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ALLEN-BRADLEY

DC (10–30V) Input Module Cat. No. 1771–IBN

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–IBN dc input module is a sink input and requires a source output. A sink input provides a path to ground and a source output provides a positive voltage path.

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) Mini–PLC–2/16 (cat. no. 1772–LX, –LXP) Mini–PLC–2/17 (cat. no. 1772–LW, –LWP) 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) PLC–2/30 (cat. no. 1772–LP3) PLC–3® (cat. no. 1775–L1, –L2, –L3, –L4) PLC–3/10 (cat. no. 1775–LP4, –LP8) 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.

This module has input filtering to limit the effect of voltage transients caused by contact bounce and/or electrical noise. Specifications for input filtering are listed in the specifications at the end of this document.

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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 dc input module. The maximum current drawn from this supply is 280mA.

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 input 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
- 18 and 20

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.

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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.

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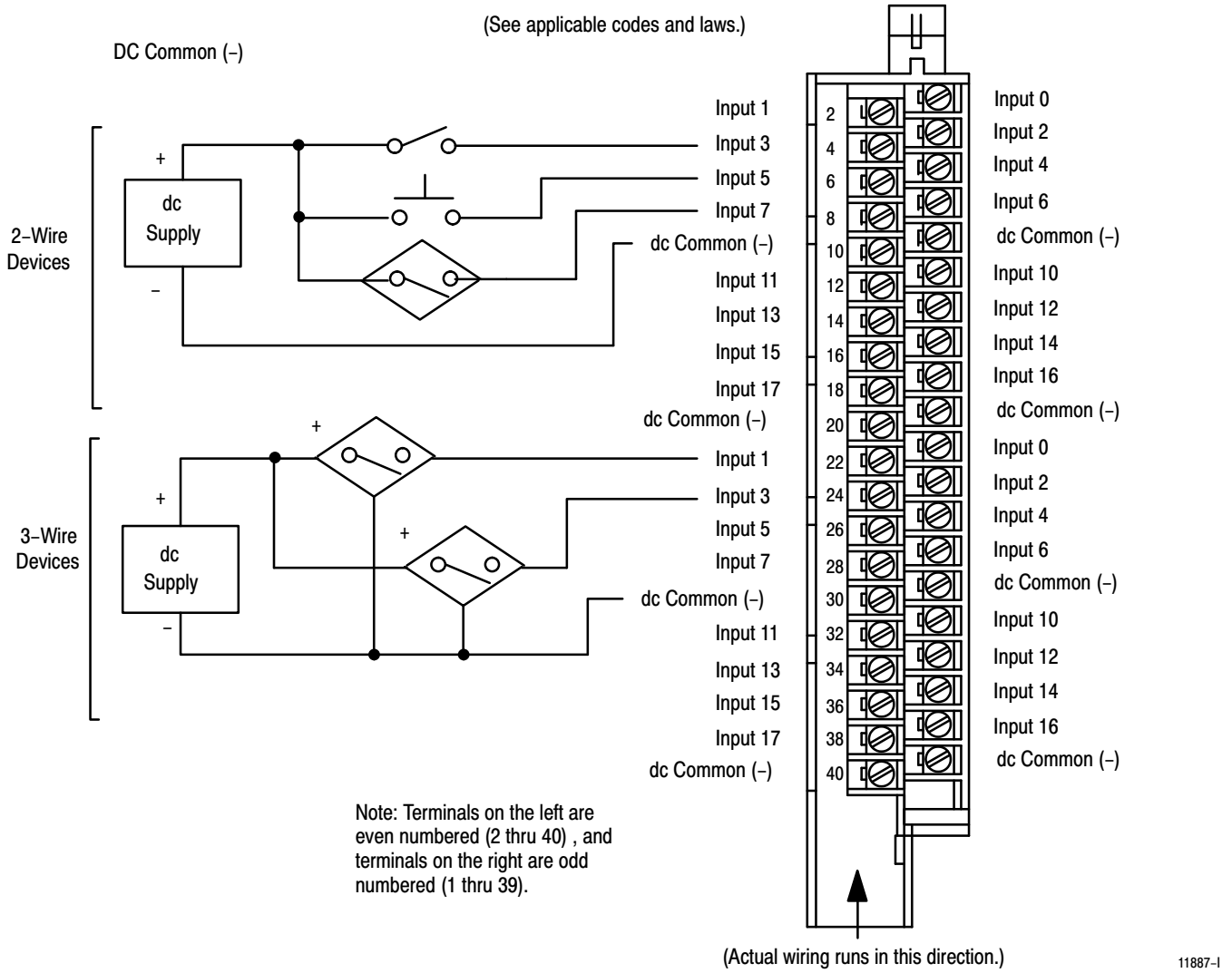
I/O Module Groups

Each module condenses two full module groups (32 inputs) 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 inputs).

In Figure 1, terminals 1 through 20 represent module group 1, with terminals 9, 10, 19 and 20 dc common. Terminals 21 through 40 represent module group 2, with terminals 29, 30, 39 and 40 dc common.

Figure 1
Connection Diagram for the 1771–IBN DC Input Module



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

Table B
Module Input Terminal Assignments

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

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

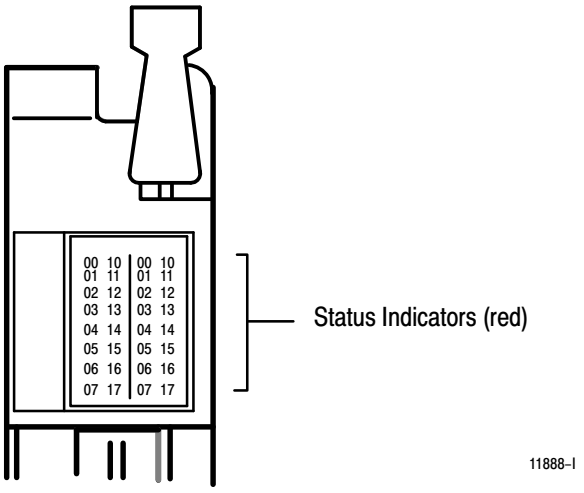
1 You can connect a different power supply to each DC common (0, 1, 2 and 3). Terminals 09/10 are common for terminals 01 thru 08; 19/20 for 11 thru 18; 29/30 for 21 thru 28; 39/40 for 31 thru 38.

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Interpreting the Status Indicators

The module has 32 status indicators on the module front plate (Figure 2). These represent the control status of the inputs. Each indicator is lit when voltage is present at the corresponding input.

Figure 2
Status Indicators



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Installation Data
DC (10 – 30V) Input Module
(Cat. No. 1771–IBN)

Specifications

Inputs per module	32
Module Location	1771–A1B thru -A4B or later I/O Chassis
Input Voltage Range	10 to 30V dc
Nominal Input Current	4.5mA @ 10V
Minimum Off–state Current	1.7mA @ 5V dc
Maximum Off–state Voltage	5V dc
Minimum On-state Voltage	10V dc
Input Impedance	2.2K
Input Signal Delay	Low to high propagation: 6ms(±2ms) High to low propagation: 6ms(±2ms)
Power Dissipation	15.6W (max); 1.5W (min)
Thermal Dissipation	53.3 BTU/hr (max); 5.1 BTU/hr (min)
Backplane Current	280mA @ 5V dc maximum
Isolation Voltage	1500V ac rms
Conductors Wire Size Category	14 gauge stranded (max)[1] 3/64 inch insulation (max) 1[2]
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)
Keying	Between 14 and 16 Between 18 and 20
Field Wiring Arm	1771-WN
Wiring Arm Screw Torque	7-9 inch-pounds

[1] 4 gauge wire connected to all terminals may not allow the cover on the field wiring arm to close. A smaller gauge wire may be used.

[2] You use this conductor-category information for planning conductor routing as described in the system-level installation manual.

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