



Wireless sensor

send

need

try to persuade



bright

write



safety instruction

- ❖ To protect the product and ensure safe operation, follow this operating manual. The Company is not responsible for the product if used improperly or not as required in the manual.
- ❖ Do not remove and modify this product.
- ❖ Do not place the product in an environment that does not meet the working temperature, humidity and other conditions, and stay away from the cold source, heat source and open flame.
- ❖ This product is used as indoor environment monitoring and cannot be used as a measuring tool.
- ❖ If the product has not been used for a long time, please remove the battery. Otherwise, it may cause battery leakage and damage to the internal components.
- ❖ Do not subject the product to an external impact or vibration.
- ❖ Please avoid water and use of various detergents or solvents such as benzene and alcohol. The surface cleaning can be wiped with a wet soft cloth, and then dried with a dry soft cloth.

Declaration of product conformity

The wireless monitoring terminals comply with the basic requirements of CE, FCC and RoHS.



Copyright © Zhengzhou Fenghua Industrial Co., LTD

All rights reserved.

For help, please contact the department



Technical support:

Email address: zz-zh@163.com

Tel.: 0371-67602008

Zhengzhou Fenghua Industrial

Co., Ltd



Document revision record

date	edition	description
2020.06.16	V 1.0	the front page
2020.08.07	V 1.1	New electronic ink screen multiple display modes and configuration examples, APP interface update
2020.09.14	V 1.2	1. VOC、CO ₂ The screen alarm threshold can be set 2. Toolbox Software Chinese picture replacement
2020.09.25	V 2.0	Layout replacement

catalogue

1. Product profile	5
1.1 Product Introduction	5
1.2 Product highlights	5
1.3 Technical parameters	6
2. Introduction of the product structure	8
2.1 Packaging list	8
2.2 Appearance overview	9
2.3 Product Dimensions (mm)	9
2.4 E-ink screen	9
2.4.1 Display instructions	9
2.4.2 Screen mode switching	12
3. Battery installation	12
4. Switches and resets	13
5. product configuration	13
5.1 Mobile phone APP configuration	14
5.1.1 Switch and basic read and write configuration	14
5.1.2 Batch configuration	15
5.2 Computer software configuration	17
5.2.1 Switch and basic read and write configuration	17
5.2.2 Bulk configuration	19
5.2.3 Product upgrade	21



5.3 Example of the configuration	22
5.3.1 Frequency setting	22
5.3.2 Time synchronization	23
5.3.3 Alarm setting	24
VI. Product installation	25
6.1 Notes for installation	25
6.2 Installation method	26

1. Product profile

1.1 Product Introduction

The wireless sensor monitoring terminal is independently developed and designed by Zhengzhou Fenghua, with built-in temperature, humidity, illumination, infrared detection, TVOC and CO₂, Atmospheric pressure and other sensors, to help us to continuously monitor the office, bedroom, museum and other Spaces of environmental changes, timely adjustment, improve comfort. The product is based on the standard protocol, using low power consumption design, support battery and external power supply, battery replacement is convenient. The product uses E-ink electronic ink screen, which can view environmental data in real time, and can be combined with cloud platform and APP.

1.2 Product highlights

- Various monitoring contents are included: integrating temperature and humidity, light, atmospheric pressure, infrared detection and other functions, to meet the application of indoor environment monitoring
- Real-time data monitoring: support real-time view of data on e-ink screen
- Battery is easy to replace: use the standard number 5 alkaline battery
- Easy to use: support mobile phone NFC fast configuration



- Good compatibility: compatible with standard gateway and third-party network server platform, support ad hoc network
- Management integration: fast docking between gateway and cloud platform, without additional configuration

1.3 Technical parameters

model		Wireless temperature and humidity detection terminal	Wireless VOC monitoring terminal
wireless parameter	communicating protocol	standard agreement	
	Work frequency band	470~510MHz (Multi-band is optional: IN 865 / EU868 / RU 864 / US915 / AU 915 / KR 920 / AS923, etc.)	
	transmitting power	16dBm(868)/20dBm(915)/19dBm(470)	
	receiving sensitivity	-147dBm @300bps	
	Network access / working mode	OTAA/ABP Class A	
built-in sensor	temperature	Collection range	-20°C ~70°C
		acquisition accuracy	Within the range of 0 °C to 70 ° C: ± 0.3°C -20°C ~ 0°C range: ± 0.6°C
	humidity	Collection range	0%~100% RH
		acquisition accuracy	Within the 10% to 90% RH range: ± 3% Other ranges: ± 5%
	Human infrared	Detection Angle	Horizontal 94 °, vertical 82 °
	induction	Detection distance	5 m



Wireless sensor, instructions for use

	output range	0~65535	
beam	Collectio n range	60,000 lux (dual-channel: visible light + IR, IR)	
	acquisitio n accuracy	±30%	
carbon dioxide	Collectio n range	—	400~5000 ppm
	acquisitio n accuracy	—	± 30 ppm or ± 3% of the reads
Total volatile organic compou nds (VOC)	Collectio n range	—	0~60000 ppb
	acquisitio n accuracy	—	±15 %
	Long-ter m offset	—	And 1.3% accuracy offset per year
atmos	Collectio n range	—	300~1100 hPa (-40°C - 85° C)
	acquisitio n accuracy	—	±1 hPa
show & config ure	show	A 2.13-inch black and white electronic ink screen	
	configure	Support USB Type-C or NFC configuration (mobile APP or Windows software)	
physic s	power supply mode	2 alkaline no. 5 battery or USB type-C 5V DC power supply	



characteristic	Battery life * (Sampling interval of 10 minutes)	18 months (SF7) 14 months (SF10)	11 months (SF7) 9 months (SF10) 13 months (disabled TVOC acquisition, SF7) 11 months (TVOC acquisition disabled, SF10)
	working temperature	0°C ~45°C	
	relative humidity	0%~100% (no condensation)	
	product size	105 × 70.4 × 21.2 mm	
	way to install	Wall hanging installation	

* The above test data are from laboratory conditions, and there may be errors according to the changes in the objective environment.

2. Introduction of the product structure

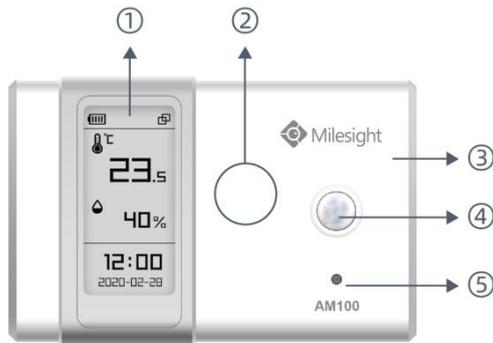
2.1 Packaging list

						
1 ×	2 ×	1 ×	2 ×	1 ×	1 ×	1 ×
AM100/AM102	No.5 alkaline battery	Positioning sticker	Wall hanging screws	warranty card	Quick Use Manual	Dedicated NFC reader (optional)

⚠ If the above items are damaged or lost, please contact your agent or sales representative immediately.

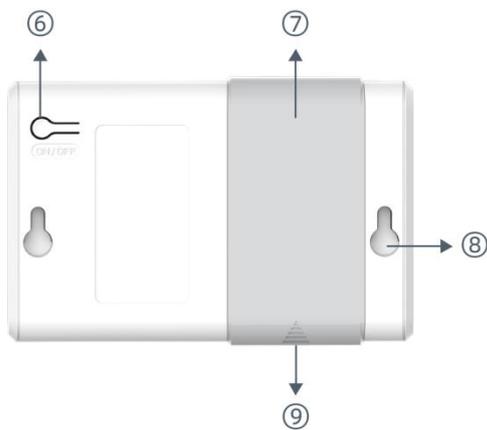


2.2 Appearance overview



front panel:

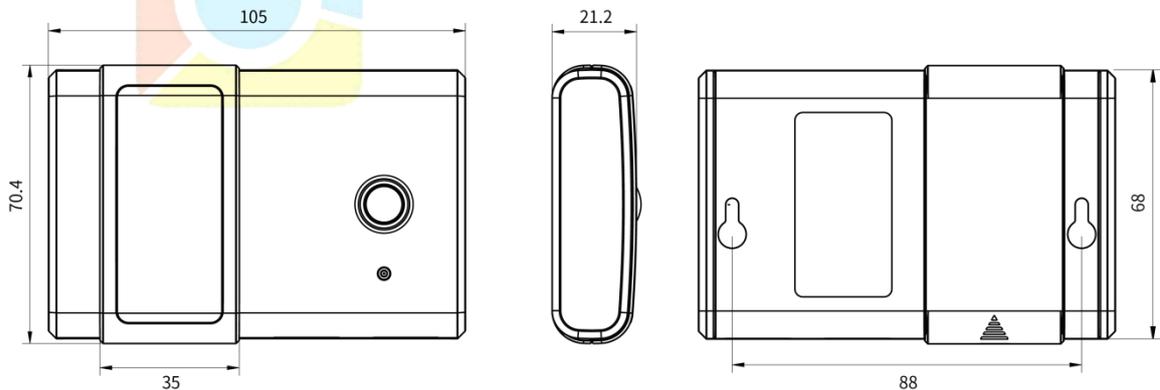
- ① e-ink screen
- ② NFC induction zone
- ③ LoRa Antenna (Built-in)
- ④ Infrared detection of the sensing area



back panel:

- ⑥ mains switch
 - ⑦ battery cover
 - ⑧ wall mounted holes
- The ⑨ USB Type-C interface

2.3 Product Dimensions (mm)



2.4 E-ink screen

2.4.1 Display instructions



The wireless monitoring terminal provides 3 types of screen display:

Wireless temperature and humidity detection terminal		
pattern 1	pattern 2	pattern 3
 °C -00.0 % 00:00 0000-00-00	 °C -55.2 °C % 55.2 % ☀️ ■ ■ □ □ □	22:22 °C -55.2 °C % 55.2 % ☀️ ■ ■ □ □ □
Wireless VOC monitoring terminal		
pattern 1	pattern 2	pattern 3
 °C -00.0 % 00:00 0000-00-00	 1555 CO ₂ PPM [Bar chart] -55.2 °C 22.2 % ☀️ ■ ■ □ □ □ TVOC ■ ■ □ □ □	22:22 1555 CO ₂ PPM [Bar chart] -55.2 °C 22.2 % ☀️ ■ ■ □ □ □ TVOC ■ ■ □ □ □

The detailed drawings and functional meanings are as follows:

project	icon	explain	Screen update cycle
battery capacity		battery remaining capacity.	24 Hours



Wireless sensor, instructions for use

time	22:22	It can be synchronized through the APP or the software.	1 Minutes
Network status		<p>The equipment has been connected to the network.</p> <p>The equipment is not connected to the network.</p>	Updated according to the actual status
temperature		Units can be switched by the APP or the software.	1 Minutes
humidity		not have.	1 Minutes
luminance (beam)		<p>0 case: 0-5 lux</p> <p>1 case: 6-50 lux</p> <p>2 grids: 51-100 lux</p> <p>3-case: 101-400 lux</p> <p>4 grids: 401-700 lux</p> <p>5 case: 701 lux above</p>	1 Minutes
VOC		<p>0 case: 0-100 ppb</p> <p>1 case: 101-200 ppb</p> <p>2-case: 201-250 ppb</p> <p>3 grids: 251-300 ppb</p> <p>4 grids: 301-350 ppb</p> <p>5 grids: 351-400 ppb</p> <p>Display the alarm when the preset is reached. (Default is greater than 400 ppb alarm)</p>	1 Minutes
CO ₂		<p>Shows historical trends from 0 to 1400 ppm.</p> <p>Display the alarm when the preset is reached. (Default is greater than 1200ppm alarm)</p>	2 Minutes



pay attention to:

- To improve the screen display and eliminate residual shadows, the screen is globally refreshed every 30 minutes (the screen font flashes in black and white with the background color).
- Refer to Chapter 5.3.3 for the alarm threshold setting.
- The wireless monitoring terminal screen displays the current data, and the reported value is the sampling average of the reporting cycle.

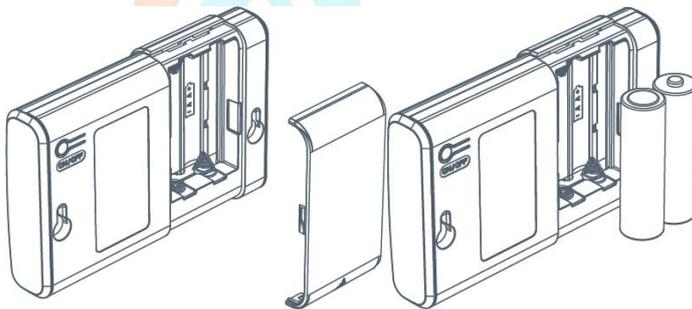
2.4.2 Screen mode switching

The wireless monitoring terminal provides the following switching screen mode:

- Power button switch: press the power button to switch the screen mode.
- APP switch: Toolbox APP menu "Device> Settings> Common Settings> Screen Display Mode" Select the screen mode.
- Software switching: Toolbox Software menu "Device Settings> Basic Information> Basic Settings" Select the screen display mode.

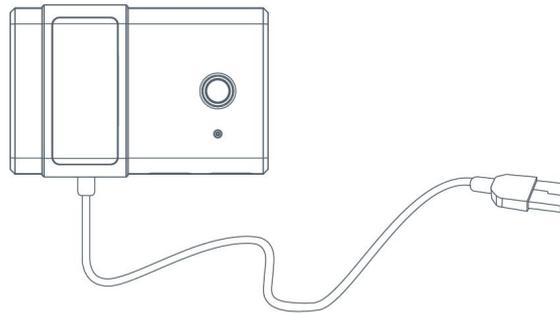
3. Battery installation

Open the battery cover from the buckle hand position on the back of the product, put two no. 5 alkaline batteries into the battery compartment (pay attention to the positive and negative electrode direction), and then press on the buckle and buckle the battery cover.



pay attention to:

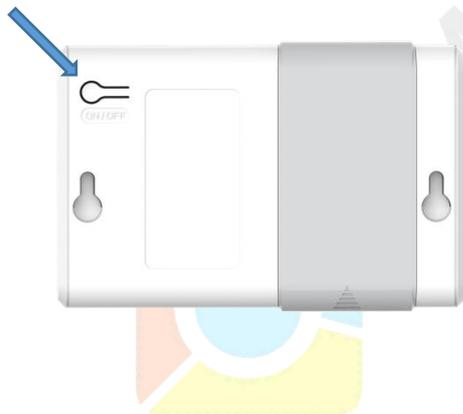
- The product also supports Type-C power supply (5V, above 100 mA), and Type-C is preferred for the battery at the same time.
- The Type-C port does not support charging for the internal battery.



4. Switches and resets

- On / off: press the power button for about 3~5 seconds until the status of the electronic ink screen changes to turn on / off.
- Restore the factory Settings: Long press the power button for more than 10 seconds to restore the factory Settings, and the product will remain turned on after reset.

Note: The product also supports using the mobile APP and configuration software to switch and reset, see Chapter 5 for details.



5. product configuration

Products can be configured in the following ways:

- Mobile phone APP wireless configuration (NFC);
- Windows Software Wireless configuration (NFC) or wired configuration (Type-C).

APP or software provides product switch, read and write, batch configuration and other functions, upgrade can only be completed through computer software. To ensure security, the first mobile phone configuration of the device needs to enter a



password for verification. Default password: 123456.

5.1 Mobile phone APP configuration

Configuration preparation:

- Mobile phone (NFC-enabled)
- Toolbox APP

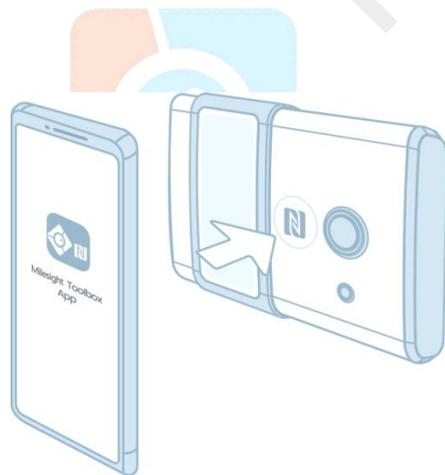
Download and install the iOS: the iOS App Store

5.1.1 Switch and basic read and write configuration

1. Turn on the mobile phone NFC function
2. The NFC identifies the product information

Open the APP and close the NFC area of the mobile phone to the NFC induction area of the product for a few seconds. The APP will obtain the basic information of the product model and switch status.

Note: Different NFC areas of different Android phones, roughly located around the camera on the back. For details, please check the phone instructions or consult the relevant customer service.



状态	设置	重量
SN	6127A1706227	
型号	AM100-915	
设备 EUI	24e124127a170622	
固件版本	V1.9	
硬件版本	V1.3	
设备状态	关机	<input type="checkbox"/>

读取

设备 模板

3. parameter setting

Turn the APP on and off, synchronize time, reset, or click "Write" to change the setting and press the APP close to the product NFC induction area for a few



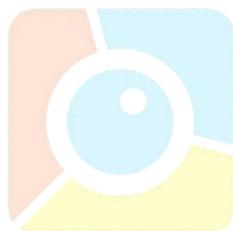
seconds until the successful prompt appears.



4. Data read

After clicking "Read" on the "Device> Status" page, press the APP close to the NFC induction area of the product for a few seconds, and you can obtain the current temperature, humidity, time and other instant data of the product.

状态	设置	重置
SN	6127A1706227	
型号	AM100-915	
设备 EUI	24e124127a170622	
固件版本	V1.9	
硬件版本	V1.3	
设备状态	开机 <input checked="" type="checkbox"/>	



5.1.2 Batch configuration

Note: The batch configuration function is only for the same model.

1. Add template

Configure and read the configuration of a device, and save the current configuration on the "Template" page of the APP.

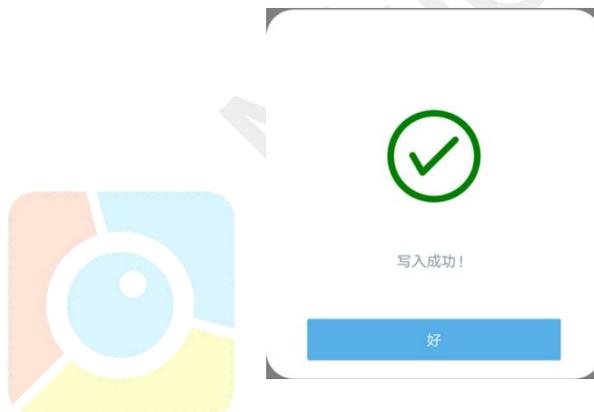


Wireless sensor, instructions for use



2. Write template configuration

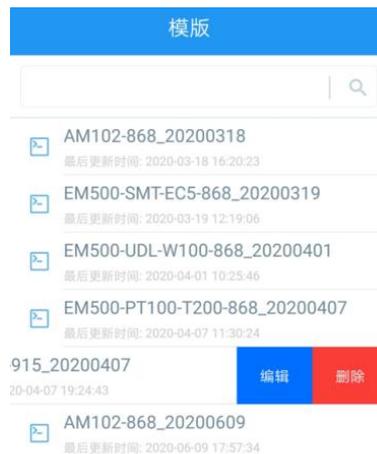
After clicking the target template, click "Write" and press the APP close to the NFC induction area of the product for several seconds until the successful prompt appears.



3. Edit / delete the template

Select the corresponding template entry on the Template page, swipe to the left to select the edit template name or delete the template.

Click on the corresponding template entry to view and edit the specific template content.



5.2 Computer software configuration

Configuration preparation:

- The NFC reader or the USB Type-C data line
- Computer (Windows system)
- Configuration tool Toolbox

5.2.1 Switch and basic read and write configuration

1. Log in to the Toolbox

Method 1:

Connect the product to the computer via Type-CUSB.



The type is set to General, the serial port is the docking USB interface, and enter the corresponding login password.(Default password: 123456)



Wireless sensor, instructions for use

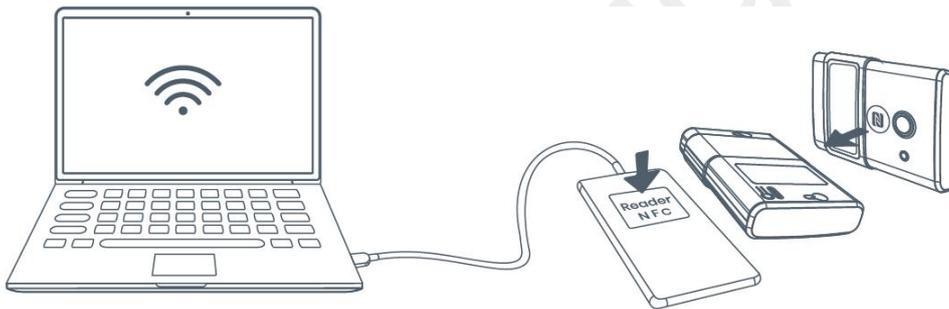
The screenshot shows the 'ToolBox Settings' dialog box with the following settings:

Type	General
Serial port	COM4
Login password	
Baud rate	115200
Data bits	8
Parity bits	None
Stop bits	1

Buttons: Save, Cancel

Method 2:

After connecting the dedicated NFC reader to the computer, close the product with the reader NFC induction area.



Type is set to NFC and serial port is the USB interface of NFC reader.

The screenshot shows the 'ToolBox Settings' dialog box with the following settings:

Type	NFC
Serial port	COM7

Buttons: Save, Cancel

2. Data read

Click "Read" and wait for a few seconds to obtain the current temperature, humidity



and other real-time data of the product.

状态 > 读取 关机

固件版本:	01.19
硬件版本:	1.4
设备状态:	开机
入网状态:	未激活
RSSI/SNR:	0/0
温度:	28.5°C
湿度:	54%
活跃度 (PIR) :	121
: 光照	53 lux
CO2浓度:	1729 ppm
TVOC:	1 ppb
气压:	1008 hPa
电池电量:	89%
通道掩码:	00000000#0000000000000000
上行帧计数:	0

3. parameter setting

After switching on and off the machine, synchronize time, reset or changing the setting and save, click "Write", enter the correct password in the pop-up dialog box, click "confirm" and wait a few seconds.(No new password required for USB connection)

LoRaWAN > 读取 写入

基础 通道

设备EUI: 24E124128A216164

密码验证

密码: [masked]

确认

请将NFC感应区靠近设备.

应用程序密钥: [masked]

Confirmed Mode:

ADR模式:

保存

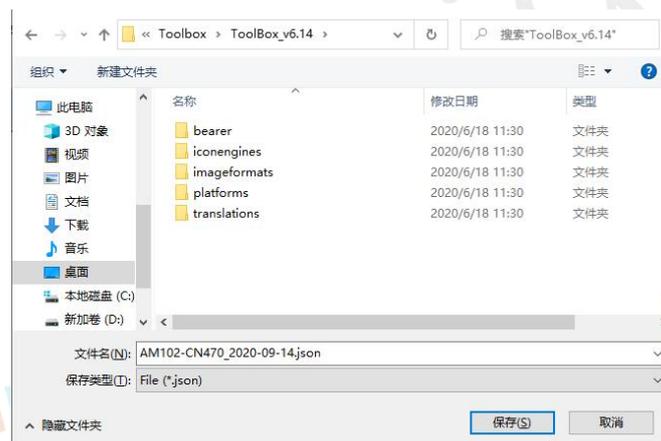
5.2.2 Bulk configuration

Note: The template batch configuration function is only for the same model.

1. Add backup configuration



Click Export on the Maintenance> Backup and Reset page to export the current device configuration to the local computer.



2. Import backup configuration

Go to the Toolbox configuration page of other devices to load the backup file and import the configuration.



5.2.3 Product upgrade

After loading the backup files saved on the computer on the "Maintenance> Upgrade" page, click "Upgrade" to upgrade. Upgrades usually take a few minutes. Note: Do not move the device or the reader when upgrading with an NFC reader, otherwise it may fail.





5.3 Example of the configuration

5.3.1 Frequency setting

In order to ensure the normal sending and receiving of data, the frequency of AM series and the gateway should be matched before use. Taking CN470 as an example, the protocol supports 96 ascending channels, so the corresponding channels need to be matched according to the gateway. Please follow the following methods for completing the configuration.

Method 1: After opening the Toolbox APP on the phone and reading the device information, select the support frequency in "Device> Settings> Settings" and enable the corresponding channel.



Method 2: Open the Toolbox software on the computer and enter the configuration interface, select the support frequency and enable the corresponding channel on the "Set up> Channel" page.



5.3.2 Time synchronization

Initial use requires the synchronization of the screen time. There are two synchronization methods:

Method 1: After opening the Toolbox APP on the mobile phone and reading the device information, click "synchronization" next to the device time entry of "Device> State" to synchronize the mobile phone time to the device information and the screen.





Method 2: Open the Toolbox software on the computer and enter the configuration interface, and click "synchronization" next to the "Device Time" entry of "state" to synchronize the computer time to the device information and screen.

状态 >

设备状态:	开机
入网状态:	未激活
RSSI/SNR:	0/0
温度:	28.5°C
湿度:	54%
活跃度 (PIR):	72
: 光照	53 lux
CO2:浓度:	1520 ppm
TVOC:	2 ppb
气压:	1007.9 hPa
电池电量:	89%
通道掩码:	00000000#0000000000000000
上行帧计数:	0
下行帧计数:	0
设备时间:	2020-09-14 17:02:01 <input type="button" value="同步"/>

5.3.3 Alarm setting

After setting the threshold alarm, the AM series sensor will report the value immediately after the corresponding sensor data reaches the threshold value, and the wireless VOC monitoring terminal will also display the VOC and CO on the screen.²Warning tips.

Method 1: After opening the Toolbox APP on the phone and reading the device information, enable the corresponding sensor and set the threshold in "Device> Set> threshold set".



Wireless sensor, instructions for use

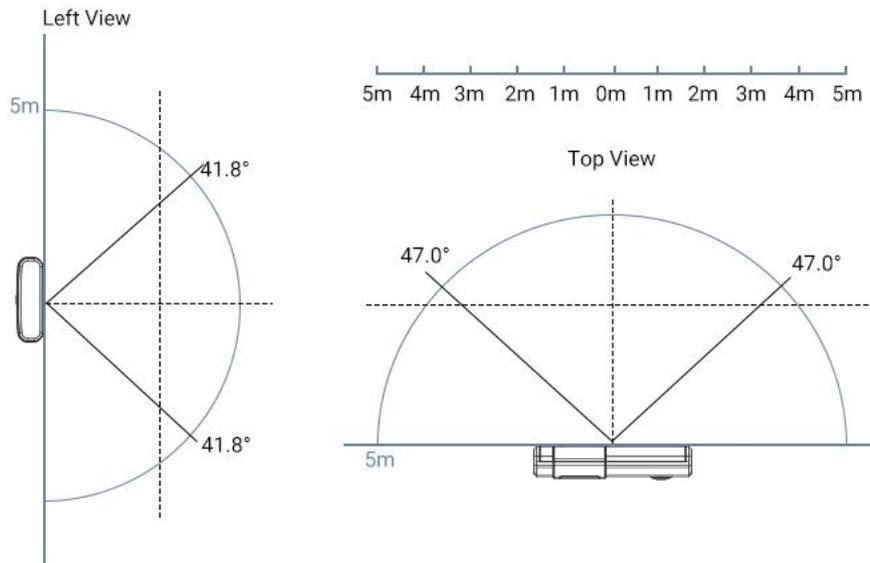
Method 2: Open the Toolbox software on the computer and enter the configuration interface, and configure the threshold value of the corresponding sensor on the page of "Device Settings> Basic Information> Threshold Settings".

VI. Product installation

6.1 Notes for installation

To ensure that the product properly monitors the environment, follow the following precautions:

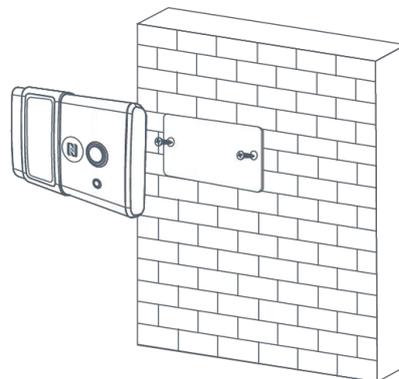
- ✧ Do not install the equipment in an environment beyond the operating temperature range or with large temperature variation;
- ✧ Do not install the equipment in places, such as window, vents, air conditioner or fan;
- ✧ Do not install the equipment vent facing down;
- ✧ It is not recommended to install the equipment at the door or window, if installed at the window, please try to close the curtains;
- ✧ It is recommended to install the equipment in a position without large obstacles within the infrared sensing range.



6.2 Installation method

The installation distance of the best equipment from the ground is 1.5m. The installation method is as follows:

1. Post the positioning sticker to the designated position on the wall, and try to keep two hole positions parallel to the ground when pasting;
2. Make two holes in the wall (about 88mm apart according to the hole position of the positioning sticker);
3. Drive 2 wall-mounted screws into two holes;
4. Hang the device to the wall-mounted screws.





Zhengzhou Fenghua Industrial Co., Ltd. ZHENGZHOU FENGHUA INDUSURY
CO.,LTD

Wireless sensor, instructions for use



Milesight