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1771 Analog Input and Output Modules

Product Data



Interfaces your analog devices to Allen-Bradley programmable controllers within the 1771 Universal I/O structure.

Allen–Bradley analog I/O modules interface to analog devices such as speed sensors, temperature and pressure sensors, tire and printing presses, and flow meters. The modules are compatible with all current Allen-Bradley programmable controllers.

Allen-Bradley analog modules perform the required A/D and D/A conversions to directly interface analog signals to programmable controller data table values using up to 16-bit resolution.

Analog I/O can be user-configured for the desired fault-response state in the event that I/O communication is disrupted. This feature provides a safe reaction/response in case of a fault, limits the extent of the fault and provides a predictable fault response.

Rockwell Automation
Allen-Bradley

Publication 1771-2.183 – May 1996

Overview

Analog Module Features

Analog I/O modules feature:

- a wide range of signal levels including standard analog inputs and outputs, and direct thermocouple and RTD temperature inputs
- software selectable features including digital filtering for noisy transmitters and environments, and range selections per I/O point for added flexibility
- comprehensive self-diagnostic test: over/underrange, high/low rate-of-change alarming, open input/open loop detection, on board error checking
- scaling to engineering units makes incoming signals easy to work with
- I/O chassis-supplied power eliminates the cost of external power supplies
- inputs isolated from power source noise
- isolation between individual output circuits
- user-configurable output response (min, mid, max range or last value) for safe reaction to a module fault
- a status block provides information to the processor for alarming and troubleshooting

Overview of the 1771 Analog I/O Modules

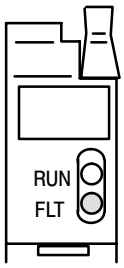
Allen-Bradley offers a full line of analog modules to accommodate your specific needs. The varied selection of the analog I/O family allows you the flexibility to purchase modules with the features and performance capabilities that you need. Refer to the table below for a list of analog I/O family modules.

1771 Analog I/O Modules

Catalog Number	Series	Module Type
1771-IFE	C	Analog Input
1771-IFF	A	Fast Analog Input
1771-IFMS	A	Fast Millivolt Input
1771-IL	C	Isolated Analog Input
1771-IR	C	Resistance Temperature Detector Input
1771-IXE	C	Thermocouple Millivolt Input
1771-IXHR	B	High Resolution Thermocouple /Millivolt Input
1771-OFE1	B	Analog Output (voltage)
1771-OFE2	B	Analog Output (4 to 20mA)
1771-OFE3	B	Analog Output (0 to 50mA)
1771-N series		High Resolution Analog Modules are also available. Refer to publication 1771-2.193

System Compatibility

Refer to the individual specification sheets included in this document for compatibility and use of each module.



Status Indicators

The front panel of each analog I/O module contains status indicators. Refer to the individual specification sheets included in this document for each module's status indicators and meanings.

Keying

Plastic keying bands shipped with each I/O chassis let you key your I/O slots to accept only one type of module. You can key any backplane connector in an I/O chassis to receive your module except for the leftmost connector, which is reserved for adapter or processor modules.

Power Supply Requirements

The analog modules do not require any external power. Power is supplied through the 1771 I/O chassis backplane from the associated chassis power supply. Refer to the table below for individual module power requirements.

Catalog Number	Module Type	Current Requirement
1771-IFE/C	Analog Input	500mA
1771-IFF/A	Fast Analog Input	500mA
1771-IFMS/A	Intrinsically Safe Fast Millivolt Input	750mA
1771-IL/C	Isolated Analog Input	1.0mA
1771-IR/C	Resistance Temperature Detector Input	850mA
1771-IXE/C	Thermocouple Millivolt Input	750mA
1771-IXHR/B	High Resolution Thermocouple /Millivolt Input	750mA
1771-OFE1/B	Analog Output (voltage)	1.5A
1771-OFE2/B	Analog Output (4 to 20mA)	1.5A
1771-OFE3/B	Analog Output (0 to 50mA)	2.5A

Total the current requirements for all the modules in the chassis to avoid overloading the power supply or the I/O chassis backplane.

Module Placement Guidelines

Group your modules to minimize adverse effects from radiated electrical noise and/or heat.

- Group analog I/O modules away from other modules in the chassis to minimize electrical noise interference.
- Place analog input modules and other I/O modules that are sensitive to heat away from slot power supplies to minimize adverse heat effects.

Addressing Modes

Your Allen-Bradley processor can address its I/O in 2-slot, 1-slot or 1/2-slot I/O groups. You select the addressing method for the chassis in which a processor or I/O adapter resides with the I/O chassis backplane switch assembly. You make the selection for each chassis independently, choosing one method of addressing for each chassis.

Analog Input Modules

The 1771 analog input modules are intelligent modules that use block transfer programming to interface analog inputs with Allen-Bradley programmable controllers. Typical analog applications include:

- temperature and pressure sensing
- level sensing
- flow metering

Allen-Bradley analog input modules are available with a wide range of input terminals per module.

Catalog Number	Module Type	Number of Inputs	Type of Inputs
1771-IFE/C	Analog Input	16/8	16 single-ended/8 differential
1771-IFF/A	Fast Analog Input	16/8	16 single-ended/8 differential
1771-IFMS	Intrinsically Safe Fast Millivolt Input	8	differential low level
1771-IL/C	Isolated Analog Input	8	fully isolated differential
1771-IR/C	RTD Input	6	RTD, fully isolated differential
1771-IXE/C	Thermocouple Millivolt Input	8	thermocouple/mV, fully isolated differential
1771-IXHR/B	High Resolution Thermocouple/Millivolt Input	8	high resolution thermocouple/mV, fully isolated differential

Input Filtering

Input filtering limits the effect of voltage transients caused by contact bounce and/or electrical noise. If not filtered, voltage transients could produce false data.

Backplane circuits, module logic circuits, and the rest of the system are protected from possible damage due to electrical transients by opto-electrical isolation.

Analog Output Modules

The1771 analog output modules are intelligent block transfer modules that convert binary or four-digit BCD values (from your processor) to analog signals at module outputs. The modules use block transfer programming to accomplish data transfer. Typical output devices include:

- motor speed controllers
- signal amplifiers
- valve positioners

Output modules include:

Catalog Number	Module Type	Number of Outputs	Type of Outputs
1771-OFE1/B	Analog Output	4	individually isolated voltage
1771-OFE2/B	Analog Output	4	individually isolated 4–20mA current
1771-OFE3/B	Analog Output	4	individually isolated 0–50mA current

High Resolution N-Series Analog Modules

1771-N series high resolution analog modules come in a variety of combinations of inputs and outputs. Input/output connections to the N-series modules are made to remote termination panels, tailored to the type of module. The remote termination panels are then cable-connected to the actual module.

In addition, 1771-N series modules can be custom-ordered with input and output combinations not normally offered. Consult your local Allen-Bradley district office for more information.

1771-N series modules are not covered in this publication. Refer to publication 1771-2.193, “High Resolution Isolated Analog Modules Product Data” for detailed information on the N-series modules.

Conformal Coating

Many products are available conformally coated. Conformal coatings are polymeric films which cover or encapsulate printed circuit assemblies. They protect the assembly by sealing out contaminants and humidity.

The catalog number of a conformally coated product will include the designation “**K**” in the last position before the series identifier. For example, a 1771-IFE C module with conformal coating would have a catalog number of 1771-IFE**K** C.

All analog modules, except for the 1771-IXHR and 1771-IFMS modules, are available conformally coated.

Compliance to European Union Directives

If this product has the CE mark it 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 the following Allen-Bradley publications:

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

Agency Certification

Individual discrete I/O modules can also comply with various other agency requirements when product or packaging is so marked.

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

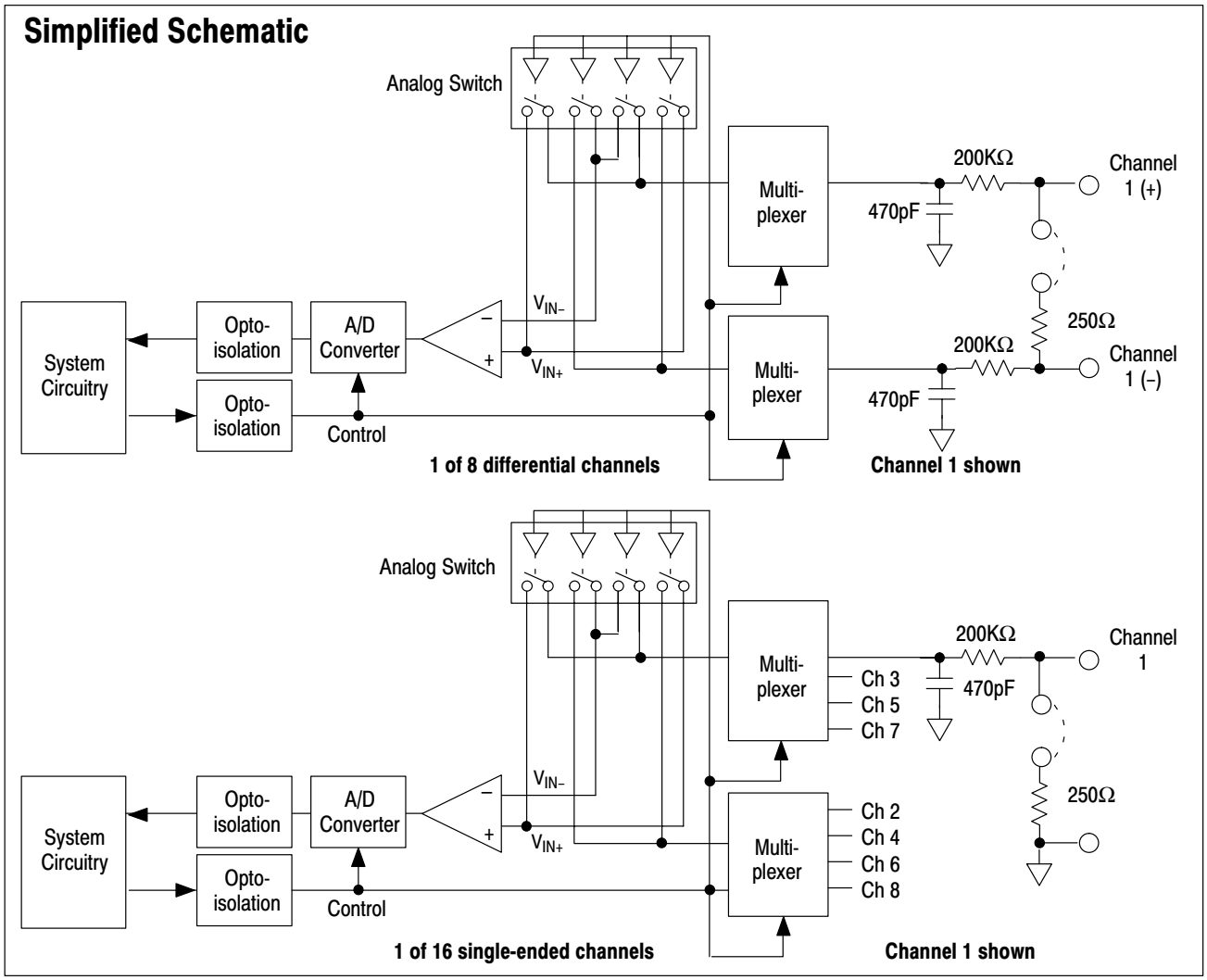
Where to Look

The following table shows you where to go in this publication for the specifications, wiring, and application information specific to each analog input and output module.

Catalog Number	Module Type	For specifications, refer to:
1771-IFE/C	Analog Input	page 7
1771-IFF/A	Fast Analog Input	page 11
1771-IFMS/A	Intrinsically Safe Fast Millivolt Input	page 15
1771-IL/C	Isolated Analog Input	page 17
1771-IR/C	RTD Input	page 19
1771-IXE/C	Thermocouple/Millivolt Input	page 21
1771-IXHR/B	High Resolution Thermocouple/Millivolt Input	page 23
1771-OFE1/B	Analog Output	page 25
1771-OFE2/B	Analog Output	
1771-OFE3/B	Analog Output	
1771-N series	High Resolution Analog Modules	Refer to publication 1771-2.193

Analog Input Module (Cat. No. 1771-IFE Series C) 8 differential, or 16 single-ended inputs

Simplified Schematic



Application Notes

Product Compatibility – The module is compatible with 1771-A1B through –A4B or later I/O chassis only. Insert the module in any slot in the chassis except the leftmost slot, which is reserved for processors or adapter modules.

Status Indicators – The front panel of the input module contains a green RUN and a red FAULT indicator. At power-up an initial module self-check occurs. If there is no fault, the red indicator turns off. The green indicator will blink until the processor completes a successful write block transfer to the module.

The green indicator remains on while the module is powered. Any time a fault occurs, the red FAULT indicator lights up.

Wiring – Wiring to the analog input module is connected to the 1771-WG field wiring arm. The wiring arm pivots upward and connects with the module so that you can install or remove it without disconnecting the wires. Recommended maximum cable length for voltage input devices is 50 feet.

Configurable Features –

- 16 single-ended or 8 differential inputs
- user-programmable selectable input ranges
- selectable real-time sampling
- selectable digital filtering
- selectable data format
- selectable scaling to engineering units

Note: Configuring the module for differential inputs does not provide channel-to-channel isolation. To prevent common mode voltage problems, we recommend the use of common power supplies and careful wiring and grounding practices (refer to publication 1770-4.1, "Industrial Automation Wiring and Grounding Guidelines for Noise Immunity"). If isolation is required, signal conditioners must be added.

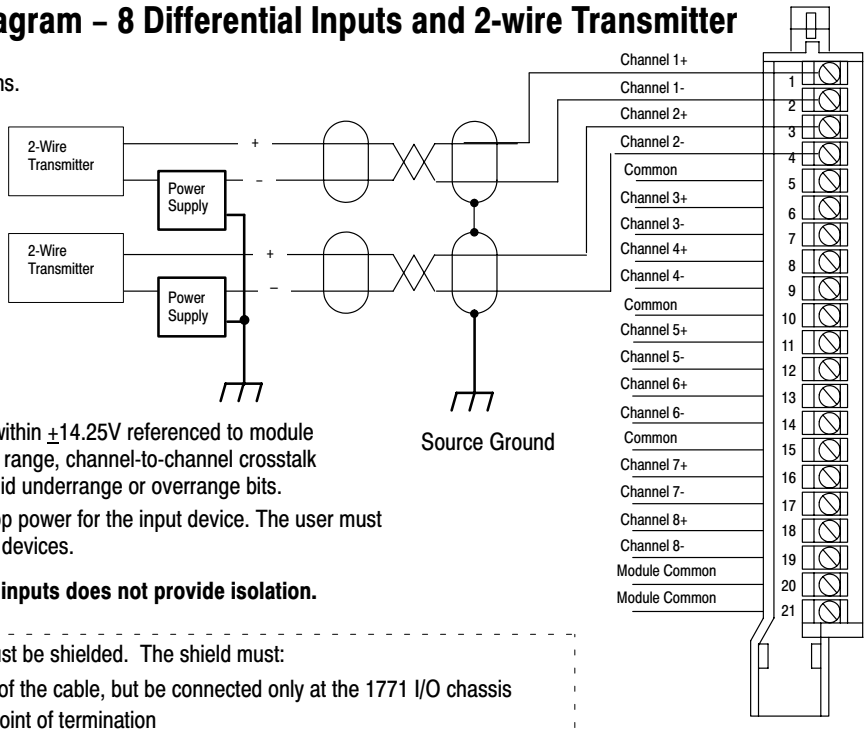
Analog Input Module (Cat. No. 1771-IFE Series C) 8 differential, or 16 single-ended inputs

Connection Diagram – 8 Differential Inputs and 2-wire Transmitter

Note: Refer to transmitter manufacturers specifications for power supply connections.

Note:

1. Unused channels must have their + and - inputs jumpered together and tied to module common to reduce noise.
2. Tie power supply grounds together to minimize ground loops.

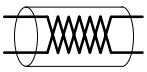


1771-WG
Field Wiring Arm

Attention: Analog input signals must be within ±14.25V referenced to module common. If an input channel exceeds this range, channel-to-channel crosstalk can cause invalid input readings and invalid underrange or overrange bits.

The 1771-IFE module does not supply loop power for the input device. The user must supply loop power for loop-powered input devices.

Configuring the module for differential inputs does not provide isolation.



The sensor cable must be shielded. The shield must:

- extend the length of the cable, but be connected only at the 1771 I/O chassis
- extend up to the point of termination

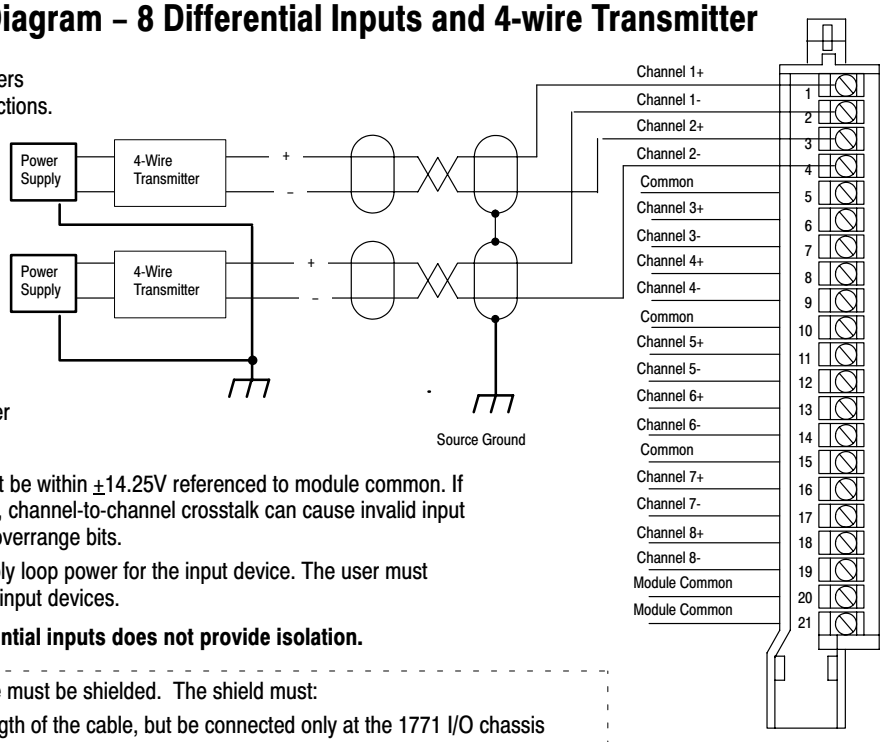
Important: The shield should extend to the termination point, exposing just enough cable to adequately terminate the inner conductors. Use heat shrink or another suitable insulation where the wire exits the cable jacket.

Connection Diagram – 8 Differential Inputs and 4-wire Transmitter

Note: Refer to transmitter manufacturers specifications for power supply connections.

Note:

1. Unused channels must have their + and - inputs jumpered together and tied to module common to reduce noise.
2. Tie power supply grounds together to minimize ground loops.

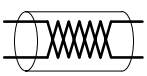


1771-WG
Field Wiring Arm

Attention: Analog input signals must be within ±14.25V referenced to module common. If an input channel exceeds this range, channel-to-channel crosstalk can cause invalid input readings and invalid underrange or overrange bits.

The 1771-IFE module does not supply loop power for the input device. The user must supply loop power for loop-powered input devices.

Configuring the module for differential inputs does not provide isolation.



The sensor cable must be shielded. The shield must:

- extend the length of the cable, but be connected only at the 1771 I/O chassis
- extend up to the point of termination

Important: The shield should extend to the termination point, exposing just enough cable to adequately terminate the inner conductors. Use heat shrink or another suitable insulation where the wire exits the cable jacket.

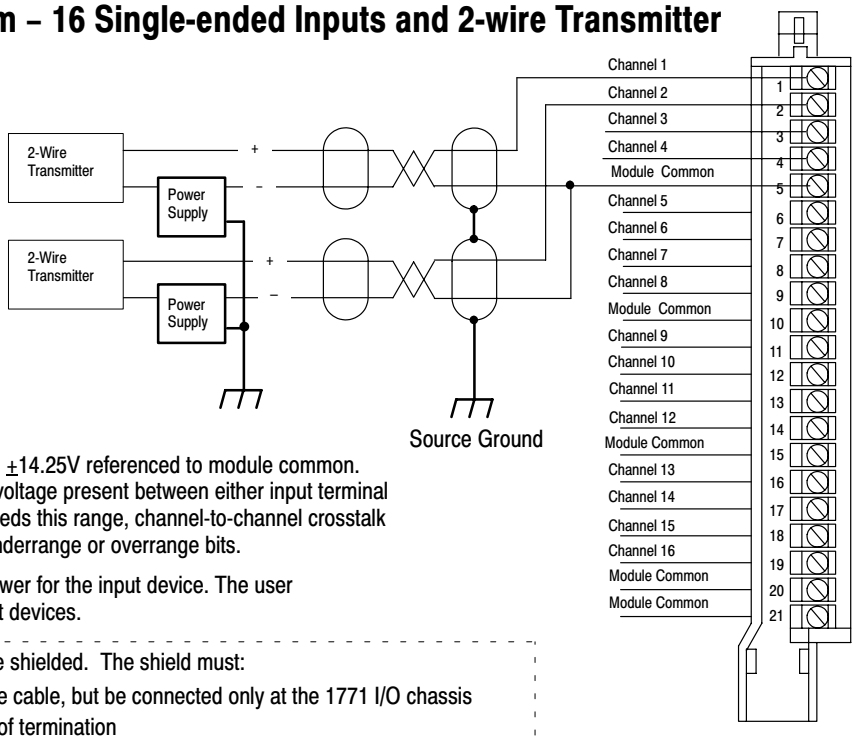
Analog Input Module (Cat. No. 1771-IFE Series C) 8 differential, or 16 single-ended inputs

Connection Diagram – 16 Single-ended Inputs and 2-wire Transmitter

Note: Refer to transmitter manufacturers specifications for power supply connections.

Note:

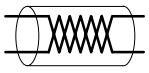
1. All commons are electrically tied together inside the module.
2. Jumper all unused channels to module common to reduce noise.
3. Tie power supply grounds together to minimize ground loops.



1771-WG
Field Wiring Arm

Attention: Analog input signals must be within ±14.25V referenced to module common. This input signal includes any common mode voltage present between either input terminal and module common. If an input terminal exceeds this range, channel-to-channel crosstalk can cause invalid input readings and invalid underrange or overrange bits.

The 1771-IFE module does not supply loop power for the input device. The user must supply loop power for loop-powered input devices.



The sensor cable must be shielded. The shield must:

- extend the length of the cable, but be connected only at the 1771 I/O chassis
- extend up to the point of termination

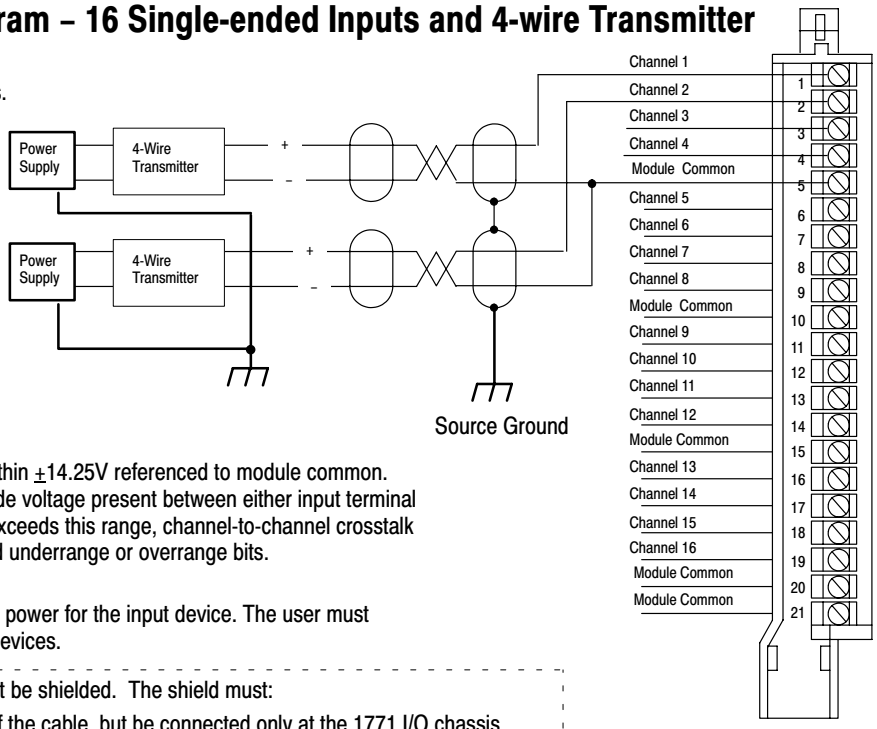
Important: The shield should extend to the termination point, exposing just enough cable to adequately terminate the inner conductors. Use heat shrink or another suitable insulation where the wire exits the cable jacket.

Connection Diagram – 16 Single-ended Inputs and 4-wire Transmitter

Note: Refer to transmitter manufacturers specifications for power supply connections.

Note:

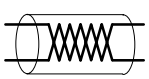
1. All commons are electrically tied together inside the module.
2. Jumper all unused channels to module common to reduce noise.
3. Tie power supply grounds together to minimize ground loops.



1771-WG
Field Wiring Arm

Attention: Analog input signals must be within ±14.25V referenced to module common. This input signal includes any common mode voltage present between either input terminal and module common. If an input terminal exceeds this range, channel-to-channel crosstalk can cause invalid input readings and invalid underrange or overrange bits.

The 1771-IFE module does not supply loop power for the input device. The user must supply loop power for loop-powered input devices.



The sensor cable must be shielded. The shield must:

- extend the length of the cable, but be connected only at the 1771 I/O chassis
- extend up to the point of termination

Important: The shield should extend to the termination point, exposing just enough cable to adequately terminate the inner conductors. Use heat shrink or another suitable insulation where the wire exits the cable jacket.

Analog Input Module (Cat. No. 1771-IFE Series C) 8 differential, or 16 single-ended inputs

Specifications (Cat. No. 1771-IFE/C)

Inputs per module	16 single-ended; 8 differential low level
Module location	1771 I/O chassis – 1 slot
Nominal input voltage	+1 to +5V dc 0 to 5V dc -5 to + 5V dc -10 to +10V dc 0 to 10V dc
Nominal input current	+4 to +20mA 0 to +20mA -20 to +20mA
Resolution	12-bit binary, 12 bits plus sign in bipolar ranges
Accuracy	0.1% of full scale range @ 25ºC
Linearity	±1LSB
Repeatability	±1LSB
Isolation voltage	Isolation meets or exceeds UL Standard 508, and CSA Standard C22.2 No. 142.
Input overvoltage protection (current ranges)	200V (voltage mode)[1] 8V (current mode)[2]
Common mode voltage	±14.25 Volts
Input impedance	>10 megohms for voltage ranges; 250 ohms for current ranges
Common mode rejection	80 db, dc-120Hz
Backplane current	500mA @ +5V
Power dissipation	2.5 Watts (maximum)
Thermal dissipation	8.52 BTU/hr (maximum)
Unscaled BCD and binary output to processor	0000 to $+4095_{10}$ for polar ranges (0 to 5V, +1 to +5V, 0 to +20mA, and +4 to 20mA) -4095_{10} to 4095_{10} for bipolar ranges (±5V, ±10V, ±20mA)
Engineering units sent to processor	±9999 with selectable scaling
Internal scan rate	13.7ms for 8 differential inputs (no digital filtering) - add 0.3ms for filtering 27.4ms for 16 single-ended input (no digital filtering) - add 0.3ms for filtering

Specifications (Cat. No. 1771-IFE/C)

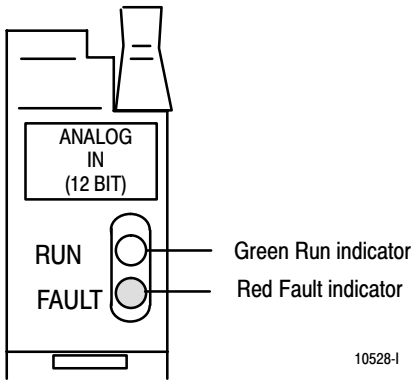
Environmental conditions: Operational temperature Storage temperature Relative humidity Operating Storage	 0º to 60ºC (32º to 140ºF) –40º to 85ºC (–40º to 185ºF) 5 to 95% (noncondensing) 5 to 90% (noncondensing)
Conductors Wire size Category	14 gauge ($2mm^2$) stranded maximum 3/64 inch (1.2mm) insulation maximum 2[3]
Keying	Between 10 and 12 Between 24 and 26
Field wiring arm	Catalog number 1771-WG
Wiring arm screw torque	7-9 inch-pounds
Publications User manual Installation Instructions	 Publication 1771-6.5.115 Publication 1771-5.45
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

1 The inputs are protected to 200V. However, if an input terminal's voltage exceeds ±14.25 as referenced to module common, channel-to-channel crosstalk can cause invalid input readings and nvalid underrange/overrange bits.

2 Only 8 volts can be placed directly across the input when configured in the current mode.

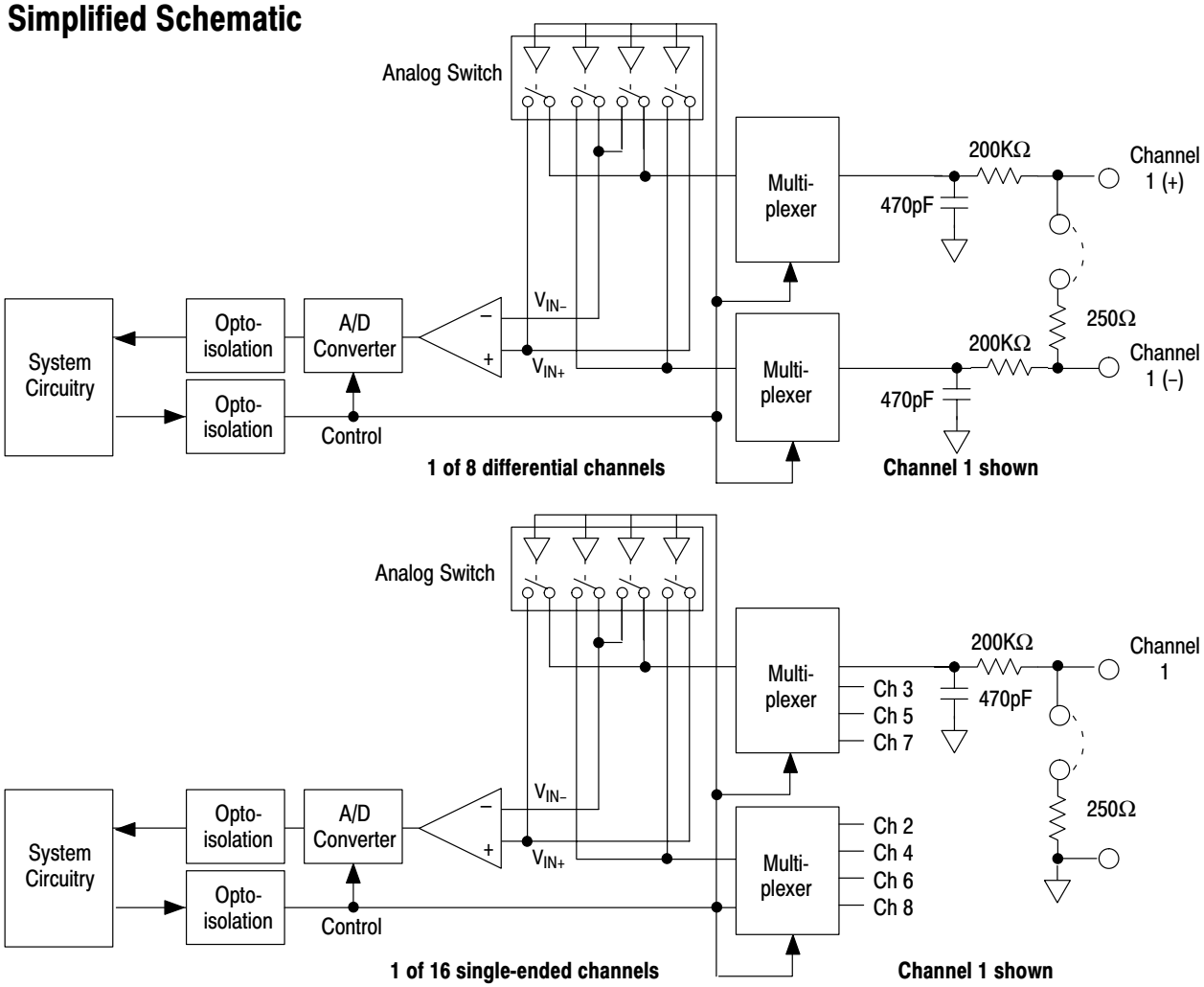
3 Refer to publication 1770-4.1, "Industrial Automation Wiring and Grounding Guidelines."

Status Indicators



Analog Input Module (Cat. No. 1771-IFF Series A) 8 differential, or 16 differential inputs

Simplified Schematic



Application Notes

Product Compatibility – The module is compatible with 1771-A1B through –A4B or later I/O chassis only. Insert the module in any slot in the chassis except the leftmost slot, which is reserved for processors or adapter modules.

Status Indicators – The front panel of the input module contains a green RUN and a red FAULT indicator. At power-up an initial module self-check occurs. If there is no fault, the red indicator turns off. The green indicator will blink until the processor completes a successful write block transfer to the module.

The green indicator remains on while the module is powered. Any time a fault occurs, the red FAULT indicator lights up.

Wiring – Wiring to the analog input module is connected to the 1771-WG field wiring arm. The wiring arm pivots upward and connects with the module so that you can install or remove it without disconnecting the wires. Recommended maximum cable length for voltage input devices is 50 feet.

Configurable Features –

- 16 single-ended or 8 differential inputs
- user-programmable selectable input ranges
- selectable real-time sampling
- selectable digital filtering
- selectable data format
- selectable scaling to engineering units

Note: Configuring the module for differential inputs does not provide channel-to-channel isolation. To prevent common mode voltage problems, we recommend the use of common power supplies and careful wiring and grounding practices (refer to publication 1770-4.1, "Industrial Automation Wiring and Grounding Guidelines for Noise Immunity"). If isolation is required, signal conditioners must be added.

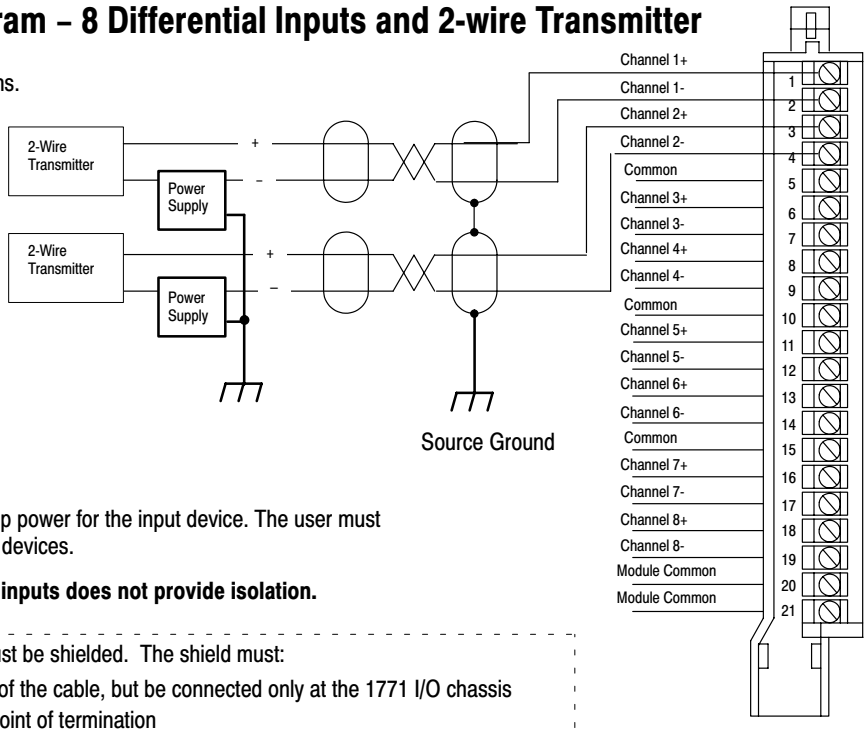
Analog Input Module (Cat. No. 1771-IFF Series A) 8 differential, or 16 differential inputs

Connection Diagram – 8 Differential Inputs and 2-wire Transmitter

Note: Refer to transmitter manufacturers specifications for power supply connections.

Note:

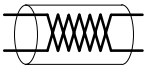
1. Unused channels must have their + and - inputs jumpered together and tied to module common to reduce noise.
2. Tie power supply grounds together to minimize ground loops.



1771-WG
Field Wiring Arm

The 1771-IFF module does not supply loop power for the input device. The user must supply loop power for loop-powered input devices.

Configuring the module for differential inputs does not provide isolation.



The sensor cable must be shielded. The shield must:

- extend the length of the cable, but be connected only at the 1771 I/O chassis
- extend up to the point of termination

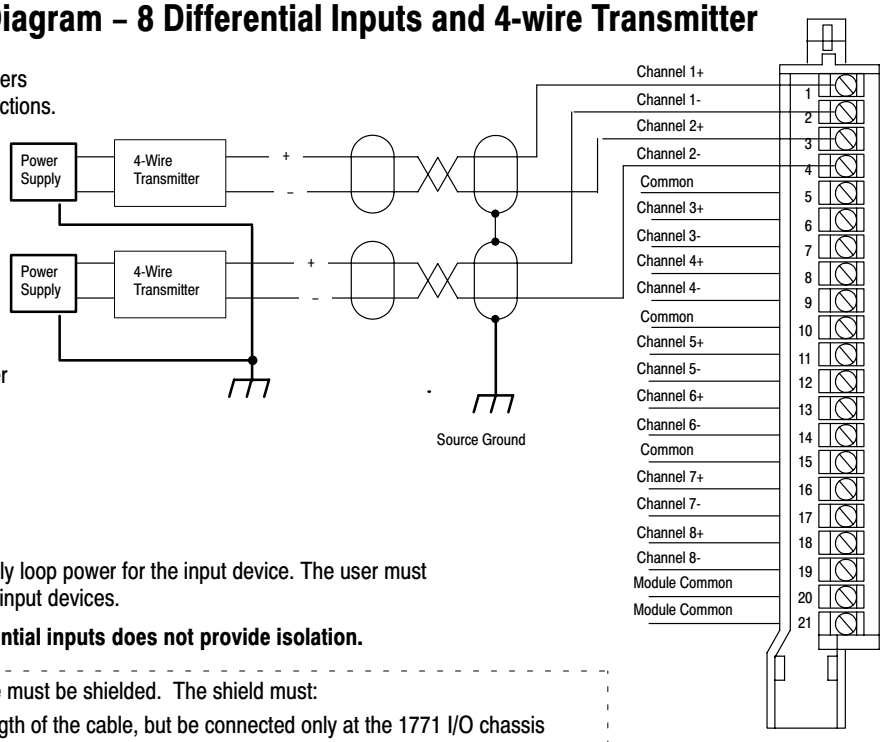
Important: The shield should extend to the termination point, exposing just enough cable to adequately terminate the inner conductors. Use heat shrink or another suitable insulation where the wire exits the cable jacket.

Connection Diagram – 8 Differential Inputs and 4-wire Transmitter

Note: Refer to transmitter manufacturers specifications for power supply connections.

Note:

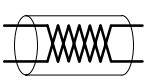
1. Unused channels must have their + and - inputs jumpered together and tied to module common to reduce noise.
2. Tie power supply grounds together to minimize ground loops.



1771-WG
Field Wiring Arm

The 1771-IFF module does not supply loop power for the input device. The user must supply loop power for loop-powered input devices.

Configuring the module for differential inputs does not provide isolation.



The sensor cable must be shielded. The shield must:

- extend the length of the cable, but be connected only at the 1771 I/O chassis
- extend up to the point of termination

Important: The shield should extend to the termination point, exposing just enough cable to adequately terminate the inner conductors. Use heat shrink or another suitable insulation where the wire exits the cable jacket.

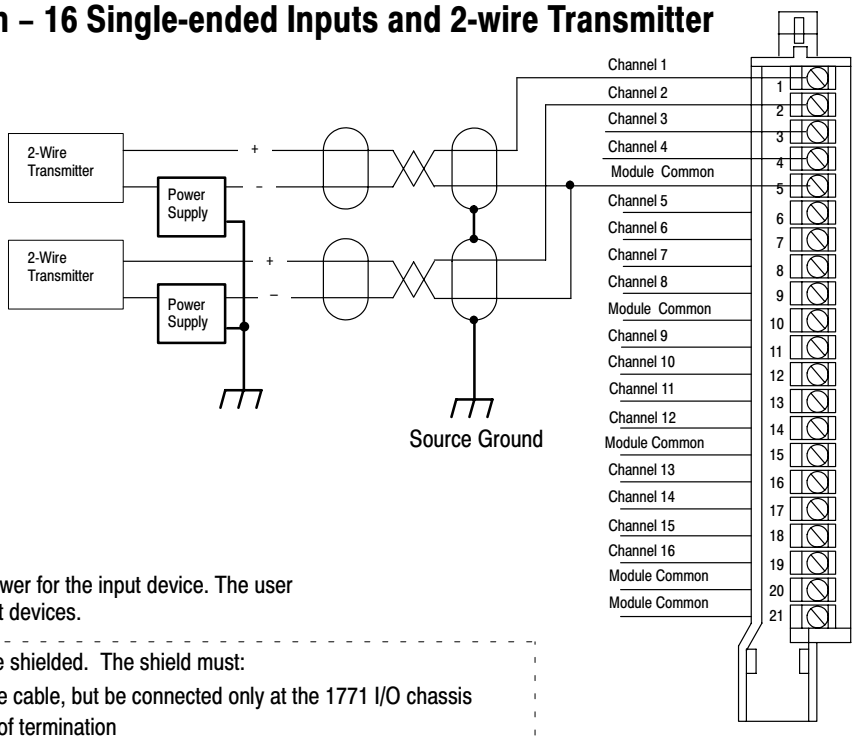
Analog Input Module (Cat. No. 1771-IFF Series A) 8 differential, or 16 differential inputs

Connection Diagram – 16 Single-ended Inputs and 2-wire Transmitter

Note: Refer to transmitter manufacturers specifications for power supply connections.

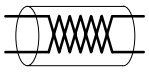
Note:

1. All commons are electrically tied together inside the module.
2. Jumper all unused channels to module common to reduce noise.
3. Tie power supply grounds together to minimize ground loops.



1771-WG
Field Wiring Arm

The 1771-IFE module does not supply loop power for the input device. The user must supply loop power for loop-powered input devices.



The sensor cable must be shielded. The shield must:

- extend the length of the cable, but be connected only at the 1771 I/O chassis
- extend up to the point of termination

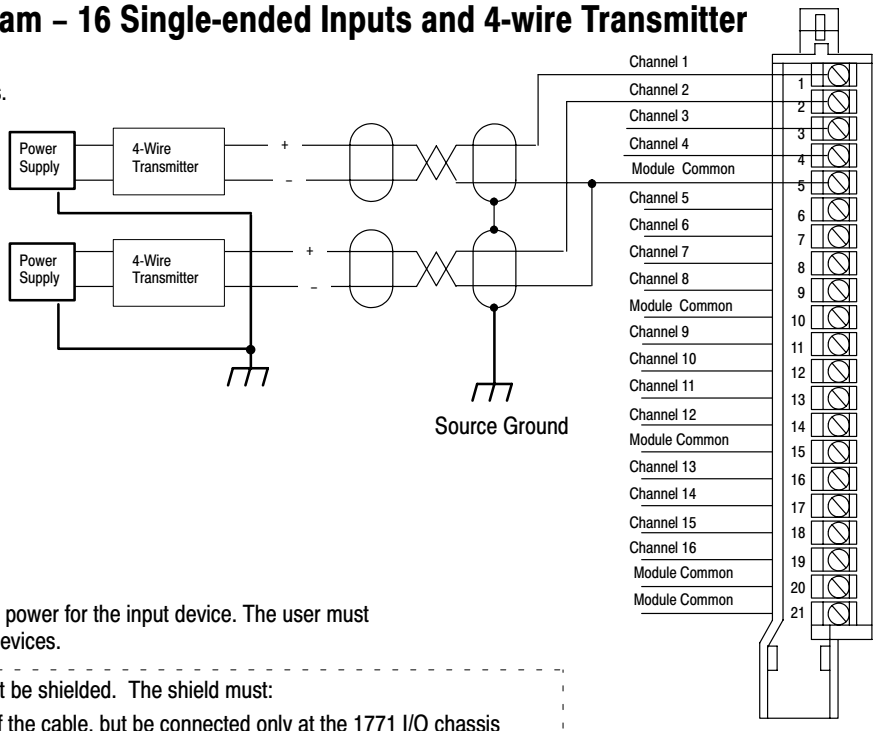
Important: The shield should extend to the termination point, exposing just enough cable to adequately terminate the inner conductors. Use heat shrink or another suitable insulation where the wire exits the cable jacket.

Connection Diagram – 16 Single-ended Inputs and 4-wire Transmitter

Note: Refer to transmitter manufacturers specifications for power supply connections.

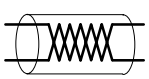
Note:

1. All commons are electrically tied together inside the module.
2. Jumper all unused channels to module common to reduce noise.
3. Tie power supply grounds together to minimize ground loops.



1771-WG
Field Wiring Arm

The 1771-IFE module does not supply loop power for the input device. The user must supply loop power for loop-powered input devices.



The sensor cable must be shielded. The shield must:

- extend the length of the cable, but be connected only at the 1771 I/O chassis
- extend up to the point of termination

Important: The shield should extend to the termination point, exposing just enough cable to adequately terminate the inner conductors. Use heat shrink or another suitable insulation where the wire exits the cable jacket.

Analog Input Module (Cat. No. 1771-IFF Series A) 8 differential, or 16 differential inputs

Specifications (Cat. No. 1771-IFF/A)

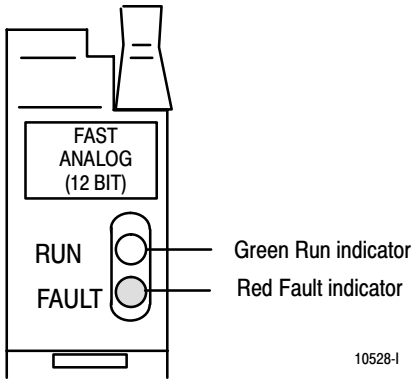
Inputs per module	16 single-ended; 8 differential low level
Module location	1771 I/O chassis – 1 slot
Nominal input voltage	+1 to +5V dc 0 to 5V dc -5 to + 5V dc -10 to +10V dc 0 to 10V dc
Nominal input current	+4 to +20mA 0 to +20mA -20 to +20mA
Resolution	12-bit binary, 12 bits plus sign in bipolar ranges
Accuracy	0.1% of full scale range @ 25ºC
Linearity	±1LSB
Repeatability	±1LSB
Isolation voltage	Isolation meets or exceeds UL Standard 508, and CSA Standard C22.2 No. 142.
Input overvoltage protection (current ranges)	35V (voltage mode)[1] 8V (current mode)[2]
Common mode voltage	±35 Volts
Input impedance	>10 megohms for voltage ranges; 250 ohms for current ranges
Common mode rejection	80 db, dc-120Hz
Backplane current	500mA @ +5V
Power dissipation	2.5 Watts (maximum)
Thermal dissipation	8.52 BTU/hr (maximum)
Unscaled BCD and binary output to processor	0000 to $+4095_{10}$ for polar ranges (0 to 5V, +1 to +5V, 0 to +20mA, and +4 to 20mA) -4095_{10} to 4095_{10} for bipolar ranges (±5V, ±10V, ±20mA)
Engineering units sent to processor	±9999 with selectable scaling
Fastest internal scan rate	8 channels in less than 2ms (Depends on number of oversamples, number of channels, and active features.)

Specifications (Cat. No. 1771-IFF/A)

Environmental conditions: Operational temperature Storage temperature Relative humidity Operating Storage	 0º to 60ºC (32º to 140ºF) –40º to 85ºC (–40º to 185ºF) 5 to 95% (noncondensing) 5 to 90% (noncondensing)
Conductors Wire size Category	14 gauge ($2mm^2$) stranded maximum 3/64 inch (1.2mm) insulation maximum 2[3]
Keying	Between 10 and 12 Between 24 and 26
Field wiring arm	Catalog number 1771-WG
Wiring arm screw torque	7-9 inch-pounds
Publications User manual Installation Instructions	 Publication 1771-6.5.116 Publication 1771-5.46
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

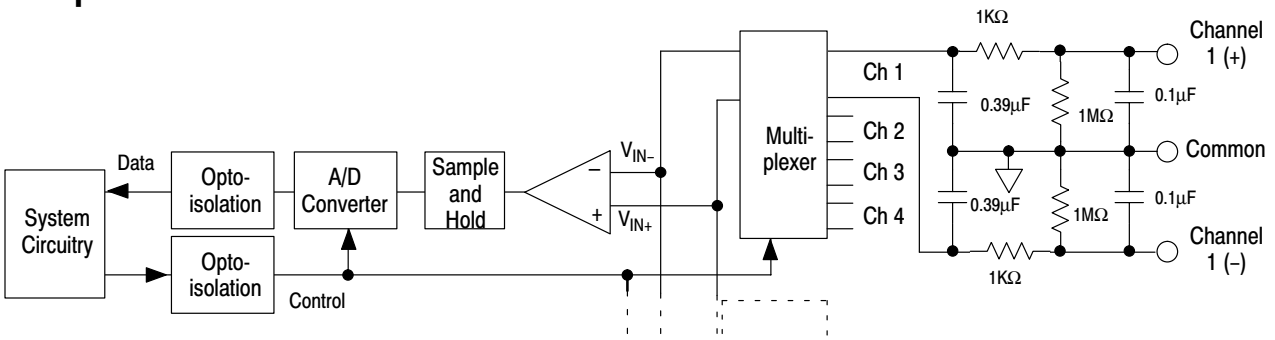
1 The inputs are protected to 35V.
2 Only 8 volts can be placed directly across the input when configured in the current mode.
3 Refer to publication 1770-4.1, "Industrial Automation Wiring and Grounding Guidelines."

Status Indicators



Intrisically Safe Fast Millivolt Input Module (Cat. No 1771-IFMS Series A)

Simplified Schematic



Application Notes

Product Compatibility – The Fast Millivolt Input Module can be used with any 1771 I/O chassis. Insert the module in any slot in the I/O chassis except for the leftmost slot which is reserved for the processor or adapter. You can put two input modules, or an input module and an output module, in the same module group. Do not put this module in the same module group as a digital high density module unless you are using 1 or 1/2-slot addressing.

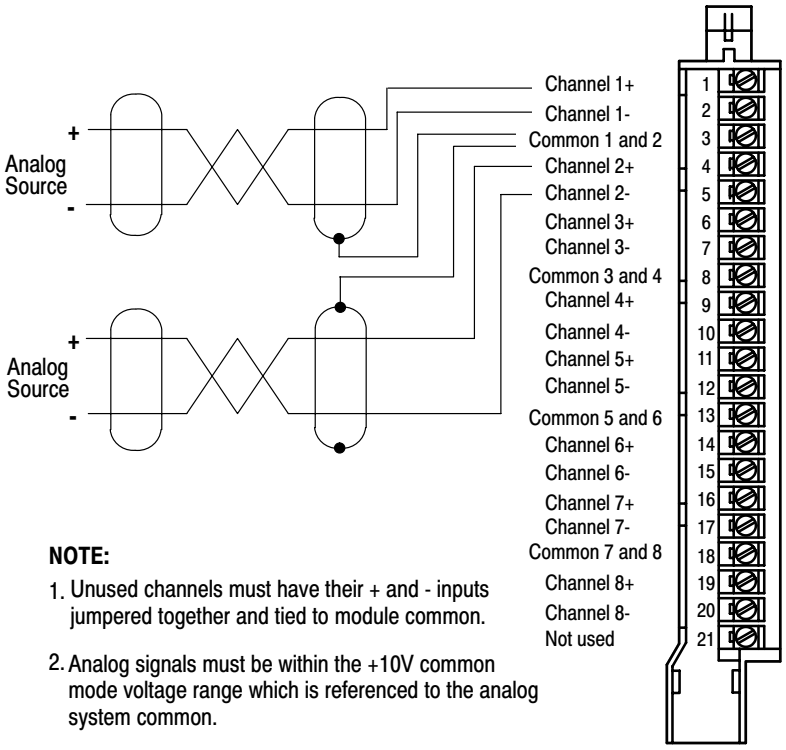
Status Indicators – The front panel of the input module contains a green RUN and a red FLT (fault) indicator. At power-up an initial module self-check occurs. If there is no fault, the red indicator turns off. The green indicator will blink until the processor completes a successful write block transfer to the module. The green indicator remains on while the module is powered. Any time a fault is detected, the red FLT indicator lights up.

Wiring – Wiring to the analog input module connects to the 1771-WG field wiring arm. The wiring arm pivots upward and connects with the module so that you can install or remove the module without disconnecting the wiring. Recommended maximum cable length for voltage input devices is 50 feet.

Configurable Features –

- 8 differential inputs on one card
- selectable real time sampling
- selectable scaling to engineering units
- selectable digital filtering
- 0 to 50mV input range with extended linear range above 50mV and below 0mV

Connection Diagram



NOTE:

1. Unused channels must have their + and - inputs jumpered together and tied to module common.
2. Analog signals must be within the +10V common mode voltage range which is referenced to the analog system common.

Field Wiring Arm
Cat. No. 1771-WG

Intrisically Safe Fast Millivolt Input Module (Cat. No 1771-IFMS Series A)

Specifications (Cat. No. 1771-IFMS/A)

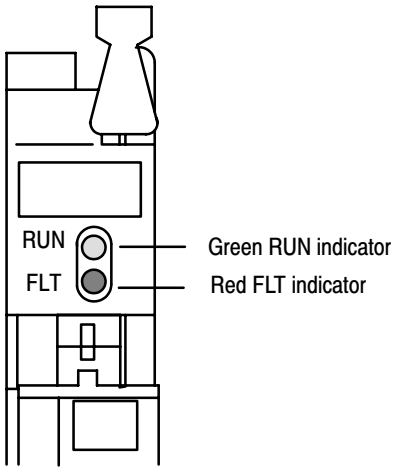
Inputs per module	8 differential, low level
Module location	1771 I/O rack – 1 slot
Input voltage range	0 to 50mV
Resolution	12-bit binary
Accuracy	0.1% of full range @ 25ºC
Linearity	±1 LSB
Repeatability	±1 LSB
Isolation Voltage	Isolation meets or exceeds UL Standard 508, and CSA Standard C22.2 No. 142.
Input overvoltage protection	32V
Maximum input voltage	±10V
Input impedance	1 megohm
Common mode rejection	100db dc - 60Hz
BCD and unscaled output to processor	0000 to 4095_{10}
Engineering units sent to processor	9999 BCD with selectable scaling 32767 Binary
A/D converter Resolution Absolute accuracy Quantizing error Temperature coefficient	monotonic output with no missing codes 12–bit binary ±0.1% of full scale ±1/2 LSB ±50ppm/ºC of full scale range for 0 to 60ºC ambient
Internal scan rate	14.5ms for 8 differential inputs (no digital filtering) – add 2.5ms for filtering, 0.25ms for BCD format
Recalibration time	check calibration at 6 month intervals to maintain specified accuracy
Backplane current	0.75A @ +5V
Power dissipation	3.75 Watts (maximum)
Thermal dissipation	12.8 BTU/hr (maximum)
Environmental conditions Operational temp.: Storage temperature: Relative humidity: Operating Storage	 0º to 60ºC (32º to 140ºF) –40º to 85ºC (–40º to 185ºF) 5 to 95% (noncondensing) 5 to 95% (noncondensing)

Specifications (Cat. No. 1771-IFMS/A)

Conductors Wire size Category	 14 gauge ($2mm^2$) stranded maximum 3/64 inch (1.2mm) insulation maximum 2[1]
Keying	Between 20 and 22 Between 28 and 30
Field wiring arm	Catalog number 1771-WG
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	1771-6.5.57

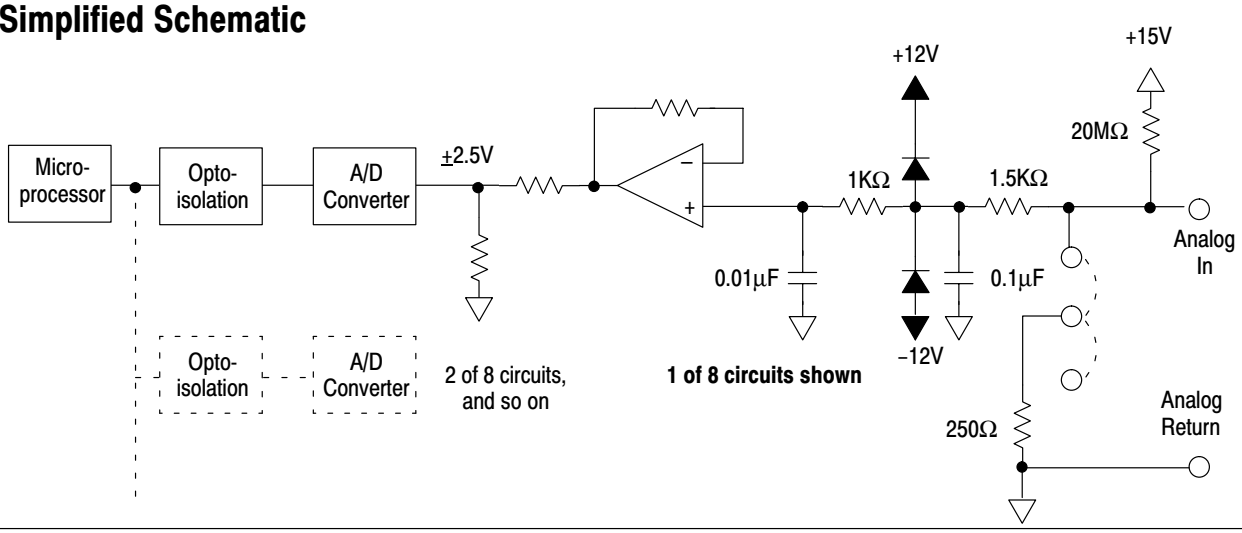
[1] Refer to publication 1770-4.1, "Industrial Automation Wiring and Grounding Guidelines."

Status Indicators



Isolated Input Module (Cat. No. 1771-IL Series C)

Simplified Schematic



Application Notes

Product Compatibility – This module is compatible with all 1771 I/O chassis. Insert the module in any chassis slot except the leftmost, which is reserved for the processor or adapter module.

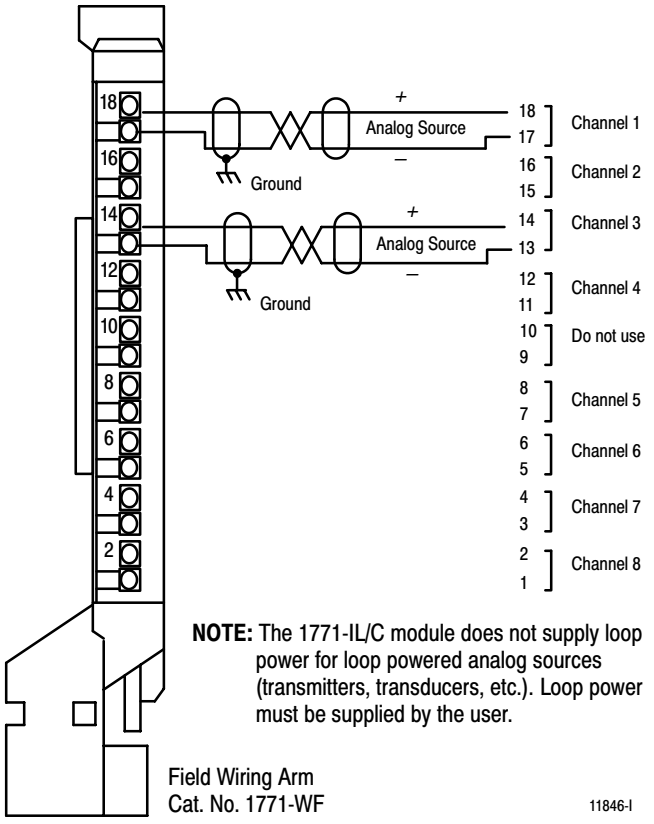
Status Indicators – The front panel of the input module contains a green RUN and a red FLT (fault) indicator. At power-up an initial module self-check occurs. If there is no fault, the red indicator turns off. The green indicator will blink until the processor completes a successful write block transfer to the module. The green indicator remains on while the module is powered. Any time a fault is detected, the red FLT indicator lights up.

Wiring – Wiring to the analog input module connects to the 1771-WF field wiring arm. The wiring arm pivots upward and connects with the module so that you can install or remove the module without disconnecting the wiring. Recommended maximum cable length for voltage input devices is 50 feet.

Configurable Features –

- 8 software configurable differential inputs
- user selectable input ranges
- selectable real time sampling
- selectable scaling to engineering units
- selectable digital filtering
- ±1000V input isolation, channel-to-channel, channel-to-ground

Connection Diagram



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.

Field Wiring Arm
Cat. No. 1771-WF

11846-I

Isolated Input Module (Cat. No. 1771-IL Series C)

Specifications (Cat. No. 1771-IL/C)

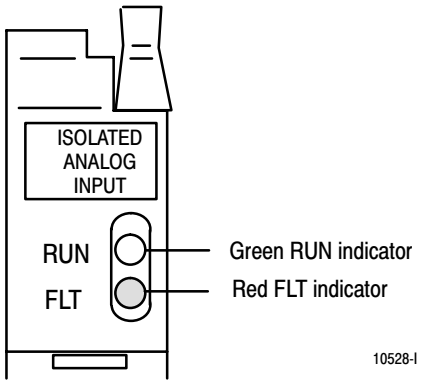
Inputs per module	8 fully isolated differential
Module location	1771 I/O rack - 1 slot
Input voltage ranges (nominal)	+1 to +5V DC 0 to 5V DC -5 to +5V DC -10 to +10V DC
Input current ranges (nominal)	+4 to +20mA 0 to +20mA -20 to +20mA
Resolution	16-bit binary over full range (±10.7V); 0.33mV/bit, 1.3μA/bit
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% with internal current resistor)
Linearity	±1 LSB
Repeatability	±1 LSB
Isolation voltage	Isolation meets or exceeds 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 ±5V, ±10V, ±20mA input
Input impedance	>10 megohms for voltage ranges; 250 ohms for current ranges
Common mode rejection	>150db typical @ 60Hz and 1K ohm source imbalance
Common mode impedence	>50 megohms shunted by <5nF
Normal mode rejection	>60db @ 60Hz
Open circuit detection	Voltage mode: Open input produces upscale reading. Current mode: Open input produces zero reading.
Time to detect open circuit	10 seconds maximum
Calibration Auto	Auto-calibration for offset and gain
Interval	Verify every 6 months to maintain absolute accuracy
Backplane current	1.1A @ +5V from I/O chassis backplane
Power dissipation	5.5 Watts maximum
Thermal dissipation	18.75 BTU/hr maximum
Engineering units sent to processor	±9999 BCD with selectable scaling; ±32767 binary
Internal scan rate	50ms for 8 channels
Environmental conditions Operational temp.: Storage temperature: Relative humidity	 0 to 60ºC (32 to 140ºF) -40 to 85ºC (-40 to 185ºF Operating: 5 to 95% (noncondensing) Non-operating: 5 to 80% (noncondensing)

Specifications (Cat. No. 1771-IL/C)

Conductors Wiring	14 gauge ($2mm^2$) stranded (max.); 3/64 inch (1.2mm) insulation (max.)
Category	2[1]
Keying	between 10 and 12 and between 32 and 34
Wiring arm	Catalog number 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

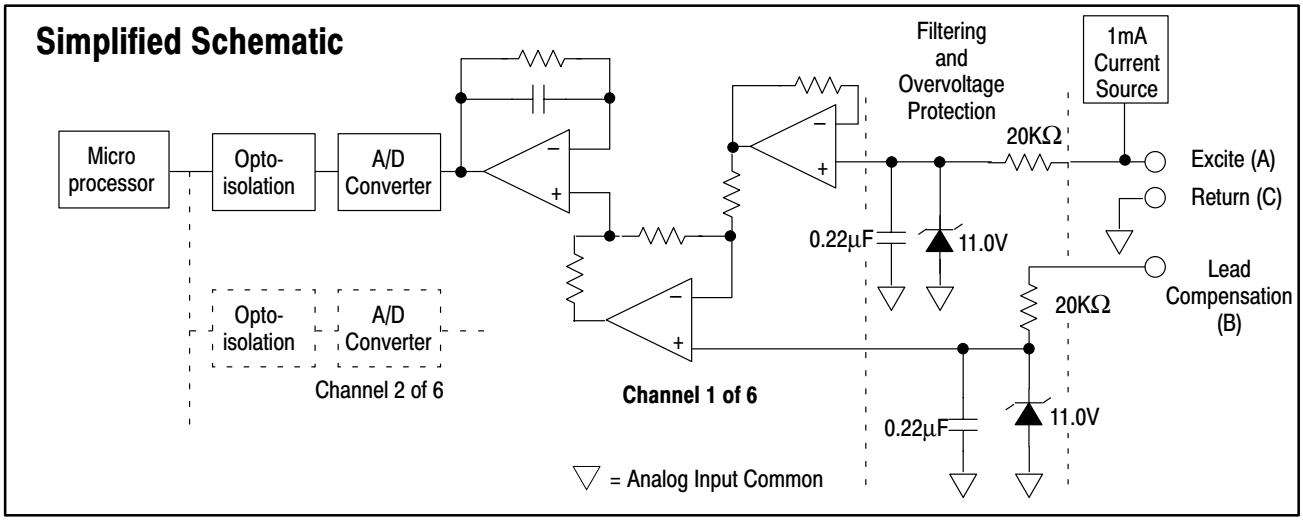
[1] Refer to publication 1770-4.1, "Industrial Automation Wiring and Grounding Guidelines."

Status Indicators



RTD Input Module (Cat. No 1771-IR Series C)

Simplified Schematic



Application Notes

Product Compatibility – The RTD Input Module can be used with any 1771 I/O chassis. Insert the module in any slot of the I/O chassis except for the leftmost slot reserved for the processor or adapter. You can put two input modules, or an input module and an output module, in the same module group. Do not put this module in the same module group as a digital high density module unless you are using 1 or 1/2-slot addressing. Avoid placing this module close to ac modules, or high voltage dc modules.

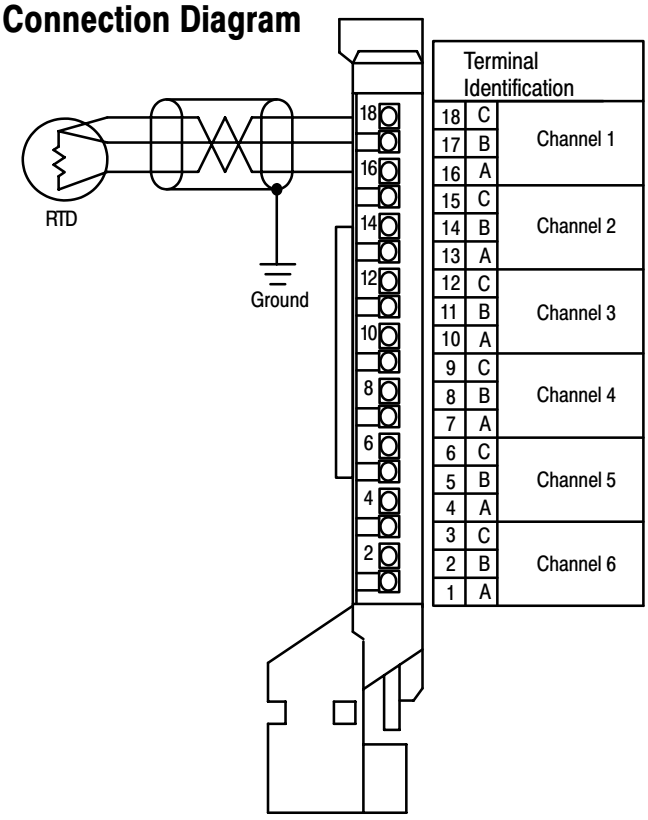
Status Indicators – The front panel of the input module contains a green RUN and a red FLT (fault) indicator. At power-up an initial module self-check occurs. If there is no fault, the red indicator turns off. The green indicator will blink until the processor completes a successful write block transfer to the module. The green indicator remains on while the module is powered. Any time a fault is detected, the red FLT indicator lights up.

Wiring – Wiring to the analog input module connects to the 1771-WG field wiring arm. The wiring arm pivots upward and connects with the module so that you can install or remove the module without disconnecting the wiring. Recommended maximum cable length for voltage input devices is 50 feet.

Configurable Features

- 6 resistance temperature detector inputs
- reports ohms for other types of sensors
- software configurable
- auto-calibration
- open wire detection

Connection Diagram



Field Wiring Arm
Cat. No. 1771-WG

RTD Input Module (Cat. No 1771-IR Series C)

Specifications (Cat. No. 1771-IR/C)

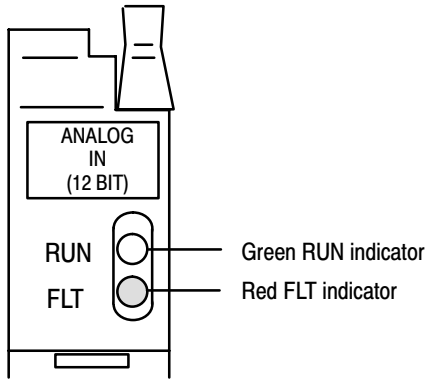
Module capacity	6 RTD Input Channels
Module location	1771 I/O Chassis
Sensor type	100 ohm platinum (alpha = 0.00385) or 10 ohm copper (alpha = 0.00386) Other types may be used with report in ohms only
Units of measure	Temperature in ºC Temperature in ºF RTD resistance in ohms (10 milliohms or 30 milliohms resolution)
Temperature range	Platinum: –200 to +870ºC (–328 to +1598ºF) Copper: –200 to +260ºC (–328 to +500ºF)
Resistance range	1.00 to 600.00 ohms
Resolution	Platinum: 0.1ºC (0.1ºF) Copper: 0.3ºC (0.5ºF)
Sensor excitation	1mA constant current source supplied by module
Isolation Voltage	Isolation meets or exceeds UL Standard 508, and CSA Standard C22.2 No. 142.
Common mode rejection	120db @ 60Hz, up to 1000V peak
Common mode impedance	Greater than 10 megohms
Normal mode rejection	60dB at 60Hz
Input overvoltage protection	120V rms, continuous
Open RTD response time	Open excitation (terminal A) overerrange: <0.5s Open Common (terminal C) to underrange: <0.5s Open Sense (terminal B): drift high
Scan time	50ms for all 6 channels

Specifications (Cat. No. 1771-IR/C)

Backplane current	950mA maximum
Power dissipation	4.75 Watts
Thermal dissipation	16.2 BTU/hr
Environmental conditions Operational temperature: Rate of change: Storage temperature: Relative humidity: Operating Storage	 0º to 60ºC (32º to 140ºF) Ambient changes greater than 01.0ºC per minute may temporarily degrade performance during periods of change. –40º to 85ºC (–40º to 185ºF) 5 to 95% (noncondensing) 5 to 95% (noncondensing)
Keying	Between 10 and 12 Between 28 and 30
Field wiring arm	Catalog number 1771-WF
Field 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 1771-6.5.76

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

Status Indicators

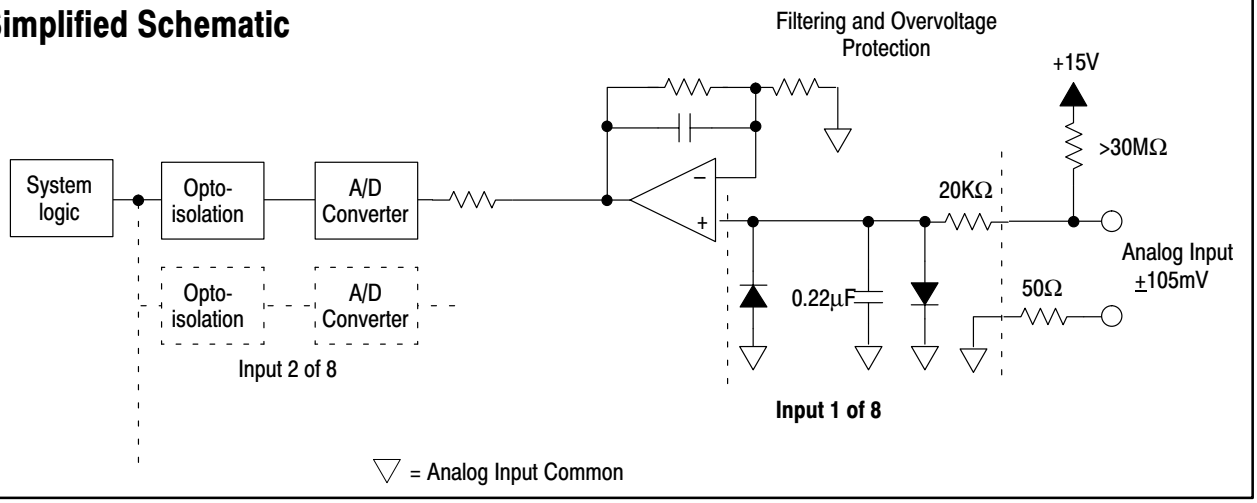


RTD Type	Range	Error @ Calibration Temperature (25ºC) (over range)	Drift ºC/ºC or ºF/ºF
Copper	–200 to +260ºC (–328 to +500ºF)	±0.344ºC/±0.564ºF	±0.1306
Platinum	–200 to +870ºC (–328 to 1598ºF)	±0.100ºC/±0.152ºF	±0.0717

RTD Type	Resistance Error @ 25ºC (over range)	Resistance Drift Ohm/ºC
Copper	±0.074 ohm	±0.0213
Platinum	±0.075 ohm	±0.0213

Thermocouple/Millivolt Input (Cat. No.1771-IXE Series C)

Simplified Schematic



Application Notes

Product Compatibility – The module is compatible with all 1771–A1B through -A4B or later I/O chassis. Insert the module in any slot in the chassis except the leftmost slot, which is reserved for a processor or adapter module.

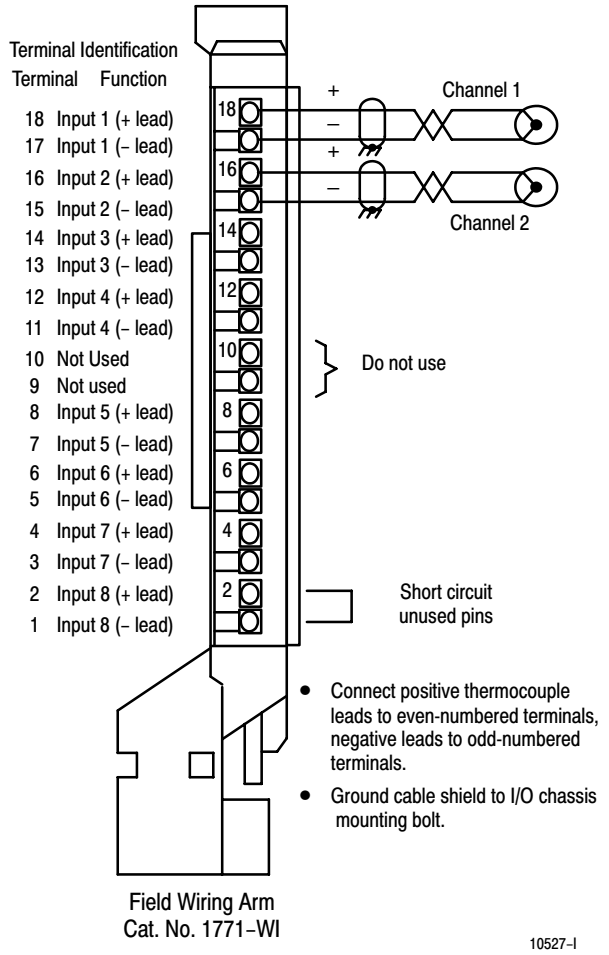
Status Indicators – The front panel of the input module contains a green RUN and a red FLT (fault) indicator. At power-up the red and green indicators are on. If there is no fault, the red indicator turns off. The green indicator will blink until the processor completes a successful write block transfer to the module. Any time a fault is detected, the red FLT indicator lights up.

Wiring – Wiring to the analog input module is connected to the 1771-WI field wiring arm. The wiring arm pivots upward and connects with the module so that you can install or remove the module without disconnecting the wiring. Recommended maximum cable length for voltage input devices is 50 feet.

Configurable Features –

- 8 input channels configurable for thermocouple input ranges or millivolt: Types E,J,K,T,R and S thermocouples and ±100 millivolts (full range is ±105mV)
- two types of inputs allowed at the same time: 4 of one type and 4 of another
- cold junction compensation
- user selectable high and low temperature alarms

Connection Diagram



- Connect positive thermocouple leads to even-numbered terminals, negative leads to odd-numbered terminals.
- Ground cable shield to I/O chassis mounting bolt.

Thermocouple/Millivolt Input (Cat. No.1771-IXE Series C)

Specifications (Cat. No. 1771-IXE/C)

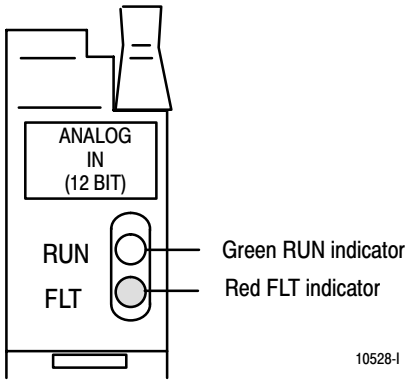
Number of inputs	8, all of the same type, or 4 each of 2 different types
I/O chassis location	Any single I/O module slot
Type of input	Type E, chromel/constantan (–270 to 1000ºC) Type J, iron/constantan (–210 to 1200ºC) Type K, chromel/alumel (–270 to 1380ºC) Type R, Pt/Pt-13% Rh (–50 to 1770ºC) Type S, Pt/Pt-10% Rh (–50 to 1770ºC) Type T, copper/constantan (–270 to 400ºC) Millivolt (–105 to =105mV dc)
Thermocouple linearization	IPTS-standard, NBS MN-125
Cold junction compensation	Range: 0 to 60ºC Accuracy: ± 0.5ºC
Temperature scale (selectable)	ºC or ºF
Input resolution	1ºC, 1ºF, or 10uV
Common mode rejection	120db @ 60Hz, up to 1000V peak
Common mode impedance	Greater than 10 megohms
Normal mode rejection	60dB at 60Hz
Input overvoltage protection	120V rms, continuous
Open input detection	Open input produces maximum value reading in less than 10s
Isolation voltage	Isolation meets or exceeds UL Standard 508, and CSA Standard C22.2 No. 142.
Backplane current	850mA @ 5V
Power dissipation	4.25 Watts (maximum)
Thermal dissipation	14.5 BTU/hr (maximum)
Data format (selectable)	4-digit BCD 2's compliment binary signed magnitude binary
Calibration	
Auto	Auto-calibration for offset and gain
Manual	Zero, offset and gain adjustment for each channel via programming terminal
Check	Verify every six months for maintaining absolute accuracy

Specifications (Cat. No. 1771-IXE/C)

Environmental conditions	
Operating temp.:	0º to 60ºC (32º to 140ºF)
Rate of change:	Ambient changes greater than 0.5ºC per minute may temporarily degrade performance during periods of change
Storage temp.:	–40º to 85ºC (–40º to 185ºF)
Relative humidity:	
Operating	5 to 95% (noncondensing)
Storage	5 to 95% (noncondensing)
Processor compatibility	Any A-B processor using 1771 I/O structure block transfer
Keying	Between 20 and 22 Between 24 and 26
Field wiring arm	Catalog number 1771-WI
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 1771-6.5.77

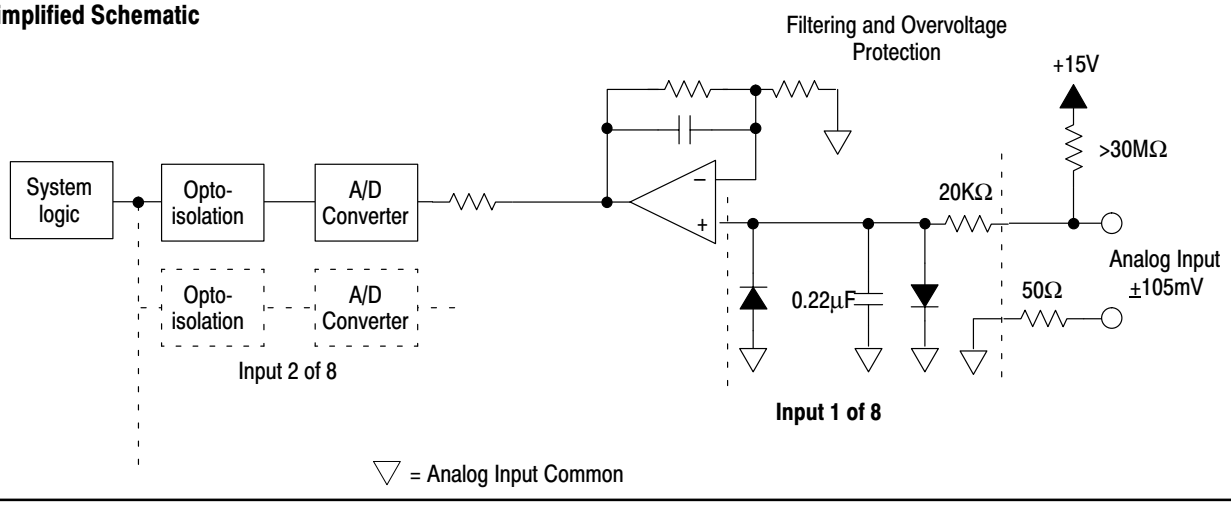
[1] Refer to publication 1770-4.1, "Industrial Automation Wiring and Grounding Guidelines."

Status Indicators



High Resolution Thermocouple/Millivolt Input (Cat. No. 1771-IXHR)

Simplified Schematic



Application Notes

Product Compatibility – The module is compatible with 1771-A1B through A4B or later I/O chassis. Insert the module in any slot in the chassis except the leftmost slot, which is reserved for the processor or adapter module.

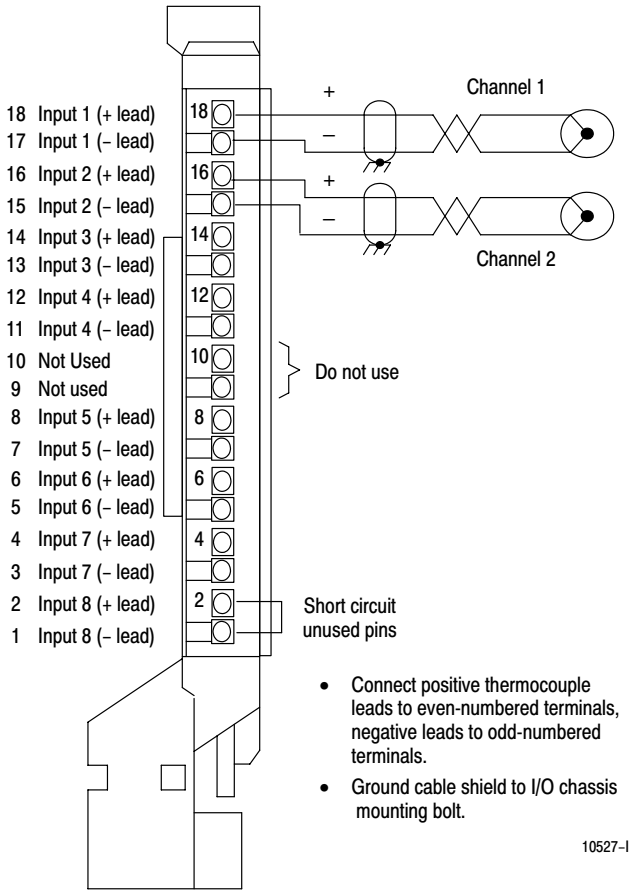
Status Indicators – The front panel of the input module contains a green RUN and a red FLT (fault) indicator. At power-up the red and green indicators are on. If there is no fault, the red indicator turns off. The green indicator will blink until the processor completes a successful write block transfer to the module. Any time a fault is detected, the red FLT indicator lights up.

Wiring – Wiring to the analog input module is connected to the 1771-WI field wiring arm. The wiring arm pivots upward and connects with the module so that you can install or remove the module without disconnecting the wiring. Recommended maximum cable length for voltage input devices is 50 feet.

Configurable Features

- 8 input channels configurable for thermocouple input ranges (Types B, E, J, K, T, R and S thermocouples) and ±100 millivolts (full range is ±105V)
- two types of input allowed at one time: 4 of one type and 4 of another
- cold junction compensation
- user selectable high and low temperature alarms

Connection Diagram



- Connect positive thermocouple leads to even-numbered terminals, negative leads to odd-numbered terminals.
- Ground cable shield to I/O chassis mounting bolt.

10527–I

High Resolution Thermocouple/Millivolt Input (Cat. No. 1771-IXHR)

Specifications (Cat. No. 1771-IXHR)

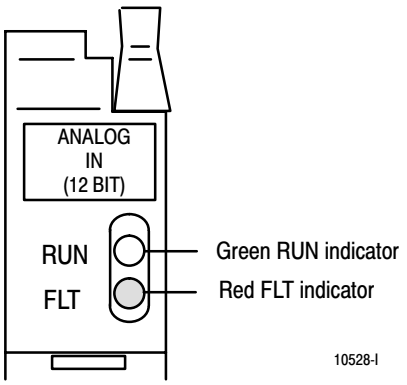
Number of inputs	8, all of the same type or 4 each of 2 different types
I/O chassis location	Any single I/O module slot
Type of input	See table below.
Thermocouple linearization	IPTS-standard, NBS MN-125
Cold junction compensation	Range: 0 to 60ºC Accuracy: ± 0.5ºC
Temperature scale selectable	ºC or ºF
Input resolution	3.2328µV
Display resolution	0.1ºC, 0.1ºF, or 1.0µV, 10µV
Input isolation	Isolation meets or exceeds UL Standard 508, and CSA Standard C22.2 No. 142.
Common mode rejection	120db @ 60Hz, up to 1000V peak
Common mode impedance	Greater than 10 megohms
Normal mode rejection	60dB at 60Hz
Input overvoltage protection	120V rms, continuous
Open input detection	Open input produces an overrange in less than 10s
Data format	2's complement binary
Backplane current	850mA @ 5V
Thermal dissipation	4.255 Watts (maximum)
Power dissipation	14.5 BTU/hr (maximum)
Calibration Auto Manual Check	 Auto-calibration for offset and gain Zero offset and gain adjustment for each channel via programming terminal Verify every six months to maintain absolute accuracy

Specifications (Cat. No. 1771-IXHR)

Environmental conditions: Operational temp. Rate of change: Storage temp.: Relative humidity: Operating Storage	 0º to 60ºC (32º to 140ºF) Ambient changes greater than 0.5ºC per minute may temporarily degrade performance during periods of change –40º to 85ºC (–40º to 185ºF) 5 to 95% (noncondensing) 5 to 95% (noncondensing)
Keying	Between 20 and 22 Between 24 and 26
Field wiring arm	Catalog number 1771-WI
Wiring arm screw torque	7-9 inch-pounds
Processor compatibility	PLC-3 or PLC-5 family processor using the 1771-I/O structure and block transfer. (Not recommended for use with the PLC-2 family processors.)
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	1771-6.5.80

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

Status Indicators

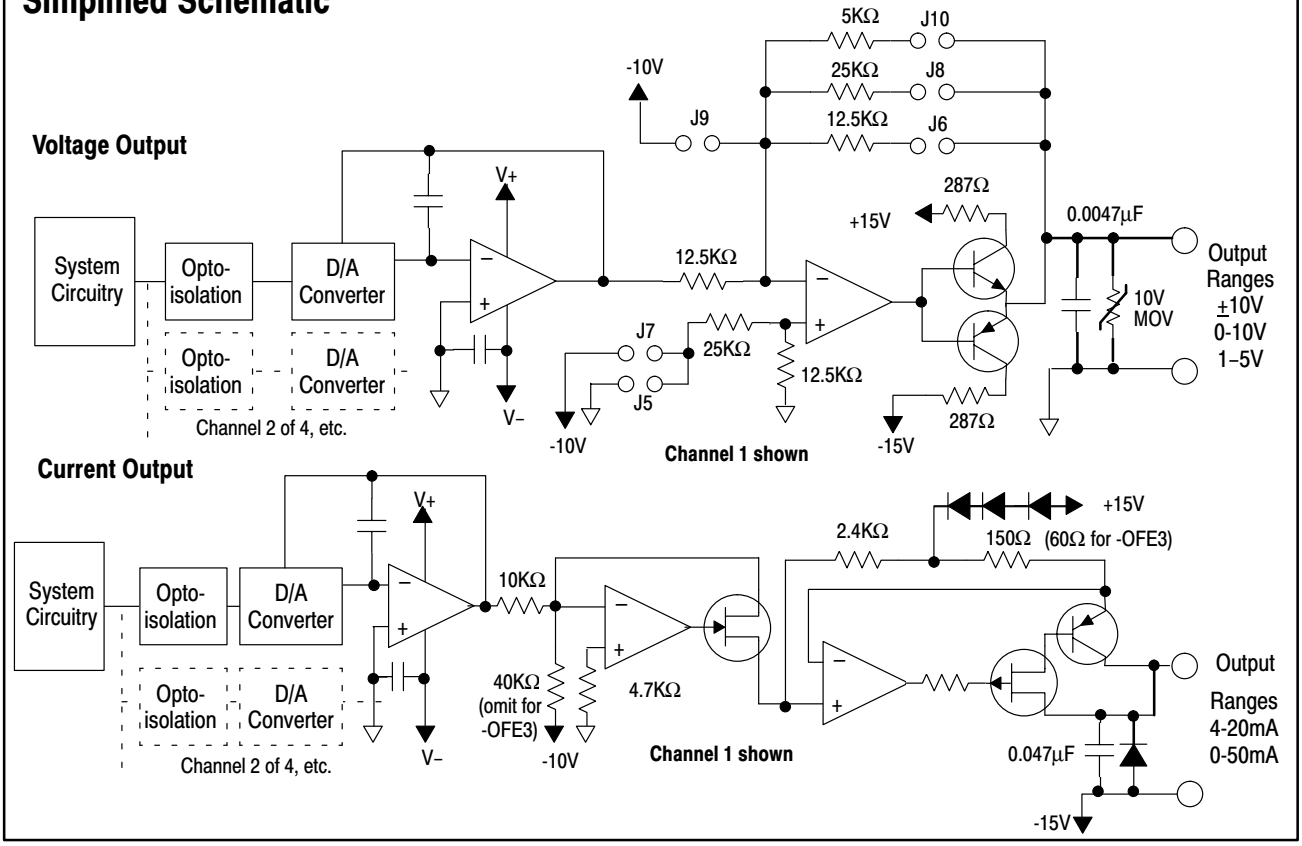


Types of Inputs for the 1771-IXHR Module

Input Type	Type B, Pt - 30% Rh/Pt-6% Rh	(320 to 1800ºC)
	Type E, chromel/constantan	(–270 to 1000ºC)
	Type J, iron/constantan	(–210 to 1200ºC)
	Type K, chromel/alumel	(–270 to 1380ºC)
	Type R, Pt/Pt-13% Rh	(–50 to 1770ºC)
	Type S, Pt/Pt-10% Rh	(–50 to 1770ºC)
	Type T, copper/constantan	(–270 to 400ºC)
	Millivolt	(–105 to +105mV dc)

Analog Output Module (Cat. No. 1771-OFE1, -OFE2 and -OFE3, Series B)

Simplified Schematic



Application Notes

Product Compatibility – The analog output module can be used with any 1771 I/O chassis. Insert the module in any slot of the I/O chassis except for the leftmost slot reserved for the processor or adapter. You can put two input modules, or an input module and an output module, in the same module group. Do not put this module in the same module group as a discrete high density module unless you are using 1 or 1/2-slot addressing. Avoid placing this module close to ac modules, or high voltage dc modules.

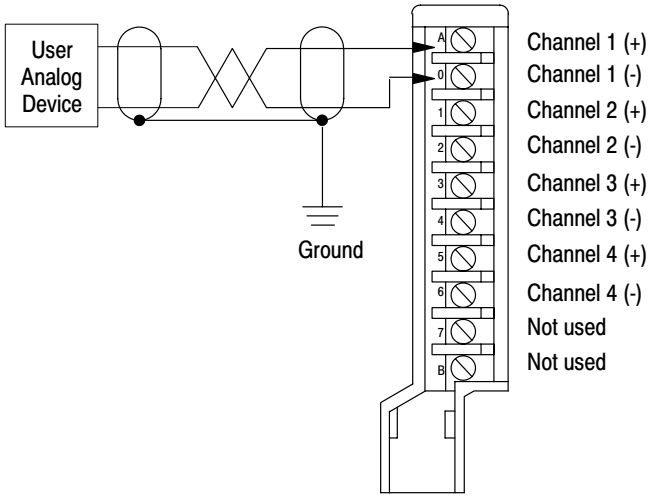
Status Indicators – The front panel of the input module contains a green RUN and a red FLT (fault) indicator. At power-up an initial module self-check occurs. If there is no fault, the red indicator turns off and the green indicator turn on. The green indicator remains on while the module is powered. Any time a fault occurs, the red FLT indicator lights up.

Wiring – Wiring to the analog input module connects to the 1771-WC field wiring arm. The wiring arm pivots upward and connects with the module so that you can install or remove it without disconnecting the wires. Recommended maximum cable length for voltage input devices is 50 feet.

Configurable Features –

- 4 individually isolated differential outputs
- selectable scaling to engineering units
- selectable data formats
- selectable voltage ranges (1771-OFE1 only)
- requires only one I/O slot

Connection Diagram



Field Wiring Arm
Cat. No 1771-WC

Analog Output Module (Cat. No. 1771-OFE1, -OFE2 and -OFE3, Series B)

Specifications (Cat. No. 1771-OFE1,2,3)

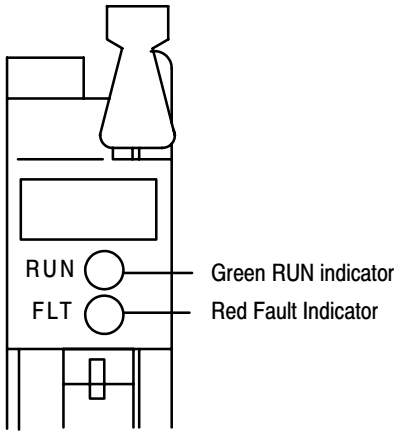
Outputs per module	4 individually isolated
Module location	Bulletin 1771 I/O chassis – 1 slot
Output voltage ranges (nominal) – 1771-OFE1 only	+1 to +5V dc –10 to +10V dc 0 to +10V dc
Output current (maximum) – 1771-OFE1 only	10mA per channel in voltage mode (1771–OFE1)
Output current ranges (nominal)	+4 to +20mA (1771–OFE2) 0 to +50mA (1771–OFE3)
Digital resolution	12-Bit Binary – 1 part in 4095
Output capacitance	0.01μF (voltage outputs) 0.022μF (current outputs)
Output impedance	<0.25 ohms for voltage outputs exclusive of contact wiring resistance >1.5 megohms for current outputs
Maximum loop impedance in the current mode	1771-OFE2 – Up to 1200 ohms load resistance 1771-OFE3 – Up to 450 ohms load resistance
Output overload protection	All outputs are protected against short circuit load conditions not to exceed one minute.
Backplane power	1771-OFE1 1.50A 1771-OFE2 1.50A 1771-OFE3 2.50A
Power dissipation	1771-OFE1 7.9W 1771-OFE2 7.9W 1771-OFE3 13.1W
Thermal dissipation	1771-OFE1 26.9 BTU/hr 1771-OFE2 26.9 BTU/hr 1771-OFE3 44.5 BTU/hr
Isolation voltage	Isolation meets or exceeds UL Standard 508, and CSA Standard C22.2 No. 142.
D/A converter settling time	0.8ms maximum for a resistive load
Internal scan rate	8.0ms for all channels using BCD data, scaling 1.6ms for all channels using binary data, no scaling
Accuracy (including linearity, gain, and offset at 25°C)	+0.1% of full scale +1/2 LSD (BCD Mode) +1/2 LSB (BINARY Mode)
Temperature coefficient	±50 ppm/°C of full scale range

Specifications (Cat. No. 1771-OFE1,2,3)

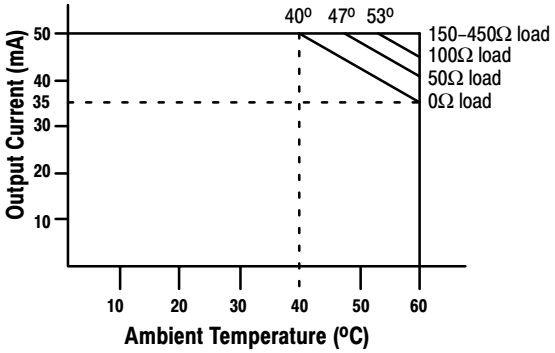
Environmental conditions Operational temp.: Storage temp.: Relative himidity: Operating Storage	 0°C to +60°C (+32°F to +140°F) –40°C to +85°C (–40°F to +185°F) 5% to 95% (noncondensing) 5% to 95% (noncondensing)
Field wiring arm	Catalog number 1771-WC
Field wiring arm screw torque	7-9 inch-pounds
Agency 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
Publications User manual Installation Instruction	 Publication 1771-6.5.30 Publication 1771-5.44

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

Status Indicators



1771-OFE3 Loop Impedance vs. Temperature



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