ΩΞ **OMEGA**®

User's Guide

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HHF81
Anemometer, Hygrometer, Light Meter, Thermometer

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1. FEATURES

- 4 in 1 professional measuring instrument: Anemometer, Hygrometer, Thermometer, and Light Meter.
- Tiny bone shape with lightweight and small size case design are suitable for handling with one hand.
- Wristlet design provides extra protection to the instrument especially for user one hand operation.
- Low-friction ball bearing mounted wheel design provides high accuracy at high and low air velocity.
- Exclusive photo diode and color correction filter light sensor, spectrum meets C.I.E. photopic.
- High precision thin-film capacitance humidity sensor with fast response to the humidity changes.
- Standard type K (NiCr-NiAl) thermocouple input jack suitable for all kinds of type K probes.
- Built-in microprocessor circuit assures excellent performance and accuracy.
- Concise and compact buttons arrangement, easy operation.
- Memorize the maximum and minimum value with recall.
- °C/°F selectable by pressing button on the front panel.
- Lux/Feet-candle selectable by pressing button on the front panel.
- Air velocity measuring units selectable by pressing button on the front panel for five kinds of units.
- Multi channel display for relative humidity and temperature measured values or air velocity and temperature measured values at the same time.
- Zero button design makes light meter calibration.
- Hold function to freeze the current reading value.

2. SPECIFICATIONS

2-1 General Specifications

Display	8 mm LCD Display
Measurement	Anemometer, Humidity, Temperature, Light
Operating Humidity	Max. 80% RH
Operating Temperature	0 to 50°C (32 to 122°F)
Over Input Display	Indication of "_ _ _ _"
Power Supply	006P DC 9V Battery (Heavy duty type)
Power Consumption	Approx. DC 6.2 mA
Weight	160 g (Battery included)
Dimension	HWD 156 x 60 x 33 mm (6.14 x 2.36 x 1.29")
Standard Accessory	Instruction Manual
Optional Accessory	Carrying Case. Temperature Probe (Please refer to page 9)

2-2 Electrical Specifications (23 ± 5°C)

Measurement		Range	Resolution
Air Velocity	ft/min	80 to 5910 ft/min	1 ft/min
	m/s	0.4 to 30.0 m/s	0.1 m/s
	km/h	1.4 to 108.0 km/h	0.1 km/h
	MPH	0.9 to 67.0 mile/h	0.1 MPH
	knots	0.8 to 58.3 knots	0.1 knots
	Temperature (Thermistor)	32 to 122°F	0.1°F
		0 to 50°C	0.1°C

Measurement		Range	Resolution
Humidity	% RH	10 to 95% RH	0.1% RH
	Temperature (Thermistor)	32 to 122°F	0.1°F
		0 to 50°C	0.1°C
Light * auto range	Lux	0 to 2,200 Lux	1 Lux
		1,800 to 20,000 Lux	10 Lux
	Ft-cd	0 to 204.0 Fc	0.1 Ft-cd
		170 to 2,000 Fc	1 Ft-cd
Temperature (Type K)		-148 to 2372°F	0.1°F
		-100 to 13,000°C	0.1°C

Measurement	Range	Accuracy
Air Velocity	80 to 5910 fl/min	≥ 20 m/s: ±3% F.S. > 20 m/s: ±4% F.S.
	0.4 to 30.0 m/s	
	1.4 to 108.0 km/h	
	0.9 to 67.0 mile/h	
	0.8 to 58.3 knots	
	32 to 122°F	±2.5°F
	0 to 50°C	±1.2°C
Humidity	10 to 95% RH	< 70% RH: ±4% RH ≥70% RH: ±(4% rdg + 1.2% rdg)
	32 to 122°F	±2.5°F
	0 to 50°C	±1.2°C
Light	0 to 20,000 Lux 0 to 2,000 Fc	±5% rdg ±8 dgt
Temperature (Type K)	-148 to 2372°F	± (1% rdg + 2°F)
	-100 to 1300°C	± (1% rdg + 1°C)

Remark:
ft/min: feet per minute   MPH: miles per hour
m/s: meters per second   knots: nautical miles per hour
km/h: kilometers per hour   Ft-cd: feet candle
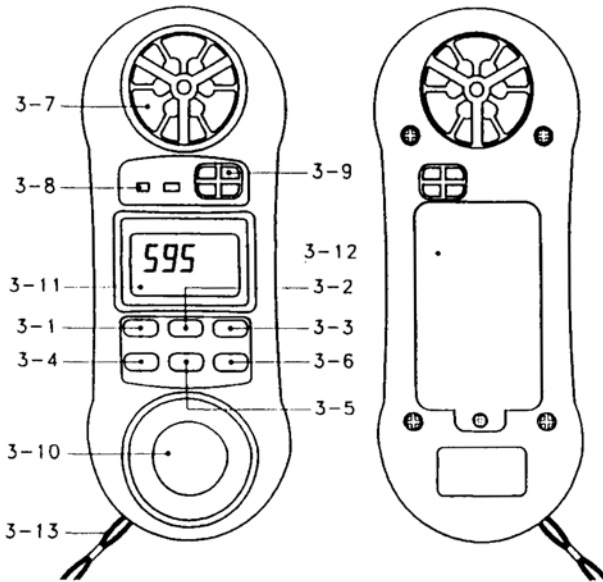
3. FRONT PANEL DESCRIPTION AND DIAGRAM

Figure 1

3-1 Power Button
3-2 Hold Button
3-3 Max./Min. Button
3-4 Unit/Zero Button
3-5 °C/°F Button
     Lux/Ft-cd Button
3-6 Function Button

3-7 Air Flow Sensor
3-8 Thermocouple Input Socket
3-9 R. H. Sensor
3-10 Light Sensor
3-11 LCD Display
3-12 Battery/Compartment Cover
3-13 Wristlet

4. MEASURING PROCEDURE

4-1 Air Velocity Measurement
1. Power on the instrument by pressing the "Power Button" (3-1, Figure 1).
2. Select the Anemometer function by pressing "Function Button" (3-6, Figure 1).
3. Press the "Unit/Zero Button" (3-4, Figure 1) to select the unit you want and then face the "Air Flow Sensor" (3-7, Figure 1) to the source of the wind.
4. Allow time for the reading to become stable and note the value indicated. From a practical point of view the velocity may fluctuate.

4-2 Temperature Measurement (Thermocouple)
1. Power on the instrument by pressing the "Power Button" (3-1, Figure 10.
2. Plug a type K thermocouple probe in the "Thermocouple Input Socket" (3-8, Figure 1).
3. Select the Temperature function by pressing "Function Button" (3-6, Figure 1).
4. Contact the Thermocouple Sensor Head with measuring object and the reading value will be displayed on the LCD display.

Measuring Consideration of Temperature Measurement (Thermocouple)
• Please make sure the polarity is correct when you plug a thermocouple probe in the Temperature Input Socket.

• The temperature difference between thermocouple probe and thermometer will cause an inaccurate measuring result. Therefore, for the best measuring and accuracy performance, whenever change a probe or plug a new probe, thermal equivalent between the probe plug and meter's input socket is a necessary condition. Thermal equivalent procedure may take a few minutes and apply only when the probe has been exposed to an ambient temperature different from the meter.

4-3 Humidity and Ambient Temperature Measurement
1. Power on the instrument by pressing the "Power Button" (3-1, Figure 1, Page 4).
2. Select the Relative Humidity function by pressing "Function Button" (3-6, Figure 1).
3. At the mean time the reading value of relative humidity and temperature will be displayed on the LCD display.
4. When the meter is applied in a new environment, a few minutes are required to reach a stable condition.

4-4 Light Measurement
1. Power on the instrument by pressing the "Power Button" (3-1, Figure 1, Page 4).
2. Select the Light Measurement function by pressing the "Function button" (3-6, Figure 1) until the light value is displayed. The light display digits are oriented 180° from the other function displays for easy exposure and output reading of the light sensor.
3. Press the "Lux/Ft-cd Button" (3-5, Figure 1) to select measuring unit "Lux" or "Ft-cd".

Zero Offset Adjustment of Light Function
- For best results zero the light sensor prior to use in a dark environment. Placing the light sensor end of the meter under a desktop or flat surface so as to block any light can accomplish this. Then press the "Unit/Zero Button" (3-4, Figure 1) to set the meter indication to zero.
- Zero point can drift due to environment temperature and battery power change as well as for other reasons. It is recommended that the zero be checked frequently using the above procedure.

5. OTHER FUNCTIONS

5-1 Hold Function
Press the "Hold Button" (3-2, Figure 1) to freeze the current reading value with a "HOLD" symbol on the display.

5-2 Data Record Function
1. The Data Record function records and displays the maximum and minimum reading values. Start the Data Record function by pressing the "Max./Min. Button" (3-3, Figure 1) once. There will be a "REC" symbol on the display.

2. With the REC symbol on the display:
- (a) Press the "Max./Min. Button" (3-3, Figure 1, Page 4) once and the "Max" symbol along with the maximum value will appear on the display.
- (b) Press the "Max./Min. Button" again, the "Min" symbol along with the minimum value will appear on the display.
- (c) To exit the memory record function, press the "Max./Min. Button" continuously for at least 2 seconds. The display will revert to the current reading.
- (d) Clear the "Max./Min. value recorded by pressing the "Hold Button" (3-2, Figure 1) once. Previous recorded "Max./Min. value will be given up and then revert to the REC function keep on recording.

5-3 Auto Power Off Disable
In order to prolong the battery life, the instrument has "Auto Power Off" function. The meter will switch off automatically if no buttons are pressed for around 10 minutes.

6. BATTERY REPLACEMENT

1. When the LCD display shows " ▬ " symbol, it is necessary to replace the battery. However measurements may still be made for several hours after the low battery indicator appears.
2. Open the "Battery Compartment/Cover" (3-12, Figure 1, Page 4) and remove the battery.
3. Install a 9V (Alkaline or Heavy duty type) and then reinstall the cover.

7. OPTIONAL TEMPERATURE PROBE AND OTHER ACCESSORIES

Thermocouple Probe (Type K) TP-01	• Measuring Range: -40 to 250°C (-40 to 482°F) • Max. short-term operating temperature: • It's an ultra fast response naked-bead thermocouple suitable for many general purpose applications.
Thermocouple Probe (Type K) TP-02A	• Measuring Range: -50 to 900°C (-50 to 1650°F) • Dimensions: 10 cm tube, 3.2 mm Dia.
Thermocouple Probe (Type K) TP-03	• Measuring Range: -50 to 1200°C (-50 to 2200°F) • Dimensions: 10 cm tube, 8 mm Dia.
Thermocouple Probe (Type K) TP-04 • Surface Temperature Probe	• Measuring Range: -50 to 400°C (-50 to 752°F) • Size: Temp. sensing head - 15 mm Dia. Probe length: 12 mm
Carrying Case CA-52A	• High quality carrying case with sash.

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

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

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