TENMARS

Air Velocity Meter
TM-411/412/413/414

Air Velocity Meter
TM-411

User's Manual

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TENMARS

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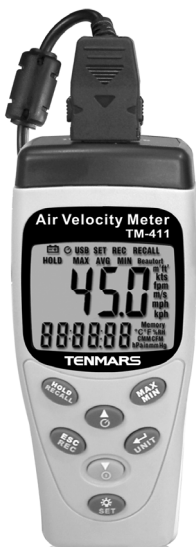
HB2TM4110000

TENMARS ELECTRONICS CO., LTD

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1.   Introduction

TM-40X 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-404 also measures air moisture and absolute pressure. In this way, air conditions can be reliably checked.

2.   Features

- 45mm 4 plastics vane
- High sensitivity of 0.4m/s.
- Air flow calculate function.
- Max/Min/Avg and data hold.
- Auto power off with disable function.
- Low battery indication. "▀▬▬▬"
- Low battery indication.
- Datalogging capacity: 99 records.
- Memory recall function.
- Backlight function.
- Absolute Pressure Sensor
- Humidity Sensor

3. Functions Cross table

	Velocity	Flow	99 Record	Temperature	Humidity	Pressure
TM-411 (with Vane-01)	●	●	●			
TM-412 (with Vane-02)	●	●	●	●		
TM-413 (with Vane-03)	●	●	●	●	●	
TM-414 (with Vane-03)	●	●	●	●	●	●

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. Vane
16. Internal Pressure Sensor (TM-414)

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.

7.   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.

8.   LED Backlight

When press 🔆 key to turn on backlight. Press

key to turn off again. The backlight will turn off of

after 30 seconds.

9. Auto Backlight On/Off

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

Press and hold $\overset{\ast}{\text{SET}}$ key into setting mode.

Press $\overset{\blacktriangle}{\circlearrowleft}$ and $\overset{\blacktriangledown}{\circ}$ key to select BLIGHT setting, as shown in figures. Press $\overset{\leftarrow}{\text{UNIT}}$ key into Backlight setting. Press $\overset{\blacktriangle}{\circlearrowleft}$ and $\overset{\blacktriangledown}{\circ}$ key to select auto off on or off. Press $\overset{\leftarrow}{\text{UNIT}}$ key to finish and leave setting mode.

10. 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.

ARROWS
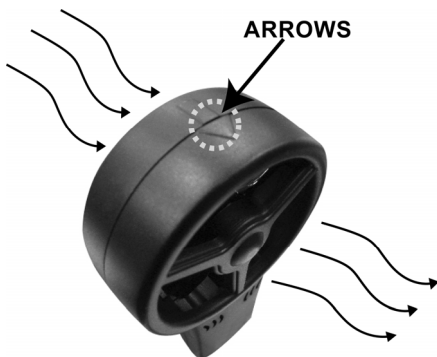
11. Change Secondary Display Mode

In the normal mode, Press ⬆ and ⬇ key to change secondary display mode.

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

12. 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.

13. Air Flow Calculation

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

14. Setting Area

Press and hold $\overset{\ast}{\text{SET}}$ key into the setting mode.

Press $\overset{\blacktriangle}{\oslash}$ and $\overset{\blacktriangledown}{\oslash}$ key to select setting area

mode, as shown in figures. Press $\overset{\curvearrowleft}{\text{UNIT}}$ key into

the setting area mode.

From left to right to set the digits, and press $\overset{ESC}{REC}$

and $\overset{\curvearrowleft}{\text{UNIT}}$ key to adjust digits to left or right. Press

$\overset{\blacktriangle}{\oslash}$ and $\overset{\blacktriangledown}{\oslash}$ key to increase and decrease

volume through last right digits.

Users can press and hold $\overset{\curvearrowleft}{\text{UNIT}}$ key to change

area units (m^2 / ft^2).

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   ⟳   SET




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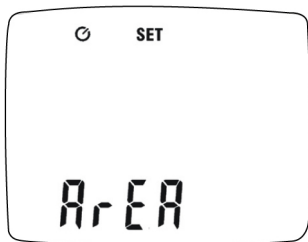
※ The units(m^2) maximum volume is 1.5 m^2, and minimum volume is 0.096 m^2.

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

15. 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.

16. Freeze Display (HOLD)

Users can press 🔘 key to freeze display, and

press 🔘 key again to release display.

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

17. 99 Records

Device cans storage air velocity data up to 99 records.

Press 🔘 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.

18. Clear Memory

When the memory are full or want to clear

memory data, please fallow the setup to clear

memory.

Press and hold $\overset{\ast}{\text{SET}}$ key into the setting mode,

as shown in figures.

Press $\overset{\blacktriangle}{\text{G}}$ and $\overset{\blacktriangledown}{\text{O}}$ key to select the clear

memory mode.

Press $\overset{\leftarrow}{\text{UNIT}}$ key into the clear memory mode.

The LCD showed the "yes" to reconfirm.

Press $\overset{\text{ESC}}{\text{REC}}$ key to leave or press $\overset{\leftarrow}{\text{UNIT}}$ key to

clear memory and leave clear memory mode.
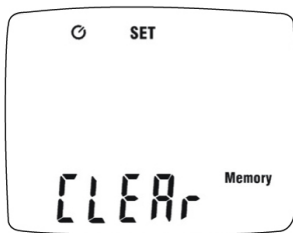
19. Memory Recall

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

Press and hold (HOLD RECALL) 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 (HOLD RECALL) key to leave this mode.

20. 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.

21. Battery Replacement

WARNING

⚠ If the symbol "$\boxminus$" 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.

22. Specifications

Velocity:

Unit	Range	Resolution	Accuracy
m/s	0.4~45	0.1	±3% +0.2
Km/hr(kph)	1.5~160	0.1	±3% +0.8
mph	0.9~100	0.1	±3% +0.4
Knots(kts)	0.8~88	0.1	±3% +0.4
ft/min(fpm)	79~8800	1	±3% +40
Beaufort	1~12	1	-

Air Flow Calculation:

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

Temperature:

Unit	Range	Resolution	Accuracy
℃	-20~60	0.1	±1℃
℉	-4~140	0.1	±1.8℉

Humidity:

Unit	Range	Resolution	Accuracy
%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)*33mm(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 : 5℃ to 40℃,below 80% RH.
- Storage temperature and humidity : -10℃ to 60℃, below 70%.

- Instrument dimensions : 130(L)*56(W)*38(H) mm.
- Weight : About 160g.
- Probe dimensions : 135(L)*67(W)*31(H) mm. Cable length: 95cm. Weight : About 100g.
- Accessories : User's manual x1, 9V battery x1, Probe x1, Bag x1

23. End of life

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

TENMARS

VFE

Professional Electrical and Environment Test & Measurement Instruments:

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, Digital Insulation tester

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