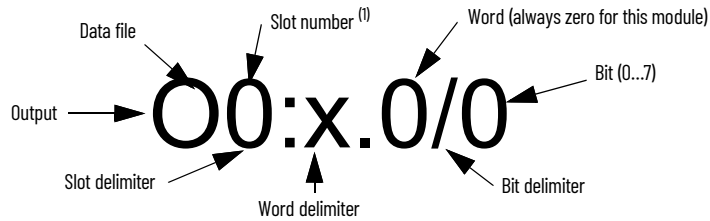
Bit Position																
Words	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	0	0	0	0	0	0	0	0	W	W	W	W	W	W	W	W

W = Write-only, 0 = Always at a 0 or OFF state.

Addressing

The addressing scheme for MicroLogix 1200 expansion I/O is shown in [Figure 6](#).

Figure 6 - Addressing Scheme



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

Module Specifications

General Specifications

Attribute	Value												
Dimensions HxWxD	Without mounting tabs: 90 x 40 x 87 mm (3.54 x 1.57 x 3.42 in.) With mounting tabs: 90 x 40 x 110 mm (3.54 x 1.57 x 4.33 in.)												
Shipping weight, approx.	210 g (7.41 oz)												
Voltage range, operating	5V...265V AC 5V...125V DC												
Bus current draw, max	115 mA @ 5V DC (0.575 W)												
Enclosure type rating	None (open-style)												
Wire size	<table><tr><th rowspan="2">Wire Type</th><th colspan="2">Wire Size</th><th rowspan="2">Wire Type</th></tr><tr><th>Min</th><th>Max</th></tr><tr><td>Solid</td><td rowspan="2">0.33 mm² (22 AWG)</td><td>2.08 mm² (14 AWG)</td><td rowspan="2">Copper wire rated @ 90 °C (194 °F)</td></tr><tr><td>Stranded</td><td>1.31 mm² (16 AWG)</td></tr></table>	Wire Type	Wire Size		Wire Type	Min	Max	Solid	0.33 mm ² (22 AWG)	2.08 mm ² (14 AWG)	Copper wire rated @ 90 °C (194 °F)	Stranded	1.31 mm ² (16 AWG)
Wire Type	Wire Size		Wire Type										
	Min	Max											
Solid	0.33 mm ² (22 AWG)	2.08 mm ² (14 AWG)	Copper wire rated @ 90 °C (194 °F)										
Stranded		1.31 mm ² (16 AWG)											
Terminal screw torque	0.90 N•m (8 lb•in) ⁽¹⁾												
Status indicators	1 green health indicator 4 red error indicators												

(1) Tighten RTB hold down screws by hand. Do not tighten the screws with a power tool.

Output Specifications

Attribute	Value
Number of outputs	8
Voltage category	AC/DC normally open relay
Signal delay, max (resistive load) ⁽¹⁾	On delay: 0.1 ms Off delay: 1.0 ms
Off-state leakage, max ⁽²⁾	1.0 mA
On-state current, min	1.0 mA
On-state voltage drop, max	1.0V DC
Continuous current per point, max	0.5 A @ 55 °C (131 °F) 1.0 A @ 30 °C (86 °F)
Continuous current per module, max	4.0 A @ 55 °C (131 °F) 8.0 A @ 30 °C (86 °F)
Power supply distance rating	6
Isolated groups	Group 1: Output 0...7

Output Specifications (Continued)

Attribute	Value
Output group to backplane isolation	Verified by one of the following dielectric tests: 1200V AC for 1 s or 1697V DC for 1 s. 75V AC working voltage (IEC Class 2 reinforced insulation)
Surge current, max ⁽³⁾	2.0 A (Repeatability is once every 2 s for a duration of 10 ms.)
Vendor ID code	1
Product type code	7
Product code	101

(1) Turn On Type - Triac outputs turn On at AC line zero cross, and Off at zero current.

(2) Recommended Loading Resistor - To limit the effects of leakage current through solid-state outputs, connect a loading resistor in parallel with your load. For 120V AC operation, use a 15 k Ω , 2 W resistor. For 240V AC operation, use a 15 k Ω , 5 W resistor.

(3) Surge Suppression - Connect surge suppressors across your inductive loads reduces the stress on your triac outputs and to help minimize the load-induced electromagnetic emissions that are conducted on your plant wiring. For 120V loads, we recommend the Littelfuse-Harris surge suppressor, part number V175LA10A MOV or an equivalent device. For 240V loads, we recommend the Littelfuse-Harris surge suppressor, part number V250LA20A MOV or an equivalent device.

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): 0 °C ≤ Ta ≤ +55 °C (+32 °F ≤ Ta ≤ +131 °F)
Temperature, ambient, max	55 °C (131 °F)
Temperature, surrounding air, max	55 °C (131 °F)
Temperature, nonoperating	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 °C...+85 °C (-40 °F...+185 °F)
Relative humidity	IEC 60068-2-30 (Test Db, Unpackaged Damp Heat): 5...95% noncondensing
Vibration	IEC 60068-2-6 (Test Fc, Operating): 5 g @ 10...500 Hz
Shock, operating, panel mounted	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	IEC 61000-4-2: 4 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...1000 MHz
Surge transient immunity	IEC 61000-4-5: ±1 kV line-line(DM) and ±2 kV line-earth(CM) on signal ports
Conducted RF immunity	IEC 61000-4-6: 10V rms with 1 kHz sine wave 80% AM from 150 kHz...80 MHz

Certifications

Certification (when product is marked) ⁽¹⁾	Value
c-UL-us	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 2014/30/EU EMC Directive, compliant with: EN 61000-6-2; Industrial Immunity EN 61000-6-4; Industrial Emissions EN 61131-2; Programmable Controllers (Clause 8, Zone A & B) European Union 2014/35/EU LVD, compliant with: EN 61131-2; Programmable Controllers (Clause 11) European Union 2011/65/EU RoHS, compliant with: EN 63000; Technical documentation
RCM	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
Morocco	Arrêté ministériel n° 6404-15 du 1 er muharram 1437 Arrêté ministériel n° 6404-15 du 29 ramadan 1436
UKCA	2016 No. 1091 – Electromagnetic Compatibility Regulations 2016 No. 1101 – Electrical Equipment (Safety) Regulations 2012 No. 3032 – Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations

(1) See the Product Certification link at rok.auto/certifications for Declaration of Conformity, Certificates, and other certification details.

Additional Resources

For more information on the products that are described in this publication, use these resources. You can view or download publications at rok.auto/literature.

Resource	Description
Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1	More information on proper wiring and grounding techniques.
Product Certifications website, rok.auto/certifications	Provides declarations of conformity, certificates, and other certification details.