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Find the *Rockwell / Allen-Bradley 1771-OA* at our website: *Click HERE*

AC Output Module
(Catalog Number 1771-OA)

To The Installer

This document provides information on:

To	See page
Important User Information	1
Pre-installation Considerations	4
Calculate Power Requirements	4
Determine Module Placement	4
Prevent Electrostatic Discharge	4
Key the Backplane Connector	5
Install the Module and Field Wiring Arm	6
Connect Wiring to the Field Wiring Arm	7
For this reference information	**See page**
Interpreting the Status Indicators	10
Replacing a Fuse	10
Hazardous Location Approval	11
Specifications	11

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.

Publication 1771-IN080A-EN-P – November 2002

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Allen–Bradley publication SGI–1.1, Safety Guidelines for 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 may 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.

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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 enclosures. 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.

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Pre–installation Considerations

This module contains the circuitry necessary to control the on/off status of eight user devices. The devices can be:

- ac motor starters
- indicators
- solenoids

An output can drive an Allen–Bradley Size 4 motor starter, provided its supply voltage does not drop below 92V ac. The maximum load current the module can deliver is 1.5A per channel, not to exceed 6A total per module.

Calculate Power Requirements

The output module is powered by the power supply connected to the I/O chassis backplane. The module requires a maximum current of 210mA from the +5V dc output of this supply. Total the current requirements of this module with the other modules in the I/O chassis to avoid overloading the supply or the I/O chassis backplane.

Determine Module Placement

Group your modules to minimize adverse effects from radiated electrical noise and/or heat. We recommend the following:

- Group analog input and low voltage dc modules away from ac modules or high voltage dc modules to minimize electrical noise interference.
- Place analog input modules and other I/O modules sensitive to heat away from slot power supplies and rack controllers to minimize adverse heat effects.

ATTENTION



Preventing Electrostatic Discharge

This equipment is sensitive to electrostatic discharge, which can cause internal damage and affect normal operation. Follow these guidelines when you handle this equipment:

- Touch a grounded object to discharge potential static.
- Wear an approved grounding wriststrap.
- Do not touch connectors or pins on component boards.
- Do not touch circuit components inside the equipment.
- If available, use a static–safe workstation.
- When not in use, keep modules in appropriate static–safe packaging.

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Key the Backplane Connector

Place your module in any slot in the chassis except the leftmost slot which is reserved for processors or adapters.

ATTENTION Observe the following precautions when inserting or removing keys:

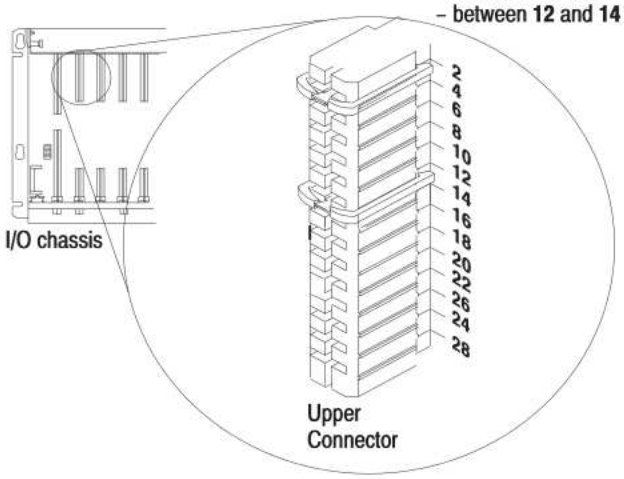


- insert or remove keys with your fingers
- make sure that key placement is correct

Incorrect keying or the use of a tool can result in damage to the backplane connector and possible system faults.

Position the keying bands in the backplane connectors to correspond to the key slots on the module.

Place the keying bands:
- between **4** and **6**
- between **12** and **14**



You can change the position of these bands if subsequent system design and rewiring makes insertion of a different type of module necessary.

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Install the Module and Field Wiring Arm

ATTENTION



Remove power from the 1771 I/O chassis backplane and wiring arm before removing or installing an I/O module.

- Failure to remove power from the backplane or wiring arm could cause module damage, degradation of performance, or injury.
- Failure to remove power from the backplane could cause injury or equipment damage due to possible unexpected operation.

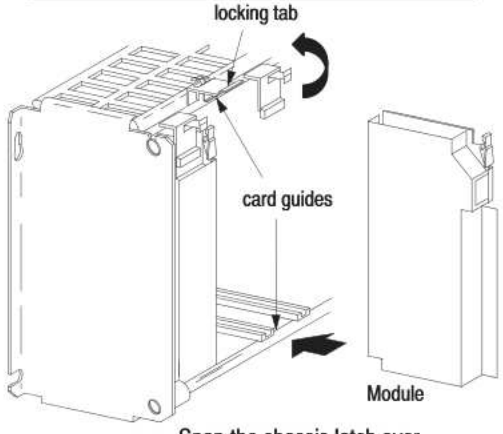
WARNING



When you insert or remove the module with field power applied, or connect or disconnect the field wiring arm with field side power applied, an electrical arc can occur. This could cause an explosion in hazardous location installations. Be sure that power is removed or the area is nonhazardous before proceeding.

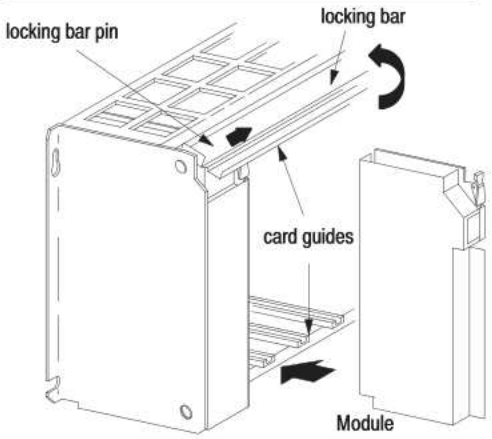
1

1771-A1B, -A2B, -A3B, -A3B1, -A4B I/O chassis



Snap the chassis latch over the top of the module to secure it.

1771-A1B, -A2B, -A3B1, -A4B Series B I/O chassis



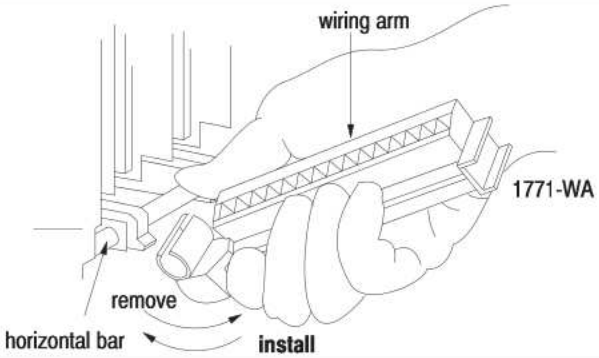
Swing the chassis locking bar down into place to secure the modules. Make sure the locking pins engage.

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2

Attach the wiring arm (1771-WA) to the horizontal bar at the bottom of the I/O chassis.

The wiring arm pivots upward and connects with the module so you can install or remove the module without disconnecting the wires.



17643

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The 1771–OA module is a modular component of the 1771 I/O system requiring a properly installed system chassis. Refer to publication 1771–IN075 for detailed information on acceptable chassis, proper installation and grounding requirements. Limit the maximum adjacent slot power dissipation to 15W maximum.

Connect Wiring to the Module

You make connections to the module through the 1771-WA field wiring arm shipped with the module. The arm pivots on the chassis to connect with the 8 terminals on the front of the module. The wiring arm allows the module to be removed from the chassis without disconnecting wiring.

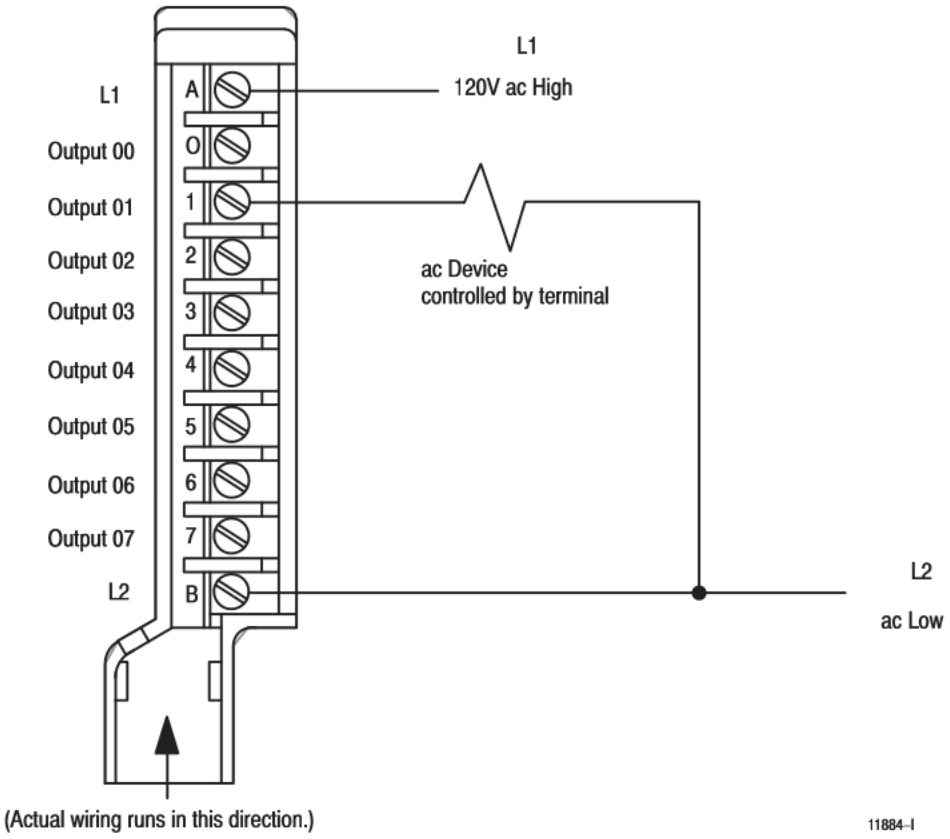
1. Make certain all power is removed from the module before making wiring connections.
2. Swing the wiring arm up into position on the front of the module. The locking tab on the module will secure it into place.
3. Make your connections to the field wiring arm as shown in Figure 1. (Use the label on the front of the wiring arm to identify your wiring.)

IMPORTANT The field wiring arm terminal identification number is not the same as the number of the bit which controls that output.

You should identify the labels on the wiring arm with the name or number of the device connected at each terminal.

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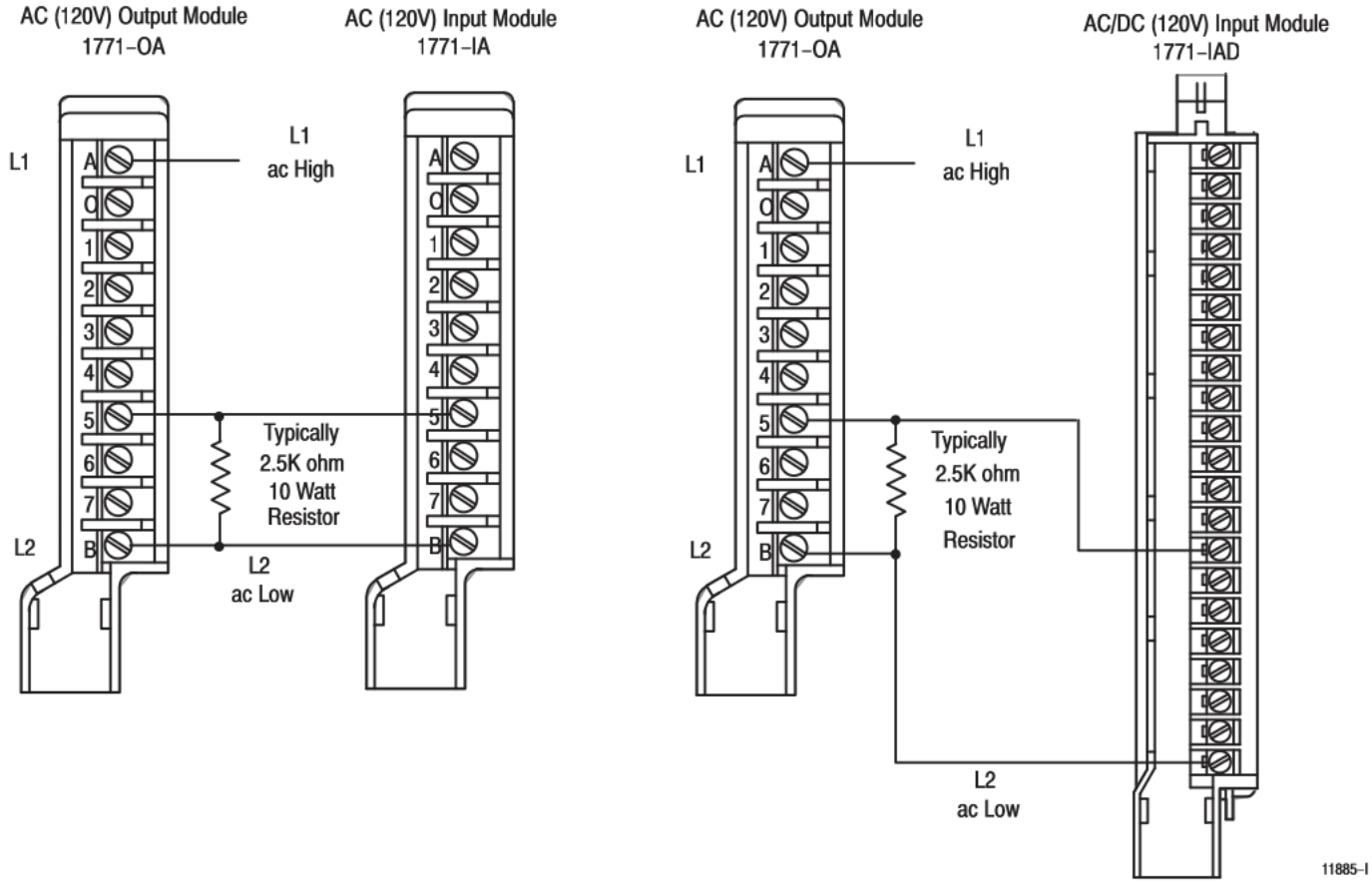
Figure 1
Connection Diagram



You can use an output of the 1771–OA module to drive an input of a 120V AC input module (1771–IA, –IA2, –ID and –IAD) to indicate status, such as the turning on a motor starter (Figure 2). However, you must add an external resistor between the output terminal and the common (L2) (Figure 2). Typically, this is a 2.5K ohm, 10W resistor.

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Figure 2
Using an Output Module to drive an Input Module



ATTENTION

The 1771–OA module outputs are not isolated. Maintain isolation between phases in multiple phase systems.

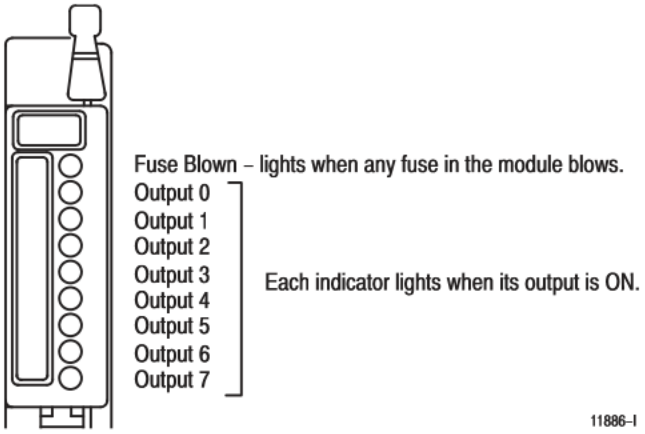
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Interpreting the Status Indicators

The module has eight neon status indicators (Figure 3) that show the state of each output. These indicators light when their corresponding outputs are energized.

The module also has an indicator that displays a blown–fuse condition at the respective output regardless of the state of the output. This indicator is driven by your field device power supply.

Figure 3
Status Indicators



Replacing a Fuse

Each module output is individually fused. You can easily access the module fuses by removing the front component–side cover.

ATTENTION



Remove power from the 1771 I/O chassis backplane and wiring arm before removing or installing the module.

- Failure to remove power from the backplane or field wiring arm could cause module damage, degradation of performance, or injury.
- Failure to remove power from the backplane could cause injury or equipment damage due to possible unexpected operation.

If a blown fuse occurs:

1. Turn off power to the I/O chassis backplane.
2. Pivot the wiring arm away from the module and pull the module from the I/O chassis.
3. Remove the front half of the protective cover from the unlabeled side of the module by removing the two slotted screws.
4. Replace the blown fuse with a 2A, 250V Buss AGC2 fuse.
5. Replace the protective cover and install the module in the I/O chassis.
6. Reposition the wiring arm.
7. Restart system power.

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The following information applies when operating this equipment in hazardous locations:

Products marked "CL I, DIV 2, GP A, B, C, D" are suitable for use in Class I Division 2 Groups A, B, C, and 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.

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.

Informations sur l'utilisation de cet équipement en environnements dangereux:

Les produits marqués CL I, DIV 2, GP A, B, C, D ne conviennent que 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 systéme, le code de température le plus défavorable (code de température le plus faible) peut eatre utilisé pour déterminer le code de température global du systéme. Les combinaisons d'equipements dans le systéme sont sujettes à inspection par les autorités locales qualifiées au moment de l'installation.

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 1, Division 2.
- S'assurer que l'environnement est classé non dangereux avant de changer les piles.

Specifications

Outputs per Module	8
Module Location	1771 I/O chassis
Output Voltage Range	92 to 138V ac @ 47 – 63Hz
Output Current Rating	1.5A per output – not to exceed 6A per module
Surge Current (maximum)	4A per output for 8.3ms at 120V ac, repeatable every 1s
Minimum Load Current	50mA per output @ 120V ac, 60Hz
On State Voltage Drop	2V at 100mA
Off State Leakage Current (max.)	5mA per output @ 120V ac

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Power Dissipation	10.7 Watts (max.), 1.1 Watts (min.)
Thermal Dissipation	36.6 BTU/hr (max.), 3.4 BTU/hr (min.)
Adjacent Slot Power Dissipation	15 Watts
Backplane Current	210mA @ 5V dc 5%
Opto–electrical Isolation	Tested to 1500V ac rms for 2s
Environmental Conditions	
Operational Temperature	IEC 60068–2–1 (Test Ad, Operating Cold) IEC 60068–2–2 (Test Bd, Operating Dry Heat) IEC 60068–2–14 (Test Nb, Operating Thermal Shock) 32 to 140°F (0 to 60°C)
Storage Temperature	IEC 60068–2–1 (Test Ab, Unpackaged, Nonoperating Cold) IEC 60068–2–2 (Test Bb, Unpackaged, Nonoperating Dry Heat) IEC 60068–2–14 (Test Na, Unpackaged, Nonoperating Thermal Shock) –40 to 185°F (–40 to 85°C)
Relative Humidity	IEC 60068–2–30 (Test Db, Unpackaged, Nonoperating Damp Heat) 5 to 95% noncondensing
Shock Operating Nonoperating	IEC 60068–2–27 (Test Ea, Unpackaged Shock) 30g 50g
Vibration	IEC 60068–2–6 (Test Fc, Operating) 2g @ 10–500Hz
Enclosure Type Rating	None (open style)
Keying	Between 4 and 6 Between 12 and 14
Fuses	2A, 250V Buss AGC2 fuse
Field Wiring Arm	Cat. No. 1771–WA
Field Wiring Arm Screw Torque	9 pound–inches (0.7Nm)
Conductors Wire Size	14–22AWG (2.5–0.25mm^2) stranded copper wire rated at 75ºC or greater[1] 3/64 inch (1.2mm) insulation (max)
Category	1[2]
Certifications (when product is marked)	UL UL Listed Industrial Control Equipment c–UL UL Listed for Class I, Division 2, Group A, B, C, D Hazardous Locations, certified for Canada

1 One or two 14–22 AWG solid or stranded copper wires per terminal. Must be same size. Do not intermix solid and stranded wires. Use copper wire only.
2 Use this conductor category information for planning conductor routing . Refer to publication 1770-4.1, "Industrial Automation Wiring and Grounding Guidelines."

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