# 0.11  Campbell SR50 Sonic Snow Depth Gauge
## *Quick Reference*

*Description*

The SR50 sensor is an intelligent sensor which uses a 50kHz electrostatic transducer to measure distance.  An internal microprocessor can be programmed to filter the data in order to obtain higher quality output.

The output of the sensor is an SDI-12 serial message, with measurement data in meters.  The reading must be corrected for air temperature by the following equation:

$$\text{Distance} = \text{Reading} * \text{sqrt}(\ T(degK)/273.15)$$

On the PAM GAME station this is done in EVE using the temperature from TRH probe 1.  In the CR10X program supplied to GAME the instrument uses SDI-12 instruction 8.  If the ground or snow base is not found, the instrument will return a 0.

*Specifications*

| | |
|---|---|
| Power Input: | 9-16VDC |
| Power Consumption: | 2mA (quiescent) |
| | 250 mA (measurement peak) |
| Measurement Time: | .6 sec to 3 seconds max |
| Viewing Angle: | 22 degrees |
| Output: | SDI-12 or Pulse Train |
| | SDI-12 data is in meters or feet |
| Range: | 0.5 to 10 meters |
| Accuracy: | +/- 1 cm or 0.4% of reading |

*SDI-12 Commands (Partial List)*

| CR10- P105 Parameter 2 | Function | Output |
|---|---|---|
| 0 | First Target | D1 |
| 8 | First Target no retries | D1 |

*Installation*

The sensor should be mounted on a sturdy platform.  Vibrations can reduce the accuracy of the reading.  The sensor should be mounted perpendicular to the surface, and as close to it as possible, but at least 0.5 meters away.  Once the sensor is attached and running, a manual measurement should be done to ensure the output accuracy.

*Wiring*

| Color | Function | Connector Pin | Logger |
|-------|----------|---------------|--------|
| ==== | ====== | ========== | ===== |
| Black | ground | 1 | ground |
| Red | +12V | 2 | +12V |
| Green | SDI-12 bus | 4 | control port |
| White | ground | 3 | ground |
| Clear | shield | 5 | ground |

The sensor should be connected to the CR10X box to the SNOW depth port.


*Maintenance*

Dessicant in the sensor should be replaced yearly, or more often if the sensor is used in a humid environment.  See the SR50 manual for information on disassembling the sensor to replace the dessicant.