



# *Installation Instructions*

## **AC (220V) Output Module Cat. No. 1771-OMD Series B**

### **To The Installer**

This document provides information on:

- important pre-installation considerations
- power supply requirements
- initial handling
- installing the module
- using the indicators for troubleshooting
- replacing the fuses
- troubleshooting
- module specifications

### **Pre-installation Considerations**

This module must be used with a 1771 Series B I/O chassis. If you are using a 1/2-slot or 1-slot addressing you may use any combination of I/O modules. Otherwise, make sure no other output module or single card block transfer module is placed in the same I/O group.

### **European Union Directive Compliance**

If this product is installed within the European Union or EEA regions and has the CE mark, the following regulations apply.

#### **EMC Directive**

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

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

The product described in this manual is intended for use in an industrial environment.

#### **Low Voltage Directive**

This apparatus is also designed 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.

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For specific information that the above norm requires, see the appropriate sections in this manual, as well as the following Allen-Bradley publications:

- Industrial Automation Wiring and Grounding Guidelines for Noise Immunity, publication 1770-4.1
- Guidelines for Handling Lithium Batteries, publication AG-5.4

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.

## Power Requirements

Your module receives its power through the 1771 I/O chassis backplane from the chassis power supply. The module requires 700mA from the output of this supply. Add this to the requirements of all other modules in the I/O chassis to prevent overloading the chassis backplane and/or chassis power supply.

## Initial Handling

The ac output module is shipped in a static-shielded bag to guard against electrostatic discharge damage. Observe the following precautions when handling the module.

### Electrostatic Discharge Damage



**ATTENTION:** Under some conditions, electrostatic discharge can degrade performance or damage the module. Observe the following precautions to guard against electrostatic damage.

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- Wear an approved wrist strap grounding device, or touch a grounded object to discharge yourself before handling the module.
- Do not touch the backplane connector or connector pins.
- If you configure or replace internal components, do not touch other circuit components inside the module. If available, use a static-free work station.
- When not in use, keep the module in a static-shielded bag.

## Installing Your Module

In this section we tell you how to set the module fault mode, key your I/O chassis, install your module and make your wiring connections.

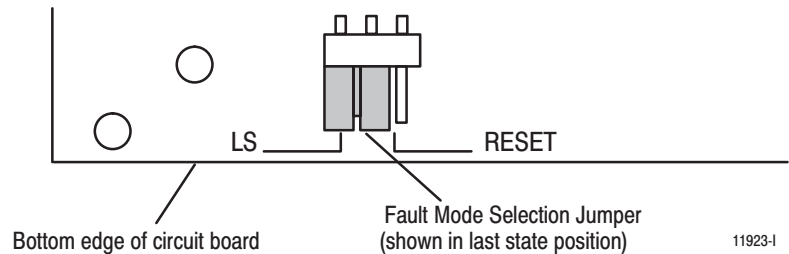
### Setting the Module Fault Mode

You may select one of two output-failure configurations (last state or reset) by positioning a selection jumper on the bottom edge of the printed circuit board. The setting of this selection jumper determines how the module presents its outputs in the event of an internal module fault. With processor-to-I/O module communication faults, the position of the last state switch on the I/O chassis backplane controls the outputs.

To set the fault mode selection, proceed as follows:

13. Locate the fault mode selection jumper at the bottom edge of the module circuit board.
14. Using your finger, slide the jumper off the 2 posts.
15. Carefully position the jumper on 2 of the 3 posts that correspond to your requirement.

### Fault Mode Selection Jumper



Jumper Setting	Description
Reset (RESET)	Module resets its outputs (Default setting).
Last State (LS)	Module holds outputs in state they were in when module faulted.

## Keying Your I/O Chassis

Use the plastic keying bands, shipped with each I/O chassis, to key the I/O slots to accept only this type of module.

The module circuit board is slotted in two places on the rear edge. The position of the keying bands on the backplane connector must correspond to these slots to allow insertion of the module. You can key any connector in an I/O chassis to receive this module except for the left-most connector reserved for adapter or processor modules. Place keying bands between the following numbers labeled on the backplane connector:

- Between 2 and 4
- Between 6 and 8

You can change the position of these keys if system redesign and rewiring makes insertion of a different module necessary.

## Installing the Output Module

To install the ac output module in your 1771 I/O chassis, follow the steps listed 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 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.
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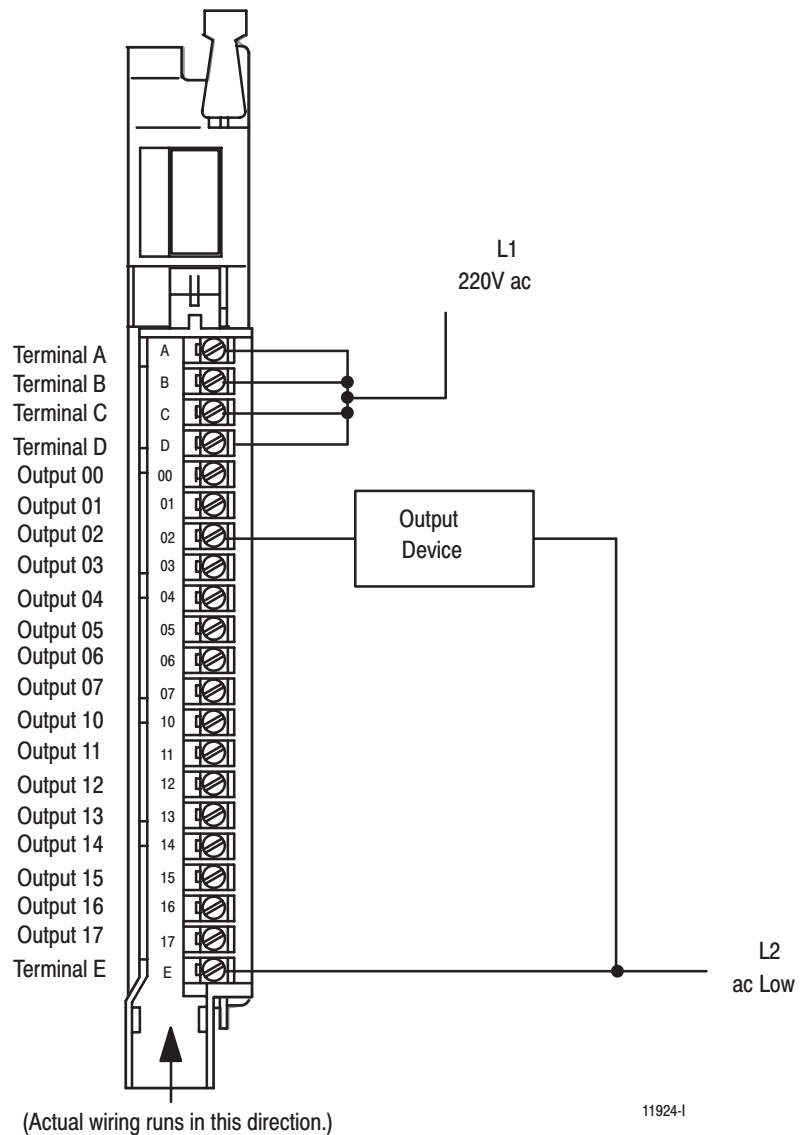
1. Turn off power to the I/O chassis.
2. Position the module so that the circuit board on the rear of the module lines up with the top and bottom card guides in the chassis.
3. Do not force the module into its backplane connector. Apply firm, even pressure on the module to seat it properly.
4. Snap the chassis latch over the top of the module to secure its position.
5. Connect the wiring arm to the module.
6. Make wiring connections to the field wiring arm as indicated in “Connecting Wiring to the Output Module.”

## Connecting Wiring to the Output Module

Connections to the output module are made to the 21-terminal field wiring arm (cat. no. 1771-WH) shipped with the module. Attach the wiring arm to the pivot bar on 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.

You must supply ac (L1) at terminals A through D on the wiring arm. You need four ac connections to accommodate the total required surge rating on the module without overstressing any single connection on the field wiring arm. Jumper all ac (L1) connections together to prevent module damage.

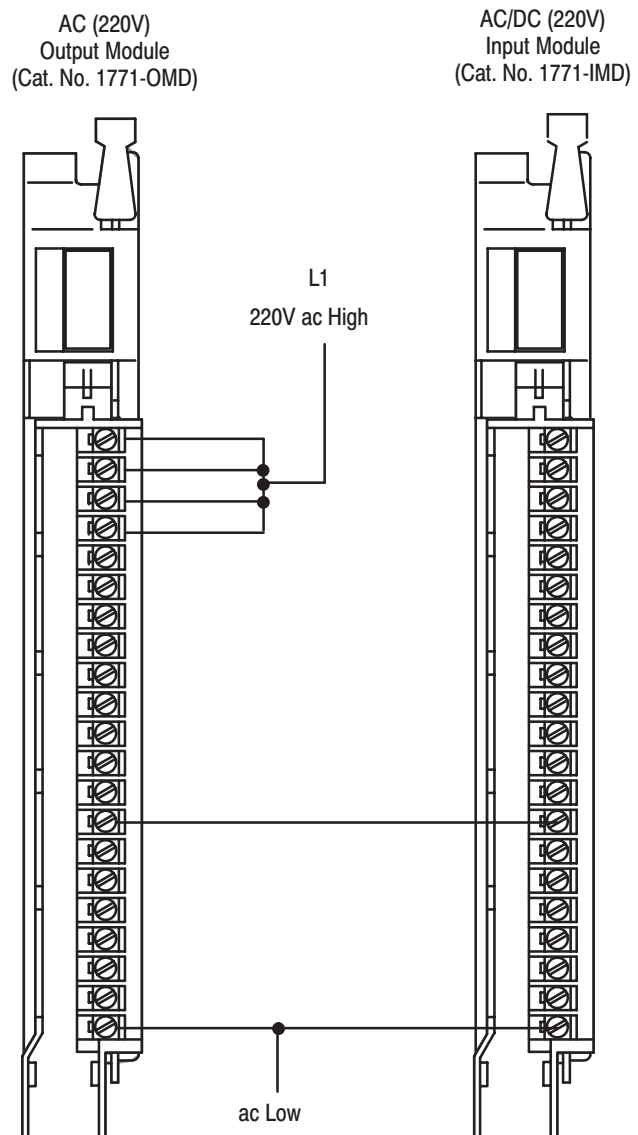
### 1771-OMD/B Connection Diagram



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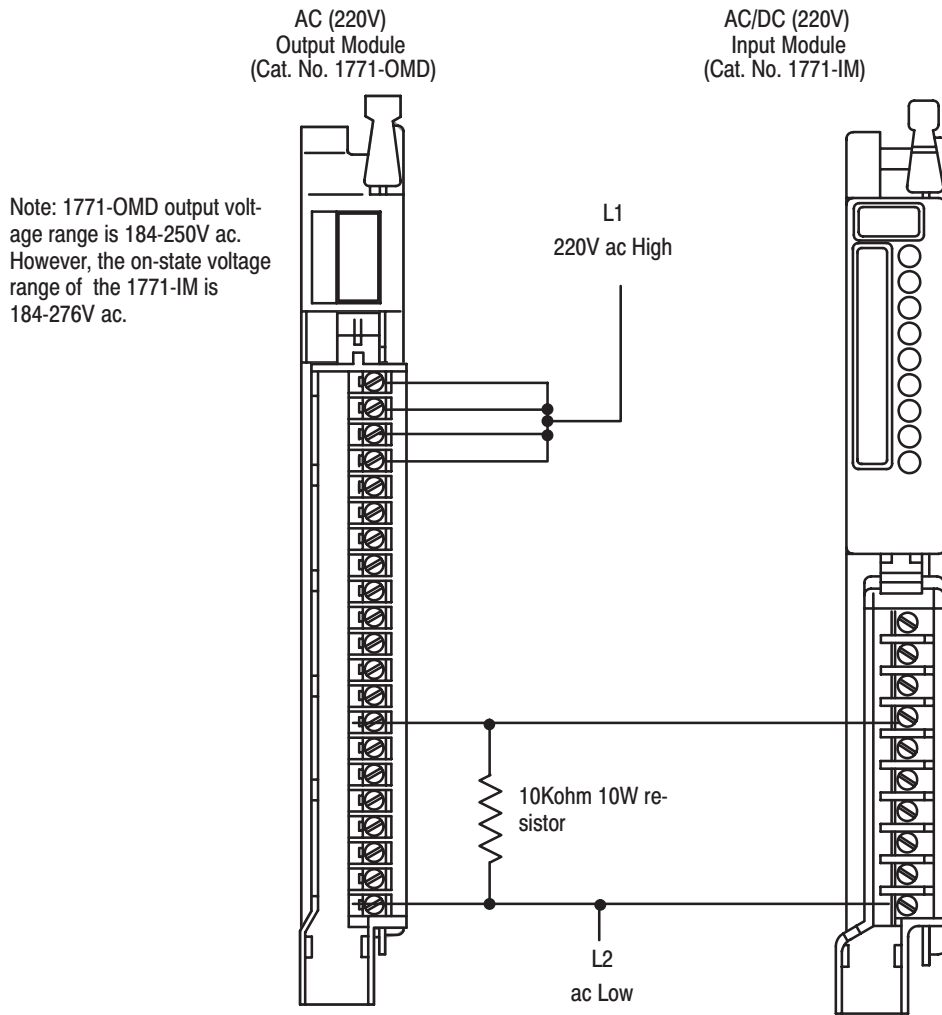
**Important:** You can use an AC (220V) Output Module (cat. no. 1771-OMD) to directly drive terminals on an AC/DC (220V) Input Module (cat. no. 1771-IMD). You can also use a 1771-OMD Output module to drive an AC/DC (220V) Input Module (cat. no. 1771-IM) but you must connect a 10K ohm, 10W resistor between the output terminal and L2 (common) as shown below. **Use the same ac power source to power both modules to ensure proper phasing and prevent module damage.**

#### Driving a 1771-IMD Module with a 1771-OMD Module



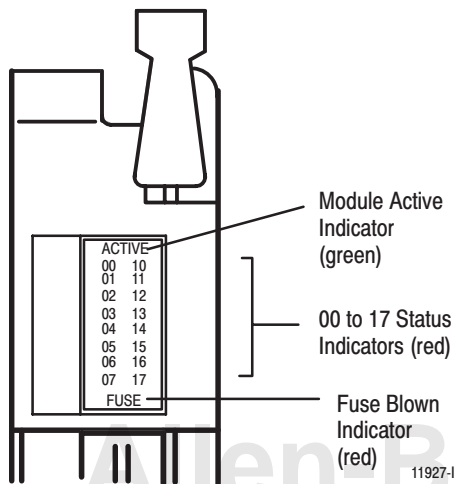
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### Driving an Input with an Output



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### Interpreting the Status Indicators



The front panel of your module contains one green, module active indicator, 16 red status indicators and one red fuse-blown indicator. The 1771-OMD/B performs diagnostics in a handshaking mode when first powered up. Upon successful completion of the diagnostics, the green module active indicator lights. It turns off if a fault occurs in the data paths or the opto-isolators.

The red status indicators are provided for system logic side indication of individual outputs. When a red status indicator lights, voltage is present on the terminal.

The red fuse-blown indicator is lit when the fuse in the module has cleared or been removed.

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## Replacing the Fuse

The module's output circuitry is protected from overload or shorts by a fuse. You can replace the fuse as outlined below.

1. Turn off all power to the I/O chassis and all output device power to the field wiring arm.



**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.
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2. Pivot the wiring arm away from the module and remove the module from the chassis.
3. Replace the blown fuse with a 10A, 250V rectifier fuse (1/4 x 1-1/4 inch), Littelfuse part number 322010.
4. Replace the module in the chassis and attach the field wiring arm.

## Troubleshooting

If a problem occurs, follow the procedure below.

### Modules with Internal Fuses Only

1. Turn off all power to the I/O chassis and all output device power to the field wiring arm.

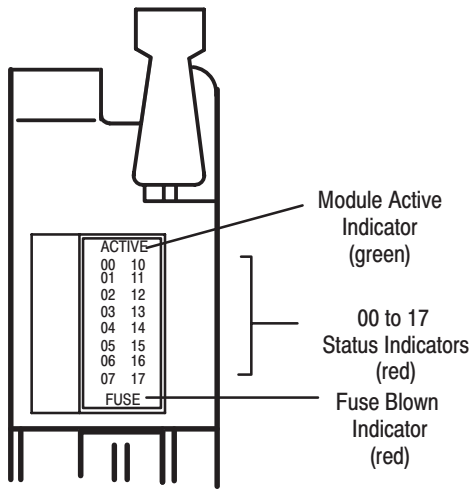


**ATTENTION:** Remove power from the 1771 I/O chassis backplane and wiring arm before removing or installing the module.

- 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.
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2. Pivot the wiring arm away from the module and remove the module from the chassis.
3. Replace the blown fuse with a 10A, 250V rectifier fuse (1/4 x 1-1/4 inch), Littelfuse part number 322010 3AB.
4. Replace the module in the chassis and attach the field wiring arm.





5. Turn OFF all outputs to the module.
  6. Turn ON power to the I/O chassis only.
  7. Check that the red status indicators on the front of the module are off (no outputs on). Make sure the red fuse blown indicator is off.
  8. Turn on output device power to the field wiring arm.
  9. Start with bit 00 and turn on individual outputs one at a time. Turn off the previous output before turning on the next output.
  10. If the red fuse blown indicator turns on, note which output is faulty and trace the output wiring to the faulty device.
- After correcting the fault problem, return to step 1 and begin again.

If a faulty output can't be located, return to step 9 and turn on two or more outputs at the same time. Total output current should not exceed 2A per output, or 8A total per module.




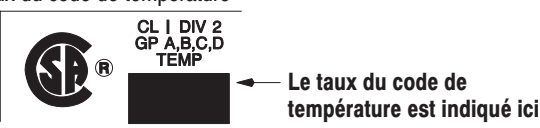


### Modules with External Fuses Only

1. Turn off all power to the I/O chassis and all output device power to the field wiring arm.
2. Pivot the wiring arm away from the module.
3. Use a continuity checker (meter in low ohms setting) to check fuses for an open (high resistance) reading.
4. Note if the fuse is open and trace the output wiring back to the output device.
5. Check the remaining fuses (refer to step 3).
6. After all faulty fuses are replaced and any wiring problems solved, reposition the wiring arm on the module.
7. Turn off all outputs to the module.
8. Turn on power to the I/O chassis.
9. Check that the red status indicators on the front of the module are off (no outputs on). Make sure the red fuse blown indicator is off.
10. Turn on output device power to the wiring arm.

**11.** Start with bit 00 and turn on individual outputs one at a time.  
Turn off the last output before turning on the next output.

**12.** If the red fuse blown indicator lights, note which output is faulty and trace the output wiring to the faulty device.

After correcting the fault problem, return to step 1 and begin again. If you cannot locate a faulty output, return to step 8 and turn on 2 or more outputs at the same time. Total output current should not exceed 2A per output, or 8A per module.

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. <b>Actual CSA certification is indicated by the product label</b> 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. <b>La certification CSA en vigueur est indiquée par l'étiquette du produit</b> et non par des affirmations dans la documentation à l'usage des utilisateurs.</p>
<p><b>Example of the CSA certification product label</b></p> 	<p><b>Exemple d'étiquette de certification d'un produit par la CSA</b></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"> <li>This equipment is suitable for use in Class I, Division 2, Groups A, B, C, D, or non-hazardous locations only.</li> <li>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.</li> </ul>	<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"> <li>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.</li> <li>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.</li> </ul>
<p><b>Important:</b> 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><b>Important:</b> 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><b>Temperature code rating</b></p> 	<p><b>Taux du code de température</b></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><b>WARNING:</b> Explosion hazard —</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 unless power has been switched off or the area is known to be non-hazardous.</li> <li>Do not disconnect equipment unless power has been switched off or the area is known to be non-hazardous.</li> <li>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.</li> </ul>	 <p><b>AVERTISSEMENT:</b> Risque d'explosion —</p> <ul style="list-style-type: none"> <li>La substitution de composants peut rendre ce matériel inacceptable pour les emplacements de Classe I, Division 2.</li> <li>Couper le courant ou s'assurer que l'emplacement est désigné non dangereux avant de remplacer les composants.</li> <li>Avant de débrancher l'équipement, couper le courant ou s'assurer que l'emplacement est désigné non dangereux.</li> <li>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.</li> </ul>
<p>CSA logo is a registered trademark of the Canadian Standards Association PLC is a registered trademark of Allen-Bradley Company, Inc.</p>	<p>Le sigle CSA est la marque déposée de l'Association des Standards pour le Canada. PLC est une marque déposée de Allen-Bradley Company, Inc.</p>

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## Specifications

Outputs per Module	16
Module Location	1771-A1B thru -A4B or later I/O chassis; 1771-AM1, -AM2 I/O chassis
Output Voltage Range	184 to 250V ac @ 47 - 63Hz
Output Current Rating	2A per output - not to exceed 8A per module
Surge Current (maximum)	25A per output for 100msec, repeatable every 1 second 25A per module for 100msec, repeatable every 1 second
Minimum Load Current	10mA per output @ 220V ac, 60Hz
On State Voltage Drop (max.)	1.5V at 2A (maximum)
Off State Leakage Current (max.)	4mA per output @ 220V ac
Signal Delay	1.0ms
Off to On	8.3-9.1ms @ 60Hz
On to Off	
Power Dissipation	17.3 Watts (max.), 3.7 Watts (min.)
Thermal Dissipation	59.0 BTU/hr (max.), 12.6 BTU/hr (min.)
Backplane Current	700mA @ 5V dc $\pm$ 5%
Isolation Voltage	Isolation meets or exceeds UL Standard 508, and CSA Standard C22.2 No. 142.
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)
Conductors	Wire Size
	14 gauge stranded maximum
	3/64 inch insulation maximum
	1 <sup>1</sup>
Category	
Fuse	10A, 250V rectifier fuse (1/4 x 1-1/4 inch), Littelfuse PN 322010 3AB
Keying	Between 2 and 4 Between 6 and 8
Field Wiring Arm	Standard
	Optional Fused
	Cat. No. 1771-WH Cat. No. 1771-WHF (3A fuses) or Cat. No. 1771-WHFB (1.5A fuses)
Wiring Arm Screw Torque	7-9 inch-pounds
Agency Certification (when product is marked)	<ul style="list-style-type: none"> <li>• CSA certified</li> <li>• CSA Class I, Division 2, Groups A, B, C, D certified</li> <li>• UL listed</li> <li>• CE marked for all applicable directives</li> <li>• C-Tick marked for all applicable acts</li> </ul>

<sup>1</sup> Refer to publication 1770-4.1, Programmable Controller Wiring and Grounding Guidelines.



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