

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

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.



SNAP Analog Input Modules

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 thermocouple 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 thermocouple 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

SNAP Analog Input Modules

Current Input Module, -20 mA to +20 mA, 32 Channels

Specifications

Input Range	-20 mA to +20 mA
Resolution	0.8 microamps
Input Filtering	-3 dB @ 31 Hz
Data Freshness (Max)	1.15 s
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) @ 150 mA
Input Resistance - Single Ended	200 ohms (each channel)
Operating Temperature	0 °C to 70 °C
Storage Temperature	-25 °C to 85 °C

Description

The SNAP-AIMA-32 and SNAP-AIMA-32-FM modules provide 32 channels of input with an input range of -20mA to +20mA. Check the table on [page 2](#) for I/O processor compatibility.

These modules DO NOT supply loop excitation current.

The SNAP-AIMA-32-FM is Factory Mutual approved.

Since all inputs share a common reference, the module must be installed at the beginning or end of a typical 4–20 mA 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.)

See the dimensional drawing for the modules on [page 31](#).



Part Number	Description
SNAP-AIMA-32 SNAP-AIMA-32-FM	32-channel analog current input, -20 mA to +20 mA
SNAP-HD-BF6	Wiring harness for SNAP-AIMA-32 modules and breakout racks
SNAP-AIMA-HDB SNAP-AIMA-HDB-FM	Breakout racks for SNAP-AIMA-32 and SNAP-AIMA-32-FM

Wiring

SNAP TEX cables and a breakout rack are available separately for wiring points to field devices (see form #1756, the *SNAP TEX Cables & Breakout Boards Data Sheet*). The SNAP-HD-BF6 cable connects the module to the breakout rack, which can then be wired to field devices. (NOTE: The SNAP-HD-CBF6 wiring harness with flying leads is not recommended for this module.)

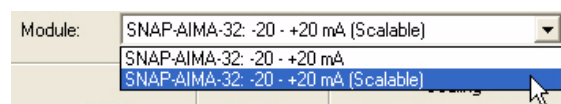
CAUTION: We strongly recommend that you use the breakout rack with these modules. Miswiring of any point on the module can cause severe out-of-warranty damage. The breakout rack protects the module from many wiring errors.

if you are using the module with loop power (2-wire) devices, connect to the SNAP-AIMA-HDB or SNAP-AIMA-HDB-FM rack. If you are using the module with self-powered devices (4-wire), do not use the SNAP-AIMA-HDB (or -FM) boards, which have a current limiter. Instead, wire to the SNAP-AIV-HDB or SNAP-AIV-HDB-FM.

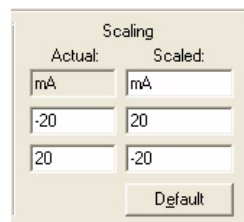
Correcting for Inverted Scaling

Positive readings for these modules appear as negative values. Therefore, in order to obtain meaningful readings, use the scaling feature in PAC Control as follows:

1. In the Add or Edit Analog Point dialog box for each point, choose the scalable version of the module.



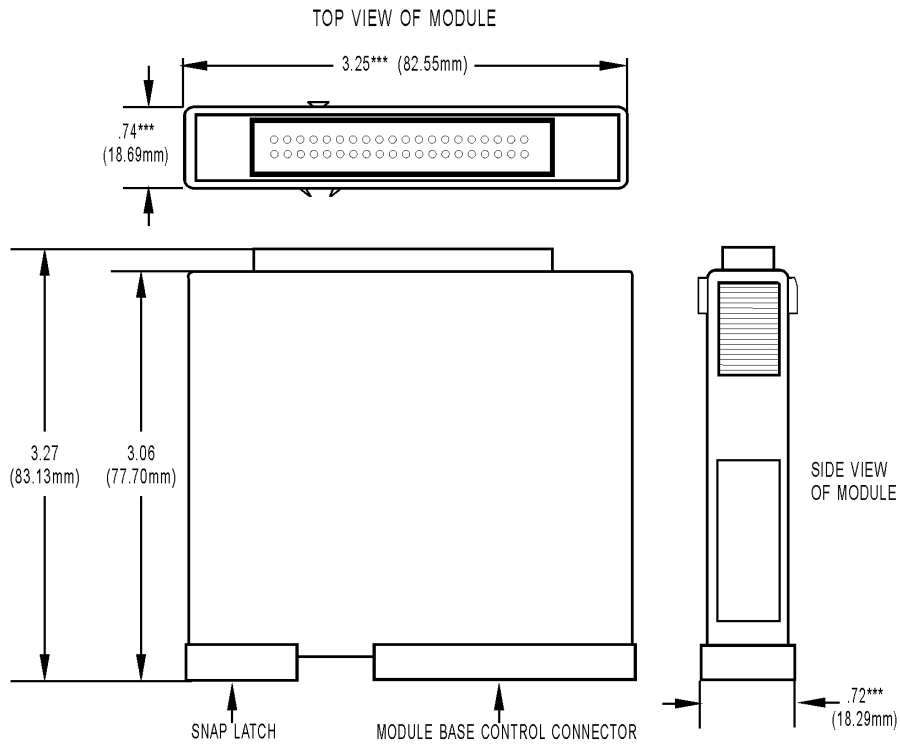
2. Under Scaling, scale each point negatively as shown below:



SNAP Analog Input Modules

Dimensional Drawing

SNAP-AIMA-32, SNAP-AIMA-32-FM, SNAP-AIV-32, and SNAP-AIV-32-FM Modules



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

SNAP Analog Input Modules

Dimensional Drawing

Height on Rack: 32-Channel Modules

