



DC (10–60V) Output Module Cat. No. 1771-OBD Series B

Installation Instructions

To the Installer

This document provides information on:

- important pre-installation considerations
- power supply requirements
- initial handling
- installing the module
- using the indicators for troubleshooting
- replacing the fuse
- module specifications

Pre-installation Considerations

The 1771-OBD Series B module is compatible with all chassis **except** 1771-A1, 1771-A2, 1771-A4 chassis. Make sure no other output module or single slot block transfer module is placed in the same module group when using 2-slot addressing.

The 1771-OBD Series B module has 12 amp output capability. If you want to use this option, follow the procedures on page 5.

Power Requirements

Your module receives its power through the 1771 I/O chassis backplane from the chassis power supply. The module requires 130mA from the output of this supply. To calculate the requirements for the backplane power supply, add 130mA to the power requirements of all other modules in the I/O chassis. Calculating the requirements will prevent an overload to the chassis backplane and/or backplane power supply.

Initial Handling

The dc output module is shipped in static-shielded packaging 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 its original static-shielded packaging.

Installing Your Module

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

Keying Your I/O Chassis

Use the plastic keying bands, shipped with each I/O chassis, to key the I/O slots to accept only this type of module.

The module circuit board is slotted in two places on the rear edge. The position of the keying bands on the backplane connector must correspond 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. Place keying bands between the following numbers labeled on the upper backplane connector:

- Between 10 and 12
- Between 22 and 24

You can change the position of these keys if system redesign and rewiring makes insertion of a different module necessary.

Installing the Output Module

To install the dc output module in your 1771 I/O chassis, follow the steps listed 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 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 I/O chassis.
2. Place the module in the plastic tracks on the top and bottom of the slot that guides the module into position.
3. Do not force the module into its backplane connector. Apply firm, even pressure on the module to seat it properly.
4. Snap the chassis latch over the top of the module to secure its position.
5. Connect the wiring arm to the module.
6. Make wiring connections to the field wiring arm as indicated under “Connecting Wiring to the Output Module.”

Connecting Wiring to the Output Module

Connections to the output module are made to the 21 terminal field wiring arm (cat. no. 1771-WH) shipped with the module.

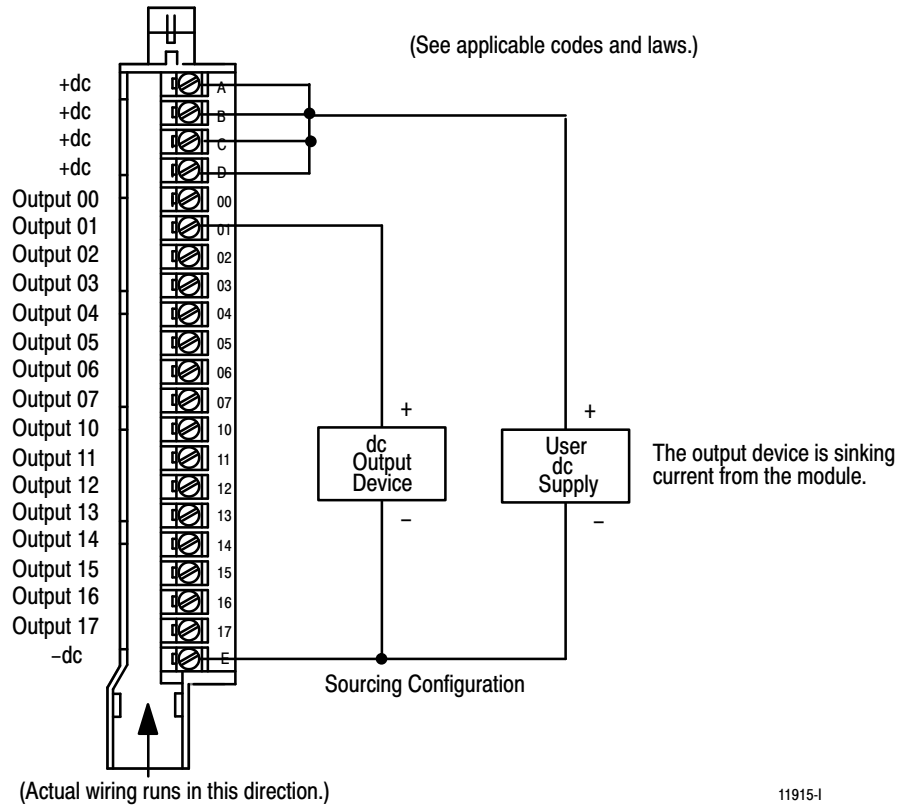


ATTENTION: Permanent damage to the module may occur in applications where frequent overload or short circuit conditions are possible. To prevent module damage where these conditions exist, use the optional 1771-WHF or 1771-WHFB fused field wiring arm instead of the 1771-WH field wiring arm shipped with the module.

Attach the wiring arm to the pivot bar on the bottom of the I/O chassis. The wiring arm pivots upward and connects with the module so you can install or remove the module without disconnecting the wires.

Optional fused wiring arms (cat. no. 1771-WHF or 1771-WHFB) include individual 3A and 1.5A fuses for each of the 16 outputs. These fuses protect the module output transistors. For more information on fused wiring arms, refer to publication 1771-2.116.

Figure 1
Connection Diagram



You must supply dc at terminals A through D on the wiring arm. You need four dc connections to accommodate the total required surge rating on the module without overstressing any single connection on the field wiring arm. Jumper all dc connections together to prevent module damage. Connect terminal E to dc common.



ATTENTION: Observe proper polarity, as indicated in the connection diagram (Figure 1) with dc power connections. Reverse polarity, or application of ac voltage, could damage the module.

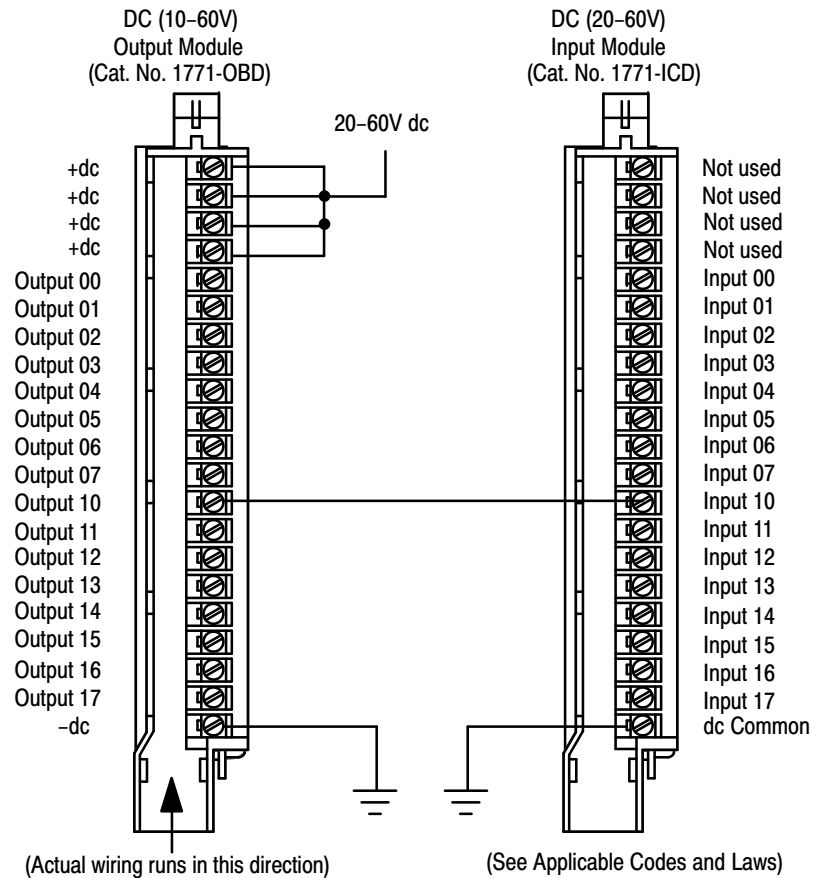
Important: You can use a DC (10–60V) Output Module (cat. no. 1771-OBD Series B) to directly drive terminals on the following modules:

- DC (5–30V) Input module (cat. no. 1771-IQ)
- DC (10–30V) Input module (cat. nos. 1771-IBD, -IBN)
- DC (20–60V) Input module (cat. no. 1771-ICD)
- DC (12–24V) Input module (cat. no. 1771-IB)
- DC (24V) Input module (cat. no. 1771-IQ16)
- DC (48V) Input module (cat. no. 1771-IC)

Refer to _____ for direct connection to a 1771-ICD input module.

Important: Use the same dc supply to power both modules to make sure that ground is at the same potential.

Figure 2
Driving an Input Module with an Output Module



Your module can drive a total of 12 amps per module. To use this capability, do the following:

1. Provide external fusing which places a 3 amp fuse in series with each output channel. Do this by using the 1771-WHF fused wiring arm or a fused terminal block solution.
2. Replace your module's existing 10 amp, 250 volt rectifier fuse with a Littlefuse 15 amp, 250 volt fast blow fuse, part number 314015.



ATTENTION: To configure your module for the 12 amp option, you must use it in an application providing individually fused outputs according to the above procedures. The 15 amp fuse will limit total module current but it will not protect the output transistors.

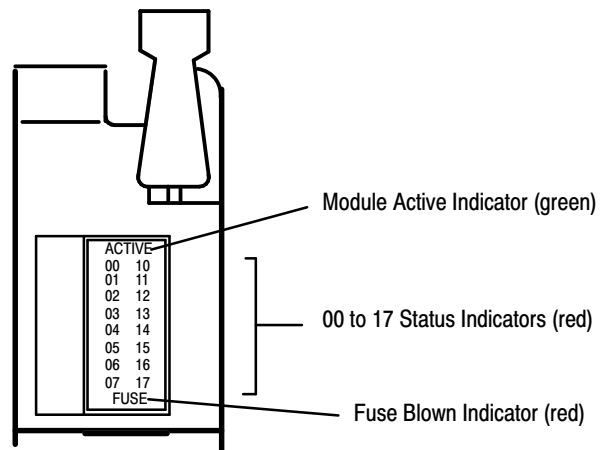
Interpreting the Status Indicators

The front panel of your module contains one green module active indicator, 16 red status indicators and one red fuse blown indicator (Figure 3). The green module active indicator lights when the module is powered and the processor keyswitch is on “run”. The indicator light turns off when the processor resets the outputs.

The module active indicator must be on to properly interpret the red status indicators. The red status indicators are provided for indication of individual outputs. They indicate the state to which the transistor is commanded by the processor and are powered by circuitry within the module. The indicators will turn on and off as commanded by the processor. They do not indicate the presence or absence of dc power at an output terminal.

The fuse blown indicator turns on when the fuse is blown. When the fuse blown indicator is lit, check the fuse. After checking the fuse, make sure the field wiring arm is firmly in place. Do this before checking the status of the other indicators.

Figure 3
Status Indicators



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Replacing the Fuse

An overload or short will cause the single onboard fuse to blow when the module output exceeds 10A. **The onboard fuse may not always protect individual output transistors.** To replace the onboard fuse, do the following:

1. Turn off all power to the I/O chassis and all output device power to the field wiring arm.



ATTENTION: Remove power from the 1771 I/O chassis backplane and wiring arm before removing or installing the module.

- Failure to remove power from the backplane or field 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.

2. Remove the module from the chassis and replace the blown fuse with a 10A, 250V rectifier fuse (1/4 x 1-1/4 inch), Littelfuse part number 322010. The fuse is accessible through the side of the module.



ATTENTION: Failure to use the specified replacement fuse may cause module damage, degradation of performance, or injury.

3. Replace the module in the chassis and attach the field wiring arm.
4. Turn system power ON.

Troubleshooting

Use this table to help you interpret the 1771-OBD status indicators and to troubleshoot module and system faults.

Indicator Status	Description of Fault or System Status	Action to Take
Module active ON (green)	Normal Indication.	None.
Module active ON (green) and Output status ON (red)	Check voltage at output point on swing arm.	If voltage is present, take no action. If no voltage is present, replace module.
Module active ON (green) and Output status OFF (red)	Output point not ON in data table.	None.
	Module failure.	Replace module.
Module active OFF and Output status ON (red) or OFF	1. Processor is in program mode. 2. Module not functioning properly.	1. None. 2. Check chassis power supply and processor. If they are OK, replace module.

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DC (10–60V) Output Module
Cat. No. 1771–OBD Series B

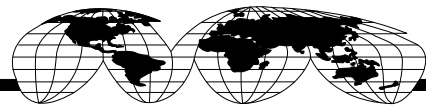
Specifications

Outputs per Module	16
Module Location	All locations except 1771-A1, -A2, and -A4 I/O chassis
Output Voltage Range	10 to 60V dc
Minimum Load Current	2.5mA per output
Output Current Rating	2A per output - not to exceed 8A per module (except when using 12A option)
Surge Current (maximum)	4A per output for 10ms, repeatable every 2 seconds 25A per module for 10ms, repeatable every 2 seconds
On State Voltage Drop (max.)	0.3V dc at rated current
Off State Leakage Current (max.)	0.5mA per output
Signal Delay	0.1ms on or .2ms off
Power Dissipation	5.6 Watts (max.), 1 Watt (min.)
Thermal Dissipation	19.1 BTU/hr (max.), 3.4 BTU/hr (min.)
Backplane Current	130mA @ 5V dc ±5%
Opto-electrical Isolation	1500V ac (rms)
Power Rating	0.6 Watt per output
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)
Conductors Wire Size	14 gauge stranded maximum 3/64 inch insulation maximum
Category	1 ¹
Keying	Between 10 and 12 Between 22 and 24
Fuse	10A, 250V rectifier fuse (1/4 x 1–1/4 inch)
Field Wiring Arm Standard Optional Fused	Catalog Number 1771-WH Catalog Number 1771-WHF, -WHFB

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



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