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ALLEN-BRADLEY

AC (120V) Isolated Output Module, 16 Outputs Cat. No. 1771-ODD

Installation Instructions

To The Installer

This document provides information on:

- important pre-installation considerations
- power supply requirements
- installing the module
- installing and connecting the wiring
- replacing the fuse
- using the module indicators for troubleshooting
- 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 92V ac. The maximum load current the module can deliver is 2A per channel, not to exceed 8A total per module.

Your module's outputs can drive the following motor starter combinations:

- 16 size 3 motor starters (1 per output)
- 10 size 4 motor starters (1 per output)
- 7 size 5 motor starters (1 per output)

The switching device in the output circuit is a solid-state 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 3mA at 138V ac. Nominal leakage current is 1.5mA. The on-state voltage drop across the output terminals will not exceed 1.5V ac at 2A.

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The 1771-ODD module is designed for a 10mA minimum current on each output circuit. The total continuous current the module supports is 8A (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 in 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 1 for acceptable suppression devices for typical loads.

Table 1
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	700N5/700N9
Miscellaneous	700-N24[2]

[1] For starters with 120V AC coils
[2] Bulletin 700-N24 is a universal surge suppressor. You can use it on electromagnetic devices with the limitation of 35 sealed VA, 150V.

Power Supply 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 420mA 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.

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Installing the Module

In this section we tell you how to install your module, key your I/O chassis 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.

Initial Handling Procedures



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.

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 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.

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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-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 ( ). 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.

Note: You can use the shorting bar supplied with your module to connect the L1-0 through L1-17 high side ac power connections together if desired.

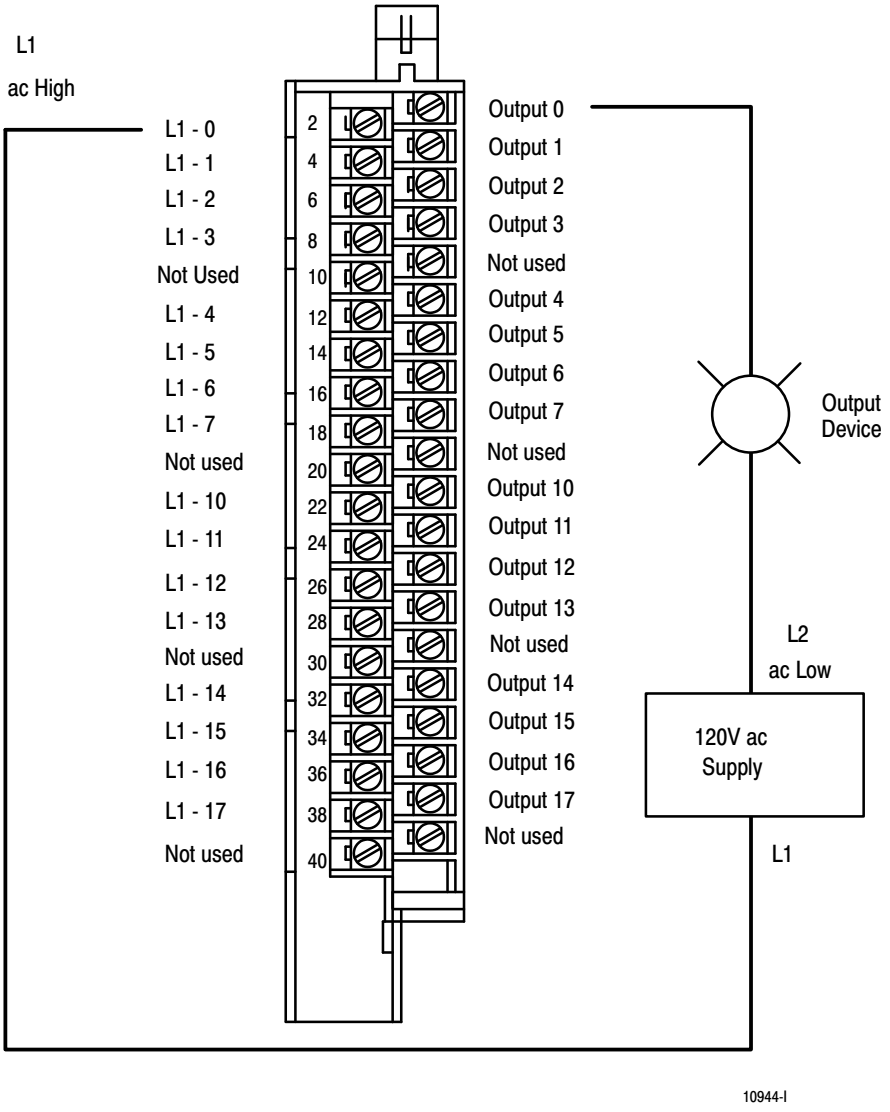
You should identify the labels on the wiring arm with the name or number of the device connected at each terminal.

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Figure 1

Figure 1

Figure 1
Connection Diagram for the 1771-ODD Isolated Output Module



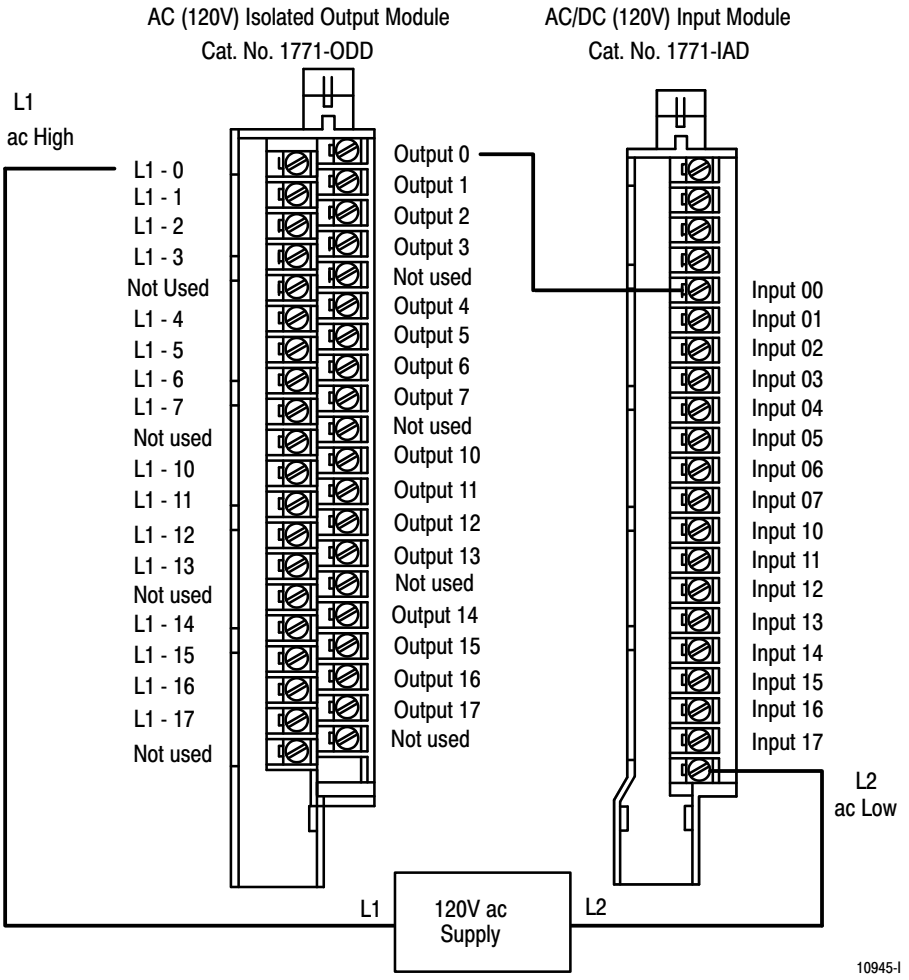
You can use an output of the 1771-ODD module to drive an input of a 120V ac input module (1771-IA, -IA2, -IAD,-ID) to indicate status of turning on a motor starter, for example ( ). Inputs configured with the output module are not isolated from each other.

ATTENTION: Do not connect the 1771-ODD 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

Figure 2
Driving an Input with an Output



Replacing a Fuse

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

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If a blown fuse occurs:

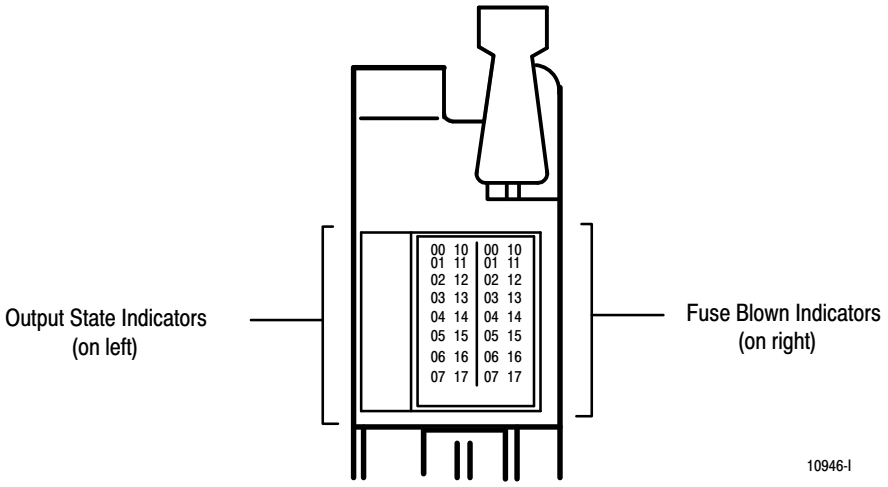
1. Turn off power to the I/O chassis backplane.
2. Pivot the wiring arm away from the module and pull the module from the I/O chassis.
3. Remove the solder side cover from the module by removing the screws securing the cover to the module..
4. Then remove the cover from the unlabeled side of the module.
5. Replace the blown fuse.
6. Replace the protective cover and install the module in the I/O chassis.
7. Reposition the wiring arm.
8. Restart system power.

Interpreting the Status Indicators

The module has 32 status indicators (Figure 3). The 16 indicators on the left side of the display 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 module also has 16 indicators (on the right side of the display) that display a blown-fuse condition at the respective output regardless of the state of the output. These indicators are driven by your ac power supply.

Figure 3
Status Indicators



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Installation Instructions
AC (120V) Output Module
(Cat. No. 1771–ODD)

Specifications

Outputs per Module	16
Module Location	1771-A1B thru -A4B or later I/O Chassis and 1771-AM1, -AM2
Voltage Rating	85 to 138V ac, 47-63Hz
Current Rating (per channel)	10mA – 2A continuous (max) 20A surge for 100ms; repeatable once every 2 seconds 8A per module maximum
Power Rating	3 Watts per output (max) @ 2A
On-state Voltage Drop (each output)	6.5V rms (max.) @ load current <65mA 1.5V rms (max.) @ load current >65mA
Signal Delay Times Off to On On to Off	8.8msec @ 60Hz max.: 10.6msec @ 50Hz max 8.8msec @ 60Hz max.: 10.6msec @ 50Hz max (zero cross switching)
Power Dissipation	14.2 Watts (max); 0.1 Watts (min)
Thermal Dissipation	48.5 BTU/hr (max); 0.4 BTU/hr (min)
Backplane Current	420mA maximum at 5.25V
Isolation Voltage	1500V channel-to-channel 1500V to backplane
Maximum Cable Length	1000 ft (304.8 m)
Conductors Wire Size Category	14 gauge stranded maximum 3/64 inch insulation maximum 1[1]
Environmental Conditions Operational Temperature Storage Temperature Relative Humidity	 0° to 60°C (32° to 140°F) -40° to 85°C (-40° to 185°F) 5 to 95% (without condensation)
Keying	Between 4 and 6 Between 30 and 32
Field Wiring Arm	Catalog Number 1771-WN
Wiring Arm Screw Torque	7–9 pound-inches
Fuses	3A 2AG Slo-Blo fuses (1 per output)

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

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