

# SNAP-AIPM Module

## Features

- Convenient pluggable wiring
- Powered by a single 5-volt supply
- Single-phase power monitor
- Monitors AC RMS volts and AC RMS current; calculates true power and volt-amps
- 10% over range; 120% over range on current input when used with 5-amp CT
- 25,000 counts of resolution over input ranges
- Out-of-range indication
- Factory calibrated; no user adjustment necessary

## Description

The SNAP-AIPM analog input module provides an efficient way to monitor AC voltage and current using a SNAP PAC rack-mounted controller or SNAP PAC brain. The module mounts on a SNAP PAC rack right alongside digital, analog, serial, and special-purpose SNAP I/O™ modules.

The SNAP-AIPM individually and simultaneously measures single-phase AC volts RMS and amps RMS and calculates true power and volt-amps. Power factor can then be calculated from true power and volt-amp values. Because true power is a signed value, either leading or lagging power factor can be calculated.

SNAP-AIPM modules help you measure and control power usage throughout your facility, so you can reduce costs, maintain power quality, and track energy use. If these modules are used as part of a SNAP PAC System running a PAC Control™ strategy, strategy logic can automatically perform additional calculations and respond to any problems the module reports.

The SNAP-AIPM module offers four channels (points) of data, two from wired inputs and two calculated by the module:

Pt	Data	Data Source
1	0–250 AC VRMS	Measured from wired input point 1
2	0–10 AC ARMS	Measured from wired input point 2
3	True Power	Calculated from synchronous measurement of volts and amps
4	Volt-Amps	Calculated (volts x amps)

To calculate power factor, simply use the data in points 3 and 4 in the formula: Power Factor = (True Power Magnitude)/ (volt-amps).



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The SNAP-AIPM can also monitor AC line currents greater than 10 amps using a standard 5-Amp current transformer (CT) of suitable ratio. For line voltage larger than 250 VAC, use a step-down potential transformer. If hazardous voltage or current is to be monitored, an interposing potential transformer and a CT **must** be used for safety.

All SNAP analog input modules are transformer isolated as well as optically isolated from all other modules and from the SNAP PAC brain or rack-mounted controller. Optical isolation provides 4,000 volts of transient (4,000 V for 1 ms) protection for sensitive control electronics from industrial field signals. 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.

However, note that the SNAP-AIPM's two input points are *not* isolated from each other. Because they share the same reference terminal, polarity must be observed.

**Note for legacy hardware:** The SNAP-AIPM can also be used with SNAP Ultimate, SNAP Ethernet, and SNAP Simple brains and on a SNAP M-series or B-series mounting rack.

## Part Number

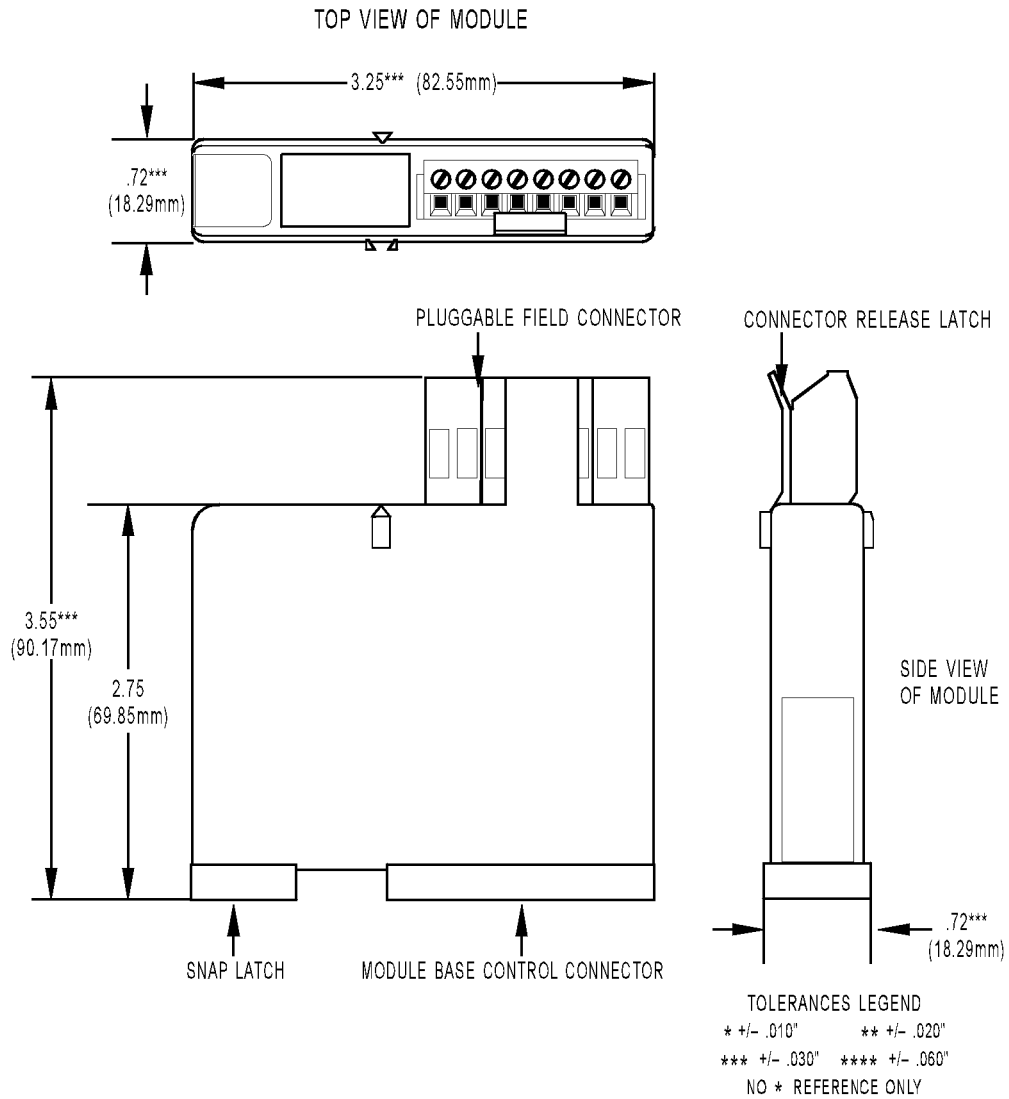
Part	Description
SNAP-AIPM	Single-phase Power Monitoring Module, 85–250 V RMS and 0–10 A RMS Inputs

### Specifications

Voltage Input	
Recommended Input Range	85 to 250 VAC RMS
Scaled Input Range	0 to 250 VAC RMS
Input Over Range	To 275 volts
Resolution	10 mV
Accuracy (47 to 63 Hz)	(When used within recommended range) ± 0.2 V and ± 0.2% reading (at full scale = ± 0.7 V or 0.28%) (-0.2 dB at 660 Hz; -3 dB at 1.89 kHz) nominal
RMS Integration Time/ Data Freshness	1000 ms (synchronous with current measurement)
Input Filtering	Time constant = 70 µs (analog front end)
Input Resistance – Single Ended	1 Megohm NOTE: Because both channels share the same reference terminal, <b>polarity must be observed</b> when connecting the current channel.
Maximum Input	300 V non-operating
Current Input	
Input Range	0 to 10 AC amps RMS
Input Over Range	To 11 amps (Reading is not reliable over 11 A.)
Input Overload	15 A continuous, non-operating
Resolution	400 µA
Accuracy (47 to 63 Hz)	± 8 mA and ± 0.2% reading (at full scale = ± 28 mA or 0.28%) (-0.2 dB at 660 Hz; -3 dB at 1.89 kHz) nominal
RMS Integration Time/ Data Freshness	1000 ms (synchronous with voltage measurement)
Input Filtering	Time constant = 105 µs (analog front end)
Input Resistance – Single Ended	0.005 Ohm NOTE: Because both channels share the same reference terminal, <b>polarity must be observed</b> when connecting the voltage channel.
Maximum Input	15 A continuous, non-operating
Both Channels	
True Power and Volt-Amps Range	True power: 2500 Watts. Volt-amps: 25,000 counts (inputs = 250 volts and 10 amps)
Over Range	2750 Watts true power or 27,500 counts volt-amps
Accuracy:	
True Power	± 0.6% reading (at full scale = ± 15 Watts)
Volt-Amps	± 0.6% reading (at full scale = ± 15 VA)
Resolution	100 Megohms
AC Common Mode Rejection	> -120 dB at 60 Hz
Maximum Operating Common Mode Voltage	250 VAC
Power Requirements	5.0 VDC ± 0.15 VDC at 100 mA
Ambient Temperature:	
Operating	0 to 70 °C
Storage	-25 to 85 °C

# SNAP-AIPM Module

## Dimensional Drawing



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## Dimensional Drawing

