

# Documenting Multifunction Calibrator

## Portable, High Accuracy

CL310



- ✓ Highest Accuracy in Class to 0.015% of Reading
- ✓ Measure and Simulate T/Cs (13 Types), RTDs (13 Types),  $\Omega$ , Current, Voltage, Frequency and Pressure; Source Pulse Trains
- ✓ Pressure Module Communication Port Compatible with OMEGA® Pressure Modules
- ✓ Direct Entry of Custom RTD Coefficients (R0, A, B, C)
- ✓ All Simulate Modes Can be Programmed with Dedicated Setpoints to Speed Calibration and Linearity Tests
- ✓ Store Up to 21 Data Points Per Instrument, and Up to 50 Instruments in Non-Volatile Memory
- ✓ Test for Pass/Fail Criteria
- ✓ Capture Both as Found and as Left Data
- ✓ Software is Included
- ✓ Protective Rubber Boot Standard

The CL310 documenting multi-function calibrator delivers a feature set unmatched in high accuracy, hand-held calibrators in its price range. The CL310 delivers functions and accuracy associated with fixed installation, laboratory instruments, and has everything needed for virtually any calibration task. What makes this versatile calibrator best in class is the ability to fully document any calibration easily while performing the normal job. Software is included. Some functions will require a Microsoft Excel-compatibility.

CL310 can also measure and source thermocouples, RTDs, current, voltage, frequency, and it can source pulse trains. It has a communications port for pressure modules and an isolated mA/V readback circuit.

Arrow keys, direct numeric keypad entry, and three software-driven function buttons combine with a large, backlit, menu-driven graphics display to provide a highly intuitive yet powerful interface. A built-in 250  $\Omega$  resistor for Hart® compatibility; compatibility with smart transmitters and PLCs, full fuseless protection, and a serial communications port for control using ASCII commands are additional features that make the CL310 indispensable for calibration tasks. This product is battery operated.



CL310, shown with protective rubber boot (included).

### Measuring Pressure

With a PCL-PMA pressure module adaptor, the CL310 will work with all OMEGA® PCL-PM pressure modules. (For information on these see specifications under PCL1200 visit [omega.com/pcl1200](http://omega.com/pcl1200)).

### Specifications (23 $\pm$ 5°C unless otherwise noted)

#### Voltage:

Source: 0.000 to 20.000 Vdc

#### Read:

Isolated: 0.000 to 30.000 Vdc

Non-Isolated: 0.000 to 20.000 Vdc

#### Thermocouple mV:

Read/Source: -10.000 to 75.000 mV

#### Current (mA):

Source: 0.000 to 24.000 mA

#### Read:

Isolated: 0.000 to 24.000 mA

Non-Isolated: 0.000 to 24.000 mA

**Frequency (1 to 20V Selectable Amplitude):****CPM Source/Read:** 2.0 to 600.0 cpm**Hz Source/Read:** 1.0 to 1000.0 Hz**kHz Source/Read:** 1.0 to 10.00 kHz**Pulse (Source Only 1 to 20V; Selectable Amplitude):****Pulses:** 1 to 30,000; 2 cpm to 10 kHz**Ohms:****Source:** 5.0 to 4000.0  $\Omega$ **Read:** 0.00 to 4000.0  $\Omega$ **Thermocouple Range Read and Source:****Type J:** -200.0 to 1200.0°C (-328 to 2192°F)**Type K:** -200.0 to 1370.0°C (-328 to 2498°F)**Type T:** -200.0 to 400.0°C (-328 to 752°F)**Type E:** -200.0 to 950.0°C (-328 to 1742°F)**Type R:** -20.0 to 1750.0°C (-4 to 3182°F)**Type S:** -20.0 to 1750.0°C (-4 to 3182°F)**Type B:** 600.0 to 1800.0°C (1112 to 3272°F)**Type C:** 0 to 2316.0°C (32 to 4201°F)**Type XK:** -200.0 to 800.0°C (-328 to 1472°F)**Type BP:** 0 to 2500.0°C (32 to 4532°F)**Type L:** -200.0 to 900.0°C (-328 to 1652°F)**Type U:** -200.0 to 400.0°C (-328 to 752°F)**Type N:** -200.0 to 1300.0°C (-328 to 2372°F)**RTD Range Read and Source:****Ni120 (672):** -80.0 to 260.0°C (-112 to 500°F)**Pt100 (385):** -200.0 to 800.0°C (-328 to 1472°F)**Pt100 (3926):** -200.0 to 630.0°C (-328 to 1166°F)**Pt100 (3916):** -200.0 to 630.0°C (-328 to 1166°F)**Pt200 (385):** -200.0 to 630.0°C (-328 to 1166°F)**Pt500 (385):** -200.0 to 630.0°C (-328 to 1166°F)**Pt1000 (385):** -200.0 to 630.0°C (-328 to 1166°F)**Cu10:** -100.0 to 260.0°C (-148 to 500°F)**YSi400:** 15.00 to 50.00°C (59 to 122°F)**Cu50:** -180.0 to 200.0°C (-292 to 392°F)**Cu100:** -180.0 to 200.0°C (-292 to 392°F)**Pt385-10:** -200.0 to 800.0°C (-328 to 1472°F)**Pt385-50:** -200.0 to 800.0°C (-328 to 1472°F)**Accuracy****Voltage:**  $\pm 0.015\%$  of reading,  $\pm 2$  mV**Thermocouple:** mV  $\pm 0.02\%$  of reading,  $\pm 10$   $\mu$ V**Thermocouple Errors (Typical at 100°C)****(In °C; Add 0.2 for Cold-Junction Compensation Error)****Type J:** 0.2°C (0.4°F)**Type K:** 0.3°C (0.5°F)**Type T:** 0.2°C (0.4°F)**Type B:** 1.2°C (2.2°F)**Type S:** 1.2°C (2.2°F)**Type XK:** 0.2°C (0.4°F)**Type C:** 0.6°C (1.6°F)**Type L:** 0.2°C (0.4°F)**Type BP:** 0.9°C (34°F)**Type N:** 0.4°C (0.7°F)**Type U:** 0.25°C (0.5°F)**RTD Read/Source:****Ni120 (672):** 0.06°C (0.11°F)**Pt100 (385):** 0.13°C (0.23°F)**Pt100 (3926):** 0.13°C (0.23°F)**Pt100 (3916):** 0.13°C (0.23°F)**Pt200 (385):** 0.45°C (0.81°F)**Pt500 (385):** 0.21°C (0.38°F)**Pt1000 (385):** 0.14°C (0.75°F)**Cu10:** 0.82°C (1.48°F)**YSi400:** 0.05°C (0.09°F)**Cu50:** 0.20°C (0.36°F)**Cu100:** 0.13°C (0.23°F)**Pt385-10:** 0.84°C (2.16°F)**Pt385-50:** 0.21°C (0.38°F)**Read/Source:****Current (mA):**  $\pm 0.015\%$  of reading,  $\pm 2$   $\mu$ A/ $\pm 0.015\%$  of reading,  $\pm 2$   $\mu$ A**CPM:**  $\pm 0.05\%$  of reading,  $\pm 0.1$ **Hz:**  $\pm 0.05\%$  of reading,  $\pm 0.1$  Hz**kHz:** 1 to 10 kHz/ $\pm 0.250\%$  of reading**Ohms (Works with All Pulsed Transmitters Down to 5 ms):****5 to 400  $\Omega$  Range:**  $\pm 0.015\%$  of reading  $\pm 0.03$   $\Omega$ / $\pm 0.015\%$  of reading  $\pm 0.1$   $\Omega$ **400 to 1500  $\Omega$  Range:**  $\pm 0.015\%$  of reading  $\pm 0.3$   $\Omega$ **1500 to 4000  $\Omega$  Range:**  $\pm 0.015\%$  of reading  $\pm 0.3$   $\Omega$ **Environmental****Operating Temperature:** -10 to 50°C (14 to 122°F)**Storage Temperature:** -20 to 70°C (-4 to 158°F)**Stability:**  $\pm 0.005\%$  of reading/ $^{\circ}$ C (outside of 23°C  $\pm 5^{\circ}$ C)**Power Requirement:** 6 Vdc**Batteries:** 4 "AA" alkaline (included) or optional rechargeable

**Warning:** This product has non-rechargeable alkaline batteries installed. Prior to connecting any AC adaptor or battery charger, these batteries must be removed and/or replaced with rechargeable batteries such as Nickel Cadmium or Nickel Metal Hydride types. Failure to remove the batteries will result in damage to the calibrator and voids the warranty.

**Mechanical****Dimensions:** 220.9 H x 106.6 W x 58.4 mm D (8.7 x 4.2 x 2.3")**Weight:** 863 g (30.5 oz)

OMEGACARE<sup>SM</sup> extended warranty program is available for models shown on this page. Ask your sales representative for full details when placing an order. OMEGACARE<sup>SM</sup> covers parts, labor and equivalent loaners.

**To Order** Visit [omega.com/cl310](http://omega.com/cl310) for Pricing and Details

Model No.	Description
CL310	Documenting multifunction calibrator

**Accessories**

Model No.	Description
PCL-PMA	Pressure module adaptor
DPG4000-C32	RS232 cable with miniature plug
PCL422-TL	1.2 m (48") stackable test leads
CL20-KIT-2	Thermocouple test lead kit
PCL-ACA	AC adaptor/charger 120 Vac

Comes complete with instruction manual, test leads, protective rubber boot, nylon carrying case, USB cable, Type K thermocouple, Type K cable, NIST calibration certificate, software CD and 4 "AA" alkaline batteries.

**Ordering Examples:** CL310, high accuracy multifunction calibrator, and CL20-KIT-2, thermocouple test lead kit.

CL310, high accuracy multifunction calibrator, and PLC-ACA AC adaptor. OCW-1, OMEGACARE<sup>SM</sup> extends standard 1-year warranty to a total of 2 years.

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