



# AC/DC (120V) Isolated Input Module Cat. No. 1771-ID16

## 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

This module must be used in a series B I/O chassis. The 1771-ID16 is not compatible with the 1771-AL local I/O adapter.

This module contains customer-selectable input filtering to limit the effects of voltage transients caused by contact bounce and/or radiated electrical noise. The delay due to filtering is 9.0 or 18.0ms for turning ac inputs on to off, and 1.0ms for turning ac inputs off to on; 9.0ms for turning dc inputs on to off, and 1.2ms for turning dc inputs off to on. The filter time is factory set to 9.0ms.

This module is designed to operate with limit switches, float switches, selector switches, and pushbutton switches.

### Power Requirements

Your module receives its power through the 1771 I/O chassis backplane from the chassis power supply. The module requires 75mA 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.

## Installation Data

AC/DC (120V) Isolated Input Module

Cat. No. 1771-ID16

## Initial Handling

The isolated 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

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**ATTENTION:** Under some conditions, electrostatic discharge can degrade performance or damage the module. Observe the following precautions to guard against electrostatic damage.

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- 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 set your input filter time, key your I/O chassis, install your module and make your wiring connections.

### Setting the Input Filtering Time

The input module has 2 customer-selectable input filter time jumpers. Jumper JPR 1 sets the input filter time for inputs 00 through 07, and jumper JPR 2 sets the input filter time for inputs 10 through 17. These filter times apply when the input is cycling from ON to OFF. The OFF to ON filter time is fixed at 1ms. Refer to Table A and Figure 1 for filter times and jumper settings.

**Important:** Half cycle dropout protection is dependent upon the position of the jumpers. With the jumpers at the 9.0ms position (Fast), half cycle protection may not be guaranteed. If half cycle dropout protection is required, position the jumpers in the 18.0ms position (Norm). Maximum and minimum filter times are shown in Table A.

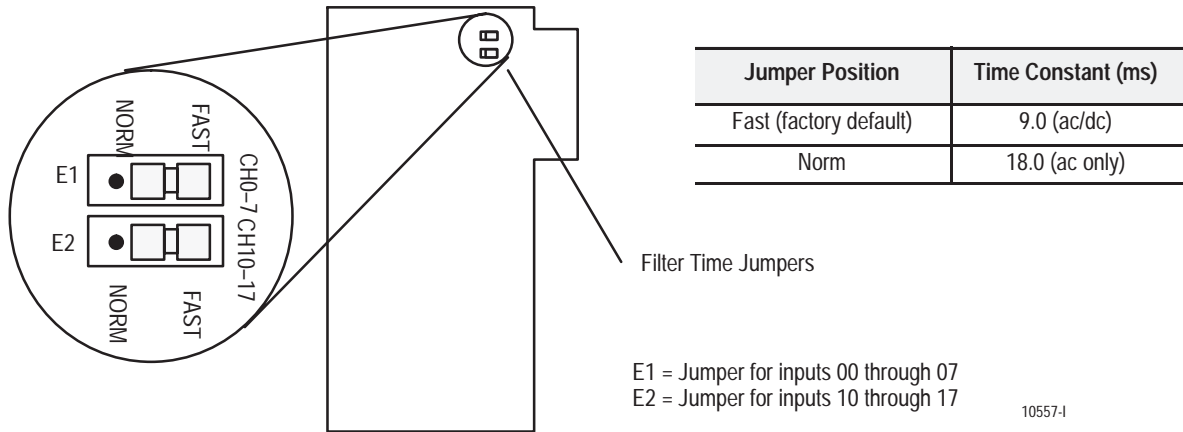
To set the filtering time, proceed as follows:

1. Remove the side covers from the module circuit board by removing the four screws securing the covers to the module and remove the circuit board.
2. Position the jumpers as required to provide the filter time you require. Refer to Figure 1. Use your fingers to pull the jumper up and position over the 2 pins corresponding to your selection (Fast or Norm).

## Installation Data

AC/DC (120V) Isolated Input Module  
Cat. No. 1771-ID16

**Figure 1**  
Setting the Filter Time Jumpers



- Reinstall the covers on the module circuit board and secure with 4 screws.

**Table A**  
Minimum and Maximum Filter Times

Input Voltage	Filter Time (msec)	Off to On (ms)			On to Off (ms)		
		Minimum	Maximum	Typical	Minimum	Maximum	Typical
ac	9.0	1.0	6.3	2.0	9.0	33	20
ac	18.0	1.0	6.3	2.0	18.0	42	29
dc	9.0	1.2	1.6	1.3	10.3	25	13

## Keying Your Module

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 22 and 24
- Between 26 and 28

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

## Installation Data

AC/DC (120V) Isolated Input Module

Cat. No. 1771-ID16

### Installing the Input Module

To install the ac/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. 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 of the module.

### Connecting Wiring to the 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.

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 2. (Use the label on the front of the wiring arm to identify your wiring.)

**Note:** A shorting bar may be used to connect the commons if channel-to-channel isolation is **not** required.

Installation Data

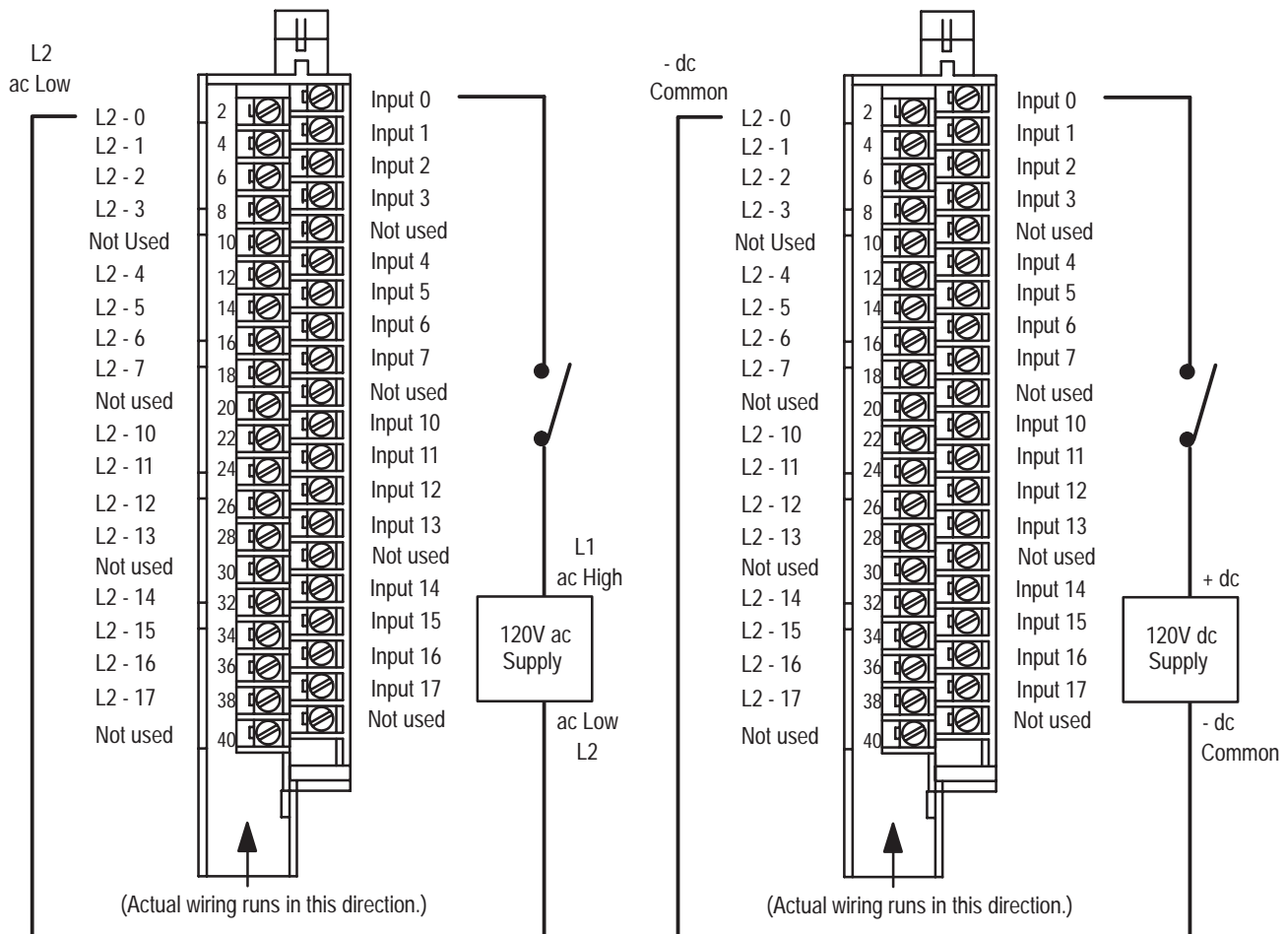
AC/DC (120V) Isolated Input Module

Cat. No. 1771-ID16



**ATTENTION:** The field wiring arm terminal identification number is not the same as the number of the bit associated with that input.

Figure 2  
Connection Diagram for the 1771-ID16 AC/DC (120V) Isolated Input Module



10558-1

4. Use two wires per input. Connect only one wire to a terminal. When multiple connections to a terminal are required, use an auxiliary terminal strip. Use stranded 14 or 16 gauge wire to minimize the voltage drop over long cable distances.

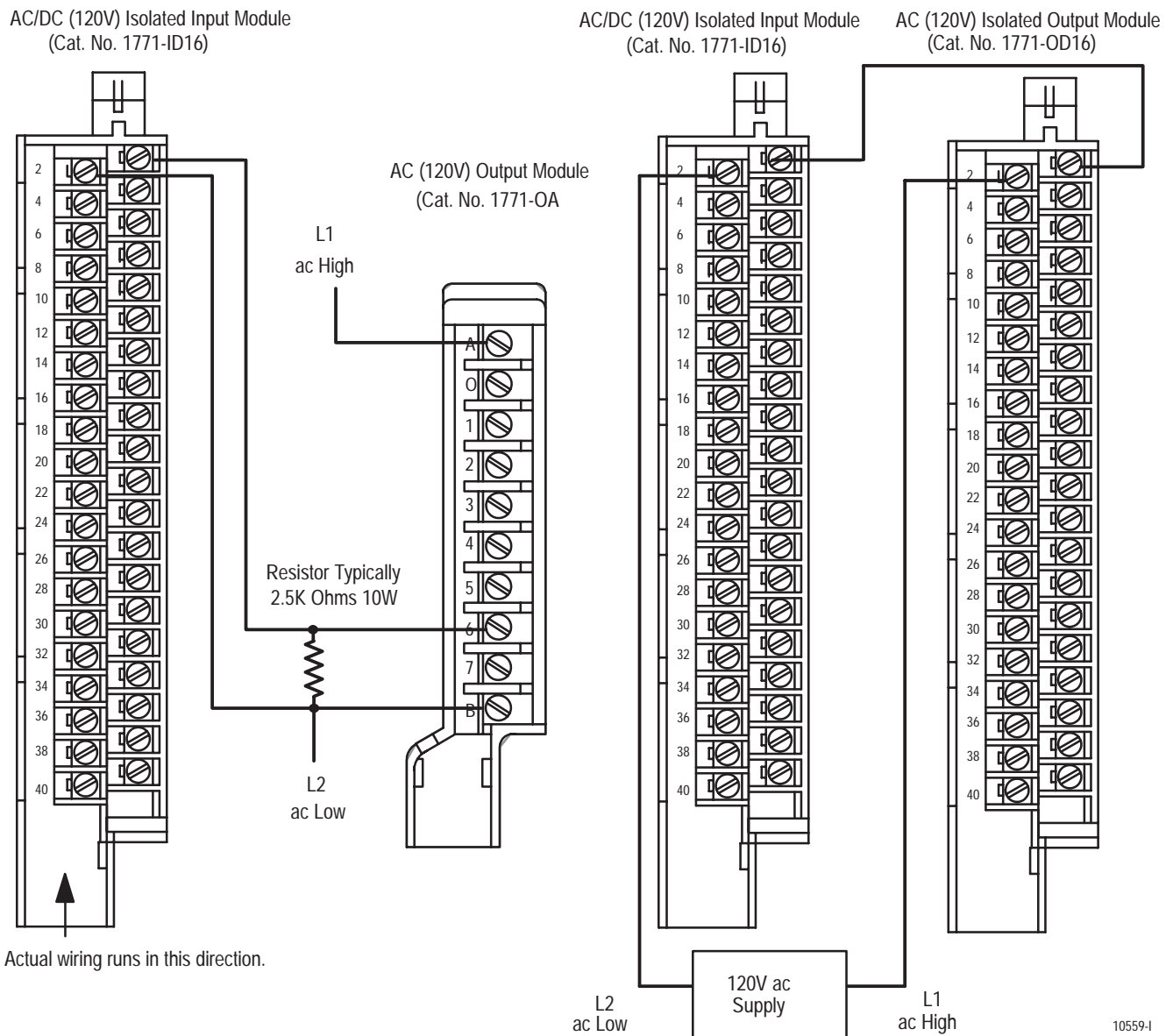
## Installation Data

AC/DC (120V) Isolated Input Module

Cat. No. 1771-ID16

**Important:** You can use an AC (120V) Output Module (cat. no. 1771-OA, 1771-OD or 1771-OP) to directly drive terminals on an AC/DC (120V) Input Module (cat. no. 1771-ID16) (Figure 3), but you must connect a 2.5K ohm, 10W resistor between the output terminal and L2 (common) as shown in Figure 3. You can use an AC (120V) Output Module (1771-OD16) to drive the 1771-ID16 module without using a resistor. **Isolation must be maintained between phases to prevent module damage.**

**Figure 3**  
Driving an Input with an Output



10559-1

## Installation Data

AC/DC (120V) Isolated Input Module

Cat. No. 1771-ID16

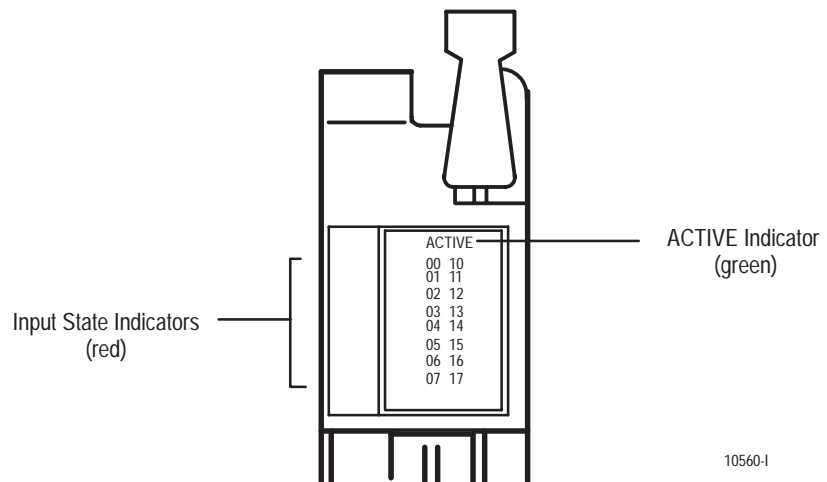
## Interpreting the Status Indicators

The module has 17 indicators (Figure 4), consisting of 16 input status indicators and an active indicator. The 16 status indicators will light when the field load has been applied to the field wiring arm of the module.

At power up, all indicators will light for about one second. This is a self-test feature of the module. The inputs are not “on” during this test.

The active indicator will light when the module has successfully started up and has initialized.

**Figure 4**  
Status Indicators



## Installation Data

AC (120V) Isolated Input Module

Cat. No. 1771-ID16

## Specifications

Inputs per Module	16
Module Location	1771-A1B thru -A4B I/O chassis
Input Voltage Range	74-138V ac, 47-63Hz; 105-138V dc
Nominal Input Voltage	120V ac/dc
Input ON Voltage (minimum)	74V ac; 105V dc
Input Signal Delay	ac only; Selectable: 9ms or 18.0ms, on to off ; dc: 9.0ms on to off
Input ON Current (minimum)	6.0mA @ 74V ac, 47-63Hz; 12.0mA @ 105V dc
Input OFF Current (minimum)	4mA @ 45V ac, 47-63Hz; 0.8mA @ 63V dc
Input OFF Voltage (maximum)	45V ac; 66V dc
Input Impedance (minimum)	9.3Kohm @ 47Hz; 6.9Kohms @ 63Hz 75Kohm dc off, 48Kohms dc on
Power Dissipation	7.0 Watts (max.), 0.3 Watts (min.)
Thermal Dissipation	23.8 BTU/hr (max.), 1.0 BTU/hr (min.)
Backplane Current	75mA maximum
Isolation Voltage	1500V ac (rms) channel-to-channel; 1500V ac (rms) channel to backplane
Maximum Cable Length	1000ft (304.8m)
Environmental Conditions	
Operational Temperature	0° to 60°C (32° to 140°F)
Storage Temperature	-40° to 85°C (-40° to 185°F)
Relative Humidity	5 to 95% (without condensation)
Conductors Wire Size	14 gauge stranded maximum <sup>1</sup> 3/64 inch insulation maximum
Category	1 <sup>2</sup>
Keying	Between 22 and 24 Between 26 and 28
Wiring Arm	Catalog Number 1771-WN
Wiring Arm Screw Torque	9 pound-inches

<sup>1</sup> 14 gauge wire may not allow field wiring arm cover to close. A smaller wire size may be used.

<sup>2</sup> Refer to publication 1770-4.1, "Programmable Controller Wiring and Grounding Guidelines."



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