

SNAP Isolated Analog Input Modules

Isolated Frequency Input Module

Description

The SNAP-AIRATE-HFi module provides frequency to digital conversion. Each channel can be configured for a 0.1-second measurement interval, providing an input range of 20 Hz to 500 kHz, or a 1-second measurement interval, providing an input range of 2 Hz to 500 kHz. Data freshness is dependent upon and directly related to the measurement interval.

Nine volts through a 3.6 kOhm pull-up resistor is provided internally for each channel for use with devices that have open-collector outputs. This feature eliminates the need for you to provide the pull-up voltage supply and associated wiring, barrier strips, and so on. The module works with TTL, CMOS, and open-collector outputs.

The two channels on the module are isolated from each other. Since these channels do not share any common connections, grounded sensors and field devices may be used with them.

This module requires a SNAP PAC controller or brain with SNAP PAC firmware version 9.3c or higher. It cannot be used with legacy controllers or brains.

See wiring diagrams on the following page.



Part Number	Description
SNAP-AIRATE-HFi	Isolated two-channel analog frequency input, 2 Hz–500 kHz or 20 Hz–500 kHz

Specifications

Input Range	2 Hz - 500 kHz at 1.0 s Data Freshness 20 Hz - 500 kHz at 0.1 s Data Freshness
Input Voltage Range	3.0 V to 48 V _{p-p} 4.0 V to 48 V _{p-p} 5.0 V to 48 V _{p-p} 17 V to 48 V _{p-p} 3.0 V to 48 V _{p-p} 110 V _{p-p}
Input Impedance	55 kOhms
Input Coupling	Single-ended AC
Pull-up Voltage	6 to 9 VDC
Pull-up Resistor	3.6 kOhm
Minimum Pulse Width	1 microsecond
Data Freshness*	100 ms at 20 Hz - 500 kHz 1.0 s at 2 Hz to 500 kHz
Resolution (Hz)	$f / (48,000,000 * \text{Data Freshness})$, where f is the current frequency measurement
Accuracy	+ 0.005% of input for input greater than 500 Hz. + 0.005% of input plus an additional +/- 0.1 Hz for input less than 500 Hz.
Maximum Operating Common Mode Voltage	250 V Continuous 1500 V Transient
DC Common Mode Rejection	> -120 dB
AC Common Mode Rejection	> -120 dB at 60 Hz
Isolation: Channel to Channel	250 V Continuous 1500 V Transient
Power Consumption	1.05 W (210 mA @ 5 V)
Ambient Temperature	-20 to 70 °C
Operating Storage	-40 to 85 °C
Torque, hold-down screws	4 in-lb (0.45 N-m)
Torque, connector screws	5.26 in-lb (0.6 N-m)
Wire size range	22 to 14 AWG
Agency Approvals	CE, RoHS, DFARS
Warranty	Lifetime

* User selectable. Default is 0.1 seconds.

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Isolated Frequency Input Module (cont'd)

SNAP-AIRATE-HFi Wiring Diagrams

The two channels on the module are isolated from each other. Since these channels do not share any common connections, grounded sensors and field devices may be used with them.

