

# TENMARS

## Temperature Humidity Meter

*TM-182 / TM-184*

User's Manual



HB2TM1840003

TENMARS ELECTRONICS CO., LTD



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## 1. PREFACE


Thank you for your patronage, please read the operating instructions before you use this meter, so you will operate the meter correctly.



### WARNING

Without following the operating instructions might damage the instrument or its component

## 2. CHARACTERISTICS

- LCD display.
- It shows both the value of temperature and humidity.
- The measurement of °C or °F.
- Real time data.
- Data Hold function.
- Alarm function.
- Back Light
- Auto Power Off
- DEW-POINT and WET-BULB temperature.
- USB PC interface.
- Low battery indication “”.
- Over load display “OL”.



## WARNING

Use this meter in high humidity environment, please put the meter in warm and low humidity place for 24 hours after finishing measurement.



## WARNING

In order to ensure the accuracy of this meter, We strongly recommend send the meter back to original factory for maintenance every year.

### 3. General Specifications

- Display :Double rows LCD, humidity detective capability up to 999, and temperature detective capability up to 1999.
- Temperature sensor :Diode.
- Humidity Sensor :Capacitor Sensor.
- Sampling :1 times/second.
- Power :9V battery · NEDA 1604 · IEC 6F22 or JIS 006P(Only data logger use), or AC to DC Adapter. (9V/300mA).
- Resolution :0.1%RH,0.1°C,0.1°F.

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- Data logging capacity with Memory Size : 30000 data sets.
- Size :130 x56 x38 mm ( LxWxH ) .
- Weight :250g.
- Operating Temperature and Humidity :  
-20°C ~ +60°C, <95% RH.(Non-condensing).
- Storage Temperature and Humidity :  
-10 to 60°C, <70% RH. (Non-condensing).
- Consumption Current :  $\leq 10$ mA.
- Standard Accessories :User's manual, 9V battery ,Carrying case ,MINI USB 4P(MALE) to USB A Type cable, Install CD disk.



## WARNING

Do not Touch Humidity Sensor Surfaces.

## 4. Electrical Specification

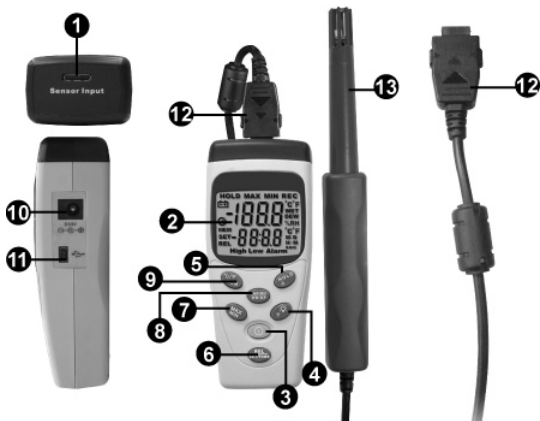
Measurement Range :

- Humidity :1%~99%.
- Temperature :  
-20.0°C ~ 60.0°C / -4.0°F ~ 140.0°F.
- Temperature Accuracy (TM-182) :  
±0.8°C / ±1.5°F (0.0°C ~ 40.0°C / 32°F ~ 104°F) ; other ±2.0°C / 3.6°F.
- Temperature Accuracy (TM-184):  
±0.5°C / ±1.0°F (0.0°C ~ 40.0°C / 32°F ~ 104°F) ; other ±2.0°C / 3.6°F.
- Humidity Accuracy (TM-182) :  
±3.0%RH (20%RH~80%RH). at 25°C  
±5.0%RH (<20%RH, >80%RH). at 25°C
- Humidity Accuracy (TM-184) :  
±1.0%RH (15%RH~90%RH). at 25°C  
±2.5%RH (<15%RH, >90%RH). at 25°C



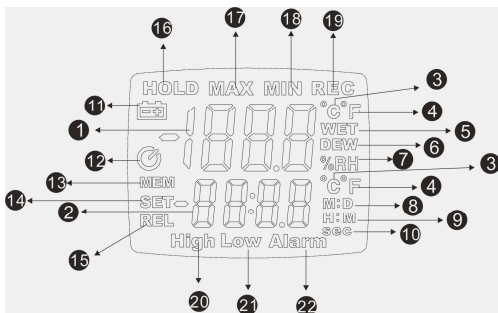
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## 5. Instrument description










- |                          |                           |
|--------------------------|---------------------------|
| 1. Sensor Probe input(-) | 2. LCD                    |
| 3. Power Button          | 4. Backlight/Down Button  |
| 5. Hold/Up Button        | 6. REL/SET/Time Button    |
| 7. MAX/Min/MEM Button    | 8. TMP/RH/WB/DP Button    |
| 9. REC/°C/°F Button      | 10. External power DC 9V  |
| 11. USB interface        | 12. Sensor Probe input(+) |
| 13. Sensor Probe         |                           |

## 6. LCD description







- |                             |                           |
|-----------------------------|---------------------------|
| 1. Primary Display          | 2. Secondary Display      |
| 3. Temperature unit (°C)    | 4. Temperature unit (°F)  |
| 5. WET-BULB temperature     | 6. DEW-POINT temperature  |
| 7. Humidity unit            | 8. Time unit (month: day) |
| 9. Time unit (hour: minute) | 10. Time unit (second)    |
| 11. Low battery symbol      | 12. Auto power off symbol |
| 13. Memory reading symbol   | 14. SET symbol            |
| 15. REL symbol              | 16. Hold symbol           |
| 17. MAX symbol              | 19. REC symbol            |
| 18. MIN symbol              |                           |
| 20. High symbol             | 21. LOW symbol            |
| 22. Alarm symbol            |                           |





## 7. Measurement Procedures

- Press “” button to turn on the meter, press “” button again to turn off the meter.
- Hold “” button and press “” button to change temperature unit.(Deform temperature unit  $^{\circ}\text{C}$ )
- Press “” button to change the display data.  
Humidity(%RH)→DEW-POINT(WET)→WET-BULB(DEW).
- Press “” button to lock display data on the LCD , press “” button again to unlock.



## 8. Maximum/Minimum

- Press “” button to enter MAX/MIN record mode and the LCD will display Maximum temperature data, and start to record maximum and minimum data, LCD secondary display shows that enter MAX/MIN record mode the time elapsed, when entering MAX/MIN record mode, The maximum storage is up to 99 minutes and 99seconds.
- Press “” button to change Maximum or Minimum
- Press “” button to change the display data. (Temperature→Humidity (%RH)→DEW-POINT(WET)→WET-BULB (DEW).
- Press “” button for more than 1 second to exit maximum/minimum mode.





## 9. Auto Power Off

- If you want disable auto power off, please hold “” button and press “” button, the auto power off symbol will not display on the LCD.
- If you want enable auto power off please hold “” button and press “” button again the auto power off symbol will display on the LCD.
- Auto power off time is 30 minutes long.

## 10. Relative Deduction Value(REL)

- Press “” button to save the current measured result, and then the current measured result will be subtracted by the next measured result, and the difference from the subtraction will appear on the LCD. Press “” button again to exit REL mode.

## 11. Setup Mode





- Hold “” button and press “” button into the setup mode.
- Press “” button to change the setup function. (Setup function see Note1) .
- Push “” button to save setup data.

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Note1: you can set up 7 different functions in setup mode

1. Enable or disable alarm
2. Low alarm temperature setup
3. High alarm temperature setup
4. Low alarm humidity setup
5. High alarm humidity setup
6. Clock setup
7. Auto recording time setup
8. Auto power off time setup


## 12. Enable Alarm Setup

- Hold “” button and press “” button to enable alarm setup
- If you want to enable alarm please press “” or “” button, LCD will display Alarm On.








- Press “” button to save the setting.

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- When alarm sound action you can push  button to stop alarm sound and this time to stop alarm mode ,this time meter auto set alarm data to High Temperature(Humidity) 60.0°C;99.9%RH,Low Alarm Temperature(Humidity) -20.0°C;0.1%RH.

## 13. Low Alarm Temperature Setup






- Hold  button and press  button first.
- And then press  button to enable Low Alarm Temperature setup.
- If you want to set the range for the low alarm temperature function, please Press  or  button.
- Low alarm temperature range from -20.0°C to 60.0°C (-4.0°F~140.0°F).





- Press “” button to save the setting.







## 14. High Alarm Temperature Setup

- Hold “” button and press “” button first.
- And then press “” button twice to enable High Alarm Temperature setup.
- If you want to change the range for the high alarm temperature function, please press “” or “” button.
- High alarm temperature range is from  $-20.0^{\circ}\text{C}$  to  $60.0^{\circ}\text{C}$  ( $-4.0^{\circ}\text{F}$ ~ $140.0^{\circ}\text{F}$ ).








- Push “” button to save the setting

## 15. Low Alarm Humidity Setup

- Hold “” button and press “” button first.
- And then press “” button three times to enable Low Alarm Humidity setup.
- If you want to change the range for the low alarm humidity function, please push “” or “” button.
- Low alarm humidity range:  
0.1%RH~99.9%RH.
- Press “” button to save the setting.








## 16. High Alarm Humidity Setup

- Hold “” button and press “” button first.
- And then press “” button four times to enable High Alarm Humidity setup.
- If you want to change the range for the high alarm humidity function, please press “” or “” button.
- High alarm humidity range is from 0.1%RH to 99.9%RH




- Press “” button to save the setting.

## 17. Clock Setup

- Hold “” button and press “” button first.
- And then press “” button five times to enable Clock Setup.
- This meter clock is 24 hour time setting.
- Use “” or “” to select the digit you want to adjust.
- Use “” or “” button to change digit.



- Press “” button to save the setting.
- Time deform set “2008/01/01 12:12:12”.






## 18. Auto Recording Time Setup

- Hold “(1)” button and press “REL SET/TIME” button first.
- And then press “REL SET/TIME” button 6 times to enable Auto Recording Time Setup.
- Use “REC °C/°F” or “MX/MN MEM” to select option to adjust.
- Use “HOLD ▲” or “☀ ▼” button to change digit.




- Press “TMP/RH WB/DP” button to save the setting.
- Maximum auto recording time: 23 hours 59 minutes 59 seconds.
- Minimum auto recording time: 1 second.


### 19. Auto Power off time setup

- Hold “” button and press “” button first.
- And then press “” button seven times to enable Auto Power off time Setup.
- Use “” or “” button to change digit.












- Press “” button to save the setting.
- If you do not want auto power to be on, you can set auto power off time to be 0.
- Maximum auto power off time: 99 minutes.

## 20. Single Data Record

- Press “” button, the meter will save the current measured result, and REC will also appear on the LCD.


## 21. Viewing Data Records

- Hold “” button and press “” button to view the saved data records.
- Use “” or “” button to see the next or previous records.
- Press “” to change temperature unit.
- Press “” button to change display data (Temperature→Humidity→DEW-POINT→WET-BULB).
- Press “” button to change time data (H:M→M:D→year).
- Hold “” button and press “” button again to exit viewing data records mode.

## 22. Battery Replacement



### WARNING

If the LCD display “” symbol, please replace the battery immediately

- Turn off the instrument.
- Open the battery cover and remove the battery.
- Replace with four-9V NEDA 1604, IEC 6F22 or JIS 006P size battery.
- Install the battery cover.



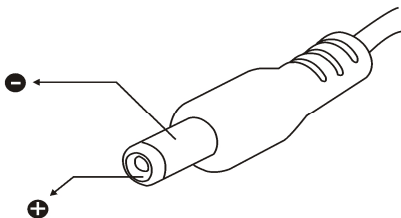
### WARNING

If you will not use this meter for a long time, please remove the battery in order to protect the meter.



## 23. External DC Power

- External AC to DC adapter: Voltage 9VDC(8~14VDCMax)
- Socket : pin Positive, Ground Casing External
- Diameter 5.5mm internal Diameter 2.1 mm



## 24. Safety Precaution

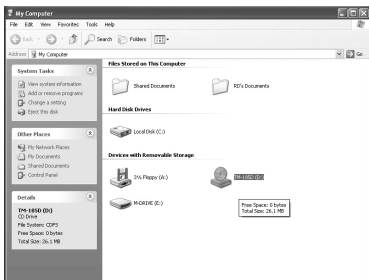
- For cleaning the instrument, use a soft dry cloth. Never use a wet cloth, solvents or water, etc.
- Operation Altitude: Up to 2000M.
- Operating Environment: Indoors use only. This instrument has been designed for being used in an environment of pollution degree 2.

## 25. Computer Grade

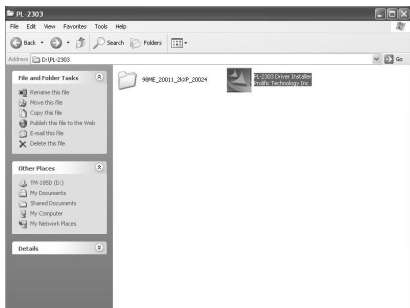
- CPU :Pentium III 1000MHZ.
- RAM :SDRAM 256MB.
- Hard Disk :200MB.
- OS :Windows 2000, Windows XP.
- Display: 800x600 256 cooler.

## 26. Software installation

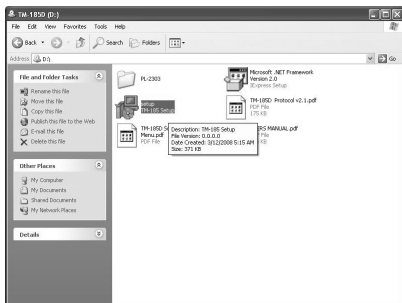
- Please insert the CD into the PC to install the software first.



- Please select the USB driver to be installed, which is E:\TM-184\PL-2303 Driver Installer.exe (windows 2000 SP4/windows XP SP2), click twice on the left key of the mouse to install the USB driver.

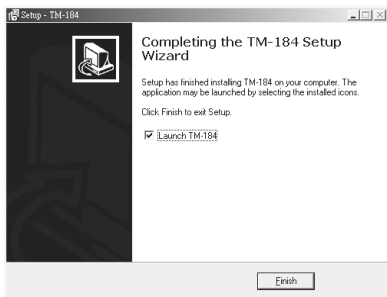


- Select the SETUP.EXE i.e., E:\SETUP.EXE and installs the desktop icon

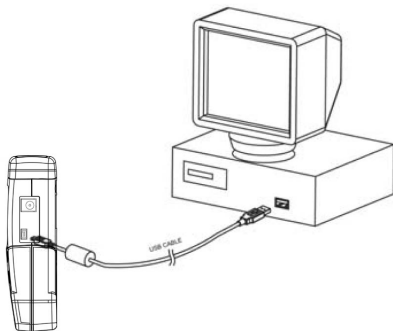


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- Tack out the CD from PC after completed the installation.



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



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- Select the desktop icon TM-184 and click twice on left key of the mouse to run the procedure.



## 27. Maintenance

- Do not use the meter in an environment with severe change; do not store the unit in an environment with high temperature, high humidity, and high vibration
- Take battery out if the meter has not been used for a long period of time
- The Diode temperature probe is used to measure temperature and the capacitive humidity sensor is used to measure humidity
- The thermocouple and humidity sensor will start aging under the influence of

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oxidation, reduction, corrosion, pollution, vaporization, diffusion or other metallurgy. The aging process will affect its precision seriously.

- Cleaning and inspection of temperature probe:
- The smoke, coal, dust, grease attached on the protective tube of temperature probe will slow down the heat conduction of the thermocouple and cause measuring error. Therefore, it should be cleaned periodically. The metal coating of thin thermocouple should be replaced properly upon the occurrence of corrosion.
- Cleaning and inspection of humidity sensor:
- The smoke and dust attached on the humidity sensor will slow down the function of humidity sensor and cause measuring error. Therefore, it should be cleaned periodically. Blow off the dust with mild compressed air instead of water or alcohol. The aluminum plate inside the humidity sensor should be replaced upon the occurrence of corrosion.

## 28. End of life



### Caution

This symbol indicates that equipment and its accessories should be subject to a separate collection and correct disposal.

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## **Professional Electrical and Environment Test & Measurement Instruments:**

Battery Capacity / Impedance Tester, TACHO Meter ,LED light meter, Temperature & Humidity meter ,Infrared Thermometer, Sound level meter ,Light meter, EMF meter, UV Light meter, RF meter, Hot wire Anemometer, CO meter Anemometer, Lan cable tester, CO<sub>2</sub> meter, Solar power meter, Radiation meter, Clamp meter, Multimeter ,Phase Rotation test, Digital Insulation tester

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well all over the world**

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