Temtop

**AMS 100 Ambient
Air Quality Monitoring System
User Manual**

Thank you for purchasing Temtop instruments.

Before using the instrument, please read this manual carefully. You can obtain information about safety, instrument performance, usage, and maintenance, which will help you use the instrument better. Please keep this manual properly for reference at any time.

In order to improve the performance and reliability of the components and the whole machine, we will make some changes to the hardware or software of the instrument from time to time, which may be inconsistent with the contents of the manual. Please understand. If you find any problems during use, please contact our customer service.

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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 shall be maintained by the professional from the manufacturer.

- ⟳ 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.

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1. Introduction

1.1 Operation information

This manual guides you to correctly operate and use the AMS 100 ambient air quality monitoring system. Please keep this manual properly.
If the operating procedures in this manual are violated and the instrument is damaged, we will not assume any warranty responsibility.

1.2 Instrument use

AMS 100 ambient air quality monitoring system is suitable for online monitoring of dust at construction sites, atmospheric environment monitoring, roadside gridding and other places.

1.3 Transport and storage

Improper transport packaging may damage the instrument.
During transportation, the instrument host and components must be wrapped with appropriate anti-shock, anti-pressure, anti-bending, moisture-proof, heat-insulating and other materials to avoid damage to the instrument.

2. Instrument introduction

2.1 Appearance

2.2 Product overview

AMS 100 environmental air quality monitoring system is an all-weather outdoor automatic monitoring terminal. It consists of a data acquisition platform and a data transmission platform. The data acquisition platform can expand a variety of sensors to achieve different air pollutant monitoring functions. It is made of steel material and can adapt to all-weather complex environments. It has an electronic compatible A-level design and IP55 dustproof and splashproof design. It has complete functions, compact size, high system integration, and is durable. It can work reliably in various complex environments. The device has an internal temperature control system in the chassis and can work in an external environment temperature of -10℃~60℃, with a wide range of applications.

2.3 Technical indicators

Function items	Technical indicators	
Particle monitoring	Monitoring principle	Light scattering detection method
	Measuring range	$(0{\sim}30000)\mu g/m^3$
	PM2.5	$0{\sim}100\mu g/m^3$, $\pm10\mu g/m^3$; $>100\mu g/m^3$, $\pm10\%$
	PM10	$0{\sim}100\mu g/m^3$, $\pm15\mu g/m^3$; $>100\mu g/m^3$, $\pm15\%$
	TSP	$0{\sim}100\mu g/m^3$, $\pm20\mu g/m^3$; $>100\mu g/m^3$, $\pm20\%$
	Resolution	$0.1\mu g/m^3$
	Particle size	$(0.3{\sim}100)\mu m$
	Flow control	RPM control
	Constant temperature dehumidification	Heating pipe automatic constant temperature dehumidification
Environmental gas monitoring	SO_2	Range:0~1000ppb, Accuracy: repeatability<5% ±10%FS, Resolution: 1ppb(response time<120s)
	NO_2	Range:0~1000ppb, Accuracy: repeatability<5% ±10%FS, Resolution: 1ppb(response time<120s)
	CO	Range:0~20ppm, Accuracy: repeatability<5% ±10%FS, Resolution: 1ppb(response time<120s)
	O_3	Range:0~1000ppb, Accuracy: repeatability<5% ±10%FS, Resolution: 1ppb(response time<120s)
	H_2S	Range:0~10ppm, Accuracy: repeatability<5% ±10%FS, Resolution: 10ppb(response time<120s)
	TVOC	Range:0~10ppm, Accuracy: repeatability<5% ±10%FS, Resolution: 1ppb(response time<120s)
Data transfer	Network	Ethernet; 4G
	Interface	RJ45; RS485
Electrical specifications	Rated power	$<150W$
	Rated voltage	AC220V 50HZ

Environmental requirements	Operating temperature	-10℃～60℃
	Operating humidity	0～90%RH （No condensation）
	Waterproof grade	IP55
Others	Packaging Dimensions	585*422*498mm
	Assembled Dimensions	530*230*830mm
	Product Weight	20~25kg
	Standing Pole	Matching vertical pole bracket. The vertical pole weighs 20kg, has a length of 3m, and can be packaged in two sections.
	Structural materials	Stainless steel spray painting

2.4 How it works

The sensor uses the principle of laser scattering. That is, the laser is irradiated on the suspended particles in the air to produce scattering, and the scattered light is collected at a certain angle to obtain a curve of the scattered light intensity changing with time. Then the microprocessor uses an algorithm based on the Mie (MIE) theory to obtain the equivalent particle size of the particles and the number of particles of different sizes per unit volume. The particle concentration test component is a digital universal particle concentration sensor that can be used to obtain the number of suspended particles of 0.3 to 100 microns in the air per unit volume, that is, the particle concentration, and output it in the form of a digital interface. It can also output the mass data of each particle. Using electronic cutting, it can simultaneously measure PM2.5, PM10, and other concentration data. The sensor uses the principle of laser scattering. The laser is irradiated on the suspended particles in the air to produce scattering, and the scattered light is collected at a certain angle to obtain a curve of the scattered light intensity changing with time. After the microprocessor collects the data, it obtains the relationship between the time domain and the frequency domain through Fourier transform, and then obtains the equivalent particle size of the particles and the number of particles of different sizes per unit volume through a series of complex algorithms. The block diagram of the functional parts of the sensor is shown in the figure:
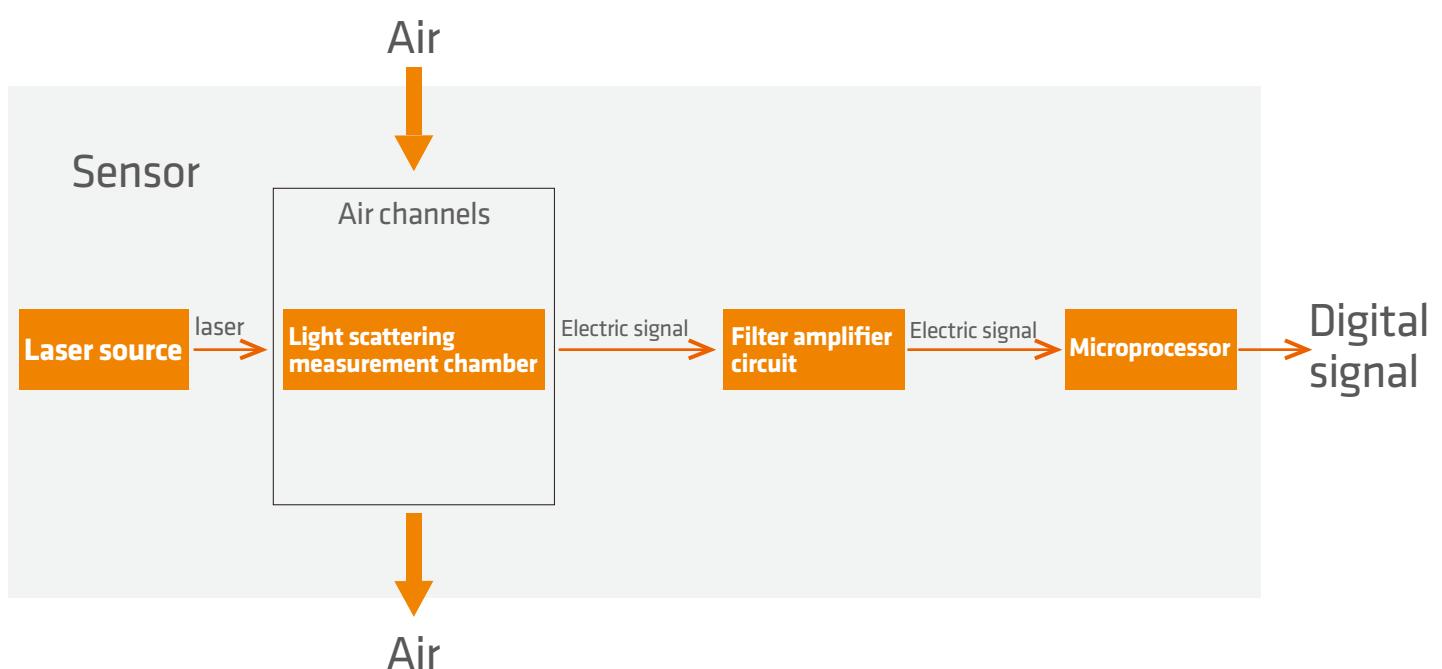
2.5 Working conditions

| Operating temperature range	-10℃～60℃	℃
Operating humidity range	0~99%	RH

3. Operate

3.1 Power on and off

Power on: Connect the instrument to a 220V AC power source, turn on the instrument power switch, and power on.

Power off: Turn off the power switch of the instrument.

3.2 Data display

Connect the instrument to a 220V AC power source, turn on the power, and the device will enter the automatic sampling mode. The collected particle data will be displayed on the home page.

Temperature : . C		
Humidity : . %RH	**Sampling**	**2025-04-14**
Atmospheric : . kPa		
Wind speed : m/s	stop sample	**15:53:02**
Wind Direct : west		
S : ug/m		☢
N : ug/m	⚙	**Control Settings**
next page	**Settings**	**Device Info**

LK_102_1.0.6
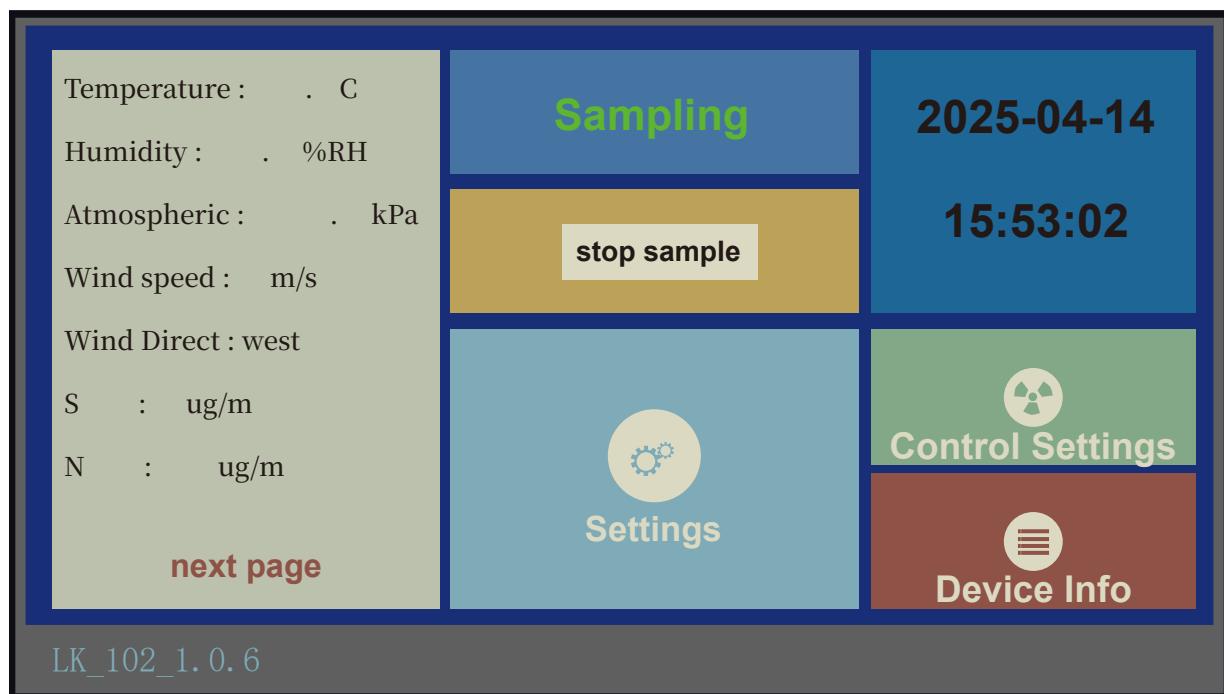
3.3 Status information

This interface is used to display the running status of the equipment, the status information of the air pump, the connection status of the sensor, the MN, IP and protocol of each channel. You can view different status information of the equipment by switching pages left and right.

Device Info	2025-04-14 15:53:02 ↰
Pump 1: Connect **Flow: 2.82 L/min** **Power: 48 %** **Pressure: 101.20 KPa** **Pump 2: Connect** **Flow: 0.50 L/min** **Power: 18 %** **Pressure: 101.21 KPa**	**ICCID: 89462038075015680394** **SN: 5CF29F0286D90626A12826CF** **MN: HC622425011003** **SIM: Connect**

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Sensor Status	2025-04-14 15:53:02 ↰
particulate sensor: **Connect**	**SO2 sensor: Connect**
weather sensor: **Connect**	**NO2 sensor: Connect**
wind speed sensor: **Connect**	**CO sensor: Connect**
wind direction sensor: **Connect**	**O3 sensor: Connect**

⇐   ⇒

Channel Status　　　　　　　　　　2025-04-14 15:53:02 ↰

Num	MN	IP	protocol	state
1	HC622425011003	223.99.217.146:10021	message1	CONNECT
2	HC622425011003	223.99.217.146:10011	message2	CONNECT
3	HC622425011003	0.0.0.0:	NONE	CLOSE
4	HC622425011003	223.99.217.146:7002	nessage3	CONNECT
5	LK000000000005	0.0.0.0:	NONE	CLOSE
6	LK000000000006	0.0.0.0:	NONE	CLOSE
7	LK000000000007	0.0.0.0:	NONE	CLOSE
8	LK000000000008	0.0.0.0:	NONE	CLOSE

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3.4 Data export

Click Settings on the main interface to enter the Settings interface. Find Data Export on the Settings interface to enter the interface where the current image is displayed.

This interface is mainly used for device data export. When a USB flash drive is inserted, the export status will change to Detect USB flash drive. After clicking Export, the status will change to Exporting. The current export progress will be displayed in the progress bar.

3.5 Data caching

Click Settings on the main interface to enter the Settings interface. Find Data Export on the Settings interface to enter the interface where the current image is displayed.

This interface is mainly used to display the information about data generated, uploaded, and not uploaded for each channel. Switching pages left and right will display information about other channels.
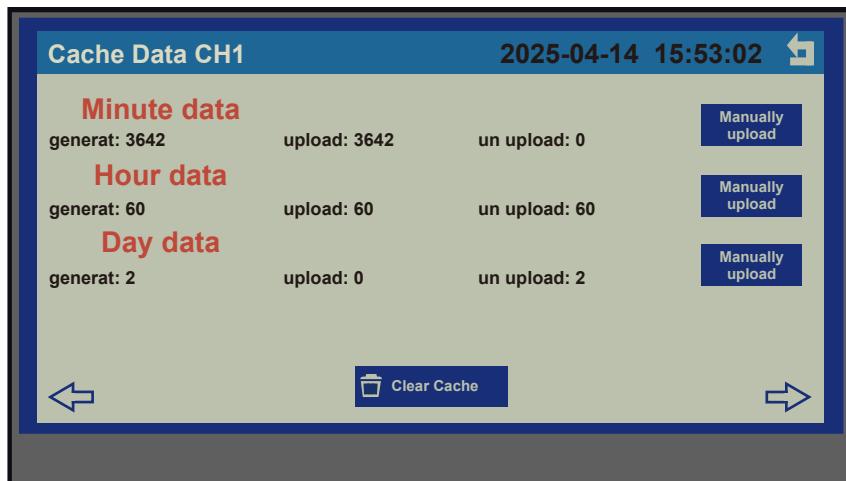
3.6 Sampling settings

The heating start temperature and humidity can be viewed and set on this interface.
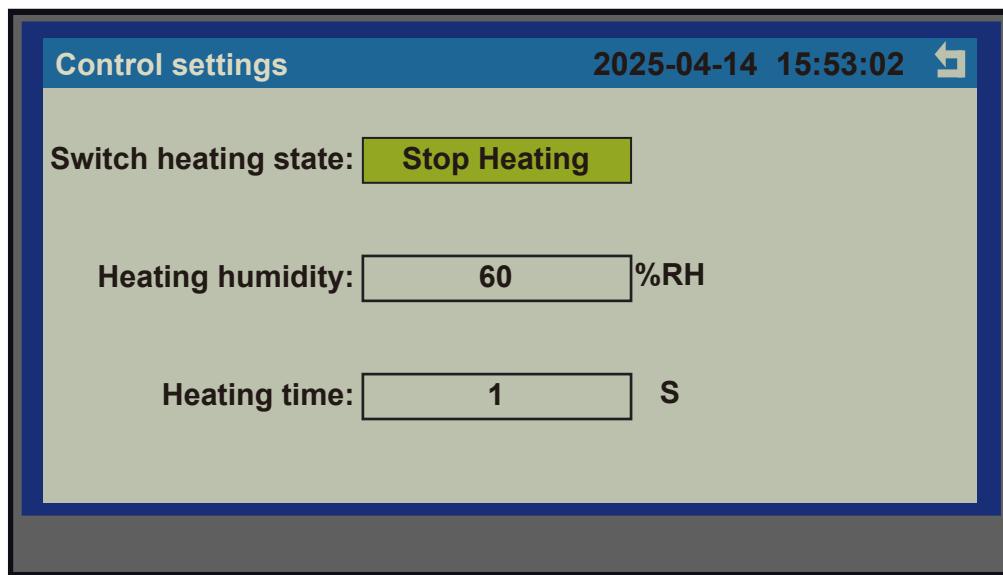
3.7 Time settings

Click the time in the main interface to set the time.
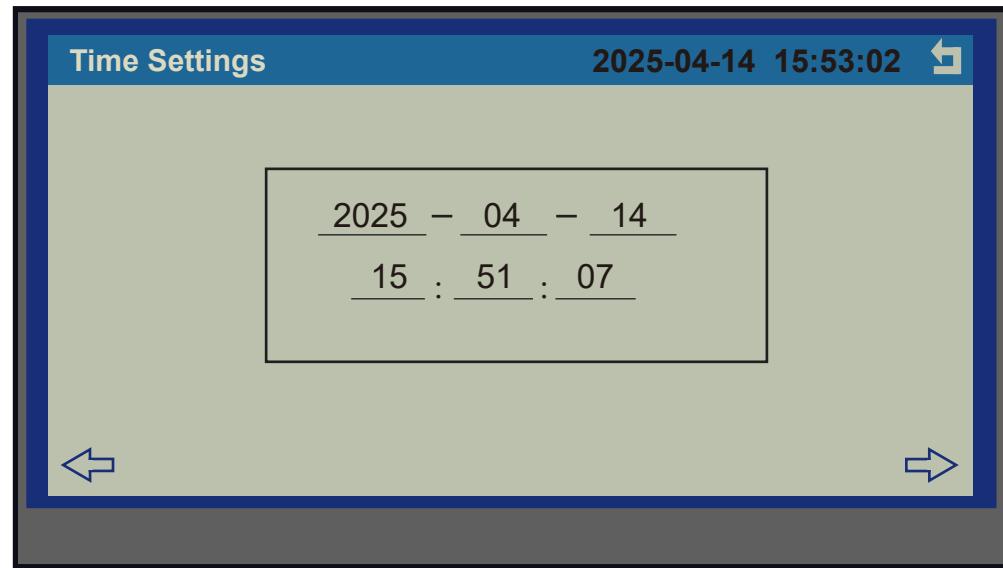
3.8 System settings

Click Settings on the main interface to enter the settings interface. Click System Settings in the settings interface. Enter the password (default password is 6688) to set the MN, IP, and protocol of the eight channels. Note (set the channel MN, IP, and protocol number in sequence and click OK before the channel information can be written). You can set the alarm values of PM2.5, PM10, and TSP. Channel settings and alarm settings can be switched by pressing buttons.

1) Channel settings

Channel Settings					2025-04-14 15:53:02
Num	MN	IP	protocol	CH	operate
1	HC622425011003	223. 99.217. 146: 10021	message1	1	apply
2	HC622425011003	223. 99.217. 146: 10011	message2	2	apply
3	HC622425011003	0. 0. 0. 0: 0	NONE	0	apply
4	HC622425011003	223. 99.217. 146: 7002	nessage3	3	apply
5	LK000000000005	0. 0. 0. 0: 0	NONE	0	apply
6	LK000000000006	0. 0. 0. 0: 0	NONE	0	apply
7	LK000000000007	0. 0. 0. 0: 0	NONE	0	apply
8	LK000000000008	0. 0. 0. 0: 0	NONE	0	apply

APN Setting | m2m.tele2.com 🔒 USER

2) Alarm settings

Spray Settings   2025-04-14 15:53:02

PM 2.5:   100

PM 10:   200

TSP: 300

🔒 Apply

3.9 Factory settings

Click Settings on the main interface to enter the settings interface. Click Factory Settings in the settings interface. Enter the password (default password is 6688) to calibrate the flow, set AB values for particle sensors, meteorological sensors, and gas sensors, and configure display factors and upload factors.

1) Flow calibration

Flow Calibration			2025-04-14 15:53:02

Dust pump

calibrate flow:	2.83	L/min
multiple:	2.015	
actual flow:	2.82	L/min

Air pump

calibrate flow:	0.50	L/min
multiple:	0.460	
actual flow:	0.50	L/min

stop sampling   start sampling
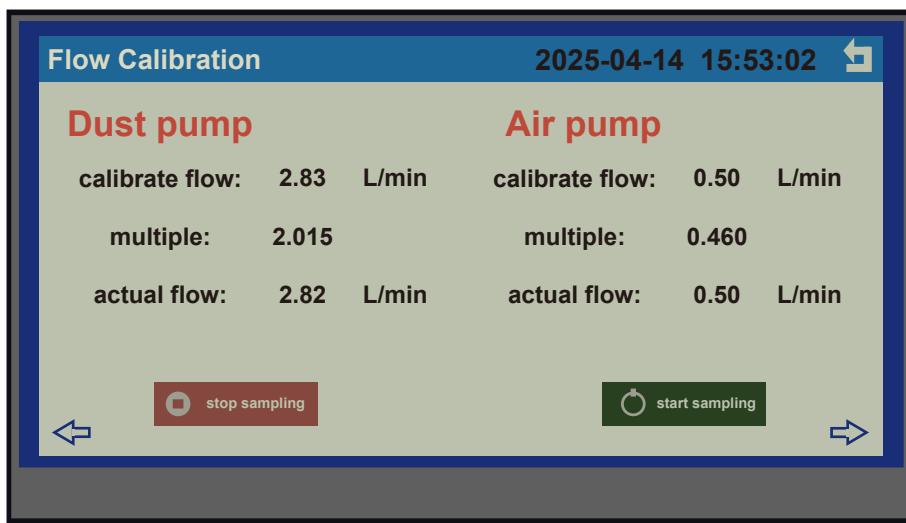
2) Particle AB value configuration

Particulate Sensor			2025-04-14 15:53:02

factor	Cof K	Cof B	original	correct
PM 2.5	1.00	000	10.0	10.0
PM 10	0.80	000	27.0	21.0
TSP	1.00	000	28.0	28.0
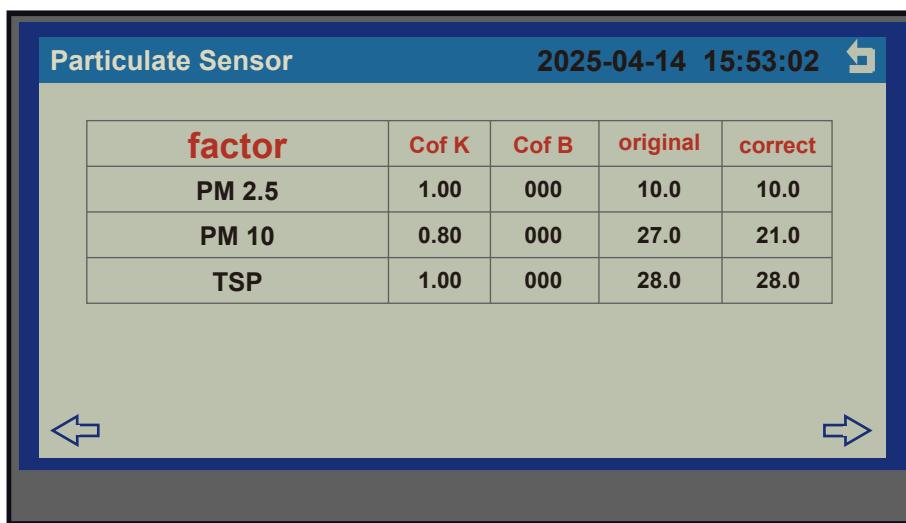
3) Weather AB value configuration

Weather Sensor			2025-04-14 15:53:02	
factor	Cof K	Cof B	original	correct
temperature	1.00	00.0	26.1	26.1
humidity	1.00	00.0	25.8	25.8
atmos pressure	1.00	00.0	100.5	100.5
wind speed	1.00	00.0	0.0	0.0
wind direction	1.00	00.0	25.3	0.0

4) Gas AB value configuration

| Gas Sensor			2025-04-14 15:53:02	
factor	Cof K	Cof B	original	correct
SO2	0.02	-2	3	0
NO2	0.02	0	12	0
CO	0.80	311	843	985
O3	0.15	-10	5	0
TVOC	1.00	0	3	0

Restore factory settings

4. Machine composition

4.1 Instrument host panel
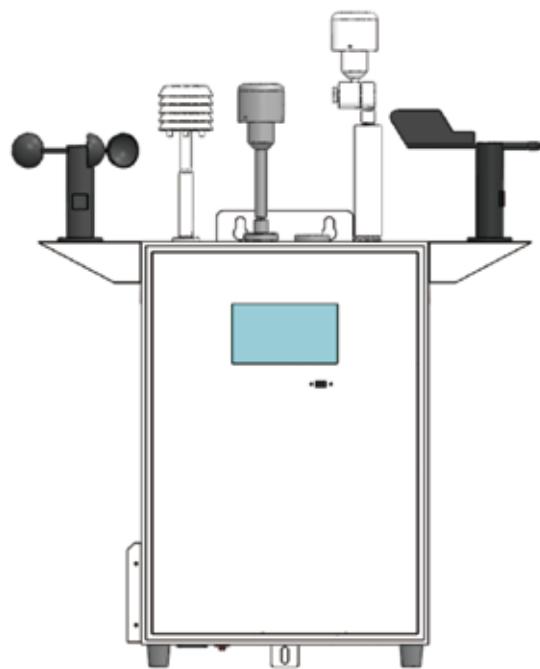
4.2 Both side panels of the instrument host

Wind direction
connection port

Wind speed
connection port

Heating interface
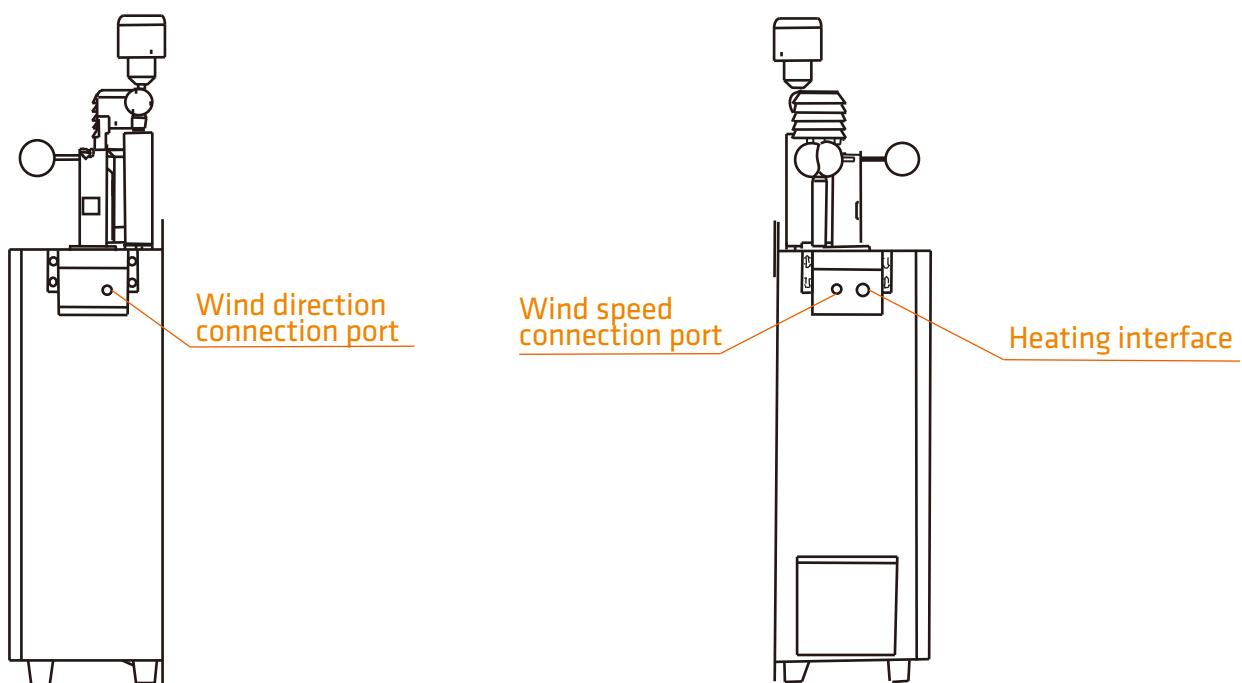
4.3 The whole set of instruments
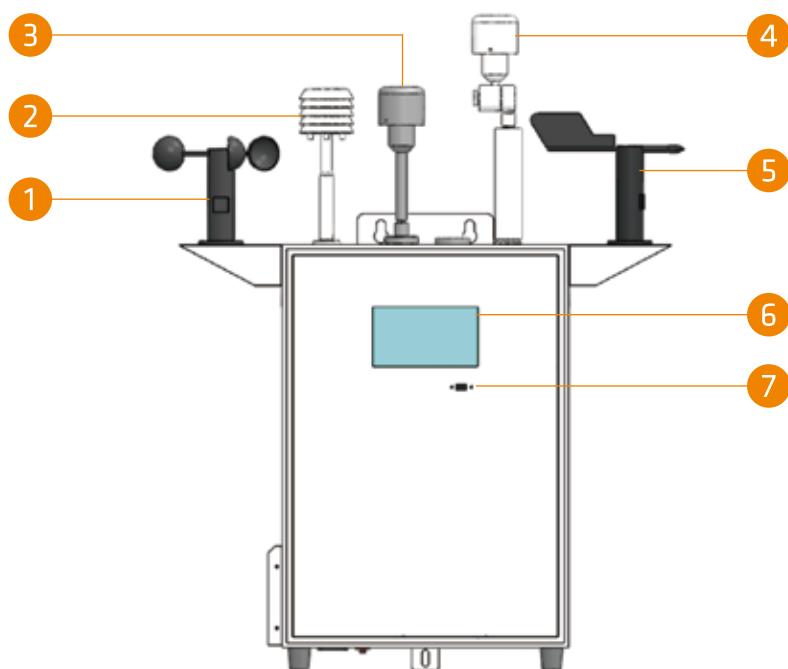
① Wind speed	② Temperature, humidity, atmospheric pressure sensors	
③ Gas line sampling	④ Dust road sampling	⑤ Wind direction
⑥ Touchscreen	⑦ USB interface	

4.4 Wiring Diagram

As shown in the figure, it is the external wiring port. Insert the aviation plugs of wind speed, wind direction, heating rod, LED, noise and other equipment according to the screen printing on the chassis and lock them. After plugging in, waterproof treatment should be done. Among them, the three aviation plug interfaces of wind speed, wind direction and spare are 485 signals.

16 aviation plug (4 cores)	Mother seat	Female cable color	Male head	Male cable color
	1	VCC (Red)	1	Red
	2	GND (Black)	2	Black
	3	485A (Yellow)	3	Yellow
	4	485B (Blue)	4	Blue

LED is 232 signal

16 aviation plug (3 cores)	Mother seat	Female cable color	Male head	Male cable color
	1	GND (Black)	1	White (Blue) (232-5)
	2	T (Rrown)	2	Black (Green) (232-3)
	3	R (Blue)	3	Red (Red) (232-2)

The LED power supply is 220V AC output (please pay attention to safety when operating, unplug the power cord before proceeding to the next step).

20 aviation plug (3 cores)		Female cable color	Male head	Male cable color
	1	L (Green)	1	Green
	2	N (Blue)	2	Blue
	3	Ground (Yellow & Green)	3	

The heating rod is a relay controlled 220V mains output. (Please pay attention to safety when operating, unplug the power cord before proceeding to the next step)

20 aviation plug (2 cores)		Female cable color	Male head	Male cable color
	1	L (Green)	1	Orange
	2	N (Blue)	2	Orange

Note:
The LED power supply and the heating rod are power output interfaces, and the voltage is 220V AC, so be careful. When the aviation plug is not in use, be sure to cover the waterproof cap tightly to prevent water from entering and causing serious consequences.

4.5 Installation Diagram

4.5.1 Pole mounting and fixing

1) Composition of the pole

① Vertical pole - upper pole (1 piece)
② Vertical pole - lower pole (1 piece)
* Equipped with LED screen custom clamp.
③ M20 nuts (5 pieces/1 spare)/M20*150 expansion bolts (5 pieces/1 spare)

2) Installation of poles
As shown in the figure, bolt the upper and lower rods together to form a complete vertical pole. The 4 mounting holes at the bottom of the vertical pole correspond to the 4 M20 studs on the concrete. Tighten the nuts. If there is no concrete platform, use 4 M20*150 expansion bolts to fix the vertical pole to the ground.
*To avoid lightning strikes, a lightning rod is installed on the top of the vertical pole. The lightning rod is sent out with the vertical pole and fixed to the top of the vertical pole with four bolts.

Noise head installation position
Installation location of the instrument host
Camera installation location
Cable outlet
LED screen custom hoop
Cable outlet
8 M10*40 hexagonal bolts + spring washers + flat washers
4 M20*150 expansion bolts/4 M20 nuts
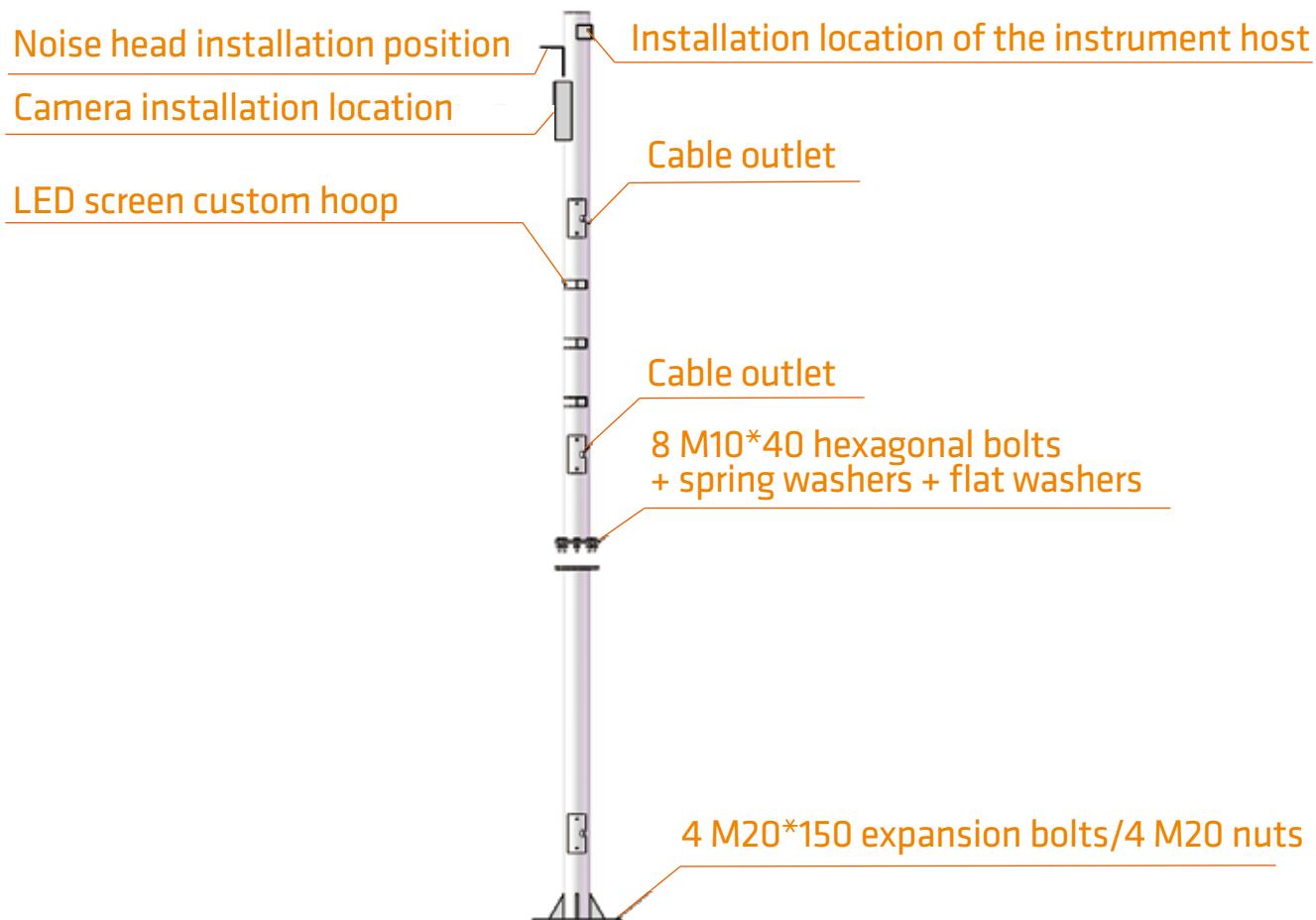
4.5.2 Equipment Installation

The device includes :

① One main machine.
② One set of cutting parts.
③ One set of heating tube parts.
④ One set of instruction manual and one power cable.

Accessories:

⑤ 1 set of temperature and humidity sensors.
⑥ Wind direction sensor + mounting plate (installed on the instrument host) - optional accessories.
⑦ Wind speed sensor + mounting plate (installed on the instrument host) - optional accessories.
⑧ 1 set of cameras (installed on the pole) - optional accessories.

Install the whole camera bracket on the pole marked with the camera installation position using 4 M8*30 bolts.
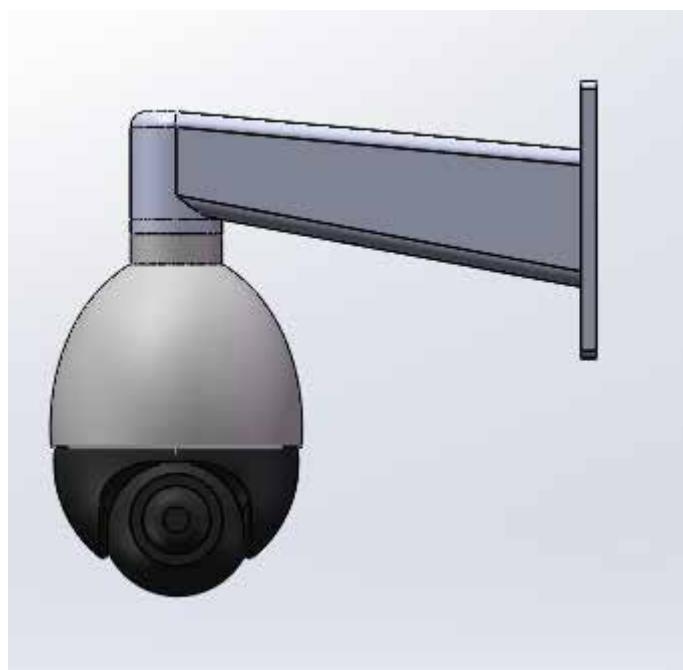
⑨ 1 set of noise head (installed on the pole) - optional accessories.

Install the noise head at the position marked on the pole.


⑩ LED display screen (installed on the pole) - optional accessories.

Install the LED screen at the designated position of the pole with a customized clamp.

Instrument assembly:

1) Insert the cutter section into the heater section and the heater section into the mounting flange as shown.

2) Insert the external temperature and humidity sensor into the flange as shown in the figure and lock it on the right side with the M5*15 linear knob.

3) As shown in the figure, fix the wind direction sensor/wind speed sensor to the left and right sides of the chassis with 4 M4*8 pan head screws + spring washers + flat washers.
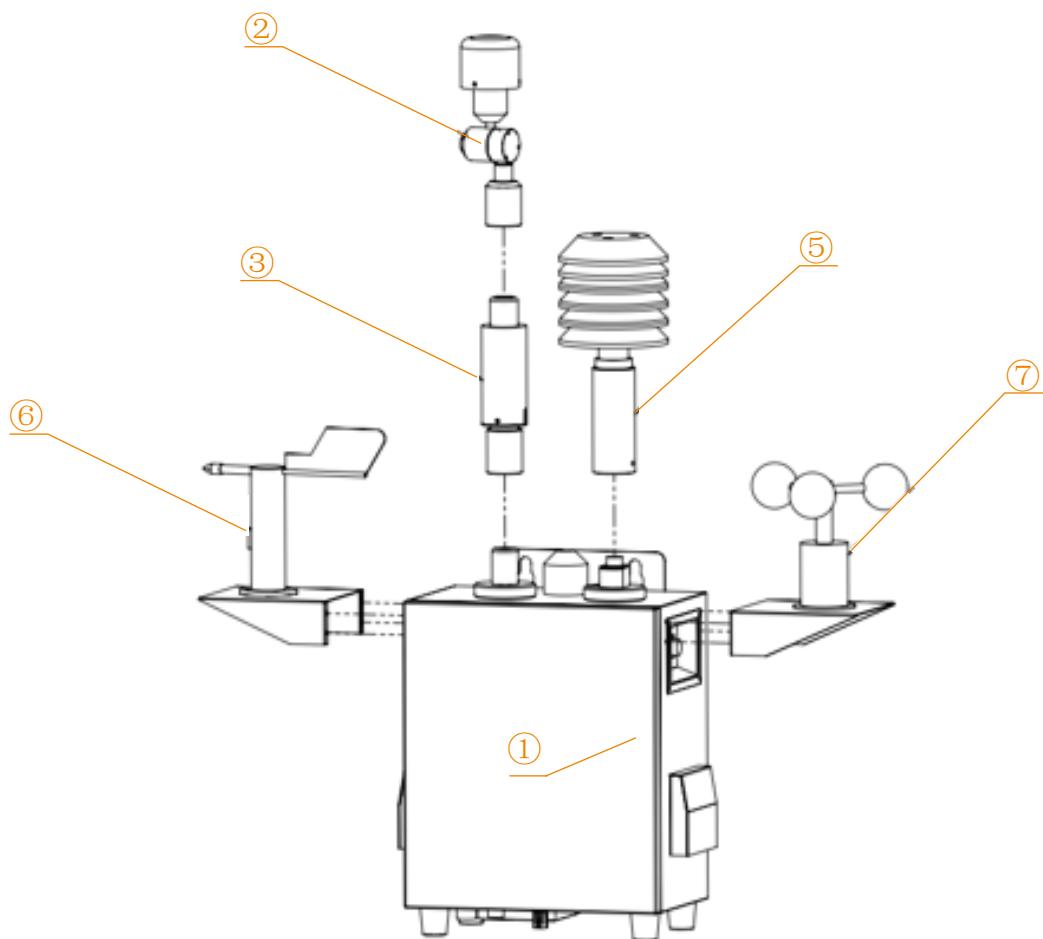
4) The figure shows the overall assembly of the pole.
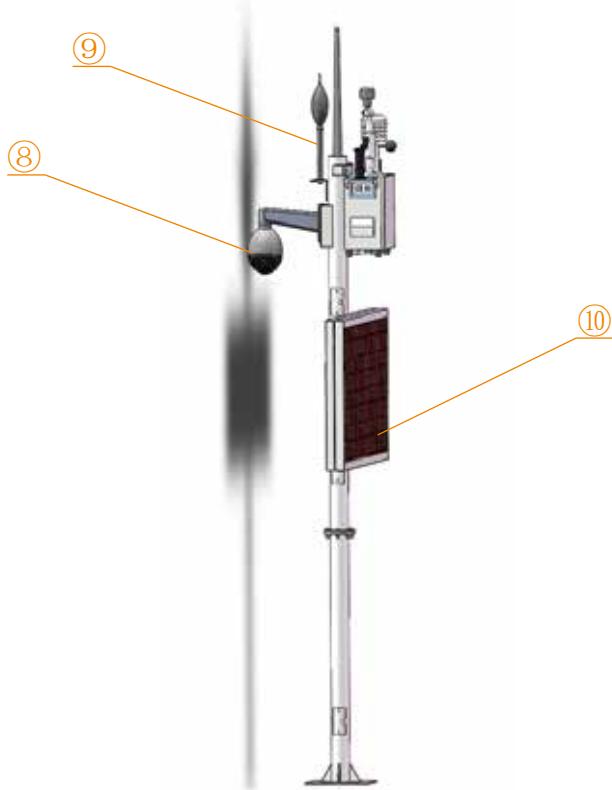
5. Simple faults and troubleshooting

Fault phenomenon	Possible causes	Troubleshooting
No display	No power supply	Connect to 220V power supply
	The power switch is not turned on	Turn on the power switch
The data shows 0	Sensor failure	Replace the sensor
	Gas blockage	Check whether the pipes are connected correctly
	no flow	Check whether the sampling pump is working
Data displayed too large	Dust accumulation on the cutter or pipe	Clean the cutter or sampling line
	Pump out of control, speed too high	Check whether the sampling pump is working normally
Pump out of control, speed too high	Gas path blockage	Check if the gas line is blocked and clear it
	Buffer bottle clogged	Check whether the gas inlet of the buffer bottle is blocked and clear it
Temperature, humidity and pressure display are abnormal	Loose line connection	Reseat the sensor interface
	Sensor failure	Replace the sensor

6. Warranty and Service

Our company takes a responsible attitude towards users and provides users with the best quality products and the most favorable services. We will ensure that:

1. Ensure that the quantity, quality, technical indicators, etc. of the equipment provided to users are consistent with the procurement requirements or the signed contract.

2. Provide a 1-year warranty period for the equipment (if otherwise agreed, follow the agreement). During the warranty period, if a malfunction occurs, we will be responsible for free repair (except for human factors). After the warranty period, the company will still be responsible for repairs and only charge for spare parts. If the user causes losses due to improper use, the company will still bear the responsibility for repairs and charge for spare parts as appropriate.

3. As the manufacturer of the main products involved in this package, our company can fully guarantee sufficient spare parts and ensure that the supply period is no shorter than 5 years after the equipment is installed and debugged. We can provide the spare parts needed for the goods in a timely manner to provide better service to customers.

4. During the execution of the contract, if the user needs non-contractual obligations, the company will try its best to solve them, and the fees can be discounted to the greatest extent.

9. As the situation develops, when the software used in the instrument needs to be upgraded, our company will be responsible for the replacement and no fees will be charged.

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