

Where Do I Find Everything I Need for Process Measurement and Control? OMEGA...Of Course!

TEMPERATURE

- ✓ Thermocouple, RTD & Thermistor Probes, Connectors, Panels & Assemblies
- ✓ Wire: Thermocouple, RTD & Thermistor
- ✓ Calibrators & Ice Point References
- ✓ Recorders, Controllers & Process Monitors
- ✓ Infrared Pyrometers

PRESSURE, STRAIN AND FORCE

- ✓ Transducers & Strain Gauges
- ✓ Load Cells & Pressure Gauges
- ✓ Displacement Transducers
- ✓ Instrumentation & Accessories

FLOW/LEVEL

- ✓ Rotameters, Gas Mass Flowmeters & Flow Computers
- ✓ Air Velocity Indicators
- ✓ Turbine/Paddlewheel Systems
- ✓ Totalizers & Batch Controllers

pH/CONDUCTIVITY

- ✓ pH Electrodes, Testers & Accessories
- ✓ Benchtop/Laboratory Meters

- ✓ Controllers, Calibrators, Simulators & Pumps
- ✓ Industrial pH & Conductivity Equipment

DATA ACQUISITION

- ✓ Data Acquisition & Engineering Software
- ✓ Communications-Based Acquisition Systems
- ✓ Plug-in Cards for Apple, IBM & Compatibles
- ✓ Datalogging Systems
- ✓ Recorders, Printers & Plotters

HEATERS

- ✓ Heating Cable
- ✓ Cartridge & Strip Heaters
- ✓ Immersion & Band Heaters
- ✓ Flexible Heaters
- ✓ Laboratory Heaters

ENVIRONMENTAL MONITORING AND CONTROL

- ✓ Metering & Control Instrumentation
- ✓ Refractometers
- ✓ Pumps & Tubing
- ✓ Air, Soil & Water Monitors
- ✓ Industrial Water & Wastewater Treatment
- ✓ pH, Conductivity & Dissolved Oxygen Instruments



User's Guide



CL260 Hand-Held Milliamp Calibrator

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WARNING: These products are not designed for use in, and should not be used for, patient connected applications.

MADE
USA

WARRANTY / DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA Warranty adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit should malfunction, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of being damaged as a result of excessive corrosion, or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components which wear are not warranted, including but not limited to contact points, fuses, and traces.

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RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. PO. number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. PO. number to cover the COST of the repair,
2. Model and serial number of product, and
3. Repair instructions and/or specific problems relative to the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering. OMEGA is a registered trademark of OMEGA ENGINEERING, INC.

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GENERAL DESCRIPTION

The CL260 is designed to be a complete 4-20mA 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.

Current can be sourced into loads up to 1000 ohms or simulated with external power supplies of up to 60 VDC. When operated in the read mode the user can input a current from a signal source directly. Also in the read/power mode, the Model CL260 will supply 24 volt loop power to a two wire device and simultaneously monitor the resultant loop current. Both read and source measurements can be displayed directly in milliamps or as a percentage of a 4-20mA loop.

Commonly used outputs (0, 4, 8, 12, 16, 20, 24mA) can be selected using the STEP keys. The scroll keys allow for fine adjustment between these points.

INSTALLATION

Remove the Packing List and verify that all equipment has been received. If there are any questions about the shipment, please call Omega's Customer Service Dept. at 1-800-826-6342.

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.

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 the jack identification label on back of unit and 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 STEP and SCROLL keys adjust the output value up or down. Holding the SCROLL key continuously for several seconds will increase the scroll rate. The STEP key allows the user to make large changes quickly and are preset to (0, 4, 8, 12, 16, 20, and 24mA).

NOTE: You must have a closed circuit when you operate in the source mode. If an open condition exists the calibrator will indicate zero output current even when the scroll or step keys are pressed.

OPERATING MODES

1. When operating in the voltage source mode, the CL260 has the capability to drive loads up to 1000 ohms as shown in Figure 1.

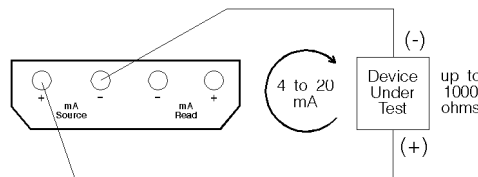


FIGURE 1 - CURRENT SOURCE MODE

2. When operating in the current simulate mode, the CL260 acts like a two-wire transmitter controlling a current loop with an external voltage of up to 60 VDC as shown in Figure 2.

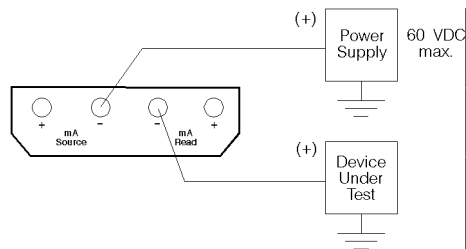


FIGURE 2 - CURRENT SIMULATE MODE

3. When reading a current loop, the CL260 can measure over a range of 0-24mA. Connections are shown in Figure 3.

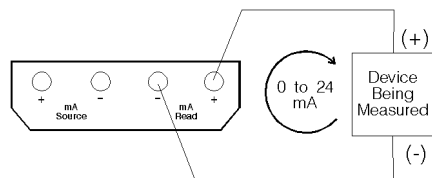


FIGURE 3 - CURRENT LOOP READINGS

4. The CL260 can simultaneously power a device with 24 volts and display the current flowing through the loop. This is particularly useful when calibrating a two-wire transmitter. A typical application is shown in Figure 4.

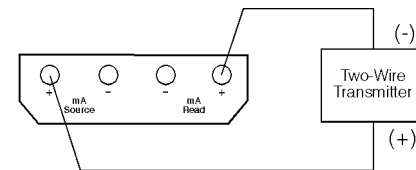


FIGURE 4 - SIMULTANEOUS POWER/DISPLAY

ACCURACY

The CL260 is checked against a NIST traceable reference before shipment to verify that each range falls within the 0.025%, ±1 count, of full scale accuracy specification. Long term accuracy should remain within 0.05%, ±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	0.00 to 24.00 or 25.0% to 125.0%
Accuracy	±0.025% ±1LSD
Maximum Load Driving	1000 ohm (24V compliance)
Operating Modes	Source Simulate Read Read/Pwr } All can be done in either % or mA
Operating Temperature	0 to 50°C
Storage Temperature	-20 to 60°C
Temperature Stability	.01% F.S./°C
Power ¹	9V alkaline battery
Case Size	1.43" x 3.15" x 5.7"
Weight	12 oz.

Notes: ¹ A low battery indication is given at 5.5 volts.

MAINTENANCE

Generally, with normal usage, this calibrator should hold its rated specifications for at least 12 months. Beyond this, it should remain within 1.5X of its specification 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 for re-calibration. Please call 1-800-826-6342 for pricing and return information.