SCM9B-D192
USERS MANUAL

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Dataforth Corporation

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WARRANTY

DATAFORTH warrants each SCM9B-D192 series module to be free from defects in materials and workmanship under normal conditions of use and service and will replace any component found to be defective, on its return to DATAFORTH, transportation charges prepaid within one year of its original purchase. DATAFORTH assumes no liability, expressed or implied, beyond its obligation to replace any component involved. Such warranty is in lieu of all other warranties expressed or implied.

RETURNS

When returning products for any reason, contact the factory and request a Return Authorization Number and shipping instructions. Write the Return Authorization Number on the outside of the shipping box. DATAFORTH strongly recommends that you insure the product for value prior to shipping. Items should not be returned collect, as they will not be accepted.

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GENERAL DESCRIPTION

The RS-485 communications standard is recommended when many modules, or other addressable devices, must be connected to a host computer over long distances. The SCM9B-D192 repeaters allow communications bus lengths up to 4,000 feet and baud rates up to 115K baud using one twisted pair of wires. The SCM9B-D192 is an RS-485 repeater. Repeaters are required to extend communications bus lengths or allow more than 32 RS-485 devices to be connected to a communications bus. A repeater simply re-amplifies, or boosts, existing RS-485 signals transmitted over long distances.

The SCM9B-D192 is isolated between input and output ports and requires a regulated +5Vdc power supply.

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SPECIFICATIONS

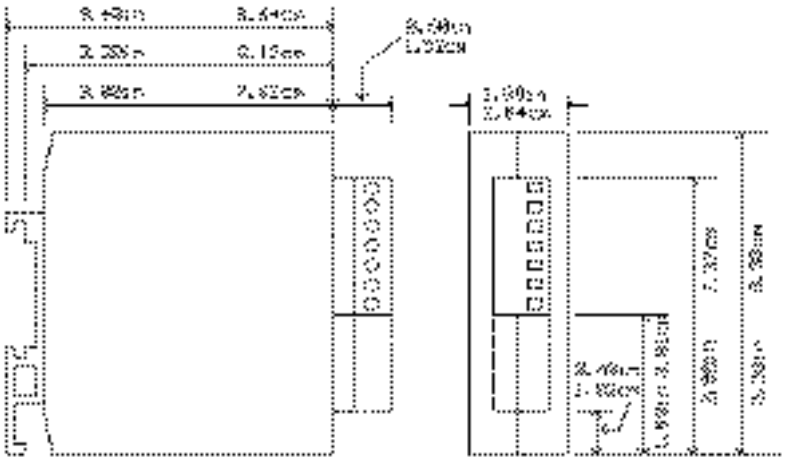
Max common mode voltage: 500Vrms, 60s duration.
Baud rates: 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 (Dip -switch selectable).
Temperature range (operating & storage): -25 to +70°C.
Relative humidity: 0 - 95% noncondensing.
Warranty: 3 years on workmanship and materials.

Power Specifications

Power requirements: Regulated +5Vdc.
Power consumption: 1.0W Max (RS-485 driver on).

MECHANICALS AND DIMENSIONS

Case: ABS case with screw terminal barrier plug (supplied.
RS-485 Connectors: Phoenix screw terminal barrier plug (supplied). Replace with Phoenix MSTB 2.5/4 ST 5.08 or equivalent. Warranty: 3 years on workmanship and materials.



An RS-485 repeater is necessary to extend the length of an RS-485 network, or connect more than 32 RS-485 devices on an RS-485 network.

The SCM9B-D192 repeater contains a seven-pin screw terminal plug. The pin designations are located on the label of each module. The screw terminals will accept up to #14 gauge wire (AWG). This connector is used for +5.0Vdc regulated power supply input and both pairs of RS-485 data lines. The isolated RS-485 input data lines are clearly marked and their ground reference is isolated by up to 500VRMS from the power supply ground. The isolated RS-485 input data lines should be attached to the end of an existing RS-485 network. The serial data received on the isolated RS-485 input data lines will be re-amplified and retransmitted on the RS-485 OUT data lines.

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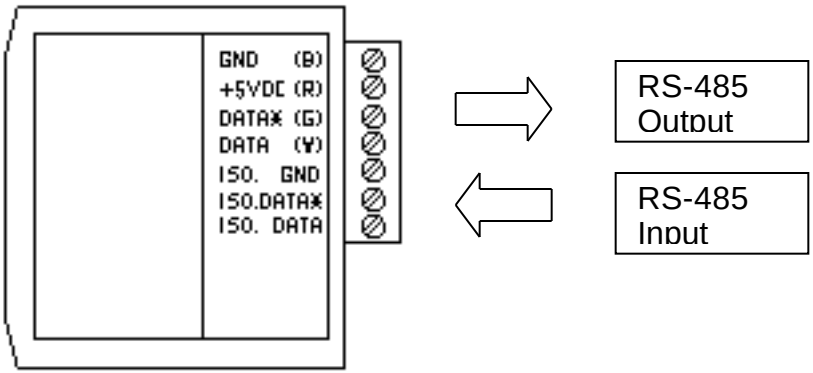


Figure 1 Connections for SCM9B-D192.

BAUD RATE

The SCM9B-D192 contains a 10-position DIP switch located on the bottom of each unit. The DIP switch is used to select the correct communications baud rate and must be set to the same value as the devices connected to the RS-485 data lines. Each position on the DIP switch is labeled from 1 to 10. Switch position 1 selects 300 baud. Switch positions 2 thru 9 select standard baud rates from 600 to 57.6K respectively. Switch position10 selects 115.2K baud rate. Only one baud rate switch may be turned on (up position) at one time for proper operation.

RS-485 TERMINATIONS

The proper termination techniques for any RS-485 system require two biasing resistors and two termination resistors. The 1kΩ biasing resistors are connected from the DATA line to +5Vdc and from the DATA* line to

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ground. The biasing resistors and are normally positioned at the HOST end of the cable. The RS-485 standard also requires two resistors across the data lines for proper termination. Two 220Ω resistors should be connected between the DATA and DATA* lines. The resistors should be placed at each end of the RS-485 cable. Please refer to Figure 2 for a typical RS-485 system application.

The SCM9B-D192 contains the biasing and termination resistors necessary to interface any equipment on an RS-485 network. These resistors are jumper-selectable making it easier to interface the SCM9B-D192 to other pieces of equipment that may or may not contain the biasing and/or termination resistors.

RS-485 TERMINATION & BIASING SETTINGS

Proper termination and biasing of any RS-485 based system can be performed by properly enabling the correct resistors inside each SCM9B-D192. Figures 2.0 shows the location of the jumpers on the printed circuit board. The jumpers are shown in their factory set locations to enable the selected resistors. Insert or remove the jumpers as required to properly terminate any RS-485 system.

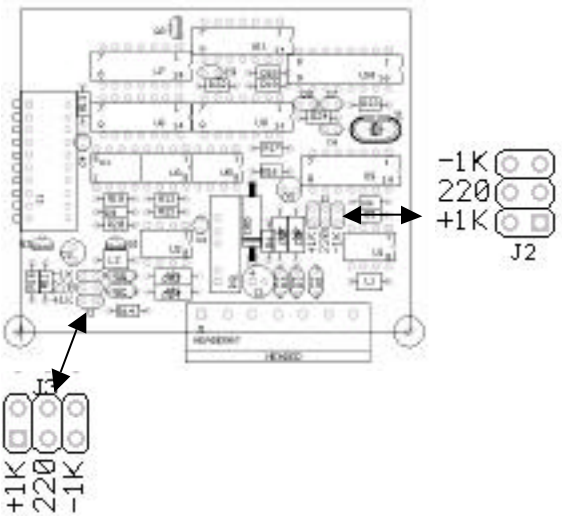


FIGURE 2. SCM9B-D192 jumper locations.

FACTORY RS-485 TERMINATION SETTINGS

Each SCM9B-D192 contains internal pin strips for enabling the internal termination and biasing resistors. Each pc board is clearly marked with the jumper designators adjacent to each row of pins. The jumper designators are +1K, 220 and -1K. To enable any resistor, place a jumper over the pins next to the required designator. The factory switch and jumper settings are outlined below.

SCM9B-D192:

Baud Rate: 300 baud switch up.

RS-485 (J3): Biasing Resistors: +1K, -1K jumpers installed.
Termination Resistor: 220 jumper installed.

Isolated RS-485 (J2): Biasing Resistors: +1K, -1K jumpers installed.
Termination Resistor: 220 jumper not installed.

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