SNAP Isolated Analog Input Modules

Features

- Channel-to-channel isolation
- Rugged packaging and convenient pluggable wiring. Accepts up to 14 AWG wire.
- Factory calibrated; no user adjustment necessary
- Out-of-range indication
- Operating temperature 0 °C to 70 °C

SNAP Isolated Analog Input Modules

Description

SNAP I/O isolated analog input modules provide two channels isolated from each other, thereby eliminating problems caused by ground loop currents. These isolated analog modules are part of Opto 22's SNAP PAC System and mount on SNAP PAC racks with an I/O processor (brain or on-the-rack controller).

Since many SNAP analog input modules are software-configurable and handle a wide variety of signal levels, a small number of modules can support a full range of analog input requirements. Modules provide high resolution for precise signal levels, as well as dual-channel packaging. All SNAP analog modules are factory calibrated. Part numbers ending in -FM are Factory Mutual approved. Dimensional drawings are on pages 11–14.

SNAP analog input modules have an on-board microprocessor to provide module-level intelligence, making them an ideal choice for Original Equipment Manufacturers (OEMs). For more information about the standalone operation of SNAP analog modules, see the *SNAP I/O Module Integration Guide* (Opto 22 form #876).

Notes for legacy hardware: These modules can also be used with SNAP Simple, SNAP Ethernet, and SNAP Ultimate brains, as well as SNAP *mistic* brains such as the serial B3000. These modules can be installed on M-series or B-series mounting racks.

Isolation

All SNAP analog input modules are transformer isolated as well as optically isolated from all other modules and from the SNAP brain or on-the-rack controller. In addition, the modules described in this data sheet feature two channels isolated from each other.

Transformer isolation prevents ground loop currents from flowing between field devices and causing noise that produces erroneous readings. Ground loop currents are caused when two grounded field devices share a connection, and the ground potential at each device is different. Optical isolation provides 4,000 volts of transient (4,000 V for 1 ms) protection for sensitive control electronics from industrial field signals.

Channel-to-channel isolation gives you complete freedom from ground-loop problems even on grounded devices connected to channels on the same module.

Part Numbers

Part	Description	See pg
SNAP-AIARMS-i SNAP-AIARMS-i-FM*	Isolated two-channel 0 to 10 amp RMS AC/DC input	2
SNAP-AIVRMS-i SNAP-AIVRMS-i-FM*	Isolated two-channel 0 to 250 V RMS AC/DC input	3
SNAP-AIMA-i	Isolated two-channel analog current input -20 mA to +20 mA	4
SNAP-AIMA-iSRC SNAP-AIMA-iSRC-FM*	Isolated two-channel analog current input -20 mA to +20 mA, with loop sourcing	5
SNAP-AIMA2-i	Isolated two-channel analog current input -1 mA to +1 mA	6
SNAP-AITM-i	Isolated two-channel analog type E, J, or K thermocouple or -150 mV to +150 mV input or -75 mV to +75 mV input	7
SNAP-AITM2-i	Isolated two-channel analog type B, C, D, G, N, T, R, or S thermocouple or -50 mV to +50 mVDC input or -25 mV to +25 mVDC input	8
SNAP-AIV-i	Isolated two-channel analog voltage input-10 VDC to +10 VDC or -5 VDC to +5 VDC	9
SNAP-AIV2-i	Isolated two-channel analog voltage input -100 VDC to +100 VDC or -50 VDC to +50 VDC	10

* Factory Mutual approved

Isolated Thermocouple/ Millivolt Input Module

Part Number	Description
SNAP-AITM-i	Isolated two-channel analog type E, J, or K thermocouple or -150 mV to +150 mV input or -75 mV to +75 mV input

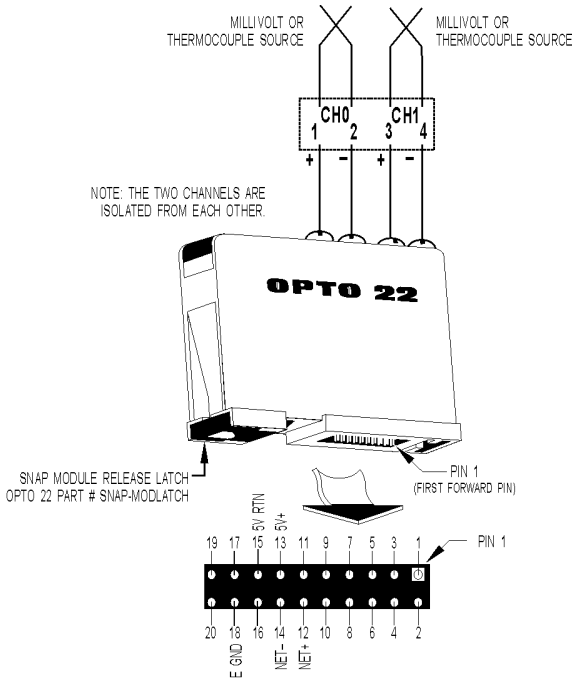
Specifications

Input Range	From -150 mV to +150 mV From -75 mV to +75 mV
Resolution	6 µV from -150 mV to +150 mV 3 µV from -75 mV to +75 mV
Cold Junction Temperature Compensation	Automatic when used with SNAP brains
Input Filtering	-3 dB @ 7 Hz
Input Response Time (% of span/delta V/delta time)	63.2%/95 mV/23 mS
DC Common Mode Rejection	>-120 dB
AC Common Mode Rejection	>-120 dB @ 60 Hz
Maximum Survivable Input	±15 volts
Maximum Operating Common Mode Voltage	250 V
Accuracy	0.06% (90 µV) @ 150 mV (full scale) 0.1% (75 µV) @ 75 mV (full scale)
Drift: Gain Temperature Coefficient	5 µV / °C
Drift: Offset Temperature Coefficient	2 µV / °C
Thermocouple Accuracy [°C] From factory After user gain and offset commands	 ± 2.0 (E, J, and K) ± 0.8
Isolation: Optical	4000 V
Isolation: Transformer	1500 V
Isolation: Channel to Channel	250 V continuous (1500 V transient)
Power Requirements	5 VDC (±0.15) @ 200 mA
Input Resistance	100 megohms (each channel)
Ambient Temperature: Operating Storage	 0 °C to 70 °C -25 °C to 85 °C

Description

The SNAP-AITM-i module provides two channels of analog to digital conversion. Each channel on the module can be configured for -150 mV DC to +150 mV DC or -75 mV DC to +75 mV DC, or for type E, J, or K thermocouple operation. The two channels are isolated from each other. Since these channels do not share any common connections, grounded sensors and field devices may be used with them.

Type	-	+	Range
E	Red	Purple	-270°C to +1,000° C
J	Red	White	-210°C to +1,200° C
K	Red	Yellow	-270°C to +1,372°

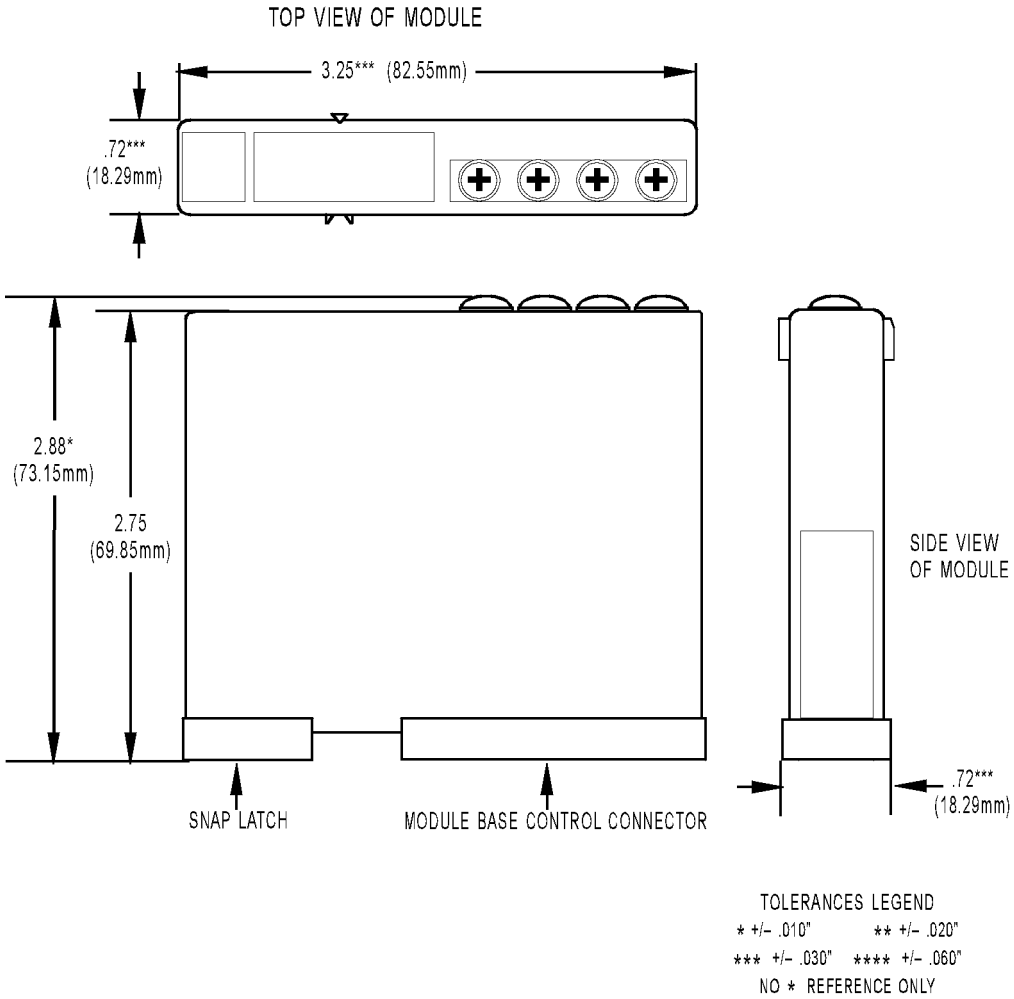


SNAP ANALOG MODULE BASE CONTROL CONNECTOR (BOTTOM VIEW)

IMPORTANT: The mounting rack connector has 24 pins; the module connector has 20 pins. The extra pins on the mounting rack connector prevent misalignment of the module during installation.

Dimensional Drawing

SNAP-AITM-i and SNAP-AITM2-i Modules



Dimensional Drawing