

# INSTRUCTION MANUAL



## SC32B Optically Isolated RS-232 Interface

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# SC32B Optically Isolated RS-232 Interface

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## 1. Function



FIGURE 1-1. SC32B Optically Isolated RS-232 Interface

The SC32B interfaces an RS-232 peripheral, commonly a computer or terminal, to the CS I/O port of a Campbell Scientific datalogger. The SC32B has the same functions as the SC32A. Functions include:

1. Converting datalogger logic levels to RS-232 logic levels.
2. Optically isolating the datalogger and the RS-232 peripheral. Optical isolation separates the SC32B into a datalogger section and an RS-232 section. Signals entering from either side are electrically independent, protecting against ground loops, normal static discharge, and noise.
3. Passing data when modem enable pin 5 is high and SDE/printer enable pin 6 is low (normal telecommunications mode).

The SC32B blocks data sent out the datalogger CS I/O port when the SDE/print enable pin 6 is high. This prevents data sent to an SDE device (for example, storage module) or printer output from being sent out the RS-232 port. The SC32B cannot be configured to pass Instruction 96 serial printer or computer data. Contact Campbell Scientific if this capability is required.

## 2. Specifications

|                               |   |
|-------------------------------|---|
| <b>Operating Temperature:</b> | -25° to +50°C (typical)                                     |
| <b>Power:</b>                 | Powered by datalogger; see Section 4, <i>Operation</i>      |
| <b>Ports:</b>                 | 9 pin female RS-232 configured as DCE.<br>9 pin male CS I/O |
| <b>Baud Rate:</b>             | 1200 bps to 115.2 kbps; see Section 4, <i>Operation</i>     |
| <b>Size:</b>                  | 4.1 x 2.3 x 7.6 cm (1.6 x 0.9 x 3 in)                       |
| <b>Weight:</b>                | 45.4 g (1.6 oz)   |

## 3. Connector Descriptions

| TABLE 3-1. SC32B Connector Descriptions |     |               |                                |     |               |
|---|-----|---------------|--------------------------------|-----|---------------|
| RS-232<br>9 Pin Female Connector        |     |               | CS I/O<br>9 Pin Male Connector |     |               |
| Pin #                                   | I/O | Description   | Pin #                          | I/O | Description   |
| 1                                       | Out | DCD           | 1                              | In  | +5 V          |
| 2                                       | Out | RXD           | 2                              |     | Ground        |
| 3                                       | In  | TXD           | 3                              | Out | Ring          |
| 4                                       | In  | DTR           | 4                              | Out | RX            |
| 5                                       |     | Ground        | 5                              | In  | ME            |
| 6                                       | Out | DSR           | 6                              | In  | PE (SDE)      |
| 7                                       | In  | RTS           | 7                              |     | No Connection |
| 8                                       | Out | CTS           | 8                              |     | No Connection |
| 9                                       |     | No Connection | 9                              | In  | TX            |

### 3.1 RS-232

The DB9 RS-232 port is configured as Data Communications Equipment (DCE) for direct cable connection to Data Terminal Equipment (DTE). Most computers are configured as DTE. For connection to DCE devices such as modems, the SC932 or SC932A should be used in place of the SC32B.

### 3.2 9 Pin

The CS I/O port connects to the datalogger through the SC12 Two Peripheral Cable supplied with the SC32B. Pin descriptions and direction (Input/Output) are given in TABLE 3-1.



## 4. Operation

Power for the SC32B datalogger section comes from the 5 V supply on pin 1 of the datalogger CS I/O. Communication logic levels to and from the datalogger are referenced to this voltage, ranging from 0 to slightly less than 5 V.

Power for the RS-232 section is isolated from the datalogger 5 V supply via a transformer/isolator. An on-board DC to DC converter supplies the negative voltage required for RS-232 signals.

When the SC32B first receives a character from the RS-232 peripheral (pin 3), 5 V is applied to the datalogger Ring line (pin 3) until the datalogger Modem Enable (ME) goes high, putting the datalogger into the Telecommunications Mode.

The SC32B does not perform baud rate translation. The data speed going out will match the data speed coming in. If you are having trouble communicating, check that the datalogger's CS I/O ME baud rate matches that being used by the computer/*LoggerNet*. When other devices are also connected to the datalogger's CS I/O port, it may be necessary to lower the baud rate used for the SC32B. If you encounter communication issues, consider starting at 9600. If communication is successful, you can increase the baud rate until communication problems return.

## 5. Application

The SC32B provides a direct interface between the CS I/O port on a Campbell Scientific datalogger and the RS-232 port on a computer. Some Campbell Scientific dataloggers (for example, the CR23X and CR5000) have a built-in RS-232 port in addition to the CS I/O port. With these dataloggers, the SC32B is only necessary if you wish to connect to the CS I/O port instead of the RS-232 port.

The SC32B blocks data sent out the CS I/O port when the datalogger sets the printer enable/SDE (pin 6) high. The SC932 or SC932A (CS I/O to RS-232 DTE interface) can be used to interface to an RS-232 modem.





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