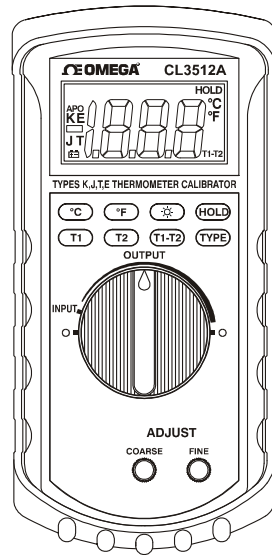




User's Guide



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CL3512A Digital Thermometer & Calibrator



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

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1.0 Introduction

The OMEGA® CL3512A calibrator/thermometer is two meters in one. The CL3512A simulates type J/K/T/E thermocouple signals. Each signal is adjustable by using the coarse and fine dials. The CL3512A can also be used as a dual type J/K/T/E thermocouple input thermometer. Features include a large 3½ digit display with backlighting and display selections of HOLD, °C/°F, and 0.1/1°.

The source mode of the CL3512A simulates the thermocouple output to check the operation of a thermocouple meter and make rough calibration adjustments. A more accurate calibrator would be required for calibration of thermocouple meters to specify tolerances.

1.1 Safety Information

It is recommended that you read the safety and operation instructions before using the thermometer.

WARNING

To avoid electrical shock, do not use this instrument when working voltages at the measurement surface over 24V AC or DC.

WARNING

To avoid damage or burns, do not make temperature measurement in microwave ovens.

CAUTION

Repeated sharp flexing can break the thermocouple leads. To prolong lead life, avoid sharp bends in the leads, especially near the connector.

1

1.2 Unpacking

Remove the packing list and verify that all equipment has been received. If there are any questions about the shipment, please call the OMEGA Customer Service Department.

Upon receipt of shipment, inspect the container and equipment for any signs of damage. 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 the packing material and carton in the event reshipment is necessary.

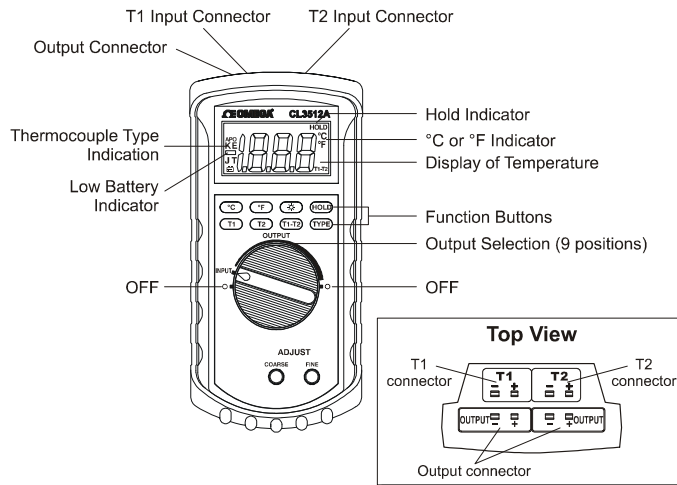
The following is supplied in the box:

- CL3512A
- Rubber boot
- 2 K beaded wire thermocouples
- K calibration cable
- 9 volt battery
- Operator's manual

2

2.0 Operation Procedure

2.1 Drawing of Unit



Actual Dimensions: 195mm(H) x 92mm(W) x 53mm(D)

3

2.2 Descriptions of Buttons and Switches

°C/°F Buttons

Temperature is displayed in either degrees Celsius(°C) or degrees Fahrenheit(°F). When the thermometer is turned on, it is set to the temperature scale that was in use when the thermometer was last turned off. To change the temperature scale, press the °C or °F key.

☀ Button

Press "☀" button to toggle the on and off backlight. The backlight will switch-off automatically after 37 seconds.

HOLD Button (HOLD Mode)

Press the HOLD key to enter the Data Hold mode, the "HOLD" annunciator is displayed. When HOLD mode is selected, the thermometer will hold the present reading and stop all further measurements.

Pressing the HOLD key again will cancel HOLD mode causing the thermometer to resume taking measurements.

TYPE Button (K/J/T/E Input Thermocouple Type Selection)

The TYPE key allows for selection of J, K, E or T thermocouple types as either the input or simulated output. To select thermocouple type press type key once. Unit will briefly show 1888 and beep and then the type of thermocouple selected will be indicated on the left hand side of the display. Continue pressing the type key to step through the thermocouple types until desired type is indicated.

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T1 T2 T1-T2 **Input Selections**

The input selection indicates which input is selected; T1 thermocouple, T2 thermocouple or the difference between the two thermocouples (T1-T2). When the thermometer is turned on, it is set to the temperature input that was in use when the thermometer was last turned off.

Selector Switch

The circular selector switch is used to turn the unit off (O) or to select Reading Mode (Input) or Simulation Mode (Output). There are nine selector switch positions under output which provide rough adjustment of the simulated output.

Adjust

Course and fine adjustment Dials are used in Simulation Mode to allow a particular simulated temperature to be selected once the output has been adjusted close to the desired temperature using the selector switch.

2.3 Read Mode Procedure

1. Plug Thermocouple Sensor into input T1 and/or T2.
2. Turn selector switch to Input.
3. Select proper thermocouple type (J, K, T or E) using type button.
4. Press T1 button to read thermocouple connected to input T1.
Press T2 button to read thermocouple connected to input T2.
Press T1-T2 if difference between T1 and T2 is to be read.
5. To Hold reading press HOLD button. To resume making measurements press HOLD again.
Note: Unit will display -OL if input is out of range or thermocouple is broken or not connected to proper input.

To save battery life, CL3512A will turn off automatically if no is key is pressed for 90 minutes.

2.4 Source Mode Procedure (Calibration Simulation)

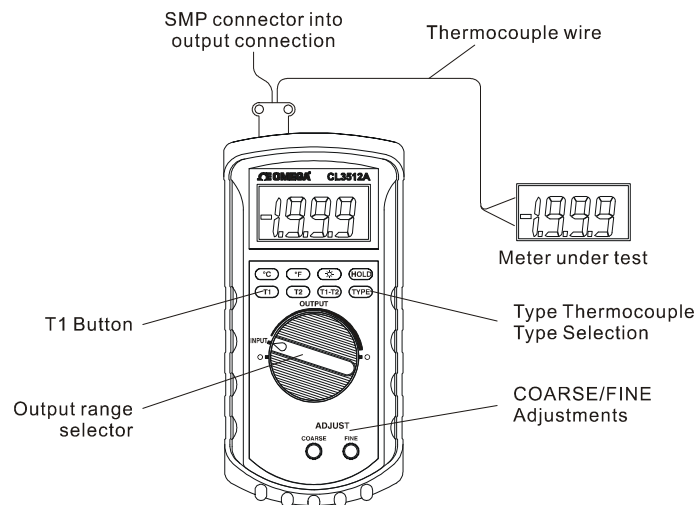
1. Turn CL3512A on by turning selector switch to any one of the output selector positions.
2. Press T1 button.
3. Select thermocouple type (J, K, T or E) using type button.
Select °C or °F using °C or °F buttons.
4. Plug proper type of thermocouple wire into either one of the two output connectors. (SMP male connector required)
5. Attach the other end of the thermocouple wire to the instrument being tested/calibrated.
6. Move the output range switch to the temperature value close to the desired simulated value.

Note: There are 9 temperature range switch positions arranged from left to right representing low to high temperatures.

The display will read -OL if the output voltage for the meter is higher than the maximum voltage for that particular thermocouple type. For type T this will be in the highest 4 positions, type K in the highest 3 positions, type J in the highest 2 positions, and type E in the highest position only.

7. Adjust course and/or fine adjustment dial until desired temperature is displayed on CL3512A.
8. Instrument under test should read same temperature as CL3512A. If not adjust instrument under test or have recalibrated.
9. Repeat steps 6-8 at different temperatures as needed.

Source Mode Diagram




3.0 Operator Maintenance

WARNING

To avoid possible electrical shock, disconnect the thermocouple connectors from the thermometer before removing the cover.

Battery Replacement

Power is supplied by a 9 volt "transistor" battery. The  appears on the LCD display when replacement is needed. To replace the battery, remove the two screws from the back of the meter and lift off the battery cover. Remove the battery from battery contacts.

4.0 Specifications

ELECTRICAL

Temperature Scale: Celsius or Fahrenheit user-selectable

Measurement Range:

Thermocouple	Range
K-TYPE(0.1°C)	-200°C to 1372°C, -328°F to 1999°F
J-TYPE(0.1°C)	-210°C to 1200°C, -346°F to 1999°F
T-TYPE(0.1°C)	-200°C to 400°C, -328°F to 752°F
E-TYPE(0.1°C)	-220°C to 1000°C, -364°F to 1832°F

Calibration Range: -210°C to 1372°C, (-364°F to 1999°F)

Auto range: 0.1°C/1°C, 0.1°F/1°F

Accuracy: Accuracy is specified for operating temperatures over the range of 18°C to 28°C (64°F to 82°F), for 1 year, not including thermocouple error. (Read mode)

±(0.1%rdg + 1°C) range -60°C to 1372°C

±(0.1%rdg + 2°C) range -60°C to -220°C

±(0.1%rdg + 2°F) range -76°F to 1999°F

±(0.1%rdg + 4°F) range -76°F to -364°F

Simulation Accuracy: Measurement accuracy plus 1°C

ENVIRONMENTAL

Ambient Operating Ranges: 0°C to 50°C (32°F to 122°F) <80% R.H.

Storage Temperature: -20°C to 60°C (-4°F to 140°F) <70% R.H.


GENERAL

Display: 3½ digit liquid crystal display (LCD) with a maximum reading of 1999.

Polarity: Automatic, positive implied, negative polarity indication.

Overrange: -OL is displayed.

Zero: Automatic.

Low battery indication: The “” is displayed when the battery voltage drops below the operating level.

Measurement rate: 1 times/second.

Accuracy: Stated accuracy at 23°C±5°C, <75% R.H.

Dimensions: 195mm(H) x 92mm(W) x 53mm(D).

Weight: approx. 9 oz. (250g) including battery.

Input Connector: Accepts standard miniature thermocouple connectors (flat blades spaced 7.9mm, center to center SMP type).

Battery Life: 100 hours typical with carbon zinc battery.

Auto power off: The meter key switch inactive for more than 90 minutes.

Temperature Coefficient: 0.1 times the applicable accuracy specification per °C from 0°C to 18°C and 28°C to 50°C (32°F to 64°F and 82°F to 122°F).









Input Protection: 24V dc or 24V ac rms maximum input voltage on any combination of input pins.

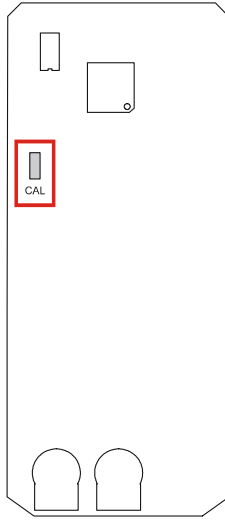
Maximum Differential Common Mode Voltage (Maximum Voltage between T1 and T2 during measurement): 1 volt.

5.0 CL3152A Calibration Procedure

Note: The following calibration procedure should be performed only by qualified technicians who have access to the items as following items:

Equipment: Thermocouple calibrator had better 10 times greater than the measured meter.

1. Short CAL jumper and turn on the meter to INPUT range.
2. Press “” key display was showed 35°C / T1/ SET / K.
3. Input 35°C / K-type to the T1, then press “” key and wait for the display was showed 1300°C / T1 / SET / K.
4. Input 1300°C / K-type to the T1, then press “” key and wait for the display was showed 0°C / T1 / SET / K.
5. Input 0°C/K-type to the T1, then press “” key and wait for the display was showed “-OL” then press “” key and wait for the display was 35°C / T2 / SET / K.
6. Input 35°C / K-type to the T2, then press “” key and wait for the display was showed 1300°C / T2 / SET / K.
7. Input 1300°C / K-type to the T2, then press “” key and wait for the display was showed Out / K / °C / SET / T2.
8. Knob being with clockwise rotation 2 range and two knobs of lower left corner are set to the position of the middle (horizontal).
9. Press “” key and wait for the meter auto power off then remove jumper.
10. The calibration was completed.



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WARRANTY / DISCLAIMER

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