

SNAP Quadrature Input Module

Features

- 4,000 Vrms optical isolation
- Built-in LED status indicators
- 4 times encoder resolution
- Input signals in 4–24 VDC range

Description

The SNAP-IDC5Q quadrature input module is part of the SNAP PAC System. It mounts on a SNAP PAC rack and is designed to allow a SNAP PAC brain or R-series controller to resolve two axes of rotating position information from quadrature encoder devices. The module outputs a pulse to the SNAP PAC processor upon each change in quadrature state. The processor counts the module output pulses and keeps track of the direction and position.

The SNAP-IDC5Q can be used with most quadrature devices, including transducers with TTL, CMOS, and open collector outputs. All inputs are isolated from each other and do not share any common connections.

Module Operation

The SNAP-IDC5Q quadrature module converts a quadrature signal to a stream of pulses that is sent to the I/O processor on one of two input channels. The rotation direction of the encoder determines which output is used. One 0.8 microsecond pulse is output for each change of quadrature state. The actual resolution of the position count is four times the encoder resolution (4xPPR).

The position count is incremented when the signal into the A channel leads the signal into the B channel. It is decremented when the signal into the B channel leads the signal into the A channel.

Since the I/O processor (brain or on-the-rack controller) has a maximum input count rate, the maximum allowable RPM at which the encoder may turn is related to the number of cycles per turn that the encoder outputs.

Notes for legacy hardware: The SNAP-IDC5Q is also compatible with Ethernet-based SNAP-B3000-ENET and SNAP-UP1-ADS brains, as well as B3000 and B3000-HA brains, which use the *mistic* protocol. From a mounting standpoint the module is treated as a standard SNAP I/O digital module, which means it can be installed only in the first eight positions (0–7) of larger SNAP B-series racks.



Specifications

Logic Voltage	5 VDC
Operating Ambient Temperature	0 to 70 °C
Isolation input-to-output	4,000 Vrms
Input Voltage Range	4–24 VDC
Input Resistance	1K ohms @ 4 V 560 ohms @ 24 V
Input Allowed for No Output	1 V
Logic Supply Current @ 5 VDC	120 mA
Maximum Input Frequency, 50% Duty Cycle	4 kHz SNAP Ethernet-based brains or on-the-rack controllers; 5 kHz other SNAP brains*
Maximum Reverse Input Voltage	–21 V

* The module actually supports an input frequency of up to 20 kHz (for SNAP PAC or other Ethernet-based brains and on-the-rack controllers) or 25 kHz (for other brains) but outputs a frequency four times the input frequency. Due to these limits of the Opto 22 brains, the maximum frequency to the module is 4 kHz and 5 kHz as shown.

Part Number

Part	Description
SNAP-IDC5Q	SNAP Two-Axis Quadrature Position Input