CAMPBELL SCIENTIFIC
WHEN MEASUREMENTS MATTER

SDM-AO4A

4-Channel Analogue-Output Module

Analogue Output Module

Connects to Campbell Scientific dataloggers

Overview

The SDM-AO4A provides four independent, continuous, analogue outputs for proportional control or driving strip charts. Measured or processed values in the datalogger are scaled to millivolts and transferred to the SDM-AO4A as digital values. The SDM-AO4A then performs a digital to analogue conversion and outputs an analogue voltage signal. The output voltage level is maintained until it is updated by the datalogger.

SDM Operation

The datalogger enables individual modules through an addressing scheme; multiple SDMs (in any combination) can be connected to one datalogger. After a module is enabled, it operates independently of the datalogger until additional commands are received or results are transmitted.

Datalogger Connection

The CABLE5CBL is recommended for connecting the module to the datalogger. A 30 cm (1-ft) cable length should be sufficient when both datalogger and SDM-AO4A are housed within an ENC12/14 enclosure; a 60 cm (2-ft) length may be required if the datalogger and SDM-AO4A are housed at opposite ends of an ENC16/18 enclosure.

The cable length should be as short as possible. Typically, the maximum cable length is 6 m. Contact Campbell Scientific if the length needs to be longer.

Compatible Dataloggers

Our CR800, CR850, CR1000, CR3000, and CR5000 dataloggers support all of the SDM-AO4A's capabilities. Edlog dataloggers only support the ±5 V mode and synchronous operation. Please note that the SDM-AO4A is not compatible with the CR200(X)-series, CR9000(X), CR500, or CR510 dataloggers.

Benefits and features

- ±5 V and 0 to 10 V modes
- Choice of synchronous and sequential operation
- Resolution of 167 µV
- High Accuracy

Ordering information

Synchronous Device for Measurement

SDM-AO4A	4 Channel Analogue Output Module

SDM-to-Datalogger Cable

CABLE5CBL	5-conductor, 24 AWG cable with drain wire and Santoprene jacket. Must choose a cable termination option (see below).

Cable Termination Options (choose one)

-PT	Cable terminates in stripped and tinned leads for direct connection to a datalogger's terminals.
-PW	Cable terminates in connector for attachment to a prewired enclosure.

SDM-AO4A Specifications

Physical

Operating Temperature:	-40° to +60°C
Dimensions:	13.46 x 8.51 x 2.41 cm (5.3 x 3.35 x 0.95 in.)
Weight:	175 g (6.2 oz.)

Analogue Output

Voltage Range:	±5 V or 0 to 10 V
Resolution:	167 µV

Accuracy with 20 kOhm load (maximum)

25°C:	±(0.05% of $\|V_{out}(V)\|$ + 500 µV)
-40° to 60°C:	±(0.1% of $\|V_{out}(V)\|$ + 500 µV)

Additional Full-Scale Error with 50 mA load

±5 V Mode:	-1.3 mV typical
0 to 10 V Mode:	-1.5 mV typical

Power Requirements

Operating Voltage:	12 Vdc nominal (9.6 V to 16 V)

Typical Current Drain

	±5 V Mode	0 to 10 V Mode
No load, V_{out} = 0, V_{supply} = 12 V	11 mA	21 mA
No load, V_{out} = Fullscale, V_{supply} = 12 V	13 mA	28 mA
With load, V_{supply} = 12 V	13 mA + load	28 mA + (2.4)(load)
Power down mode, V_{supply} = 12 V	1.1 mA	

Maximum Output Current

Per Channel:	50 mA
Total:	100 mA

Overcurrent Shutdown Point: 130 mA ± 15 mA

Power Supply

It may be convenient to use the datalogger's batteries to power the SDM-AO4A, but consideration must be given to the SDM-AO4A's continuous current drain (11 mA in ±5 V mode or 21 mA in 10 V mode). The datalogger's alkaline batteries can power one SDM-AO4A for less than a month, and therefore these batteries are not recommended for continuous long-term operation. The datalogger's sealed rechargeable batteries, float charged by an ac supply or solar panel, typically can be used for long-term operation.

The SDM-AO4A can also be powered from an external 12 Vdc source, independent from the datalogger batteries. The low side of this external 12 Vdc source needs to be connected to datalogger ground and not directly earth grounded.