

CompactLogix Isolated Analog Input Module

Catalog Number 1769-IF4I

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Important User Information

Solid-state equipment has operational characteristics differing from those of electromechanical equipment. Safety Guidelines for the Application, Installation and Maintenance of Solid State Controls (Publication SGI-1.1 available from your local Rockwell Automation sales office or online at <http://www.rockwellautomation.com/literature/>) describes some important differences between solid-state equipment and hard-wired electromechanical devices. Because of this difference, and also because of the wide variety of uses for solid-state equipment, all persons responsible for applying this equipment must satisfy themselves that each intended application of this equipment is acceptable.





In no event will Rockwell Automation, Inc. be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Rockwell Automation, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams.

No patent liability is assumed by Rockwell Automation, Inc. with respect to use of information, circuits, equipment, or software described in this manual.

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Throughout this manual, when necessary, we use notes to make you aware of safety considerations.

	WARNING: Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.
	ATTENTION: Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you identify a hazard, avoid a hazard and recognize the consequences.
	SHOCK HAZARD: Labels may be on or inside the equipment, for example, drive or motor, to alert people that dangerous voltage may be present.
	BURN HAZARD: Labels may be on or inside the equipment, for example, drive or motor, to alert people that surfaces may reach dangerous temperatures.
IMPORTANT	Identifies information that is critical for successful application and understanding of the product.

North American Hazardous Location Approval

The following information applies when operating this equipment in hazardous locations.	Informations sur l'utilisation de cet équipement en environnements dangereux.
<p>Products marked "CL I, DIV 2, GP A, B, C, D" are suitable for use in Class I Division 2 Groups A, B, C, D, Hazardous Locations and nonhazardous locations only. Each product is supplied with markings on the rating nameplate indicating the hazardous location temperature code. When combining products within a system, the most adverse temperature code (lowest "T" number) may be used to help determine the overall temperature code of the system. Combinations of equipment in your system are subject to investigation by the local Authority Having Jurisdiction at the time of installation.</p>	<p>Les produits marqués "CL I, DIV 2, GP A, B, C, D" ne conviennent qu'à une utilisation en environnements de Classe I Division 2 Groupes A, B, C, D dangereux et non dangereux. Chaque produit est livré avec des marquages sur sa plaque d'identification qui indiquent le code de température pour les environnements dangereux. Lorsque plusieurs produits sont combinés dans un système, le code de température le plus défavorable (code de température le plus faible) peut être utilisé pour déterminer le code de température global du système. Les combinaisons d'équipements dans le système sont sujettes à inspection par les autorités locales qualifiées au moment de l'installation.</p>
<div data-bbox="118 493 213 581" data-label="Image"> </div> <p>WARNING: Explosion Hazard -</p> <ul style="list-style-type: none"> • Do not disconnect equipment unless power has been removed or the area is known to be nonhazardous. • Do not disconnect connections to this equipment unless power has been removed or the area is known to be nonhazardous. Secure any external connections that mate to this equipment by using screws, sliding latches, threaded connectors, or other means provided with this product. • Substitution of components may impair suitability for Class I, Division 2. • If this product contains batteries, they must only be changed in an area known to be nonhazardous. 	<div data-bbox="537 493 633 581" data-label="Image"> </div> <p>AVERTISSEMENT: Risque d'Explosion –</p> <ul style="list-style-type: none"> • Couper le courant ou s'assurer que l'environnement est classé non dangereux avant de débrancher l'équipement. • Couper le courant ou s'assurer que l'environnement est classé non dangereux avant de débrancher les connecteurs. Fixer tous les connecteurs externes reliés à cet équipement à l'aide de vis, loquets coulissants, connecteurs filetés ou autres moyens fournis avec ce produit. • La substitution de composants peut rendre cet équipement inadapté à une utilisation en environnement de Classe I, Division 2. • S'assurer que l'environnement est classé non dangereux avant de changer les piles.

Environment and Enclosure



ATTENTION: This equipment is intended for use in a Pollution Degree 2 industrial environment, in overvoltage Category II applications (as defined in IEC 60664-1), at altitudes up to 2000 m (6562 ft) without derating.

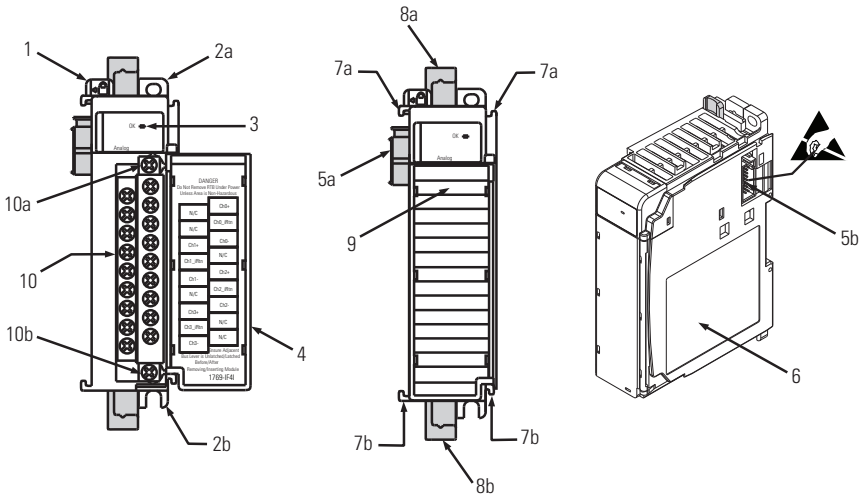
This equipment is considered Group 1, Class A industrial equipment according to IEC/CISPR 11. Without appropriate precautions, there may be difficulties with electromagnetic compatibility in residential and other environments due to conducted and radiated disturbances.

This equipment is supplied as open-type equipment. It must be mounted within an enclosure that is suitably designed for those specific environmental conditions that will be present and appropriately designed to prevent personal injury resulting from accessibility to live parts. The enclosure must have suitable flame-retardant properties to prevent or minimize the spread of flame, complying with a flame spread rating of 5VA, V2, V1, V0 (or equivalent) if non-metallic. The interior of the enclosure must be accessible only by the use of a tool. Subsequent sections of this publication may contain additional information regarding specific enclosure type ratings that are required to comply with certain product safety certifications.

Besides this publication, see:

- Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#), for additional installation requirements, .
- NEMA Standards publication 250 and IEC publication 60529, as applicable, for explanations of the degrees of protection provided by different types of enclosure.

Module Description



Item	Description	Item	Description
1	Bus lever (with locking function)	7a	Upper tongue-and-groove slots
2a	Upper panel mounting tab	7b	Lower tongue-and-groove slots
2b	Lower panel mounting tab	8a	Upper DIN rail latch
3	Module status indicator	8b	Lower DIN rail latch
4	Module door with terminal identification label	9	Write-on label (user ID tag)
5a	Movable bus connector with female pins	10	Removable terminal block (RTB) with finger-safe cover
5b	Stationary bus connector with male pins	10a	RTB upper retaining screw
6	Nameplate label	10b	RTB lower retaining screw

Prevent Electrostatic Discharge



ATTENTION: This equipment is sensitive to electrostatic discharge, which can cause internal damage and affect normal operation. Follow these guidelines when you handle this equipment:

- Touch a grounded object to discharge potential static.
- Wear an approved grounding wriststrap.
- Do not touch connectors or pins on component boards.
- Do not touch circuit components inside the equipment.
- Use a static-safe workstation, if available.
- Store the equipment in appropriate static-safe packaging when not in use.

Remove Power



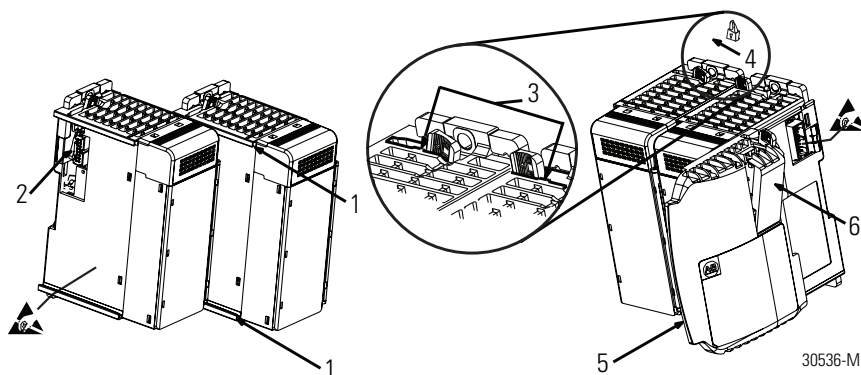
WARNING: When you insert or remove the module while backplane power is on, an electrical arc can occur. This could cause an explosion in hazardous location installations.

Be sure that power is removed or the area is nonhazardous before proceeding. Repeated electrical arcing causes excessive wear to contacts on both the module and its mating connector. Worn contacts may create electrical resistance that can affect module operation.

System Assembly

The module can be attached to the controller or an adjacent I/O module before or after mounting. For mounting instructions, see [Panel Mounting on page 8](#), or [DIN Rail Mounting on page 9](#). To work with a system that is already mounted, see [Replacing a Single Module within a System on page 9](#).

The following procedure shows you how to assemble the Compact I/O system.



1. Disconnect power.
2. Check that the bus lever of the module to be installed is in the unlocked (fully right) position.
3. Use the upper and lower tongue-and-groove slots (1) to secure the modules together (or to a controller).
4. Move the module back along the tongue-and-groove slots until the bus connectors (2) line up with each other.
5. Push the bus lever back slightly to clear the positioning tab (3).

Use your fingers or a small screwdriver.

6. To allow communication between the controller and module, move the bus lever fully to the left (4) until it clicks.

Be sure it is locked firmly in place.



ATTENTION: When attaching I/O modules, it is very important that the bus connectors are securely locked together to ensure proper electrical connection.

7. Attach an end cap terminator (5) to the last module in the system by using the tongue-and-groove slots as before.
8. Lock the end cap bus terminator (6).

IMPORTANT A 1769-ECR or 1769-ECL right or left end cap must be used to terminate the end of the communication bus.

Mounting Expansion I/O



ATTENTION: During panel or DIN rail mounting of all devices, be sure that all debris (such as metal chips or wire strands) is kept from falling into the module. Debris that falls into the module could cause damage on power up.



ATTENTION: When used in a Class I, Division 2, hazardous location, this equipment must be mounted in a suitable enclosure with proper wiring method that complies with the governing electrical codes.

Grounding the Module



ATTENTION: This product is intended to be mounted to a well-grounded mounting surface such as a metal panel. Additional grounding connections from the power supply's mounting tabs or DIN rail (if used) are not required unless the mounting surface cannot be grounded. Refer to Industrial Automation Wiring and Grounding Guidelines, Rockwell Automation publication [1770-4.1](#), for additional information.

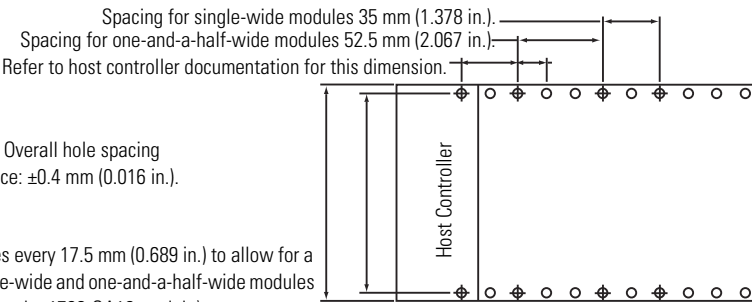
Minimum Spacing

Maintain spacing from enclosure walls, wireways, and adjacent equipment. Allow 50 mm (2 in.) of space on all sides for adequate ventilation, as shown.

Panel Mounting

Mount the module to a panel by using two screws per module. Use M4 or #8 panhead screws. Mounting screws are required on every module.

Panel Mounting Using the Dimensional Template



Panel Mounting Procedure Using Modules as a Template

The following procedure allows you to use the assembled modules as a template for drilling holes in the panel. If you have sophisticated panel mounting equipment, you can use the dimensional template provided on page [8](#). Due to module mounting hole tolerance, it is important to follow this procedure.

1. On a clean work surface, assemble no more than three modules.
2. Using the assembled modules as a template, carefully mark the center of all module-mounting holes on the panel.
3. Return the assembled modules to the clean work surface, including any previously mounted modules.

4. Drill and tap the mounting holes for the recommended M4 or #8 screw.
5. Place the modules back on the panel and check for proper hole alignment.
6. Attach the modules to the panel using the mounting screws.

TIP If mounting more modules, mount only the last one of this group and put the others aside. This reduces remounting time during drilling and tapping of the next group.

7. Repeat steps [1](#)... [6](#) for any remaining modules.

DIN Rail Mounting

The module can be mounted using the following DIN rails:

35 x 7.5 mm (1.38 x 0.30 in.; EN 50 022 - 35 x 7.5)

35 x 15 mm (1.38 x 0.59 in.; EN 50 022 - 35 x 15)

Before mounting the module on a DIN rail, close the DIN rail latches. Press the DIN rail mounting area of the module against the DIN rail. The latches will momentarily open and lock into place.

Replacing a Single Module within a System

The module can be replaced while the system is mounted to a panel (or DIN rail). Follow these steps.

1. Remove power.

See important note on [page 6](#).

2. On the module to be removed, remove the upper and lower mounting screws from the module (or open the DIN latches by using a flat-blade or phillips-style screwdriver).
3. Move the bus lever to the right to disconnect (unlock) the bus.
4. On the right-side adjacent module, move its bus lever to the right (unlock) to disconnect it from the module to be removed.
5. Gently slide the disconnected module forward.

If you feel excessive resistance, check that the module has been disconnected from the bus and that both mounting screws have been removed (or DIN latches opened).

TIP It may be necessary to rock the module slightly from front to back to remove it, or, in a panel-mounted system, to loosen the screws of adjacent modules.

6. Before installing the replacement module, be sure that the bus lever on the module to be installed and on the right-side adjacent module are in the unlocked (fully right) position.

7. Slide the replacement module into the open slot.
8. Connect the modules together by locking (fully left) the bus levers on the replacement module and the right-side adjacent module.
9. Replace the mounting screws (or snap the module onto the DIN rail).

Replacement Part

Terminal block, catalog number 1769-RTBN18 (one per kit).

System Wiring Guidelines



ATTENTION: Use supply wires suitable for 20 °C (68 °F) above surrounding ambient.

Consider the following when wiring your system:

- Do not use the analog module's NC terminals as connection points.
- Channels are isolated from each other.
- Use Belden 8761, or equivalent, shielded wire.
- Under normal conditions, the drain wire and shield junction must be connected to earth ground via a panel or DIN rail mounting screw at the analog I/O module end. Keep the shield connection to ground as short as possible.⁽¹⁾
- To ensure optimum accuracy, limit overall cable impedance by keeping your cable as short as possible. Locate the I/O system as close to your sensors or actuators as your application will permit.
- If multiple power supplies are used with analog inputs, the power supply commons must be connected.
- The 1769-IF4I module does not provide loop power for analog inputs. Use a power supply that matches the input transmitter specifications.
- Differential analog inputs are more immune to noise than single-ended analog inputs.

(1) In environments where high-frequency noise may be present, it may be necessary to directly ground cable shields to earth at the module end and via a 0.1µF capacitor at the sensor end.

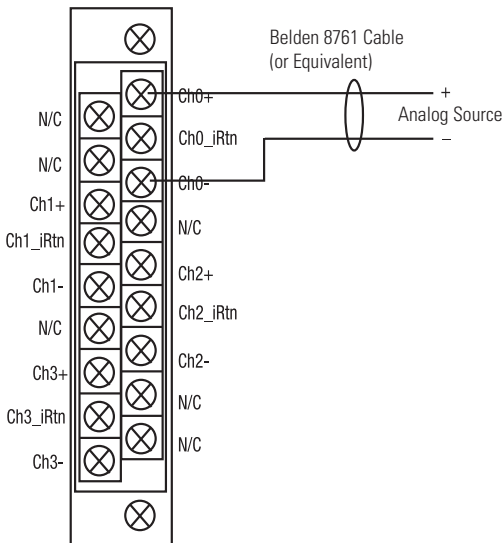
- Voltages on Ch+, Ch-, and Ch_iRtn for a single, isolated channel of the 1769-IF4I module must not exceed the maximum overload levels detailed in the [Input Specifications on page 21](#).



ATTENTION: To comply with UL restrictions, this equipment must be powered from a source compliant with Class 2 or Limited Voltage/Current.

Be careful when stripping wires. Wire fragments that fall into a module could cause damage at power up. Once wiring is complete, make sure that the module is free of all metal fragments.

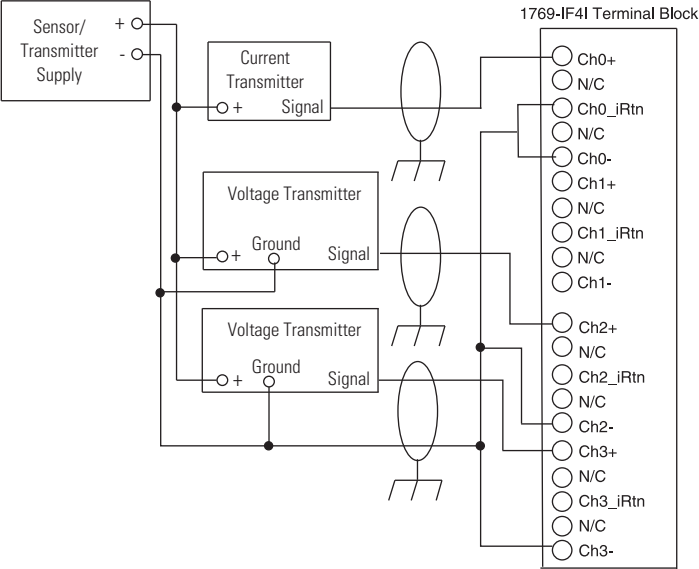
Wiring Differential Inputs



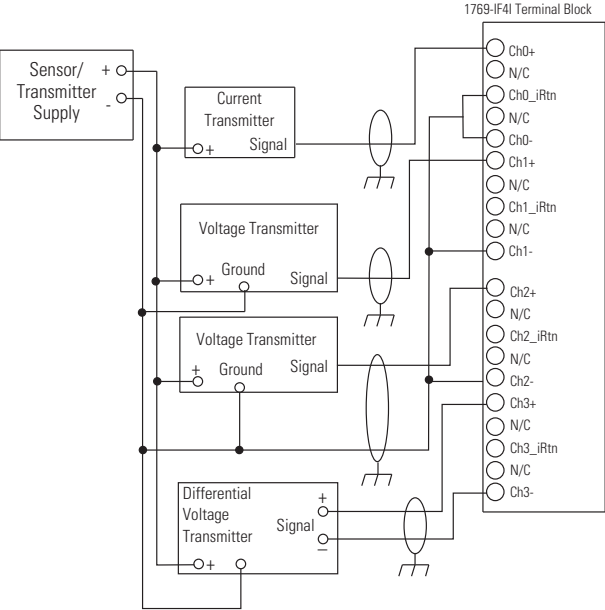
IMPORTANT

1769-IF4I input channels connected to current sources must have a jumper wire placed between Ch#_iRtn and the Ch#- terminals for that channel.

Wiring Single-ended Sensor/Transmitter Types

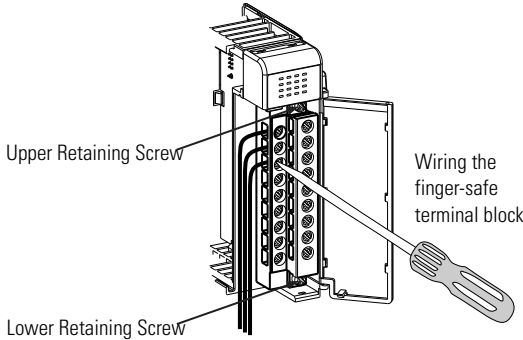


Wiring Mixed Transmitter Types



Labeling the Terminals

A removable, write-on label is provided with the module. Remove the label from the door, mark the identification of each terminal with permanent ink, and slide the label back into the door. Your markings (ID tag) will be visible when the module door is closed.



Removing the Finger-safe Terminal Block



WARNING: When you connect or disconnect the removable terminal block (RTB) with field side power applied, an electrical arc can occur. This could cause an explosion in hazardous location installations.

Be sure that power is removed or the area is nonhazardous before proceeding.

When wiring field devices to the module, it is not necessary to remove the terminal block. If you remove the terminal block, use the write-on label on the side of the terminal block to identify the module slot location and type. RTB position can be indicated by circling either the 'R' for right side or 'L' for left side.

To remove the terminal block, loosen the upper and lower retaining screws. The terminal block will back away from the module as you remove the screws. When replacing the terminal block, torque the retaining screws to 0.46 N•m (4.1 lb•in).

Wiring the Finger-safe Terminal Block

When wiring the terminal block, keep the finger-safe cover in place.

1. Loosen the terminal screws to be wired.
2. Route the wire under the terminal pressure plate.

You can use the bare wire or a spade lug. The terminals will accept a 6.35 mm (0.25 in.) spade lug.

TIP The terminal screws are non-captive. Therefore, it is possible to use a ring lug [maximum 1/4 inch o.d. with a 0.139 in. minimum i.d. (M3.5)] with the module.

3. Tighten the terminal screw, making sure the pressure plate secures the wire.

Recommended torque when tightening terminal screws is 0.68 N•m (6 lb•in).

TIP If you need to remove the finger-safe cover, insert a screwdriver into one of the square wiring holes and gently pry off the cover. If you wire the terminal block with the finger-safe cover removed, you will not be able to put the cover back on the terminal block because the wires will obstruct the cover.

Wire Size and Terminal Screw Torque

Each terminal accepts one or two wires with the following restrictions.

Wire Type		Wire Size	Terminal Screw Torque	Retaining Screw Torque
Solid	Cu-90 °C (194°F)	#14...#22 AWG	0.68 N•m (6 lb•in)	0.46 N•m (4.1 lb•in)
Stranded	Cu-90 °C (194°F)	#16...#22 AWG	0.68 N•m (6 lb•in)	0.46 N•m (4.1 lb•in)

I/O Memory Mapping

Input Data File

For each input module, slot x, words 0-3 in the input data file contain the analog values of the inputs.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	SGN	Analog Input Data Channel 0														
1	SGN	Analog Input Data Channel 1														
2	SGN	Analog Input Data Channel 2														
3	SGN	Analog Input Data Channel 3														
4	Nu	Time Stamp Value														
5	Nu	Nu	Nu	Nu	Nu	Nu	Nu	Nu	Nu	Nu	Nu	Nu	S3	S2	S1	S0
6	L3	H3	U3	O3	L2	H2	U2	O2	L1	H1	U1	O1	L0	H0	U0	O0

The bits are defined as follows:

- SGN = Sign bit in two's complement format
- Nu = Not used. Bit set to 0
- Sx = General status bit for input channels 0...3
- Lx = Low alarm flag bits for input channels 0...3
- Hx = High alarm flag bits for input channels 0...3
- Ux = Under-range flag bits for channels 0...3

When set, the input signal is under normal range or an open circuit condition exists, in the case of the 4...20 mA range.

- Ox = Over-range flag bits for channels 0...3

When set, the input signal is over normal range or an open circuit condition exists (open circuit detection applies to voltage input ranges only).

Output Data File

For each input module, slot x, word 0 in the output data file contains the analog values of the outputs.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	Nu	Nu	Nu	Nu	Nu	Nu	Nu	Nu	UL3	UH3	UL2	UH2	UL1	UH1	UL0	UH0

The bits are defined as follows:

- Nu = Not used. Bit set to 0
- UHx = Cancel High Process Alarm Latch x

Allows each high process alarm latch to be individually cancelled. Cancel = 1.

- ULx = Cancel Low Process Alarm Latch x

Allows each low process alarm latch to be individually cancelled. Cancel = 1.

Configuration Data File

The manipulation of the bits from this file is normally done with programming software (for example, RSLogix 5000 or RSNetWorx for DeviceNet software) during initial configuration of the system. In that case, graphical screens are provided by the programmer to simplify configuration. However, some systems, like the 1769-ADN DeviceNet adapter, also allow the bits to be altered as part of the control program, using communication rungs. In that case, it is necessary to understand the bit arrangement.

Configuration Data Array

Word	Bit Position																
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	
0	Real Time Sample Value																
1	ETS		Reserved														
2	EC		Reserved				EA	AL	EI	Reserved				Input Filter Sel ChI0			
3	Reserved					Inpt Dta Fm ChI0				Reserved				Inpt Tp/RngeSel ChI0			
4	S		Process Alarm High Data Value Channel 0														
5	S		Process Alarm Low Data Value Channel 0														
6	S		Alarm Dead Band Value Channel 0														
7	Reserved																
8	EC		Reserved				EA	AL	EI	Reserved				Inpt Filter Sel ChI1			
9	Reserved					Inpt Dta Fm ChI1				Reserved				Inpt Tp/RngeSel ChI1			
10	S		Process Alarm High Data Value Channel 1														
11	S		Process Alarm Low Data Value Channel 1														
12	S		Alarm Dead Band Value Channel 1														
13	Reserved																
14	EC		Reserved				EA	AL	EI	Reserved				Input Filter Sel ChI2			
15	Reserved					Inpt Dta Fm ChI2				Reserved				Inpt Tp/RngeSel ChI2			
16	S		Process Alarm High Data Value Channel 2														
17	S		Process Alarm Low Data Value Channel 2														
18	S		Alarm Dead Band Value Channel 2														
19	Reserved																
20	EC		Reserved				EA	AL	EI	Reserved				Input Filter Sel ChI3			
21	Reserved					Inpt Dta Fm ChI3				Reserved				Inpt Tp/RngeSel ChI3			
22	S		Process Alarm High Data Value Channel 3														
23	S		Process Alarm Low Data Value Channel 3														

Configuration Data Array (cont.)

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
24	S	Alarm Dead Band Value Channel 3														
25	Reserved															

The bits are defined as follows:

- EC = Enable Channel
- Inpt Dta Fm Chlx = Input Data Format Select
- EA = Enable Alarm
- AL = Alarm Latch
- EI = Enable Interrupt⁽¹⁾
- Inpt Tp/Rnge Sel Chlx = Input Type/Range Select
- Inpt Filter Sel Chlx = Input Filter Select
- Reserved = Allows for future expansion
- ETS = Enable Time Stamp

Bit Definitions for Channel Configuration Words

Define	To Select	Make these bit settings									
		15	14...11	10	9	8	7...4	3	2	1	0
Input Filter Selection	60 Hz							0	0	0	0
	50 Hz							0	0	0	1
	28.5 Hz							0	0	1	0
	300 Hz							0	0	1	1
	360 Hz							0	1	0	0
Enable Interrupt	Enable					1					
	Disable					0					
Enable Process AlarmLatch	Enable				1						
	Disable				0						
Enable Process Alarms	Enable			1							
	Disable			0							
Enable Channel	Enable	1									
	Disable	0									

(1) MicroLogix 1500 and CompactLogix L3x controllers do not support interrupts.

Bit Definitions for Input Range and Input Data Configuration

Define	Indicate This	These bit settings								
		15...11	10	9	8	7...4	3	2	1	0
Input Range Select	-10...+10V DC						0	0	0	0
	0...5V DC						0	0	0	1
	0...10V DC						0	0	1	0
	4...20 mA						0	0	1	1
	1...5V DC						0	1	0	0
	0...20 mA						0	1	0	1
Input Data Select	Raw/Proportional Counts		0	0	0					
	Engineering Units		0	0	1					
	Scaled for PID		0	1	0					
	Percent Range		0	1	1					

Specifications

Technical Specifications 1769-IF4I

Attribute	1769-IF4I
Enclosure type rating	None (open-style)
Dimensions, HxWxD (approx.)	118 mm x 35 mm x 87 mm Height including mounting tabs is 138 mm 4.65 in. x 1.38 in. x 3.43 in. Height including mounting tabs is 5.43 in.
Approximate shipping weight (with carton)	300 g (0.66 lb)
Enclosure type rating	None (open-style)
Wire size...	0.32...2.1 mm ² (22...14 AWG) solid copper wire or 0.32...1.3 mm ² (22...16 AWG) stranded copper wire rated at 90 °C (194 °F) insulation max
Wiring category ⁽¹⁾	2 - on signal ports
North American temp code	T4A

(1) Use this Conductor Category information for planning conductor routing. Refer to Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

Environmental Specifications 1769-IF4I

Attribute	1769-IF4I
Temperature, storage	-40...85 °C (-40...185 °F)

Environmental Specifications 1769-IF4I

Attribute	1769-IF4I
Temperature, operating <ul style="list-style-type: none"> IEC 60068-2-1 (Test Ad, Operating Cold) IEC 60068-2-2 (Test Bd, Operating Dry Heat) IEC 60068-2-14 (Test Nb, Operating Thermal Shock) 	0...60 °C (32...140 °F)
Temperature, surrounding air, max	60 °C (140 °F)
Temperature, nonoperating <ul style="list-style-type: none"> IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold) IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat) IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) 	-40...85 °C (-40...185 °F)
Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Damp Heat)	5...95% noncondensing
Vibration IEC 60068-2-6 (Test Fc, Operating)	5 g @ 10...500 Hz
Shock, operating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	20 g
Shock, nonoperating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	30 g
Emissions CISPR 11	Group 1, Class A
ESD immunity IEC 61000-4-2	4 kV contact discharges 8 kV air discharges
Radiated RF immunity IEC 61000-4-3	10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz 10V/m with 200 Hz 50% Pulse 100% AM at 900 MHz 10V/m with 200 Hz 50% Pulse 100% AM at 1890 MHz 3V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz
EFT/B immunity IEC 61000-4-4	±2 kV at 5 kHz on signal ports

Environmental Specifications 1769-IF4I

Attribute	1769-IF4I
Surge transient immunity IEC 61000-4-5	±1 kV line-earth(CM) on shielded ports
Conducted RF immunity IEC 61000-4-6	10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz
Supply power and current ratings	Backplane: <ul style="list-style-type: none">• 5V DC, 140 mA• 24V DC, 110 mA Voltage Inputs: <ul style="list-style-type: none">• ±10V DC• 0...10V DC• 1...5V DC• 0...5V DC (30V DC max) Current Inputs: <ul style="list-style-type: none">• 0...20 mA• 4...20 mA
Isolation voltage	30V (continuous), reinforced insulation type, channel to system and channel to channel Type tested at 710V DC for 60 s

Input Specifications

Attribute	1769-IF4I
Analog normal operating ranges ⁽¹⁾	Voltage: $\pm 10\text{V DC}$, $0 \dots 10\text{V DC}$, $0 \dots 5\text{V DC}$, $1 \dots 5\text{V DC}$ Current: $0 \dots 20\text{ mA}$, $4 \dots 20\text{ mA}$
Full scale analog ranges ⁽¹⁾	Voltage: $\pm 10.5\text{V DC}$, $0 \dots 10.5\text{V DC}$, $0 \dots 5.25\text{V DC}$, $0.5 \dots 5.25\text{V DC}$ Current: $0 \dots 21\text{ mA}$, $3.2 \dots 21\text{ mA}$
Number of inputs	4 isolated differential
Bus current draw (max)	145 mA at 5V DC 125 mA at 24V DC
Heat dissipation	3.0 Total Watts (The Watts per point, plus the minimum Watts, with all points energized.)
Converter type	Delta Sigma
Response speed per channel	Input filter and configuration dependent. See your user manual.
Resolutions (max) ⁽²⁾	16 bits (unipolar) 15 bits plus sign (bipolar)
Rated working voltage ⁽³⁾	30V AC 30V DC
Common mode rejection	Greater than 60 dB at 50 and 60 Hz with the 10 Hz filter selected, respectively.
Normal mode rejection ratio	-50 dB at 50 and 60 Hz with the 10 Hz filter selected, respectively.
Input impedance	Voltage Terminal: $1\text{M } \Omega$ (typical) Current Terminal: $249\text{ } \Omega$
Overall accuracy ⁽⁴⁾	Voltage Terminal: $\pm 0.2\%$ full scale at $25\text{ }^\circ\text{C}$ ($77\text{ }^\circ\text{F}$) Current Terminal: $\pm 0.35\%$ full scale at $25\text{ }^\circ\text{C}$ ($77\text{ }^\circ\text{F}$)

(1) The over- or under-range flag will come on when the normal operating range (over/under) is exceeded. The module will continue to convert the analog input up to the maximum full scale range. The flag automatically resets when within the normal operating range.

(2) Resolution is dependent upon your filter selection. The maximum resolution is achieved with the 10 Hz filter selected.

(3) Rated working voltage is the maximum continuous voltage that can be applied at the input terminal, including the input signal and the value that floats above ground potential (for example, 10V DC input signal and 20V DC potential above ground).

(4) Includes offset, gain, non-linearity and repeatability error terms.

Input Specifications (cont.)

Attribute	Value
Accuracy drift with temperature	Voltage terminal: $\pm 0.003\%$ per $^{\circ}\text{C}$ Current terminal: $\pm 0.0045\%$ per $^{\circ}\text{C}$
Calibration	The module performs only initial factory calibration.
Non-linearity (in percent full scale)	$\pm 0.03\%$
Repeatability ⁽¹⁾	$\pm 0.03\%$
Module error over full temperature range (0...60 $^{\circ}\text{C}$ [+32...140 $^{\circ}\text{F}$])	Voltage: $\pm 0.3\%$ Current: $\pm 0.5\%$
Input channel configuration	Via configuration software screen or the user program (by writing a unique bit pattern into the module's configuration file). Refer to your controller's user manual to determine if user program configuration is supported.
Module OK status indicator	On: module has power, has passed internal diagnostics, and is communicating over the bus. Off: Any of the above is not true.
Channel diagnostics	Over- or under-range by bit reporting, process alarms
Maximum overload at input terminals ⁽²⁾	Voltage Terminal: $\pm 24\text{V}$ DC continuous, 0.1 mA Current Terminal: $\pm 28\text{ mA}$ continuous, $\pm 7.0\text{V}$ DC
System power supply distance rating	8 (The module may not be more than 8 modules away from the system power supply)
Recommended cable	Belden 8761 (shielded)
Vendor I.D. code	1
Product type code	10
Product code	44

(1) Repeatability is the ability of the input module to register the same reading in successive measurements for the same input signal.

(2) Damage may occur to the input circuit if this value is exceeded.

Certifications 1769-IF4I

Certifications ⁽¹⁾ (when product is marked)	1769-IF4I
c-UL-us	UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E10314.
CE	European Union 2004/108/EC EMC Directive, compliant with: <ul style="list-style-type: none"> • EN 61000-6-2; Industrial Immunity • EN 61000-6-4; Industrial Emissions • EN 61131-2; Programmable Controllers (Clause 8, Zone A & B)
C-Tick	Australian Radiocommunications Act, compliant with: AS/NZS CISPR 11; Industrial Emissions

(1) See the Product Certification link at <http://www.ab.com> for Declarations of Conformity, Certificates, and other certification details.

Additional Resources

These documents contain additional information concerning related Rockwell Automation products.

Resource	Description
CompactLogix I/O Analog Modules User Manual, publication 1769-UM002	Provides detailed information on installing, programming, and troubleshooting CompactLogix analog I/O modules.
MicroLogix 1500 Programmable Controllers User Manual, publication 1764-UM001	Provides a detailed description for installing and using Compact I/O modules with a MicroLogix 1500 programmable controller.
1769-ADN DeviceNet Adapter User Manual, publication 1769-UM001	Provides a detailed description of how to install and use Compact I/O modules with the 1769-ADN DeviceNet adapter.

You can view or download publications at <http://www.rockwellautomation.com/literature/>. To order paper copies of technical documentation, contact your local Rockwell Automation distributor or sales representative.

Rockwell Automation Support

Rockwell Automation provides technical information on the Web to assist you in using its products. At <http://www.rockwellautomation.com/support/>, you can find technical manuals, a knowledge base of FAQs, technical and application notes, sample code and links to software service packs, and a MySupport feature that you can customize to make the best use of these tools.

For an additional level of technical phone support for installation, configuration and troubleshooting, we offer TechConnect support programs. For more information, contact your local distributor or Rockwell Automation representative, or visit <http://www.rockwellautomation.com/support/>.

Installation Assistance

If you experience a problem within the first 24 hours of installation, please review the information that's contained in this manual. You can also contact a special Customer Support number for initial help in getting your product up and running.

United States or Canada	1.440.646.3434
Outside United States or Canada	Use the Worldwide Locator at http://www.rockwellautomation.com/support/americas/phone_en.html , or contact your local Rockwell Automation representative.

New Product Satisfaction Return

Rockwell Automation tests all of its products to ensure that they are fully operational when shipped from the manufacturing facility. However, if your product is not functioning and needs to be returned, follow these procedures.

United States	Contact your distributor. You must provide a Customer Support case number (call the phone number above to obtain one) to your distributor to complete the return process.
Outside United States	Please contact your local Rockwell Automation representative for the return procedure.

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Your comments will help us serve your documentation needs better. If you have any suggestions on how to improve this document, complete this form, publication [BA-DU002](#), available at <http://www.rockwellautomation.com/literature/>.

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