

# QUADCAL LOOP CALIBRATOR OPERATOR INSTRUCTION MANUAL



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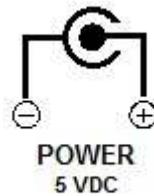
The Sigma Controls Quadcal calibrator is designed to generate (simulate) 4 isolated channels of 4/20MA signals sink/source and read 4 Channels (sink) of 4/20MA inputs that share a common return but are isolated from the 4 outputs. The inputs are protected from accidental over currents by means of resettable fuses and polarity protection and clamp diodes.

The display resolution is for 2 digits after the decimal point for both the inputs and outputs.

DC power connection.

The unit is powered by a 5 VDC 1A “plug in” power supply or USB connection. The barrel jack supply connection is on the top of the unit.

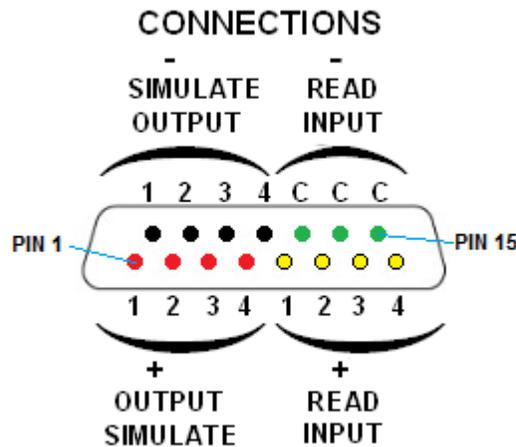
Note: The center pin on the connector must be the positive (+) of the DC supply.



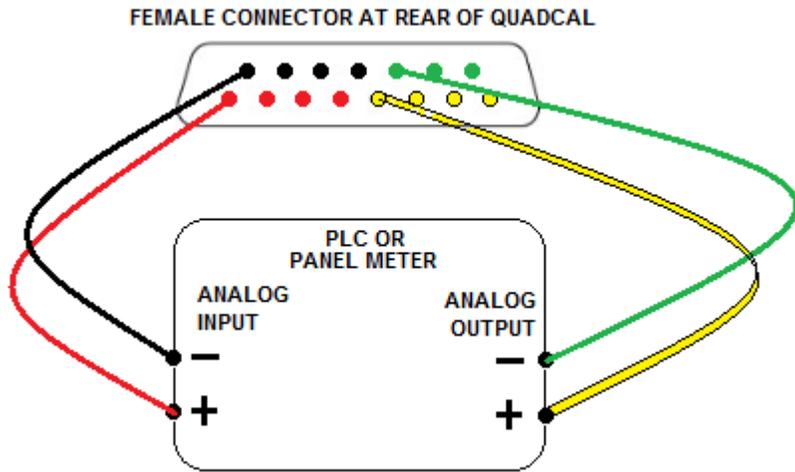
USB Data connection. For future use.



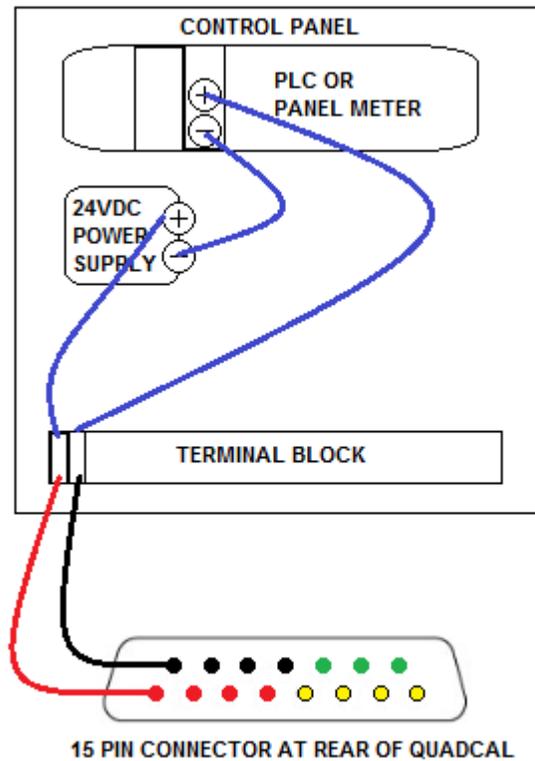
Test Lead connections



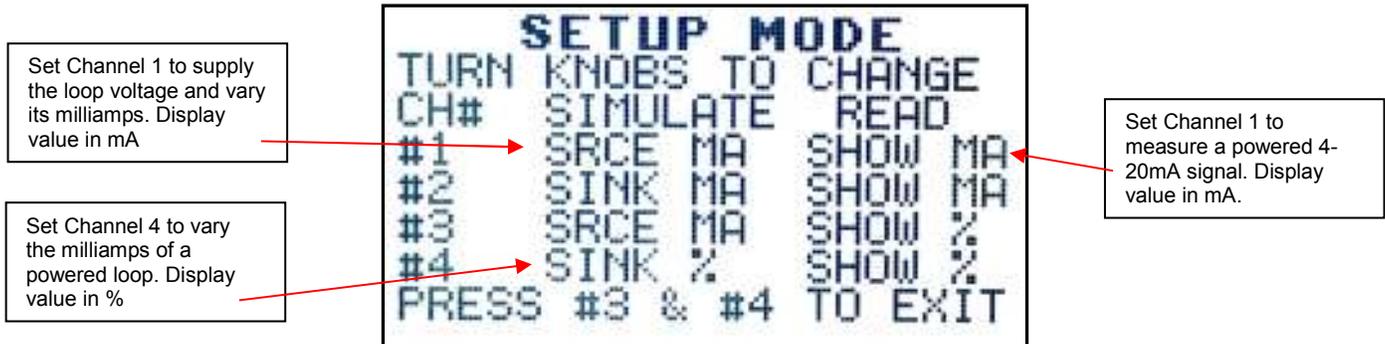
Test Lead connections Example 1: Simulating the signal to a non-powered 4-20mA input using Channel 1. Channel must be in the SOURCE mode. While reading the powered 4-20mA analog output from a device on Channel 1 READ display



Test Lead connections Example 2: Simulating the signal to a powered sensor input on Channel 1. Channel must be in the SINK mode.

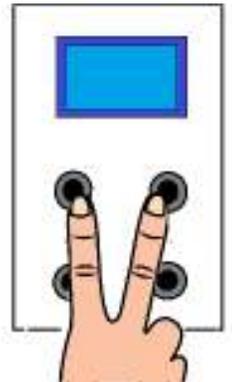


## SETUP MODE:



When power is first applied, a “splash screen” is displayed which shows its model name, copyright information, the current loaded software versions, and the date and time according to its internal clock.

Following the introductory screen comes the “Setup Screen” which allows for operating parameter selection. It allows you to set if an output channel is in source (power supplied internally for the loop) or sink mode (emulating a 4/20MA loop powered device). It also allows you to select the display mode for the (output) channel (MA or %), and the display mode for the corresponding input channel (MA or %). This is accomplished by turning the corresponding knob for that channel pair until the correct selection is shown. The possible choices for each channel are: SRCE MA – SHOW MA, SRCE % - SHOW MA, SRCE MA – SHOW %, SINK MA – SHOW MA, SINK % - SHOW MA, SINK MA – SHOW % and SINK % - SHOW %. These choices are independent for each of the channel pairs. Setup mode can also be entered by pressing the 1 and 2 keys at the same time.



When the selections are correct for your application, press the ‘3’ and ‘4’ knobs at the same time to save the settings. The unit will remember your setting when you apply power to the unit the next time.

## OPERATING MODE:

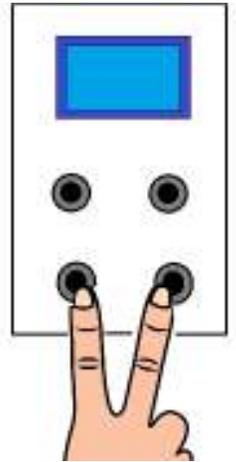
OPERATING MODE		
#	SIMULATE	READ
1	† 12.00mA	8.64mA
2	† 10.75%	26.56%
3	† 8.25mA	30.12%
4	† 29.00%	30.62%

The “Operating Mode” follows the “Setup” screen.

The display shows the status of the four sets of outputs (simulate) and inputs (read).

In front of each of the simulate output readings will be either an up arrow or a down arrow. The up arrow indicates the Quadcal is sourcing the current for that loop, and the down arrow indicates the Quadcal is just sinking current for that loop. Next is the reading that loop is set to and then the display mode (MA or %). If the loop is not connected or is set up as “sinking” when it should be ‘sourcing”, the reading will be “Open”, instead of the setting for that loop.

The right side of the display for that loop pair will show either the current sensed in that input loop, or the percent of the 4/20 reading (%) associated with that current loop. If the reading is non-existent due to the loop being open, or much below 3.5MA, the display will show “OPEN” instead of a current/percentage reading.



If you need to change the operating mode for the unit, pressing the ‘1’ & ‘2’ knobs at the same time will return the Quadcal to the “SETUP MODE”.

#### CHANGING AN OUTPUT CURRENT OR PERCENTAGE:

There are several ways of changing the current output of a channel:

Turning the knob of the channel one ‘click’ will change the current setting by either 0.25MA or .25%, depending on the output mode selected for that channel.

Pressing the knob down and turning it while pressed down will change the current setting by either 0.01MA or 0.01%, depending on the output mode for that channel.

Pressing and releasing the knob without turning it will cause the channels output to step between the current reading and one of three presets (see PRESETS ADJUST) for the channel.

The initial presets are 4MA, 12MA and 20MA or 0%, 50% and 100%, depending on the operating mode selected for that channel.

#### PRESETS ADJUST:

This mode is entered from the OPERATING MODE by pressing both the ‘1’ & ‘3’ knobs at the same time.

In this mode, knob '1' is used to select the channel (1-4) to select for changing presets, knob '2' is used to select which preset (1-3), knob '3' is used to change the preset, and knob '4' is used to store the change. If you do not press and release knob '4', the value for that channel/preset will NOT be changed. Note that there are 6 presets stored for each output channel: 3 for MA mode, and 3 for percent (%) mode operation, and the presets for each channel are selected based on the operating mode for that channel.

As in OPERATING MODE, pressing knob '3' while turning will allow changing of the preset in 0.01MA or 0.01% steps, instead of 0.25MA or 0.25% steps.

To exit back to OPERATING MODE, press both knobs '3' and '4' at the same time.

These settings are also remembered by the unit.

## **DISPLAY ADJUST:**

This mode lets you adjust the display contrast and back light brightness.

To enter the mode from the OPERATING MODE, press both the '2' and '4' knobs at the same time.

Turn knob '1' to adjust the contrast of the display and knob '2' to adjust the back light brightness.

Press knobs '3' and '4' at the same time to return to OPERATING MODE.

These settings are also remembered by the unit.

## **DATE/TIME ADJUST:**

This mode is primarily for future expansion when software upgrades will allow the Quadcal to do data logging and/or run 'canned' test sequences along with the data logging.

The date/time are stored in a battery backed clock chip in the Quadcal.

To enter the mode, press the '1' and '4' knobs at the same time.

Use knob '1' to select the date/time settings to change – they are indicated by the underlining of the digits that are to be changed.

Use knob '2' to change the value of the displayed date/time information.

Press knobs '3' and '4' at the same time to return to OPERATING MODE.



## WARRANTY

All Sigma Controls, Inc. products are warranted to be free from defective materials and workmanship for one (1) year from date of shipment. Sigma reserves the right to repair or replace at its option any product found to be defective. In no event shall Sigma Controls, Inc. be liable for any consequential, incidental, or special damages and the limit of its liability shall not exceed the purchase price of the supplied equipment.

**\*\*\*\*IMPORTANT\*\*\*\***

**SENSORS AND CABLE THAT HAVE BEEN USED IN WASTE WATER OR HAZARDOUS LIQUIDS MUST BE THOROUGHLY CLEANED BEFORE RETURNING. UNITS RETURNED UNCLEANED WILL BE CONSIDERED UNREPAIRABLE AND RETURNED TO SENDER OR DISCARDED. NOTE: DO NOT SUBMERGE UNITS FOR CLEANING WITH CABLE CUT OR REMOVED. THIS WILL ALLOW CLEANING FLUID TO ENTER HOUSING, DAMAGING ELECTRONICS AND VOIDING THE WARRANTY.**

**RETURN FOR REPAIR POLICY (WARRANTY/NON-WARRANTY REPAIR)**

Return status can be determined upon factory inspection of returned equipment.

A completed Return Authorization form must accompany all items returned for repair.

Repairs will be evaluated as quickly as possible. Cost for non-warranty repairs will be provided before repairs are initiated and repairs will be completed only after approval by customer.

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