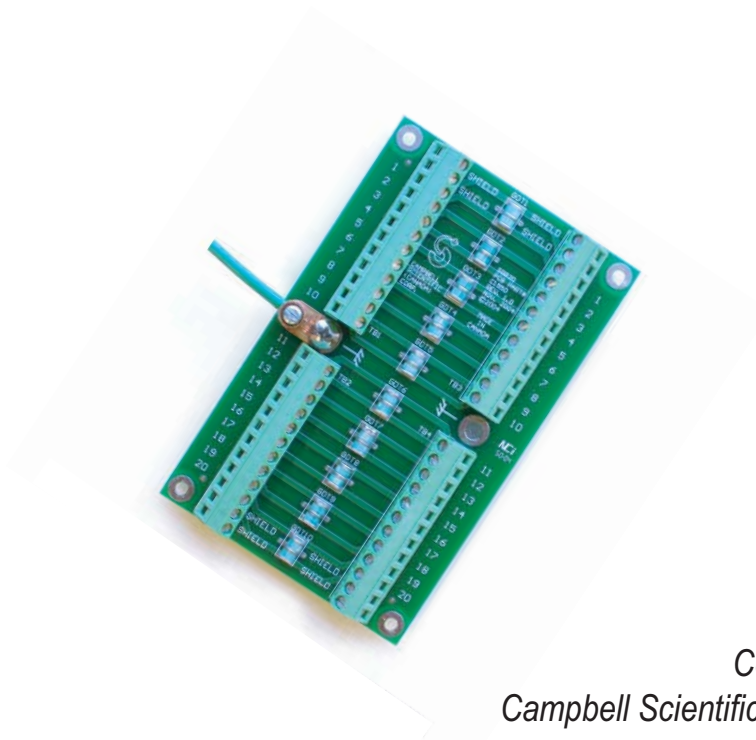


INSTRUCTION MANUAL



SGB20(D) **Transient Protection System**

June 2008



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SGB20(D) Transient Protection System

1. Overview

The SGB20 and SGB20D provide transient protection for up to 20 conductors. The SGB20D model differs in that it includes detachable terminals. See Appendix A for pictures of the SGB20D.

NOTE: SGB20 will be used to refer to both models throughout the manual unless otherwise specified.

Typically, the SGB20 is placed in-line between environmental sensors and a Campbell Scientific datalogger. As a result, the SGB20 enhances the datalogger's built-in surge protection and provides additional defence against transients.

The SGB20 is designed to be mounted inside the ENC SGB Enclosure (10" x 12" enclosure with a custom back plate). Two SGB20 boards can be mounted inside of one ENC SGB enclosure. The SGB20 can also be mounted in one of Campbell Scientific's standard enclosures using the C1988 mounting kit.

1.1 Physical Dimensions

Length: 5.4 inches

Width: 3.4 inches

Height: 0.7 inches

The mounting holes of the SGB20 are spaced 3 inches apart horizontally, and 5 inches apart vertically.

1.2 Specifications

| | |
|----------------------------|---------------|
| Maximum Operating Voltage: | 70 V |
| Maximum Operating Current: | 5 A |
| Sparkover Voltage: | 90 V |
| Capacitance (at 1MHz): | < 2pF |
| Operating Temperature: | -55 to +85 °C |

NOTE: Equipment connected to the SGB20 should be limited to Class 2 Circuits as defined by the Canadian Electrical Code, Part I, C22.1.

Transient protection is provided by 10 Bourns Gas Discharge Tubes (GDTs). The GDTs prevent damage by creating a short-to-ground circuit during transient surges. When a surge exceeds the sparkover voltage of 90V, the GDTs become ionized and short the transient to ground. After the surge passes, the GDTs return to their normal high-impedance state.

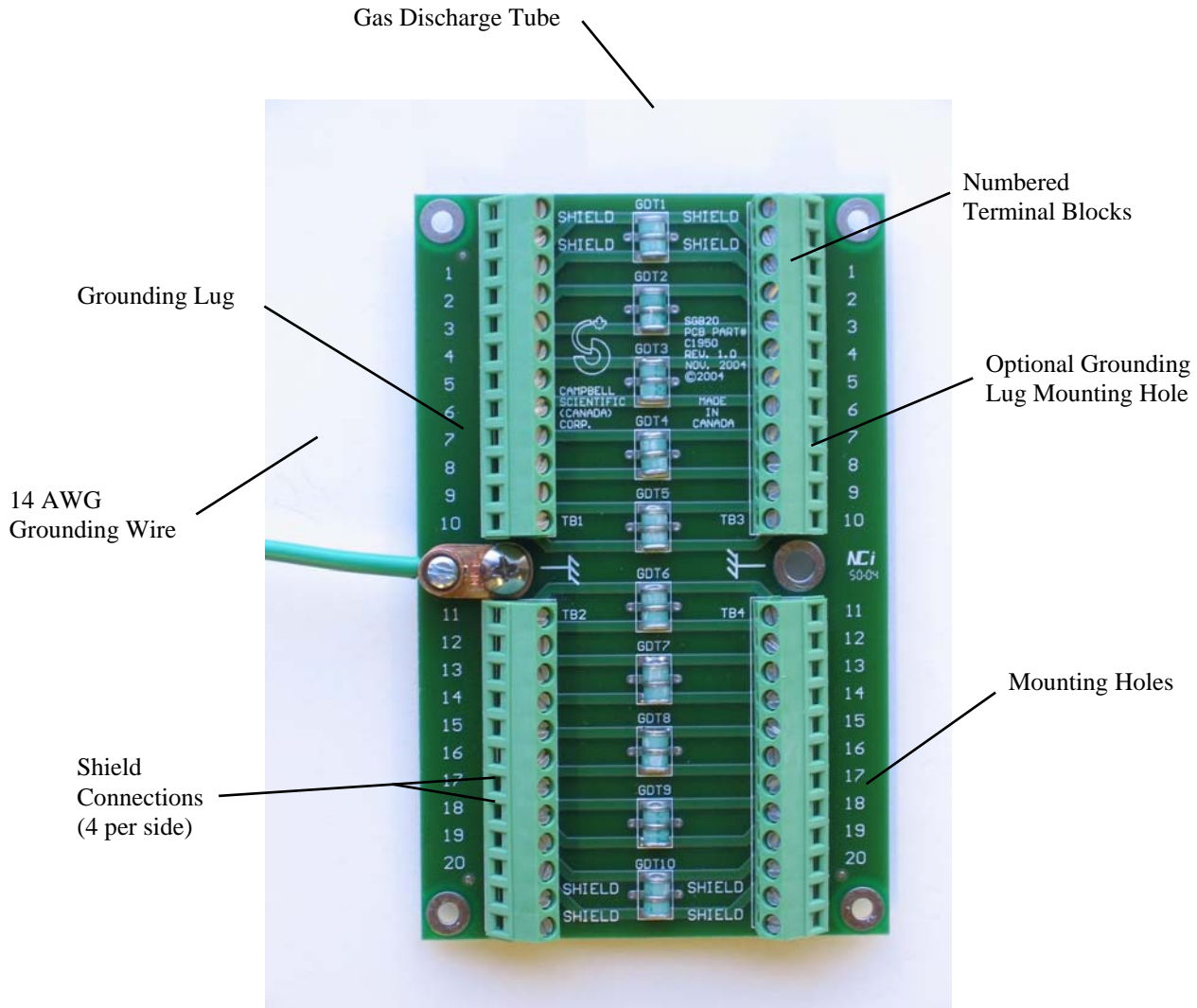


FIGURE 1. SGB20

2. Installation

2.1 Mounting the SGB20 into an ENC SGB

The ENC SGB is designed to hold two SGB20 transient suppression boards and includes a custom back plate. All necessary mounting hardware is provided with the ENC SGB. Simply place the SGB20 boards on top of the threaded spacers, place the lock washers on top of the SGB20 mounting holes, and secure the SGB20 with the provided screws.

2.2 Mounting the SGB20 into a Campbell Scientific Enclosure

The SGB20 can also be mounted into a Campbell Scientific enclosure with a standard back plate. The standard backplate is punched with a grid of one-inch-on-centre holes. The C1988 Mounting Kit is required to mount the SGB20 onto the backplate.

Insert the nylon grommets provided with the C1988 mounting kit into four of the square mounting plate holes. The nylon grommets should form the corners of a rectangle with dimensions of 3" x 5". The SGB20 may be mounted horizontally or vertically.

Insert and tighten the threaded spacers into the nylon grommets. Place the SGB20 on top of the spacers, and the lock washers on top of the mounting holes. Secure the SGB20 to the spacers using the provided screws.

2.3 Grounding Connections

The SGB20 includes an 18" green 14 AWG ground wire for connection to the grounding chuck in Campbell Scientific enclosures. Remove the top nut on the ground chuck and place the ring end of the ground wire on the chuck. Replace the top nut. Ground the enclosure to earth ground using 14 AWG or larger braided copper wire.

The grounding lug and grounding wire can be moved from one side of the SGB20 to the other. This may facilitate wiring in certain situations. Only one ground connection per SGB20 board should be made.

2.4 Attaching Sensors to the SGB20

To connect signal or excitation leads to the SGB20, insert the bare end of one lead into a terminal on a given side of the SGB20. Take note of the number that is beside the terminal. On the opposite side of the SGB20, locate the same terminal number and run a short length of wire from the SGB20 terminal to the appropriate datalogger terminal. This short length of wire should be of the same gauge and insulation type as the sensor leads provided by the manufacturer.

Shield leads should be connected to the labelled shield terminals, which are located at the top and bottom of the terminal blocks. There are four shield terminals per side. If possible, limit the number of shield connections to three per terminal.

3. Maintenance

3.1 Replacement Considerations

When an electrical surge occurs, the surge protectors involved may need to be replaced. If one or more of the GDTs have become damaged, they will remain in a short-to-ground state. To check that each GDT is operational, first disconnect all equipment wired to the SGB20. Then obtain a multimeter and set it to measure resistance. Firmly place one of the test leads on the ground lug, ensuring that a solid electrical connection

is made. Then place the other test lead inside one of the numbered terminals. The multimeter should obtain a reading of infinite resistance (or an open circuit depending on the style of multimeter). If any other resistance reading is obtained, the SGB20 should be replaced. Repeat the process for all of the numbered terminals.

Appendix A – SGB20D

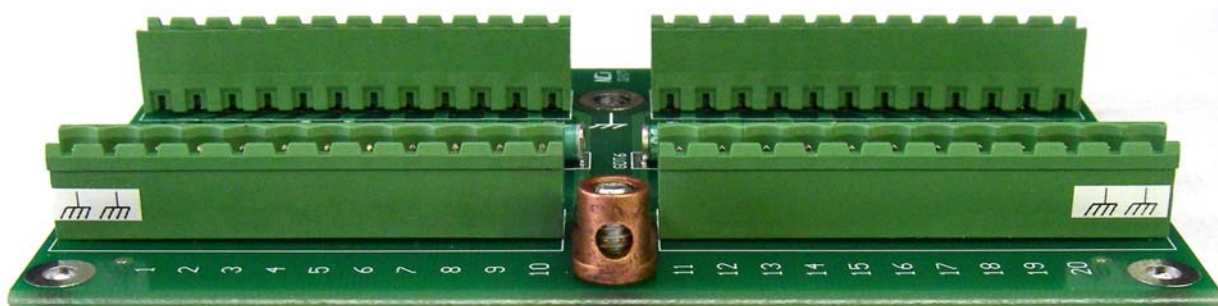


Figure 1: SGB20D without terminal block

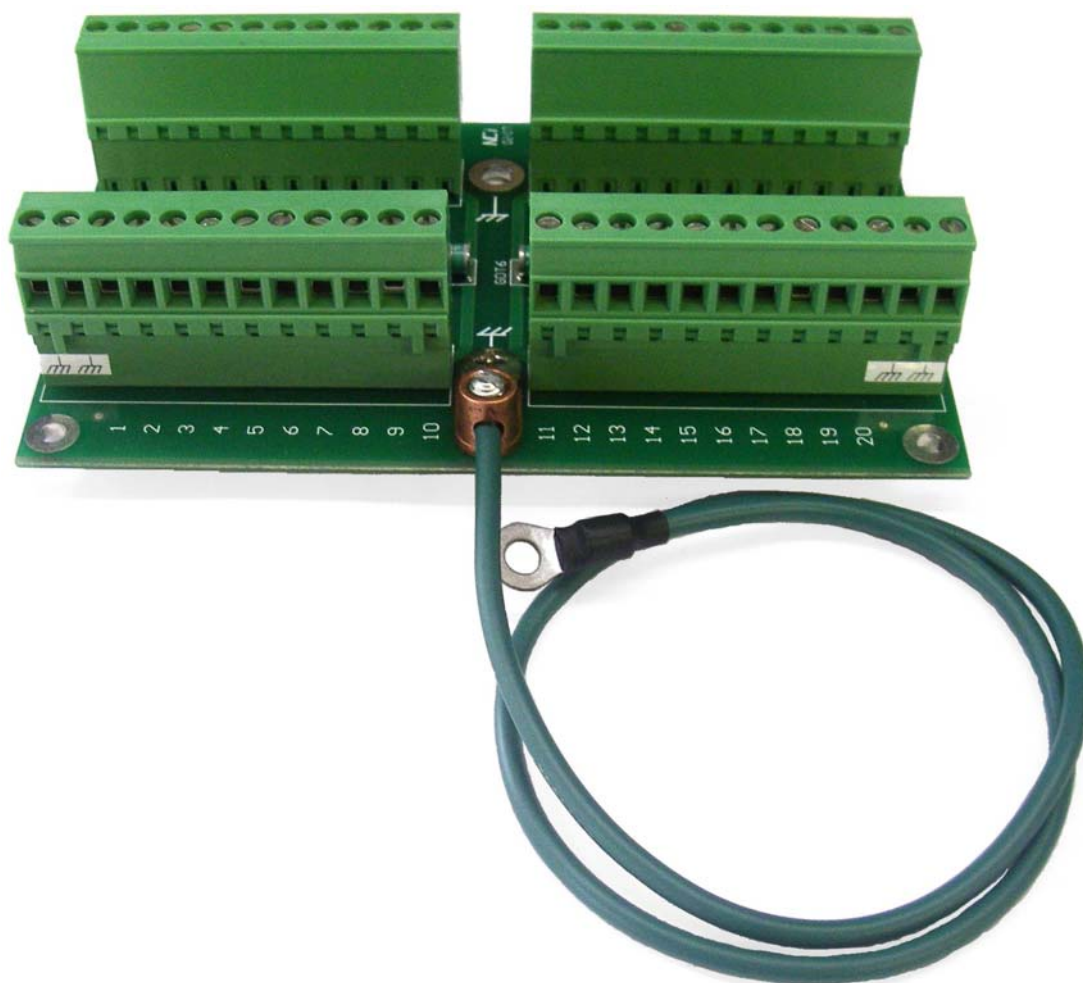


Figure 2: SGB20D with terminal block

SGB20 WIRING DIAGRAM

Company: _____
Project: _____
Prepared By: _____

Notes:

