ALLEN-BRADLEY

Electromechanical Relay Contact Output Module Cat. No. 1771-OW16 Series B

Installation Instructions

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
- module specifications

Pre-installation Considerations

This module must be used in a 1771-A1B thru -A4B chassis. It may also be used in a 1771-AM1 or 1771-AM2 chassis. This module does not contain surge limiting circuitry. With properly chosen surge limiting devices, this module can be used to control resistive, capacitive and inductive loads.

The module's outputs are arranged in two groups of eight, each output is independently isolated. The first group of outputs are arranged as normally open contacts, and the second group of contacts are arranged as selectable normally-open or normally-closed contacts. The module can simultaneously switch all 16 outputs to separate loads. Each output can conduct a maximum load of 2.0A continuously at 500VA for ac loads or 80W for dc loads maximum, but the total output power of the module cannot exceed 1440VA or 1280W.

Maximum interconnect cable length for this module is 1000 ft. (304.8 meters).

Relay Reliability

Varying load conditions can drastically shorten relay life. Operation at the same load conditions, preferably at low loads, delivers long relay life. Do not operate relays at low current or voltage after operating them at high power conditions. Operation at low power first, followed by high power, is acceptable.

Relay Environment

Relays in this module are not hermetically sealed. Do not use this module in environments with contaminants such as acid, ammonia, nitrogen and chlorine.

Module Loading

Both minimum current and minimum voltage specifications are given to assure there is always a good conduction surface between the relay's contacts. The relays will function at less than minimum specified voltages and/or currents, but module reliability is not guaranteed.

Exceeding the module's maximum power ratings will shorten the life of the relay contacts. Do not operate this module with voltage, current or power levels higher than the maximum specifications.

Load Characteristics

Inductive/high current loads cause arcing of the relay contacts, resulting in shortened contact life. Use a resistor-capacitor network (RC) across the contacts to suppress arcing. Failure to use an RC filter network could result in generation of electromagnetic noise (EMI) which can disrupt nearby electrical equipment, including your 1771 I/O chassis. Connect the RC filter network across the contacts at the field wiring arm connections. If this is not possible, an alternate (but not as effective) solution would be to place the RC network across the load.

ATTENTION: Wirewound resistors do have some inductance associated with them and may require an RC filter network.

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 contact output module is powered by the power supply connected to the I/O chassis backplane. This supply also provides the necessary power to energize the coils of the module's relays. The maximum current required from this supply with all coils energized is 1.3A. Total the current requirements of this module with the other modules in the I/O chassis to avoid overloading the chassis power supply or the I/O chassis backplane.

Initial Handling

The contact 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.

- 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 the Module

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

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 2 and 4
- between 32 and 34

Slots on the rear edge of the circuit board are matched to these connector locations 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. Turn off power to the 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. Slide the module into the chassis.
4. Press firmly to seat the module in the chassis backplane connector.
5. Swing the module locking latch down into place over the front of the module.

Connecting Wiring to the module

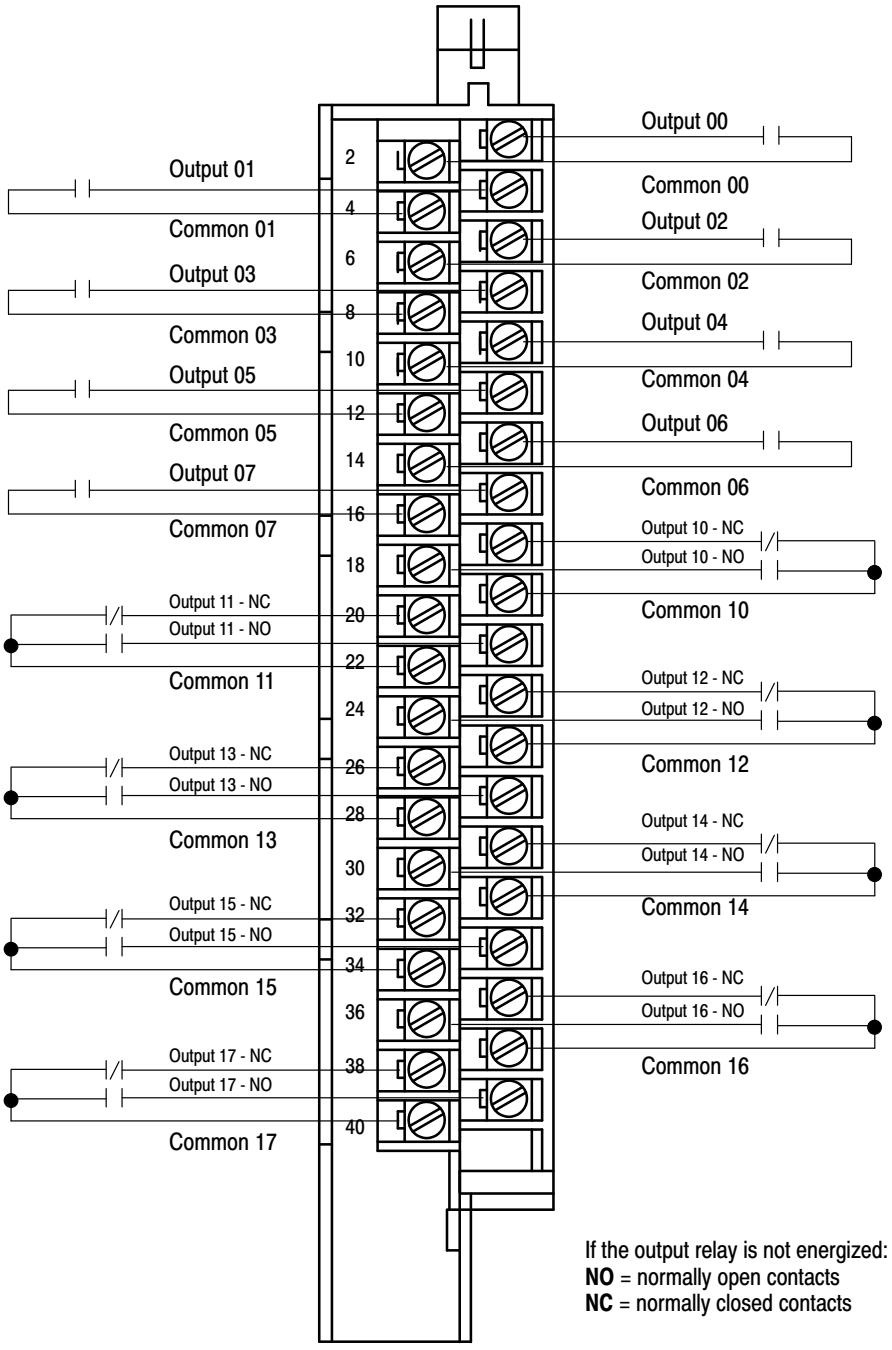
You make connections to the module through the 1771-WN field wiring arm shipped with the module. The arm pivots on the chassis to connect with the 40 terminals on the front of the module (Figure 1). The wiring arm allows the module to be removed from the chassis without disconnecting wiring.

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 Figure 1. (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.

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

Figure 1
Connection Diagram for the 1771-OW16 Contact Output Module



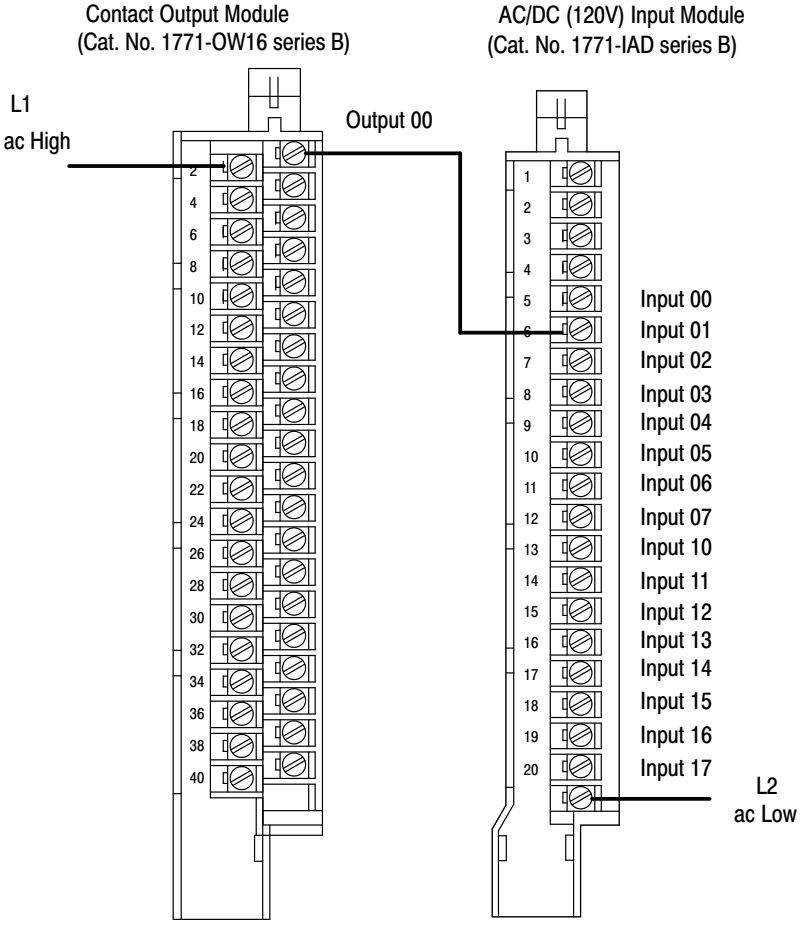
If the output relay is not energized:
NO = normally open contacts
NC = normally closed contacts

Terminal	Function
1	Output 00 (NO)
2	Common for output 00
3	Output 01 (NO)
4	Common for output 01
5	Output 02 (NO)
6	Common for output 02
7	Output 03 (NO)
8	Common for output 03
9	Output 04 (NO)
10	Common for output 04
11	Output 05 (NO)
12	Common for output 05
13	Output 06 (NO)
14	Common for output 06
15	Output 07 (NO)
16	Common for output 07
17	Output 10 (NC)
18	Output 10 (NO)
19	Common for output 10
20	Output 11 (NC)
21	Output 11 (NO)
22	Common for output 11
23	Output 12 (NC)
24	Output 12 (NO)
25	Common for output 12
26	Output 13 (NC)
27	Output 13 (NO)
28	Common for output 13
29	Output 14 (NC)
30	Output 14 (NO)
31	Common for output 14
32	Output 15 (NC)
33	Output 15 (NO)
34	Common for output 15
35	Output 16 (NC)
36	Output 16 (NO)
37	Common for output 16
38	Output 17 (NC)
39	Output 17 (NO)
40	Common for output 17

You can use an output of the 1771-OW16 series B module to drive an input of a 120V ac/dc input module (1771-IAD series B) to indicate the status of turning on a motor starter, for example (Figure 2). Inputs configured with the output module are not isolated from each other.

ATTENTION: Do not attempt to increase load current or wattage capability beyond the maximum rating by connecting two or more outputs in parallel. The slightest variation in relay switching time may cause one relay to momentarily switch the total load current.

Figure 2
Contact Output Module Driving an Input Module



Interpreting the Module Status Indicators

The module has 16 output status indicators (Figure 3). Each indicator represents the system side control status of the corresponding output relay. Each indicator is lit when its corresponding relay is energized.

Figure 3
Status Indicators

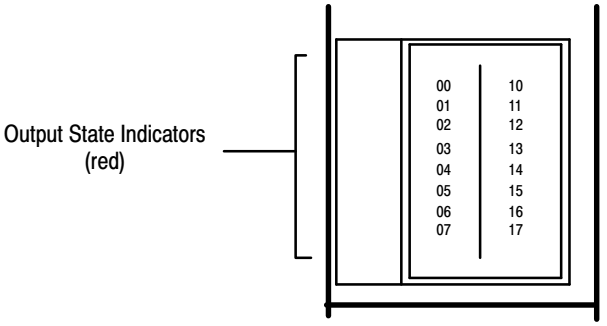


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Table 2
Maximum Output Current Rating Per Channel

Voltage	Output Current
ac	2A per output at rated power
dc	2A per output up to 40V 1A per output at 50V 0.5A per output at 100V 0.25A per output at 150V

Table 3
Maximum ac Surge Current

Maximum Contact Rating					
ac Voltage	Amperes		Continuous Carrying Current	Maximum VoltAmperes	
	Make	Break		Make	Break
120	30	3	2	3600	360
240	15	1.5	2	3600	360

Installation Instructions
Contact Output Module
(Cat. No. 1771–OW16 Series B)

Specifications

Outputs per Module	16
Module Location	1771-A1B thru -A4B I/O Chassis; 1771-AM1 or -AM2
Voltage Rating	24-250V ac (rms), 47-63Hz; 24-150V dc
Power Rating[1]	dc: 80 Watts per output (max); 1280 Watts per module (max.) ac: 500 VA per output (max); 1440 VA per module (max.) **cos Φ ⩾ 0.4**
Current Rating (maximum per channel)[2]	Refer to Table 2 on page 7
Maximum Surge Current	dc: 2A maximum per output (at rated power); ac: Refer to Table 3 on page 7
Minimum Contact Load	10mA
Operate/Release Time	10ms maximum; 5ms (±1ms) typical
Bounce Time Maximum	4ms
Switching Frequency Maximum	1/3Hz @ maximum load
Expected Life of Electrical Contacts	300K operations @ 25ºC (**cos Φ = 1)**
Power Dissipation	All relays off: 0.015 Watts; All relays on: 6.55 Watts
Thermal Dissipation	All relays off: 0.05 BTU/hr; All relays on: 22.24 BTU/hr
Backplane Current	1.3A maximum
Maximum Cable Length	1000 ft (304.8 m)
Isolation Voltage	1500V ac for 1s customer side to system side; relay rated 4000V coil to contact
Conductors Wire Size Category	14 gauge stranded maximum[3] 3/64 inch insulation maximum 1[4]
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)
Keying	Between 2 and 4 Between 32 and 34
Field Wiring Arm	Catalog Number 1771-WN
Wiring Arm Screw Torque	7-9 inch-pounds

[1] An individual output should not be subjected to high power loads and then be required to run low power loads.
[2] Output current maximum per module is limited by the maximum output power rating.
[3] 14 gauge wire connected to all terminals may not allow the field wiring arm cover to close. A smaller wire size may be required.
[4] Refer to publication 1770-4.1, Programmable Controller Wiring and Grounding Guidelines

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