TENMARS

Carbon Monoxide Meter
TM-801 / TM-802

User's Manual

HB2TM8010002

TENMARS ELECTRONICS CO., LTD

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1. PREFACE

Thank you for purchasing our product.
Please, read the operating instructions in details before you use this CO 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

■ Adjustable alarm: Adjustable alarm threshold level(25/35/50/100/250/400/800/Randomly Adjustable); Enable/Disable alarm.
■ Dual and digital display of the CO and temperature measuring.
■ Maximum/Minimum/Average hold.
■ Data hold(HOLD).
■ Low battery indication " ".
■ LED Backlight.
■ Auto power OFF and disable function.
■ USB PC Interface.(TM-802)
■ Data logging capacity up to 8000

reading.(TM-802)
■ Choose the recording　interval.(TM-802)

3. TECHNICAL SPECIFICATIONS
3.1. Characteristics

Accuracy is indicated as [% of reading +ppm]. It is referred to the following reference conditions: 23°C ± 5°C with RH <75%.
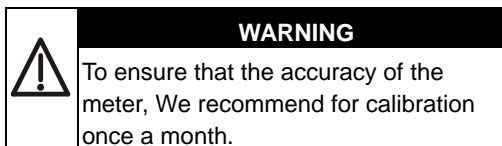
CO ※Carbon monoxide

Range	0 ~ 1000ppm
Resolution	±1ppm
Accuracy	±(5% +2ppm)
Repeatability	< 2%
Response time※	< 30 seconds.
Zero drift in long term	< 5ppm
Sensitivity drift	< 5% (per year)
Typical sensor life	3 years
※ The response time refers to the fixed value of 90% of the value.	

Temperature

Range	-20~50℃/-4~122℉
Resolution	±0.1℃/±0.1℉
Accuracy	±1.0℃/±1.8℉

3.2. General data

- 4 dgt LCD with maximum 1000 counts. 60mm(W)x 47mm(L) monochrome LCD and backlight.
- Sample rate:1 times/second
- Dimension: 156×73×35mm(LxWxH).
- Weight: approx 250g (Batteries not included).
- Power Supply : UM-4(AAA)1.5V× 6 PCS or AC100~240V DC9V/0.5A(9mm) Adaptor.
- Battery life : approx 90 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.
- Standard Accessories : UM-4(AAA)1.5V battery ×6 PCS
  、User's manual、USB cable (TM-802)
  、AC100~240V DC9V/0.5A(9mm)×1 (TM-802)
  、Install CD disk (TM-802)

⚠	**WARNING**
	To ensure that the accuracy of the meter, We recommend for calibration once a month.

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

4. CO LEVELS AND STANDARDS

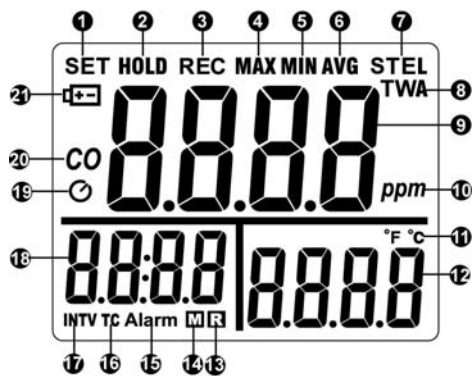| Carbon monoxide content in the air	Inspiration time	Symptoms and applicable standard
0-1 ppm		Normal background levels.
9 ppm		Maximum indoor air quality level.
35 ppm	8 hours	The average exposure level per U.S. OSHA workplace standards.
50 ppm	8 hours	The maximum average exposure of the U.S. OSHA workplace standards.
0.01%(100 ppm)	2~3 hours	evacuate people from enclosed space if the CO concentration exceeds 100 ppm per OSHA exposure limit. Mild headache.
0.04%(400 ppm)	1~2 hours	Headache occur in 2.5 hours to 3.5 hours.
0.08%(800 ppm)	45-min	Dizziness, nausea, cramps(convulsions).
0.16%(1600 ppm)	20-min	Headache, dizziness and will be dead within 2 hours.

0.32%(3200 ppm)	5~10 min	Headache, dizziness, vomiting and will be dead in 30 minutes.
0.64%(6400 ppm)	1~2 min	Headache, dizziness and will be dead within 10 to 15 minutes
1.28%(12800 ppm)	1~3 min	Will die.

5. INSTRUMENT DESCRIPTION

1. HOLD Button
2. Power Button
3. MAX/MIN/AVG Button
4. MODE Button
5. Backlight Button
6. SEL Button
7. LCD
8. Temperature Sensor
9. Earphone Jack

10. CO SENSOR
11. USB
12. DC POWER

13. HOLDER
14. Battery Holder
15. Battery Cover

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6. LCD DESCRIPTION

1. SET symbol
2. HOLD symbol
3. REC symbol
4. MAX symbol
5. MIN symbol
6. AVG symbol
7. STEL symbol
8. TWA symbol
9. Numeral reading value
10. PPM unit

11. Temperature unit
12. Temperature Reading
13. Reading symbol
14. Memory symbol
15. Alarm symbol
16. Time constant symbol
17. Interval symbol
18. Time display
19. Auto power off
20. CO symbol
21. Low Battery symbol

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7. POWER ON/OFF

Press ⓞ button to turn on or turn off the meter.
It will be unable to turn off under setting up alarm,
and correction.

8. AUTO POWER OFF

The duration of auto power off time is 15 minutes.

If you want disable auto power off, please hold

ʜᴼᴸᴰ 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.

※ The auto power off will disable if the alarm is
   enabled.

9. BACKLIGHT

Press ☼ button to turn on the backlight, press
this button again to turn it off.
The backlight time is 15 seconds.

10. CHANGE THE TEMP UNIT

Press SEL button to change the temperature

℃, ℉ unit。

11.DATA HOLD

Freezes the reading present on the LCD screen at the moment the button is pressed.

12.CO ALARM SETTING

Hold and press [MODE] button for more than 2 seconds to enter into the alarm setting mode, press [SEL] button to choose and press [MODE] button to turn on(A-on) or turn off(A-oF) the alarm.

If you select the alarm to be turned on(A-on), press [SEL] button to select alarm value (25/50/100/250/400/800/0000) and press [MODE] button to enable.

If you select the "0000", press [MAX/MIN] button to adjust the value and press [MODE] button to enable.(Hold and press [MAX/MIN] button to High value adjustment, the highest setting value is 1200, and the lowest is 0.)

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13.MAXIMUM/MINIMUM/AVERAGE

Press MAX/MIN button simultaneously Lockup data maximum and minimum and average value of measuring data. Press the "MAX/MIN" button for more than 2 seconds to disable this feature.

14.CHANGE SETL OR TWA(TM-802)

Press MODE button to change SETL* or TWA*

values.

※ SETL-Short Term Exposure Limit.

(15min short term max)

※ TWA-Time Weighted Average.

(8 hours average)

15.REC SETTING(TM-802)

● Enter logger setting mode:

Press MODE button for 3 times to enter into

the record setting mode, the "SET" and "INTV"

will display on the LCD.

● Logger Storage interval setting:

Press SEL button or MAX/MIN button to set

logger storage interval (hh:mm), press MODE

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button to exit the logger storage interval

setting mode.

The Down-left LCD will display "L-on" or

"L-oF".

- Logger enable/disable setting:

Press SEL button to enable or disable

logger(L-on or L-oF), press MODE button to

exit logger setting .

Start logging if logger mode is on, the **M** will

blink on LCD, if the data is downloaded, the

R will blink on the LCD.

16.CALIBRATION

Please shutting down the meter first, then hold

and press MODE button and press ⓞ button

to enter into calibration mode. It will show a

blinking 0 ppm on the upper display and the

lower-left corner of the screen will display the

value of the ADC.

※ In the calibration, must away from the environment or equipment with electromagnetic waves.

● 0 ppm Calibration
The meter is running 0 ppm calibration as default.
Put the meter in an area free of CO and enter the calibration mode. It calibrates automatically. The duration of calibration time is 5 minutes.

● 100 ppm/500 ppm Calibration
After end of the 0 ppm calibration, the screen will display 100 ppm, then press [SEL] button to select 100 ppm or 500 ppm value and press [MODE] button to start calibration. It will show a blinking 100 ppm or 500 ppm on the upper display and the lower-left corner of the screen will display the value of the ADC and place the meter into the sealed box filled with standard gas(e.g. 100 ppm/500 ppm) for 5 minutes, then the calibration will be done automatically.

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※ Check if the reading meets calibration value. If it does, the calibration is not, repeat the procedure.

17.PRECAUTIONS

● Keep the meter away from electromagnetic interference (EMI) which may cause erratic readings.
● Recovering time is required when meter exposed to high level CO. The longer the exposure, the longer recovering time is needed.

18.SOFTWARE INSTALLATION(TM-802)

Please refer to the TM-802 installation CD execution.
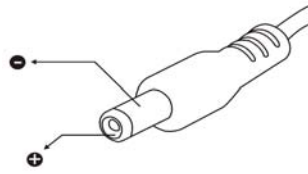
19.COMPUTER GRADE

- CPU:Pentium Ⅲ 1000MHZ.
- RAM:SDRAM 256MB.
- HARD DISK:200MB.
- OS:Windows 2000, Windows XP.
- DISPLAY :800×600 256 color

20.EXTERNAL DC POWER

External AC to DC adapter : Voltage 9 V_{DC} (8~14 V_{DC} Max).

Socket :Pin positive, Ground casing negative.

External Diameter 5.5mm ;Internal Diameter 2.1mm.

21.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.

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22.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.

23.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 ◇VFE◇

**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**

TENMARS ELECTRONICS CO., LTD
6F, 586, RUI GUANG ROAD, NEIHU,
TAIPEI 114, TAIWAN.
E-mail: service@tenmars.com
http: //www.tenmars.com