AC Output Module
Cat. No. 1771–OA

Installation Instructions

To The Installer

This document provides information on:

- important pre–installation considerations
- power supply requirements
- installing the module
- connecting the wiring
- replacing fuses
- using the indicators for troubleshooting
- module specifications

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.

Power Supply 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.

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 and rack controllers to minimize adverse heat effects.

Initial Handling

⚠ **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 12 and 14

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 I/O 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-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   .
   (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.

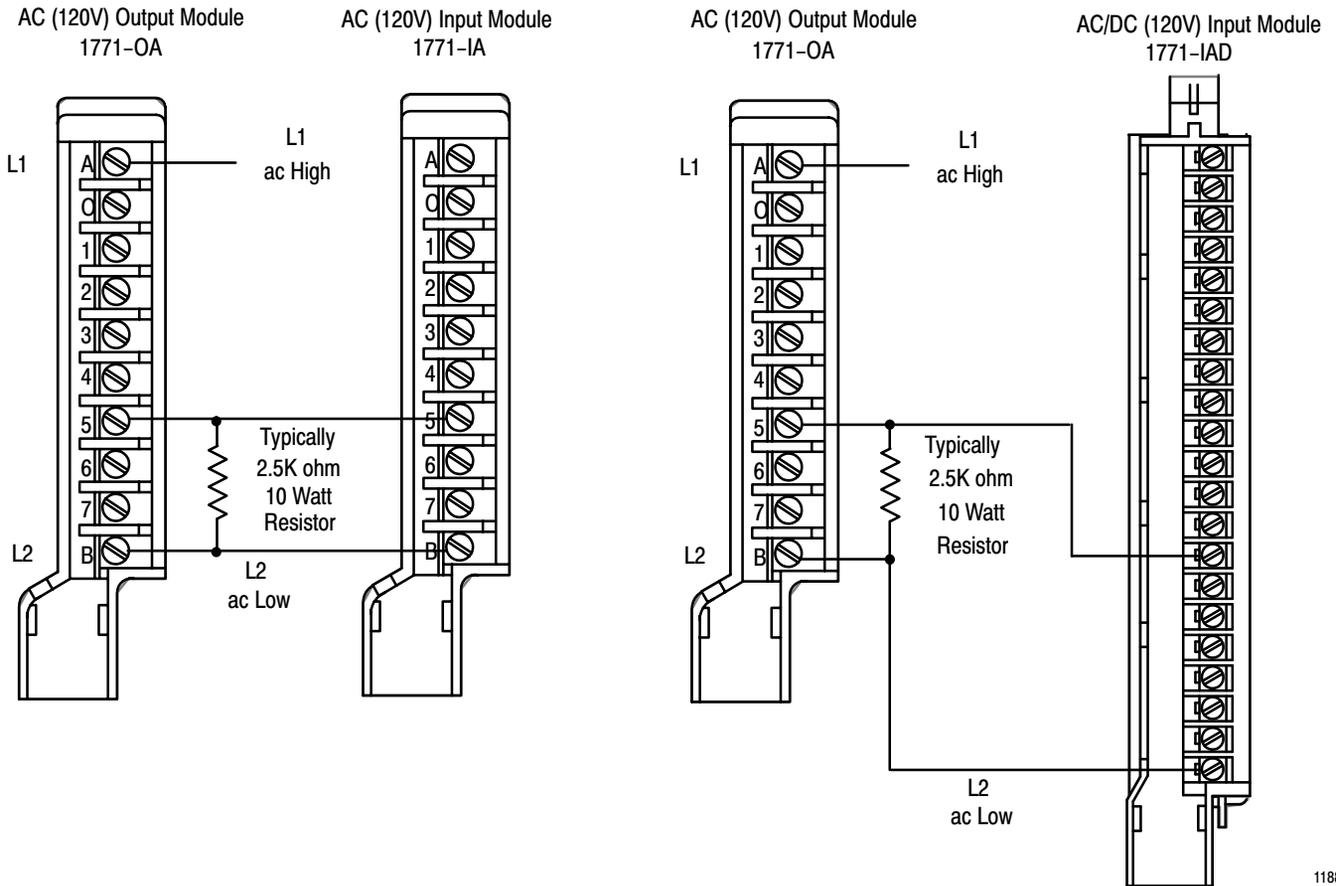**Figure 1**
Connection Diagram
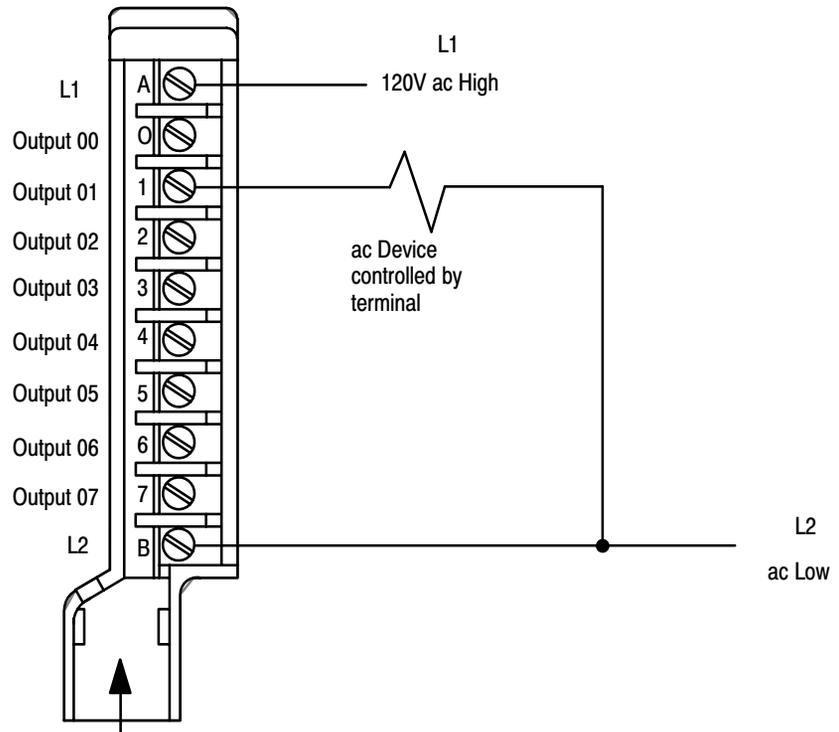
(Actual wiring runs in this direction.)

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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 of turning on a motor starter, for example (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.

Figure 2
Using an Output Module to drive an Input Module

AC (120V) Output Module
1771–OA

AC (120V) Input Module
1771–IA

AC (120V) Output Module
1771–OA

AC/DC (120V) Input Module
1771–IAD

L1

L1
ac High

Typically
2.5K ohm
10 Watt
Resistor

L2
ac Low

L1

L1
ac High

Typically
2.5K ohm
10 Watt
Resistor

L2
ac Low

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ATTENTION: Do not apply two different phases of one power source to the same 1771–OA module, or to a 1771–OA module and a 1771–IA or 1771–IAD module being driven by that 1771–OA module. When you must use different phases, use the 1771–OD and a 1771–ID module (isolated 120V ac output and input modules).

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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.

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> - 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.

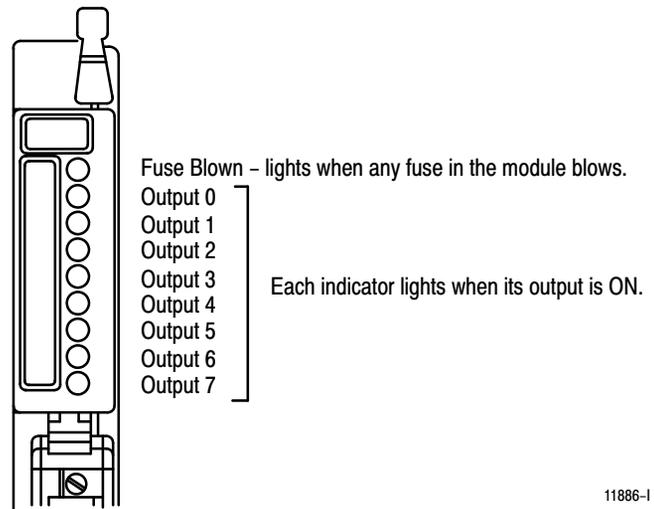If a blown fuse occurs:

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 half of the protective cover from the unlabeled side of the module by removing the two slotted screws.

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.

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

Fuse Blown – lights when any fuse in the module blows.
Output 0
Output 1
Output 2
Output 3
Output 4   Each indicator lights when its output is ON.
Output 5
Output 6
Output 7

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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 1 second
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
Power Dissipation	10.7 Watts (max.), 1.1 Watts (min.)
Thermal Dissipation	36.6 BTU/hr (max.), 3.4 BTU/hr (min.)
Backplane Current	210mA @ 5V dc 5%
Opto−electrical Isolation	1500V ac rms 2500V peak

Environmental Conditions
    Operational Temperature
    Storage Temperature
    Relative Humidity
	
	0º to 60ºC (32º to 140ºF)
	−40º to 85ºC (−40º to 185ºF)
	5 to 95% (without condensation)

Conductors Wire Size Category	14 gauge stranded maximum 3/64 inch insulation maximum 1[1]
Keying	Between 4 and 6 Between 12 and 14
Fuse	2A, 250V Buss AGC2 fuse
Wiring Arm	Catalog Number 1771−WA
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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