



AC (120V) Isolated Output Module

Cat. No. 1771-OD

Installation Data

To The Installer

This document provides information on:

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

Pre-installation Considerations

An output from this module can drive an Allen-Bradley Size 5 motor starter, provided its supply voltage does not drop below 105V ac. The maximum load current the module can deliver is 2A per channel, not to exceed 6A total per module.

The switching device in the output circuit is a triac. There is a small leakage current in the off state due to both triac and capacitive characteristics. The maximum leakage current per output is 5mA at 138V ac. Nominal leakage current is 1mA. The on-state voltage drop across the output terminals is no more than 2.0V ac at 100mA.

The triac needs a minimum of 60mA load current to stay on. If your device pulls less than 60mA, the triac will not operate. The total continuous current the module supports is 6A (2A maximum per channel). If this rating is exceeded, the module overheats and damage may occur.

Suppression

Surge suppression circuitry is provided for the output triacs of this module. To suppress high-voltage transients from the ac line, a metal-oxide varistor (MOV) is provided between each set of terminals on the module. In each output circuit, an RC network limits the magnitude of voltage transients that may occur when a device is wired in parallel or series with hard contacts.

Loads with inductive characteristics may require additional suppression devices. The impedance characteristic of the load is the most important factor in selecting a suppression device; thus no single suppression device can be recommended for every possible load. See Table A for acceptable suppression devices for typical loads.

Table A
Allen-Bradley Suppressors

Allen-Bradley Equipment	Suppressor Catalog Number
Motor Starter Bulletin 509	599-K04 ¹
Motor Starter Bulletin 709	1401-N10 ¹
Relay Bulletin 700 Type N or P	700-N5/700N9 ²
Miscellaneous	700-N24 ³

¹ For starters with 120V ac coils

² Maximum coil voltage 150V ac or dc

³ Bulletin 700-N24 is a universal surge suppressor. You can use it on electromagnetic devices with the limitation of 35 sealed VA, 150V.

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 225mA 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.

Initial Handling Procedures

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.



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.
-
- Touch a grounded object to rid yourself of charge before handling the module.
 - Do not touch the backplane connector or connector pins.
 - When you configure or replace internal components, do not touch other 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.

Installing Your Module

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

Module Location in the I/O 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.

Keying the I/O Chassis

Use the plastic keying bands, shipped with each I/O chassis, to key your I/O slots to accept only this type of module. Place keying bands between these numbers labeled on the upper backplane connector:

- between 4 and 6
- between 30 and 32

Slots on the rear edge of the circuit board are matched 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.



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.

Inserting the Module into the Chassis

1. 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.
2. Slide the module into the chassis.
3. Press firmly to seat the module in the chassis backplane connector.
4. Swing the module locking latch down into place over the front of the module.

Connecting Wiring to the module

You make connections to the module through the 1771-WD field wiring arm shipped with the module. The arm pivots on the chassis to connect with the 12 terminals on the front of the module (). The wiring arm allows the module to be removed from the chassis without disconnecting wiring.

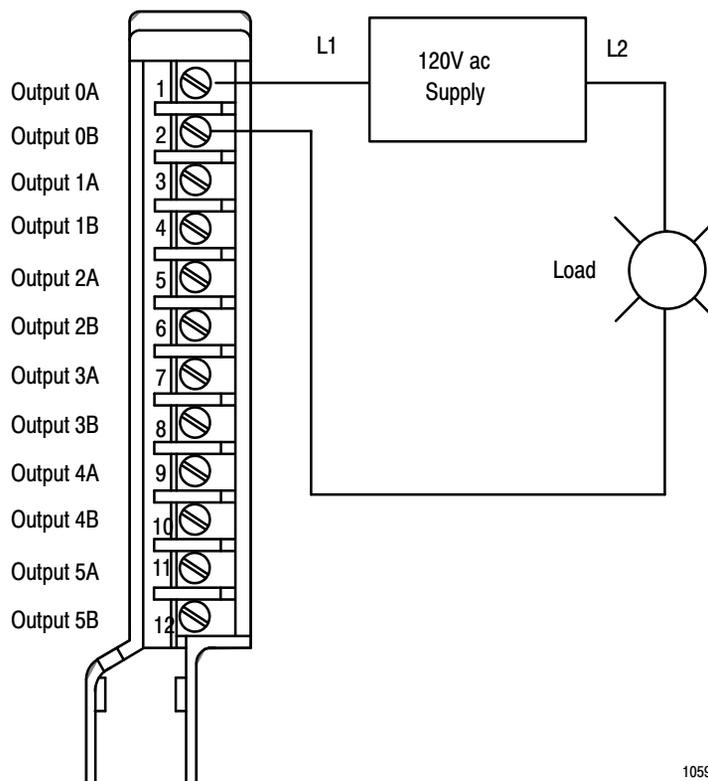
1. Make certain all power is removed from the module before making wiring connections.
2. Swing the wiring arm up into position on the front of the module. The locking tab on the module will secure it into place.
3. Make your connections to the field wiring arm as shown in . (Use the label on the front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



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.

Figure 1
Connection Diagram for 1771-OD Isolated Output Module



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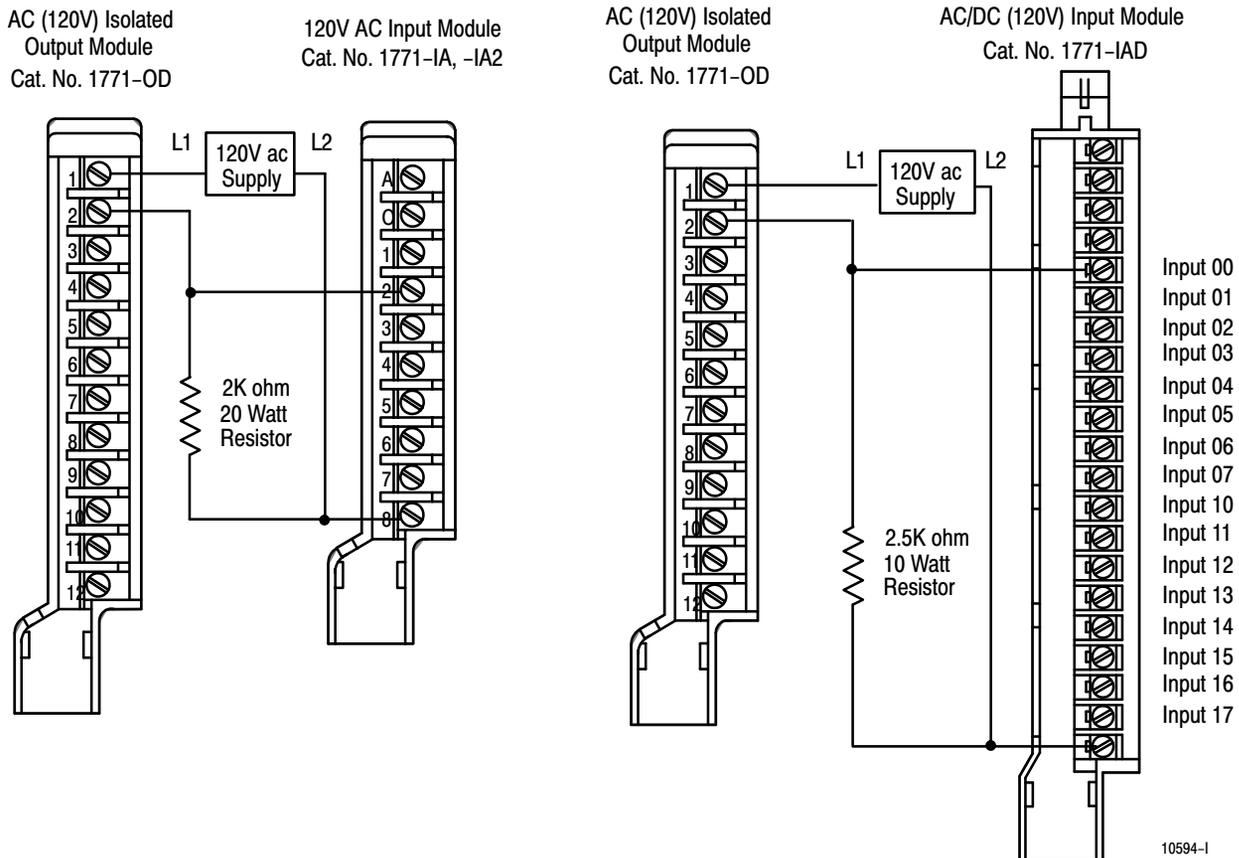
You can use an output of the 1771-OD module to drive an input of a 120V ac input module (1771-IA, -IA2, -ID, -IAD) to indicate status of turning on a motor starter, for example (). However, you must add a 2.5K ohm, 10W resistor (or an Electrocube snubber, pt. no. RG-1676-1) between the output and L2 (common). Inputs configured with the output module are not isolated from each other (except for 1771-IAD inputs).



ATTENTION: Do not connect the 1771-OD output channels in series. Doing so can result in distortion of the output waveform causing the output devices to chatter.

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Figure 2
Driving an Input with an Output

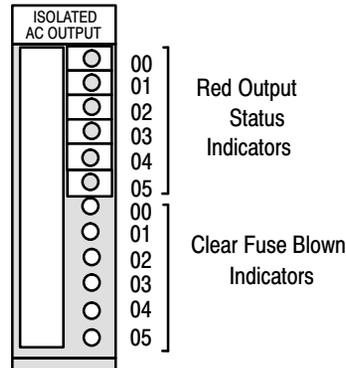


Interpreting the Status Indicators

The module has 12 status indicators (). The top 6 indicators show the state of each output and are driven by the logic circuitry on the programmable controller side of the module. These indicators light when their corresponding outputs are energized.

The bottom 6 indicators display a blown-fuse condition at the respective output regardless of the state of the output. These indicators are driven by your power supply.

Figure 3
Status Indicators



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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 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. Remove the front component side cover from the module by removing the screws securing the cover to the module.
4. Replace the blown 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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Specifications

Outputs per Module	6
Module Location	1771 I/O Chassis
Voltage Rating	92 to 138V ac @ 47-63 Hz
Output Current Rating (per channel)	2A per output (not to exceed 6A per module)
Surge Current	20A maximum for 100msec Repeatable every 5 seconds
Minimum Load Current	60mA per output
On-state Voltage Drop	2V ac (max) at 100mA
Off-state Leakage Current	5mA (max) per output at 138V ac
Power Rating	4Watts per output
Power Dissipation	13.2 Watts (max); 1.2 Watts (min)
Thermal Dissipation	45.2 BTU/hr (max); 4.1 BTU/hr (min)
Backplane Current	225mA
Maximum Cable Length	1000 ft (304.8 m)
Isolation Voltage	1000V channel-to-channel 1500V to backplane
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 gage stranded maximum 3/64 inch insulation maximum
Category	1 ¹
Keying	Between 4 and 6 Between 30 and 32
Fuse	5A, 3AG normal blow fuses (1 per output)
Field Wiring Arm	Catalog Number 1771-WD
Wiring Arm Screw Torque	7-9 inch-pounds

¹ Refer to publication 1770-4.1, Programmable Controller Wiring and Grounding Guidelines



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