

TENMARS

Hot-Wire Air Velocity Meter

TM-4001 / TM-4002
/ TM-4003

User's
Manual



HB2TM4001000



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1. PREFACE

Thank you for purchasing out product.

Please, read the operating instructions in details before you use this Hot-Wire Velocity meter, so you will operate the meter correctly.


This meter can be operated in industry and home.



WARNING

Non-compliance warning and/or operating instructions may damage the instrument or its parts or injuring the operator.

2. GENERAL DESCRIPTION

- Fast response probe.
- Air flow volume.(Use platinum-resistors sensor)
- Telescoping probe.
- Instant/ AVG/ 2/3V MAX flow measurement.
- Max/AVG/Min & data hold function.
- Low batter indication “  ”.
- LCD triple display with LED backlight.
- Manual data memory and read function (99 records). (TM-4001/TM-4002)
- Humidity measurement. (TM-4002/TM-4003)
- Calculate dew point temperature, wet bulb temperature. (TM-4002/TM-4003)
- Absolute pressure measurement. (TM-4003)
- Auto power off with disable function.
- USB PC serial interface. (TM-4003)

- Data logging capacity(8000 records).(TM-4003)
- Sampling interval : Max 24 hours; Min 1S.
(TM-4003)

3. SPECIFICATIONS (23°C±5°C)

Air velocity measurement:

Unit	Range	Resolution	Accuracy
m/s	0.01~40.00	0.01	±3%of reading ±1%FS
Km/hr(kph)	0.02~144.0	0.1	
mph	0.12~89.5	0.1	
Knots(kts)	0.11~77.75	0.01	
Ft/min(fpm)	0~7874.0	0.1	
Beaufort	1~12	1	-

Air flow(volume) calculate:

Unit	Range	Resolution	Accuracy
CMM	0~9999	0.1	-
CFM	0~9999	0.1	-

Temperature Measurement:

Unit	Range	Resolution	Accuracy
°C	-20~50	0.1	±1°C
°F	-4~122	0.1	±1.8°F

Humidity(TM-4002、TM-4003):

Unit	Range	Resolution	Accuracy
%RH	20~80	0.1	±3.5%RH
%RH	<20,>80	0.1	±5.0%RH

Absolute pressure(TM-4003):

Unit	Range	Resolution	Accuracy
hPa	350~1100	0.1	±2hPa
mmHg	263~825	0.1	±1.5mmHg
inHg	10.3~32	0.1	±0.1

- Meter Dimension: 156x73x35mm(Lx W x H).
- Probe Dimension:
 - Wire length: 160cm
 - Probe length: 128cm
 - Probe diameter of tip: 1.6cm
 - Probe diameter of base: 3.2cm
- Meter weight: 250g.(without batteries)
- Probe weight: 240g.
- Power supply: UM-4(AAA)1.5V*6PCS or AC100~240V DC9V/0.5A(9mm).
- Battery life: 10 hours.
- Operating temperature & humidity:
 - 20°C to +50°C, <80 %RH.
- Storage temperature & humidity :
 - 10°C to +50°C, <70 %RH.
- Data output: USB PC serial interface. (TM-4003)
- Display: 60mm(W) x 47mm(L) monochrome LCD and backlight.
- Standard accessories:
 - UM-4(AAA)1.5V batteryx6 PCS,

User's manual, USB cable.(TM-4003),
AC100~240V DC9V/0.5A.(9mm)×1(TM-4003),
Install CD disk (TM-4003).

**WARNING**

To ensure that the accuracy of the meter, we recommend for calibration once a year.

- EMC: This test was designed in accordance with EMC standards in force and its compatibility has been tested in accordance with EN61326-1 (2006).

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4. INSTRUMENT DESCRIPTION



- | | |
|-------------------------|------------------------|
| 1. HOLD Button | 12. Enter Button |
| 2. Power Button | 13. DC power |
| 3. MAX/MIN Button | 14. USB |
| 4. Left/read Button | 15. Probe Jack |
| 5. Mode Button | 16. Holder |
| 6. Display | 17. Battery holder |
| 7. Backlight Button | 18. Battery cover |
| 8. Unit Button | 19. Hot-wire sensor |
| 9. Up Button | 20. Humidity sensor |
| 10. Right/record Button | 21. Temperature sensor |
| 11. Down Button | |

5. LCD DESCRIPTION



First window: Air velocity display

- SET : Setting mode indication.
- REC : Record mode indication.
- HOLD : Data hold indication.
- MAX : Maximum measured display indication.
- MIN : Minimum measured display indication.
- AVG : Average measured display indication.
- [batteries icon] : Low battery indication.
- [power icon] : Auto power off indication.
- m/s: Meters per second.
- Knots : knots.
- km/hr : Kilometers per hour.
- mile/hr : Miles per hour.
- ft/min : Feet per minute.
- Beau for : Beaufort.

Second window: Temperature, humidity, air velocity and Absolute pressure display.

- WET: Wet bulb temperature indication.
- DEW: Dew point temperature indication.
- %RH: humidity indication.
- °C: Degree Celsius.
- °F: Degree Fahrenheit.
- hPa: Hectopascal indication.
- inHg: Inch of mercury.
- mmHg: Millimeter of mercury.
- CFM: Cubic feet per minute.
- CMM: Cubic meters per minute.
- 2/3V MAX : 2/3V Maximum mode is selected indication.
- ×10: Multiply reading by ten
- ×100: Multiply reading by hundred.
- ×1000: Multiply reading by thousand.

Third window: Air flow setting and record display

- Sample: Sampling indication.
- INTV: Sample interval indication.
- Area: Duct area indication.
- TC: Average time constant indication.
- AVG: Average mode is selected indication.

- K: Number of records by one thousand.
- [●]: Round duct diameter dimension indication.
- [■XY]: Rectangle duct XY dimension indication.
- h: Hour indication.
- m: Minute indication.
- S: Second indication.
- in: Inches indication.
- cm: Centimeter indication.
- ft²: Square feet indication.
- m²: Square meters indication.



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
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6. POWER ON/OFF


Press  button to turn on or turn off the power.

7. Auto power off

The duration of auto power off time is 15 minutes.


If you want disable auto power off, please hold  button and press  button at the power shutdown mode. When you see the “n-SL” display on the LCD, that means the auto power off function is off. If you want enable auto power off, please restart the meter.

8. BACKLIGHT

Press  button to turn on the backlight, press this button again to turn it off.

The backlight time is 15 seconds.

9. CHANGE AIR VELOCITY UNIT

Press  button to change the air velocity unit.

m/s→knots→km/hr→mile/hr→ft/min→Beaufort

10. CHANGE UNIT

Press  button and  button to change unit.




°C<=>°F, m<=>ft







11. CHANGE FUNCTION

Press  button and  button to change function.




Temperature→Humidity(TM-4002、
TM-4003)→Dew point temperature(TM-4002、
TM-4003)→Wet blub temperature(TM-4002、
TM-4003)→Air flow→2/3 max air flow →Absolute
pressure (TM-4003)

12. TIME CONSTANT SETTING MODE



Press  button to select TC and press  button to into the time constant setting mode and press  to exit the time constant setting mode.
Time constant setting mode operation:

1. Press  to into time constant setting mode.
2. In the setting the time constant setting mode that can press , , ,  button to change the digit and press  to confirm.






13. AIR FLOW SETTING MODE

Press  button to select Area and press  button to into the air flow setting mode and press  to exit the air flow setting mode.


Air flow setting mode operation:

1. Press  button or  button to selected Area or the area of a circle, square

area, and press  button to into setting the size of area.


2. In the setting the size of area that can press , , ,  button to change the digit and press  to confirm.

14. DATA HOLD



Press  button to enable or disable hold function.


※ The HOLD function will be unavailable if calibration function is enabled.

15. SINGLE DATA RECORD

Press  button to record the current measured result.

16. VIEWING OR CLEARING DATA RECORDS


Press  button to read the data records and press  or wait 15 second to exit.


Press  button for more than 2 seconds to clear the data records.

※The Viewing or cleared Data Records function will be unavailable if calibration,




MAX/MIN, HOLD function is enabled.


17. MAX/MIN/AVG

Press  button simultaneously lockup data maximum and minimum and average value of measuring data.



Press  button for more than 2 seconds to disable this feature.

18. CALIBRATION



Please shut down the meter first, then hold and press ,  button and press  button to enter into calibration mode. It will show 0.00 m/s on the upper display.

Press  button to select the project would you want calibration. (Select the order of 0.00m/s→10.00m/s→33.00%RH→75.00%RH→25.00°C)

A. Wind speed calibration (0.00m/s)



Press  button to select the 0.00m/s and press  button to start and the 0.00m/s is blinking.

The duration of calibration time is 5 minutes.

After end of the 0m/s calibration, you can press  button to shut down or press 



button to into 10 m/s calibration.



B. Wind speed calibration (10.00m/s)

Put the probe into the standard 10m/s wind tunnel, and press  button to select the 10.00m/s and press  button to start calibration 10m/s.



The duration of calibration time is 5 minutes.
After end of the 10m/s calibration, then will be into the normal display.

C. Humidity calibration (33.0%RH)

Put the probe in the 33.0%rh chamber and press  button to select the 33.0%RH and press  button to start calibration 33.0%RH.






The duration of calibration time is 10 minutes.
After end of the 33.0%RH calibration, you can press  button to shut down or press  button to into 75%RH calibration.

D. Humidity calibration (75%RH)

Put the probe in the 75%RH chamber and press  button to select the 75%RH and press  button to start 75%RH calibration.

The duration of calibration time is 10 minutes.
After end of the 75%RH calibration, then will be into the normal display.

E. Temperature calibration (25.0°C)

1. Press  button to select the 25.0°C and press  button to start 25.0°C calibration.
2. Confirm with the standard value of the error, press the  and  button to adjust the temperature and the display will flash.
3. Press  to complete the adjustment and into the normal display.

19. PRECAUTIONS

- Keep the meter away from electromagnetic interference (EMI) which may cause erratic readings.
- Please turn off the meter to avoid the sensor burned when you have finished testing the high wind speed (more than 20m/s) and remove the probe.
- To extend the probe, hold the handle in one hand while pulling on the probe tip with the other hand. Do not hold the cable while

extending the probe.

- Remove the sensor protective cover, make sure the sensor window is fully exposed and the orientation is facing upstream.
- To retract the probe, hold the handle in one hand while pushing on the probe tip with the other hand. If the probe antenna binding, please gently straightened probe, and then the rest of the extension of section pressure back and don't pull the cable.

20. SOFTWARE INSTALLATION(TM-4003)

Please refer to the TM-4003 installation CD execution.

21. COMPUTER GRADE

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

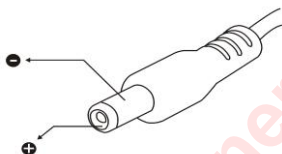
22. EXTERNAL DC POWER

External AC to DC adapter: Voltage $9V_{DC}$.

Socket: Pin positive, Ground casing negative.

External diameter 5.5mm internal diameter

2.1mm




23. SAFETY AND MAINTENANCE STANDARDS

- Do not put this device in direct sunlight or where it is hot and/or damp.
- Operating altitude: below 2,000m.

24. BATTERY REPLACEMENT



WARNING

If the LCD displays "  "symbol, please replace the battery immediately.

Turn off the power and unplug all cables, remove the battery and replace into the new battery. Please use the correct specification of the battery and correctly installed in the battery holder.

25. END OF LIFE

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

**WARNING**

If not using the meter, please remove the battery to avoid possible damage.

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TENMARS



Professional Electrical and Environment Test & Measurement Instruments:

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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, CO₂ meter,
Solar power meter, Radiation meter,
Clamp meter, Multimeter, Phase Rotation test,
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