

# PCL432

## Voltage Calibrator

### Operator's Manual

#### M1891/0994

#### **GENERAL DESCRIPTION**

The OMEGA® PCL432 Hand-Held Voltage Calibrator is designed to be a complete process voltage calibrator delivering high accuracy in a small, easy to use package. Its microprocessor based circuitry gives the user a large number of input/output options and operating modes without unnecessary complexity.

Commonly used outputs (up to 3) can be stored in the PCL432's non-volatile memory for quick recall. In addition, an auto-step mode allows the calibrator to step through the selected setpoints at a user defined dwell time of 5 to 60 seconds.

#### **INSTALLATION**

##### **UNPACKING**

Remove the Packing List and verify that you have received all equipment. If you have any questions about the shipment, please call the OMEGA Customer Service Department at 1-800-622-2378 or (203) 359-1660.

When you receive the shipment, inspect the container and equipment for any signs of damage. Note 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 reshipment is necessary.

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

1. Carrying case (Qty=1)
2. Test leads (Qty=1 set)
3. 9V battery (Installed)
4. Operator's Manual (Qty=1)

##### **SET-UP**

Before beginning, become familiar with the keypad layout and the configuration of the input/output jacks. Remember, these jacks are used in multiple configurations so pay careful attention to how the test leads are connected for the specific application.

## OPERATING PROCEDURE

1. Turn on power and select the desired range by depressing the "RANGE SELECT" key, then place the slide switch in the desired position (Read or Source).
2. Connections are made as follows:  
Red Jack - Positive Input/Output  
Black Jack - Negative Input/Output
3. The ▲ and ▼ keys adjust the output value up or down. Holding the ramp keys continuously for several seconds will increase the scroll rate. Going beyond the endpoints will cause the output to wrap around, thus allowing a quick return to either end of the scale.
4. Three calibration points can be stored in non-volatile memory by scrolling to the desired output, depressing the Store key, and then the desired setpoint key.
5. The auto step will automatically step through the stored setpoints at pre-defined intervals. When the auto-step key is first depressed, the display will indicate the dwell time (in seconds) between steps. The factory set value is 15 seconds but you can set this value, from 5 to 60 seconds, by using the ▲ and ▼ keys when the dwell time is being displayed. Once you have scrolled to the desired dwell time, release the ▲ or ▼ key and wait approximately 3 seconds until the calibrator begins to automatically step through the 3 setpoints. The calibrator will continue the stepping process until any key is pressed. Your chosen dwell time will remain in a non-volatile memory location until you choose to change it.

## OPERATING CONSIDERATIONS AND PRECAUTIONS

1. When operating in the voltage source mode, the PCL432 has the capability to drive loads up to 20 mA as shown in Figure 1.

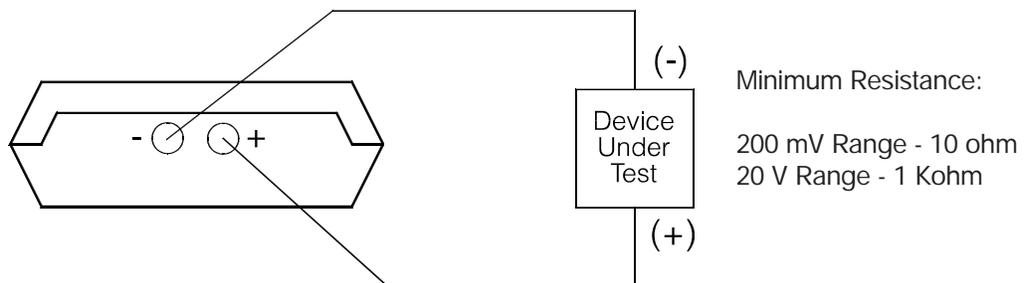


Figure 1 - Voltage Source Mode

2. When reading a voltage, the PCL432 can measure over a range of 0-200 mV or 0-20 Volts. Connections are shown in Figure 2.

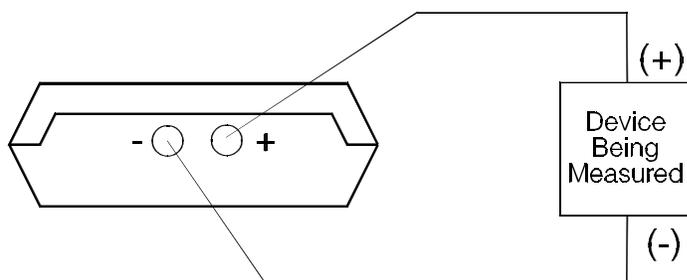


Figure 2 - Voltage Loop Readings

## ACCURACY

The PCL432 is checked against an NIST traceable reference before shipment to verify that each range falls within the 0.05%,  $\pm 1$  count, of full scale accuracy specification. Long term accuracy should remain within 0.1%,  $\pm 1$  count, of FSR. All of these ratings are based on a 25°C ambient temperature. A change of 10°C will cause approximately a 1000 ppm change (based on 100 ppm/C temp.) in the output or the equivalent of a 0.1% output change. Therefore, allowances must be made for error caused by wide temperature variations.

## SPECIFICATIONS

Input/output Ranges	0 to 200 mV 0 to 20 Volts
Accuracy	$\pm 0.05\%$ $\pm 1$ LSD
Maximum Load Driving	$\pm 20$ mA
Operating Modes	Read } or } 0-200.0 mV Source } 0-20.00 V
Operating Temperature	0 to 50°C (32 to 122°F)
Storage Temperature	-20 to 60°C (-4 to 140°F)
Temperature Stability	0.01% F.S./°C
Setpoints	3 user programmed calibration points stored in non-volatile RAM.
Power	9V alkaline battery
Auto Step Function	Toggle through SP1, SP2 and SP3 with user defined display.
Case Size	1.43" x 3.15" x 5.7" (36.3 x 80.0 x 144.8mm)
Weight	12 oz (340g)

## MAINTENANCE

Generally, with normal usage, this 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 OMEGA Engineering, Inc. for re-calibration.



