Campbell SCIENTIFIC

SDM-SIO4A

Four-Channel Serial I/O Module

Serial I/O Expansion for Data Loggers

Overview

The SDM-SIO4A is a serial I/O expansion module for Campbell Scientific data loggers. It is designed to add four additional and individually configurable and addressable RS-232, RS-422, or RS-485 (half- or full-duplex) serial ports to an SDM-capable data logger for the purposes of interfacing with intelligent sensors, actuators, or displays. Up to three SDM-SIO4A modules can be connected to a single data logger SDM port. The SDM-SIO4A channels behave much like a native data logger serial port and use the same familiar serial I/O commands. The SDM-SIO4A is transient and surge protected to IEC61000-4-5 level 4 on the serial port interfaces, avoiding the need for separate transient protection in most applications.

Note: The SDM-SIO4A is not a direct replacement for the SDM-SIO4. The SDM-SIO4A consists of four SDM-SIO1A modules in a single package. Consequently, the SDM-SIO4A is a good replacement for up to four SDM-SIO1 modules or as an alternative to the SDM-SIO1A.

Benefits and Features

- Easy and compact method to add up to 12 additional serial ports to an SDM-capable Campbell Scientific data logger
- Fully compliant with the RS-232, RS-422, and RS-485 (half- and full-duplex) standards
- Can buffer large amounts of serial sensor data between datalogger processing events
- Supports data logger terminal "talk-through" mode, facilitating serial device testing and diagnostics
- Includes transient and surge protection on the serial port interface, eliminating the need for separate transient protection
- Low idle power consumption, which is ideal for battery-powered stations

Detailed Description

The SDM-SIO4A connects to multiple remote serial devices 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, the channel 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 serial data up to 6143 bytes and store it in its buffer. This allows remote equipment to transmit

large amounts of data without needing to stop other processes in the data logger.

Up to three SDM-SIO4A modules can be connected to a single data logger using the SDM port, allowing a user to connect 12 different serial devices to a data logger with ease. This is in addition to any connections made to the data loggers via other serial ports.

The SDM Jumper Wire Kit (pn 32505) connects up to four SDMs to the data logger. This kit is recommended when multiple SDMs are connected to one data logger or for extremely short distances between the SDM and data logger. The CABLE5CBL-L cable is recommended for connecting a single SDM to the data logger, and for longer distances between the SDM and data logger.

Specifications

Function	Expands the number of serial devices that can communicate with a data logger.
Number of Channels	4
Supported Data Rates	300, 1200, 2400, 4800, 9600, 19200, 38400, 57600, and 115200 bits/s
Supported Modes of Operation	❱ RS-422 (half and full duplex) ❱ RS-485 (half and full duplex) ❱ RS-232 (full duplex and receive only) ❱ 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	❱ In 7 bit mode with no parity, the user must ensure that the characters received by the 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-SIO4A. ❱ 8, 7 bit data size; none, odd, or even parity; one or two stops bits
Auto Baud Rate Detection	Auto baud rate detection is NOT supported.
PakBus Communications	Use of the serial port for general PakBus communications is not currently supported.
Voltage	❱ 30 V (maximum) ❱ 7 V (minimum) ❱ Power supply +12 V connection ❱ 12 V (nominal)
Operating Temperature	-40° to +70°C (standard)
Humidity	0% to 95% (non-condensing) standard
Mounting Holes	Two spaced 17.78 cm (7 in.) apart
Mounting Clips	Optional DIN rail mounting clips are available, which can be fitted to the base of the case.
EMC Compliance	The SDM-SIO4A has 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.
Dimensions	6.4 x 15.45 x 2.2 cm (2.51 x 6.09 x 0.86 in.) excluding mounting tabs

Buffer Sizes

-NOTE-	*Both transmit and receive buffers are fill and discard type. That is, after the buffers become full, no new information is accepted, and all further data is discarded until space is made when the data logger requests data from the SDM-SIO4A.*
Transmit Buffer Size	767 bytes (buffer from the data logger to the sensor)
Receive Buffer Size	6143 bytes (buffer from the sensor to the data logger)

Current Consumption

Active Current	9.6 to 11.7 mA (depending on transmit mode and connections made)
Standby Current	❱ 500 µA nominal, 1200 µA (applies at max temperatures only) ❱ 110 µA nominal, 400 µA (applies at max temperatures only)

For comprehensive details, visit: www.campbellsci.com/sdm-sio4a

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