Isolated Analog Input Module
(Catalog Number 1771-IL Series C)

Contents

This icon is used when additional information is available in the *Isolated Analog Input Module User Manual*, publication 1771-6.5.91.

If you need a copy of this manual, fax the enclosed User Manual Request Card to 1-800-576-6340. If you are outside the U.S., fax the card to 1-330-723-4036.

Use this document as a guide when installing the catalog number 1771-IL/C analog input module.

Prevent Electrostatic Discharge

The isolated analog input module is sensitive to electrostatic discharge.

> ⚠ **ATTENTION:** Electrostatic discharge can damage integrated circuits or semiconductors if you touch backplane connector pins. Follow these guidelines when you handle the module:
>
> - Touch a grounded object to discharge static potential
> - Wear an approved wrist-strap grounding device
> - Do not touch the backplane connector or connector pins
> - Do not touch circuit components inside the module
> - If available, use a static-safe work station
> - When not in use, keep the module in its static-shield bag

Understand Compliance to European Union Directives

This product has the CE mark and is approved for installation within the European Union and EEA regions. It has been designed and tested to meet the following directives.

EMC Directive

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

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

This product is intended for use in an industrial environment.

Low Voltage Directive

This product is tested 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 required by EN 61131-2, see the appropriate sections in this publication, as well as these Allen-Bradley publications:

Publication	Publication number
Industrial Automation Wiring and Grounding Guidelines For Noise Immunity	1770-4.1
Guidelines for Handling Lithium Batteries	AG-5.4
Automation Systems Catalog	B111

Understand Product Compatibility

The 1771-IL/C module can be used with any 1771 I/O chassis. Compatibility and data table use is listed below.

Catalog Number	Use of Data Table				Compatibility			
	Input Image Bits	Output Image Bits	Read Block Words	Write Block Words	Addressing			Chassis Series
					1/2-Slot	1-Slot	2-Slot	
1771-IL/C	8	8	15	37	Yes	Yes	Yes	A, B

A = Compatible with 1771-A1, -A2, -A4
B = Compatible with 1771-A1B, -A2B, -A3B, -A4B
Y = Compatible without restriction.
No = Restricted to complementary module placement.

Calculate Power Requirements

The module receives its power through the 1771 I/O power supply and requires 1.1A at 5V (5.5 Watts) from the backplane.

Add this current to the requirements of all other modules in the I/O chassis to prevent overloading the chassis backplane and/or backplane power supply.

Determine Module Placement in the I/O Chassis

You can place your module in any I/O module slot of the I/O chassis except for the extreme left slot. This slot is reserved for PC processors or adapter modules.
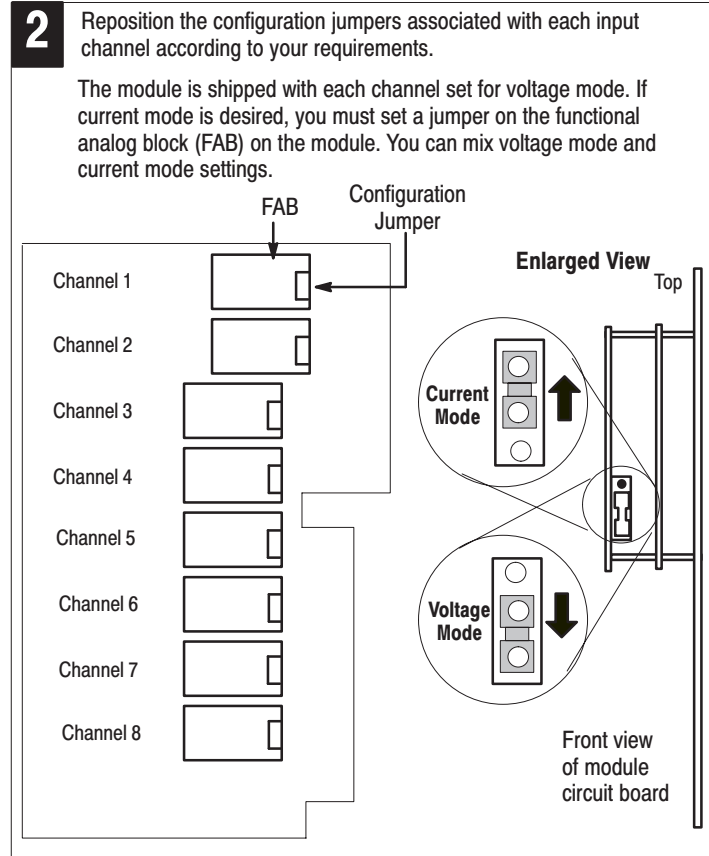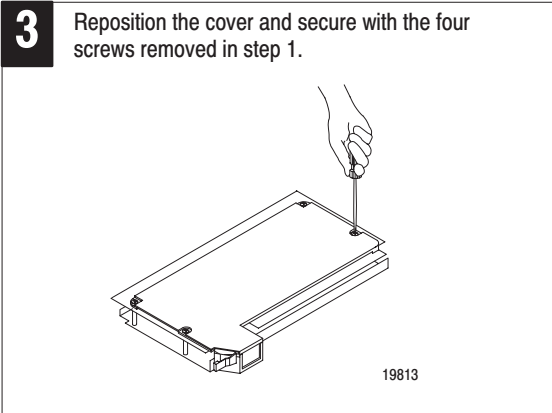
ATTENTION: Do not insert or remove modules from the I/O chassis while system power is ON. Failure to observe this rule could result in damage to module circuitry.

Group your modules to minimize adverse affects from radiated electrical noise and heat. We recommend the following.

- Group analog input and low voltage dc modules away from ac modules or high voltage dc modules to minimize electrical noise interference.
- Do not place this module in the same I/O group with a discrete high-density I/O module when using 2-slot addressing. This module uses a byte in both the input and output image tables for block transfer.

Setting the Configuration Jumpers

The module has configuration jumpers for determining the input type (voltage or current) for each input. **The module is shipped with the configuration jumpers positioned for voltage mode.** You can select either voltage or current for each input.

1 Remove the four screws securing the side cover to the module and remove the covers.

19805

3 Reposition the cover and secure with the four screws removed in step 1.

19813

2 Reposition the configuration jumpers associated with each input channel according to your requirements.

The module is shipped with each channel set for voltage mode. If current mode is desired, you must set a jumper on the functional analog block (FAB) on the module. You can mix voltage mode and current mode settings.

FAB   Configuration Jumper

Channel 1
Channel 2
Channel 3
Channel 4
Channel 5
Channel 6
Channel 7
Channel 8

Enlarged View Top

Current Mode

Voltage Mode

Front view of module circuit board

Key the Backplane Connector

Place your module in any slot in the chassis except the leftmost slot which is reserved for processors or adapters.

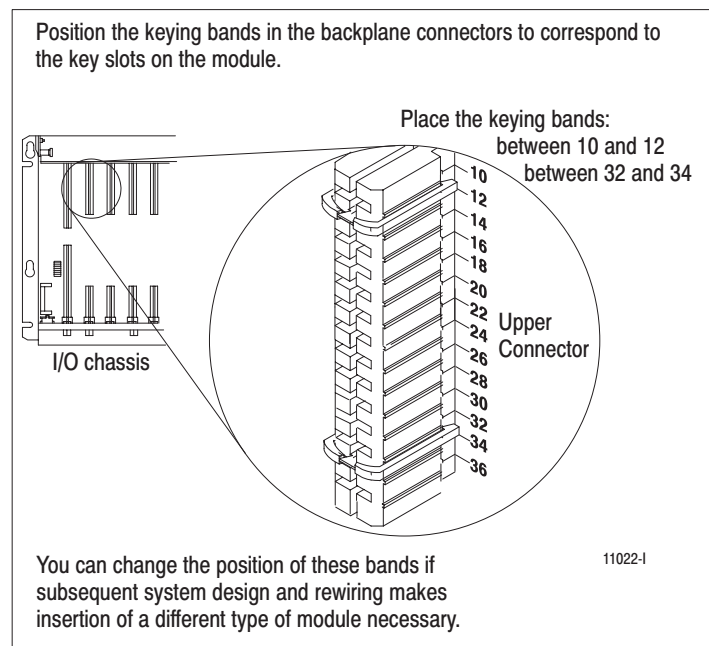**ATTENTION:** Observe the following precautions when inserting or removing keys:

- insert or remove keys with your fingers
- make sure that key placement is correct

Incorrect keying or the use of a tool can result in damage to the backplane connector and possible system faults.

Position the keying bands in the backplane connectors to correspond to the key slots on the module.

Place the keying bands:
between 10 and 12
between 32 and 34

I/O chassis

Upper Connector

10 12 14 16 18 20 22 24 26 28 30 32 34 36

You can change the position of these bands if subsequent system design and rewiring makes insertion of a different type of module necessary.

11022-I
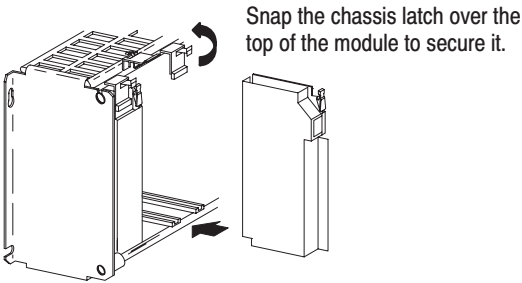
Install the Module and Field Wiring Arm

⚠️ **ATTENTION:** Remove power from the 1771 I/O chassis backplane before you install the module. Failure to remove power from the backplane could cause:

- •module damage
- •degradation of performance
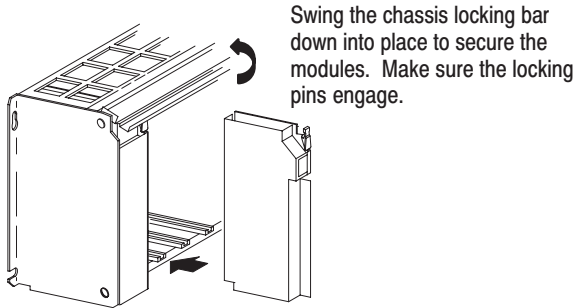- •injury or equipment damage due to possible unexpected operation

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1 Place the module in the card guides on the top and bottom of the chassis that guide the module into position.

Important: Apply firm even pressure on the module to seat it into its backplane connector.

1771-A1B, -A2B, -A3B, -A4B I/O chassis

Snap the chassis latch over the top of the module to secure it.

1771-A1B, -A2B, -A4B Series B I/O chassis

Swing the chassis locking bar down into place to secure the modules. Make sure the locking pins engage.

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2 Attach the wiring arm (1771-WF) to the horizontal bar at 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.
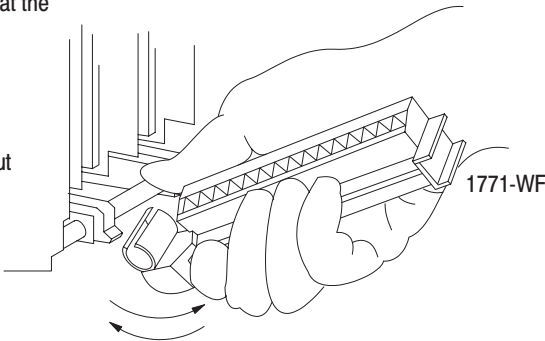
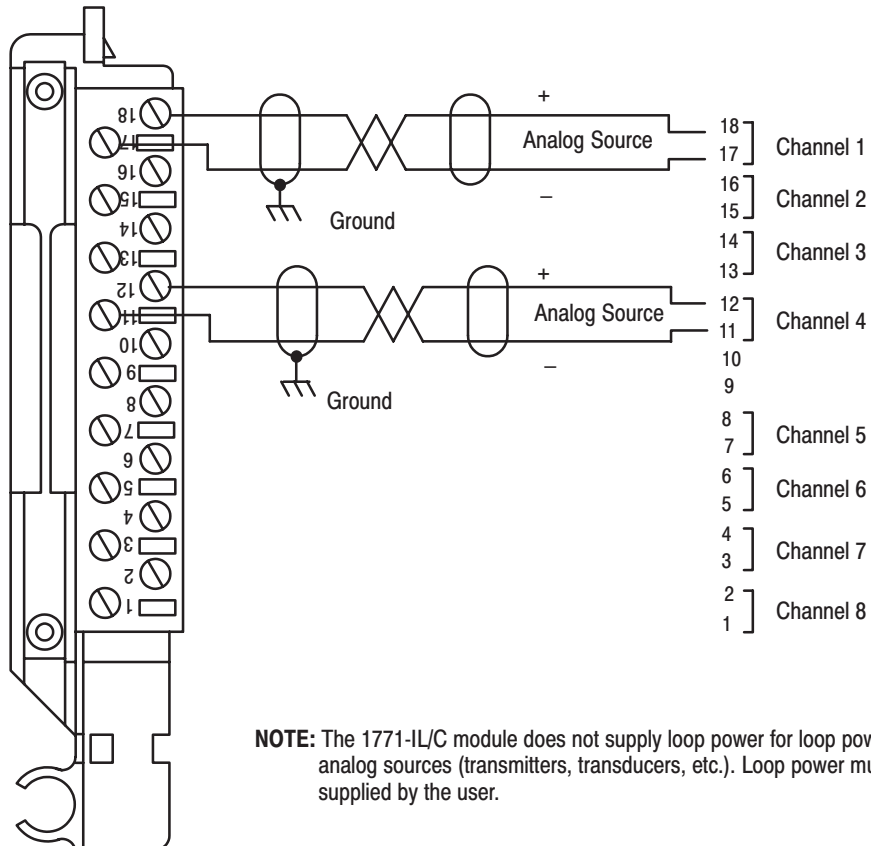1771-WF

Connect Wiring to the Field Wiring Arm

Connect your I/O devices to the field wiring arm (cat. no. 1771-WF) shipped with the module.

> ⚠️ **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.

Connection Diagram for the Isolated Analog Input Module (cat. no. 1771-IL/C)

NOTE: The 1771-IL/C module does not supply loop power for loop powered analog sources (transmitters, transducers, etc.). Loop power must be supplied by the user.

11846-I

Field Wiring Arm
Cat. No. 1771-WF

Ground the Chassis and Module

Use the following diagrams to ground your I/O chassis and isolated analog input module. Follow these steps to prepare the cable:

1 Remove a length of cable jacket from the Belden 8761 cable.

Belden 8761 Cable

- -

2 Pull the foil shield and bare drain wire from the insulated wires.

Bare drain wire

Insulated wires

Foil shield

- -
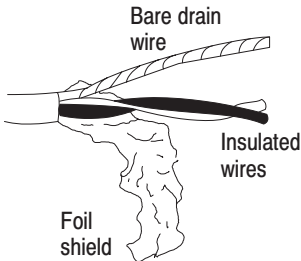
3 Twist the foil shield and drain wire together to form a single strand.

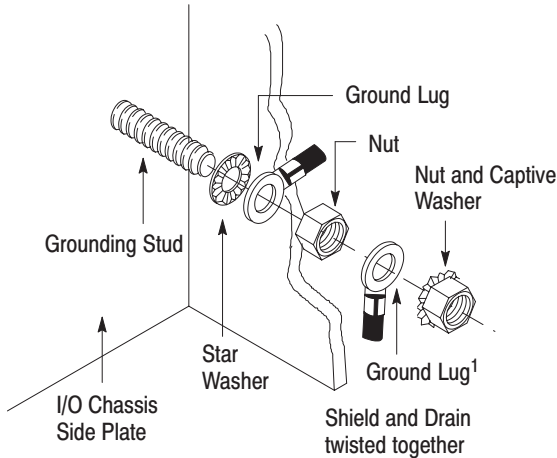- -

4 Attach a ground lug.

When using shielded cable wire, ground the foil shield and drain wire only at one end of the cable. We recommend that you wrap the foil shield and drain wire together and connect them to a chassis mounting bolt.
At the opposite end of the cable, tape exposed shield and drain wire with electrical tape to insulate it from electrical contact.

Refer to Wiring and Grounding Guidelines, publication 1770-4.1 for additional information.
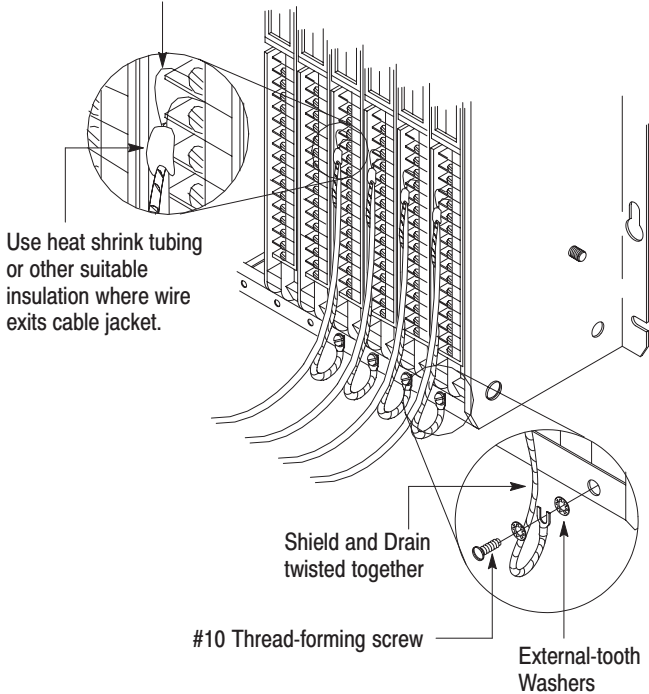
Chassis Ground
When you connect grounding conductors to the I/O chassis grounding stud, place a star washer under the first lug, then place a nut with captive lock washer on top of each ground lug.

Ground Lug

Nut

Nut and Captive Washer

Grounding Stud

Star Washer

Ground Lug[1]

I/O Chassis Side Plate

Shield and Drain twisted together

[1]Use the cup washer if crimp-on lugs are not used.

Single-point Grounding

Extend shield to termination point. Expose just enough cable to adequately terminate inner conductors.

Use heat shrink tubing or other suitable insulation where wire exits cable jacket.

Shield and Drain twisted together

#10 Thread-forming screw

External-tooth Washers

Configure the Module

For detailed configuration information, see chapter 5 of your *Isolated Analog Input Module User Manual* (publication 1771-6.5.91).

Configure the module to conform to the application that you have chosen. Use the configuration information below to configure your module to your specifications.

Dec. Bits	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	Description
Octal Bits	17	16	15	14	13	12	11	10	07	06	05	04	03	02	01	00	
Word 1	8		7		6		5		4		3		2		1		Range Selection - Channels 1 – 8

Input range selections allow the user to configure the inputs for any of 7 input voltage or current ranges. Two bits are required for each channel. Bits 00 and 01 for channel 1, bits 02 and 03 for channel 2, etc.

Bit 01	Bit 00	Voltage or Current Input
0	0	1 to 5V DC, 4 to 20mA (default)
0	1	0 to 5V DC, 0 to 20mA
1	0	-5 to +5V DC, -20 to +20mA
1	1	-10 to +10V DC, 0 to 10V DC

2	Real Time Sampling	Data Format	BTW Format	Digital Filter	Real time sampling, data format, BTW format, and digital filter

No RTS	0	0	0	0	0
100ms	0	0	0	0	1
200ms	0	0	0	1	0
300ms	0	0	0	1	1
400ms	0	0	1	0	0
500ms	0	0	1	0	1
600ms	0	0	1	1	0
700ms	0	0	1	1	1
800ms	0	1	0	0	0
900ms	0	1	0	0	1
1.0s	0	1	0	1	0
1.5s	0	1	1	1	1
2.0s	1	0	1	0	0
2.5s	1	1	0	0	1
3.0s	1	1	1	1	0
3.1s	1	1	1	1	1

Digital filter reduces effect of noise on input. (Default is no filter.)

BTW format, determines format for scaling, digital filter constant, and high and low alarms.
Bit 08 (10) = 0 - values must be entered in BCD (default)
Bit 08 (10) = 1 - values must be entered in Two's Complement Binary

Bit 10	Bit 09	**Data format** – set to match your processor.
0	0	BCD (default)
0	1	Not Used
1	0	Two's complement binary
1	1	Signed magnitude binary

3	8	7	6	5	4	3	2	1	8	7	6	5	4	3	2	1	Sign bits, minimum, and maximum negative scaling values
	Sign bits, maximum negative scaling values								Sign bits, minimum negative scaling values								

4, 6, 8, 10, 12, 14, 16, 18	**Minimum scaling** values for each channel (word 4 to channel 1, word 6 to channel 2, etc.). Enter in BCD format.	Channels 1 – 8 minimum scaling
5, 7, 9, 11, 13, 15, 17, 19	**Maximum scaling** values for each channel (word 5 to channel 1, word 7 to channel 2, etc.). Enter in BCD format.	Channels 1 – 8 maximum scaling

20	8	7	6	5	4	3	2	1	8	7	6	5	4	3	2	1	Sign bits, low and high alarm values
	Sign bits, high alarm values								Sign bits, low alarm values								

21, 23, 25, 27, 29, 31, 33, 35	**Low alarm** values for each channel (word 21 to channel 1, word 23 to channel 2, etc.). Enter in BCD format.	Channels 1 – 8 low alarm
22, 24, 26, 28, 30, 32, 34, 36	**High alarm** values for each channel (word 22 to channel 1, word 24 to channel 2, etc.). Enter in BCD format.	Channels 1 – 8 high alarm
37	Inhibit bits for calibration	Not Used	S	G	O	Calibration bits

Inhibit Channel Calibration Bits – (8–15) When this bit is set, that particular channel will not be calibrated. Bit 8 to channel 1, bit 9 to channel 2, etc. Default = 0, all channels to be calibrated.

Save Calibration Values – (S) When this bit is set, new calibration values will be saved in EEPROM. Default = 0, values not saved.

Gain Calibration Bit – (G) When this bit is set, gain calibration is to be performed. When set, no other calibration functions can be performed. Default = 0, no gain calibration.

Offset Calibration Bit – (O) When this bit is set, offset calibration is to be performed. When set, no other calibration functions can be set. Default = 0, no calibration.

Use the following table to read data from your input module.

Dec. Bits	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	Description
Octal Bits	17	16	15	14	13	12	11	10	07	06	05	04	03	02	01	00	
Word 1					Not Used				A	HF	IA	IF	RTS	IS	OR	PU	Diagnostics

Alarm violation status bit – (A) This bit is set if one or more channels are in an alarm condition.

Hardware fault – (HF) When this bit is set, the dc/dc converter fuse has blown. Digital logic will continue to operate.

Invalid alarm bit – (IA) This bit is set if any alarm value is unusable, such as expecting BCD and value is in 2's complement binary.

Invalid filter bit – (IF) This bit is set if the filter parameters are not correct. The value must be between 00 and 99 (0.00 and 0.99 seconds) in BCD, or between 0 and 255 (0 to 2.55) in binary.

Real time sample fault bit – (RTS) This bit is set if the module is configured for RTS and a block transfer read has not occurred within the user–programmed period.

Power up bit – (PU) Used by the module to tell the processor that it is alive but not yet configured. It is a key element in the application program.

Out of range bit – (OR) This bit is sent to tell the processor that one or more channels are either over or under range.

Invalid scaling bit – (IS) This bit reports that the scaling is somehow invalid. Usually, both values are equal or minimum is greater than maximum when this bit comes on. Can also be an **invalid filter** value.

Octal Bits	17	16	15	14	13	12	11	10	07	06	05	04	03	02	01	00	Description
2					Not Used				8	7	6	5	4	3	2	1	Data underrange for channels 1–8
3					Not Used				8	7	6	5	4	3	2	1	Data overrange for channels 1–8

Underrange bits for each channel. Bit 00 for channel 1, bit 01 for channel 2, etc. These bits are set (1) at approximately the input range limits shown on the right.

Overrange bits for each channel. Bit 00 for channel 1, bit 01 for channel 2, etc. These bits are set (1) at approximately the input range limits shown on the right.

1 to 5V dc, 4 to 20mA (default)

0 to 5V dc, 0 to 20mA

-5 to +5V dc, -20 to +20mA

-10 to +10V dc, 0 to 10V dc

Octal Bits	17	16	15	14	13	12	11	10	07	06	05	04	03	02	01	00	Description
4					Not Used				8	7	6	5	4	3	2	1	Data polarity for channels 1–8
	Polarity bits – Set when input is less than zero.																
5					Channel 1 Input												Channel 1 Input
6					Channel 2 Input												Channel 2 Input
⇓	⇓		⇓				⇓	⇓									
12					Channel 8 Input												Channel 8 Input
13					Not Used				8	7	6	5	4	3	2	1	Low Alarm Bits
14					Not Used				8	7	6	5	4	3	2	1	High Alarm Bits

Low Alarm bits for channels 1 through 8 respectively. Each bit represents an alarm indicator for that channel. When the bit is set, the value of that channel is below the low alarm value.

High Alarm bits for channels 1 through 8 respectively. Each bit represents an alarm indicator for that channel. When the bit is set, the value of that channel is above the high alarm value.

15	8	7	6	5	4	3	2	1	CF	EF		Not Used		S	G	O	Calibration Status Bits

Calibration Inhibited. Bits 8 (10) through 15 (17) represent a channel that was not calibrated, either due to an error or a user request. If the channel was requested not to be calibrated, these bits confirm that request.

Calibration Fault – (CF) When this bit is set, the module could not perform offset or gain calibration. This bit is set when a save is requested.

EEPROM Fault – (EF) When this bit is set, the calibration values could not be saved to EEPROM.

Offset Calibration Complete – (O) When this bit is set, the offset calibration request was successfully completed.

**Gain Calibration Complete – (G)** When this bit is set, the gain calibration request was successfully completed.

Save Complete – (S) When this bit is set, the "save calibration values to EEPROM" was successfully completed.

Default Configuration

If a write block of with all zeroes is sent to the module, the default selections will be:

- 1 to 5V dc or 4 to 20mA (depends on voltage/current selection jumper setting)
- BCD data format
- no real time sampling (RTS)
- no digital filter
- no scaling
- no alarms

Interpret Status Indicators

ISOLATED
ANALOG INPUT

RUN ⚪ ——— Green RUN indicator
FLT ⚪ ——— Red FAULT indicator

10528-I
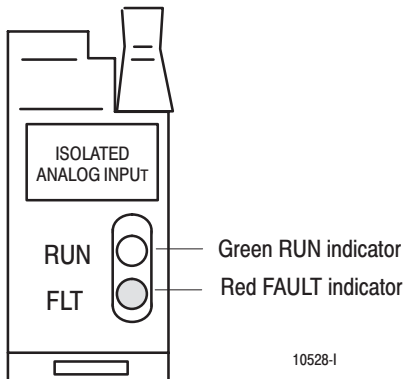
The front panel of the isolated analog input module contains a green RUN indicator and a red FAULT indicator. At power-up, the module momentarily turns on both indicators as a lamp test, then checks for:

- correct RAM operation
- EPROM operation
- EEPROM operation
- a valid write block transfer with configuration data

If there is no fault, the red indicator turns off.

The green indicator comes on when the module is powered. It will flash until the module is programmed. If a fault is found initially or occurs later, the red fault indicator lights. The module also reports status and specific faults (if they occur) in every transfer of data (BTR) to the PC processor. Monitor the green and red indicators and status bits in word 1 of the BTR file when troubleshooting your module.
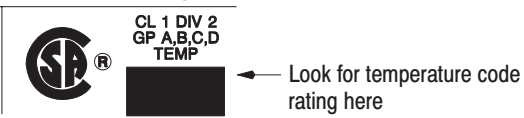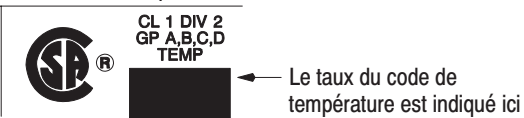
Troubleshooting

For detailed troubleshooting information, see chapter 7 of your *Isolated Analog Input Module User Manual* (publication 1771-6.5.91).

Possible module fault causes and corrective action are described in the following table.

Indicators	Probable Cause	Recommended Action
RUN (green) off FLT (red) off	No power to module	Check power to I/O chassis. Recyle as necessary.
	Possible short on module	Replace module.
	LED driver failure	
RUN (green) on FLT (red) on	Microprocessor, oscillator or EPROM failure	
RUN (green) off FLT (red) on	If immediately after power-up, indicates RAM or EPROM failure.[1]	
	If during operation, indicates possible microprocessor or backplane interface failure.[1]	
	Hardware failure (blown fuse, etc.)	
RUN (green) blinking FLT (red) off	Powerup diagnostic successfully completed.	Normal operation.
	If indicator continues to flash, and write block transfers (BTW) cannot be accomplished, you have a possible interface failure.	Replace module.
RUN (green) on FLT (red) off	Normal operation	None

[1] When red LED is on, the watchdog timer has timed out and backplane communications are terminated. Your user program should monitor communication.

CSA Hazardous Location Approval	Approbation d'utilisation dans des emplacements dangereux par la CSA
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.	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.
Example of the CSA certification product label	Exemple d'étiquette de certification d'un produit par la CSA
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. • 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.	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. • 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.
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.	**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.
Temperature code rating Look for temperature code rating here	Taux du code de température Le taux du code de température est indiqué ici
The following warnings apply to products having CSA certification for use in hazardous locations.	Les avertissements suivants s'appliquent aux produits ayant la certification CSA pour leur utilisation dans des emplacements dangereux.
ATTENTION: Explosion hazard — • 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.	**AVERTISSEMENT:** Risque d'explosion — • La substitution de composants peut rendre ce matériel inacceptable pour lesemplacements de Classe I, Division 2. • Couper le courant ou s'assurer quel'emplacement est désigné non dangereux avant de remplacer lescomposants. • 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.

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PLC est une marque déposée de Allen-Bradley Company, Inc.

CSA logo is a registered trademark of the Canadian Standards Association

PLC is a registered trademark of Allen-Bradley Company, Inc.

Specifications

Description		Value
Number of Inputs		8 fully isolated differential
Module Location		1771 I/O rack - 1 slot
Input voltage ranges (nominal)		+1 to +5V DC 0 to 5V DC -5 to +5V DC -10 to +10V DC
Input current ranges (nominal)		+4 to +20mA 0 to +20mA -20 to +20mA
Resolution		16-bit binary over full range
Accuracy	Voltage	Typical - 0.01% of full scale range @ 25ºC Maximum - 0.05% of full scale range @ 25ºC
	Current	Typical - 0.06% of full scale range @ 25ºC Maximum - 0.1% of full scale range @ 25ºC (Includes 0.05% when using internal current resistor)
Linearity		$\pm$1 LSB
Repeatability		$\pm$1 LSB
Isolation Voltage		This isolation meets or exceeds the requirements of UL standard 508, and CSA standard C22.2 No. 142.
Input overvoltage protection		voltage mode: 140V ac (rms) continuous; current mode: 8V dc continuous
Unscaled BCD and binary output data to the processor		0000 to +4095$_{10}$ for unipolar ranges (0 to 5V, +1 to +5V, 0 to +20mA, and +4 to +20mA) -4095$_{10}$ to 4095$_{10}$ for bipolar ranges $\pm$5V, $\pm$10V, $\pm$20mA input ranges
Input impedance		>10 megohms for voltage ranges; 250 ohms for current ranges
Common mode rejection		>120 db @ 60Hz and 1K ohm source imbalance
Common mode impedence		>50 megohms shunted by <5 nF
Normal mode rejection		>60 db @ 60Hz
Open Circuit Detection	Voltage mode Current mode	Open input produces upscale reading. Open input produces zero reading.
Time to Detect Open Circuit		10s maximum
Calibration		Auto-calibration (offset and gain) Zero offset and gain adjustment for each channel via programming terminal Verify every six months to maintain specified accuracy
Engineering units sent to processor		$\pm$9999 BCD with selectable scaling $\pm$32767 binary
Internal scan rate		50ms for 8 channels
Backplane Current		1.1A @ +5V
Power Dissipation		5.5 Watts maximum
Thermal Dissipation		18.8 BTU/hr maximum
Conductors	Wiring	14 gauge (2mm^2) stranded (max.) 3/64 inch (1.2mm) insulation (max.)
	Category	Category 2[1]
Specifications continued on next page		

Description	Value

Environmental Conditions
    Operational Temperature:
    Storage Temperature:
    Relative Humidity: Operating
                        Storage
	0 to 60°C (32 to 140°F)
	-40 to 85°C (-40 to 185°F
	5 to 95% (without condensation)
	5 to 80% (without condensation)

Keying	between 10 and 12 between 32 and 34
Field Wiring Arm	Cat. No. 1771-WF
Wiring Arm Screw Torque	7-9 inch-pounds
Agency Certification (when product or packaging is marked)	• CSA certified • CSA Class I, Division 2, Groups A, B, C, D certified • UL listed • CE marked for all applicable directives
User Manual	Publication 1771-6.5.91

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

Differences Between Series A, Series B, and Series C

The following are major differences between series levels of the 1771-IL isolated analog input module.

Description	Series A	Series B	Series C
Data Table Usage	8 in/8 out/12 read words/19 write words	8 in/8 out/15 read words/37 write words	
Resolution	12-bit binary	16-bit binary	
Sample Time	No RTS, Default 500ms; range 500ms to 3.1s in 100ms increments	No RTS, Default 50ms; range 50ms to 3.1s in 100ms increments	
Calibration	Mechanical adjustments for gain, offset and zero offset.	Auto-calibration (offset and gain) Zero offset and gain adjustment for each channel via programming terminal	
Accuracy	0.1% of full scale range @ 25°C	Voltage: Typical - 0.01% of full scale range @ 25°C Maximum - 0.05% of full scale range @ 25°C Current: Typical - 0.06% of full scale range @ 25°C Maximum - 0.1% of full scale range @ 25°C (Includes 0.05% when using internal current resistor)	
Common Mode Rejection	>120 db @ 60Hz and 1K ohm source imbalance	>150 db @ 60Hz and 1K ohm source imbalance	
Normal mode rejection	>120 db @ 60Hz	>60 db @ 60Hz	
Input Overvoltage Protection	±40V peak, continuous	voltage mode: 140V ac (rms) continuous; current mode: 8V dc continuous	
Backplane Current	1.3A @ +5V	1.0A @ +5V	1.1A @ +5V
Power Dissipation	6.5 Watts maximum	5.0 Watts maximum	5.5 Watts maximum
Thermal Dissipation	22.2 BTU/hr maximum	17.1 BTU/hr maximum	18.8 BTU/hr maximum
Insternal Scan Rate	500ms for 8 channels (no scaling or digital filtering)	50ms for 8 channels (no scaling or digital filtering)	
Engineering Units sent to Processor	±9999 BCD with selectable scaling	±9999 BCD with selectable scaling ±32767 binary	
Agency Cerfification	CSA certified, CSA Class I, Division 2, Groups A, B, C, D certified; UL listed		CSA certified, CSA Class I, Division 2, Groups A, B, C, D certified; UL listed; CE marked for all applicable directives

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