# DC (10 - 30V) Output Module
# Cat. No. 1771-OVN

## Installation Data

**To The Installer**

This document provides information on:

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

**Pre-installation Considerations**

The 1771-OVN dc output module is a sink output and requires a source input. A source input provides a positive voltage path and a sink output provides a path to ground.

You must use this module in a 1771-A1B, -A2B, -A3B, -A3B1, -A4B or later 1771 I/O chassis. Refer to the table below for processor compatibility.

**Table A**
**Processor Compatibility Chart**

| System Type | Use with Processors: |
|---|---|
| Local | Mini-PLC-2/02 (cat. no. 1772-LZ, -LZP)<br>Mini-PLC-2/16 (cat. no. 1772-LX, -LXP)<br>Mini-PLC-2/17 (cat. no. 1772-LW, -LWP)<br>PLC-5/15, Series B and later (cat. no. 1785-LT) |
| Remote (with a 1771-ASB remote I/O adapter) | PLC-2/20 (cat. no. 1772-LP2)<br>PLC-2/30 (cat. no. 1772-LP3)<br>PLC-3 (cat. no. 1775-L1, -L2, -L3, -L4)<br>PLC-3/10 (cat. no. 1775-LP4, -LP8)<br>PLC-5/15, Series B and later (cat. no. 1785-LT) |

Do not place this module in the same I/O chassis as the 1771-IX thermocouple module. You can use this module in the same chassis as the 1771-IXE thermocouple module.

**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 output modules. The maximum current drawn from this supply is 330mA.

**Installing Your Module**

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

### 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.

The output module contains components which can be damaged by electrostatic discharge. The module is shipped in an electrostatic shielded bag for protection. Follow the handling procedures outlined below to guard against damage to your module.

- 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-safe work station.
- When not in use, keep the module in its static-free 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 the keying bands on the chassis backplane between:

- 14 and 16
- 32 and 34

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.

## 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 edge of the module.

## Connecting Wiring to the Module

You make connections to the module through the field wiring arm cat. no. 1771-WN. 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 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.

3

### I/O Module Groups

Each module condenses two full module groups (32 outputs) into each I/O chassis slot. For example:

- Module group 1 = inputs 00 through 17

- Module group 2 = inputs 00 through 17 (module group 2 represents the second set of outputs).

In Figure 1, terminals 1 through 20 represent module group 1. Terminals 21 through 40 represent module group 2. Terminals 10, 20, 30 and 40 are DC common and terminals 1, 11, 21 and 31 are DC power.

**Figure 1**
**Connection Diagram for the 1771-OVN DC Output Module**

Note: Terminals on the left are even numbered (2 thru 40) , and terminals on the right are odd numbered (1 thru 39).
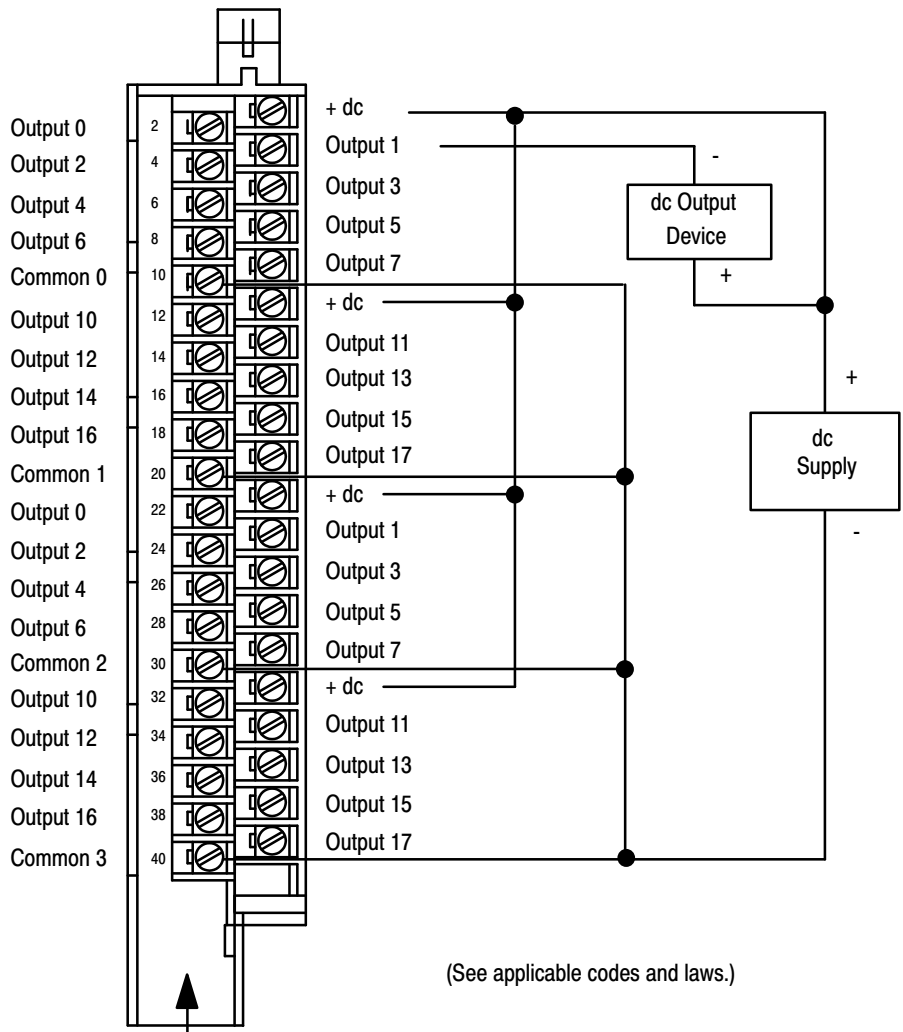


(See applicable codes and laws.)

(Actual wiring runs in this direction.)

10435-I

4

⚠ **ATTENTION:** Observe proper polarity with dc power connections. Reverse polarity, or application of ac voltage could damage the module.

⚠ **ATTENTION:** Miswiring or shorting the output terminals will cause permanent damage to this module.

**Table B**
**Module Output Terminal Assignments**

| Terminal Number | Output Assignment | I/O program address | Terminal Number | Output Assignment | I/O program address |
|---|---|---|---|---|---|
| 01 | [1] 10 to 30V dc | - | 21 | [1] 10 to 30V dc | - |
| 02 | Output 00 | 0RG00 | 22 | Output 00 | 0RG00 |
| 03 | Output 01 | 0RG01 | 23 | Output 01 | 0RG01 |
| 04 | Output 02 | 0RG02 | 24 | Output 02 | 0RG02 |
| 05 | Output 03 | 0RG03 | 25 | Output 03 | 0RG03 |
| 06 | Output 04 | 0RG04 | 26 | Output 04 | 0RG04 |
| 07 | Output 05 | 0RG05 | 27 | Output 05 | 0RG05 |
| 08 | Output 06 | 0RG06 | 28 | Output 06 | 0RG06 |
| 09 | Output 07 | 0RG07 | 29 | Output 07 | 0RG07 |
| 10 | Common 0 | - | 30 | Common 2 | - |
| 11 | [1] 10 to 30V dc | - | 31 | [1] 10 to 30V dc | - |
| 12 | Output 10 | 0RG10 | 32 | Output 10 | 0RG10 |
| 13 | Output 11 | 0RG11 | 33 | Output 11 | 0RG11 |
| 14 | Output 12 | 0RG12 | 34 | Output 12 | 0RG12 |
| 15 | Output 13 | 0RG13 | 35 | Output 13 | 0RG13 |
| 16 | Output 14 | 0RG14 | 36 | Output 14 | 0RG14 |
| 17 | Output 15 | 0RG15 | 37 | Output 15 | 0RG15 |
| 18 | Output 16 | 0RG16 | 38 | Output 16 | 0RG16 |
| 19 | Output 17 | 0RG17 | 39 | Output 17 | 0RG17 |
| 20 | Common 1 | - | 40 | Common 3 | - |

Where:     R = rack number (1, 2, 3, etc.)
           G = I/O group (0 - 7)

[1] You can connect a different power supply to each 10 to 30V dc terminal. They are not connected internally. Connect each common (0, 1, 2, 3) to the corresponding supply. Commons are not internally connected.

5

## Interpreting the Status Indicators

The module has 32 status indicators on the module front plate. These represent the control status of the outputs. Each indicator is lit when its corresponding output is energized. An additional indicator is provided to indicate a blown fuse condition.

**Figure 2**
**Status Indicators**



Status Indicators (red)

Fuse Blown Indicator
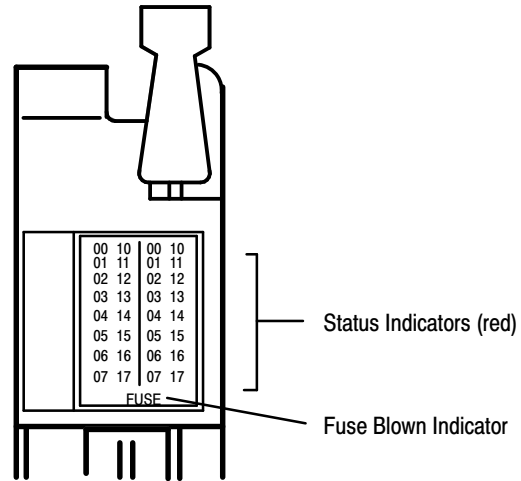
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**Replacing the Fuses**

To replace a blown fuse, proceed as follows:

> ⚠ **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.

1. Turn off power to the chassis.

2. Remove the module from the I/O chassis.

3. Remove the blown fuse from the fuse holder (accessible through side cover), and replace it with a 4A, 250V normal blow fuse.

4. Reinsert the module into the I/O chassis.

5. Turn on power to the chassis.

## Specifications

| | |
|---|---|
| Outputs per module | 32 (4 groups of 8) |
| Module Location | 1771-A1B thru -A4B or later I/O Chassis |
| Voltage Rating | 10 to 30V dc |
| Isolation Voltage | 1500V ac rms |
| Maximum Output Current Rating | 0.5A per output (not to exceed 8A per module) <br> 2A per output group |
| Maximum Surge Current | 2A per output for 10ms; repeatable every 2 seconds. <br> 5A per output group for 10ms; repeatable every 2 seconds. <br> 20A per module for 10ms; repeatable every 2 seconds. |
| Maximum On-state Voltage Drop | 1.5V dc at rated output current |
| Maximum Off-state Leakage Current | 1.0mA @ 55$^o$C |
| Output Signal Delay | On to off propagation delay 2.0msec <br> Off to on propagation delay 0.1msec |
| Power Dissipation | 13.7W (max); 1.7W (min) |
| Thermal Dissipation | 46.7 BTU/hr (max); 5.7 BTU/hr (min) |
| Backplane Current | 330mA @ 5V dc maximum |
| Conductors       Wire Size <br>                      Category | 14 ga. stranded (max) <br> 3/64 inch insulation (max) <br> 1[1] |
| Environmental Conditions <br>       Operational Temperature <br>       Storage Temperature <br>       Relative Humidity | 0$^o$ to 60$^o$C (32$^o$ to 140$^o$F) <br> -40$^o$ to 85$^o$C (-40$^o$ to 185$^o$F) <br> 5 to 95% (without condensation) |
| Field Wiring Arm | 1771-WN |
| Wiring Arm Screw Torque | 7-9 inch-pounds |
| Keying | Between 14 and 16 <br> Between 32 and 34 |
| Fuses | Four 4.0A, 250V normal blow fuses (1 per group) |

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

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