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Part Number: 7603171
GTIN: 6298043998246

MarMonix®

MAL 900

Hot Wire Digital Anemometer

Instruction Manual

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Introduction

Marmonix MAL 900 is designed for precise measurement of wind velocity, airflow, and temperature. Its slim, extendable probe allows reliable operation in narrow or hard-to-reach spaces. With features such as unit conversion, Max/Min and average flow measurement, data storage, USB connectivity, and a large LCD display, it delivers stable performance and professional accuracy for HVAC, industrial, and environmental applications. The device provides up to 20 hours of continuous operation on four AAA batteries with dependable low-battery indication.

Applications

- HVAC system testing – airflow balance, duct efficiency, and ventilation performance.
- Industrial monitoring – cleanrooms, production environments, and process control.
- Environmental studies – wind speed, air movement, and temperature profiling.
- Agriculture and storage – monitoring ventilation in greenhouses, warehouses, and silos.
- Laboratory and research work – precise airflow and temperature measurement in experimental setups.

Package Contents

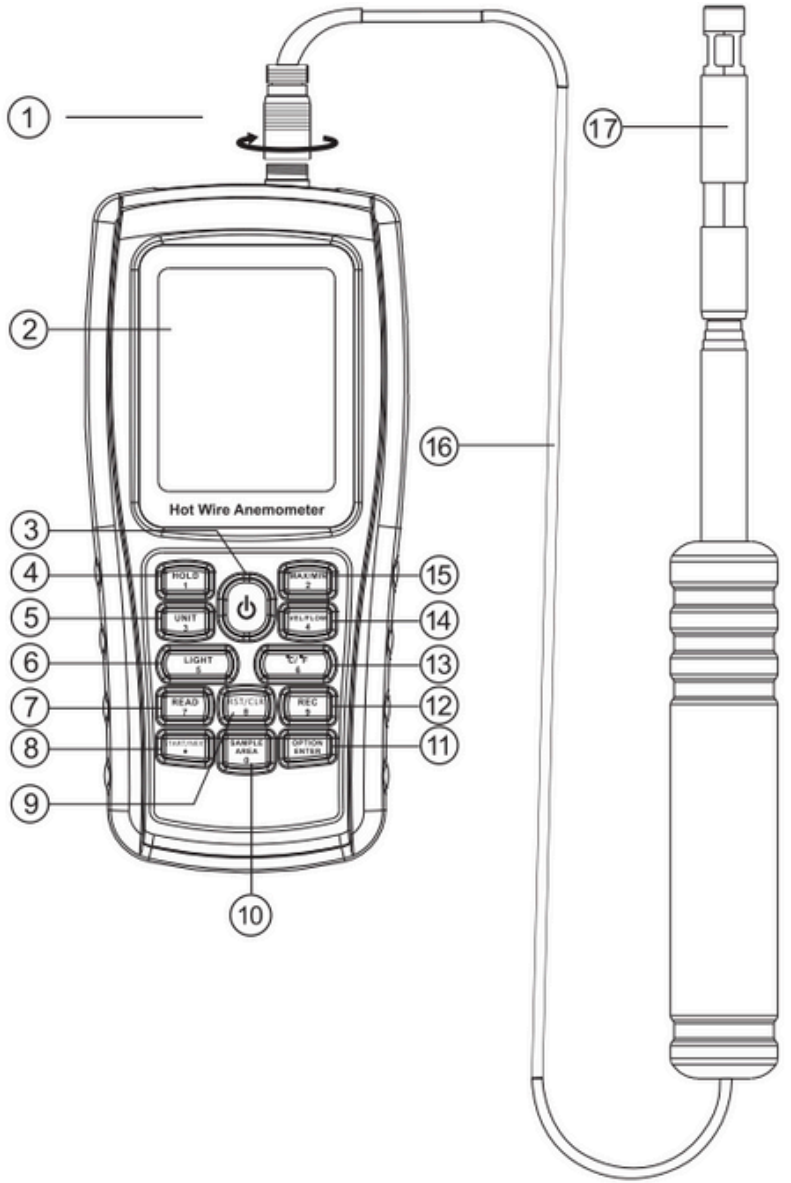
- MAL 900 Hot Wire Anemometer — 1 pc
- Sticker Pocket — 1 pc
- Probe — 1 pc
- Software Disc for Anemometer — 1 pc
- USB Computer Connecting Cable — 1 pc
- 1.5 V AAA Alkaline Batteries — 4 pcs
- English Instruction Manual — 1 pc
- Cloth Pouch — 1 pc

Product Features

- **Measurement of wind velocity, air temperature, and airflow:** Provides accurate assessment of key HVAC and environmental parameters.
- **Unit conversion for velocity, temperature, and flow**: Supports multiple engineering units for flexible application (m/s, ft/min, knots, km/h, mph, °C/°F, CMM, CFM).
- **Maximum and minimum wind velocity measurement**: Captures peak and lowest airflow values for performance evaluation.
- **2/3 Vmax and average wind flow calculation**: Offers advanced testing methods for duct analysis and system efficiency.
- **Data hold, storage, and deletion functions**: Allows freezing readings, storing up to 350 records, and managing data directly on the device.
- **Low battery indication**: Alerts the user to replace batteries in time, preventing inaccurate results.
- **Auto power-off after 10 minutes of inactivity**: Conserves energy during field use; function is bypassed when powered by USB.
- **Internal memory capacity: 350 records**: Enables convenient data logging without immediate PC transfer.
- **Backlit display:** Ensures visibility in dark or confined spaces.
- **USB interface for PC connectivity**; Facilitates real-time data transfer and analysis with included software.
- **Audible keypress alert:** Provides confirmation of key operations, reducing operational errors.
- **Large LCD display**: Presents velocity, temperature, and flow values clearly for efficient reading.

Diagram of the unit

(1) A Schematic Diagram



1).Connector (With direction indicator)

2). LCD display

3). ⏻ : ON/ OFF key

4). HOLD 1 :Data holding key

5). UNIT 3 :Unit transform key

6). LIGHT 5 :Backlight on/off key

7). READ 7 :Data read key

8). START/NEXT * :Measuring key for average value of wind flow

9). RST/CLR 8 :Reset key in READ mode/clear recorded

10). SAMPLE AREA 0 :Duct area input and sampling time setting key

11). OPTION ENTER :Wind flow AVG 2/3 MAX and figure input

12). REC 9 :Data record key

13). °C/°F 6 :Temperature unit switch

14). VEL/FLOW 4 :Wind velocity/flow transform key

15). MAX/MIN 2 :Max/Min value switch

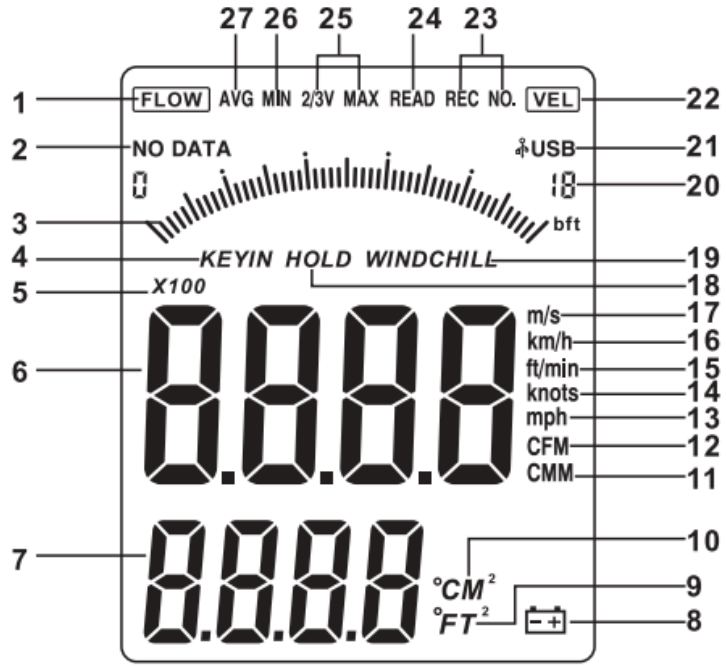
16). Connecting wire

17). Probe

Note:

The above key function descriptions provide only a brief introduction. For detailed guidance, please refer to the operation instructions section.

(2) Description of the symbols on the display unit



1. FLOW : Air flow symbol
2. NO DATA : No data store symbol
3. Dynamic indicator bar of velocity or air flow
4. KEYIN : Enter duct area values symbol
5. X100 : Air multiplier
6. Wind velocity and air flow display area
7. Duct area display area/Wind temperature display
8. : Low battery icon
9. °FT² : Indicating duct area in square feet when in flow function ; °F is used to indicate wind temperature in metric;

10. ℃CM^2 : Indicating duct area in square meter in flow function, "℃ " is used to indicate wind temperature in metric.
11. CMM : Wind flow unit (cube meter / minute)
12. CFM : Wind flow unit (cube foot / minute)
13. mph : Wind velocity unit (mile / hour)
14. knots : Wind velocity unit (sea mile / hour)
15. ft/min : Wind velocity unit (foot / minute)
16. km/h : Wind velocity unit (kilometer / hour)
17. m/s : Wind velocity unit (meter / second)
18. HOLD : Data hold
19. WINDCHILL : Windchill symbol
20. 18 : Velocity sampling rate; Sequential number display area of average wind flow
21. USB : When connecting PC with USB cable, this symbol appears
22. : Wind velocity symbol
23. VEL : Recording the using number and signals
24. REC NO. : Read stored data symbol
25. READ 2/3V MAX : 2/3 of maximum value measurement (one of the wind flow measuring method)
26. : Showing minimum values
27. MIN AVG : When measuring average values (one of the wind flow measuring Method) this symbol appears.

Specifications

1. Wind Velocity Range:

Unit	Wind Velocity	Resolution	Lowest Point of start value	Accouracy
m/s	0.0-30.0	0.001	0.3	±3%±0.1
Ft/min	0.0-5860	0.01/0.1/1	60	±3%±20
Knots	0.0-55.0	0.01/0.01	0.6	±3%±0.2
Km/h	0.0-90.0	0.001	1.0	±3%±0.4
Mph	0.0-65	0.001/0.01	0.7	±3%±0.2

2. Wind flow range :

- CMM: 0-999900 m^3/min
- CFM: 0-999900 ft^3/min

Unit	Range	Resolution	Area
CFM(FT^3/MIN)	0-999900	0.001-100	0.001-9999
CMM(M^3/MIN)	0-999900	0.001-100	0.001-9999

3. Unit Conversion :

	m/s	Ft/min	Knots	Km/h	Mph
1m/s	1	196.87	1.944	3.60	2.24
1ft/min	0.00508	1	0.00987	0.01829	0.01138
1knots	0.5144	101.27	1	1.8519	1.1523
1km/h	0.2778	54.69	0.54	1	0.6222
1mph	0.4464	87.89	0.8679	1.6071	1

4. Air Temperature Range:

Wind Temperature

Unit	Scale	Resolution	Accuracy
℃	0.0-45.0	0.1	±1.0℃
℉	32.0-113.0	0.1	±1.8℉

5. Operation Conditions

	Temperature	Humidity
Host	0-50℃ (32℉~122℉)	⩽80% RH
Sensor	0-60℃ (32℉~140℉)	

6. Storage Conditions:

Temperature	-40℃~60℃ (-40℉~140℉)
Humidity	⩽80%RH

7. Power Supply: 4 × AAA 1.5 V alkaline batteries

8. Low Battery Indication: 4.4 V ± 0.2 V

9. Standby Current: 0 μA

10. Operating Current: ≤ 60 mA

11. Battery Life: Approx. 20 hours (continuous use)

12. Dimensions:

- Meter: 77 × 36 × 164 mm
- Probe: 30.5 × 30.5 × 305 mm

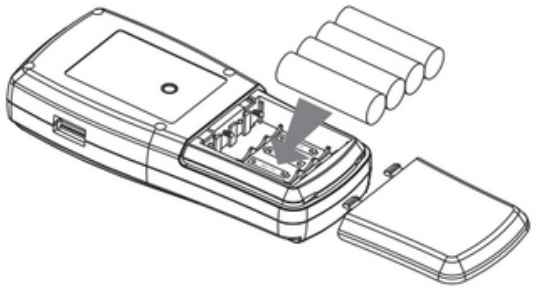
  30.5 × 30.5 ×1000MM(Elongated)

13. Net Weight: 330 g (excluding batteries)

Operating Instructions

Preparing the Device

Open the battery compartment and insert the batteries correctly, as shown in the figure below.



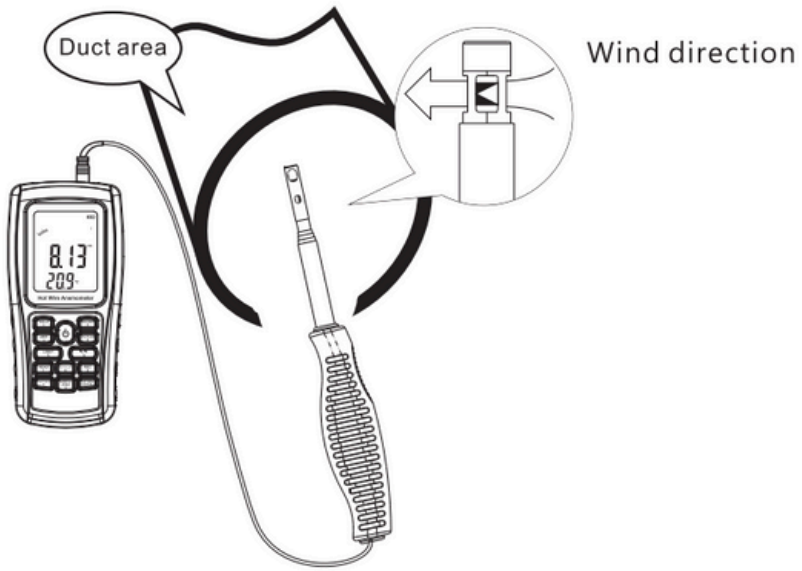
long Press the [⏻]. All symbols will appear on the screen for 1 second, after which the unit enters wind velocity and temperature measurement mode. The LCD display will appear as shown in the following figure.

Selecting Units for Wind Velocity and Temperature

1. Press the [UNIT] key to cycle through the wind velocity units: m/s, km/h, ft/min, knots, mph. (Default: m/s)
2. Press the [°C/°F] key to toggle the temperature unit between °C and °F. (Default: °C)

Placing the probe

Hold the anemometer by hand and position the vane in the airflow, ensuring the air direction aligns with the arrows marked on the inner wall of the vane. Avoid bending or applying pressure to the probe sensor, as this may affect accuracy.



(1) Measurement of Wind Velocity and Temperature

1. Wait 2 seconds for the unit to initialize.
2. Place the probe in the airflow direction to obtain accurate data (temperature within 20 °C).
3. Press the Light key to toggle the backlight.
   - The backlight turns on when the vane rotates or when any key is pressed.
   - Backlight turns off if no key is pressed for 7 seconds.

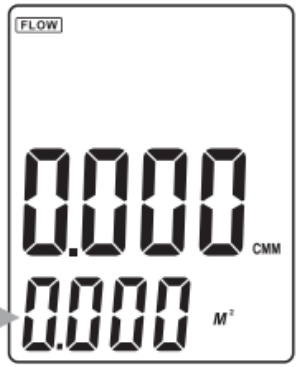
Wind / Air Temperature Measurement

1. When measuring, the vane icon appears along with the TEMP symbol.
2. Press the °C/°F key (or key 6) to switch between °C and °F.

(2) Measurement of Wind flow

1. Press the [VEL/FLOW] key to enter FLOW mode. The LCD display will appear as shown in the following figure.

(If the area value has been set before, the last setting will be shown)



2. Selecting Wind Flow and Duct Area Units

- Press the [UNIT] key to switch wind flow units between CMM and CFM. (Default: CMM)
- Press the [UNIT] key to switch area units between m² and ft². (Default: m²)
- The area unit automatically corresponds to the wind flow unit:

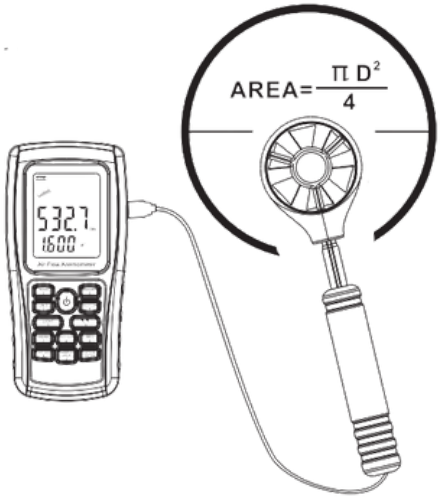
(1) CMM → m²

(2) CFM → ft²

To set a new duct area:

- Press the [AREA] key; the four digits on the upper LCD will clear.
- Use the numeric keys to input the new area (e.g., 1.6).
- Press the [ENTER] key to confirm.
- The LCD will then display the updated setting as shown in the figure.

3. Place the probe in the duct area to immediately measure the current wind flow value. The LCD will display as shown in the following figure.



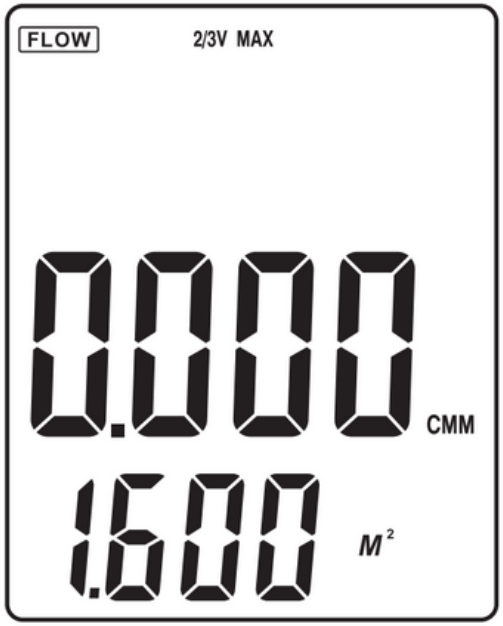
4. Wind Flow Calculation Formula: Flow = Velocity × Free Area
5. Testing Wind Velocity: The bar icon in the middle of the LCD changes in response to wind flow and velocity.

Notes:

- If the duct area is not entered, wind flow measurement cannot be performed.
- When wind flow exceeds 9999, the LCD displays ×10 or ×100, indicating the measured value is multiplied accordingly.

(3) Measurement of 2/3 Vmax Wind Flow

1. Press the [VEL/FLOW] key to enter FLOW mode.
2. Select the desired unit with the [UNIT] key (e.g., CMM for wind flow, m² for area).
3. Press the [AREA] key; the LCD clears. Enter the duct area (e.g., 1.6) using the numeric keys, then press [ENTER] to confirm.
4. Press the [OPTION] key to select 2/3 Vmax mode.
5. The LCD will display as shown in the following figure.



6. Aim the vane at the duct area to measure the 2/3 Vmax wind flow immediately. Press the [OPTION] key again to exit 2/3 Vmax mode.

2/3 Vmax Wind Flow Formula: Flow = (2/3) × Maximum Wind Velocity × Duct Area

(4) Measurement of Average Wind Flow

1. Press the [VEL/FLOW] key to enter FLOW mode.
2. Select the desired unit with the [UNIT] key (e.g., CMM for wind flow, m² for area).
3. Press the [AREA] key; the LCD clears. Input the duct area (e.g., 1.6) using the numeric keys, then press [ENTER] to confirm.
4. Press the [OPTION] key to select AVG mode.
5. The LCD will display as shown in the following figure.

6. Aim the vane at the selected point of the duct area and press the [NEXT] key. A serial number will appear in the lower-right corner of the LCD, and the first group of wind flow values will be measured. The display will appear as shown in the following figure.

7. Select the next test point and press the [NEXT] key to measure the second group of average wind flow values.
8. Repeat this procedure for up to 12 groups. The LCD will then display the results as shown in the following figure (TFLOW AVG).

9. Press the [OPTION] key again to exit the average wind flow measurement mode.
10. Average Wind Flow Formula

    Flow = (1 / N) × Σ (Velocity × Free Area)

Note:

The average value is displayed only by pressing the [NEXT] key. If airflow is present in the duct area, the LCD will show the measured average wind flow.

(5) Max/Min Measurement

During wind flow or velocity measurement, press the [MAX/MIN] key to display maximum and minimum values. Press the key again to exit.

Example:

1. When measuring the maximum wind velocity, MAX appears on the upper LCD, as shown in the following figure.

2. When measuring the minimum wind velocity, MIN appears on the upper LCD, as shown in the following figure.

Note:

The Max/Min measurement procedure for wind flow is identical to that for wind velocity.

(6) Data Hold / Storage / Reading / Clearing

- **Data Holding**

1. During wind velocity or flow measurement, press the [HOLD] key to freeze the reading.
2. Press [HOLD] again to return to normal operation.

- **Data Storage**

1. Instantaneous (One-Shot) Storage: In VEL mode, press [SAMPLE] and set the sampling rate to 0.

- Press [ENTER] to confirm.
- Each time [REC] is pressed, the current reading is stored.

2. Automatic Storage: In VEL mode, press [SAMPLE], input a sampling rate (1–99 seconds) using the numeric keys, then press [ENTER] to confirm. Press [REC] to start automatic storage. The REC icon appears on the LCD. Press [REC] again to stop data storage.

3. Stop Recording: Press [REC] to end recording at any time.

- **Reading Stored Data**

1. Press the [READ] key to review stored data sequentially. The LCD first displays the serial number, followed by the data.
2. Press [RST] to return to normal operation.

- **Reading Stored Data (Random Access)**

1. In READ mode, press the [SAMPLE] key and enter the record number using the numeric keys.
2. Press [ENTER] to display the selected data.
3. Press [RESET] to exit.

- **Clearing Stored Data**

1. Press and hold the [CLEAR] key for 5 seconds.
2. CRL will appear on the LCD, confirming that all stored data has been erased.

Note:

- In instantaneous storage mode, press [SAMPLE] and set the sampling rate to 0 seconds, then press [ENTER] to confirm.
- Press [REC] to complete recording; otherwise, the data will not be saved.
- Maximum storage capacity: 500 readings.
- If the selected record number exceeds the total stored, the LCD will display the last stored reading.

Connection with PC

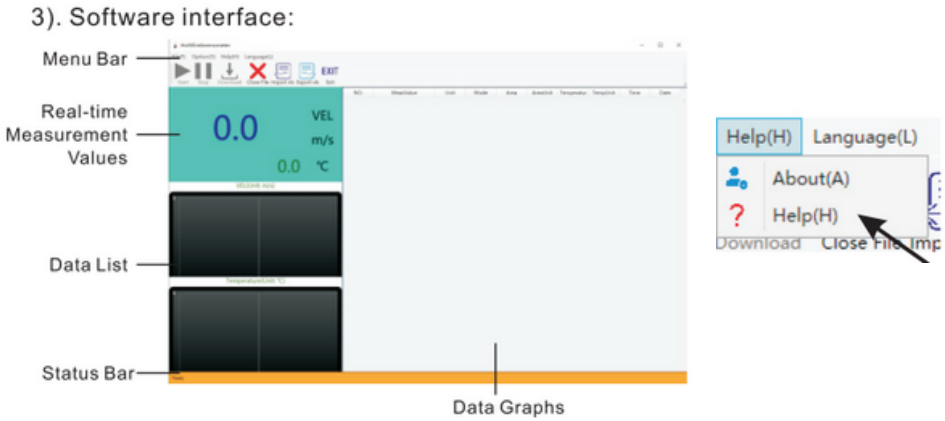
(1) Computer Requirements

- CPU: Pentium 600 MHz or higher
- One available USB interface
- Monitor resolution: minimum 800 × 600 (or higher), color mode
- Available memory: at least 8 MB
- Available disk space: at least 50 MB
- Operating system: Microsoft Windows 98 / ME / 2000 / XP Home / XP Professional (32-bit)

(2) Software Installation

- Go to marmonix.co in your browser.
- Search the product name in the site's search bar.
- Locate the software in the Download section and download it.
- Extract the ZIP file, then double-click "Hot Wire Anemometer.exe" to install.

(3) Software interface



For a detailed operation introduction of the software, please refer to:
Menu Bar - Help - Open Manual

Troubleshooting

If the unit is not operating correctly, check the following:

1. **Blank Screen**

Verify that the batteries are installed correctly. Open the battery compartment on the rear of the unit and ensure the "+" and "–" symbols match the markings inside.

2. **PC Connection Failure**

Check the USB cable. If defective, replace with a new cable.

3. **Incorrect Wind Flow Reading**

Ensure the vane is not blocked or obstructed.

4. **Incorrect Wind Temperature Reading**

Check if the temperature sensor has become loose or damaged.

5. **Data Reading Issues**

Confirm the device is operating within the specified temperature and humidity conditions.

Maintenance & Warranty

(1) Maintenance

Battery Replacement and Care

- Remove the battery if the unit will not be used for extended periods to prevent leakage that may damage the compartment and electrodes.
- If the low battery symbol appears on the LCD, replace the battery immediately to avoid inaccurate readings or leakage that may severely damage the unit.
- The battery compartment is located on the lower rear of the unit. Open the cover, replace the old battery with a new one (observe correct polarity), and close the cover securely.

Cleaning the Casing

- Do not use alcohol or thinner, as these may damage the LCD surface. Clean the casing lightly with a small amount of clean water.
- Avoid impact and operation in humid conditions.

Storage and Operating Conditions

Do not store or use the unit in environments subject to:

- Water splashes or excessive dust
- Air containing high salt or sulfur content
- Air with corrosive gases or chemicals
- High temperature or humidity (above 50 °C, 90%) or direct sunlight

(2) Warranty

For warranty terms, refer to the warranty card provided. The manufacturer assumes no liability for:

- Transportation damage
- Incorrect use or operation
- Unauthorized manipulation, alteration, or repair attempts
- Claims without a valid warranty card or invoice

Note:

When not connected to a PC, the unit will automatically power off after 10 minutes of inactivity.

Specific Declarations

- Product design, manual updates, and repairs must be performed only by authorized technicians. Do not attempt alterations or unauthorized repairs.
- Battery disposal must comply with local laws and regulations.
- The manufacturer accepts no responsibility for the use of this product's output as direct or indirect evidence.