



Installation Instructions

DC (20-60V) Input Module Cat. No. 1771-ICD Series B

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-ICD series B module must be used in a series B 1771 I/O chassis (1771-A1B through -A4B) or a 1771-AM or -AM1 chassis. Make sure no other input module or single card block transfer module is placed in the same module group when using 2-slot addressing. Any discrete output module may be used within the same module group.

European Union Directive Compliance

If this product is installed within the European Union or EEA regions and has the CE mark, the following regulations apply.

EMC Directive

This apparatus is tested to meet Council Directive 89/336/EEC Electromagnetic Compatibility (EMC) using a technical construction file and the following standards, in whole or in part:

- EN 50081-2 EMC – Generic Emission Standard, Part 2 – Industrial Environment
- EN 50082-2 EMC – Generic Immunity Standard, Part 2 – Industrial Environment

The product described in this manual is intended for use in an industrial environment.

Low Voltage Directive

This apparatus is also designed to meet Council Directive 73/23/EEC Low Voltage, by applying the safety requirements of EN 61131-2 Programmable Controllers, Part 2 – Equipment Requirements and Tests.

For specific information that the above norm requires, see the appropriate sections in this manual, as well as the following Allen-Bradley publications:

- Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1
- Guidelines for Handling Lithium Batteries, publication AG-5.4

Open style devices must be provided with environmental and safety protection by proper mounting in enclosures designed for specific application conditions. See NEMA Standards publication 250 and IEC publication 529, as applicable, for explanations of the degrees of protection provided by different types of enclosure.

Power Requirements

Your module receives its power through the 1771 I/O chassis backplane from the chassis power supply. The module requires 250mA 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 chassis 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.



ATTENTION: This module is equipped with a plastic cover that is unique to assembly numbers 961046-01 through 961046-09. (This part number is located near the backplane edge connector pins on the component-side of the circuit board.) Do not use this plastic cover on any other 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

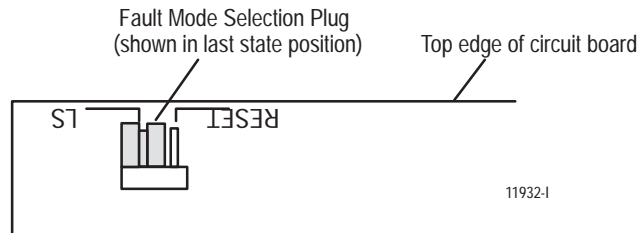
In this section we tell you how to set the fault mode selection plug, key your I/O chassis, install your module and make your wiring connections.

Setting the Fault Mode

You may select one of two input-failure configurations (last state or reset) by positioning a configuration plug on the top edge of the printed circuit board. This configuration plug is independent of the last state switch on the I/O chassis backplane during a module fault. During a chassis fault, the I/O chassis backplane last state switch setting overrides the module fault mode selection.

To set the fault mode selection, proceed as follows:

1. Locate the fault mode selection plug at the top edge of the module circuit board.



2. Using your finger, slide the plug off the two posts.
3. Carefully position the plug on two of the three posts that correspond to your requirement.

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 upper backplane connector:

- Between 10 and 12
- Between 18 and 20

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

Installing the Input Module

To install the dc input module in your series B or later 1771 I/O chassis, follow the steps listed below.



ATTENTION: Remove power from the 1771 I/O chassis backplane and field 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.
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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.
6. Make wiring connections to the field wiring arm as indicated in “Connecting Wiring to the Input Module.”



ATTENTION: Proper polarity must be observed with dc power connections. Reverse polarity, or application of ac voltage could damage the module.

Connecting Wiring to the Input Module

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

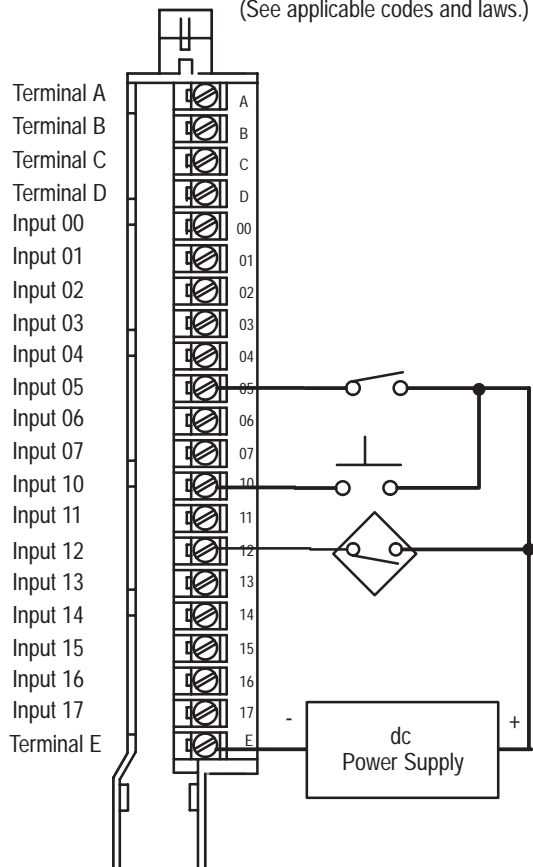
Connect one terminal of your 2-wire input device to terminals 00 through 17. Connect the +dc line to the other terminal of your input devices.

Connect terminal E to the dc common. Terminals A thru D are not used. Use stranded 14 or 16 gauge wire to minimize the voltage drop over long cable distances.

Connect 3-wire input devices, such as Allen-Bradley proximity switches (Bulletin 871), to operate in a current source mode.

Connection Diagram (2-Wire Devices)

(See applicable codes and laws.)

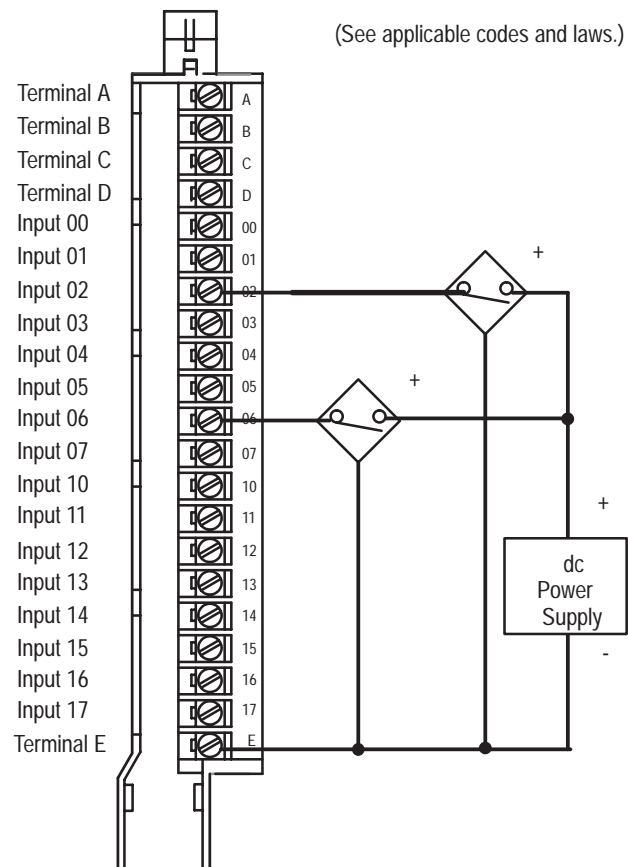


(Actual wiring runs in this direction.)

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Connection Diagram (3-Wire Devices)

(See applicable codes and laws.)



(Actual wiring runs in this direction.)

11934-1

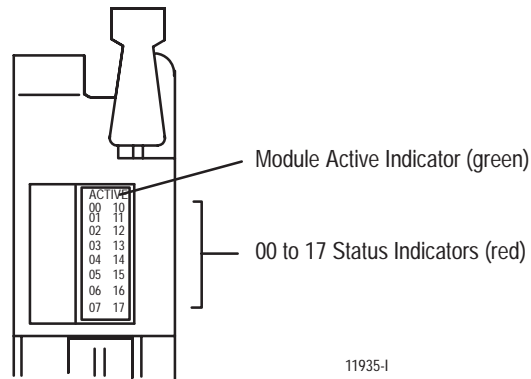
Important: You can directly drive terminals on a DC (20-60V) Input Module (cat. no. 1771-ICD) from terminals on the following modules:

- DC (10-60V) Output module (cat. no. 1771-OBD)
- DC (48V) Output module (cat. no. 1771-OC)
- DC (12-24V) Output module (cat. no. 1771-OB)

Important: Use the same dc power source to power both modules to ensure that ground is at the same potential.

Interpreting the Status Indicators

The front panel of your module contains one green, module active indicator, and 16 red status indicators.



The 1771-ICD/B performs diagnostics in a handshaking mode when first powered up. Upon successful completion of the diagnostics, the green module active indicator lights. It turns off if a fault occurs in the data paths or the opto-isolators.



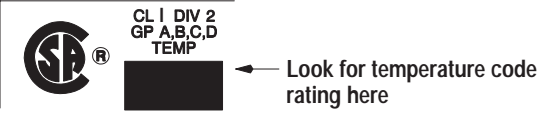
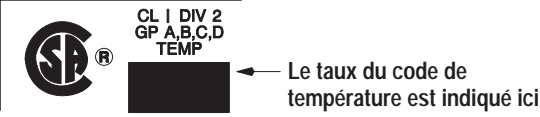


If a module fault occurs, the module resets its inputs or sets them to last state, depending on the fault mode selection. The module active indicator must be on to properly interpret the red status indicators.

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. See "Troubleshooting" for a description, probable causes, and recommended actions to take for common faults based on indicator responses.

Troubleshooting

Use this table to help you interpret the 1771-ICD/B status indicators and to troubleshoot module and system faults.

Indicator Status (color)	Description of Fault or System Status	Action to Take
Module active ON (green)	Normal Indication	None
Module active ON (green) and Input status ON (red)	Check for voltage on terminal	If none, replace module
Module active ON (green) and Input status OFF	Input devices not functioning properly or faulty input circuitry on module	1. Check input devices 2. If input devices are OK, replace module
	No voltage on terminal	None
Module active OFF	Module is not powered or fault in opto-isolators and/or data paths; module resets inputs or goes to last state	1. Check chassis power supply and module input power 2. If power supplies are OK, replace module
Module active OFF and Input status ON (red) or OFF	Not valid unless module active indicator is on; when active is off, indicators do not represent processor status	1. Check chassis power supply and module input power 2. If power supplies are OK, replace module

<p>CSA Hazardous Location Approval</p>	<p>Approbation d'utilisation dans des emplacements dangereux par la CSA</p>
<p>CSA® certifies products for general use as well as for use in hazardous locations. Actual CSA certification is indicated by the product label as shown below, and not by statements in any user documentation.</p>	<p>La CSA® certifie les produits d'utilisation générale aussi bien que ceux qui s'utilisent dans des emplacements dangereux. La certification CSA en vigueur est indiquée par l'étiquette du produit et non par des affirmations dans la documentation à l'usage des utilisateurs.</p>
<p>Example of the CSA certification product label</p> 	<p>Exemple d'étiquette de certification d'un produit par la CSA</p> 
<p>To comply with CSA certification for use in hazardous locations, the following information becomes a part of the product literature for CSA-certified Allen-Bradley industrial control products.</p> <ul style="list-style-type: none"> • This equipment is suitable for use in Class I, Division 2, Groups A, B, C, D, or non-hazardous locations only. • The products having the appropriate CSA markings (that is, Class I Division 2, Groups A, B, C, D), are certified for use in other equipment where the suitability of combination (that is, application or use) is determined by the CSA or the local inspection office having jurisdiction. 	<p>Pour satisfaire à la certification de la CSA dans des endroits dangereux, les informations suivantes font partie intégrante de la documentation des produits industriels de contrôle Allen-Bradley certifiés par la CSA.</p> <ul style="list-style-type: none"> • Cet équipement convient à l'utilisation dans des emplacements de Classe 1, Division 2, Groupes A, B, C, D, ou ne convient qu'à l'utilisation dans des endroits non dangereux. • Les produits portant le marquage approprié de la CSA (c'est à dire, Classe 1, Division 2, Groupes A, B, C, D) sont certifiés à l'utilisation pour d'autres équipements où la convenance de combinaison (application ou utilisation) est déterminée par la CSA ou le bureau local d'inspection qualifié.
<p>Important: Due to the modular nature of a PLC® control system, the product with the highest temperature rating determines the overall temperature code rating of a PLC control system in a Class I, Division 2 location. The temperature code rating is marked on the product label as shown.</p>	<p>Important: Par suite de la nature modulaire du système de contrôle PLC®, le produit ayant le taux le plus élevé de température détermine le taux d'ensemble du code de température du système de contrôle d'un PLC dans un emplacement de Classe 1, Division 2. Le taux du code de température est indiqué sur l'étiquette du produit.</p>
<p>Temperature code rating</p> 	<p>Taux du code de température</p> 
<p>The following warnings apply to products having CSA certification for use in hazardous locations.</p>	<p>Les avertissements suivants s'appliquent aux produits ayant la certification CSA pour leur utilisation dans des emplacements dangereux.</p>
 <p>WARNING: Explosion hazard —</p> <ul style="list-style-type: none"> • Substitution of components may impair suitability for Class I, Division 2. • Do not replace components unless power has been switched off or the area is known to be non-hazardous. • Do not disconnect equipment unless power has been switched off or the area is known to be non-hazardous. • Do not disconnect connectors unless power has been switched off or the area is known to be non-hazardous. Secure any user-supplied connectors that mate to external circuits on an Allen-Bradley product using screws, sliding latches, threaded connectors, or other means such that any connection can withstand a 15 Newton (3.4 lb.) separating force applied for a minimum of one minute. 	 <p>AVERTISSEMENT: Risque d'explosion —</p> <ul style="list-style-type: none"> • La substitution de composants peut rendre ce matériel inacceptable pour les emplacements de Classe I, Division 2. • Couper le courant ou s'assurer que l'emplacement est désigné non dangereux avant de remplacer les composants. • Avant de débrancher l'équipement, couper le courant ou s'assurer que l'emplacement est désigné non dangereux. • Avant de débrancher les connecteurs, couper le courant ou s'assurer que l'emplacement est reconnu non dangereux. Attacher tous connecteurs fournis par l'utilisateur et reliés aux circuits externes d'un appareil Allen-Bradley à l'aide de vis, loquets coulissants, connecteurs filetés ou autres moyens permettant aux connexions de résister à une force de séparation de 15 newtons (3,4 lb. - 1,5 kg) appliquée pendant au moins une minute.
<p>CSA logo is a registered trademark of the Canadian Standards Association PLC is a registered trademark of Allen-Bradley Company, Inc.</p>	<p>Le sigle CSA est la marque déposée de l'Association des Standards pour le Canada. PLC est une marque déposée de Allen-Bradley Company, Inc.</p>

Specifications

Inputs per Module	16
Module Location	1771-A1B, -A2B, -A3B, -A3B1, -A4B or later I/O chassis; 1771-AM1, -AM2
Input Voltage Range	20 to 60V dc
Minimum Input Current	2mA at 20V dc; 6mA at 60V dc
Minimum Off-state Current	1.2mA @ 12V dc
Maximum Off-state Voltage	12V dc
Minimum On-state Voltage	20V dc
Input Impedance	10K ohms maximum
Input Signal Delay	Low to high propagation delay - 6ms(+2ms) High to low propagation delay - 20ms (±1ms)
Power Dissipation	5.9 Watts (max.), 1.3 Watts (min.)
Thermal Dissipation	19.93 BTU/hr (max.), 4.3 BTU/hr (min.)
Backplane Current	250mA @ 5V dc ±5%
Isolation Voltage	Isolation meets or exceeds UL Standard 508, and CSA Standard C22.2 No. 142.
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 (2mm ²) stranded maximum 3/64 inch (1.2mm) insulation maximum
Category	1 ¹
Keying	Between 10 and 12 Between 18 and 20
Field Wiring Arm	Catalog Number 1771-WH
Wiring Arm Screw Torque	7-9 inch-pounds
Agency Certification (when product is marked)	<ul style="list-style-type: none"> • CSA certified • CSA Class I, Division 2, Groups A, B, C, D certified • UL listed • CE marked for all applicable directives • C-Tick marked for all applicable acts

¹ Refer to publication 1770-4.1, Programmable Controller Wiring and Grounding Guidelines.



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