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ALLEN-BRADLEY

# Power Contact Output Module
# Cat. No. 1771–OX

Installation Data

## To The Installer

This document provides information on:

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

## Pre–installation Considerations

The 1771–OX module contains mercury–wetted relays. Observe the following caution:

**ATTENTION:** Handle the module carefully and avoid excessive vibration. This can cause damage to the glass bulb which houses the mercury and contacts. Failure to observe this caution may cause damage to the module's circuitry.

**ATTENTION:** You must mount the Power Contact Output module within 30° of vertical in order for the mercury–wetted relays to function. Wait 3 minutes and/or operate the relays manually 16 times before the module is powered–up in an actual application. Perform this procedure once at initial installation of the module, and any time the module has been removed and reinstalled. Failure to do this could result in improper relay action upon power-up.

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

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## Power Supply Requirements

The controller or I/O chassis power supply, connected through the backplane of the I/O chassis, powers the logic circuitry of the contact output modules. This supply also provides the necessary power to energize the coils of the module relays. The maximum current drawn from this supply when all coils are energized is 550mA.

## Initial Handling Procedures

When handling the module, observe the following warning:



**ATTENTION:** Handle the module carefully and avoid excessive vibration. This can cause damage to the glass bulb which houses the mercury and contacts. Failure to observe this caution may cause damage to the module's circuitry.

## Installing Your Module

In this section we tell you how to key your I/O chassis, set the relay output jumpers, 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 the keying bands on the chassis backplane between:

- 6 and 8
- 16 and 18

Slots on the rear edge of the circuit board are matched to these slots to allow insertion of this type of module. You can key any connector in an I/O chassis to receive this module except for the leftmost connector reserved for adapter or processor modules.

### Setting the Programming Plugs

You must set the programming plugs before inserting the module into the 1771 I/O chassis. These plugs select either normally–open or normally–closed circuit configuration. Refer to table A.

**Table A**
**Normally–open and Normally–closed Programming Plug Locations**

| Module Output | Output Image Table Bit Address | | Normally–Open (output relay opens circuit between output terminals) | Normally–closed (output relay closes circuit between output terminals) |
|---|---|---|---|---|
| | Module located in left slot | Module located in right slot[1] | | |
| 0 | 00 | 10 | JPR 8, 10 | JPR 7, 9 |
| 1 | 01 | 11 | JPR 3, 5 | JPR 2, 4 |
| 2 | 02 | 12 | JPR 21, 23 | JPR 20, 22 |
| 3 | 03 | 13 | JPR 16, 18 | JPR 15, 17 |

1 When using 2-slot addressing.



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The module includes a selectable RC network for switching dc voltages. When switching these voltages, include the on–board surge suppression by inserting the program plug on the dc side of the jumpers 6, 11, 19, or 24 ( and Table B).

**Table B**
**Ac and Dc Programming Plug Selections**

| Output | Relay Identification | Jumper (JPR) |
|---|---|---|
| 0 | K1 | 11 |
| 1 | K2 | 6 |
| 2 | K3 | 24 |
| 3 | K4 | 19 |

When switching ac voltages, remove the on–board surge suppression by inserting the programming plug on the ac side of the jumpers. You must supply an external RC network as close as possible to the load terminals when switching ac voltages (Table C).

**Table C**
**Suggested External RC Networks for Ac Voltages (Bulletin 500 Motor Starters)**

| Starter Size | Starter Voltage | Number of Poles | R (ohms) | C (uF) | Leakage Current | Electrocube Part Number |
|---|---|---|---|---|---|---|
| 0 | 120V ac | 2–5 | 68 | 0.1 | 8mA | RG 1782–4 |
| 0 | 240V ac | 2–5 | 270 | 0.027 | 4.5mA | – |
| 1 | 120V ac | 2–5 | 68 | 0.1 | 8mA | RG 1782–4 |
| 1 | 240V ac | 2–5 | 270 | 0.027 | 4.5mA | – |
| 2 | 120V ac | 2–3 | 68 | 0.1 | 8mA | RG 1782–4 |
| 2 | 120V ac | 4–5 | 47 | 0.1 | 8mA | RG 1782–3 |
| 2 | 240V ac | 2–3 | 270 | 0.027 | 4.5mA | – |
| 2 | 240V ac | 4–5 | 180 | 0.047 | 7.5mA | – |
| 3 | 120V ac | 2–3 | 47 | 0.1 | 8mA | RG 1782–3 |
| 3 | 240V ac | 2–3 | 150 | 0.047 | 8mA | – |
|  | 240V ac | 4–5 | 100 | 0.1 | 16mA | RG 1782–6 |
| 4 | 240V ac | 2–3 | 100 | 0.1 | 16mA | RG 1782–6 |

When switching voltages less than 12V (ac or dc) or currents less than 65mA, the RC network may not be needed.

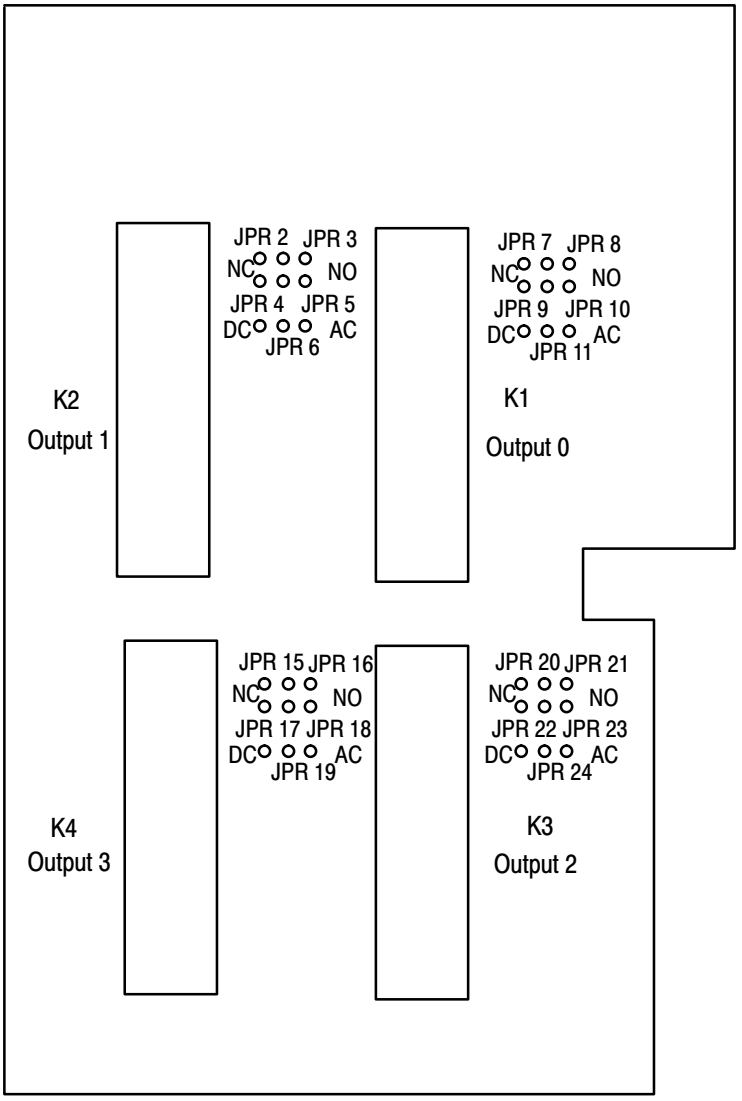


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To set any programming plug, proceed as follows:

1. Remove the 4 screws from the component side cover and remove cover.
2. Move the programming plugs to the desired position (Figure 1). Jumpers are identified by jumper number and use (N.O. or N.C.).
3. Reinstall the cover on the module.

**Figure 1**
**Programming Plug Locations**






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## Inserting the Module Into the Chassis

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. 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 edge of the module.

**Important:** Any time the module is removed or replaced in the I/O chassis you must wait at least 3 minutes and/or operate the relays manually 16 times before powering up the module. Failure to do so could result in improper relay action upon power-up.

## Connecting Wiring to the Module

You make connections to the module through the field wiring arm cat. no. 1771–WC. The arm pivots on the I/O chassis to connect with terminals on the front of the module and acts as a terminal strip. 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.)



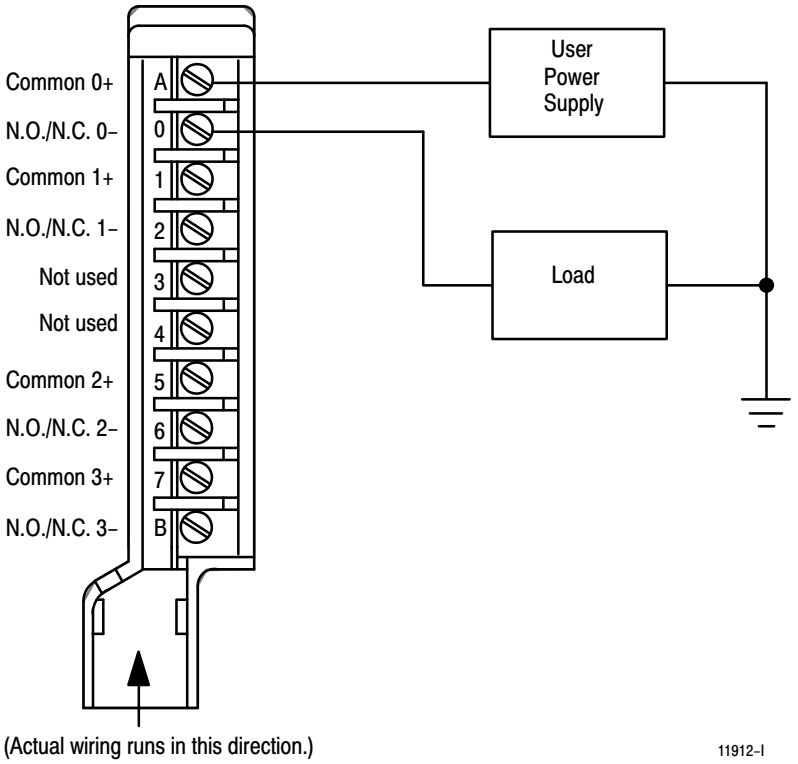
**ATTENTION:** The field wiring arm terminal identification number is not the same as the number of the bit which controls that output.

**Important:** Wait 3 minutes and/or operate the relays manually 16 times before the module is powered up.



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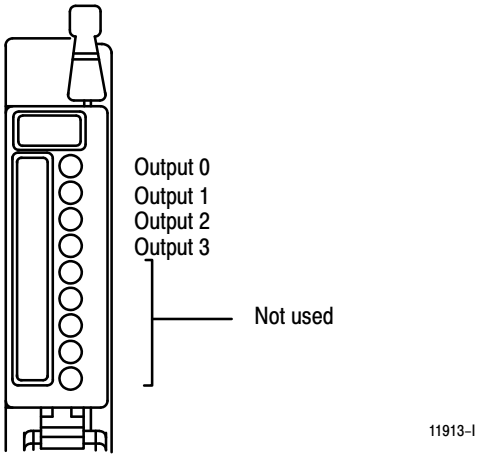
**Figure 2**
**Connection Diagram for the Selectable Contact Output Module (Cat. No. 1771–OX)**




## Interpreting the Status Indicators

The module has 4 status indicators on the module front plate (Figure 3). These represent the energized/deenergized state of the output relay coils. On indicates the output relay is energized; off indicates it is deenergized. You can quickly isolate many types of external hardware–related faults by comparing these indicators with their corresponding output devices.

**Figure 3**
**Status Indicators**






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## Replacing the Fuse

The module has a fuse which opens the output circuit under an overload condition. To replace the fuse, proceed as follows:

1. Turn off system power.

> **ATTENTION:** Remove system power before removing or installing your module in the 1771 I/O chassis. Failure to observe this warning could result in damage to the module circuitry and/or undesired operation with possible injury to personnel.

2. Pivot the field wiring arm away from the module and remove the module from the chassis.
3. Remove the protective cover from the side of the module by removing the 2 screws.
4. Replace the fuse with a 7A, 250V 3AG slow blow fuse.
5. Reinstall the protective cover and insert the module in the chassis.
6. Reposition the field wiring arm on the module.
7. Restart system power.

## Disposing of the Module

The 1771-OX module contains mercury-wetted relays. At the end of the equipment's life, it should be collected separately from any unsorted municipal waste.



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**Installation Data**
Power Contact Output Module
(Cat. No. 1771–OX)

## Specifications

| | |
|---|---|
| Outputs per Module | 4 N.O/N.C. |
| Module Location | 1771 I/O chassis |
| Voltage Rating | 0–250V ac rms; 0–175V dc |
| Current Rating | 2A (maximum) |
| Surge Current<br>(Repeatable every 10 seconds) | 5.5A ac peak for 5 seconds;<br>6A dc for 5 seconds;<br>15A dc for 500msec |
| Power Rating | 200VA |
| Operate/Release Time | 10ms maximum |
| On–state Contact Resistance | 0.25 ohms maximum |
| Signal Delay | 10ms on or off |
| Power Dissipation | 2.9 Watts (max.), 2.6 Watts (min.) |
| Thermal Dissipation | 9.9 BTU/hr (max.), 8.9 BTU/hr (min.) |
| Backplane Current | 550mA maximum |
| Isolation Voltage | 2500V ac rms |
| Conductors Wire Size<br><br>Category | 14 gauge stranded maximum<br>3/64 inch insulation maximum<br>1[1] |
| Environmental Conditions<br>Operating Temperature<br>Storage Temperature<br>Relative Humidity | <br>0 to 60°C (32 to 140°F)<br>–40 to 85°C (–40 to 185°F)<br>5 to 95% (without condensation) |
| Keying | Between 6 and 8<br>Between 16 and 18 |
| Fuse | 7A, 250V Type 3AG Slo Blow (1 per circuit) |
| Field Wiring Arm | Cat. No. 1771–WC |
| 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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