SNAP Analog Input Modules

Features

◥ Resolution = 0.004% of nominal range

◥ Two, 4, 8, or 32 single-ended inputs per module

◥ Out-of-range indication

◥ Operating temperature 0 °C to 70 °C

◥ Factory calibrated; no user adjustment necessary

SNAP Analog Input Modules

Description

SNAP I/O analog input modules are part of Opto 22's SNAP PAC System. All of these modules mount on a SNAP PAC rack with a SNAP PAC brain or R-series controller.

A minimum number of SNAP module types support a full range of analog input requirements. These software-configurable modules handle a wide variety of signal levels. They provide high resolution (0.004% of nominal range) for precise signal levels, as well as multiple-channel packaging. All SNAP analog modules are factory calibrated and individually tested. Part numbers ending in -FM are Factory Mutual approved.

SNAP analog input modules have an on-board microprocessor to provide module-level intelligence, which makes them an ideal choice for Original Equipment Manufacturers (OEMs). For additional information about the standalone operation of SNAP analog modules, see Opto 22 form #0876, *SNAP I/O Module Integration Guide*.

Notes for legacy hardware: Some of these modules also work with older Opto 22 I/O processors (brains or on-the-rack controllers) and M-series or B-series racks. To check processor compatibility, see the table on page 2.

Specifications begin on page 3. For dimensional drawings, see pages 28–36.

IMPORTANT: Any system using analog sensors and input modules should be calibrated annually for analog signals. For I/O units on a SNAP PAC System, use the PAC Control™ commands "Calculate and Set Offset" and "Calculate and Set Gain." For other Ethernet-based I/O units, you can also use PAC Manager™ software to calculate and set offset and gain.

Part Number

| Part	Description	See page
SNAP-AIARMS	2-channel 0 to 10 amp RMS AC/DC input	3
SNAP-AIVRMS	2-channel 0 to 250 V RMS AC/DC input	4
SNAP-AIMA	2-channel analog current input, -20 to +20 mA	8
SNAP-AIMA-4	4-channel analog current input -20 to +20 mA	8
SNAP-AIMA-8	8-channel analog current input -20 to +20 mA	10
SNAP-AIMA-32 SNAP-AIMA-32-FM*	32-channel analog current input -20 to +20 mA	11
SNAP-AIRATE	2-channel 0–25,000 Hz analog rate input	14
SNAP-AIRTD	2-channel 100-ohm platinum RTD input	21
SNAP-AICTD	2-channel analog temperature input, ICTD	5
SNAP-AICTD-4	4-channel analog temperature input, ICTD	5
SNAP-AICTD-8	8-channel analog temperature input, ICTD	7
SNAP-AITM	2-channel analog type E, J, or K thermocouple or -150 to +150 mV input or -75 to +75 mV input	18
SNAP-AITM-2	2-channel analog type B, C, D, G, N, T, R, or S thermo-couple or -50 to +50 mV DC or -25 to +25 mV DC input	19
SNAP-AITM-8 SNAP-AITM-8-FM*	8-channel B, C, D, E, G, J, K, N, R, S, or T thermocou-ple or -75 to +75 mV, -50 to +50 mV, or -25 to +25 mV input	20
SNAP-AIV	2-channel analog voltage input -10 to +10 VDC or -5 to +5 VDC	23
SNAP-AIV-4	4-channel analog voltage input -10 to +10 VDC or -5 to +5 VDC	23
SNAP-AIV-8	8-channel analog voltage input -10 to +10 VDC or -5 to +5 VDC	25
SNAP-AIV-32 SNAP-AIV-32-FM*	32-channel analog voltage input -10 to +10 VDC or -5 to +5 VDC	26
SNAP-AIMV-4	4-channel -150 to +150 mV input or -75 to +75 mV input	16
SNAP-AIMV2-4	4-channel -50 to +50 mV input or -25 to +25 mV input	17
SNAP-AIR40K-4	4-channel analog resistor/thermistor input, 40 K ohms, 20 K ohms, 10 K ohms, or 5 K ohms	13

* Factory Mutual approved

Current Input Module, -20 mA to +20 mA, Two or Four Channels

SNAP-AIMA (Two channels)

Four-channel module wiring is shown on .
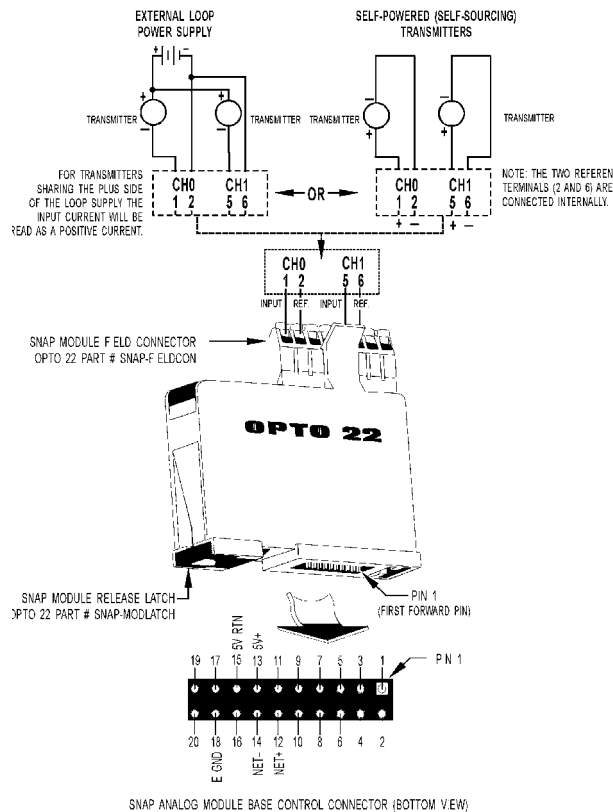
IMPORTANT: The mounting rack connector has 24 pins; the module connector has 20 pins. The extra pins on the mounting rack connector prevent misalignment of the module during installation.

Part Number	Description
SNAP-AIMA	Two-channel analog current input, -20 mA to +20 mA
SNAP-AIMA-4	Four-channel analog current input, -20 mA to +20 mA

Description

The SNAP-AIMA and SNAP-AIMA-4 modules provide an input range of -20mA to +20mA. The SNAP-AIMA has two channels, and the SNAP-AIMA-4 has four. If you need a similar module with more channels, see . Check the table on for I/O processor compatibility. These modules DO NOT supply loop excitation current.

Since all inputs share a common reference, the module must be installed at the beginning or end of a typical 4–20mA loop. If you are using both standard and self-sourcing transmitters, either put the transmitters on different modules or use different power supplies. If you need channels that are isolated from each other on the same module, see Opto 22 form #1182.
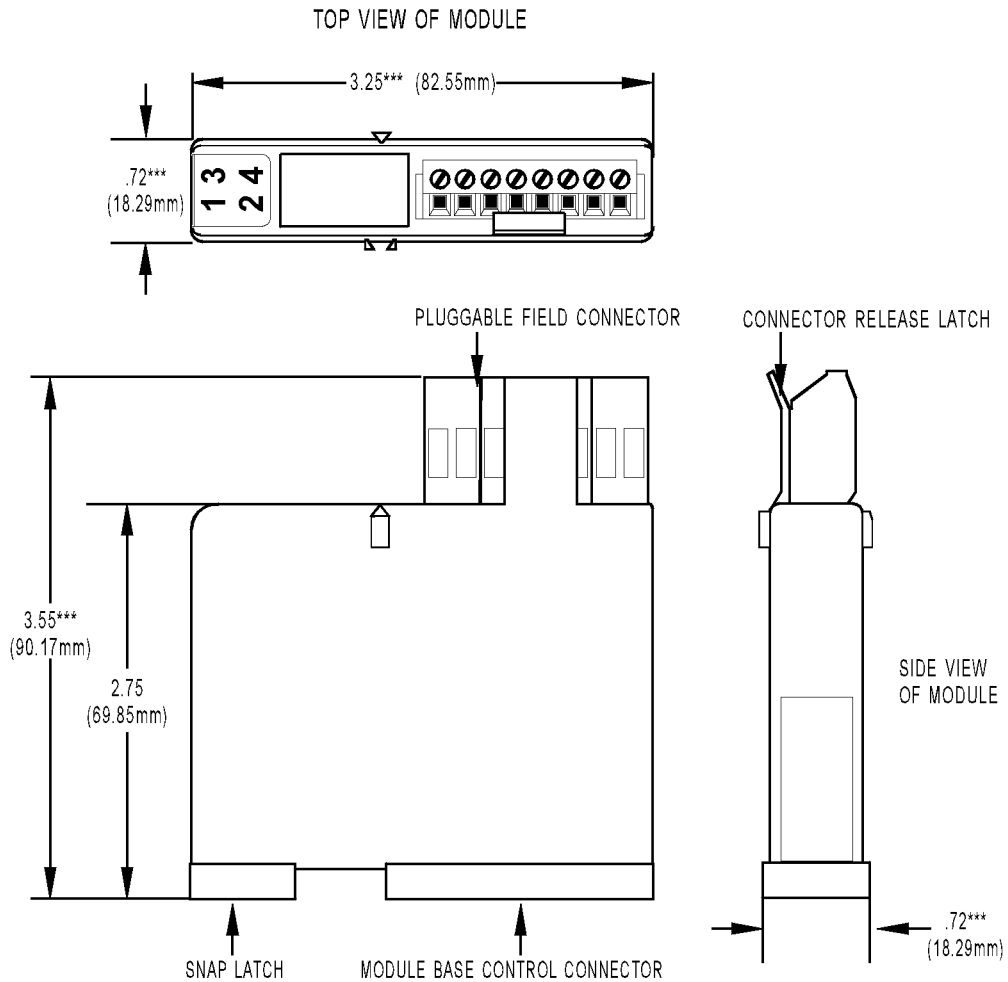
Specifications

Input Range	-20 mA to +20 mA
Resolution	0.8 microamps
Input Response Time (% of span/ delta I/delta tme)	69.9% / 6.710.9 mA / 10 ms
DC Common Mode Rejection	>-120 dB
AC Common Mode Rejection	>-120 dB @ 60 Hz
Maximum Survivable Input	36 mA or 9 VDC
Maximum Operating Common Mode Voltage	250 V
Accuracy	0.05% (10 microamps)
DRIFT: Gain Temperature Coefficient	30 PPM/ °C
DRIFT: Offset Temperature Coefficient	15 PPM/ °C
Isolation	1500 V
Power Requirements	5 VDC (±0.15) @ 170 mA
Input Resistance - Single Ended	200 ohms (each channel)
Operating Temperature	0 °C to 70 °C
Storage Temperature	-25 °C to 85 °C

Dimensional Drawing

All Two- and Four-channel Modules

TOP VIEW OF MODULE

3.25*** (82.55mm)

.72***
(18.29mm)

1 3
2 4

PLUGGABLE FIELD CONNECTOR

CONNECTOR RELEASE LATCH

3.55***
(90.17mm)

2.75
(69.85mm)

SIDE VIEW
OF MODULE

SNAP LATCH

MODULE BASE CONTROL CONNECTOR

.72***
(18.29mm)

TOLERANCES LEGEND
* +/− .010"   ** +/− .020"
*** +/− .030"   **** +/− .060"
NO * REFERENCE ONLY

SNAP Analog Input Modules

Dimensional Drawing

Height on Rack: All Two- and Four-channel Modules

TOP WIRE ENTRY
NOTE: CONSIDER NECESSARY DIMENSIONS

PLUGGABLE FIELD CONNECTOR

SNAP PAC BRAIN

SNAP I/O MODULE

MODULE RETENTION RAIL

SNAP I/O RACK BOARD

MODULE WITH RACK

MODULE

RACK

3.55***
(90.17mm)

4.310****
(109.47mm)

3.70***
(93.98mm)

.75***
(19.05mm)

FOR DIN CLIP ADD ADDITIONAL
.06" TO OVERALL HEIGHT

SNAP RACK DIN RAIL ADAPTER
CLIP MOUNTING OPTION

CUSTOMER SUPPLIED
35mm DIN RAIL
NOTE: BE SURE TO CONSIDER
DIN RAIL DIMENSIONS.
(DIN RAIL MUST BE MOUNTED
HORIZONTALLY TO USE SNAP I/O
WITHOUT MODULE HOLD-DOWN SCREWS)

SNAP RACK
BASE EXTRUSION

TOLERANCE LEGEND
* +/– .010"
** +/– .020"
*** +/– .030"
**** +/– .060"
NO * REFERENCE ONLY