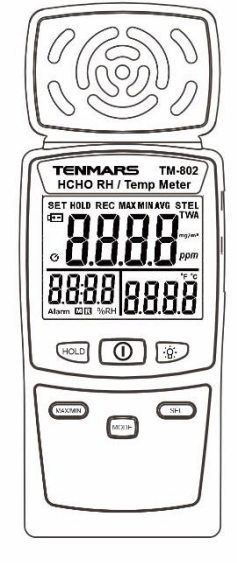
TENMARS

TM-802

Formaldehyde Meter

User's Manual



CE

HB2TM802000

Content

1 INTRODUCTION

- Measure the formaldehyde density, temperature, humidity in the environment simultaneously
- Monitor the occupational safety in TWA (8 hours) and STEL (15 min)
- Use the high-precision electrochemical sensor for formaldehyde measurement

2 ACCESSORY

1 Meter
1 User manual
6 UM-4(AAA)1.5V battery
1 Carrying case

3 SAFETY PRECAUTION

	Note! Please refer to this manual. Improper use may damage the meter and its components.
CE	Complies with European Directive.

- Do not operate in environments with flammable gas or humid environments.
- Operating altitude: up to 2000M.
- Operating environment: Indoor use; Pollution degree 2.
- Clean with soft cloth when dirty, such as glasses cloth. Do not clean with chemicals and other solvents.
- EMC: EN61326-1:CISPR 11:Group 1, Class B

✧ Class B – Equipment for use in all establishments other than domestic.

✧ Group 1 – RF energy generated is needed for internal functioning.

4 METER DESCRIPTION

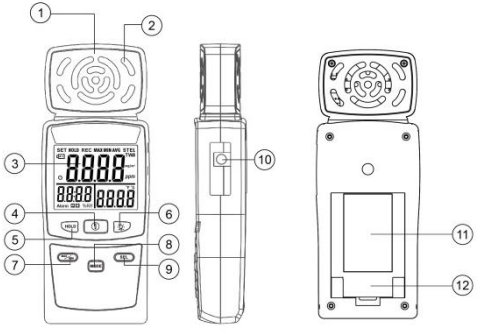


Fig. 1 Description of meter:

1. Formaldehyde sensor	7. Maximum hold and data hold button
2. Temperature and humidity sensor	8.Left button/REC record button
3. LCD display	9. Settings function button
4. Power switch button	10. DC voltage input jack
5. Data hold button	11. Tripod
6. Back light button	12. Battery cover

5 OPERATION

1. Press ⏻ button for more than 2 seconds to turn power on.
2. After the warm-up time about 5 minute, the measurement screen will display.

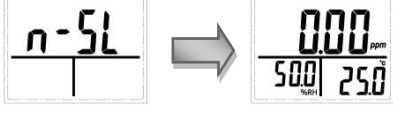
5.1 SEL Switch Unit

Press SEL to select the formaldehyde unit of PPM or mg/m^3;

Press SEL for 2 seconds to select ℃ or °F.

5.2 Auto power off

When any operation stopped for about 15 minutes, it will shut down automatically.
Turn off the auto power off function: at shutdown mode, press HOLD button and then press ⏻ button to boot, LCD will display n-SL, indicating that the automatic shutdown function has been turned off. Restart to restore the automatic shutdown function.



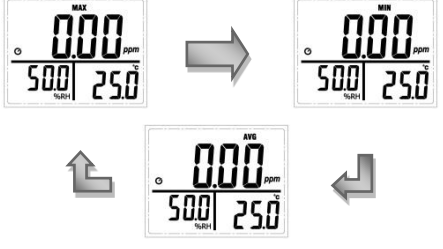
5.3 LED back light

Press button to turn back light on or off.
When turned on, the back light will be turned off automatically after 15 seconds.

5.4 Record values of the maximum, the minimum and the average

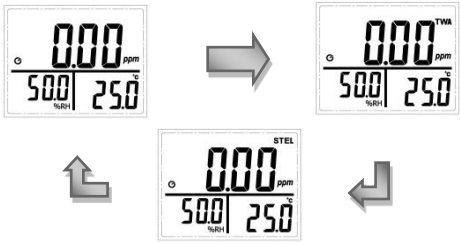
Press MAX/MIN button to start the function, press MAX/MIN button once again to select the modes of maximum (MAX), minimum (MIN) or average (AVG) displayed on the LCD sequentially.

Press MAX/MIN button for 2 seconds to turn this function off.



5.5 Switch the SETL or TWA Expression of Formaldehyde

Press MODE button to select the modes of SETL, TWA or normal.



TWA: the average total value in 8 hours (Summarize and average the values every 3 minutes, and update every 3 minutes)

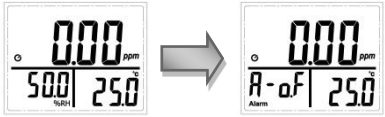
STEL: the total average value in 15 minutes (Summarize and average the values every 15 minutes, and update every 15 minutes)

5.6 HOLD Read value holding function

Press HOLD button to start or stop the data holding function.

5.7 Alarm setting

Press MODE button for 2 seconds to enter the alarm mode.



Press SEL button to select the alarm turn on (A-on) or turn off (A-oF).

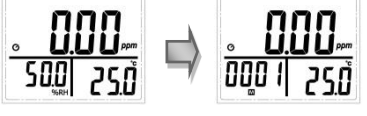
After selected, press MODE button to return to the normal mode.

After start the alarm mode as (A-on), press MODE button to select the alarm value, including 0.1/0.3/0.5/0.75/1.00/1.50/2.00/3.00/5.00/0000, press MODE button after the alarm value determined, finish the setting of alarm and turn on it.

※Under the alarm mode, the automatic shutdown function will be canceled.

5.8 Manual recording

In the normal state, press MODE and MAX/MIN button simultaneously to record a data, the screen will display the icon M and the number of records;



5.9 Record reading

In the normal state, press MODE and SEL button simultaneously to enter the reading mode. The screen will display the icon R and the number of records, and

then display the record data. Press SEL button to select the number of records; if to exit the reading mode, press ⏻ button to exit, or wait without pressing any button for 15 seconds to exit automatically.

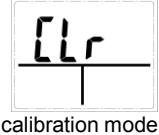
5.10 Clear record

In the manual reading state, press MAX/MIN button for 2 seconds to clear the records.

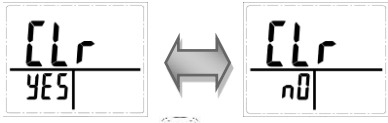
5.11 Calibration

※ As calibrating, please keep away from the organic gases such as alcohol to avoid to interfere the concentration of formaldehyde.

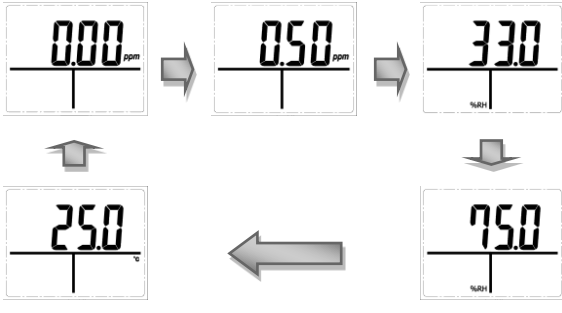
At shutdown status, press MODE and MAX/MIN button simultaneously, then press ⏻ button to enter the calibration mode.



- As entering the calibration mode, you may decide whether to reset as the factory defaults by pressing SEL or MAX/MIN button.



- Then, press MODE button, verify and access the calibration screen of each point; or press ① to exit.
- Press SEL button, you may select the items sequentially: formaldehyde 0PPM calibration, formaldehyde 0.5PPM calibration, 33% RH calibration, 75% RH calibration, temperature calibration; or press ① button to exit.



- **Formaldehyde 0PPM calibration:**

Press SEL button to select the 0PPM calibration screen.

Place the meter in a clean environment,

Press MODE button to start the formaldehyde 0PPM calibration, and finish the calibration after 8 minutes.

Or press MODE button to exit 0PPM calibration state without calibration.

- **Formaldehyde 0.5PPM calibration:**

Press SEL button to select the 0.5PPM calibration screen.

Press MODE button, and input formaldehyde of 0.5PPM with flow rate 0.8 l/min to the meter.

The detection will stop after 8 minutes.

Press button SEL or MAX/MIN to adjust the value of main window to 0.5ppm.
After adjusted, wait for 30 seconds and complete the calibration.

- **Humidity 33%RH calibration**

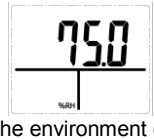
Press SEL button to select the 33%RH calibration screen.

Place the meter in the environment of 33%RH.

After the humidity stable, press MODE button, wait for 8 seconds and complete the calibration.

- **Humidity 75%RH calibration**

Press SEL button to select the 75%RH calibration screen.



Place the meter in the environment of 75%RH.

After the humidity stable, press MODE button, wait for 8 seconds and complete the calibration.

- **Temperature calibration**

Press SEL button to select the temperature calibration screen.

Place the meter and the standard part in the same environment for 30 minutes.

After the temperature stable, press MODE button.

Press SEL button or MAX/MIN button to adjust the value of main window to be same as the standard part.

After adjusted, wait for 30 seconds without pressing any button to complete the calibration.

6 FORMALDEHYDE HAZARDS

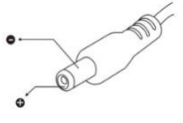
Formaldehyde concentration	Human response	International standard
0.03 ppm	General outdoor environment value	
0.08 ppm	Tasteless, no sensation for the human	
0.1 ppm	Standard recommended value	Limiting value of ASHRAE, ANSI, EPA,

		NIOSH for STEL residence, the recommended value from Taiwan Environmental Protection Administration.
0.15-0.25 ppm	Breathing for a long time may easily cause the allergies on children's skin.	
0.25-0.3 ppm	It may cause the symptoms of asthma, allergies, cough , etc	
0.5 ppm	It may cause abnormal immune function and oncogenic risk.	Limiting value of OSHA for workplace
0.75ppm	It may cause Chromosomal abnormalities and affecting fertility, and cause cancer easily.	Limiting value of OSHA and TWA for workplace
>2.0ppm	It may cause cancer and chronic respiratory	Limiting value of OSHA and TWA for workplace

	disease.	

7 GENERAL SPECIFICATIONS:

- Easy to monitor: LCD can display the three values of formaldehyde, temperature and humidity at the same time.
- Low battery indication
- The manual recording can be up to 200 readings
- Back light display.
- The maximum / minimum / average hold.
- Formaldehyde maximum and minimum alarm value setting.
- Monitoring and displaying the occupational environmental safety for TWA (8 hours), STEL (15 minutes)
- Battery life is about 75 hours under continuous use.
- Power: LR03(AAA)1.5V *6 batteries .
- **AC to DC Adaptor:(Optional)**
  External AC 100~240V to DC 9V/0.5A power supply.
  About the DC plug, the inner side of the extension lead shall be connected to the positive electrode, and the outer is the negative electrode.
  The inside diameter (I.D.) of the extension lead is 5.5mm, and the outside diameter (O.D.) is 2.1mm.



- Operating temperature and humidity: -10 ~ 40℃ (14 to 104°F); less than 80%
- Storage temperature and humidity: -20 ~ 50℃ (-4 to 122°F); less than 70% RH
- Dimension: 191x73x35mm (LxWxH)
- Weight: 250g(without the batteries' weight)

- The substances may interfere the sensors:

Substance	Relative sensitivity
formaldehyde	100
ammonia	0.0
water vapor	0.0*
carbon dioxide	0.0
acetone	0.0
ethyl methyl ketone	0.0
benzene	0.0
terephthalate	0.0
toluene	0.0
methane	0.0
ethyl acetate	0.0
hydrogen	0.1
chlorine	-3
carbon monoxide	1
phenol	8
sulfur dioxide	12
ethanol, methanol	50

- Note: within the specified range. The step change of %RH will cause a short-term transient response.

8 ELECTRICAL SPECIFICATIONS:

Accuracy of the environmental conditions: 23℃ ± 5℃ and RH <80%

8.1 Formaldehyde

Measurement Range	0.00-5.00PPM(mg/m^3)
Resolution	0.01ppm
Accuracy	±5% of reading + 0.03ppm(baseline shift)
Response time (T90)	30 seconds

8.2 Humidity

Range	5.0% to 95.0%RH
Resolution	0.1%RH
Accuracy	±5.0%RH (20 to 80%) ±8.0%RH (<20%,>80%)

8.3 Temperature

Range	-20 to 50℃(-4 to 122℉)
Resolution	0.1℃(0.1°F)
Accuracy	±1.0℃(±1.8°F)

9 SAFETY AND MAINTENANCE STANDARDS

1. When the LCD shows the symbol "  ", it means that the electric quantity is low, please replace with batteries immediately to ensure accuracy.
2. When the meter is dirty, please wipe it with a soft cloth, such as glasses cloth, and do not wipe it with

chemical solvents.

3. If not using for a long time, please remove the batteries to prevent the leakage of battery electrolyte solution which will corrode the internal components.
4. If fault on the meter, can only be sent to the service suppliers who are authorized, or sent back to the original factory for maintenance.
5. When testing high concentrations of formaldehyde (about 1PPM above), the period shall not be more than ten minutes; after testing ,it shall be placed in the environment of clean air for more than half an hour before and then shut down. If not, it will accelerate the aging of the sensor.

10 BATTERY REPLACEMENT

1. Turn off the power.
2. Open the battery cover on the back of meter and remove the batteries.
3. Install new batteries and comply with the polarity positions of positive and negative.
4. Install the battery cover back.

11 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, 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_2 meter, Solar power meter, Radiation meter, Clamp meter, Multimeter, Phase Rotation test, Digital Insulation tester

Our products of high quality are

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