1 YEAR
WARRANTY

OMEGA™

User's Guide

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THERMOMETER

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Contents

1 Introduction

The thermometers are K /J/ T / E/ R / S/ N type thermocouple thermometers.

2 Accessories

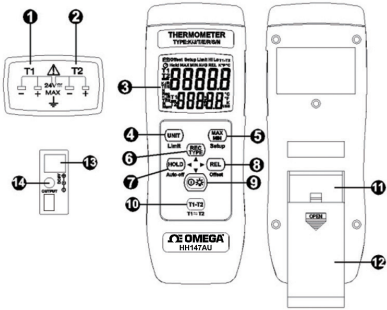
1 Meter
1 User manual
1 9V alkaline battery
1 Carrying case
1 9V AC to DC adaptor
1 USB cable
1 Installation disk

3 Safety Precaution

	Note! Please refer to this manual. Improper use may damage the meter and its components.
	Complies with European Directive.

- Do not operate in environments with flammable gas or humid environments.
- Operating altitude:up to 2000M.
- Operating environment: Indoor use; Pollution degree 2.
- Clean with soft cloth when dirty, such as glasses cloth. Do not clean with chemicals and other solvents.
- EMC: EN61326-1:CISPR 11:Group 1, Class B
  - ✧ **Class B** – Equipment for use in all establishments other than domestic.
  - ✧ **Group 1** – RF energy generated is needed for internal functioning.

4 Meter Description



1. Thermocouple input terminal T1
2. Thermocouple input terminal T2
3. LCD display: The top row is the main display and the bottom row is the secondary display
4. Unit °C/°F/ K alarm switch button
5. Maximum value, Minimum value, Average value, elapsed time / Setup button
6. K /J/ T / E/ R / S/ N type switching/record single data button
7. Hold/auto power off button
8. Relative value / offset value button
9. Power / backlight button
10. T1 - T2 / T1 and T2 top and bottom switch button
11. Battery installation
12. Battery cover
13. DC 9V input
14. Data output socket

5 Operation

1. Quickly press the button for less than a second and release to turn the thermometer ON or OFF.
   *The power cannot be turned off under SETUP mode; please exit SETUP mode first.
2. Select Celsius °C, Fahrenheit °F or Kelvin K; the temperature unit will be switched once every time the UNIT button is pressed.
3. Move the front of the thermocouple towards the test subject to measure its temperature.
4. Read the measured value on the LCD.

5.1 Backlight

While under ON status:
Press and hold the button for over 2 seconds to turn on the backlight; press and hold the button for over 2 seconds again to turn off the backlight function.

∗ The backlight will automatically turn off after being lit for 15 seconds.

5.2 Alarm Function:

Press and hold the UNIT button for 2 seconds and the LCD will display whether the alarm function is ON or OFF. A maximum and minimum value for the temperature can be set manually; when the temperature reading exceeds this range, the buzzer will give an alarm until the temperature returns to within the range or the alarm function is turned OFF.

5.3 Thermocouple Type Selection (TYPE)

Every time the TYPE button is pressed for less than a second, the termocouple type will switch in the order of K/J/E/T/R/S/N.

5.4 Manual Record (Rec)

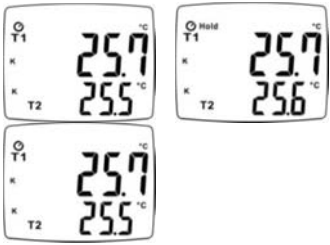
Press and hold the REC/TYPE button for over 2 seconds to save 1 temperature data; 00001 will be displayed on the LCD and will increase by 1 every time it is pressed.

Repeat this process, the manual record will continue to add 1,0002 will be displayed.

5.5 Data Hold

Press the HOLD button to turn on or turn off hold the data and stop updating.

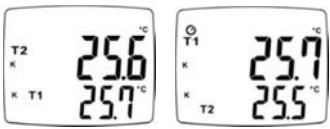
When HOLD is enabled, all buttons will stop working except for the power button.



5.6 Auto Power Off

The device is preset to automatically shut down after 15 minutes of inactivity.

Press HOLD button more than 1 second to turn on or turn off auto power off.



5.7 Relative Value Measurement

Function(REL):

Use only one thermocouple to compare the difference between 2 temperatures. For example if the first temperature was measured to be 25°C, press the (REL) button now and the LCD will display 0°C; then a second temperature was measured to be 30°C, and the LCD will display 5°C (30-25=5°C). Press the (REL) button again to turn off this function. The main display shows the REL value and the secondary display shows the temperature value currently being measured.

To display the relative value of another channel, please press and hold the (T1-T2) button to switch between T1 and T2 displays.

5.8 Offset Setting (OFFSET):

Users can manually set the offset value to use as compensation for the error of the thermocouple cable that you are currently using.

1. Press and hold the REL (OFFSET) button for 1 second to enter settings for the offset value.

2. Press the top TYPE and bottom buttons to increase or decrease the offset value; the unit for every time it is pressed is 0.1°C/°F/K. The setting range is between±5°C, ±5K and ±9°F.

3. Press the MAX MIN (Setup) button to save the setting and exit the setting mode.

To set the offset for another channel, please press the T1-T2 button to switch.

The device will automatically save the offset value set as the default value for the next power ON.

5.9 T1-T2 Display:

This meter provides the display for the difference between the T1 temperature and T2 temperature. When the T1-T2 button is pressed, it will display the value of T2 subtracted from T1.

Press the T1-T2 button again to turn off this function. The main display will display the T1-T2 value and the secondary display will display the temperature value currently measured.

To display the temperature measured on another channel on the secondary display, please press and hold the T1-T2 button to switch.

Every time the T1-T2 button is pressed and held, the main/secondary display position of T1 and T2 will be switched.

5.10 Maximum /Minimum/ Average Value:

Quickly press the MAX/MIN button for less than one second and then MAX/MIN/AVG and measurement elapsed time will be activated simultaneously. Every time the MAX/MIN button is pressed, the display will cycle as shown in the figure below.

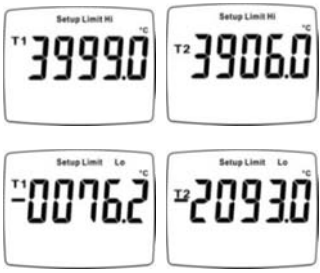
Press and hold the MAX/MIN button for over 1 second to turn off this function.

The main display will display the MAX, MIN or AVG value of the current channel and elapsed time for the measurement; the secondary display will display the current temperature value.

To display the maximum value, minimum value and mean value of another channel, please press and hold the T1-T2 button to switch displays between T1 and T2.

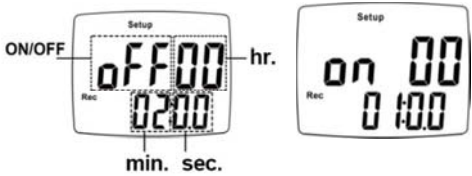
5.11 FunctionSettings:Step1~Step5High/ Low limit Value setting for alarm function (Limit):

1. Press and hold the MAX/MIN Setup button for 1 second to enter the High/Low limit value setting for T1 and T2 (Setup Limit Hi, Lo).
2. Press the HOLD button to select T1 or T2 and Hi or Lo symbol, and the REL button to select the digit.
3. Press the TYPE button or bottom ☼ button to set the temperature and positive/negative symbol.
4. The setting of the High and Low bottom limit is based on the measurement range, and it will automatically determine whether the temperature exceeded the limits.
5. Press the MAX/MIN Setup button to save the settings and go to Step 2.



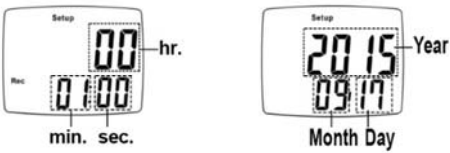
STEP 2. **Set Record Intervals and ON/OFF:**

1. Press the HOLD or REL buttons to select ON/OFF, hour, minute, second; press the TYPE button or ☼ button to select ON/OFF or adjust the hour, minute and second.
2. Press the MAX/MIN Setup button to save the settings and go to Step 3.



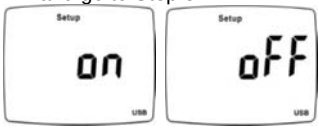
STEP 3. **Time Setting:**

1. Press the left HOLD or REL buttons to select hour, minute, second, year, month and day.
2. Press the top TYPE or ☼ button to adjust the time.
3. Press the MAX/MIN Setup button to save the settings and go to Step 4.



STEP 4. **USB ON/OFF Setting:**

1. Press the TYPE or ☼ buttons to select USB ON/OFF.
2. Press the MAX/MIN (Setup) button to save the settings and go to Step 5.

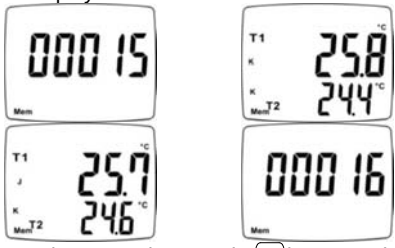


PS: Please turn off the USB when not in use in order to save battery consumption.

STEP 5. **Read and Clear Records:**

(This step will not appear if there are no records)

- Press the TYPE or ☼ buttons to read the previous or next record. Press the REL button to view the time and temperature for this record .
- Please press the T1-T2 button to switch the display of T1 and T2 between the main and secondary displays.



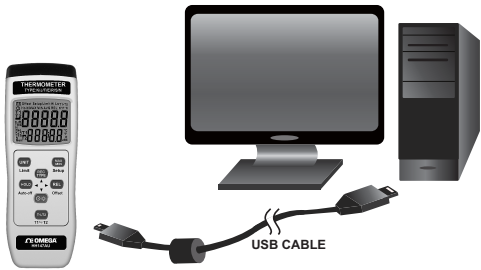
- Clear record: Press the HOLD button and CLR will start flashing on the screen; press the REL button to confirm clearing all records.

6 Software Installation

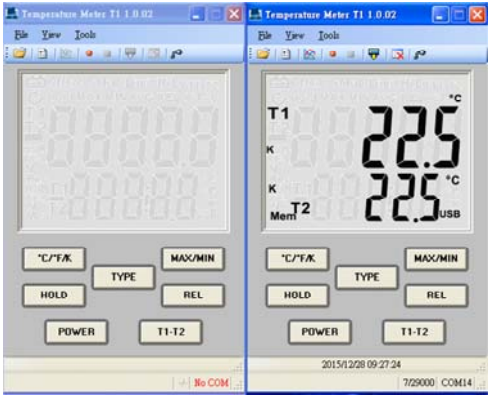
OS: Windows XP/ 7 / 8 / 10 operating systems

- Install the CD into the PC to install the software first.

- Connect the USB cable to connect the meter and the computer according to the drawing.



- Select the desktop icon and click twice on left key of the mouse to run the procedure.



7 General Specifications

- Display: Dual-display 5-digit LCD monitor with a maximum display of 99999.
- Unit: °C / °F / °K
- Data hold.
- Auto ranging.
- Back light.
- Auto power (default 15 min)and disable auto power off.
- Maximum/minimum/mean value/measurement elapsed time.
- Alarm function
- Overload display: “OL” or “-OL”
- Input limit: Maximum input 24V DC or AC.
- Manual 300 records.
- Datalogging capacity 14,000 records.
- Save interval: 1 second~24 hours.
- Low battery display
- Battery: 9V alkaline battery (NEDA 1604, IEC 6F22 or JIS 006P)
- **AC to DC Adaptor**

  External AC 100~240V to DC 9V/0.5A power supply.
  Plug: The pin in the center connects to the positive electrode and the outer case is negative electrode.
  Diameter: 5.5mm; internal diameter: 2.1mm.

- Battery life: Approximately 100 hours.
- Operation temperature and humidity: 0°C to 50°C (32°F to 122°F), < 80%RH
- Storage temperature and humidity: 0°C to 50°C (32°F to 122°F), < 80%RH
- Weight: Approximately 170 grams
- Dimensions: 155 x 56 x 38 mm (length x width x height)

8 Electrical Specifications

Accuracy is specified for ambient temperatures between 18 to 28°C (64 to 82°F).

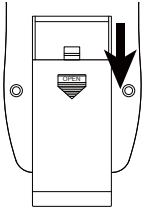
<table>
<tr><td>Range</td><td colspan="2">TYPE-K：-200°C to +1372°C (-328°F to +2501°F)
TYPE-J：-210°C to +1200°C (-346°F to +2192°F)
TYPE-T：-250°C to +400°C (-418°F to +752°F)
TYPE-E：-210°C to +1000°C (-346°F to +1832°F)
TYPE-R / S：0°C to +1767°C (+32°F to +3212°F)
TYPE-N：-150°C to +1300°C (-238°F to +2372°F)</td></tr>
<tr><td rowspan="2">Resolution</td><td>0.1</td><td>K / J / T / E / N</td></tr>
<tr><td>1</td><td>R / S</td></tr>
<tr><td rowspan="5">Accuracy</td><td colspan="2">K/J/E/T/N Type:</td></tr>
<tr><td colspan="2">±(0.05% rdg + 0.7°C / 1.4°F)
-250°C to -100°C (-418°F to -148°F)</td></tr>
<tr><td colspan="2">±(0.05% rdg + 0.7°C / 1°F)
-100 to +1372°C (-148 to 2501°F)</td></tr>
<tr><td colspan="2">R/S Type:</td></tr>
<tr><td colspan="2">±(0.05% rdg + 2°C / 4°F)
0°C to 1767°C (32°F to 3212°F)</td></tr>
<tr><td>Temperature coefficient</td><td colspan="2">0.01%+0.03°C of read value/ °C (0.06°F/ °F) outside +18°C to 28°C (+64°F to +82°F) specified range
(Under -100°C (-148°F): 0.04% of read value added to K, J, T, E, and 0.08% read value added to N).</td></tr>
<tr><td>Temperature scale</td><td colspan="2">ITS-90</td></tr>
<tr><td colspan="3">The above specifications do not include error of thermocouple.</td></tr>
</table>

9 Maintenance and Repair

1. When the symbol is displayed on the LCD, it means that there is insufficient power; please change the battery immediately in order to ensure its accuracy.
2. Do not place the meter in locations that have high temperature, humidity or that are exposed to direct sunlight.
3. Remember to turn off the power after usage; remove the battery if not used for a long period of time in order to prevent battery leakage and causing damages to internal components.
4. When the instrument failure, only by the authorized service provider or return the original repair.

10 Battery Replacement

1. Turn off the power.
2. Open the battery cover at the back of the meter, remove the battery.
3. Please insert a new 9V battery according to the polarities.
4. Put the battery cover back in place.



11 Product disposal

Note: This symbol indicates that the meter and its accessories must be separated and processed properly.

■ NOTES:

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's 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 malfunctions, 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 having been 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 in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

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

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- Pumps & Tubing
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- Industrial Water & Wastewater Treatment
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M5643/1117