CAMPBELL SCIENTIFIC®

WHEN MEASUREMENTS MATTER

SDM-SIO1A & SDM-SIO4A
Serial Input/Output Modules

1 & 4-Channel Serial Input/Output Modules

Connects to Campbell Scientific dataloggers

Overview

The SDM-SIO1A & SDM-SIO4A modules connect to Campbell Scientific dataloggers using the SDM port and communications protocol.

The SDM-SIO1A & SDM-SIO4A modules are designed to allow expansion of the number of serial ports available on a datalogger or communicating with intelligent sensors or driving external displays. The SDM-SIO4A is functionally very similar to the Campbell Scientific SDM-SIO1A serial module. The SDM-SIO4A contains four SDM-SIO1A modules making this more economical than four separate devices. The SDM-SIO4A also benefits from an overall smaller installation size when compared to four SDM-SIO1As as well as having an internal common SDM bus which reduces the amount of wiring needed.

It connects to a remote serial device using industry standard hardware that can be set to true RS-232, RS-485 or RS-422 signal levels. When operating in RS-232 mode it also supports hardware handshaking. RS-422 mode is functionally the same as RS-485 mode except the connection is limited to a point to point system. Connections and programming for RS-422 are otherwise identical to RS-485.

The SDM-SIO4A will accept four independent serial data streams up to 6143 bytes and store them in each of its buffers. This allows remote equipment to transmit large amounts of data without needing to stop other processes in the datalogger.

Up to 4 SDM-SIO4As (or 15 SDM-SIO1As) can be connected to a single logger using the SDM port, allowing the user to connect 15 different serial devices to their logger with ease. This is in addition to any connections made to the datalogger via other serial ports.

The SDM-SIO4As four serial ports are implemented in such a way as to look identical to the data loggers built in serial ports. They are presented to the logger as a single group of four based on the SDM-SIO4As base address. This allows easier identification of which module each serial port belongs to. The only difference in operation between the SDM-SIO4A and a built-in port is that there will be a small delay when transferring data to and from the device via the SDM connection.

The SDM-SIO1A & SDM-SIO4A can also be used in 'talk-through' mode to allow a user to talk, via the LoggerNet terminal emulator, to a sensor connected to the SDM-SIO1A & SDM-SIO4A for test and diagnostic purposes.

The SDM-SIO1A & SDM-SIO4A are transient and surge protected to IEC61000-4-5 level 4 on the serial port interface avoiding the need for separate transient protection in most applications.

The CABLE5CBL is recommended for connecting the module to the datalogger. A 30 cm cable length should be sufficient when both datalogger and SDM-SIO1A & SDM-SIO4A are housed within an ENC12/14 enclosure; a 60 cm length may be required if the datalogger and SDM-SIO1A & SDM-SIO4A are housed at opposite ends of an ENC16/18 enclosure.

Note: The SDM-SIO1A & SDM-SIO4A do NOT support auto baud rate detection nor the use of the serial port for DNP3 or general PakBus communications.

Benefits and features

- Allows up to 15 additional devices to be connected to a datalogger
- Fully compliant with the RS-232/RS-485/RS-422 standards
- Simple connection to Campbell Scientific dataloggers using the SDM port and communications protocol
- Can collect large amounts of data without hindering other processes within the datalogger
- Supports `talk-through' mode that facilitates testing and diagnostics

- Currently compatible with CR6, CR800/850, CR1000, CR3000, CR5000 and CR9000X dataloggers
- Uses simple CRBasic programs
- Includes transient and surge protection on the serial port interface, eliminating the need for separate transient protection
- Acts as an RS-485 interface for sensors with only a digital output (e.g., sonic and road weather sensor) providing a straight-forward and low power alternative to other RS-485 interfaces

SDM-SIO1A/4A Specifications

Supported data rates	300, 1200, 2400, 4800, 9600, 19200, 38400, 57600, and 115200 bits/s
Supported modes of operation	RS-232 (Full duplex and receive only), RS-485 (Half and full duplex), RS-422 (Half and full duplex). Hardware CTS/RTS flow control is supported in RS-232 mode, the handshaking lines can also be used as general purpose I/O lines.
Supported data format	8, 7 bit data size*; none, odd or even parity; one or two stops bits. * In 7 bit mode with no parity the user must ensure that the characters received by the SDM-SIO1A & SDM-SIO4A have a delay of at least one bit period or greater between them. This does not affect any other configuration and does not affect transmissions out of the SDM-SIO1A & SDM-SIO4A.
Miscellaneous information	• Auto baud rate detection is NOT supported • Use of the serial port for general Pakbus communications is not currently supported
Buffer sizes	• Transmit buffer size: 4 x 767 Bytes (1 x 767*) (Buffer from the logger to the sensor) • Receive buffer size: 4 x 6143 Bytes (1 x 6143*) (Buffer from the sensor to the logger) Both transmit and receive buffers are fill and discard type, i.e. once the buffers become full no new information is accepted and all further data is discarded until space is made when the logger requests data from the SDM-SIO1A & SDM-SIO4A.
Voltage specifications	Power supply +12V connection; 7V minimum; 12V nominal; 30V maximum
Current consumption	Standby current: 110 µA nominal, 400 µA** (500 µA nominal, 1200 µA** max)* Active current: 9.6-11.7 mA (9.6-50 mA)* depending on transmit mode and connections made.
Temperature range	Standard range: -40°C to +70°C (Contact Campbell Scientific Ltd for further extended temperature requirements)
Humidity	Standard range: 0% - 95% (non-condensing)
Physical parameters	**Main body** Height: 64 mm (2.51") Width: 62.5 mm (2.46") (154 mm (6.06")* - excluding mounting tabs Depth: 22 mm (0.86") Mounting holes - two spaced (76 mm (3") / 177.8 mm (7")* apart Optional DIN rail mounting clips are available which can be fitted to the base of the case.
EMC compliance	The SDM-SIO1A & SDM-SIO4A have been tested and shown to comply with IEC 61326. The device incorporates transient and surge protection that is designed to meet IEC61000-4-5, level 4, providing the device is adequately grounded. *applies to SDM-SIO4A **applies at maximum temperatures only.