Temtop

M2000 Series
Air Quality Monitor
User Manual

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Factors Affecting Air Quality

PM2.5 (Particulate Matter 2.5) refers to fine particles with a diameter of 2.5 microns or less. Due to its tiny size, PM2.5 can get absorbed into the bloodstream and lungs, so long-term exposure to high levels of PM2.5 may cause eye and nose irritation, coughing, asthma, emphysema, lung disease, heart attacks, cancer, and more.

PM10 (Particulate Matter 10) relates to particulate matter with a diameter of 10 microns or less. Due to its larger particle size, PM10 can be inhaled and does not penetrate the bronchial tubes because larger particles can be made available by the cilia and mucus in the nose and throat. It is usually considered less of a health hazard than PM2.5.

Carbon dioxide(CO_2) is a colorless and odorless gas usually derived from the breath of humans and animals. High CO_2 concentration means that fresh air or ventilation is required; otherwise, it may cause problems such as drowsiness, dizziness, loss of attention, and cognitive impairment.

HCHO (Formaldehyde) is a colorless, strong-smelling chemical with the chemical formula CH_2O or H-CHO, which has been classified as a Group 1 carcinogen by the International Agency for Research on Cancer due to its significant health risks. Long-term exposure to low doses can cause chronic respiratory disease, nasopharyngeal cancer, colon cancer, brain tumors, and nuclear genetic mutations.

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 ⑬ Model (M2000 2nd or M2000C 2nd)

Funtion

Function \ Model	M2000 2nd	M2000C 2nd	M2000	M2000C
PM2.5	√	√	√	√
PM10	√	√	√	√
Particle Count	√	√	√	√
CO_2	√	√	√	√
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 @ Backlight Level 2 (Approximately 25°C)
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 Atrnospheric 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	Measuring range: 0-999.9 μg/m³ Resolution: 0.1 μg/m³ Accuracy: ±10 μg/m³(0-100 μg/m³) ±10%(100-500 μg/m³)
PM10	Measuring range: 0-999.9 μg/m³ Resolution: 0.1 μg/m³ Accuracy: ±15 μg/m³(0-100 μg/m³) ±15%(100-500 μg/m³)
Carbon dioxide (CO_2)	Measuring range: 0-5000 ppm Resolution: 1 ppm Accuracy: ±5% ±50 ppm(400~5000ppm)
HCHO*	Measurement range:0-2 mg/m³ Resolution: 0.001 mg/m³

*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 OK for 2 seconds to turn on/off the detector.

② Detection

When the detector is turned on (fig.2), then press ▲ or ▼ to locate the option to view or set and press OK to confirm.

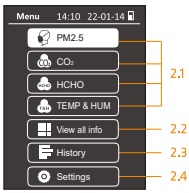

fig.2

2.1 View or set PM2.5/CO_2/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_2 screen, a "Sensor preheating" pop-up box will appear, please try again later (For M2000/M2000C).

2.1 View or set PM2.5/CO_2/HCHO/TEMP&HUM

In each interface, press ☰ to display more functions. Take CO_2 interface for example, press ☰ button, you may see the following function options (fig.3):

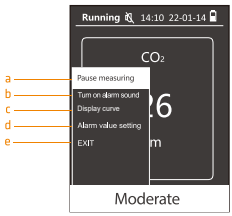

fig.3

a. Pause measuring: Pause or restart deteating CO_2.

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

c. Display curve

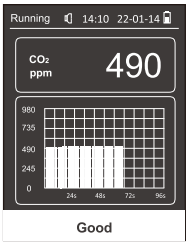

fig.4

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 OK to save the setting and exit the interface, or press **Exit** and OK to exit without saving the setting (fig.5).

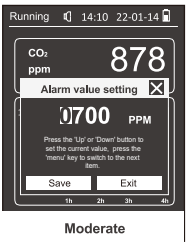

fig.5

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 PM2.5, PM10, CO_2, number of particles, temperature and humidity. Press ⁝≡ to switch between °C and °F. See the figures below.

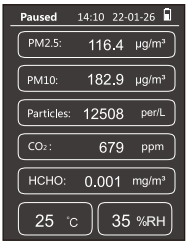

fig.6

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).

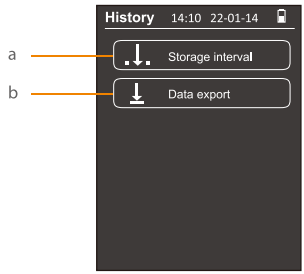

fig.7

Operation: Press ▲ or ▼ to switch between **Storage interval** and **Data export**, then press OK to enter the corresponding interface.

a. Storage interval: Press ☰ to switch between digits, **Save** and **Exit**. When you select a digit, press ▲ or ▼ 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 OK to save the setting and exit the interface; or locate the option to **Exit** and press OK to exit the interface without saving the setting.

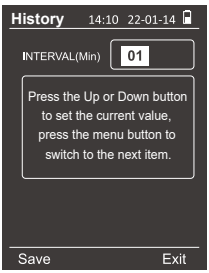

fig.8

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

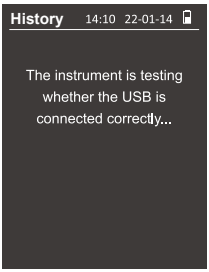

fig.9

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).

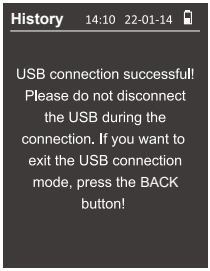

fig.10

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_2 , HCHO concentration (fig.12). Please save it to your computer for viewing.

Date	PM2.5 (μg/m³)	PM10 (μg/m³)	PARTICLES (per/L)	CO_2 (ppm)	HCHO* (mg/m³)	TEMPERATURE	HUMIDITY (%)	TEMPUNIT
2022/1/25 9:28	23.6	39.6	2395	507	0.012	25	58.6	C
2022/1/25 9:29	23.6	40.3	2399	698	0.009	25.1	58.8	C
2022/1/25 9:30	24.4	41.4	2468	683	0.007	25.2	58.4	C
2022/1/25 9:31	25	42.3	2488	531	0.006	25.3	57.9	C
2022/1/25 9:32	23.6	39.4	2392	499	0.006	25.4	57.6	C

fig.12

*For M2000 2nd

Note: In the exported data, C represents °C and F represents °F.

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 OK to enter the interface.

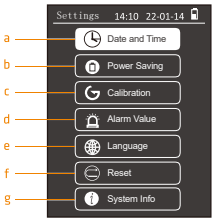

fig.14

a. Date and Time (Example Of Button Operation):

Operation: Press ▲ or ▼ to adjust time and press ☰ to switch to next digit. Then press ☰ to switch to **Save** or **Exit**. Press OK to finish the settings and exit the interface.

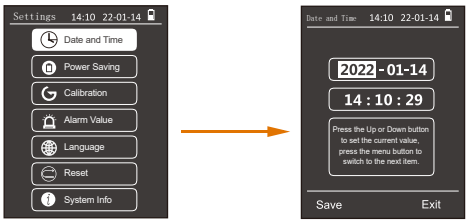

fig.15

b. Power Saving: Set power saving mode.

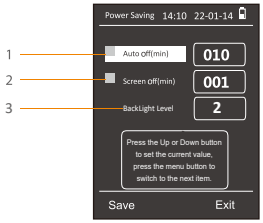

fig.16

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.
3. BackLight Level: the product backlight level is 0, 1, 2, 3, 4, 5, and the default backlight level is 2.

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

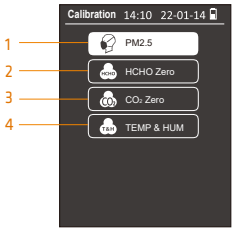

fig.17

Press OK or ↩ to stop the calibration and exit the interface(fig.18,fig.19,fig.20).If the calibration progress is 100%, the calibration is completed and press OK or ↩ button to exit the interface.

1. PM2.5 Calibration: You can calibrate the PM2.5 value by adjusting the "Target PM2.5" value.

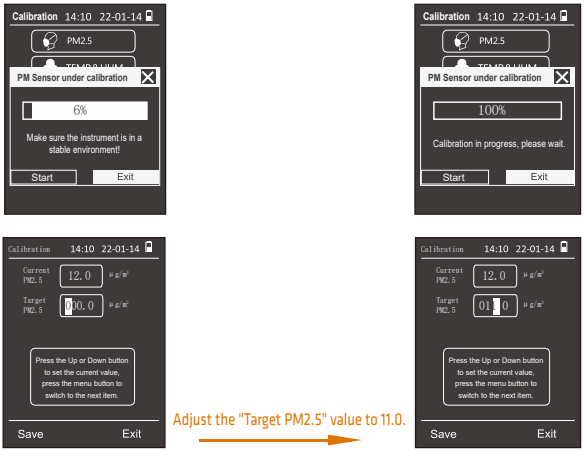

fig.18

Note: The 'Target PM2.5' value is the specific value you are adjusting.

2. HCHO Zero Calibration:

fig.19

3. CO_2 Zero Calibration:

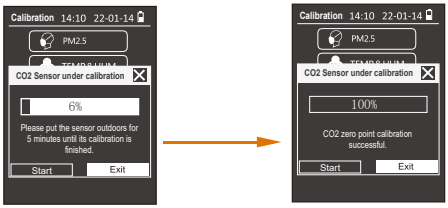

fig.20

4. TEMP & HUM Calibration: You can calibrate the temperature and humidity by modifying the "OFFSET" value.

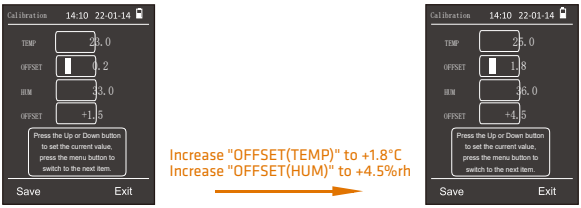

fig.21

Formula:
OFFSET(TEMP target value) = TEMP(target value) - TEMP(current value) + OFF(TEMP current value).
OFFSET(HUM target value) = HUM(target value) - HUM(current value) + OFF(HUM current value).
Example (fig.21) :
If TEMP target value is 25.0, current value is 23.0, current value of OFF(TEMP) is -0.2.
Then "OFFSET(TEMP 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 "OFFSET(HUM target value)=36.0-33.0+(+1.5)=+4.5".

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, CO_2 or HCHO concentration (fig.22).

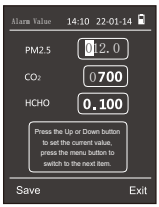

fig.22

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

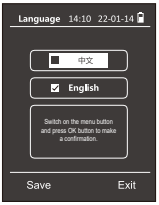

fig.23

f. Reset: Resets the product to its default values (fig.24).

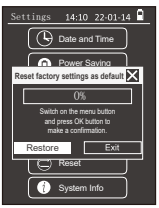

fig.24

g. The **System Info** interface displays 2 options below (fig.25).

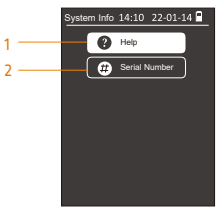

fig.25

1. Help: Press ▲ or ▼ to view the information that help you use the detector.
Press ↰ to back to set interface(fig.26).

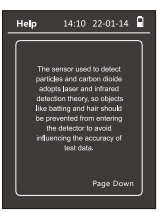

fig.26

2. Serial Number: View information about the product (fig.27).

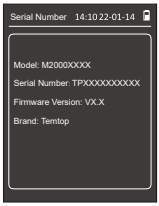

fig.27

Air Quality Parameter For Reference

Status / Pollutant	Good	Moderate	Unhealthy for Sensitive Groups	Unhealthy	Very Unhealthy	Hazardous
PM2.5 (μg/m³)	≤9	9.1~35.4	35.5~55.4	55.5~125.4	125.5~225.4	≥225.5
PM10 (μg/m³)	≤54.9	55~154.9	155~254.9	255~354.9	355~424.9	≥425
CO_2 (ppm)	≤700	701~1000	1001~1500	1501~2500	2501~5000	≥5001

Pollutant / Status	Healthy	UnHealthy
HCHO (mg/m³)	≤0.1	>0.1

What's Included

M2000 Series Detector x 1
Calibration Certificate x 1
User Manual x 1
USB Cable 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: AQI/ PM2.5 and other values, why the measured value is inconsistent with the official announcement?

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_3.

Q: Which HCHO reading is 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_2)	0.1
Ethyl alcohol	50
Phenols	7
Sulphur dioxide(SO_2)	12
Ammoniak(NH_3)	0

Q: Why is CO_2 data high?

A: The user's environment may be poorly ventilated, resulting in high CO_2 concentration; it is recommended that the user place the product in an outdoor ventilated place for 10 minutes. If the data is still high, the customer is advised to calibrate according to the user manual.

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

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?

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 is the data high after booting?

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

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.

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 artificia 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)
Return	√	√	√	√
Exchange	√	√	√	
Repair	√		√	

**Including invoice, order number and etc.

Temtop warranty does NOT include:

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

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V2.5
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