PSC-4000
Hand-Held Voltage/Current Calibrator

OPERATOR'S MANUAL

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WARNING

Before attempting to interface the PSC-4000 with any other device, carefully read the following instructions.

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GENERAL DESCRIPTION

The PSC-4000 is designed as a comprehensive calibration tool for calibrating voltage and current process signals. Its microprocessor-based circuitry combined with sophisticated analog circuitry allow it to achieve high accuracy in a small simple to use package. The PSC-4000 has the capability to store user defined calibration points and quickly recall them as required from non-volatile ram. Its 16 x 2 dot matrix display clearly warns the user of signals that are out of the calibrators range so that improper readings are avoided.

INSTALLATION

Unpacking

1. Upon receipt of shipment, inspect the container and equipment for any signs of damage. Take particular note of any evidence of rough handling in transit. Immediately report any damage to the shipping agent.

NOTE:

The carrier will not honor any claims unless all shipping material is saved for their examination. After examining and removing contents, save packing material and carton in the event re-shipment is necessary.

2. Remove the Packing List and verify that all equipment has been received. If there are any questions about the shipment, please call Martel Electronics at 1-800-821-0023.

3. Check to see if your calibrator is complete. It should include:

- PSC-4000
- Carrying case
- Test leads (1-red, 1-black)
- 4 "AA" Batteries (already installed)

Set-up

1. To access the batteries, remove the sliding cover located on the rear of the calibrator. If your calibrator was ordered with Ni-Cd rechargeable batteries remove the "AA" alkaline and install the Ni-Cd batteries. Be sure to observe proper polarity when installing the batteries. The Ni-Cd batteries must be charged before use by plugging the AC adapter into the side-mounted charge jack. Allow 12-14 hours for a complete charge.

2. Become familiar with the designations and polarities of the five input/output jacks of the PSC-4000, refer to Figure 1 in this manual or the back panel label of the unit.

OPERATING PROCEDURE

1. Power up unit by momentarily pressing the "ON/OFF" key. Its alternate action allows the user to turn the calibrator on and off using the same key.

2. Select the desired range by pressing the "RANGE SELECT" key. The choices are:

a. Millivolts (0-200)
b. Volts (0-20V)
c. Milliamps (0-24)

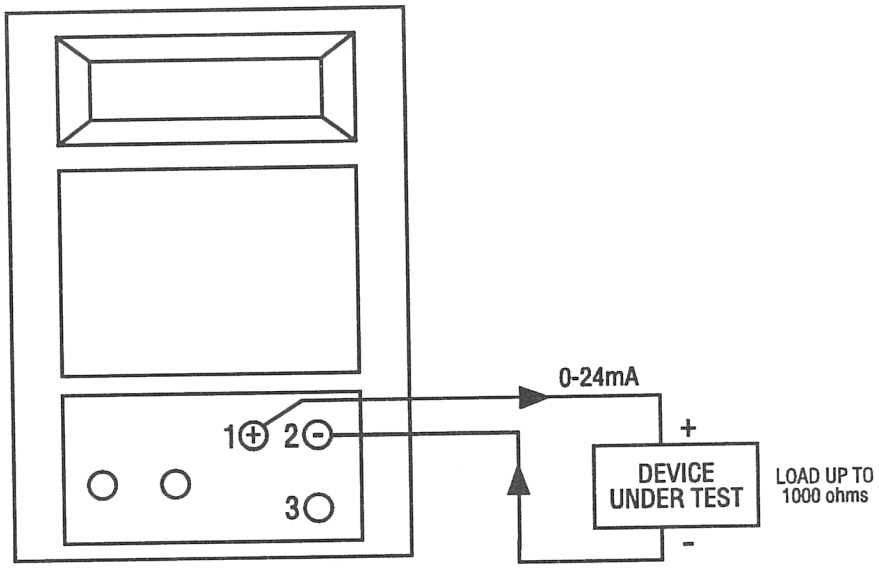
By using the appropriate slide switch, you can read or source in any of the above ranges.

3. When millivolts or volts are to be simulated or read, use the two jacks marked "VOLTS" for connections. Proper polarity must be observed.

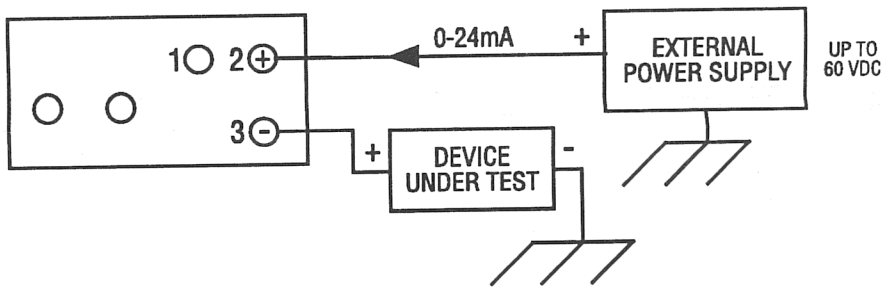
4. When current is being simulated or read, use current jacks labeled 1, 2, and 3. Depending on the mode of operation, the jacks are used as shown in Figure 1.

Current Mode Connections

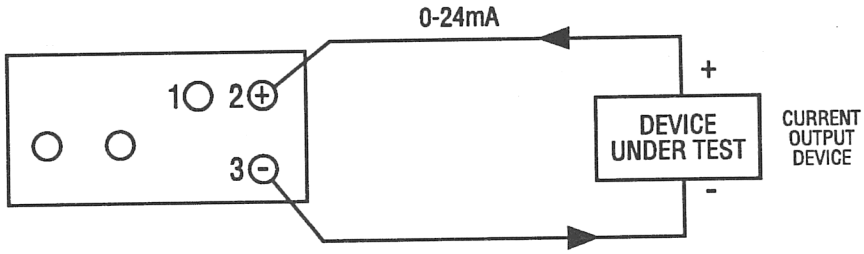
Current Source
(Slide Switch in SIM Position)



Current Simulator
(Slide Switch in SIM Position)



Current Read
(Slide Switch in READ Position)



Current Read While Supplying Loop Power
(Slide Switch in READ Position)

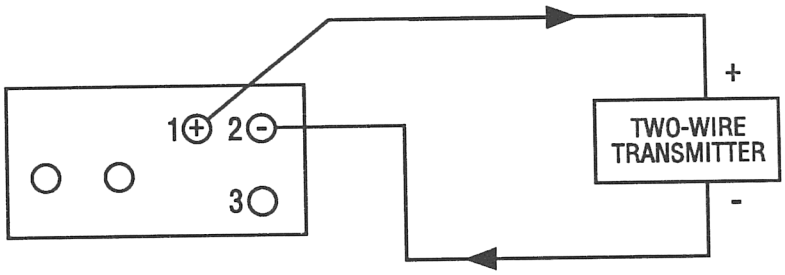


FIGURE 1

5. To adjust any output, use the up or down scroll controls. When depressed, the initial scroll rate will be slow then speed up after several seconds.

6. To facilitate calibration, up to three (3) calibration points can be stored for each output range. To store a "CAL PT.", scroll to the desired value then press the "STR" key ("STR" will appear on the display), then press one of the "CAL PT." keys. The setpoint can be recalled at any time by pressing the appropriate "CAL PT." key. When power is off, these calibration points will be retained in non-volatile memory.

OPERATING CONSIDERATIONS AND PRECAUTIONS

1. When reading voltage or currents over the maximum rating of the calibrator, the calibrator will display "OVER". A large over-range signal may cause the internal fuse to blow. Contact the factory if this is suspected.

2. Take care to avoid excessive loading on the voltage output range. While the PSC-4000 has the capability to sink or source up to 10 milliamps, voltage drop on the test leads and printed circuit board connections can cause errors beyond the calibrator's rated accuracy.

3. The optional AC adapter/charger can be used in two ways - first as an alternative to the internal batteries where prolonged use at the bench or in the lab is required and second as a charger and power supply for the optional Ni-Cd batteries. When using Ni-Cd batteries, allow 12-14 hours for a complete recharge. A low battery condition is displayed as "BT" on the display.

ACCURACY

The PSC-4000 is checked against a NBS traceable standard before shipment and should yield the specified accuracy. Remember to take into account changes in ambient temperature when making accuracy calculations.

MAINTENANCE

Generally, with normal usage, the calibrator should hold its rated specifications for at least 6 months. Beyond this, it should remain within 0.05% of FSR over its useful life, provided it is not abused or tampered with. If after the stated warranty period, the device falls out of calibration, it can be returned to Martel Electronics for re-calibration. Please call for pricing and return information.

WARRANTY

Martel Electronics Corporation warrants all products against material defects and workmanship for a period of twelve (12) months after the date of shipment. Problems or defects that arise from misuse or abuse of the instrument are not covered. If any product is to be returned, a "Return Material Authorization" number must be obtained by calling our Customer Service Department at (603) 893-0886.