

SCAD S2R-quad Manual

Revision 1.1

Description

The SCAD S2R-quad converts analog outputs from up to four SCAD external or internal sensors to a variable resistance output ranging from 240 Ohms (empty) to 85 Ohms (full). This output is intended to be used with digital vessel or vehicle monitoring systems and switching systems that have tank monitoring inputs for resistance type float sensors. The SCAD S2R-quad provides SCAD sensors with the necessary regulated voltage and timing for proper operation. The calibration of SCAD sensors is performed automatically by the S2R and data is retained when power is removed.

Warning: *The SCAD S2R-quad should not be used with analog gauges because the voltages are significantly higher than digital systems and will damage the S2R-quad.*

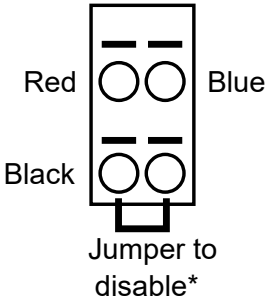
Installation

The S2R should be mounted close to the tank sensor inputs of the digital monitoring system. Leave enough room to insert and remove the connector plugs.

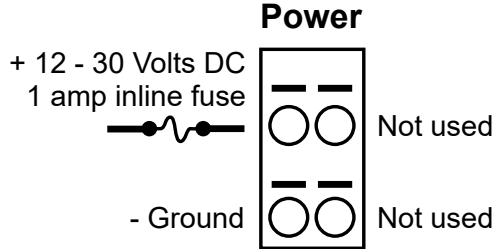
Wiring

Removable spring loaded terminal plugs are included for all sockets on the S2R. It is easier to insert wires into the plugs while removed from the sockets. Strip wires to approximately 3/8 inch (10mm). Using a small flat blade screwdriver, depress the orange tab above the terminal hole and insert the stripped wire, then release the orange tab. Pull gently on the wire to ensure the wire is secure.

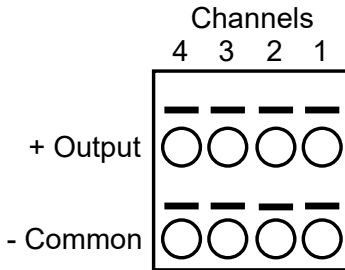
SCAD Sensor Inputs



* **Note:** If a sensor input channel will not be used, a jumper wire must be connected across the bottom two terminals and inserted into the unused channel socket.



Resistance Output



Connecting to Digital Monitoring / Switching System

On the digital system, there will be either two input terminals for each sensor or one terminal for each sensor and a common terminal. Refer to your system manual to determine their location. For example, on a Victron Cerbo GX the top row is the resistor inputs and the bottom row is common. Keep the wiring between the S2R and the digital monitoring system as short as possible to minimize resistance from the connecting wires.

Operation

SCAD Sensor Calibration

Once power is applied to the S2R, it will attempt to calibrate all channels that have a sensor connected. Calibration occurs automatically starting at any tank fluid level. Calibration will complete after sensing one empty tank level for ten minutes and one full level for ten minutes in any order. A red LED next to the channel will blink until the calibration is complete. Calibration settings are retained if power is removed. Tank shape compensation and alarm set points can be set on your digital monitoring system.

Inserting a jumped plug in an unused sensor input channels, as illustrated above, will erase previous tank level calibrations. If you want to restart the calibration process on a sensor channel, insert a jumped plug for ten seconds, then start the calibration process over with an inserted plug that has a sensor wired to it and the jumper removed.

Digital Monitor Setup

Please refer to your digital monitor manual for instructions on setting resistance values for full and empty, tank shape compensation and alarm set points.

Resistance settings

A calibrated S2R channel will have a resistance range from approximately 240 Ohms for an empty tank to 85 Ohms for full. Initially set the resistance values of empty and full to those values. Tank level readings may be fine tuned by adjusting the full or empty resistance settings in the digital monitoring system. For example, if the digital monitor shows a level of 2% when the tank is empty, raise the empty setting by an Ohm to 86 Ohms. Repeat until the digital monitor shows 0%. Be aware that some digital monitors respond slowly so allow time for any setting change to take effect.

Error Codes

Each channel has a red LED light to the right of the input socket to indicate an error condition. The LEDs will flash one or three times as follows, and then turn off for 3 seconds and repeat:

One Blink: Calibration Incomplete – This is normal until the calibration cycle is complete.

Three Blinks: Sensor Over-voltage – This can be caused by a conductive object bridging the aluminum tank sensor strips, shorted white sensor wires, or miswiring of the sensor.

Each channel also has a blue LED to the left of the socket, which will flash when the channel is measuring tank levels.