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ALLEN-BRADLEY

DC (12–24V) Driver Logic Input Module (Cat. No. 1771–IV)

Installation Data

To The Installer

This document provides information on:

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

Pre–installation Considerations

The 1771–IV module is compatible with the following 2 and 3–wire devices:

- dc proximity switches
- photoelectric sensors
- pushbuttons
- limit switches
- float switches
- selector switches

When using a 3–wire input device, the input device must be capable of sinking an on–state minimum current of 8mA at 12V dc up to 24mA at 24V dc. The off–state leakage current of your 3–wire devices should not exceed 1mA.

This module contains input filtering to limit the effect of voltage transients caused by contact bounce and/or radiated electrical noise. The delay due to input filtering is nominally 15±7ms for turning inputs on, and 15±7ms for turning inputs off.

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Power Requirements

Your module receives its power through the 1771 I/O chassis backplane from the chassis power supply. The module requires 74mA from the output of this supply. Add this to the requirements of all other modules in the I/O chassis to prevent overloading the chassis backplane and/or backplane power supply.

Initial Handling

The dc input 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 Your Module

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

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 backplane connector:

- Between 8 and 10
- Between 12 and 14

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

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Installing the Input Module

To install the dc input 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 in Figures 1 and 2.

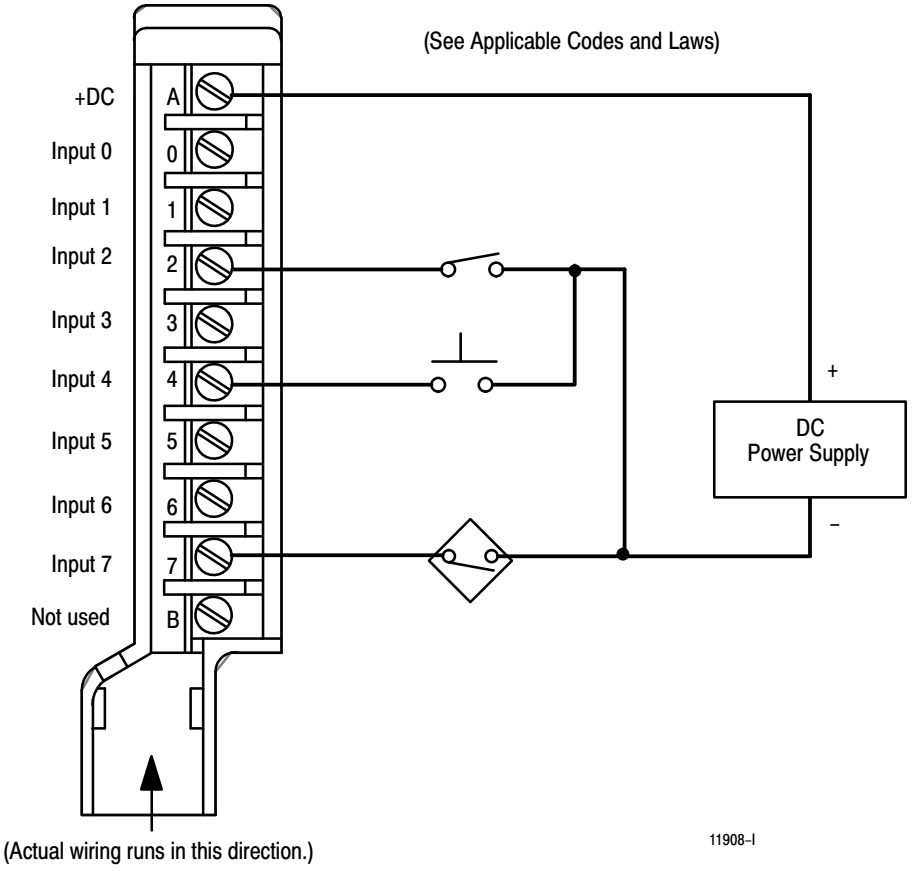
Connecting Wiring to the Input Module

Connections to the input module are made to the field wiring arm (cat. no. 1771–WA) 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.

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

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Figure 1
Connection Diagram (2–Wire Devices)



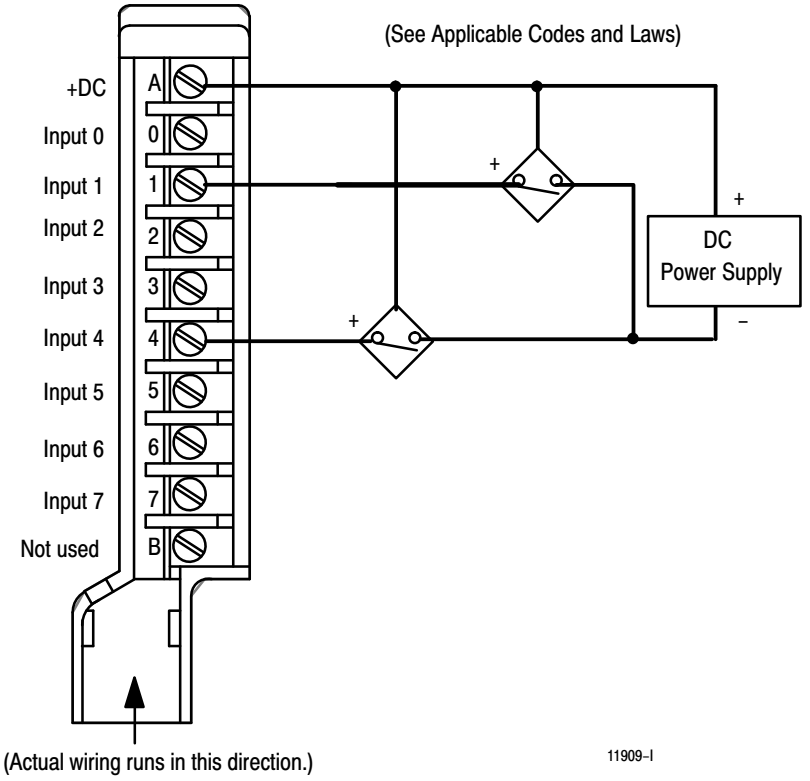
Connect one terminal of your 2–wire device (Figure 1) or 3–wire input device ( ) to terminals 0 through 7.

Connect terminal A to the +dc line. Terminal B is not used. Connect the –dc line to the other terminal of your input devices. Use stranded 14 or 16 gauge wire to minimize the voltage drop over long cable distances.

When using a 3–wire input device, the input device must be capable of sinking an on–state minimum current of 8mA at 12V dc up to 24mA at 24V dc. The off–state leakage current of your 3–wire devices should not exceed 1mA.

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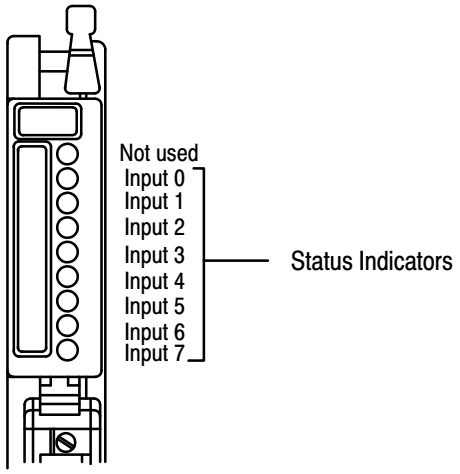
Figure 2
Connection Diagram (3–Wire Devices)



Interpreting the Status Indicators

The front panel of your module contains 8 red status indicators (Figure 3). The red status indicators are provided for system logic side indication of individual inputs. When a red indicator lights, voltage is present on the terminal. The module transfers this information to the backplane for the processor to read.

Figure 3
Status Indicators



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Installation Data
DC (12–24V) Driver Logic Input Module
Cat. No. 1771–IV

Specifications

Inputs per Module	8
Module Location	1771 I/O chassis
Input Voltage Range (+dc)	12 to 24V dc
Nominal Input Current (Sourced)	8mA at (+dc – 12V dc); 24mA at (+dc – 24V dc)
Minimum Off–state Current	3.0mA at (+dc – 7V dc)
Maximum Off–state Voltage	(+dc – 7V dc)
Minimum On–state Voltage	(+dc – 10V dc)
Input Impedance	1 to 2K ohms maximum (on–state) 2 to 3K ohms maximum (off–state)
Input Signal Delay	Low to high propagation delay 15ms (±7ms) High to low propagation delay 15ms (±7ms)
Power Dissipation	5.8 Watts (max.), 0.4 Watts (min.)
Thermal Dissipation	19.9 BTU/hr (max.), 1.3 BTU/hr (min.)
Backplane Current	74mA @ 5V dc ±5%
Isolation Voltage	1500V ac rms
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 Category	14 gauge stranded maximum 3/64 inch insulation maximum 2[1]
Keying	Between 8 and 10 Between 12 and 14
Field 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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WORLD HEADQUARTERS
Allen-Bradley
1201 South Second Street
Milwaukee, WI 53204 USA
Tel: (1) 414 382-2000
Telex: 43 11 016
FAX: (1) 414 382-4444

EUROPE/MIDDLE EAST/AFRICA HEADQUARTERS
Allen-Bradley Europe B.V.
Amsterdamseweg 15
1422 AC Uithoorn
The Netherlands
Tel: (31) 2975/43500
Telex: (844) 18042
FAX: (31) 2975/60222

ASIA/PACIFIC HEADQUARTERS
Allen-Bradley (Hong Kong) Limited
Room 1006, Block B, Sea View Estate
28 Watson Road
Hong Kong
Tel: (852) 887-4788
Telex: (780) 64347
FAX: (852) 510-9436

CANADA HEADQUARTERS
Allen-Bradley Canada Limited
135 Dundas Street
Cambridge, Ontario N1R 5X1
Canada
Tel: (1) 519 623-1810
FAX: (1) 519 623-8930

LATIN AMERICA HEADQUARTERS
Allen-Bradley
1201 South Second Street
Milwaukee, WI 53204 USA
Tel: (1) 414 382-2000
Telex: 43 11 016
FAX: (1) 414 382-2400

Publication 1771–2.25 – May 1992
Supersedes publication 1771–2.25 – June 1990

P/N 955112–17

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