



DC (24V) Isolated Output Module (Catalog Number 1771-OQ16 Series C)

To the Installer

This document provides information on:

To	See page
↓ Pre-installation Considerations	Below
↓ Understand Compliance to European Union Directives	1
↓ Calculate Power Requirements	2
↓ Determine Module Placement	2
↓ Prevent Electrostatic Discharge	3
↓ Key the Backplane Connector	3
↓ Install the Module and Field Wiring Arm	4
↓ Connect Wiring to the Field Wiring Arm	5

For this reference information	See page
➡ Status Indicators	7
➡ CSA Hazardous Location Approval	10
➡ Specifications	11

Pre-installation Considerations

This module is designed to operate with dc relays and other dc output devices.

This module can be used in all 1771 I/O chassis except 1771-A1, A2 and A4 chassis. It can also be used in the 1771-AM1 and -AM2 chassis.

This module is **not** compatible with the 1771-AL local I/O adapter.

Compliance to European Union Directives

If this product has the CE mark it is approved for installation within the European Union and EEA regions. It has been designed and tested to meet the following directives.

EMC Directive

This product is tested to meet Council Directive 89/336/EEC Electromagnetic Compatibility (EMC) and the following standards, in whole or in part, documented in a technical construction file:

- EN 50081-2EMC – Generic Emission Standard, Part 2 – Industrial Environment
- EN 50082-2EMC – Generic Immunity Standard, Part 2 – Industrial Environment

This product is intended for use in an industrial environment.

Low Voltage Directive

This product is tested to meet Council Directive 73/23/EEC Low Voltage, by applying the safety requirements of EN 61131-2 Programmable Controllers, Part 2 – Equipment Requirements and Tests.

For specific information required by EN 61131-2, see the appropriate sections in this publication, as well as Allen-Bradley publication 1770-4.1, “Industrial Automation Wiring and Grounding Guidelines For Noise Immunity.”

Open style devices must be provided with environmental and safety protection by proper mounting in enclosures designed for specific application conditions. See NEMA Standards publication 250 and IEC publication 529, as applicable, for explanations of the degrees of protection provided by different types of enclosure.

Calculate Power Requirements

The isolated output module is powered by the power supply connected to the I/O chassis backplane. The module requires a maximum current of 400mA 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 in the Chassis

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 to minimize adverse heat effects.

Prevent Electrostatic Discharge

The isolated output module is sensitive to electrostatic discharge.



ATTENTION: Electrostatic discharge can damage integrated circuits or semiconductors if you touch backplane 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 backplane 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 bag

Key the Backplane Connector

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



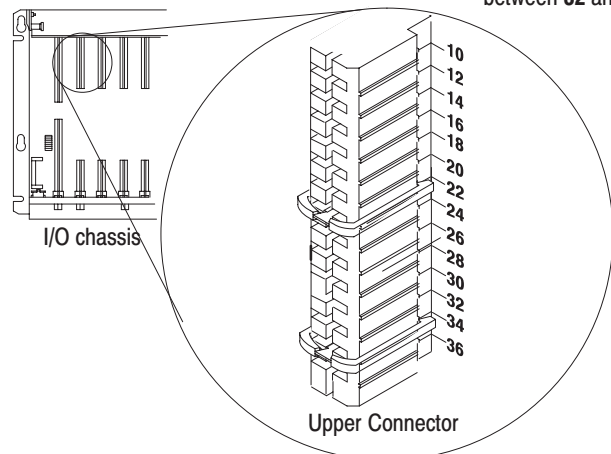
ATTENTION: Observe the following precautions when inserting or removing keys:

- 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 22 and 24
between 32 and 34



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

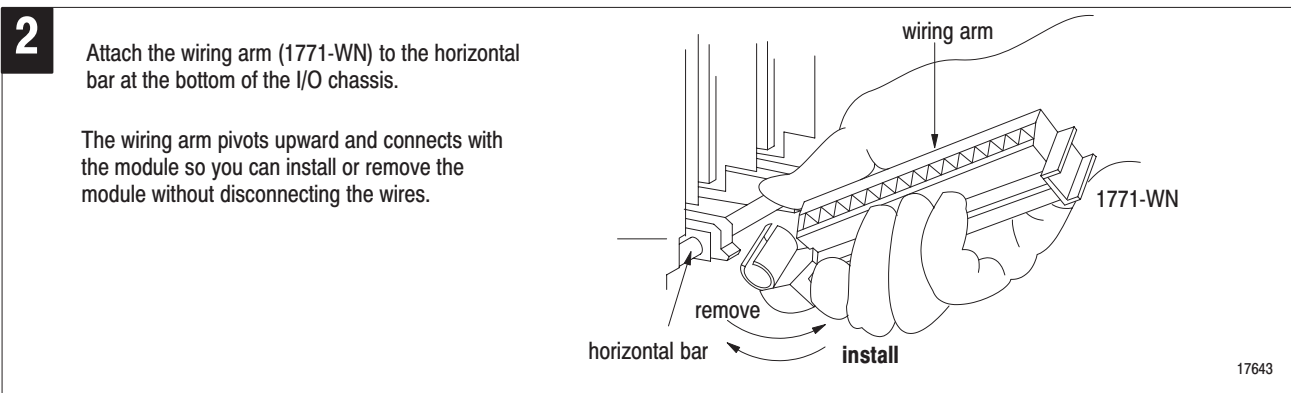
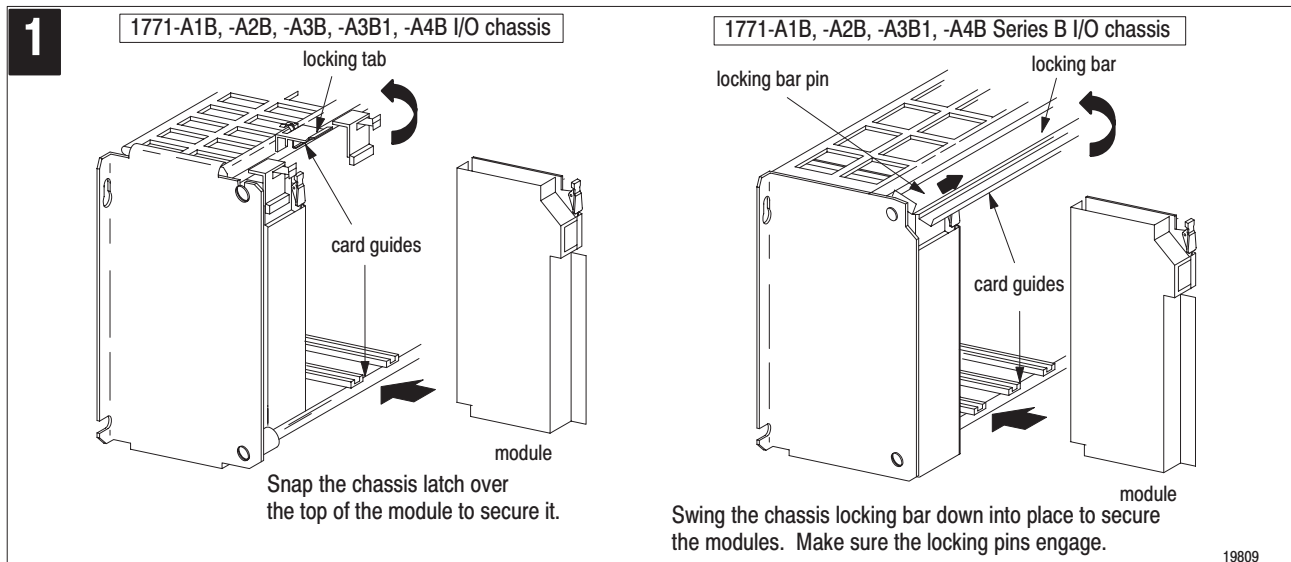
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Install the Module and Field Wiring Arm



ATTENTION: Remove power from the 1771 I/O chassis backplane and field 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.



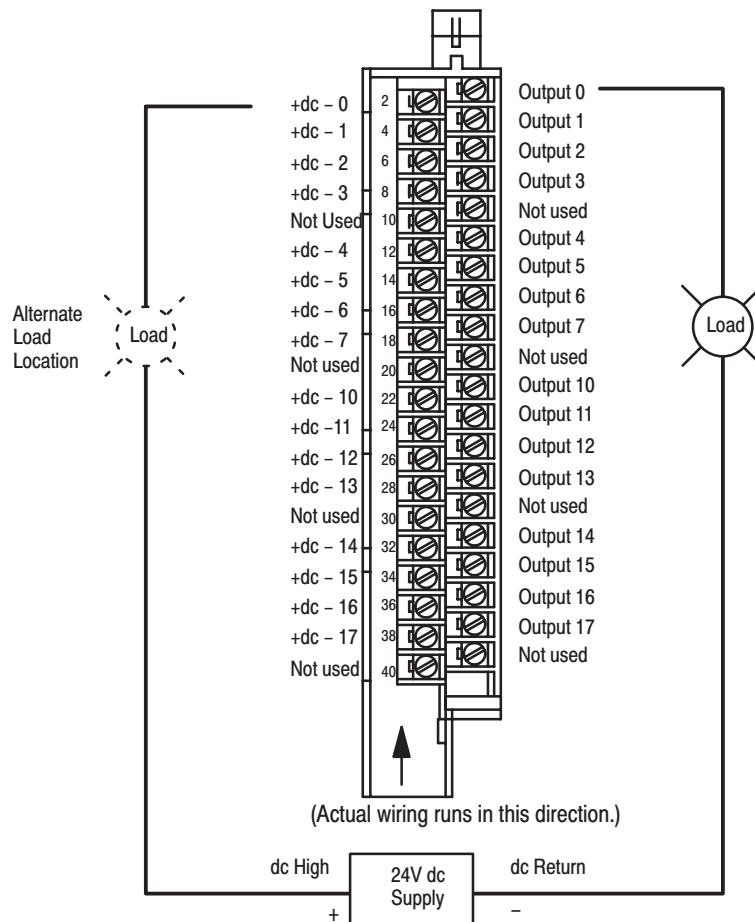
ATTENTION: A module inserted into a wrong slot could be damaged by improper voltages connected through the wiring arm. Use keying bands to prevent damage to the module.

Connect Wiring to the Field Wiring Arm

You make connections to the module through the 1771-WN field wiring arm shipped with the module. The arm pivots on the chassis to connect with the terminals on the front of the module (below). 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 the connection below. (Use the label on the front of the wiring arm to identify your wiring.)

Connection Diagram for the 1771-OQ16 Isolated Output Module



CAUTION: Use copper supply wires suitable for 35°C above surrounding ambient.

Note: A shorting bar can be used to connect the commons if no channel-to-channel isolation is required.



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

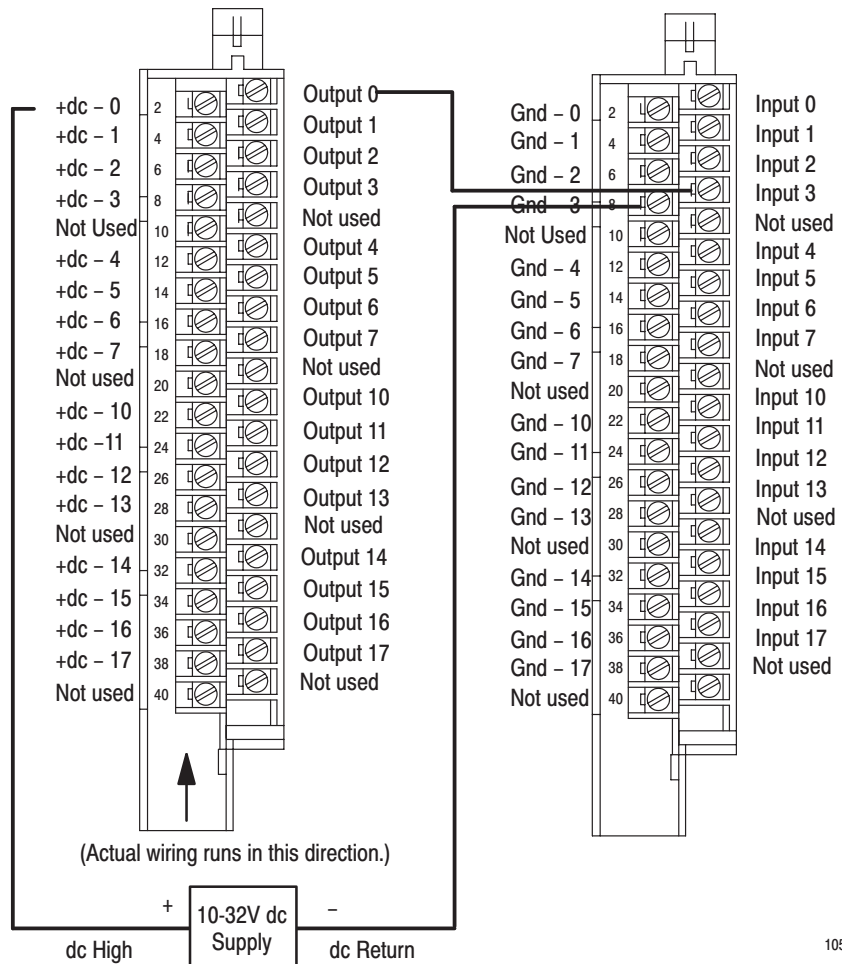
You should identify the labels on the wiring arm with the name or number of the device connected at each terminal.

You can use an output of the 1771-OQ16 module to drive an input of a 24V dc input module (1771-IQ16) to indicate status of turning on a motor starter, for example (below).

Driving an Input with an Output

DC (24V) Isolated Output Module
(Cat. No. 1771-OQ16)

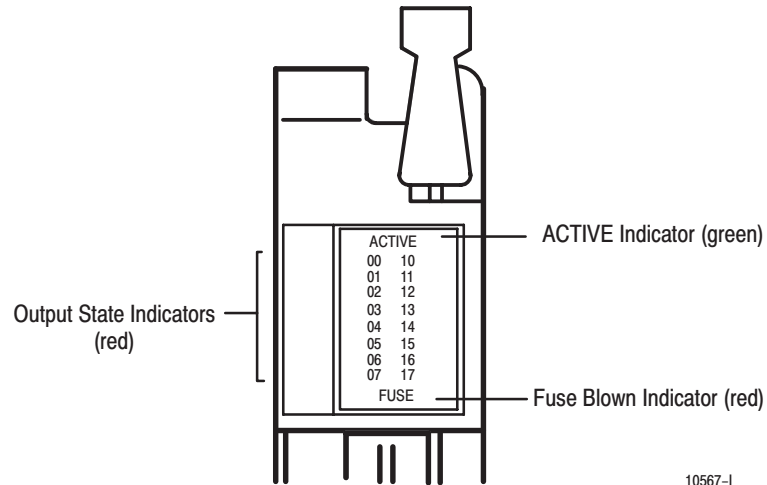
DC (24V) Isolated Input Module
(Cat. No. 1771-IQ16)



CAUTION: Use copper supply wires suitable for 35°C above surrounding ambient.

Interpreting the Status Indicators

The module has 18 indicators (below), consisting of 16 output status indicators, an active indicator and a fuse blown indicator. The 16 status indicators will light when an "on" signal has been communicated between the module and the system backplane.



The ACTIVE indicator will light when the module has started up and successfully initialized. The FUSE blown indicator will light when the fuse has cleared or been removed and the channel associated with that fuse has been turned "on." The fuse-blown circuit will not operate if the applied voltage to that channel is above the specified minimum "on-state" voltage, and the output load current is less than or equal to 5mA. The FUSE blown indicator will reset after the fuse has been replaced and chassis power has been cycled.

Replacing a Fuse

Each module output is individually fused. You can easily access the module fuses through the access hole provided in the component side cover. Follow the procedure below.

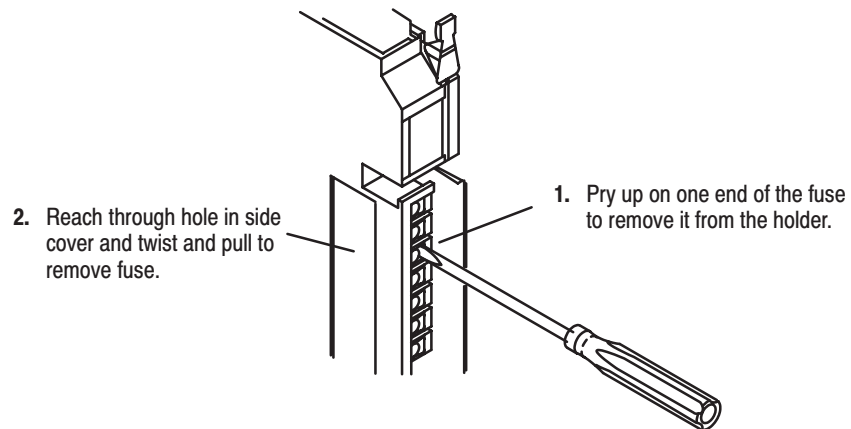


ATTENTION: Remove power from the 1771 I/O chassis backplane and wiring arm before removing or installing an I/O module.

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



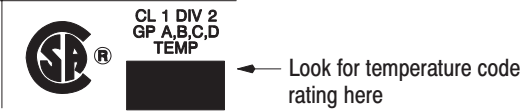
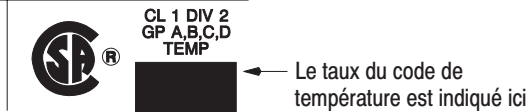


If a blown fuse occurs:

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. Use a small common screwdriver to reach through the front of the module and carefully pry one end of the fuse out of its holder.



18532

4. Reach through the access hole on the side of the module and carefully twist and pull to remove the blown fuse. Replace it with a 3A 2AG fast-acting fuse (Littelfuse part number 225003).
5. Reinstall the module in the I/O chassis.
6. Reposition the wiring arm.
7. Restart system power.

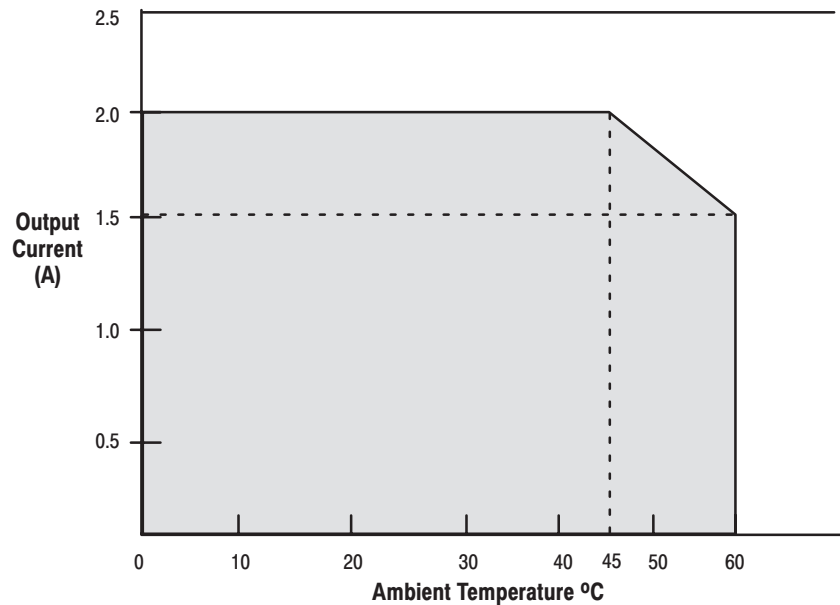
CSA Hazardous Location Approval	Approbation d'utilisation dans des emplacements dangereux par la CSA
<p>CSA® certifies products for general use as well as for use in hazardous locations. Actual CSA certification is indicated by the product label as shown below, and not by statements in any user documentation.</p>	<p>La CSA® certifie les produits d'utilisation générale aussi bien que ceux qui s'utilisent dans des emplacements dangereux. La certification CSA en vigueur est indiquée par l'étiquette du produit et non par des affirmations dans la documentation à l'usage des utilisateurs.</p>
<p>Example of the CSA certification product label</p> 	<p>Exemple d'étiquette de certification d'un produit par la CSA</p> 
<p>To comply with CSA certification for use in hazardous locations, the following information becomes a part of the product literature for CSA-certified Allen-Bradley industrial control products.</p> <ul style="list-style-type: none"> This equipment is suitable for use in Class I, Division 2, Groups A, B, C, D, or non-hazardous locations only. The products having the appropriate CSA markings (that is, Class I Division 2, Groups A, B, C, D), are certified for use in other equipment where the suitability of combination (that is, application or use) is determined by the CSA or the local inspection office having jurisdiction. 	<p>Pour satisfaire à la certification de la CSA dans des endroits dangereux, les informations suivantes font partie intégrante de la documentation des produits industriels de contrôle Allen-Bradley certifiés par la CSA.</p> <ul style="list-style-type: none"> Cet équipement convient à l'utilisation dans des emplacements de Classe 1, Division 2, Groupes A, B, C, D, ou ne convient qu'à l'utilisation dans des endroits non dangereux. Les produits portant le marquage approprié de la CSA (c'est à dire, Classe 1, Division 2, Groupes A, B, C, D) sont certifiés à l'utilisation pour d'autres équipements où la convenance de combinaison (application ou utilisation) est déterminée par la CSA ou le bureau local d'inspection qualifié.
<p>Important: Due to the modular nature of a PLC® control system, the product with the highest temperature rating determines the overall temperature code rating of a PLC control system in a Class I, Division 2 location. The temperature code rating is marked on the product label as shown.</p>	<p>Important: Par suite de la nature modulaire du système de contrôle PLC®, le produit ayant le taux le plus élevé de température détermine le taux d'ensemble du code de température du système de contrôle d'un PLC dans un emplacement de Classe 1, Division 2. Le taux du code de température est indiqué sur l'étiquette du produit.</p>
<p>Temperature code rating</p> 	<p>Taux du code de température</p> 
<p>The following warnings apply to products having CSA certification for use in hazardous locations.</p>	<p>Les avertissements suivants s'appliquent aux produits ayant la certification CSA pour leur utilisation dans des emplacements dangereux.</p>
 <p>WARNING: Explosion hazard —</p> <ul style="list-style-type: none"> Substitution of components may impair suitability for Class I, Division 2. Do not replace components unless power has been switched off or the area is known to be non-hazardous. Do not disconnect equipment unless power has been switched off or the area is known to be non-hazardous. Do not disconnect connectors unless power has been switched off or the area is known to be non-hazardous. Secure any user-supplied connectors that mate to external circuits on an Allen-Bradley product using screws, sliding latches, threaded connectors, or other means such that any connection can withstand a 15 Newton (3.4 lb.) separating force applied for a minimum of one minute. <p>CAUTION: Use copper supply wires suitable for 35°C above surrounding ambient.</p>	 <p>AVERTISSEMENT: Risque d'explosion —</p> <ul style="list-style-type: none"> La substitution de composants peut rendre ce matériel inacceptable pour les emplacements de Classe I, Division 2. Couper le courant ou s'assurer que l'emplacement est désigné non dangereux avant de remplacer les composants. Avant de débrancher l'équipement, couper le courant ou s'assurer que l'emplacement est désigné non dangereux. Avant de débrancher les connecteurs, couper le courant ou s'assurer que l'emplacement est reconnu non dangereux. Attacher tous connecteurs fournis par l'utilisateur et reliés aux circuits externes d'un appareil Allen-Bradley à l'aide de vis, loquets coulissants, connecteurs filetés ou autres moyens permettant aux connexions de résister à une force de séparation de 15 newtons (3,4 lb. - 1,5 kg) appliquée pendant au moins une minute. <p>ATTENTION: Utiliser des fils d'alimentation qui conviennent à une température de 35°C au-dessus de la température ambiante.</p>

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Specifications

Outputs per Module	16
Module Location	1771-A1B thru - A4B or later I/O Chassis
Voltage Rating	10 to 32V dc
Maximum Output Current	2.0A per output; 32.0A maximum per module @ 0–45°C; Derate linearly to 1.5A per output, 24A maximum per module @ 60°C – See derating curve.
Minimum Output Current	5mA
On-state Voltage Drop (maximum)	0.34V per output at 2A
Off-state Leakage Current (maximum)	0.5mA per output @ 32V dc, 25°C
Surge Current (maximum)	4A for 10ms per output., repeatable every 2 sec.
Power Rating	0.68W per output (maximum) @ 2A
Output Signal Delay	Off to On On to Off
	100µs (max); 300µs (max)
Power Dissipation	13.0 Watts (max); 2.0 Watts (min)
Thermal Dissipation	44.3 BTU/hr (max); 6.8 BTU/hr (min)
Backplane Current	400mA maximum
Isolation Voltage	Tested to 1500V channel-to-channel for 1s; 1500V channel to backplane for 1s.
Maximum Cable Length	1000 ft (304.8 m)
Conductors	Wire Size
	14 to 22 gauge (2.5mm ² to 0.25mm ²) stranded or solid copper ^{1, 2}
	3/64 inch (1.2mm) insulation maximum
	Category
	1 ³
Environmental Conditions	
Operational Temperature	0° to 60°C (32° to 140°F)
Storage Temperature	-40° to 85°C (-40° to 185°F)
Relative Humidity	5 to 95% (without condensation)
Keying	Between 22 and 24 Between 32 and 34
Field Wiring Arm	Catalog Number 1771-WN
Wiring Arm Screw Torque	9 inch-pounds
Fuses	3A 2AG Fast Acting fuses (1 per output) Littelfuse P/N 225003 (Optional fuse kit Cat No. 1771-FF contains 5 fuses)
Agency Certification	<ul style="list-style-type: none"> • CSA certified • CSA Class I, Division 2, Groups A, B, C, D certified • UL listed • CE marked for all applicable directives
<p>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.</p> <p>² 14 gauge wire connected to all terminals may not allow the field wiring arm cover to close. A smaller wire size may be required.</p> <p>³ Refer to publication 1770-4.1, "Industrial Automation Wiring and Grounding Guidelines for Noise Immunity."</p>	

Derating Curve



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