

# *Temtop*

**M2000 Series  
Air Quality Monitor  
User Manual**

## Factors Affecting Air Quality



PM2.5 (Particulate Matter 2.5) refers to fine particles with diameter of 2.5 micrometers or less. Due to its tiny size, PM2.5 can be absorbed into bloodstream and the lungs, so that long-term exposure to high concentration of PM2.5 environment may cause eye and nose irritation, cough, asthma, emphysema, lung disease, heart attacks, cancer and etc.



PM10 (Particulate Matter 10) refers to particulates with a diameter of 10 micrometers or less. Due to the larger size, it's inhalable but penetrates no further than bronchi as larger particles can be filtered out by cilia and mucus of nose and throat. It normally considered as less harmful to health than PM2.5.



CO<sub>2</sub>: Carbon dioxide is a colorless and odorless gas that is usually derived from the breath of humans and animals. High CO<sub>2</sub> concentration means that fresh air or ventilation is required, otherwise it may cause problems such as drowsiness, dizziness, loss of attention, and cognitive impairment.



Formaldehyde (HCHO) is a colorless and strong-smelling gas with formula CH<sub>2</sub>O, which has been classified by IARC as Group 1 carcinogen. Long-term exposure to just low doses could cause chronic respiratory diseases, nasopharyngeal carcinoma, colon cancer, brain tumors, nuclear gene mutation and etc.

## Important!

- ★ Do not place detector in heavily polluted environments for a long time; or it may cause damages to the sensor.
- ★ Do not use the detector in a humid environment to maintain detection accuracy.
- ★ Do not use the detector for a long time in a strong irritating odor environment to ensure measurement accuracy.
- ★ Do not cover the vents of the detector, and do not let fluff enter the detector, otherwise the particle sensor may not work properly.
- ★ Do not disassemble the device. In the event of a defect, please contact your dealer. The dealer will contact the Service Centre and can send the device in to be repaired, if necessary.
- ★ Children should only use the device under adult supervision. Keep packaging material, like plastic bags and plastic film, out of the reach of children, as they pose a choking hazard.
- ★ It is normal for the detector to show higher values when it is first switched on or when it is not used for a long period of time. Place it in a ventilated environment and run it on for at least 0.5 hours before testing. (only for M2000/M2000 2nd).
- ★ Repeat the test at multiple points in the target area to get a more complete picture of your air quality.

## Overview



fig.1

- |                      |                    |  |               |
|----------------------|--------------------|--|---------------|
| ① Buzzer Status      | ② Measuring Status | ③ Display                                  | ④ Menu Button |
| ⑤ Increase/Up Button | ⑥ USB Port         | ⑦ Date & Time                              | ⑧ Power Level |
| ⑨ Back Button        | ⑩ Power/OK Button  | ⑪ Decrease/Down/Switch(Start/Pause) Button |               |
| ⑫ Indicator Light    |                    |  |               |

## Function

Function \ Model	M2000 2nd	M2000C 2nd	M2000	M2000C
PM2.5	√	√	√	√
PM10	√	√	√	√
Particle Count	√	√	√	√
CO <sub>2</sub>	√	√	√	√
TEMP&HUM	√	√	√	√
HCHO	√		√	
Histogram	√	√	√	√
Data Export	√	√		

## Specifications

Model	M2000 Series
Dimensions	223.5x73.5x37.5mm / 8.8x2.8x1.4
Battery capacity	3000mAh
Battery life	6-8h
Input	DC 5V/1A
Display	TFT color screen
Weight	228g @M2000/M2000 2nd 221g @M2000C/M2000C 2nd
Operation environment	Temperature range: 0-50°C(32-122°F) Humidity range: 0-90% RH Atmospheric pressure condition: 1atm
Temperature	Measuring range: 0-50°C(32-122°F) Resolution: 0.1°C Accuracy: ±1°C
Humidity	Measuring range: 0-99.9% RH Resolution: 0.1% RH Accuracy: ±5% RH
PM2.5	Sensor: Laser PM sensor Measuring range: 0-999 µg/m <sup>3</sup> Resolution: 0.1 µg/m <sup>3</sup> Accuracy: ±10 µg/m <sup>3</sup> (0-100 µg/m <sup>3</sup> ) ±10%(100-500 µg/m <sup>3</sup> )
PM10	Sensor: Laser PM sensor Measuring range: 0-999 µg/m <sup>3</sup> Resolution: 0.1 µg/m <sup>3</sup> Accuracy: ±15 µg/m <sup>3</sup> (0-100 µg/m <sup>3</sup> ) ±15%(100-500 µg/m <sup>3</sup> )
Carbon dioxide (CO <sub>2</sub> )	Sensor: Non-Dispersive Infrared (NDIR)CO <sub>2</sub> sensor Measuring range: 0-5000 ppm Resolution: 1 ppm Accuracy: ±5% ±50 ppm(400~5000ppm)
HCHO*	Sensor: Electrochemical HCHO sensor Measurement range:0-2 mg/m <sup>3</sup> Resolution: 0.001 mg/m <sup>3</sup>

\*For M2000/M2000 2nd

Note: The above data are from Temtop Laboratory.

## Operation

### ⚠ Warning!

- Indoor use:Keep the room/area airtight for 10 minutes to obtain more accurate results.
- When charging, the indicator light is red and full of green.
- If battery level shows, please charge the detector promptly to avoid effects during use (also chargeable when turned off).

① **ON/OFF** Press and hold  $\frac{OK}{\text{U}}$  for 2 seconds to turn on/off the detector.

### ② Detection

When the detector is turned on (fig.2), then press  $\blacktriangle$  or  $\blacktriangledown$  to locate the option to view or set and press  $\frac{OK}{\text{U}}$  to confirm.

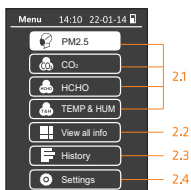


fig.2

2.1 View or set PM2.5/CO<sub>2</sub>/HCHO/TEMP&HUM.

2.2 View all the information.

2.3 Check data records.

2.4 Set date, time, power saving, calibration, alarm value, language and help.

**Note:** If the start-up time is less than three minutes before entering the CO<sub>2</sub> screen, a "Sensor preheating" pop-up box will appear, please try again later (For M2000/M2000C).

## 2.1 View or set PM2.5/CO<sub>2</sub>/HCHO/TEMP&HUM

In each interface, press  $\equiv$  to display more functions. Take CO<sub>2</sub> interface for example, press  $\equiv$  button, you may see the following function options (fig.3):

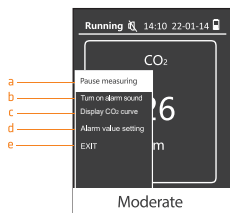


fig.3

**a. Pause measuring:** Pause or restart detecting CO<sub>2</sub>.

**b. Turn on alarm sound:** Mute / Unmute the buzzer.

### c. Display CO<sub>2</sub> curve

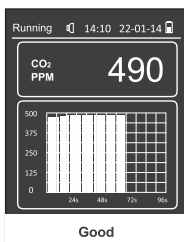


fig.4

### d. Alarm value setting: Set high alarm limit.

**Operation:** Press ▲ or ▼ button to adjust the value and press ≡ to switch digits. Then press **Save** and  $\frac{OK}{\bigcirc}$  to save the setting and exit the interface, or press **Exit** and  $\frac{OK}{\bigcirc}$  to exit without saving the setting (fig.5).

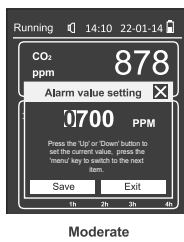


fig.5

**Note:** Buzzer will alarm when the limit exceeded.

**e. EXIT:** Exit current interface.

## 2.2 View all info

The **View all info** interface displays all the detected data including the concentration of PM<sub>2.5</sub>, PM<sub>10</sub>, CO<sub>2</sub>, number of particles, temperature and humidity. Press ≡ to switch between °C and °F. See the figures below.

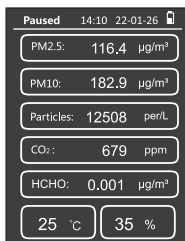


fig.6

Press ▼ to pause or detect; press ↶ to back to the main menu interface.

**Note:** Press " ≡ " to switch TEMP unit.

## 2.3 History (For M2000C 2nd/M2000 2nd)

The **History** interface includes **Storage interval** and **Data export** functions (fig.7).

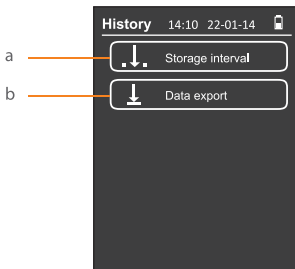


fig.7

**Operation:** Press  $\blacktriangle$  or  $\blacktriangledown$  to switch between **Storage interval** and **Data export**, then press  $\frac{OK}{\cup}$  to enter the corresponding interface.

**a. Storage interval:** Press  $\equiv$  to switch between digits, **Save** and **Exit**. When you select a digit, press  $\blacktriangle$  or  $\blacktriangledown$  to adjust the value to your desired storage interval among 1, 5, 10, 30 and 60 minutes, then locate the option to **Save** and press  $\frac{OK}{\cup}$  to save the setting and exit the interface; or locate the option to **Exit** and press  $\frac{OK}{\cup}$  to exit the interface without saving the setting.

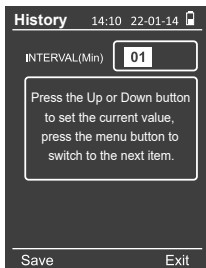


fig.8

**b. Data export:** In this interface, you will see the following tips.

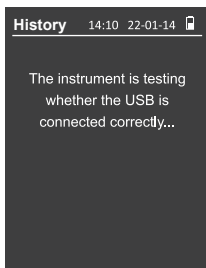


fig.9

If connected to the computer successfully by the USB cable, the detector will pop up a tip **USB connection successful**(fig.10);If not, it will remind you of the failure (fig.11).



fig.10



fig.11

After connected successfully, the detector will generate **in the computer** a removable storage device **Temtop**, which contains a folder named **History\_M2000\_2nd(for M2000 2nd) or History\_M2000C\_2nd(for M2000C 2nd)**. The history folder includes a CSV format file listing the date and time, temperature, temperature unit, humidity, PM2.5, PM10, CO<sub>2</sub>, HCHO concentration (fig.12). Please save it to your computer for viewing.

Date	PM2.5 (µg/m <sup>3</sup> )	PM10 (µg/m <sup>3</sup> )	CO <sub>2</sub> (ppm)	HCHO* (mg/m <sup>3</sup> )	TEMPERATURE	HUMIDITY (%)	TEMPUNIT
2022/1/25 9:28	23.6	39.6	507	0.012	25	58.6	C
2022/1/25 9:29	23.6	40.3	698	0.009	25.1	58.8	C
2022/1/25 9:30	24.4	41.4	683	0.007	25.2	58.4	C
2022/1/25 9:31	25	42.3	531	0.006	25.3	57.9	C
2022/1/25 9:32	23.6	39.4	499	0.006	25.4	57.6	C

fig.12

**\*For M2000 2nd**

After the data is copied and viewed, please press  to exit and restart the detector (fig.13).



fig.13

## 2.4 Settings

The **Settings** interface displays 6 options below (fig.14).

**Operation:** Press ▲ or ▼ to select the desired option; press  $\frac{OK}{U}$  to enter the interface.

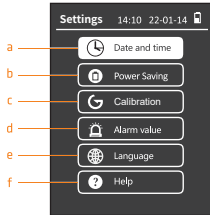


fig.14

### a. Date and time (Example Of Button Operation):

**Operation:** Press ▲ or ▼ to adjust time and press  $\equiv$  to switch to next digit. Then press  $\equiv$  to switch to **Save** or **Exit**. Press  $\frac{OK}{U}$  to finish the settings and exit the interface.

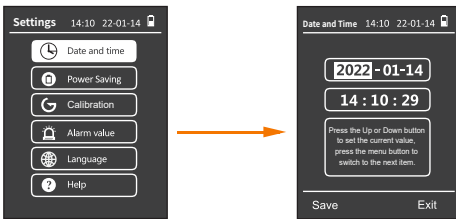


fig.15

### b. Power saving: Set power saving mode.

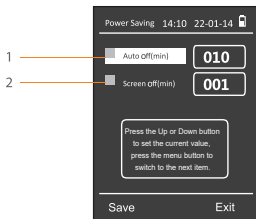


fig.16

1. Auto-off(min): enable/disable auto-off power function, unit in min.
2. Screen-off(min): enable/disable screen-off function, unit in min.

c. The **Calibration** interface displays 4 options below (fig.17).

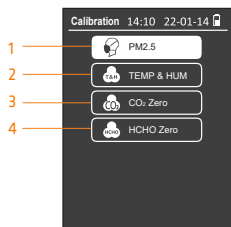


fig.17

Press ▲ or ▼ to adjust number and press ≡ to switch to next digit. Then press ≡ to switch to **Save** or **Exit**. Press to finish the calibration and exit the interface (fig.18 & fig.19).

1. PM2.5 Calibration: You can calibrate the temperature and humidity by modifying the "OFF" value.

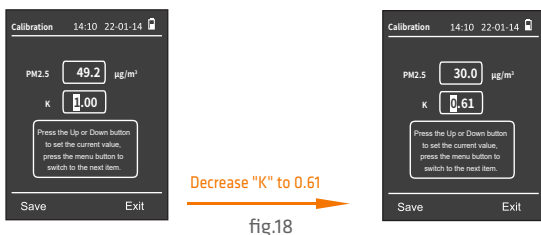


fig.18

Formula:  $K(\text{target value}) = \text{PM2.5}(\text{target value}) / \text{PM2.5}(\text{current value}) * K(\text{current value})$ .

Example (fig.18):

If PM2.5 target value is 30.0µg/m<sup>3</sup>, current value is 49.2µg/m<sup>3</sup>, current value of K is 1.00.

Then "K(target value) = 30.0/49.2 \* 1.00 = 0.61"

For products calibrated according to ISO standard, K coefficient is 1 by default. It is only recommended that professional engineers perform this adjustment under standard conditions with standard laboratory, or test bin facilities. At the same time, the calibration environment required for P2.5 is relatively high, and the calibration results will be affected by factors such as dust/particle size and different configurations of standard warehouse facilities, etc, so it is strongly recommended that you use this function only under essential conditions or contact us to better support your special needs.

2. TEMP & HUM Calibration: You can calibrate the PM2.5 value by adjusting the "K" factor.

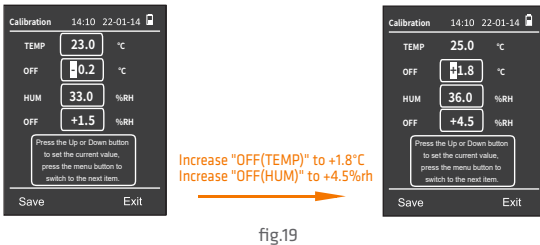


fig.19

Formula:  $OFF(TEMP \text{ target value}) = TEMP(\text{target value}) - TEMP(\text{current value}) + OFF(TEMP \text{ current value})$ .

$OFF(HUM \text{ target value}) = HUM(\text{target value}) - HUM(\text{current value}) + OFF(HUM \text{ current value})$ .

Example (fig.19):

If TEMP target value is 25.0, current value is 23.0, current value of OFF(TEMP) is -0.2.

Then  $OFF(TEMP \text{ target value}) = 25.0 - 23.0 + (-0.2) = +1.8$ .

If HUM target value is 36.0, current value is 33.0, current value of OFF(HUM) is +1.5.

Then  $OFF(HUM \text{ target value}) = 36.0 - 33.0 + (+1.5) = +4.5$ .

Press  $\frac{OK}{\odot}$  or  $\rightarrow$  to stop the calibration and exit the interface (fig.20 & fig.21). If the calibration progress is 100%, the calibration is completed and press  $\frac{OK}{\odot}$  or  $\rightarrow$  button to exit the interface.

3. CO2 Zero Calibration:

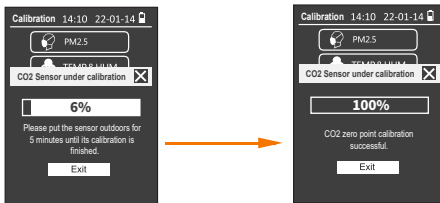


fig.20

4. HCHO Zero Calibration:

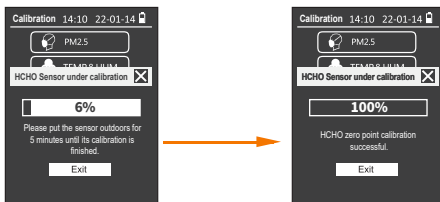


fig.21

- Note: 1. Please ensure that you can calibrate under fresh air outdoors.  
 2. During the calibration process, please do not perform other operations until the calibration is successful and you return to the previous level screen.

**d. Alarm value:** Set alarm limit for PM2.5, CO2 or HCHO concentration (fig.22).

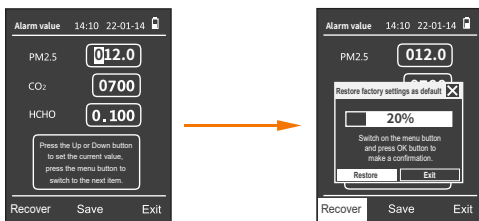


fig.22

**e. Language:** Set Chinese or English as displayed language (fig.23).

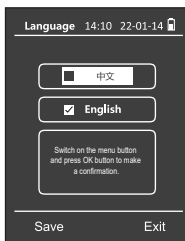


fig.23

**f. Help:** View the help information for using the detector (fig.24).

**Operation:** Press ▲ or ▼ to view the information that help you use the detector. Press ⏪ to back to set interface.

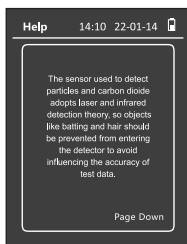


fig.24

## Air Quality Parameter for Reference

Status Pollutant	Good	Moderate	Unhealthy for Sensitive Groups	Unhealthy	Very Unhealthy	Hazardous
PM2.5 ( $\mu\text{g}/\text{m}^3$ )	$\leq 12$	12.1~35.4	35.5~55.4	55.5~150.4	150.5~250.4	$\geq 250.5$
PM10 ( $\mu\text{g}/\text{m}^3$ )	$\leq 54$	55~154	155~254	255~354	355~424	$\geq 425$
CO <sub>2</sub> (ppm)	$\leq 700$	701~1000	1001~1500	1501~2500	2501~5000	$\geq 5001$

Pollutant	Status	Healthy	UnHealthy
HCHO ( $\text{mg}/\text{m}^3$ )		$\leq 0.1$	$> 0.1$

## What's Included

Detector	x 1
USB Cable	x 1
User Manual	x 1

## FAQ:

### Q: Why is the PM2.5 reading constantly changing?

A: As PM2.5 concentration in the environment is changing all the time not only due to environmental factors like changes in airflow, humidity, wind direction and etc. but also due to common pollutant sources like smoking, cooking; exhaust emissions from vehicles, smoke from burning coal/chimneys/furnaces and etc. All these may influence the PM2.5 concentrations and give differences in the readings.

### Q: Why is the formaldehyde reading inaccurate?

A: The air is not circulated during storage and transportation. In order to ensure the best performance of the equipment, it needs to be ventilated outdoors for 1-2 hours before the first use.

Note that gases such as alcohol, carbon monoxide, and hydrogen sulfide may interfere with the sensor test. Stay away from alcohol, cigarette (including carbon monoxide), soot (including acrolein), and fruit (including ethanol). If the detector is exposed to high concentrations of air pollution, it will damage the sensor and make it unable to work properly.

### Q: Why is the test result abnormal or below normal?

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- A: ① Please check whether the air inlet or outlet is covered or liquid has entered.  
② Gently shake the detector during detection to increase the interaction with surrounding air.  
③ The sensor may be not recovered, Please place the detector outdoors for ventilation.

### Q: Why data reading is unstable?

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A: If the airflow in the current sampling space is in an unstable state, such as strong wind, the concentration of particulate matter in the air will be unevenly distributed, and will vary greatly with the surrounding airflow, resulting in large differences in measured values.

### Q: Why humidifiers can cause rising particulate matter readings?

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A: Our sensors use the principle of light scattering. When using a humidifier, the humidifier will spray many small droplets of water. Excessive humidity and moisture in the air will cause dust particles to absorb water and swell, which will affect the scattering of light and cause deviations in sensor readings.

### Q: Why is the data reading very high/over-range after the detector is turned ON?

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A: As being packed in ink printed package box over time may interfere with the sensor due to the remaining organic volatile residue inside the package. Therefore, after unpacking, please put the detector in a ventilated place to help accelerate its data recovery.

### Q: Why is the data high after booting?

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A: The reason why the data is high when you first turn on the sensor is that when the sensor starts to work, the fan will run at full speed, and it will take a while (about 1-2 minutes) for the fan to run stably. At this time, the airflow in the air duct will be stable, and the data will gradually become stable.

### Q: AQI/ PM2.5 and other values, why the measured value is inconsistent with the official announcement?

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A: The AQI/PM2.5 shown on the display is a measurement of the space where the device is located. The measured value published on the Internet or official websites is the average value of several monitoring points, and each measurement point will be different. At the same time, according to the regulations of EPA and WHO, the AQI value is calculated based on the highest value among the five pollutants in the atmosphere on that day. In the past ten years, the local AQI in the United States has basically been calculated with the value of PM2.5/10, and sometimes with the value of O<sub>3</sub>.

## Q: Which the HCHO reading inaccurate or overestimated at some points?

A: As Temtop uses a high-precision electrochemical HCHO sensor, its electrochemical reaction characteristics could also respond to other gases besides formaldehyde. This table lists the most common gases that interfere with relative sensitivities of HCHO sensor.

Interference Gas	Relative Sensitivity (%)
Carbon monoxide(CO)	1
Hydrogen (H <sub>2</sub> )	0,1
Ethyl alcohol	50
Phenols	7
Sulphur dioxide( SO <sub>2</sub> )	12
Ammoniak (NH <sub>3</sub> )	0

## Warranty

Temtop warrants the included item for 1 year from the date of original purchase. The item can be exchanged or returned within 30 days if the defect is not caused by artificial damage.

Item	Warranty Period
Detector	1 year
Accessories	N/A

Before returning or sending for repair, please check if the following items are ready:

	Detector & Accessories	Complete Package	Proof of Purchase**	Gift (if any)
<b>Return</b>	√	√	√	√
<b>Exchange</b>	√	√	√	
<b>Repair</b>	√		√	

\*\*Including invoice, order number and etc.

Temtop warranty does NOT include:

- Malfunction or damages caused by artificial damage or modification;
- Other deliberate damages;
- Damages caused by force majeure event.

# *Temtop*

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**Made in China V2.2**