

Isolated AC/DC (220/240 V) Input Module

16 Discrete Inputs

Cat. No. 1771sc-IMI16

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.

Installation Data

AC/DC (220/240 V) Input Module
Cat. No. 1771sc-IMI16

Important Pre-Installation Considerations

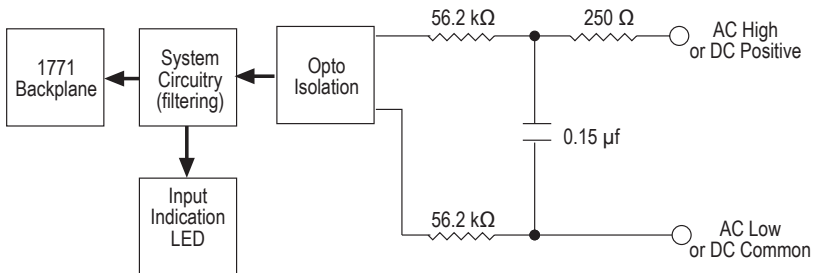
This module must be used with a 1771 Series B (or later) I/O chassis.

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 11 ± 6 ms for AC
 3 ± 2 ms for DC
- On to Off 29 ± 8 ms for AC
 30 ± 7 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.
- Keep the module in a static-shielded bag when not in use or during shipment.

Failure to observe these precautions can degrade performance or damage the module.

Power Supply Requirements

Your module receives its power from the chassis power supply through the 1771 I/O 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/O 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-IMI16 in your 1771 I/O chassis, follow these steps:



WARNING

POSSIBLE EQUIPMENT DAMAGE AND OPERATION

Always 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 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.

CE Compliance Requirements

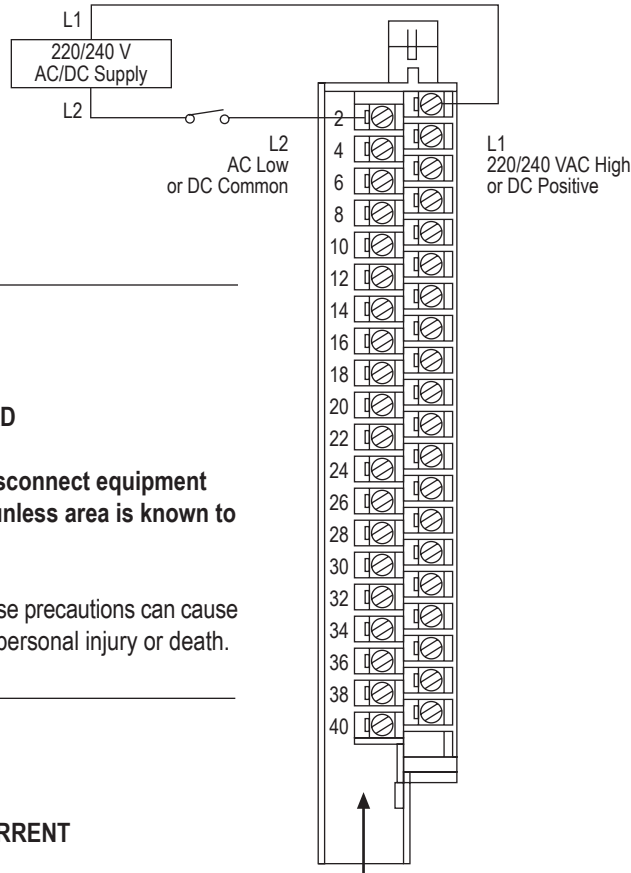
For installations requiring CE compliance, you must do the following:

- Use a minimum wire size of 16 AWG.
- Observe the grounding guidelines provided in Allen-Bradley's 1771 Universal I/O Chassis Installation Data Sheet.
- Hard wire or permanently connect the PLC to the power main, or provide a pin and sleeve (IEC 309) connector for connection to the power main.

This equipment is intended for use in over-voltage category II installation (see IEC 364-4-443), where the rated mains supply voltage does not exceed 1 kVac (50/60 Hz) or 1.5 kVdc. If the input power is rated above these levels, ensure that your system is isolated from the power main by an isolation transformer (or equivalent over-voltage device) that has CE approval or approval from a European test agency.

You must also protect against electrical shock by installing the I/O chassis in an enclosure with an IP20 to IP29 rating per IEC 529. The enclosure should have warning labels (hazard symbol 417-IEC-5036) and/or a mechanical disconnect to minimize the risk of accidental shock during maintenance. Use an enclosure that can only be opened with a key or tool.

Figure 2
Connection Diagram



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



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.

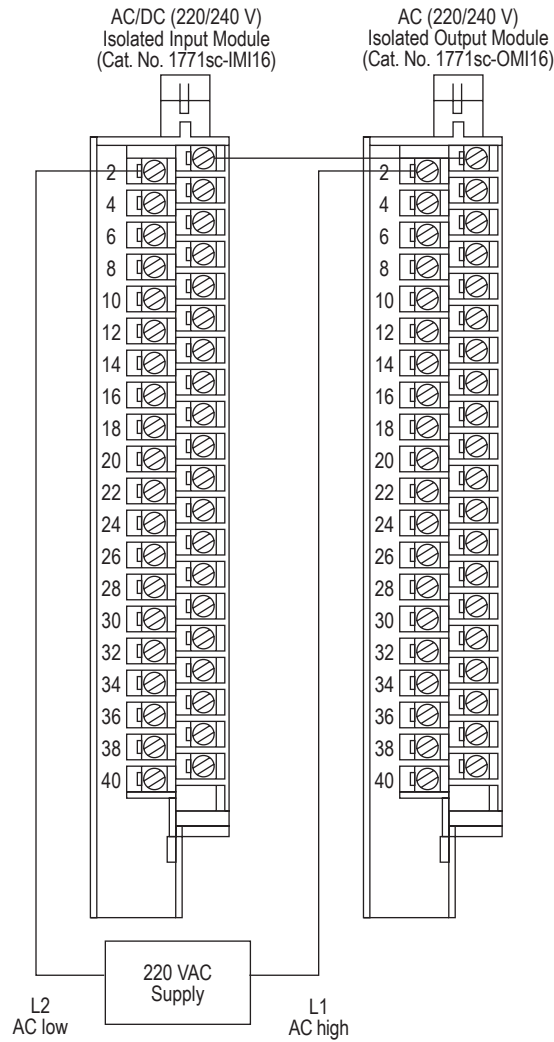
(Actual wiring runs in this direction.)

Always follow the applicable codes and laws in your area.

* Input numbers are shown in octal.

Important: You can use an AC (220/240 V) Output Module (cat. no. 1771sc-OMI16) to drive terminals on the 1771sc-IMI16, as shown in Figure 3. **Use the same AC power source to power both modules to ensure proper phasing and prevent module damage.** (Note: the 1771sc-OMI16 is an isolated output module.)

Figure 3
Driving an Input with an Output



**Using the Indicators
 For Troubleshooting**

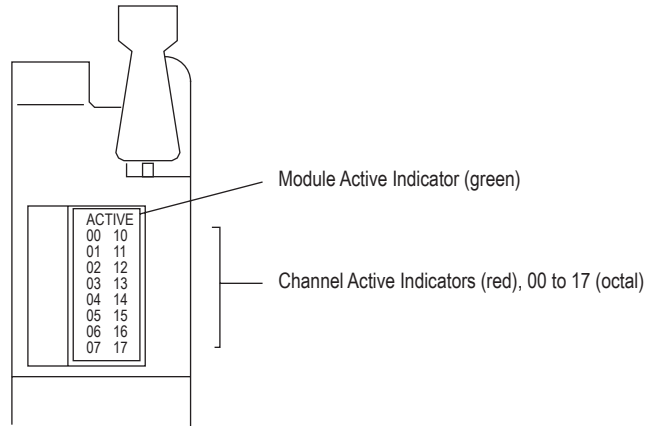
The front panel of your module contains one green module active indicator and 16 red channel active indicators (Figure 4). After successfully communicating with the PLC, the module will illuminate the green module active indicator. The 16 red status indicators illuminate when the associated input channel is active (on).

This module contains no user-serviceable parts, and should be returned to the factory for repair if necessary.

Note that these modules contain components which are susceptible to damage from electrostatic discharge (ESD). An electrostatic charge can accumulate on the surface of ordinary plastic wrapping or cushioning material. **In the unlikely event that a module should need to be returned to Spectrum Controls, please ensure that the unit is enclosed in approved ESD packaging (such as a static-shielding / metallized bag or black conductive container).** Spectrum Controls reserves the right to void the warranty on any unit that is improperly packaged for shipment.

For further information or assistance, please contact your local distributor, or call the Spectrum Controls Customer Satisfaction department at (425) 746-9481 from 8:00 A.M. to 5:00 P.M. Pacific Time.

**Figure 4
 Status indicators**



Notice

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<i>Declaration of Conformity</i>	
<i>Application of Council Directives(s)</i>	73/23/EEC Low Voltage Directive 89/336/EEC Electromagnetic Compatibility
<i>Standard(s) to which Conformity is Declared</i>	EN50081-2:1993, EN50082-2:1995 EN61010-1:1993, EN61131-2:1995
<i>Manufacturer's Name</i>	Spectrum Controls Inc.
<i>Manufacturer's Address</i>	2700 Richards Road South East, Bellevue Washington, 98005 U.S.A.
<i>Importer's Name</i>	Spectrum Controls Inc.
<i>Importer's Address</i>	2700 Richards Road South East, Bellevue Washington, 98005 U.S.A.
<i>Type Of Equipment</i>	Allen-Bradley PLC1771 Compatible I/O Modules
<i>Model No.</i>	1771sc-IMI16, 1771sc-OMI16
<i>I, the undersigned, hereby declare that the equipment specified above conforms to the above Directives(s) and Standard(s)</i>	
<i>Date Of Issue:</i> 5/29/97	
<i>Place:</i> Bellevue, Washington U.S.A.	Bruce M. Wanta (Name) Chairman (Position)
<small>SPN: 0300151-01 Rev A.0</small>	

Installation Data

AC/DC (220/240 V) Input Module
Cat. No. 1771sc-IMI16

Specifications (Cat. No. 1771sc-IMI16)

Inputs per Module	16 (isolated)
Module Location	1771 I/O chassis
Nominal Input Voltage	220/240 VAC @ 50/60 Hz 250 VDC
Nominal Input Current @ 220 VAC, 50 Hz @ 220 VAC, 60 Hz @ 250 VDC	11.44 mA 14.08 mA 2.16 mA
Input Signal Delay	See page 1 of this publication.
On-state Current (minimum) @ 159 VAC, 50 Hz @ 159 VAC, 60 Hz @ 184 VDC	6.30 mA 8.00 mA 1.30 mA
On-state Voltage (range)	159 to 264 VAC 184 to 276 VDC
Off-state Current (maximum) @ 70 VAC @ 50 VDC	2.8 mA 0.35 mA
Off-state Voltage (maximum)	70 VAC; 50 VDC
Input Impedance	250 Ω in series with a parallel combination of 0.15 μ F and 112.4 k Ω
Power Dissipation	11.5 W max.; 0.10 W min. ¹
Thermal Dissipation	39.2 BTU/hr max.; 0.34 BTU/hr min. ¹
Backplane Current	100 mA max.
Isolation Voltage	1500 VAC channel-to-channel 1500 VAC channel-to-backplane
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)
Certifications	CE per Council Directives 89/336/EEC for EMC and 73/23/EEC for Low Voltage
Conductors Wire Size Category	14 gage stranded, maximum 3/64 inch insulation, maximum ¹
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

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

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

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Publication 0300125-02 Rev. B August 1998

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