

Temptop

PMD 371

**Particle Counter
User Manual**

Notices about this User Manual

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CAUTION!

Please read this manual carefully! Use of controls or adjustments or operation other than those specified in this manual, may cause danger or damage to the monitor.

WARNING!

-  The monitor features an internal laser transmitter. Do not open the monitor housing.
-  The monitor shall be maintained by the professional from the manufacturer.
-  Unauthorized maintenance may cause hazardous radiation exposure of the operator to laser radiation.
-  Elitech Technology, Inc. accepts no responsibility for any malfunction that are caused by improper handling of this product, and such malfunction will deem as falling outside the conditions of Warranty and Services outlined in this User Manual.

IMPORTANT!

-  PMD 371 has been charged and can be used after unpacking.
-  Do not use this monitor to detect heavy smoke, high-concentration oil mist, or high-pressure gas to avoid laser tip damage or air pump block.

After opening the monitor case, make sure that the parts in the case are complete according to the following table. If anything is missing, please contact our company.

Standard Accessories



PMD 371
&
PU Protective Case



Battery Charger



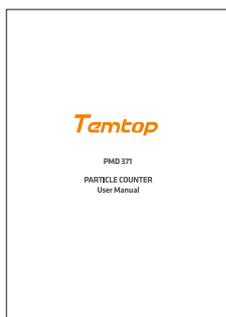
RS-485 Serial
Converter Cable



AC Power Cord



Filter Tube



User Manual



Carrying Case



USB Flash Drive

Optional Accessories



Flow Meter



Filter Element

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1. Introduction

PMD 371 is a small, light, and battery-powered particle counter with seven channels for outputs the number of 0.3 μ m, 0.5 μ m, 0.7 μ m, 1.0 μ m, 2.5 μ m, 5.0 μ m, 10.0 μ m particles, with five channels for simultaneous detection of PM1.0, PM2.5, PM4.0, PM10, and TSP (Total Suspended Particles) mass concentrations.

With a large display screen and seven buttons for operation, the monitor is simple and efficient, suitable for fast detection in multiple scenarios. The internal high-performance lithium battery allows the monitor to run continuously for 8 hours. PMD 371 also has a built-in 32GB large-capacity storage and supports two communication modes: USB and RS-485. The detected data can be viewed directly on the screen or exported through the USB port for analysis.

2. Product Overview



Fig. 1

-
- | | | | |
|---------------|-------------------|----------------------|----------------------|
| ① Intake Duct | ② Display Screen | ③ Buttons | ④ PU Protective Case |
| ⑤ USB Port | ⑥ 8.4V Power Port | ⑦ RS-485 Serial Port | |
-

Button Functions

	Hold for 2 seconds to turn on/off the instrument.
	When the instrument is on, press to enter MENU interface; From the MENU screen, press to enter the selection. From the Page Setup screen, press to enter the selection.
	Press to switch the main screen. Press to switch options.
	Press to back to the previous status.
	Press to start/stop sampling.
	Scroll up the options in the Menu interface; Increase parameter value.
	Scroll down the options in the Menu interface; Decrease parameter value.

3. Operations

3.1 Power ON

Press and hold  for 2 seconds to power on the instrument, and it will display an initialization screen (Fig.2)

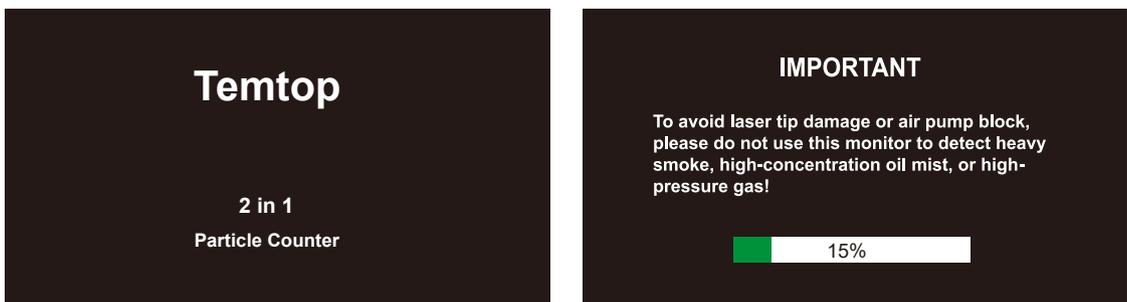


Fig.2

After initialisation, the instrument enters the main particle count interface, press  to switch to the main mass concentration interface, and by default no measurement is initiated to save power (Fig. 3) or maintains the state when the instrument was last switched off.

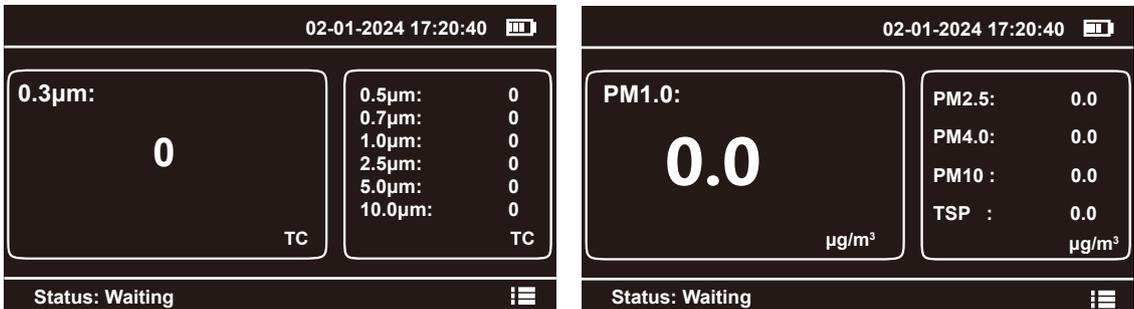


Fig. 3

Press  key to start detection, the interface real-time display of the number of particles of different sizes or mass concentration, press  or  key to switch the main view box display of the measurement items, the bottom status bar shows the sampling countdown. The instrument defaults to continuous sampling. During the sampling process, you can press  key to pause the sampling (Fig. 4).

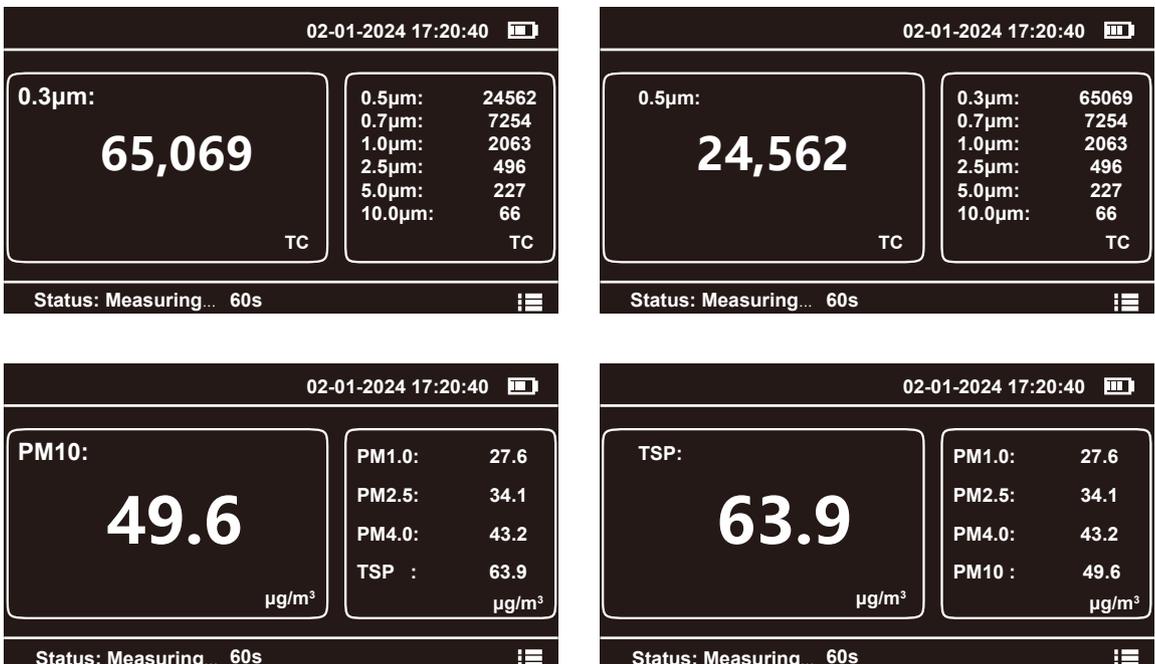


Fig. 4

3.2 Settings Menu

Press  to enter the MENU interface, then press  or  to switch between the options. Press  to enter your preferred option to view or change settings (Fig. 5).

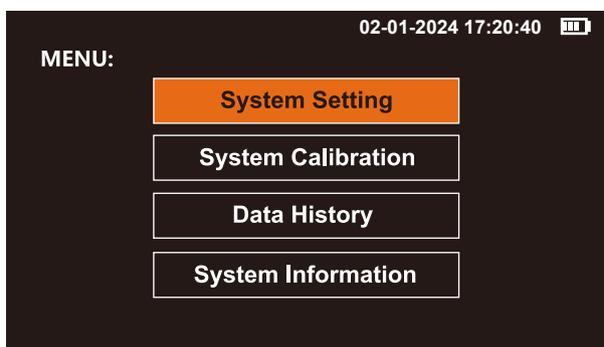


Fig. 5

MENU options are as follows:

Menu	Display as...	Description
System Setting	Setting	Set system time, sample, COM, language, backlight and auto off
System Calibration	Calibration	Calibrate zero,k-Factor and flow
Data History	History	Query, download and delete the data
System Information	Information	Display system information

3.2.1 System Setting

In the system setting interface MENU->Setting, you can set time, sample, COM, language, Backlight Adjustment and Auto off. Press  or  to switch the options (Fig.6) and press  to enter.

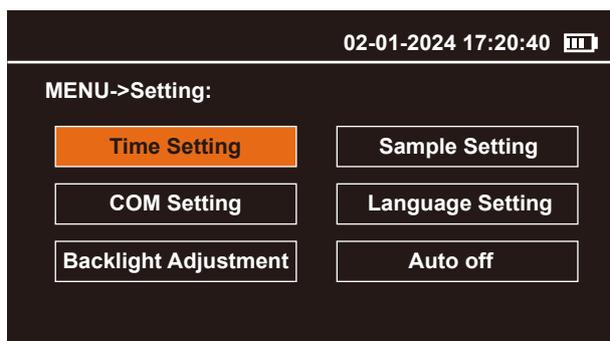


Fig.6

• Time Setting

Press the  key to enter the time setting interface, press the  key to switch the option, press the  or  key to increase or decrease the value, switch to the **Save** option when the setting is completed, press the  key to save the setting (Fig. 7).

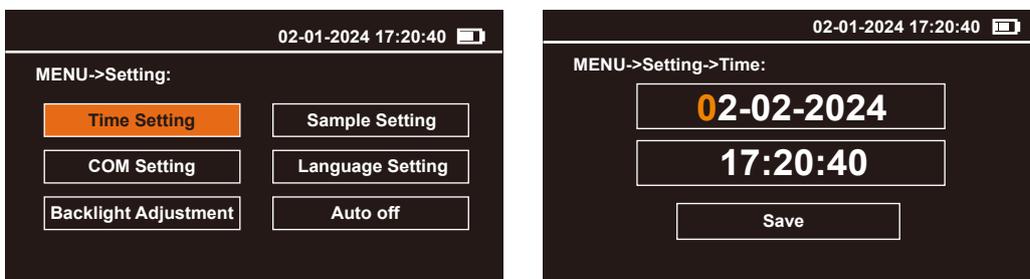


Fig. 7

• Sample Setting

In the system setting interface MENU->Setting, press  or  to switch to the **Sample Setting** option (Fig.8), and then press  to enter the sample setting interface. In the sample setting interface you can set the sample unit, sample mode, sample time, hold time.

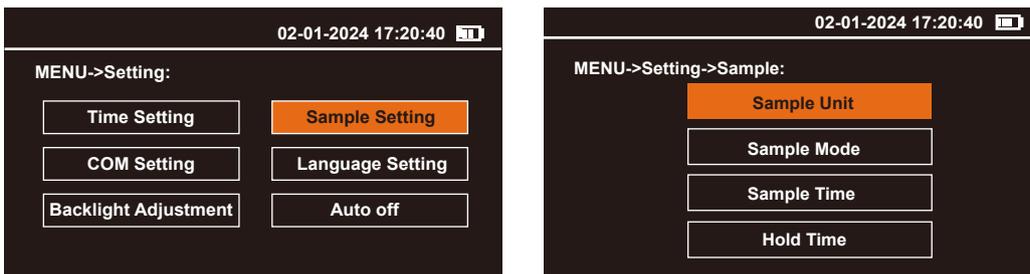


Fig. 8

• Sample Unit

Press the  key to enter the sampling unit setting interface, the mass concentration is kept as $\mu\text{g}/\text{m}^3$, the particle counter can select 4 units: TC, CF, pcs/L, m^3 . Press  or  key to switch the unit, when the setting is finished, press  key to switch to **Save**, press  to save the setting (Fig. 9).

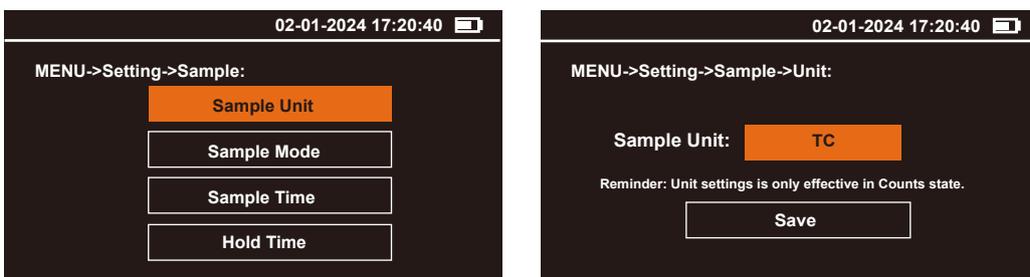


Fig. 9

• Sample Time

Press  key to enter sampling time setting interface, sampling time 1min, 2min, 5min, 10min, 15min, 30min, 60min is optional. Press  or  key to switch the sampling time, press  key to switch to **Save** after setting is completed, press  key to save the setting (Fig. 10).

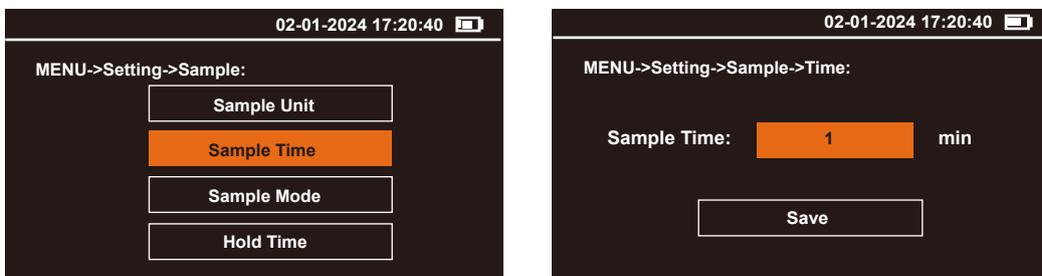


Fig. 10

• Sample Mode

Press  key to enter the sampling mode setting interface, press  or  key to switch to manual mode or continuous mode, press  key to switch to **Save** after setting is completed, press  key to save the setting (Fig. 11).

Manual Mode: After the sampling time reaches the set sampling time, the product status changes to wait and stops the sampling work.

Continuous Mode: Continuous operation according to the set sampling time and hold time.

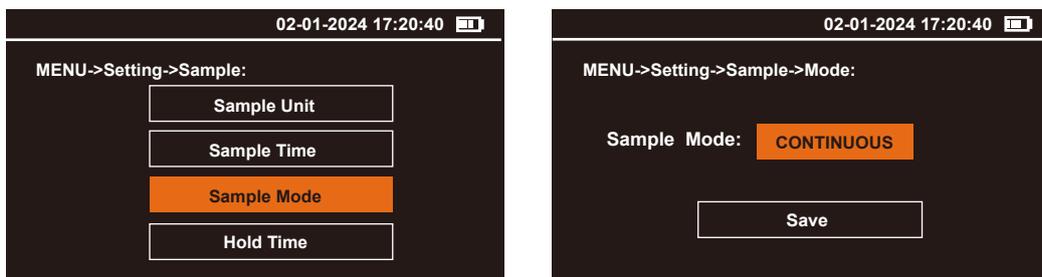


Fig. 11

• Hold Time

Press  key to enter the hold time setting interface, in continuous sampling mode, you can select the setting from 0 or 6-3600s, the default is 0. Press  or  key to increase or decrease the value, press  key to switch to **Save** after the setting is completed, and press  to save the setting (Fig. 12).

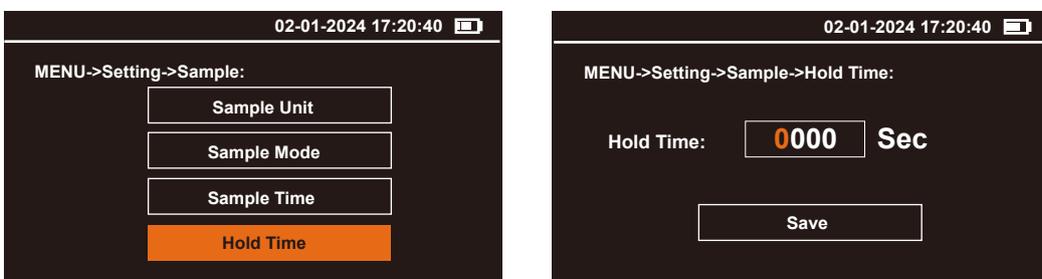


Fig. 12

• COM Setting

In the system setting interface MENU->Setting, press ▲ or ▼ to switch to the COM Setting option, and then press  to enter the COM Setting interface. In the COM Setting interface you can Press ▲ or ▼ to select the baud rates among three options: 9600, 115200, and 19200. Then press  to switch to **Save** and press  to save the setting (Fig.13).



Fig. 13

• Language Setting

In the system setting interface MENU->Setting, press ▲ or ▼ to switch to the Language Setting option, and then press  to enter the Language Setting interface. In the Language Setting interface you can Press ▲ or ▼ to switch to English or Chinese. Then press  to switch to **Save** and press  to save the setting (Fig.14).

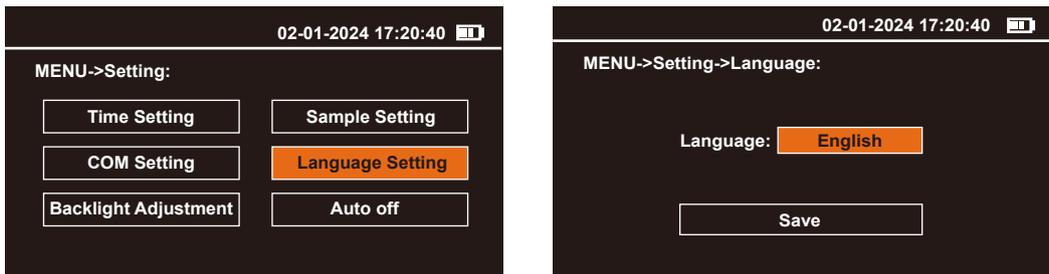


Fig. 14

• Backlight Adjustment

In system setting interface MENU->Setting, press ▲ or ▼ key to switch to Backlight Adjustment option, then press  key to enter Backlight Adjustment interface. In Backlight Adjustment, you can press ▲ or ▼ key to switch 1, 2, 3 total 3 levels of brightness. Then press  to switch to **Save** and press  to save the setting (Fig.15).

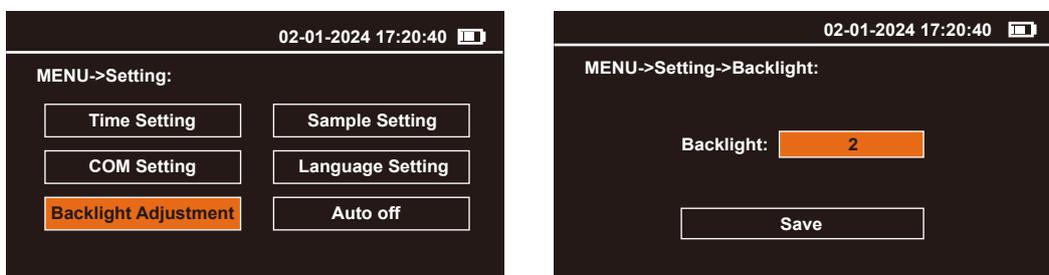


Fig. 15

• Auto off

In system setting interface MENU->Setting, press ▲ or ▼ key to switch to Auto off option, then press  key to enter Auto off interface. In Auto off, you can press ▲ or ▼ key to switch Enable and Disable. Then press  to switch to **Save** and press  to save the setting (Fig. 16).

Enable: The product does not switch off during continuous operation in measurement mode.

Disable: If there is no operation for more than 10 minutes in the disabled mode and wait state, the product will automatically shut down.

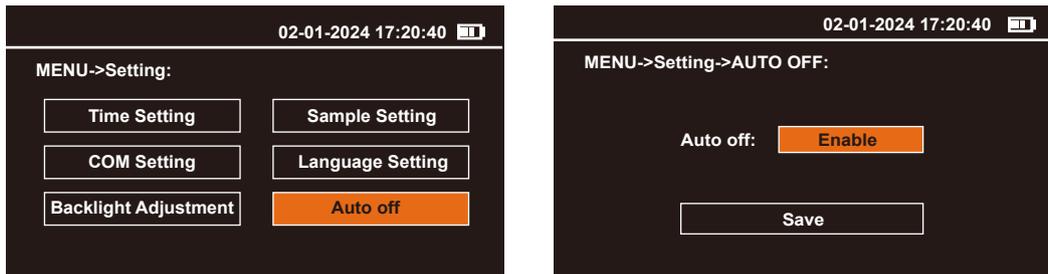


Fig. 16

3.2.2 System Calibration

Press  to enter the MENU interface, then press ▲ or ▼ to switch to System Calibration. Press  to enter the System Calibration interface.

In the system calibration interface MENU->Calibration, you can operate Zero Calibration, Flow Calibration and K-Factor Calibration. Press ▲ or ▼ to switch the option and press  to enter (Fig.17).



Fig. 17

• Zero Calibration

Before start, please install the filter and the air inlet according to the prompt reminder on the display. Please see **5.2 Zero Calibration** for more installation details.

Press  to start the calibration. It takes about 180 seconds countdown. After the countdown finishes, the display prompts reminder to confirm the calibration finishes successfully and will returns to the MENU-Calibration interface automatically (Fig. 18).



Fig. 18

• Flow Calibration

Before start, please install the flow meter to the air inlet as prompt on the display. Please see **5.3 Flow Calibration** for full installation operation.

Under Flow Calibration interface, press  to start calibrating. Then press  or  to increase or decrease the value until the flow meter reading reaches 2.83 L/min. After the setting finishes, press  to save the setting and exit (Fig. 19).

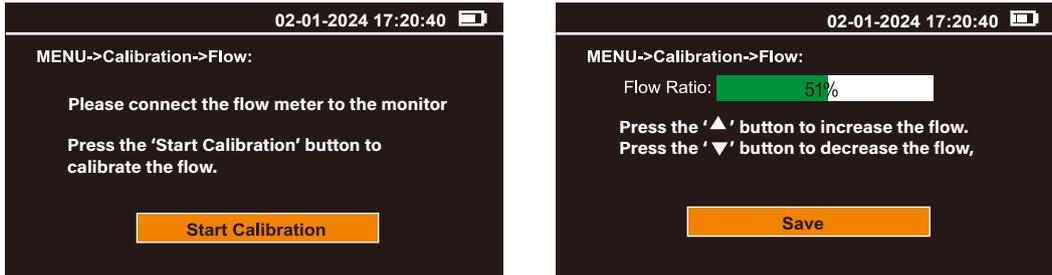


Fig. 19

• K-Factor Calibration

Press  to enter the K-factor calibration interface for mass concentration. Press  to switch the cursor, press  or  to increase or decrease the value, press  key to switch to Save after setting is completed, press  key to save the setting . (Fig. 20).

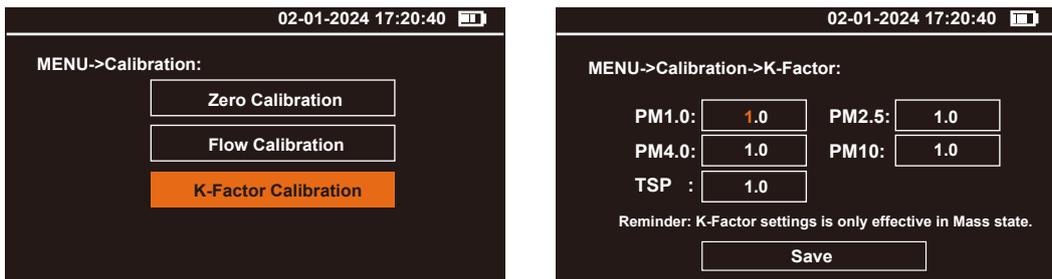


Fig. 20

3.2.3 Data History

Press  to enter the MENU interface, then press  or  to switch to Data History.

Press  to enter the Data History interface.

In the Data History interface MENU->History, you can operate Data Query, History Download and History Deletion. Press  or  to switch the option and press  to enter (Fig.21).

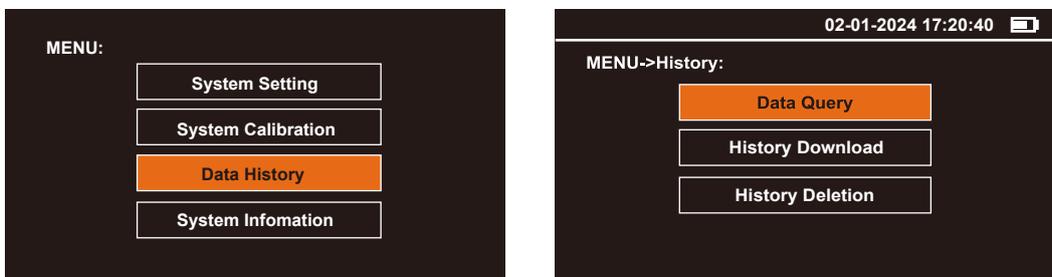


Fig. 21

• Data Query

Under the query screen, you can query the data of Counts or Mass by month. Press  or  to select Counts or Mass. By default, the system will automatically recommend the current month. If you need data for other months, press  to switch to the Year and Month option, and then press  or  to increase or decrease the value. When finished, press  to switch to the **Query** and press  to go to the query (Fig. 22).



Fig. 22

The displayed data is sorted in descending time where the latest data is on the last page. Press  or  to turn the page (Fig. 23).

#8	Date:02-01-2024	Time:09:00:17	μm	Σ	Unit	Sample Time
0.3	103956	TC	1 Min			
0.5	16620	TC	1 Min			
0.7	9524	TC	1 Min			
1.0	5241	TC	1 Min			
2.5	4105	TC	1 Min			
5.0	2756	TC	1 Min			
10	346	TC	1 Min			

#8	Date:02-01-2024	Time:09:00:17	PM	DEN	Unit	Sample Time
PM1.0	4.7	ug/m ³	1 Min			
PM2.5	5.2	ug/m ³	1 Min			
PM4.0	6.3	ug/m ³	1 Min			
PM10	8.6	ug/m ³	1 Min			
TSP	8.6	ug/m ³	1 Min			

Fig. 23

• History Download

In the History Download interface, insert a USB device such as a USB flash drive or card reader into the USB port of the monitor. If the USB device is successfully connected, press  to download the data (Fig. 24).



Fig. 24

After downloading the data, unplug the USB device and insert it into the computer to find a folder prefixed with the product serial number, for example, "TD3730201015-020120241608". You can view and analyze the data now.

If the USB device fails to connect or there is no USB device connected, the display will prompt a reminder. Please reconnect it or try again later (Fig. 25).



Fig. 25

• History Deletion

In the History Deletion interface, data can be deleted by month or all. Press  or  to switch options and press  to enter (Fig. 26).

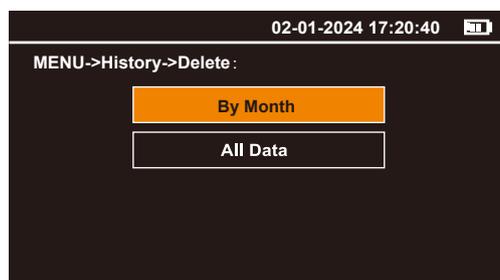
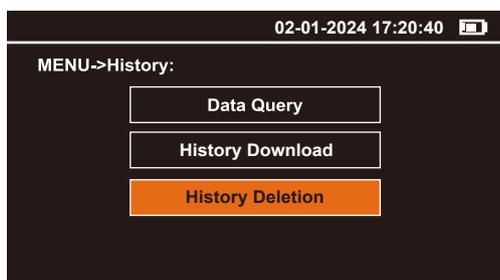


Fig. 26

• By Month

Under the Delete by Month screen, Press  or  to select Counts or Mass. By default, the system will automatically recommend the current month. If you need to delete data from other months, press  to switch to the Year and Month option, and then press  or  to increase or decrease the value. When finished, press  to switch to the Delete and press  to go to delete (Fig. 27).

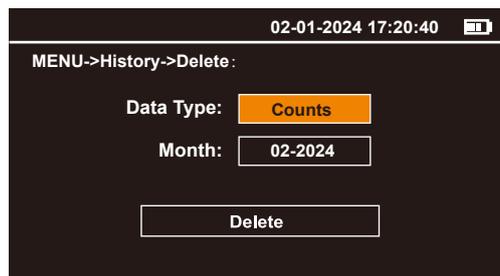
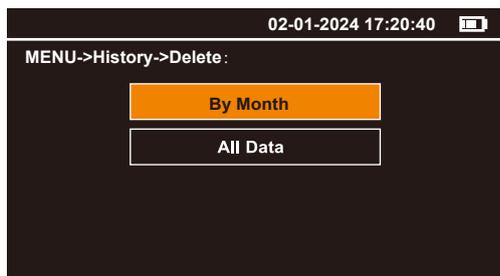


Fig. 27

• All Data

For the All Data interface, the display will prompt a confirmation reminder, press  to confirm it (Fig. 28).

Wait until the delete completed, if data delete successfully, then the display will prompt a reminder and will return to the MENU-History interface automatically.



Fig. 28

3.2.4 System Information

The System Information interface shows the following information (Fig. 29)

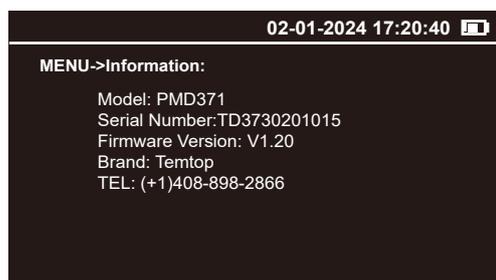


Fig. 29

3.3 Power OFF

Press and hold  for 2 seconds to turn off the monitor (Fig.30).



Fig.30

4. Protocols

PMD 371 supports two communication modes: RS-485 and USB. RS-485 serial communication is used for real-time interaction. USB communication is used to export data history.

4.1 RS-485 Serial Communication

The PMD 371 is based on the Modbus RTU protocol.

Description

1) Master-Slave:

Only the master can initiate communication, as the PMD 371 is a slave and will not initiate communication.

2) Packet identification:

Any message(packet) starts with a silent interval of 3.5 characters. Another silent interval of 3.5 characters marks message end. Silence interval between characters in the message needs to be kept less than 1.5 characters.

Both intervals are from the end of Stop-bit of previous byte to the beginning of the Start-bit of the next byte.

3) Modbus Data Model:

PMD 371 has 2 main data tables (addressable registers) that can be overwritten:

- Input register (read-only 16-bit word, interpretation depends on application)
- Holding register (read / write 16-bit word)

Note: The sensor does not support bit-wise access to registers.

4.1.1 Register List

Restrictions:

1. Input registers and holding registers are not allowed to overlap;
2. Bit-addressable items (i.e., coils and discrete inputs) are not supported;
3. The total number of registers is limited: The input register range is 0x03~0x15, and the holding register range is 0x00~0x0D, 0x0F~0x11, 0x19~0x1E.

The register map (all registers are 16-bit words) is summarized in the table below.

Input Register List		
No.	Meaning	Description
0x00	N/A	Reserved
0x01	N/A	Reserved
0x02	N/A	Reserved
0x03	0.3µm Hi 16	Particles
0x04	0.3µm Lo 16	Particles
0x05	0.5µm Hi 16	Particles
0x06	0.5µm Lo 16	Particles
0x07	0.7µm Hi 16	Particles
0x08	0.7µm Lo 16	Particles
0x09	1.0µm Hi 16	Particles
0x0A	1.0µm Lo 16	Particles
0x0B	2.5µm Hi 16	Particles
0x0C	2.5µm Lo 16	Particles
0x0D	5.0µm Hi 16	Particles
0x0E	5.0µm Lo 16	Particles
0x0F	10µm Hi 16	Particles
0x10	10µm Lo 16	Particles
0x11	PM1.0 Hi 16	Concentration value
0x12	PM1.0 Lo 16	Concentration value
0x13	PM2.5 Hi 16	Concentration value
0x14	PM2.5 Lo 16	Concentration value
0x15	PM4 Hi 16	Concentration value
0x16	PM4 Lo 16	Concentration value
0x17	PM10 Hi 16	Concentration value
0x18	PM10 Lo 16	Concentration value
0x19	TSP Hi 16	Concentration value
0x20	TSP Lo 16	Concentration value

Holding Register List		
No.	Meaning	Description
0x00	Modbus Address	1~247
0x01	Start and Stop Command	0: stop 1: start
0x02	Holding time	0,6-3600s
0x03	PM1.0 Factor	Expanded 10 times, actual 1.0
0x04	PM2.5 Factor	Expanded 10 times, actual 1.0
0x05	PM4.0 Factor	Expanded 10 times, actual 1.0

0x06	PM10 Factor	Expanded 10 times, actual 1.0
0x07	TSP Factor	Expanded 10 times, actual 1.0
0x08	Year	Year
0x09	Month	Month
0x0A	Day	Day
0x0B	Hour	Hour
0x0C	Minute	Minute
0x0D	Second	Second
...	N/A	Reserved
0x0F	Sample Unit Setting	0x00:TC 0x01:CF 0x02:L 0x03:M ³
0x10	Sample Time Setting	60s,120s,300s,600s,900s,1800s,3600s
0x11	Modes	0: Particle Count 1: Mass Concentration
...	N/A	Reserved
0x19	SN[0]	Readable
0x1A	SN[1]	Readable
0x1B	SN[2]	Readable
0x1C	SN[3]	Readable
0x1D	SN[4]	Readable
0x1E	SN[5]	Readable

Note: TC, CF, L, M³ for particle counters only.

4.1.2 Function Code Description

PMD 371 supports the following function codes:

0x03: Read holding register 0x06: Write a single holding register

0x04: Read input register 0x10: Write multiple holding register

The remaining Modbus function codes are not supported for the time being.

4.1.3 Serial Setting

Baud rate: 9600, 19200, 115200 (see **3.2.1 System Setting-COM Setting**)

Data bits: 8 Stop bit: 1 Check bit: N/A

4.1.4 Application Example

• Read Detected Data

The sensor address is 0xFE or Modbus Address.

The following use “0xFE” as an example.

Use 0x04 (read input register) in Modbus to obtain detected data.

The detected data put in a register with a starting address of 0x03, the number of registers is 0x0E, and the CRC check is 0x95C1.

The master sends:

Slave Address	Function Code	Starting Address Hi	Starting Address Lo	Quantity Hi	Quantity Lo	CRC16 Hi	CRC16 Lo
0xFE	0x04	0x00	0x03	0x00	0x0E	0x95	0xC1

The slave responds:

Slave Address	Function Code	Quantity	0.3µm Hi 16 Hi	0.3µm Hi 16 Lo	0.3µm Lo 16 Hi	0.3µm Lo 16 Lo	0.5µm Hi 16 Hi	0.5µm Hi 16 Lo
0xFE	0x04	0x1C	0x00	0x02	0x34	0x24	0x00	0x01
0.5µm Lo 16 Hi	0.5µm Lo 16 Lo	0.7µm Hi 16 Hi	0.7µm Hi 16 Lo	0.7µm Lo 16 Hi	0.7µm Lo 16Lo	1.0µm Hi 16 Hi	1.0µm Hi 16 Lo	1.0µm Lo 16 Hi
0x24	0x10	0x00	0x00	0xFE	0xFB	0x00	0x00	0x9A
1.0µm Lo 16 Lo	2.5µm Hi 16 Hi	2.5µm Hi 16 Lo	2.5µm Lo 16 Hi	2.5µm Lo 16 Lo	5.0µmHi 16 Hi	5.0µm Hi 16 Lo	5.0µm Lo 16 Hi	5.0µm Lo 16 Lo
0xF0	0x00	0x00	0x5B	0x5C	0x00	0x00	0x01	0xF2
10.0µm Hi 16 Hi	10.0µm Hi 16 Lo	10.0µm Lo 16 Hi	10.0µm Lo 16 Lo	CRC16 Hi	CRC16 Lo			
0x00	0x00	0x00	0x16	0x11	0x6B			

Reading measurement data

The sensor address is 0xFE.

Use 0x04 (read input register) in Modbus to obtain detected data.

The detected data put in a register with a starting address of 0x0011, the number of registers is 10, and the CRC check is 0x3407.

The PMD371 responds a value that is 10 times the actual concentration. In the example:

PM1.0 is 0x000000CF (actual value is 20.7 µg/m³),

PM2.5 is 0x00000138 (actual value is 31.2 µg/m³),

PM4.0 is 0x0000018F (actual value is 39.9 µg/m³)

PM10 is 0x000001F5 (actual value is 50.1 µg/m³)

TSP is 0x00000241 (actual value is 57.7 µg/m³).

The master sends:

Slave Address	Function Code	Starting Address Hi	Starting Address Lo	Quantity Hi	Quantity Lo	CRC16 Lo	CRC16 Hi
0xFE	0x04	0x00	0x11	0x00	0x0A	0x34	0x07

The slave responds:

Slave Address	Function Code	Quantity	PM1.0 Hi 16 Hi	PM1.0 Hi 16 Lo	PM1.0 Lo 16 Hi	PM1.0 Lo 16 Lo	PM2.5 Hi 16 Hi	PM2.5 Hi 16 Lo
0xFE	0x04	0x14	0x00	0x00	0x00	0xCF	0x00	0x00
PM2.5 Lo 16 Hi	PM2.5 Lo 16 Lo	PM4.0 Hi 16 Hi	PM4.0 Hi 16 Lo	PM4.0 Lo 16 Hi	PM4.0 Lo 16 Lo	PM10 Hi 16 Hi	PM10 Hi 16 Lo	PM10 Lo 16 Hi
0x01	0x38	0x00	0x00	0x01	0x8F	0x00	0x00	0x01
PM10 Lo 16 Lo	TSP Hi 16 Hi	TSP Hi 16 Lo	TSP Lo 16 Hi	TSP Lo 16 Lo	CRC16 Lo	CRC16 Hi		
0xF5	0x00	0x00	0x02	0x41	0x99	0xA0		

- **Start Detection**

The sensor address is 0xFE.

Use 0x06 (write a single holding register) in Modbus to start the detection.

Write 0x01 to register 0x01 to start detection. The starting address is 0x01, and the registered value is 0x01. CRC calculated as 0x0DC5, first sent in high byte.

The master sends:

Slave Address	Function Code	Starting Address Hi	Starting Address Lo	Value Hi	Value Lo	CRC16 Hi	CRC16 Lo
0xFE	0x06	0x00	0x01	0x00	0x01	0x0D	0xC5

The slave responds:

Slave Address	Function Code	Starting Address Hi	Starting Address Lo	Value Hi	Value Lo	CRC16 Hi	CRC16 Lo
0xFE	0x06	0x00	0x01	0x00	0x01	0x0D	0xC5

- **Stop Detection**

The sensor address is 0xFE.

Use 0x06 (write a single holding register) in Modbus to stop the detection.

Write 0x00 to register 0x01 to start detection. The starting address is 0x01, and the registered value is 0x00. CRC calculated as 0xCC05, first sent in high byte.

The master sends:

Slave Address	Function Code	Starting Address Hi	Starting Address Lo	Value Hi	Value Lo	CRC16 Hi	CRC16 Lo
0xFE	0x06	0x00	0x01	0x00	0x00	0xCC	0x05

The slave responds:

Slave Address	Function Code	Starting Address Hi	Starting Address Lo	Value Hi	Value Lo	CRC16 Hi	CRC16 Lo
0xFE	0x06	0x00	0x01	0x00	0x00	0xCC	0x05

- **Set Modbus Address**

The sensor address is 0xFE.

Use 0x06 (write a single holding register) in Modbus to set Modbus address.

Write 0x01 to register 0x00 to set Modbus address. The starting address is 0x00, and the registered value is 0x01. CRC calculated as 0x5C05, first sent in high byte.

The master sends:

Slave Address	Function Code	Starting Address Hi	Starting Address Lo	Value Hi	Value Lo	CRC16 Hi	CRC16 Lo
0xFE	0x06	0x00	0x00	0x00	0x01	0x5C	0x05

The slave responds:

Slave Address	Function Code	Starting Address Hi	Starting Address Lo	Value Hi	Value Lo	CRC16 Hi	CRC16 Lo
0xFE	0x06	0x00	0x00	0x00	0x01	0x5C	0x05

• Set Time

The sensor address is 0xFE.

Use 0x10 (write multiple holding registers) in Modbus to set the time.

In the register with start address 0x08, the number of registers is 0x06, and the number of bytes is 0x0C, which respectively correspond to the year, month, day, hour, minute, and second.

Year is 0x07E4 (actual value is 2020),

Month is 0x0005 (actual value is May),

Day is 0x001D (actual value is 29th),

Hour is 0x000D (actual value is 13),

Minute is 0x0018 (actual value is 24 minutes),

Second is 0x0000 (actual value is 0 seconds),

The CRC check is 0xC1BE.

The master sends:

Slave Address	Function Code	Starting Address Hi	Starting Address Lo	Value Hi	Value Lo	Byte Count	Year Hi
0xFE	0x10	0x00	0x08	0x00	0x06	0x0C	0x07

Year Lo	Month Hi	Month Lo	Day Hi	Day Lo	Hour Hi	Hour Lo	Minute Hi
0xE4	0x00	0x05	0x00	0x1D	0x00	0x0D	0x00

Minute Lo	Second Hi	Second Lo	CRC16 Hi	CRC16 Lo
0x18	0x00	0x00	0xC1	0xBE

The slave responds:

Slave Address	Function Code	Starting Address Hi	Starting Address Lo	Value Hi	Value Lo	CRC16 Hi	CRC16 Lo
0xFE	0x10	0x00	0x08	0x00	0x06	0xD5	0xC6

4.2 USB Communication

Please see **3.2.3 Data History - History Download** for detail USB operations.

5. Maintenance

5.1 Maintenance Schedule

To make better use of PMD 371, regular maintenance is required in addition to correct operation. Temtop recommends the following maintenance plan:

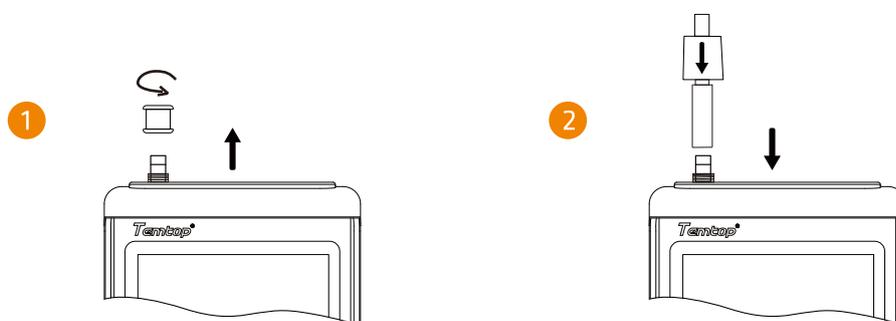
Service Items	Frequency	By
Zero calibration	Every week/User-defined	User/Manufacturer
Flow calibration	Every month	User/ Manufacturer
Air pump, pipeline, optical detector inspection and cleaning	Every year	Manufacturer only
Battery pack inspection	Every year	Manufacturer only

5.2 Zero Calibration

After the instrument has been used for a long time or the operating environment has been changed, the instrument should be zero-calibrated. Regular calibration is required, and the matching filter should be used for calibration by the following steps (Fig. 30):

1. Unscrew intake duct by turning it anti clockwise.

2. Insert the filter on the air inlet of the monitor. Please note that the direction of the arrow indicates the air intake direction.



Note: The filter is connected to the pagoda at the upper end. Do not touch the thread, otherwise the zero calibration will be affected.

Fig. 30

After the filter installed, open the Zero Calibration interface and refer to **3.2.2 System Calibration-Zero Calibration** for operation. After the calibration completed, remove the filter and screw the filter cover back.

5.3 Flow Calibration

PMD 371 sets the default flow rate to 2.83 L/min. The flow rate may change subtly due to continuous use and ambient temperature changes, thus reducing detection accuracy.

Temtop offers flow calibration accessories for testing and adjusting flow.

1. Unscrew intake duct by turning it anti clockwise.

2. Insert the flow meter on the air inlet of the monitor. Please note that it should be connected downstream of the flow meter.

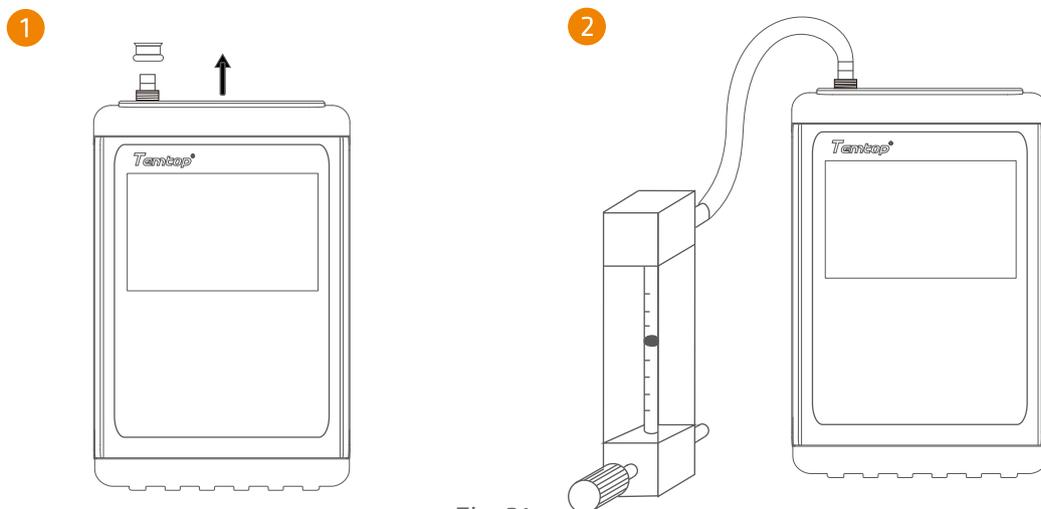


Fig. 31

After the flow meter installed, turn the adjustment knob to the maximum, and then open the Flow Calibration interface and refer to **3.2.2 System Calibration-Flow Calibration** for operation. After the calibration completed, remove the flow meter, and screw the intake duct cover back.

5.4 Filter Element Replacement

After the instrument runs for a long time or runs under high pollution conditions for a long time, the filter element will become dirty, affecting the filtering performance, and then affecting the measurement accuracy. The filter element should be replaced regularly. Temtop offers filter element accessories that can be replaced.

The replacement operation is as follows:

1. Shut down the monitor.
2. Use a coin or U-shaped screwdriver to remove the filter cover on the back of the instrument.
3. Remove the old filter element from the filter tank. If necessary, flush the filter tank with compressed air.
4. Place the new filter element in the filter tank and close the filter cover.

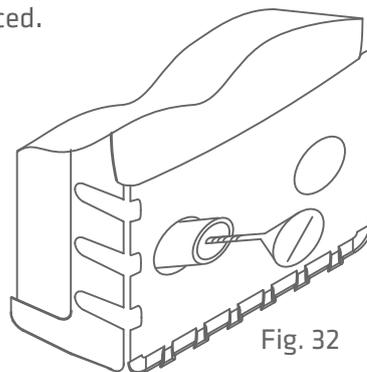


Fig. 32

5.5 Annual Maintenance

It is recommended to return PMD 371 to the manufacturer for annual calibration by specialized maintenance personnel in addition to weekly or monthly calibration by users.

Annual return-to-factory maintenance also includes the following preventative items to reduce accidental failures:

- Check and clean the optical detector;
- Check air pumps and pipes;
- Cycle and test the battery.

6. Troubleshooting

Failure	Possible Causes	Solution
Noise	The flow is excessive	Flow calibration
	The pump is faulty	Send to the service center
Cannot be turned on, no display	Battery discharged	Charge the battery for 3.5 h
	The battery is faulty	Send to the service center
Display is on, but pump does not run	Low battery level	Charge the battery for 3.5 h
	The pump is faulty	Send to the service center
Detected value is not reliable	Flow deviation	Flow calibration
	Inlet screen clogged	Check the inlet screen
	Contamination inside the monitor	Replace the filter element
Send to the service center		
Unable to charge the battery	The battery is faulty	Send to the service center
	Charger failure	Contact the service center

7. Specifications

Item	Parameter	Remark
Particle Counter Sizes	0.3µm, 0.5µm, 0.7µm, 1.0µm, 2.5µm, 5.0µm, 10µm	Switchable by 
Mass Ranges	PM1.0, PM2.5, PM4.0, PM10, TSP	
Concentration Range Particle Size Accuracy	Range: 0-3000000CF Accuracy: ±10%	
Mass Concentration Limit	Range: 0~9999.9 µg/m ³ Resolution: 0.1 µg/m ³	
Principle	Light scattering technique	
Light Source	50mW, 780nm	
Sampling Time	1min, 2min, 5min, 10min, 15min, 30min, 60min	Settable
Hold Time	0, 6~3600s	
Flow	2.83 L/min	Error ±5%
Display	4.0" TFT LCD screen	
Communication	USB/RS-485	
Memory	2,000,000 readings	
Battery	Rechargeable lithium battery	
Charging Time	3.5h	Under normal conditions
Operating Time	8h	Continuous operation
Operating Temperature	0~50 °C	
Storage Temperature	-20~60 °C	
Monitor Dimensions	170 x 110 x 48 mm	Not include intake duct and protective case
Weight	850g	

8. Warranty & Services

Warranty: Any defective monitors can be replaced or repaired during the warranty period. However, the warranty does not cover the monitors that have been altered or modified as a result of misuse, negligence, accident, natural behavior, or the ones that are not modified by Elitech Technology, Inc.

Calibration: During the warranty period, Elitech Technology, Inc. provides free calibration services with shipping charges at the customer's expense. The monitor to be calibrated must not be contaminated by pollutants such as chemicals, biological substances, or radioactive materials. If the pollutants mentioned above have contaminated the monitor, the customer shall pay the processing fee.

Temtop warrants the included item for 5 years from the date of the original purchase.

Item	Warranty Period
Monitor	5 years included
Accessories	N/A

Note: A sincere effort was made to ensure that all information in this manual was current at the time of publication. However, final products may vary from the manual, and the specifications, features, and displays are subject to change. Please check with your Temtop representative for the latest information.

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