



Aspirating Smoke Detector

User's Manual



Important Safeguards and Warnings

This section introduces content covering the proper handling of the device, hazard prevention, and prevention of property damage. Read carefully before using the device, and comply with the guidelines when using it.

Operation Requirements



- Make sure that the power supply of the device works properly before use.
- Do not pull out the power cable of the device while it is powered on.
- Only use the device within the rated power range.
- Transport, use and store the device under allowed humidity and temperature conditions.
- Prevent liquids from splashing or dripping on the device. Make sure that there are no objects filled with liquid on top of the device to avoid liquids flowing into it.
- Do not disassemble the device.

Installation Requirements



- Connect the device to the adapter before power on.
- Strictly abide by local electrical safety standards, and make sure that the voltage in the area is steady and conforms to the power requirements of the device.
- Do not connect the device to more than one power supply. Otherwise, the device might become damaged.



- Observe all safety procedures and wear required protective equipment provided for your use while working at heights.
- Do not expose the device to direct sunlight or heat sources.
- Do not install the device in humid, dusty or smoky places.
- Install the device in a well-ventilated place, and do not block the ventilator of the device.
- Use the power adapter or case power supply provided by the device manufacturer.

1 Introduction

1.1 Overview

Aspirating Smoke Detector (hereinafter referred to as the device) is designed to monitor smoke in the early stage. Integrated with dual-wave length smoke identification technology, MEMS airflow sensing detection technology, and an intelligent environmental algorithm, this device analyzes sampled air in the laser detection chamber through the sampling pipe network distributed in the protected area. Once the surrounding smoke concentration reaches the alarm threshold, it will promptly send out a visual and audible alarm signal to remind the user to take immediate measures and simultaneously link the relay to output a control signal.

The device can be widely used in rail transportation, data centers, warehousing and logistics, new energy storage stations, power systems, ancient cultural relics, high buildings, cold storage, comprehensive pipe corridors, tobacco factories and other public places.

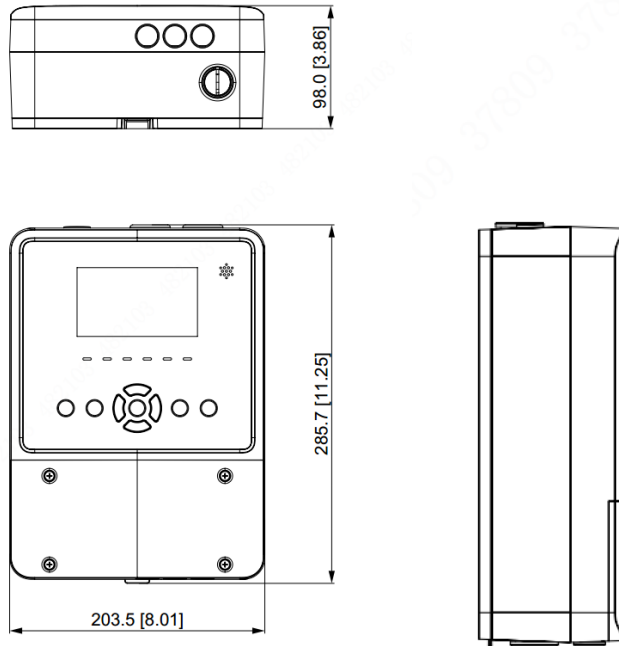
1.2 Product function

- Precise detection: immune to moisture or dirt particles thanks to dual-wave laser particle identification technology, detecting blue laser light source with high sensitivity
- 24/7 auto learning: environment dynamic auto learning algorithm enables the environment adaptation in the monitored region
- Intelligent monitoring: advanced MEMS airflow sensing technology is capable of monitoring pipe damage and blockage
- Detection chamber self-cleaning: continuous airflow allows the self-cleaning in laser detection chamber
- Large monitoring area: Max. length of a sampling pipe is 79m, and the monitoring area surpasses 711 m²/1422 m²
- Easy maintenance: intelligently monitoring filter life, and conveniently replacing the filter
- United calibration: based on smoke concentration detection, the smoke chamber is 100% calibrated
- Diversified operation modes: connecting IoT platform through RS-485
- Remote control: remotely reset through the fire alarm controller to quickly address the alarm

2 Device Structure

2.1 Dimensions

Figure 3-1 Dimensions (mm)



2.2 Device Panel

Device panel



No.	Type	Function	Information
1	Display module	Display	4.3-inch color screen

No.	Type	Function	Information
2	Indicators	Fire	When the smoke concentration exceeds the threshold of fire alarm 1 or fire alarm 2 or fire alarm 3, the red fire indicator is constantly on. Once the fire alarm is triggered, the controller will give a sound and light prompt, and the interface will record the first fire alarm. The fire indicator does not automatically turn off, which can only be turned off by resetting.
		Pre alarm	When the smoke concentration exceeds the threshold of pre alarm, action, fire alarm 1, fire alarm 2, and fire alarm 3, the red pre-alarm indicator is constantly on. Once the pre-alarm or action is triggered, the controller will give a sound and light prompt, and the interface will record the first alarm. The pre-alarm indicator does not automatically turn off, which can only be turned off by resetting.
		Fault	When the device works abnormally (such as sensor fault, pipeline blockage or damage, and abnormal filter lifetime), the yellow fault indicator is constantly on, and the buzzer beeps.
		Mute	Press Mute button, the yellow mute indicator flashes. If the buzzer beeps, press Mute button to stop beeping and mute indicator is constantly on.
		Power	Standby: Green indicator is constantly on.
3	Buttons	Test	Check whether the indicators, screen, and buzzer work normally. Press the Test button, all indicators are lit in sequence, and the screen flashes red, yellow, blue, and black in turn. After the test is completed, the screen resumes the main screen.
		Reset	When a fire alarm occurs, it can only be eliminated by manual reset. After the fault is addressed, the fault status can be automatically eliminated, and the fault record in main screen can only be eliminated by resetting, the device is still in normal working condition after resetting, and the device in alarm/fault status will display the alarm/fault information when alarm/fault is triggered again. Press Reset button and enter password to eliminate the fire alarm/fault status. The controller has a remote reset function.
		Cancel	Press Cancel in any interface to close the notifications.
		Mute	The mute light is constantly off under normal circumstances. Press Mute button, the mute light will turn yellow and the buzzer stops beeping. After the silence duration, if the device is still in a fire alarm/fault state, the buzzer beeps again, and the mute light will be normally off.
		OK	Press OK to confirm the operation.
		←	-
		→	
↑			
↓			
4	Buzzer	/	Send out alarm sound and fault sound.



Alarm level: pre-alarm < action < fire alarm 1 < fire alarm 2 < fire alarm 3.

3 Technical Information

Specification	DHI -HY-ASD610B-P	DHI -HY-ASD620B-P
Power Consumption	DC24V (DC12V~DC32V)	
Detection Sensitivity	0.001%-3% obs/m	
Alarm Levels	Pre-alarm, action, fire alarm 1, fire alarm 2, fire alarm 3	
Sampling Pipe	1×79 m	2×79 m
Max. Monitoring Area	711 m ²	1422 m ²
Sampling Tube Apertures	Inner diameter: 21 mm; outer diameter: 25 mm	
Max. Number of Sampling Holes	16	16
Relay	5 channels, 30VDC 5A	
Event Records	100,000	
Airflow Sensor	1	2
Communication Interfaces	RS-485, Ethernet	
Operating Temperature	-10°C to +55°C (14°F to +131°F)	
Operating Humidity	≤ 95% RH (non condensing)	
Storage Temperature	-20°C to +70°C (-4°F to +158°F)	
Alarm Method	Visual and audible alarm	
Material	PC	
Dimension (L x W x H)	285.7 mm x203.5 mmx98.0 mm (11.25" x 8.01" x 3.86")	
Number of Outlet Holes	2	3
Installation	Wall mount	

4 Device Installation

4.1 Installation Principles

- Make sure the application scenario conforms to installation requirements.
- Ensure the proper external wiring.
- Make sure that the power supply of the device works properly before use.
- Do not attempt to open or disassemble the detector.
- The detector must be installed by a competent person.



WARNING

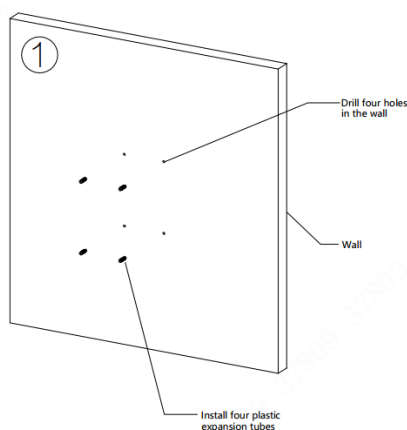
Before installation, be sure to cut off the power supply of the detector.

4.2 Installation Steps

Follow below steps to install the device properly.

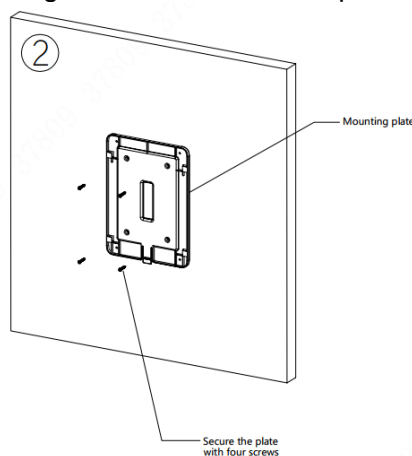
Step 1 Choose a suitable place .Drill holes ($\Phi 8$ mm [0.31"]) on the wall as the positioning map shows, and then align the screw holes on the wall with the expansion bolts..

Figure 5-1 Installation Step 2



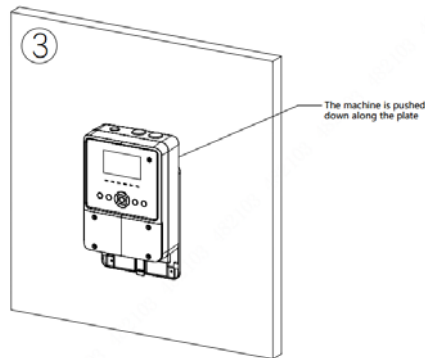
Step 2 Mounting plate and secure the plate with four screws.

Figure 5-2 Installation Step 2

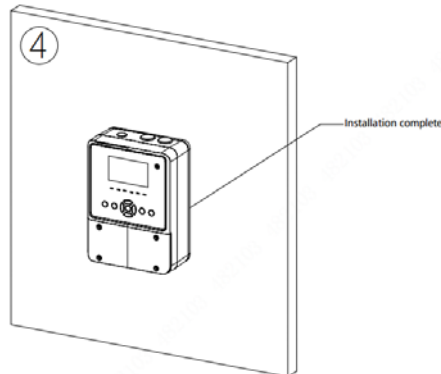


Step 3 Push the device down along the plate.

Figure 5-2 Installation Step 2



Step 4 Installation complete.



4.3 Wiring

Table 4-1 Terminal information

No.	Name	DHI-HY-ASD620B-P	DHI-HY-ASD610B-P
J14	COM1	1 st relay COM terminal	
	NO1	1 st relay NO terminal - normally open	
J15	COM2	2 nd relay COM terminal	
	NO2	2 nd relay NO terminal - normally open	
J16	COM3	3 rd relay COM terminal	
	NO3	3 rd relay NO terminal - normally open	
J18	COM4	4 th relay COM terminal	
	NO4	4 th relay NO terminal - normally open	
J17	COM5	5 th relay COM terminal	
	NO5	5 th relay NO terminal - normally open	
J5	DI1+	1 st switch input positive end	
	DI1-	1 st switch input negative end	
J13	CANL1/RS485_A1	1 st RS-485 communication interface A	
	CANH1/RS485_B1	1 st RS-485 communication interface B	
J20	RS485_A2	2 nd RS-485 communication interface A	
	RS485_B2	2 nd RS-485 communication interface B	
J1	24V_IN1+	1 st DC24V positive end	
	24V_IN1-	1 st DC24V negative end	
J2	24V_IN2+	2 nd DC24V positive end	
	24V_IN2-	2 nd DC24V negative end	
J4	/	USB interface for firmware upgrading	
J3	/	Program burning port	
J8	/	Ethernet connector	
J21	/	URAT	

5 Operation

5.1 Main screen

The main screen contains: communication status, density curve, alarm/fault information, and operation status, displaying major information at a glance.

Main interface



5.1.1 Communication Status

It contains communication icons and system time, which will remain unchanged with the system operation.

Icon	Type	Status
	RS-485	Green: RS-485 is enabled Grey: RS-485 is disabled

5.1.2 Alarm/Fault Information

It displays density curve and current density. When the device is in pre-alarm, alarm or fault status, the alarm pop-up window will be displayed.

Alarm



5.1.3 Operation Status

Located at the bottom of main interface, it displays the device's current status, including standby, auto learning, isolation, alarm, and fault. When alarm is triggered, this part will display alarm information.

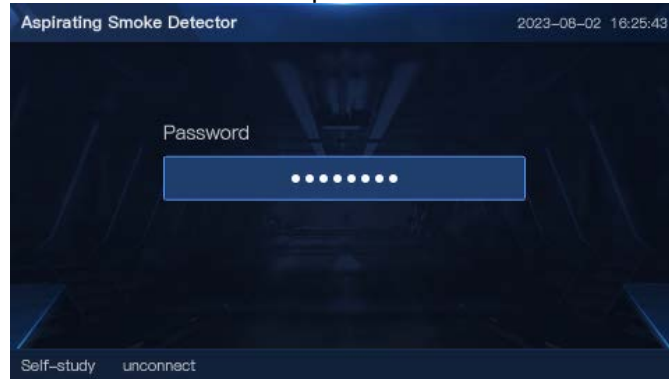
5.2 Operation

Press any button to enter the password, and then press **OK** to enter operation interface.



Please contact technical support to inquire device password (including password level 1 and password level 2).

Enter the password



This interface consists of six parts: device status, settings, device management, communication setting, device information, and log.

Operation interface



5.2.1 Device Status

It displays parameters of host status and auxiliary sensor.

Device Status



5.2.1.1 Host

It consists of sensitivity, air velocity, filter lifetime, communication mode, wireless signal strength, and scenario.

Press **↑**, **↓** to read more information.

Host status

NO.	Item	Value	Unit	Note
01	Sensitivity	Medium	--	
02	Air Velocity 1	324.0	--	
03	Air Velocity 2	162.0	--	
04	Revolutions	185.1	rpm	
05	CSQ	0	%	

5.2.1.2 Auxiliary Sensor

It displays the temperature and humidity.

Auxiliary sensor

NO.	Item	Value	Unit	Note
01	Smoke Temperature	28.0	℃	
02	Smoke Humidity	63.6	%	
03	Board Temperature	35.7	℃	
04	Board Humidity	40.9	%	

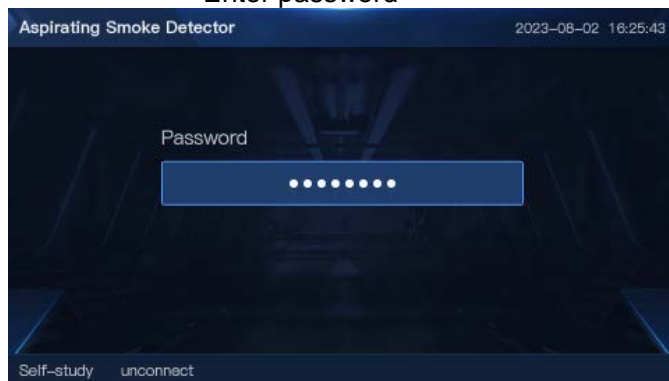
5.2.2 Settings

You can modify parameters by default to adapt to the on-site environment, including smoke detection parameter settings, relay settings, and auxiliary function settings.



To enter Settings, please enter the password level 2.

Enter password



Settings



5.2.2.1 Smoke Detection Parameter

You can set device sensitivity, aspiration speed, auto learning period, and alarm delay.

Smoke detection parameter setting

NO.	Item	Value	Unit
01	Sensitivity	Medium	--
02	Aspiration Duty Ratio	<--18-->	%
03	Self-study Period	5min	-
04	Alarm Delay	0	S
05	Mute Recovery	Disable	min

5.2.2.2 Relay

Equipped with 5 passive relays in this detector, you can freely connect them to input modules or sounder strobe.

Relay setting

NO.	Triggers
01	<--Total Alarms-->
02	Total Faults
03	Total Alarms
04	Total Alarms
05	Total Alarms

5.2.2.3 Auxiliary Function Settings

You can enable/disable particle identification, air monitor, filter lifetime monitor, isolation recovery, and choose scenario.

- Particle identification
The detector can identify particles with different size, such as water vapor and dust. However, it may cause false alarm or missed alarm in the case of drastic changes in the environment. Particle identification function is disabled by default, please enable it carefully.
- Air monitor

Detect the change in flow speed of the suction pipeline to determine the pipeline blockage or damage.

- Filter lifetime monitor
If the filter lifetime monitor function is enabled, when the dust holding capacity of the built-in filter reaches a certain level, the detector automatically sends out a fault notification.
- Isolation recovery
If the isolation function is enabled, the detector works normally without sending alarm and fault information to fire alarm controller. If you want to send information, please disable the isolation function.
- Scenario
The various environments require different detection sensitivity. Scenario function provides various types to meet the detection requirements of different scenarios such as clean, ordinary, dusty, and harsh circumstances. Only one scenario is allowed to be enabled in the same environment and time.

Auxiliary function setting



NO.	Function	Status
01	Particle Identification	<---Disable--->
02	Air Flow Monitor	Enable
03	Filter Lifetime Monitor	Enable
04	Isolation	Disable
05	Isolation Recovery	Disable

5.2.3 Device Management

You can update software and picture, change language, and reset factory settings.



To enter Settings, please enter the password level 2.

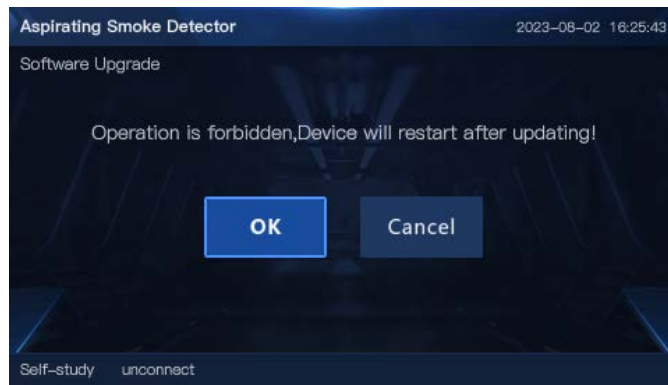
Device management



5.2.3.1 Software Update

The device supports upgrade software through the U disk. To upgrade, insert the U disk with the new program and click **OK** to confirm. Please do not operate the device during the update process.

Software update



5.2.3.2 Picture Update

The device supports upgrade UI interface through the U disk. To upgrade, insert the U disk with the new program and click **OK** to confirm. Please do not operate the device during the update process.

Picture update



5.2.3.3 Language Switch

Both Chinese and English are supported. English is set by default.

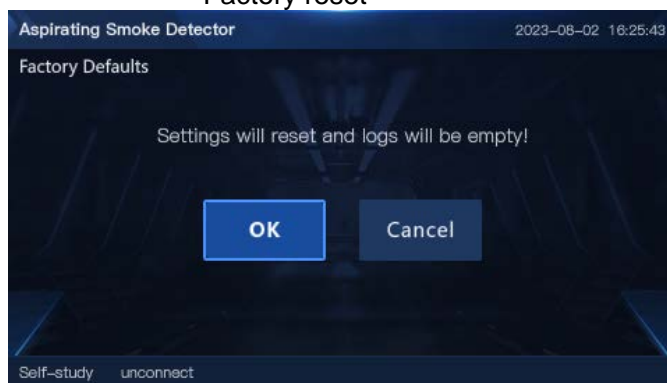
Language switch



5.2.3.4 Factory Reset

Press **Factory Reset** button and follow the instruction to reset device. Please do not operate the device during the reset process.

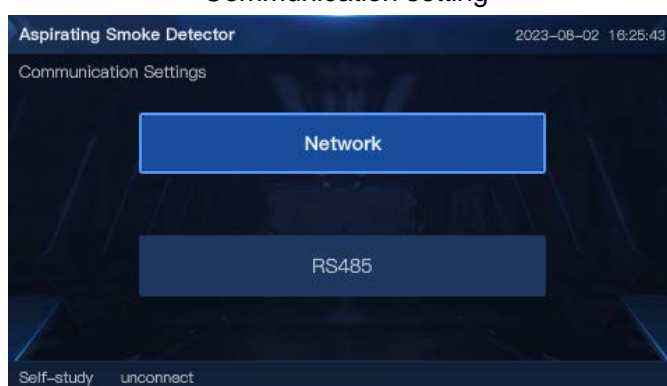
Factory reset



5.2.4 Communication Setting

Communication setting consists of network communication and RS-485 communication.

Communication setting



5.2.4.1 Network Setting

Network communication includes enable/disable wire communication and wireless communication (wire communication by default). Modify IP address (only wire mode supports), gateway, mask, platform IP, and port through CRT.

Network setting

NO.	Item	Value
01	Communication	<--4G-->
02	Platform IP	47.96.181.60
03	Platform Port	19002
04	Local IP	192.168.1.64
05	Local Gateway	192.168.1.1

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Network

Self-study unconnect ↑↓ Select ←→ Modify

5.2.4.2 RS-485 Setting

When devices are connected through RS-485, please configure RS-485 parameters, including communication status, device address, baud rate, opening and closing of active reporting mode, and reporting interval.

RS-485 setting

NO.	Item	Value
01	Device Address	<--1-->
02	Baud	115200

5.2.5 Device Information

It displays product ID, S/N, production date, software version, hardware version, MAC, and IMEI.

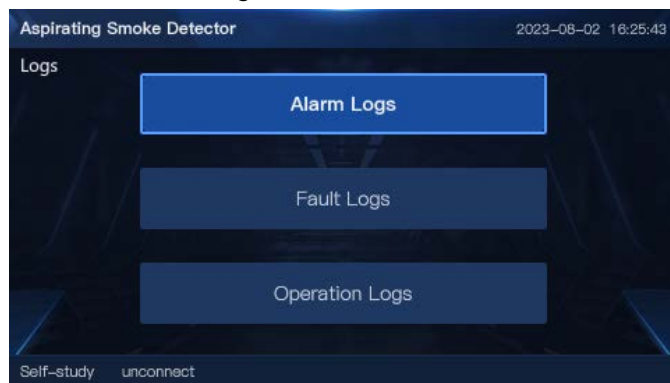
Devicie information

NO.	Function	Value
01	Model	ASD210B
02	SN	565564123456
02	Software Version	233546DD
02	Hardware Version	V1.0

5.2.6 Log

It displays alarm logs, fault logs, and operation logs.

Log



5.2.6.1 Alarm Log

Alarm logs display detailed information of alarm records, such as the alarm time and smoke concentration of first alarm, pre-alarm, action, fire alarm 1, fire alarm 2, and fire alarm 3.

Alarm logs

NO.	Date	Type	Note
01	24-05-20 15:24:59	Reset	0.090%os/m
02	24-05-20 15:29:46	Alarm	0.070%os/m
03	24-05-20 15:36:40	Reset	0.024%os/m

5.2.6.2 Fault Log

Fault logs display detailed information of fault records, such as fault time and fault type, including airflow failure, pipeline damage, pipeline blockage, detection cavity failure, filter life failure, smoke sensor failure, fan failure, and power failure.

Fault logs

NO.	Date	Type	Note
01	24-05-20 15:24:59	Locked Failure	Happen
02	24-05-20 15:29:46	Left Pipe Blockage	Happen
03	24-05-20 15:36:40	Right Pipe Damage	Happen

5.2.6.3 Operation Log

Operation logs display detailed information of operation records, including startup/shutdown, parameter setting, mute, test, auto learning, system update, and isolation.

Operation logs

NO.	Date	Type	Note
01	24-05-20 15:24:59	Mute	
02	24-05-20 15:29:46	Reset	
03	24-05-20 15:36:40	Mute	
04	24-05-20 15:36:40	Major Setting	

6 Frequently Asked Questions

6.1 FAQ

Problem	Analysis	Solutions
Your smoke alarm chirps intermittently	Aerosol interference sources or real fire hazards in the detected area	<ul style="list-style-type: none"> • Make sure that there is neither fire hazards nor aerosol interference • Adjust alarm sensitivity (high→medium→low) • If the problem still exists, please contact technical support for advice
	Frequently generated dust and vapor make the filter expired	<ul style="list-style-type: none"> • Install external filter and maintain regularly • Maintain internal filter regularly • Enable particle identification function
	Unsuitable environment	Do not place the device in a humid, extremely hot or cold site that has strong electromagnetic radiation or collision
Frequently fault (airflow)	Pipe blockage or damage	<ul style="list-style-type: none"> • Check the pipe • Confirm that there is no pipe damage, and press AutoLearn to calibrate flow rate again
	After the flow rate is calibrated, some factors (end cap, hole size, pipeline direction, etc.) affect the flow rate	
Other fault	Sensor exception, fan exception, communication exception	Please do not address the fault by yourself. Contact technical support after inquiring the fault code
No display after powering on	Poor contact	Check the wiring
	Power input is incorrect	<ul style="list-style-type: none"> • Make sure that the power supply is correct • Confirm that the 24V DC power cord has been inserted according to the terminal marking position, and the positive and negative wires have been correctly connected according to the terminal marking

6.2 Solutions

- On-site inspection to eliminate fire hazards, and leave after confirming that there is no fire risk.

- When there is "Fire Alarm 1", "Fire Alarm 2", and "Fire Alarm 3" notification, the operator should immediately notify the fire supervisor and locate the fire source to control the fire. After the fire is eliminated, press the **Reset** button to disarm the alarm.
- Press the **Mute** button to stop the alarm sound, press the **Reset** button to disarm the alarm, and press the **Isolation** button to make the detector standalone.
- When the **Reset** button is pressed, the detector is still in an alarm state, and the on-site environment may have been polluted due to fire. After cleaning the environment, auto-learning should be carried out again.
- When the fault indicator light is on, check according to the interface fault prompt. If the cause of the fault can neither be located nor dealt with, please contact the technical support in time, and do not disassemble the machine for maintenance without authorization.

6.3 Maintenance

To keep your device in good condition, please follow these requirements.

- Simulate alarm test: Test the device once a month (recommended).
If the detector works abnormally, please contact manufacturer.
- Replace the filter
During long-term use, the filter will be blocked due to accumulated dust. Therefore, replace the filter every 1 to 3 months when the environment is dirty, and replace the filter every 6 months when the environment is clean.

Step 1 Turn off the power.

Step 2 Open the front panel, remove the filter, and replace it with a new filter.

Step 3 Lock the front panel and power it on again for testing.

6.4 Notice

During use, false alarms may occur due to some man-made or weather influences, please check in time.

This detector is a precision electronic product, which needs to be managed by a special person, and it is strictly forbidden for others to touch it at will. Users should carefully keep duty records. If an alarm occurs, press the **Mute** button on the detector first, and address it after quickly confirming the fire. After processing, make an execution record, and then press the **Reset** button to eliminate it. If it is confirmed as a false alarm, after the record is completed, you can notify our company's after-sales department to repair it.