HHF81
Anemometer, Hygrometer, Light Meter, Thermometer
1. FEATURES ........................................................................................................ 1

2. SPECIFICATIONS .......................................................................................... 2
   2-1 General Specifications ............................................................................ 2
   2-2 Electrical Specifications ......................................................................... 2

3. FRONT PANEL DESCRIPTION AND DIAGRAM ........................................ 4

4. MEASURING PROCEDURES .......................................................................... 5
   4-1 Air Velocity Measurement ....................................................................... 5
   4-2 Temperature Measurement (Thermocouple) ............................................ 5
   4-3 Humidity and Ambient Temperature Measurement ............................... 6
   4-4 Light Measurement .................................................................................. 6

5. OTHER FUNCTIONS ...................................................................................... 7
   5-1 Hold Function .......................................................................................... 7
   5-2 Data Record Function ............................................................................. 7
   5-3 Auto Power Off Disable ......................................................................... 8

6. BATTERY REPLACEMENT ............................................................................ 8

7. OPTIONAL TEMPERATURE PROBE AND OTHER ACCESSORIES .......... 9
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

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

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

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Range</th>
<th>Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Velocity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ft/min</td>
<td>80 to 5910 ft/min</td>
<td>1 ft/min</td>
</tr>
<tr>
<td>m/s</td>
<td>0.4 to 30.0 m/s</td>
<td>0.1 m/s</td>
</tr>
<tr>
<td>km/h</td>
<td>1.4 to 108.0 km/h</td>
<td>0.1 km/h</td>
</tr>
<tr>
<td>MPH</td>
<td>0.9 to 67.0 mile/h</td>
<td>0.1 MPH</td>
</tr>
<tr>
<td>knots</td>
<td>0.8 to 58.3 knots</td>
<td>0.1 knots</td>
</tr>
<tr>
<td>Temperature (Thermistor)</td>
<td>32 to 122°F</td>
<td>0.1°F</td>
</tr>
<tr>
<td></td>
<td>0 to 50°C</td>
<td>0.1°C</td>
</tr>
<tr>
<td>Measurement</td>
<td>Range</td>
<td>Resolution</td>
</tr>
<tr>
<td>---------------------------</td>
<td>----------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Humidity</td>
<td>% RH 10 to 95% RH</td>
<td>0.1% RH</td>
</tr>
<tr>
<td>Temperature (Thermistor)</td>
<td>32 to 122°F</td>
<td>0.1°F</td>
</tr>
<tr>
<td></td>
<td>0 to 50°C</td>
<td>0.1°C</td>
</tr>
<tr>
<td>Light * auto range</td>
<td>Lux 0 to 2,200 Lux</td>
<td>1 Lux</td>
</tr>
<tr>
<td></td>
<td>1,800 to 20,000 Lux</td>
<td>10 Lux</td>
</tr>
<tr>
<td></td>
<td>Ft-cd 0 to 204.0 Fc</td>
<td>0.1 Ft-cd</td>
</tr>
<tr>
<td></td>
<td>170 to 2,000 Fc</td>
<td>1 Ft-cd</td>
</tr>
<tr>
<td>Temperature (Type K)</td>
<td>-148 to 2372°F</td>
<td>0.1°F</td>
</tr>
<tr>
<td></td>
<td>-100 to 13,000°C</td>
<td>0.1°C</td>
</tr>
</tbody>
</table>

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

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 3-7 Air Flow Sensor
3-2 Hold Button 3-8 Thermocouple Input Socket
3-3 Max./Min. Button 3-9 R. H. Sensor
3-4 Unit/Zero Button 3-10 Light Sensor
3-5 °C/°F Button 3-11 LCD Display
   Lux/Ft-cd Button 3-12 Battery/Compartment Cover
3-6 Function Button 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

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
</table>
| 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         | - 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. |
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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