

SNAP-SCM-ST2 PULSE OUTPUT MODULE

Features

- > Suited for pulse/direction applications with a frequency range of 0.13–50,000 Hz
- > Dual outputs
- > Software configurable

DESCRIPTION

The SNAP-SCM-ST2 pulse output module is a two-channel serial communication module that provides pulse and direction signals for stepper motor drives. Each channel is isolated from the logic side. The module can either output a constant frequency, or it can ramp from one frequency to another.

The SNAP-SCM-ST2 links up to two stepper motors which can be controlled by a SNAP PAC controller running a PAC Control™ strategy. LED indicators are provided to indicate activity on each port.

The module snaps onto an Opto 22 SNAP PAC mounting rack. SNAP PAC racks accommodate up to 4, 8, 12, or 16 I/O modules, with a maximum of 8 serial modules (including SNAP-SCM-ST2) on any one rack. Because the SNAP-SCM-ST2 module is mounted on these standard racks with other SNAP I/O modules, you can use the combination of analog, digital, and serial modules required by your application at the location where they are needed.

SNAP racks have a retention rail locking system. Use two 4-40 by ½-inch standard machine screws to hold each module securely in position on the SNAP rack.

NOTE: SNAP-SCM-ST2 modules require a SNAP PAC EB-series brain or R-series controller with firmware R9.1a or newer. These modules do not work with SNAP PAC SB-series brains nor with legacy brains or controllers.



SNAP-SCM-ST2 Module

Commands Supported

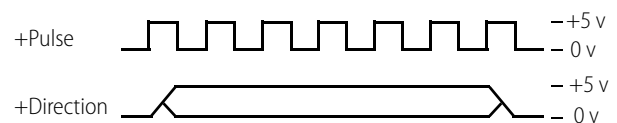
The SNAP-SCM-ST2 module supports the following pulse output commands in PAC Control:

- **SetPulseFrequency** outputs a set frequency until instructed to do otherwise.
- **SetPulseSequence** ramps from one frequency to another.
- **ReadPulseFrequency** returns a string representing a channel's current frequency. *This command requires SNAP-SCM-ST2 module firmware version R1.0d or newer.*

These pulse output commands are entered in PAC Control using the Transmit/Receive String command. For more information, see "Using the SNAP-SCM-ST2 Module Commands" in the [SNAP Serial Communication Module User's Guide](#) (form 1191).

How the SNAP-SCM-ST2 Outputs Data

The SNAP-SCM-ST2 outputs a specified frequency based on the command received, as shown here.



The Direction pin can be either +5 VDC or 0 VDC, as determined by the parameters of the command executed. See "Using the SNAP-SCM-ST2 Module Commands" in the [SNAP Serial Communication Module User's Guide](#) (form 1191).

Part Numbers

Part	Description
SNAP-SCM-ST2	SNAP 2-Channel Pulse Output Module

SPECIFICATIONS

Frequency Range	0.13–50,000 Hz
Pulse Width Range ¹	3.84 Sec to 10 µSec
Pulse Width Resolution	0–2 Hz, 2–30 Hz, 30–50,000 Hz (See resolution graphs on page 3)
Output Frequency Accuracy	To calculate error (in Hz) for the desired frequency, use this equation and the resolution graphs on page 3 the next page: Frequency Error (+/-) = Desired Frequency - (1 ÷ (Pulse Width Resolution + (1 ÷ Desired Frequency)))
Output Format	CMOS/TTL Compatible
Logic Supply Voltage	5.0 VDC
Logic Supply Current	200 mA
Compatible I/O Processors	SNAP PAC R-series controllers and EB-series brains with R9.1a or newer firmware
Duty Cycle	Fixed at 50%
Number of Ports per Module	2
Operating Temperature Range	-20–60 °C
Storage Temperature Range	-30–85 °C
Torque, hold-down screws	4 in-lb (0.45 N-m)
Torque, connector screws	5.26 in-lb (0.6 N-m)
Agency approvals	CE, RoHS, DFARS
Warranty	30 months from date of manufacture

¹Pulse Width is equal to one-half the period.

Pin Assignments

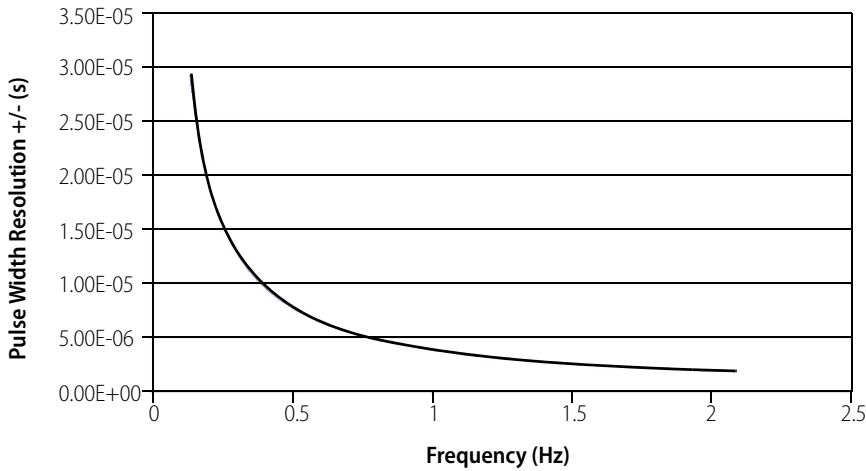
Pin	Port	Use	Description
1		Pulse	Frequency output
2		Ground	Isolated from logic side
3	A	Direction	+5 VDC when asserted 0 VDC when deasserted
4		Ground	Isolated from logic side
5		Pulse	Frequency output
6		Ground	Isolated from logic side
7	B	Direction	+5 VDC when asserted 0 VDC when deasserted
8		Ground	Isolated from logic side

See diagram on [page 4](#) for location of pin 1.

LED Indicators

LED	Description
1	Blinks when outputting pulses on channel 1
2	Positive/Negative direction indicator on channel 1
3	Blinks when outputting pulses on channel 2
4	Positive/Negative direction indicator on channel 2

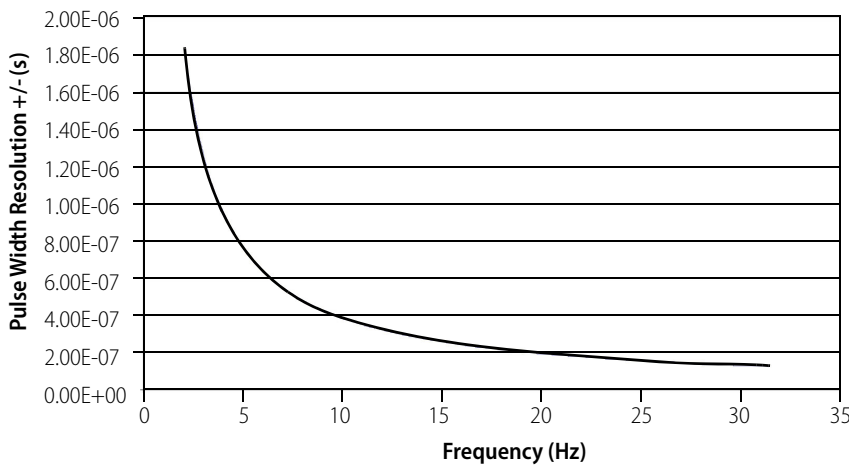
Pulse Width Resolution for Frequencies from 0-2 Hz



Equation

$$\text{Resolution} = \frac{3.871 \times 10^{-6}}{\text{Frequency}^{0.993}}$$

Pulse Width Resolution for Frequencies from 2-30 Hz



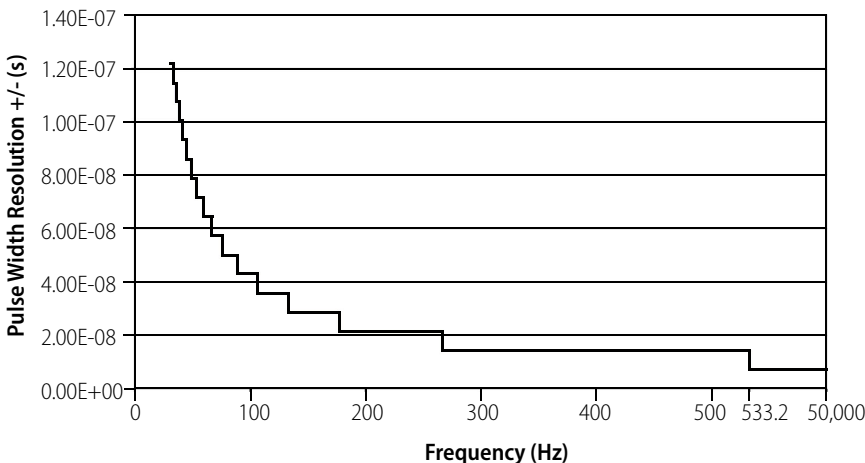
Equation

$$\text{Resolution} = \frac{3.795 \times 10^{-6}}{\text{Frequency}^{0.993}}$$

Transition Points

Frequency	Resolution +/- (s)
533.20	7.15430×10 ⁻⁹
266.60	1.43086×10 ⁻⁸
177.73	2.14629×10 ⁻⁸
133.30	2.86172×10 ⁻⁸
106.64	3.57715×10 ⁻⁸
88.87	4.29258×10 ⁻⁸
76.17	5.00801×10 ⁻⁸
66.65	5.72344×10 ⁻⁸
59.24	6.43887×10 ⁻⁸
53.32	7.15430×10 ⁻⁸
48.47	7.86973×10 ⁻⁸
44.43	8.58516×10 ⁻⁸
41.02	9.30060×10 ⁻⁸
38.09	1.00160×10 ⁻⁷
35.55	1.07315×10 ⁻⁷
33.33	1.14469×10 ⁻⁷
31.36	1.21623×10 ⁻⁷
29.62	1.28777×10 ⁻⁷

Pulse Width Resolution for Frequencies from 30-50,000 Hz



DIMENSIONS

SNAP-SCM-ST2 Pulse Output Module

