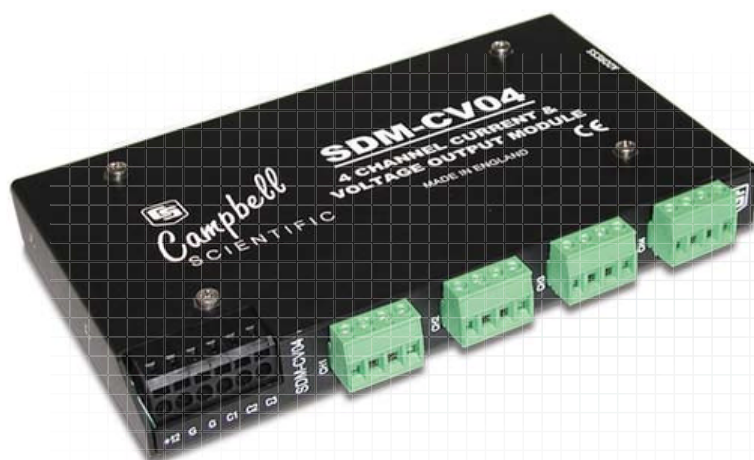## CAMPBELL SCIENTIFIC
WHEN MEASUREMENTS MATTER

Lets Datalogger Control Voltage

Expands dataloggers' current/voltage output capability

Overview

The SDM-CVO4 allows a Campbell Scientific datalogger to output variable voltage or current signals under program control. The datalogger can set each output to either 0 to 10 Vdc or 0 to 20 mA.Current outputs can also be scaled and limited to 4 to 20 mA. In the curernt mode, the output can either act as a 2-wire current controller, where the loop is powered from a remote voltage source, or can be used to generate a 0 to 20 mA current source using a voltage output derived from its own power supply.

SDM Operation

The datalogger enables individual modules through an addressing scheme. A total of sixteen SDM-CVO4s or other SDM modules may be connected and addressed from 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-CVO4 are housed within an ENC12/14 enclosure; a 60 cm (2-ft) length may be required if the datalogger and SDM-CVO4 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

The SDM-CVO4 works with our CR800, CR850, CR1000, CR3000, CR5000 and CR7 dataloggers. CRBasic dataloggers use the SDM-CVO4 instruction to control the SDM-CVO4; Edlog dataloggers typically use Instruction 103 (dataloggers purchased before August, 1988 may use a different instruction).

Typical Applications

〉 Drives remote current-loop display units

〉 Retransmits measured values to industrial control systems that have current or high voltage inputs

〉 Sends control signals to valve controllers

〉 Provides excitation voltages or currents to external sensors

Ordering information

Synchronous Device for Measurement

SDM-CVO4   4 Channel Current and Voltage 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-CVO4 Specifications (Valid for a temperature range of -25° to +50°C, unless otherwise specified.

Power

Operating voltage: 12 Vdc nominal (8 to 16 V)

Current drain @ 12 Vdc:
Typical active quiescent current 27 or 54 mA, depending on operating mode (no load on output ports). To estimate the total current, add the quiescent current to the sum of all output currents multiplied by 1.5.

For example, if each port is at 10 mA output, the total = 54 + (1.5•4•10) = 114 mA.

The CVO4 draws <0.5 mA with all outputs off .

Voltage Mode Output

Range: 0 to 10,000 mV

Resolution: 2.5 mV

Maximum output current: 30 mA per channel

Minimum load current: 5 µA if output < 200 mV

Accuracy @ +23°C: ±0.02% of set voltage + (±2.5 mV)

Accuracy @ -25° to +50°C: ±0.13% of set voltage + (±2.5 mV)

Current Mode Output

Range: 0 to 20 mA

Resolution: 5 µA

Minimum output current (leakage): 5 µA at +50°C

Accuracy @ +23°C: ±0.02% of full scale range + (±5 µA)

Accuracy @ -25° to +50°C:

Typical: ±0.1% of full scale range + (±5 µA)

Worst case: ±0.15% of full scale range + (±5 µA)

Minimum voltage drop across the internal current regulating circuit: 2.5 V @ 20 mA current flow

Maximum input voltage relative to channel ground: 20 Vdc

Note: When in current mode, the V_o terminal outputs an unregulated voltage source at 15 V nominal (±10%), 30 mA maximum load.

Isolation

Description:
The SDM-CVO4 includes an internal isolation barrier and components rated to provide signal isolation for transients up to 1500 Vac (rms), 2500 Vdc nominal. The isolation is between any output and the SDM-CVO4 ground connection and between individual output channels.

Protection components are built-in, which will break down in a controlled fashion at voltages close to this limit (see Operator's Manual Section 4.5, Safety Issues, for details).

Tested isolation:
Each channel of each unit is tested for isolation resistance at 500 Vdc. Pass level > 10 MΩ

Maximum recommended continuous operating voltage:
240 Vac rms differential between an output and datalogger ground, providing all issues relating to local regulation for safe installation and operation are followed (see Operator's Manual Section 4.5, Safety Issues)

Environmental

Operating temperature:
-25° to +50°C standard;
-40° to 80°C extended (available on special order)

Humidity: non-condensing

Physical

Dimensions:
17.6 x 11.1 x 2.4 cm (6.9" x 4.4" 0.94");
23.4 x 11.1 x 2. 4 cm (9.2" x 4.4" x 0.94") when fitted with mounting brackets for enclosure. The mounting bracket holes are spaced 20.3 cm (8") apart for attachment to an enclosure backplate.

Weight: 0.370 kg (13 oz.)

EMC Status:
Complies with EN55022-1:1998 and EN50082-1:1998

Power considerations

The SDM-CVO4 power requirements are large compared to most Campbell Scientific products - especially when driving significant loads. Care must be taken to ensure the power supply can deliver this higher demand. Alkaline batteries are not recommended for long-term applications.

The SDM-CVO4 has two internal power supplies - one for channels 1 and 2 and one for channels 3 and 4. The power supply for channels 3 and 4 is only turned on if the datalogger sends an instruction that sets the output of those channels. If channels 3 and 4 are not used, the power consumption is approximately 20 mA lower than when all outputs are used.

Where supported by the datalogger, and when the application allows it, the SDM-CVO4 can be shut down to reduce its power consumption to less than 0.5 mA. In this state, all outputs are switched off .