COMPONENTS



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Overview

The SDM-IO16 expands the digital input and/or output capability^a of Campbell Scientific dataloggers. When a port is configured as an input, each port can monitor logic state, count pulses, measure signal frequency, and determine duty cycle. An option in the pulse counting mode enables switch debounce filtering, allowing the SDM-IO16 to accurately count switch closures. The SDM-IO16 can also be programmed to send an interrupt signal to the datalogger when one or more input signals change state.

When configured as an output, each port can be set to 0 or 5 V by the datalogger. A boost circuit allows an output that is set HI to source a current of up to 100 mA for controlling external devices such as low voltage valves or relays.

SDM Operation

The SDM-IO16 is a synchronously addressed datalogger peripheral. Three ports on the datalogger are used to address the SDM-IO16. Advanced error checking techniques ensure correct

Datalogger Connection

The SDM Jumper Wire Kit (pn 32505) connects up to four SDMs to the datalogger. This kit is recommended when multiple SDMs are connected to one datalogger or for extremely short distances

data transmission to and from the SDM-IO16. Up to 15 SDM-IO16 modules can be addressed allowing up to 240 ports to be controlled by the datalogger.

between the SDM and datalogger. The CABLE5CBL-L cable is recommended for connecting a single SDM to the datalogger, and for longer distances between the SDM and datalogger.

Power Considerations

In input mode, the power consumption varies from 3 to 600 μA depending on the mode and input frequencies. The datalogger's rechargeable power supply can often power the SDM-IO16 in

these pulse counting or status input applications. However, when the SDM-IO16 is used in an output mode and is driving significant loads, an external power supply is recommended.

^a Some of our retired dataloggers only support the output mode; refer to <u>www.campbellsci.com/sdm-io16-compatibility</u> for more information.



Specifications

- Weight: 350 g (12 oz)
- Dimensions: 23.0 x 10.0 x 2.4 cm (9 x 4 x 1 in)
- Maximum Cable Length: 6 m (20 ft) total to all SDM devices. Consult Campbell Scientific if longer lengths are necessary
- > Operating Temperature Range: -25° to +50°C
- SDM and I/O Port: 0/5 V logic level ports for connecting to the datalogger's control/SDM ports
- EMC Status: Complies with EN 61326:1997
- > Operating Voltage: 12 Vdc (nominal 9 to 18 V)
- > Minimum Frequency: 0 Hz is reported if there are less than two high-to-low signal transitions in the measurement interval.
- > Minimum Pulse Width: 244 μs
- Default Switch Debounce Timing: Input and ground must remain closed for 3.17 ms then remain open for 3.17 ms to be counted as a closure
- Internal Clock Accuracy (-25° to 50°C): ±0.01%, worst case
- > Maximum Pulse Measurement Interval: 15.9375 s

Maximum Frequency (with 50/50 duty cycle)

- Switch Debounce-Mode Turned Off: 2.0 kHz on all channels simultaneously
- > Default Switch Debounce-Mode Enabled: 150 Hz on all channels

Current Drain^b

- Typical Standby: 600 μA (all ports high, no load, excludes pulse counting)
- Maximum: 3 µA (active will all 16 ports counting pulses at 2 kHz and no output load)

Output

- Voltage (no load) ON/HI: nominal 5 V, minimum 4.5 V OFF/LO: nominal 0 V, maximum 0.1 V
- > Sink Current: Output will sink 8.6 mA from a 5 V source
- > Source Current: 42 mA @ 3 V; 133 mA short-circuited to ground

Input

Voltage

High: 4.0 V minimum threshold Low: 1.0 V maximum threshold

- \blacktriangleright Protection: Input clamped at -0.6 V and ±5.6 V relative to ground via a 33 Ω resistor to withstand a continuous current flow of 200 mA
- Source Current: Output will source 42 mA at 3 V; 133 mA short-circuited to ground
-) Impedance: Biased to +5 V relative to ground by a 100 k $\!\Omega$ resistor

^bCurrent drain is roughly proportional to input signal frequency and number of ports used. Current drawn from any output must be added to the quiescent level to obtain the total current drain.

