SPECTRUM CONTROLS

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Isolated DC (48 VDC) Input Module
16 Discrete Inputs
Cat. No. 1771sc-ICI16

Installation Data

To the Installer

This document provides information on:

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

Throughout this document, we use the following symbol to make you aware of safety considerations:

This symbol identifies information about practices or circumstances that can lead to equipment damage, personal injury, or death. This symbol helps you identify a hazard, avoid the hazard, and recognize the consequences.

Please read all the information in this document before installing the product. This document assumes a full working knowledge of the relevant PLC.

CAUTION

This input module is not rated for installations in hazardous locations. Any peripheral equipment connected to this device must be suitable for the location in which it is used.

Important Pre-Installation Considerations

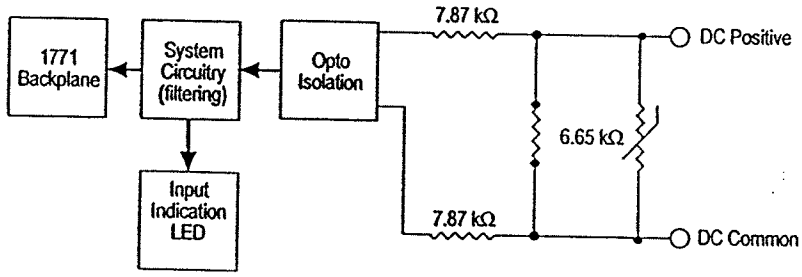
This module must be used with a 1771 Series B (or later) I/O chassis.

This module contains input filtering to limit the effects of voltage transients caused by contact bounce and/or radiated electrical noise. This filtering cannot be turned off. The delay due to filtering is:

- Off to On 2.7 ms for DC
- On to Off 21.8 ms for DC

This module is designed to operate with input devices such as limit switches, float switches, selector switches, push-buttons, and proximity switches. A simplified schematic for this module appears in Figure 1.

Figure 1
Simplified Schematic



The module is shipped in a static-shielded container to guard against electrostatic discharge damage. Observe the following precautions when handling the module:

CAUTION

ELECTROSTATICALLY SENSITIVE COMPONENTS

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 gold backplane connector or connector pins.**
- **If available, use a static-free work station.**
- **When not in use, keep the module in a static-shielded bag.**

Failure to observe these precautions can cause degraded performance or damage.

Power Supply Requirements

Your module receives its power from the chassis power supply through the 1771 I/0 chassis backplane. The module requires 100 mA, maximum, from the output of this supply. Add this to the requirements of all other modules in the I/O chassis to prevent overloading of the chassis backplane and/or backplane power supply.

Installing The 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 three places on the rear edge. The position of the keying bands on the backplane connector must correspond to these slots in order to insert your module. You can key any connector in an I/0 chassis to receive this module except for the left-most connector, which is reserved for adapter or processor modules.

Place keying bands between the following numbers labeled on the backplane connector:

- Between 2 and 4
- Between 12 and 14

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

Installing The Module In Your Chassis

To install the 1771sc-ICI16 in your 1771 I/0 chassis, follow these steps:

WARNING

POSSIBLE EQUIPMENT DAMAGE AND OPERATION

Always remove power from the 1771 I/0 chassis backplane and wiring arm before removing or installing an I/O module.

- Failure to remove power from the backplane or wiring arm can cause module damage, degraded performance, or injury.
- Failure to remove power from the backplane can also cause injury or equipment damage due to possible unexpected operation.

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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, as detailed below.

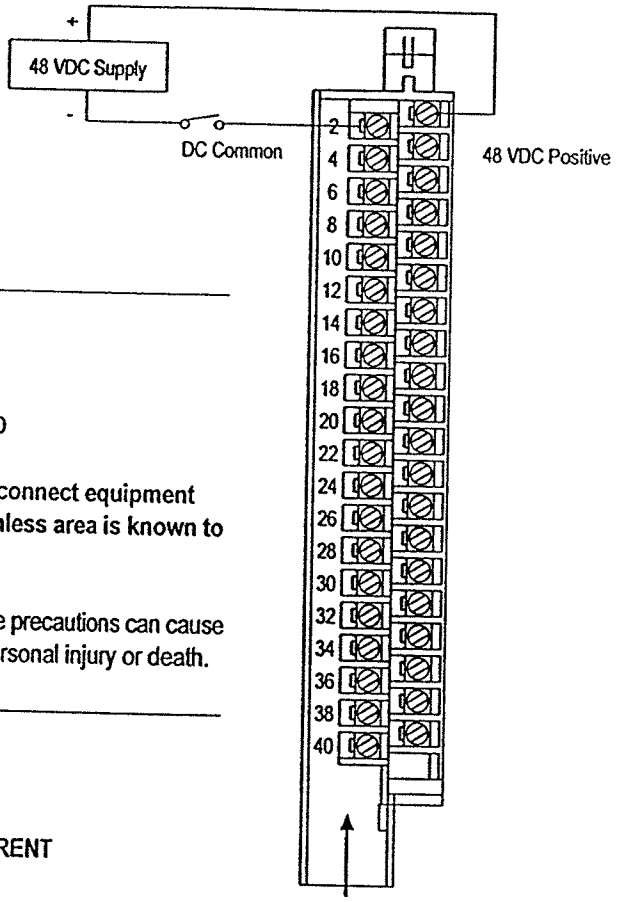
Connecting Wiring to the Input Module

Connections to the input module are made to the 40-terminal field wiring arm (cat. no. 1771-WN) shipped with the module (Figure 2). 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.

Connect your input wiring to the field wiring arm as shown in Figure 2. Each input channel has a positive and negative terminal. Connect only one wire to a terminal. When multiple connections to a terminal are required, use an auxiliary terminal strip.

CAUTION: Included with the module is a 40-position swing arm shorting bar, Allen-Bradley part number 97697301. Be aware that using the shorting bar will eliminate isolation between channels by tying all grounds together.

Figure 2
Connection Diagram



(Actual wiring runs in this direction.)

Always follow the applicable codes and laws in your area.

Terminal	Function
1	Input 00 +
2	Input 00 -
3	Input 01 +
4	Input 01 -
5	Input 02 +
6	Input 02 -
7	Input 03 +
8	Input 03 -
9	Not used
10	Not used
11	Input 04 +
12	Input 04 -
13	Input 05 +
14	Input 05 -
15	Input 06 +
16	Input 06 -
17	Input 07 +
18	Input 07 -
19	Not used
20	Not used
21	Input 10 +
22	Input 10 -
23	Input 11 +
24	Input 11 -
25	Input 12 +
26	Input 12 -
27	Input 13 +
28	Input 13 -
29	Not used
30	Not used
31	Input 14 +
32	Input 14 -
33	Input 15 +
34	Input 15 -
35	Input 16 +
36	Input 16 -
37	Input 17 +
38	Input 17 -
39	Not used
40	Not used

* Input numbers are shown in octal.

WARNING

EXPLOSION HAZARD

Never connect or disconnect equipment while circuit is live unless area is known to be non-hazardous.

Failure to observe these precautions can cause equipment damage, personal injury or death.

WARNING

HIGH LEAKAGE CURRENT

Before wiring field devices to your module, ensure that the PLC has been properly grounded

Failure to observe this precaution can cause equipment damage or personal injury.

CAUTION

HOT COMPONENTS

When removing your module after use, avoid touching any of the components on its printed circuit board. Component temperatures may exceed 100°C.

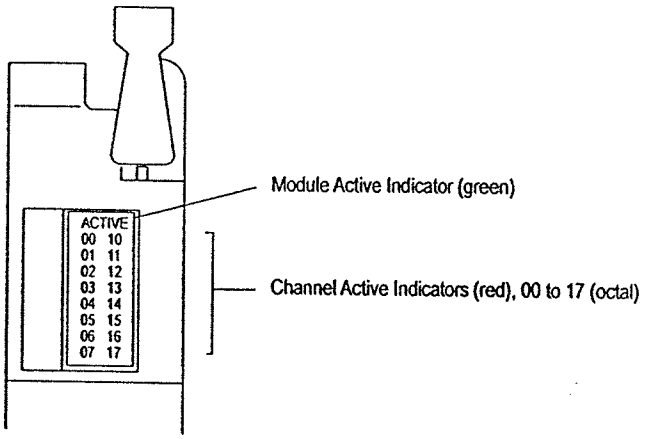
Failure to observe this precaution can cause personal injury.

Using the Indicators For Troubleshooting

The front panel of your module contains one green module active indicator and 16 red channel active indicators (Figure 3). After successfully communicating with the PLC, the module will illuminate the green module active indicator. The 16 red status indicators illuminate when the associated input channel is active (on).

If you need assistance, call the Spectrum Controls Customer Satisfaction department at (425) 746-9481. The module contains no user-serviceable parts, and if necessary, should be returned to the factory for repair.

Figure 3
Status indicators



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User's Notes

Installation Data
48 VDC Input Module
Cat. No. 1771sc-ICI16

Specifications (Cat. No. 1771sc-ICI16)

Inputs per Module	16 (isolated)
Module Location	1771 I/O chassis
Nominal Input Voltage	48 VDC
Nominal Input Current @48 VDC	10 mA
Input Signal Delay	See page 2 of this publication.
On-state Current (minimum) @ 30 VDC	6.04 mA
On-state Voltage (range)	30 to 60 VDC
Off-state Current (maximum) @ 9.5 VDC	1.8 mA
Off-state Voltage (maximum)	9.5 VDC
Input Impedance	6.65 KΩ
Power Dissipation	11.0 W max.; 0.10 W min.[1]
Thermal Dissipation	≈45 BTU/hr max.; 0.45 BTU/hr min.[1]
Backplane Current	100 mA max.
Isolation Voltage	1500 VAC channel-to-channel 1500 VAC channel-to-backplane
Agency Approvals	None
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 gage stranded, maximum 3/64 inch insulation, maximum 1[2]
Keying	Between 2 and 4 Between 12 and 14
Field Wiring Arm	A-B Catalog #1771-WN
Wiring Arm Screw Torque	7 to 9 inch-pounds

[1] Max. with all 16 inputs turned on (100% duty cycle); Min. with no inputs turned on.

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

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