

4-Channel Serial Input/Output Module

Connects to
Campbell Scientific dataloggers

Overview

Description

The SDM-SIO4 has four configurable serial RS232 ports which allow it to be connected to intelligent serial sensors, display boards, printers, satellite links and many other applications where the data is transferred in a serial fashion. This device is designed to send data to and receive data from the sensors, and process it in parallel with the datalogger's own program sequence, thus making the complete datalogging system faster and more efficient.

Connections

Communication with the SDM-SIO4 is via datalogger control ports 1, 2 and 3. Up to 16 SDM modules (in any combination) can be added to a single datalogger, making it possible to provide up to 64 RS232 ports.

Data Handling

The SDM-SIO4 can handle incoming and outgoing data in many different ways. It can either send data in the same format as sent from the datalogger or it can be programmed to send pre-stored data strings to the sensor. Combinations of data sent from the datalogger and pre-stored strings can be sent, allowing complex formatted data to be sent. For input, the SDM-SIO4 can transfer data in the same form as received from a sensor to the datalogger, or it can be programmed to filter out critical data from a sensor and only pass back the data the datalogger requires.

Programming

For simple applications the SDM-SIO4 can be configured and controlled from the datalogger alone, using the datalogger program instruction.

More complicated applications require configuration of the SDM-SIO4 using the 'command line' function on a PC running a terminal emulator. A null modem cable will be required for connection to the PC (available as an option from Campbell Scientific). This allows you to set up mechanisms to control the transmission of long, formatted output data and filtering of numerical values out of received data. This is done by storing the detailed formatting and filtering configurations in the SDM-SIO4.

Thus, when the datalogger needs to send out long or complicated data strings it only needs to send a short command to the SDM-SIO4 to tell it to do this, i.e. it does not have to pass the whole string via the SDM interface. Likewise, by telling the SDM-SIO4 how to process received data, it can strip off unwanted characters and reduce the data to either binary or floating point numbers. This minimises the time it takes for the datalogger to get the data and so allows the datalogger to load the data values into memory with minimal processing.

NB: This product is not recommended for new projects. It can still be supplied for expansion of existing networks already using these units or replacing failed units. Support for this device in new dataloggers is not guaranteed in the long term.

Benefits and features

- › Four independent RS232 ports
- › Dedicated processor - operates in parallel with datalogger
- › Send and receive complex data strings
- › Comprehensive data formatting and filtering
- › Compatible with CR800/850, CR1000, CR3000, CR5000 and CR9000X dataloggers

NB: Not compatible with CR500, CR510 and CR200-series dataloggers

Typical applications

- › Control and monitoring of intelligent serial sensors
- › Display boards for visitor centres or control rooms

SDM-SIO4 Specifications

Valid for a temperature range of -25°C to +50°C, unless otherwise specified.

Serial Ports

Number of Ports:	4 (Independently configurable for different serial data formats)
Baud Rate:	25 to 115,200 bps
Port Output:	0-5V logic; ±5V for RS232 (switchable)
Port Configuration:	9-way 'D' connector
Data Flow Control:	By datalogger, or SDM-SIO4 if required, using hardware or software protocols
Buffers (each port):	Receive (Rx), 981 bytes long + 16-byte hardware buffer; Transmit (Tx), 981 bytes long + 16-byte hardware buffer; Processed data storage, 891 bytes long. (Suitable for storing 222 4-byte Campbell Scientific floating point values). <i>Buffers are 'fill and stop' type. Once filled with data any additional data received will be lost.</i> There is an additional buffer, which is used only when the datalogger outputs floating point data via the SDM-SIO4. This buffer is 241 bytes — long enough for 60 floating point values.

Port 1 can be used for advanced configuration of the SDM-SIO4. A null modem cable (available from Campbell Scientific as an option) is required for connection to a PC.

SDM Port

The SDM port is used by the datalogger to communicate with the SDM-SIO4 and other SDM peripherals. The speed at which data is transferred is under the control of the datalogger and this can vary with other activities in the datalogger and also the length of the SDM cables.

Multiple SDM-SIO4s can be connected to the datalogger in parallel. The only difference would be the SDM address of each SDM-SIO4.

Terminal Type:	6-screw type, with the following connections: C1 (data line) C2 (clock line) C3 (synchronous device enable) I/O (special purpose interrupt line) +12V G
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Typical Transfer Rate: One byte per millisecond

Power Requirements

Because of the minimal current drain (0.7 mA quiescent, 40 mA with all four ports active), the SDM-SIO4 is typically powered directly from the datalogger. A supplementary power supply may be required for some applications, especially where more than one SDM is operated by a single datalogger.

Power Supply: Unregulated 12V supply, 9 – 18V DC

Current Consumption: typically 40 mA with all ports active; 0.7mA quiescent (quiescent state entered if there is no SDM or port activity for approx. 30ms)

Operating Environmental Range

Temperature: -25°C to +50°C.

Humidity: 0 - 95% RH (non-condensing)

Physical

Case: Anodised aluminium

Dimensions: 184 x 88 x 34 mm

Mounting: Mounting tabs are provided at each end of the case for vertical/horizontal mounting.

Max. Total Cable Length: 6m (3m for high speed communication)

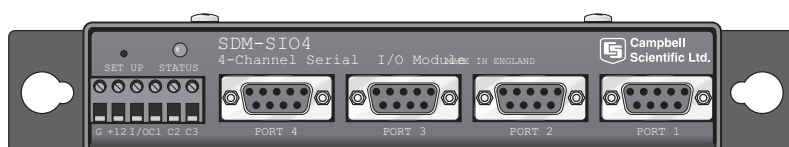
Other Key Features

Internal lithium battery which retains configuration information (estimated life 10 years)

Built-in system watchdog which will reset the processor in the event of a crash caused by transients, etc.

Multi-tasking operating system allowing concurrent transmission and receipt of data on all ports. This allows the receipt and processing of data from all four serial ports concurrently at 9600 baud.

A built-in status LED to give an indication of system function on power-up.



Front view showing the four separately configurable I/O ports