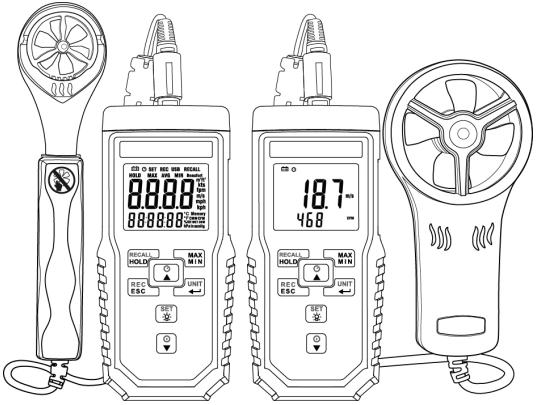
TENMARS

Air Velocity Meter

TM-402A/403A/404A

TM-412A/413A/414A

User Manual



HB2TM402A002

TENMARS ELECTRONICS CO., LTD

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1 Introduction

TM-4XX series measures air speed ,temperature and humidity. It is ideal for spot measurements at air outlets on account of its 30mm vane. In addition to air speed and temperature, TM-404A and TM-414A also measures air moisture and absolute pressure. In this way, air conditions can be reliably checked.

2 CHARACTERISTICS

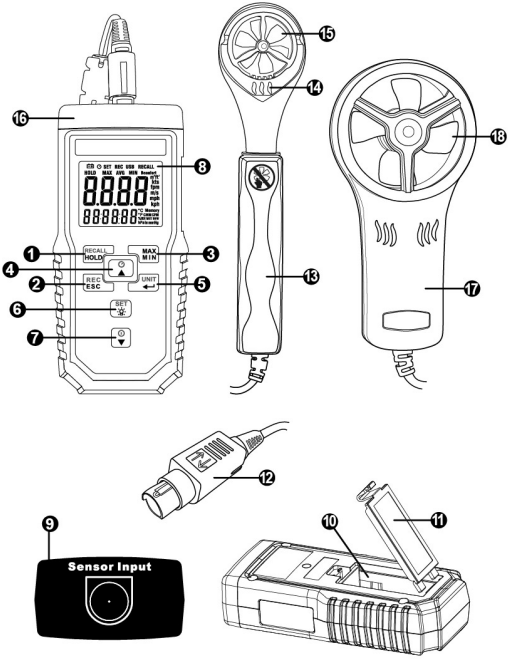
- 30mm 6 plastics blade.(TM-40X)
- 45mm 4 plastics blade.(TM-41X)
- Light air response 0.4m/s
- Rapid response temperature sensor
- Air flow calculate function.
- Max/Min/Avg and data hold.
- Auto power off with disable function.
- Low battery indication. “ ”
- Low battery indication.
- Data logging capacity: 99 records.
- Memory recall function.
- Backlight function.
- Absolute Pressure Sensor.
- Humidity Sensor
- DEW-POINT and WET-BULB temperature measurement.

3 Functions Cross table

Functions	TM402A (With Pr401T)	TM403A (With Pr401H)	TM404A (With Pr401H)
Velocity	●	●	●
Flow	●	●	●
99 Record	●	●	●
Temperature	●	●	●
Humidity		●	●
Pressure			●

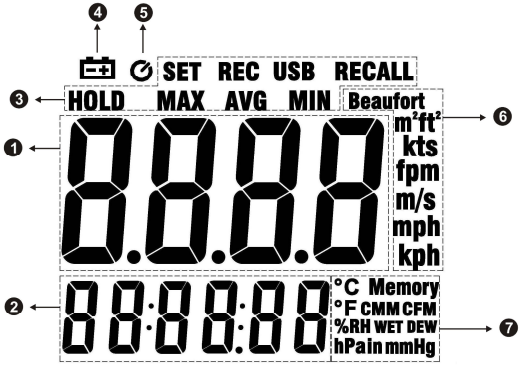
Functions	TM412A (With Vane-02)	TM413A (With Vane-03)	TM414A (With Vane-03)
Velocity	●	●	●
Flow	●	●	●
99 Record	●	●	●
Temperature	●	●	●
Humidity		●	●
Pressure			●

4 Air Velocity Meter Features



1. HOLD and Recall key
2. ESC and Rec key
3. Max, Min and AVG key
4. Select up and Auto shutoff key
5. Enter and Unit change key
6. Select down and Power key
7. Backlight and Set Key
8. Display and Backlight
9. Probes input
10. Battery placement
11. Battery cover
12. Probes Plug
13. Probes hold
14. Probes sensor (Temperature/Humidity)
15. Blades
16. Internal Pressure Sensor (TM-404A/414A)
17. Probes hold
18. Blades

5 Display Features



1. Primary display

2. Secondary display

3. Functional symbol display area

4. Lower battery indication.

5. Auto shutoff symbol indication.

6. Units of Primary display

7. Units of Secondary display

6 Power On/Off

In the shutoff mode Press key to turn on he power.

If want to turn off Press and hold key.

※ In the Set ,Unit change and recall mode can not turn off the power.

Auto Shutoff

The device will auto shutoff if there is no action for 15 minutes.

If want to disable or enable the auto power off function, please press and hold key.

※ In the Set ,Unit change and recall mode can not change this.

LED Backlight

When press SET key to turn on backlight. Press key to turn off again. The backlight will turn off of after 30 seconds.

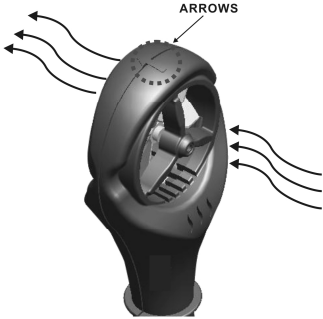
Auto Backlight On/Off

Users can set on or off the 30-seconds auto-off backlight

Press and hold SET key into setting mode. Press ▲ and ▼ key to select BLIGHT setting, as shown in figures. Press UNIT key into Backlight setting. Press ▲ and ▼ key to select auto off on or off. Press UNIT key to finish and leave setting mode.

Air Velocity Measures

1. Please insert probe plug into the device sensor input socket.
2. Fallow the arrows to measure velocity. As shown in figures.



※ Please don not touch the blades by fingers or foreign body to avoid damage to the blades.

7 Change Secondary Display Mode

In the normal mode, Press [▲] and [▼] key to change secondary display mode. The order of ºC➔CMM(CFM)➔ ºC WET(403A/404A/413A/414A)➔ ºC DEW (403A/404A/413A/414A)➔ HPa(404A/414A)➔%RH (403A/404A/413A/414A).

※ In the Humidity mode need to waiting minutes to acquire accuracy humidity reading.

8 Change Units

Press and hold [UNIT ↵] key into the setting units mode. If want to change the secondary display units, please press and hold [UNIT ↵] key again. When in the setting units mode, LCD blink the choose unit. Press [▲] and [▼] key to change the units and press [UNIT ↵] key to finish and leave setting mode. Unit to switch the order of Beaufurt➔kts➔fpm➔m/s➔mph➔kph

9 Air Flow Calculation

When secondary display in the flow mode (CMM/CFM), the device will calculate flow by the users key in area volume.

Setting Area

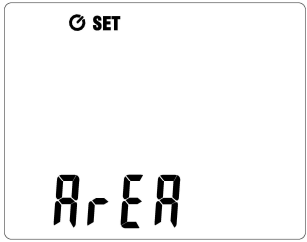
Press and hold [SET] key into the setting mode.

Press [▲] and [▼] key to select setting area mode**, as shown in figures.** Press [UNIT] key into the setting area mode.

From left to right to set the digits, and press [REC ESC] and [UNIT] key to adjust digits to left or right.

Press [▲] and [▼] key to increase and decrease volume through last right digits.

Users can press and hold [UNIT] key to change area units (m^2 / ft^2).



※ The units(m^2) maximum volume is 1.5 m^2, and minimum volume is 0.096 m^2.

※ The units (ft^2) maximum volume is 16.15 ft^2, and minimum volume is 1.03 ft^2.

10 MAX/MIN/AVG record:

This function can record maximum, minimum and average. User can select viewing. Press MAX MIN key to start record MAX, MIN, and AVG. Show the max reading to display. Press MAX MIN key to switch viewing between MAX, AVG and MIN.

Press and hold MAX MIN key to disable this function.

※ In the Set ,Unit change and recall mode can not used this function.

11 Freeze Display (HOLD)

Users can press RECALL HOLD key to freeze display, and press RECALL HOLD key again to release display.

※ In the Set ,Unit change and recall mode can not used this function.

12 99 Records

Device cans storage air velocity data up to 99 records.

Press REC ESC key to storage once record data, and shown memory location on the LCD about 1 second.

※ When the enable HOLD and MAX/MIN function, the record data still real reading.

13 Clear Memory

When the memory are full or want to clear memory data, please fallow the setup to clear memory.

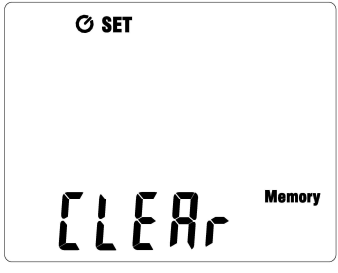
Press and hold SET key into the setting mode, as shown in figures.

Press ▲ and ▼ key to select the clear memory mode.

Press UNIT key into the clear memory mode.

The LCD showed the “yes” to reconfirm.

Press REC ESC key to leave or press UNIT key to clear memory and leave clear memory mode.



14 Memory Recall

Users can recall the memory data to show on the display.

Press and hold RECALL HOLD key into the RECALL mode. The secondary display showed the memory location and primary display showed the storage velocity data.

Press ▲ and ▼ key to increase and decrease memory location.

If want to leave the recall mode, please press and hold ▼ key to leave this mode.

15 Checking the LCD and Software Version

In the shutoff mode, Press and hold ▼ key to turn on device and LCD will keep all dark continued. Starting device will show the software version about 1 second.

16 Battery Replacement

WARNING

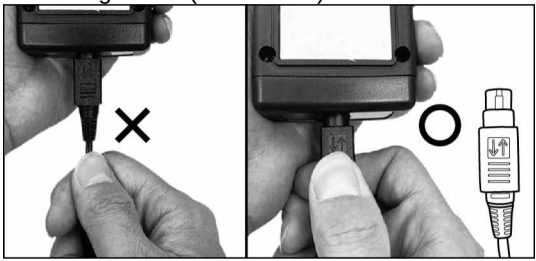
If the symbol “ ” appears on the LCD, please replace the battery immediately

Turn off the device and disconnect all test leads before replacing the battery.

Use only the correct type of batteries, properly installed in the case, to power the device.

17 PRECAUTIONS

Removing Probe (With LOCK) :



18 Specifications

Velocity(TM-402A~TM-404A):

Unit	Range	Resolution	Accuracy
m/s	0.4~20	0.1	≤10m/s ±(2.0+0.5) >10m/s ±(2.5% +1)
Km/hr (kph)	1.5~72	0.1	≤36Km/hr ±(2.0% +1.8) >36Km/hr ±(2.5% +3.6)
mph	0.9~44	0.1	≤22mph ±(2.0% +1.1) >22mph ±(2.5% +2.2)
Knots (kts)	0.8~38	0.1	≤19Knots ±(2.0% +1) >19Knots ±(2.5% +1.9)
ft/min (fpm)	79~4000	1	≤2000ft/min ±(2.0% +100) >2000ft/min ±(2.5% +200)
Beaufort	1~8	1	--

Velocity(TM-412A~TM-414A):

Unit	Range	Resolution	Accuracy
m/s	0.4~30	0.1	≤10m/s ±(3.0+0.5) >10m/s ±(3.5% +1)
Km/hr(kph)	1.5~106	0.1	≤36Km/hr ±(3.0% +1.8) >36Km/hr ±(3.5% +3.6)
mph	0.9~66	0.1	≤22mph ±(3.0% +1.1) >22mph ±(3.5% +2.2)
Knots(kts)	0.8~58	0.1	≤19Knots ±(3.0% +1) >19Knots ±(3.5% +1.9)
ft/min(fpm)	79~5866	1	≤2000ft/min ±(3.0% +100) >2000ft/min ±(3.5% +200)
Beaufort	1~8	1	--

Air Flow Calculation:

Unit	Range	Resolution	Accuracy
CMM	0~9999	1	--
CFM	0~9999	1	--

Temperature:

Unit	Range	Resolution	Accuracy
ºC	-20~60	0.1	±1ºC
ºF	-4~140	0.1	±1.8ºF

Humidity:

Unit	Range	Resolution	Accuracy @25°C
%RH	20~80	0.1	±3.5%RH
%RH	<20 , >80	0.1	±5%RH

Absolute Pressure:

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

- Display : 42mm(W) x33mm(L) Monochrome LCD with backlight
- Battery : 9V (NEDA 1604、IEC 6F22 or JIS 006P)
- Battery Lift : Approx continuous used 100 hours.
- Shutoff Rate Power : 3uA

- Operate Maximum Power : 25mA
- Operating temperature and humidity :
  5ºCto 40ºC,below 80% RH.
- Storage temperature and humidity : -10ºC to 60ºC, below 70%.
- Instrument dimensions :
  140(L)x 65(W)x 38(H) mm.
  Weight : About 285g(TM-402A~403A).
  About 240g(TM-404A).
  About 296g(TM-412A~414A).
- Probe dimensions (TM-402A~TM-404A) :
  195(L) x47(W) x30(H) mm.
  Cable length : 95cm.
- Probe dimensions (TM-412A~TM-414A) :
  135(L) x67(W) x31(H) mm.
  Cable length : 95cm.
- Weight : About 100g.
- Accessories : User’s manual x1, 9V battery x1, Probe x1, Bag x1

19 End of life

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

TENMARS

Professional Electrical and Environment Test & Measurement Instruments:

Battery Capacity / Impedance Tester
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_2 meter,
Solar power meter, Radiation meter,
Clamp meter, Multimeter, Phase Rotation test,
Digital Insulation tester

Our products of high quality are selling well all over the world

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