

MSD Indoor Air Quality Detector

—Commercial Grade IAQ products

- Over 10-year experience in IAQ products design and production, long-term exportation to Europe and America, powerful strength guaranteed.
- Rigorous design, professional test and calibration for the commercial grade indoor air quality detectors.
- High cost performance, be able to replace expensive professional instruments, coordinate well with data collection and analysis systems, making multipurpose real time monitoring placements easier to be achieved.
- Suitable for intelligent buildings, intelligent house systems, and air quality data collection systems, green building evaluation systems, as well as ventilation systems.



Specifications

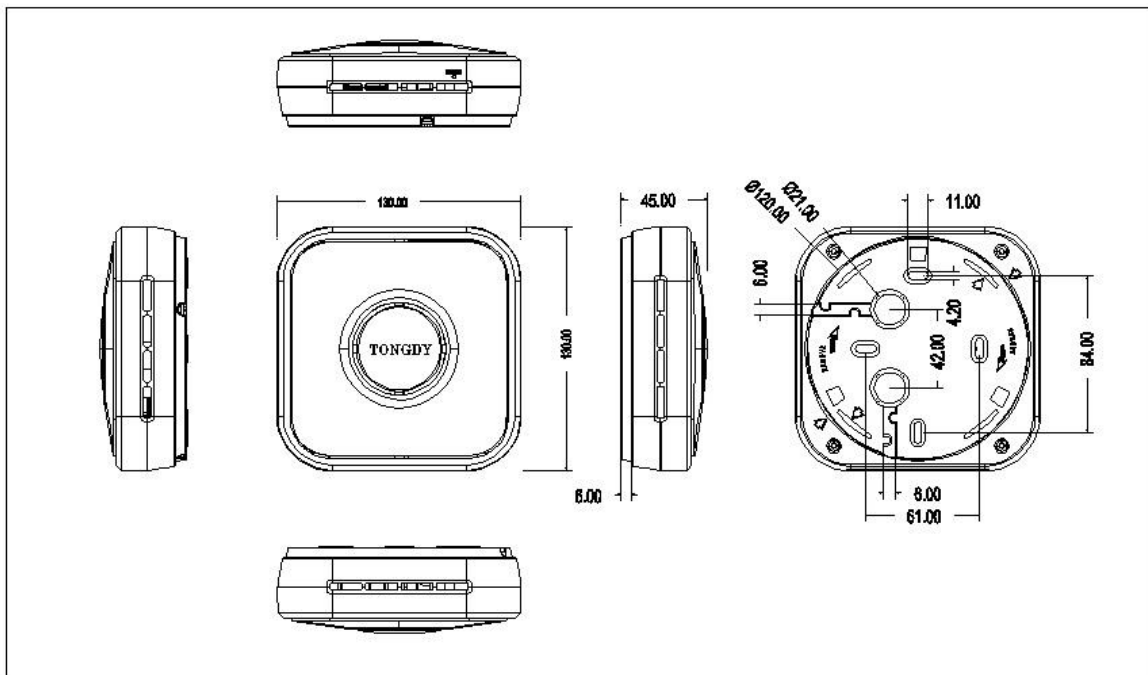
General Data	
Detection parameters	PM2.5; PM10; CO2; TVOC; air temperature & RH;
output	RS485/RTU (Modbus),RJ45 /Ethernet or WIFI @2.4 GHz 802.11b/g/n
Operating conditions	Temperature: -20~60℃ Humidity:0~99%RH
Storage conditions	Temperature: -10℃~50℃ Humidity: 0~95%RH (non-condensation)
Power supply	18~24VDC; or 100~240VAC
Dimensions	130mm(W)×130mm(H)×45mm(T)
Housing materials and IP level	PC/ABS fire-proof material / IP20
Standard Approval	CE
PM2.5/PM10 Data	
sensor	Laser particle sensor, Light scattering method
Measuring range	PM2.5: 0~1,000 $\mu\text{g}/\text{m}^3$ PM10: 0~1,000 $\mu\text{g}/\text{m}^3$
Display resolution	0.1 $\mu\text{g}/\text{m}^3$
Stability at 0	$\pm 5 \mu\text{g}/\text{m}^3$
Accuracy	10% of reading (@15~35℃)
Temperature and Humidity Data	
Sensor type	High precision digital integrated temperature and humidity sensor
Measuring Range	Temperature: -20℃~60℃ / Humidity: 0~99%RH
Output Resolution	Temperature: 0.01℃ / Humidity: 0.01%RH
Accuracy	Temperature: $\leq \pm 0.5^\circ\text{C}$ @25℃ Humidity: $\leq \pm 3.0\%$ RH (@20%~80%RH)
CO2 Data	

sensor	Non-Dispersal Infrared Detector (NDIR)
Measuring range	0~5,000ppm
Output Resolution	1ppm
Accuracy	±40ppm + 3% of reading
TVOC Data	
sensor	TVOC
Measuring range	0~3.5mg/m ³
Output Resolution	0.001 mg/m ³
Accuracy	±0.05mg+10% of reading
Version	V.1711

Models Guide

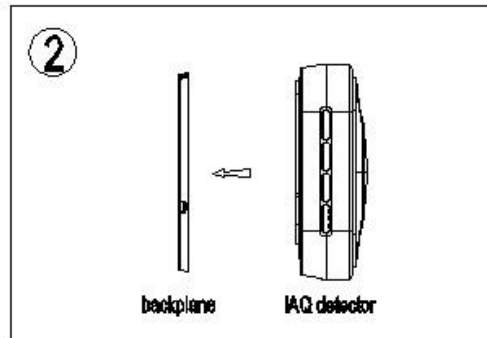
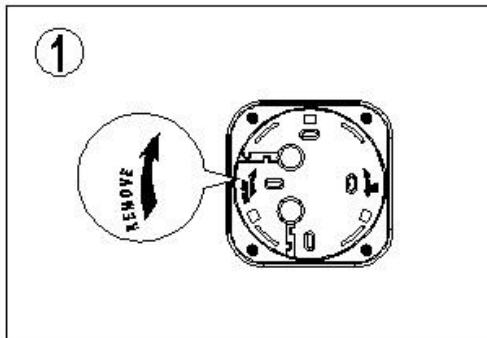
Model.	PM2.5	PM10	Temp/ RH	CO ₂	TVOC	18~24VDC Power supply	100~240VAC Power supply	outputs
MSD-1618C	●	●	●	●	●	●		RS485 (Modbus RTU)
MSD-1618D	●	●	●	●	●		●	
MSD-1613C	●	●	●	●		●		
MSD-1613D	●	●	●	●			●	
MSD-1628C	●	●	●	●	●	●		WIFI
MSD-1628D	●	●	●	●	●		●	
MSD-1623C	●	●	●	●		●		
MSD-1623D	●	●	●	●			●	
MSD-1638C	●	●	●	●	●	●		RJ45
MSD-1638D	●	●	●	●	●		●	
MSD-1633C	●	●	●	●		●		
MSD-1633D	●	●	●	●			●	

Dimension and Mounting Holes



Installation

1. To separate the backboard and the detector, rotate the backboard clockwise according to the direction of the arrow (Pic.1&Pic.2).

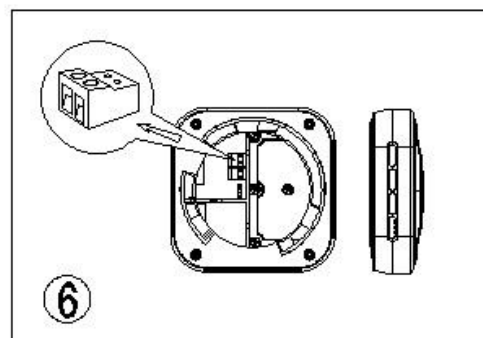
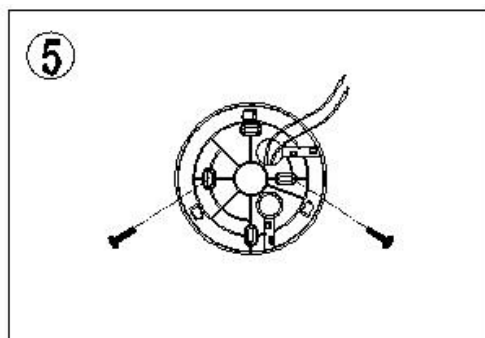
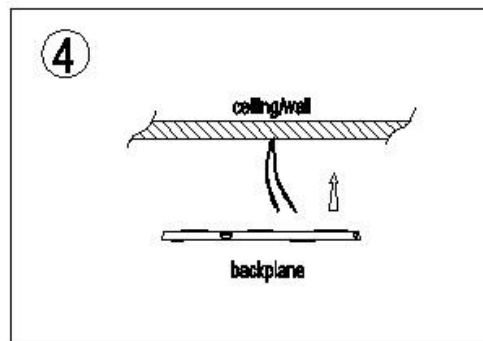
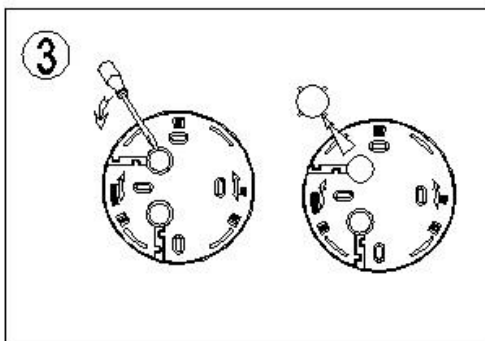


2. Use a screwdriver to pry the threading hole on the backboard, and remove the cover of the threading hole (Pic. 3).

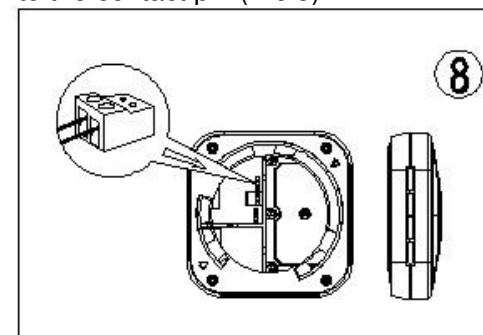
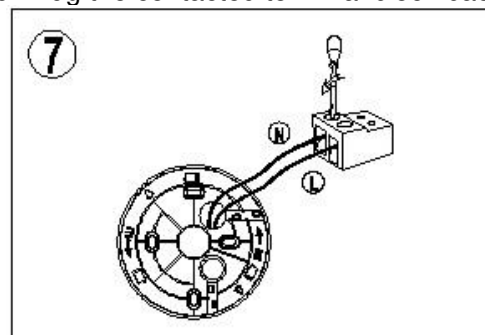
3. Let the cable on the wall go through the threading hole (Pic.4 &Pic.5).

4. Unplug the terminal block from the contact pin (Pic.6).

5. Contact the cable to the terminal block (Pic.11&Pic.12), then tightly lock the mounting screw (Pic.7).

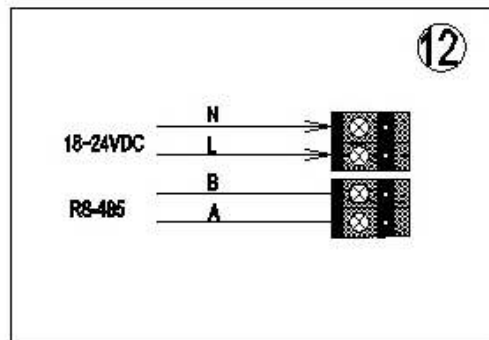
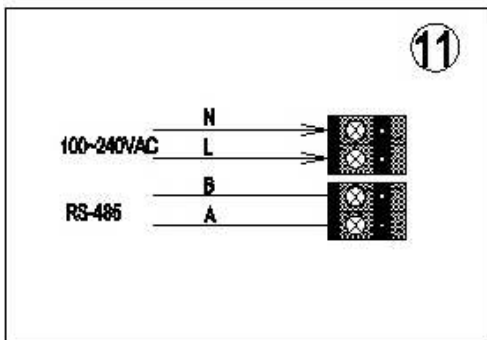
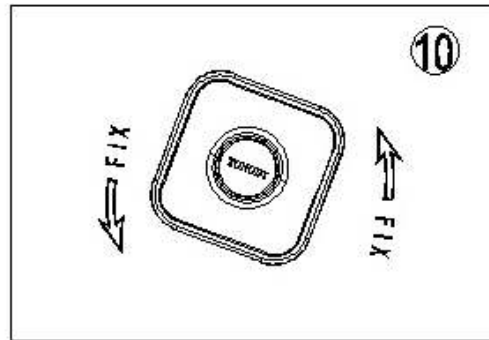
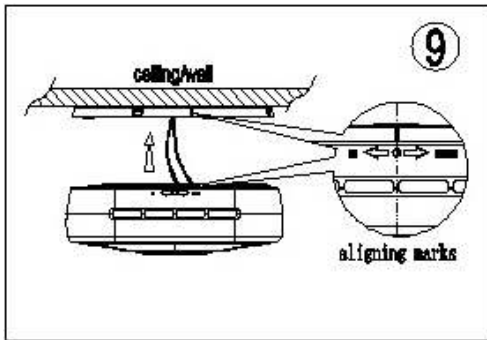


6. Plug the contacted terminal block back into the contact pin (Pic.8).



7. Aim the dot located in the middle of two arrows on the side of the detector with the vertical lines on the backboard (Pic.9). Then rotate detector following the 'FIX' direction until it's tight (Pic.10).

The installation is completed



Work Indicator

There is a circle ring of indicator light in the center of the housing. This indicator light is used to show concentration range of measured value.

This indicator light can be controlled by any of measured values of among PM2.5 or CO2 or TVOC through RS485 communication command, and change the color of indicator light depending on the concentration.

Meanwhile, the measured value of the change of indicator light can be selected with one minute average value or one hour average value of 24 hours average value in the communication command.

The indicating light is controlled by one minute average value of PM2.5 as factory default.

DIP switches can control the ring of indicator light Open, and Green light keeps ON constantly, and Turn Off the indicating light. Please see the following details.

	DIP1	DIP2	DIP3	
Green Normally ON	OFF	OFF	ON	
Three-color Indicator	ON	ON	OFF	Default
Indicator OFF	OFF	OFF	OFF	

Active indicators

There is a light ring in the middle of the shell, which indicates the measuring range of CO2 concentration.

The indicator light can be chosen to be controlled by PM2.5, CO2 or TVOC using the Modbus RS485 interface, and varies according to its concentration.

The measurement value that changes the indicator light can be the average value of one minute, one hour or 24 hours in the communication instruction.

Factory Default: The light is controlled by the average PM2.5 measurement value of one minute.

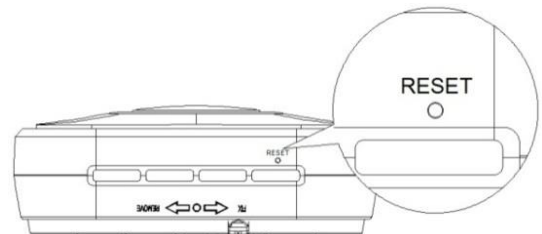
Below is indicator color changes corresponding to the measured arrange:

PM2.5	<35ug/m ³ Green,	35~75ug/ m ³ Yellow,	>75ug/m ³ Red
CO2	<600ppm Green,	600~1000ppm Yellow,	>1000ppm Red
TVOC	<0.25mg/m ³ Green,	0.25~0.50mg/m ³ Yellow,	>0.50mg/m ³ Red

WIFI Settings

In the side of the MSD, there is a reset button in the hole under “RESET”.

1. After the MSD is power on, insert a thin rod (a paper clip or a toothpick, etc.) in the RESET hole, and long press the RESET button for 6 seconds

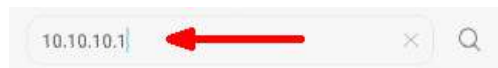


2. Open the WLAN function of the mobile device, search "MXCHIP_" at the beginning of hot spots, then connect it.

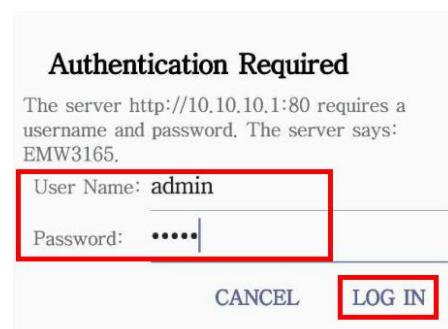


Note: researched WIFI hotspot is like MXCHIP_07E711, MXCHIP_ is an invariant format, 07E711 is a unique serial number for a WIFI module. Different WIFI modules have different serial numbers. It will be shown on the surface of the WIFI module.

3. Use the browser of the mobile device, land the site 10.10.10.1



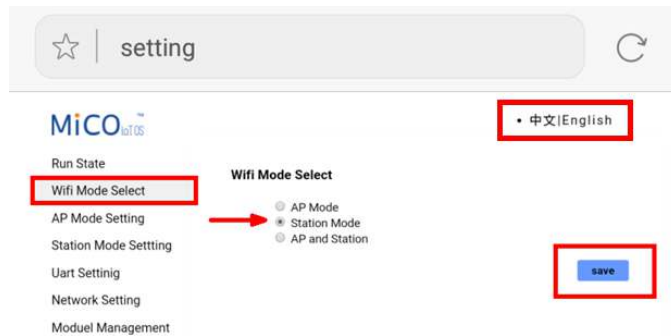
4. If you need to log into the account, input User Name: admin, Password: admin. Then “LOG IN”.



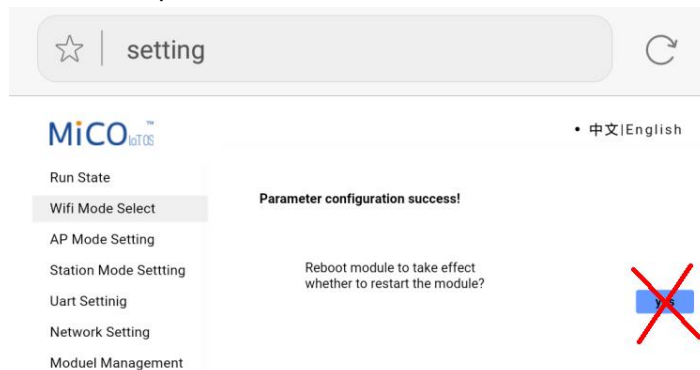
5. At this point, get into the WIFI module Settings interface. We will need to modify the parameters setting. The majority changes concentrate in "Wifi Mode Select", "Station Mode Setting" and "Network Setting".

This interface language is default in Chinese, users can switch to English interface in the upper right-hand corner.

6. On the right side of the interface, Select "Wifi Mode Select", and in the interface, click and select "Station Mode", then "Save".



7. At this point, the restart module prompts appear in the interface, be careful NOT to click "Yes". After all the parameters are set, restart the module at all.

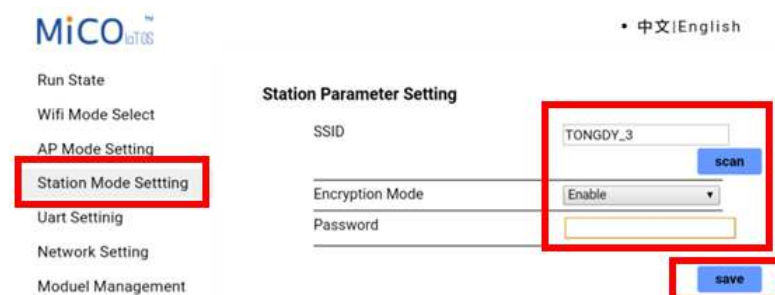


If customers are not careful to restart the module, need to start again from step 1.

8. On the right side of the interface, select "Station Mode Setting", and in the interface, click "Scan" directly, then connect to the hot spots.

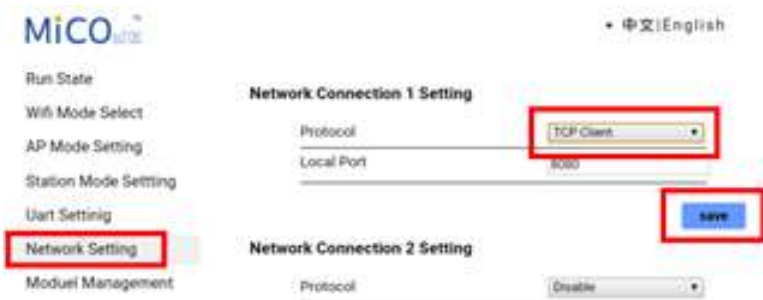
9. In the interface, select the hot spot which the device will be connected with, such as "TONGDY_3", then confirm it. Back to the previous interface, encryption based hot spots can be decided on whether you need encryption or not. Does not need encryption: Disable; Encryption: Enable.

When you choose to need encryption, you need to key in a password to connect to the hot spots in the increased option, finally "Save". The same do not restart the module.



10. On the right side of the interface, select "Network Setting", and in the interface, for "protocol"

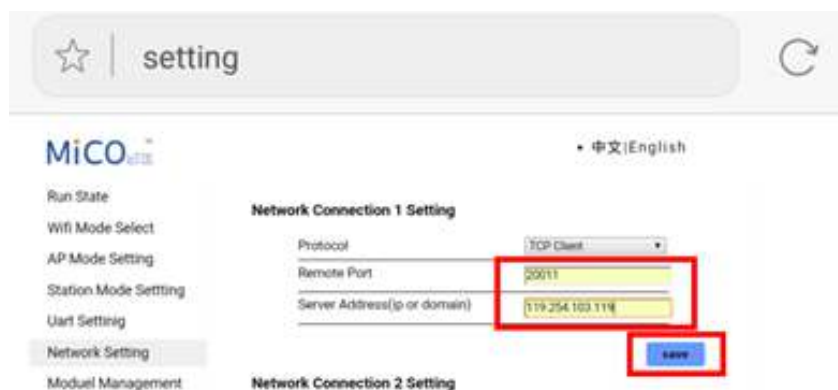
click and select "TCP Client" and "save". The same do not restart the module.



11. After entering other interface, and then get back to the "Network Setting" interface, shown as the following figure, in the "remote port" and the "server address", key in the server information where the device will upload data, for example, the corresponding parameters of Qlear platform.

Remote Port: 20011

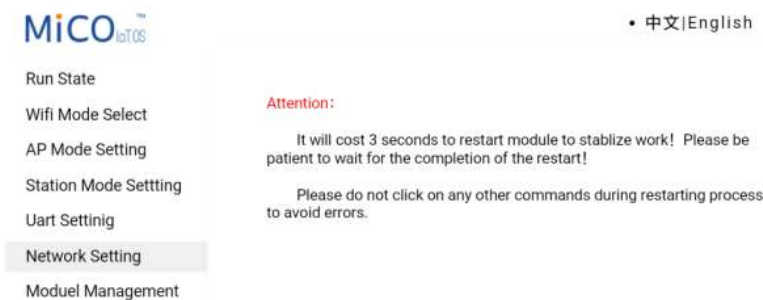
Server Address (IP): 119.254.103.119



12. At this point all the parameter settings are done, restart the module.



13. When the module restarts successfully, there will be the following interface.



14. Set up completed, now you can add equipment, and check data on the corresponding server site.

Modbus RS485 Communication Parameters

Mode: Modbus RTU (MSB First)
 Baud Rate: 1-4800; 2-9600; 3-14400; 4-19200; 5-38400; 6-56000; 7-57600; 8-115200
 Default: 2-9600bps
 Start Bits: 1
 Data Bits: 8
 Stop Bits: 1 / 2 Default: 1
 Parity: None / Odd / Even Default: None

Register Map

Support Function: 3 4 6 16

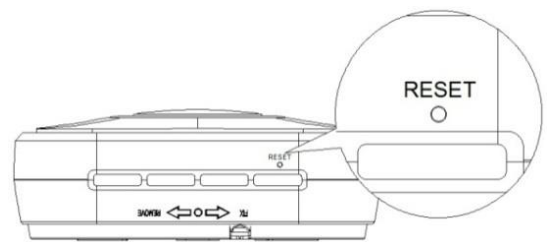
Please contact with sales to ask for Modbus Protocol document.

RJ45 Communications Configuration Instructions

1. Create virtual serial port

First install USR-VCOM and Modbus Poll on PC.

1.1 USR-K2 network port restore factory settings



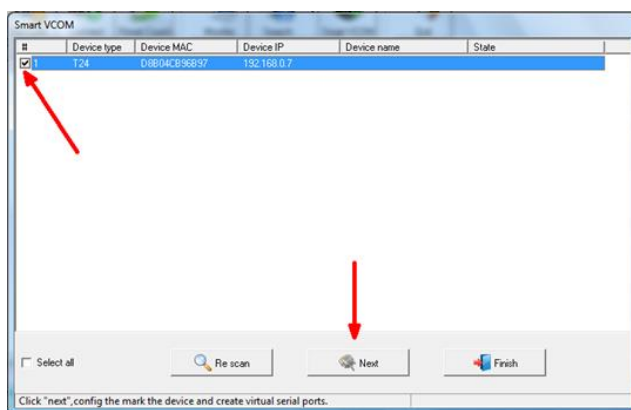
Device in the power-off state, hold down the button "RESET" on the bottom of the device, then power on the device again, after 5 seconds, release the button. If the RJ45 module is the first configuration, no need to reset.



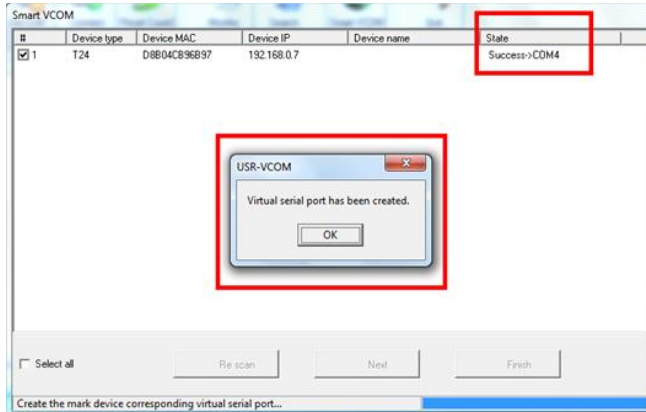
Open USR-VCOM software, in the open interface, click on the "create automatically".



The software will automatically find the device, select the device demanded, and click on the "next", then, finally click on the "finish".



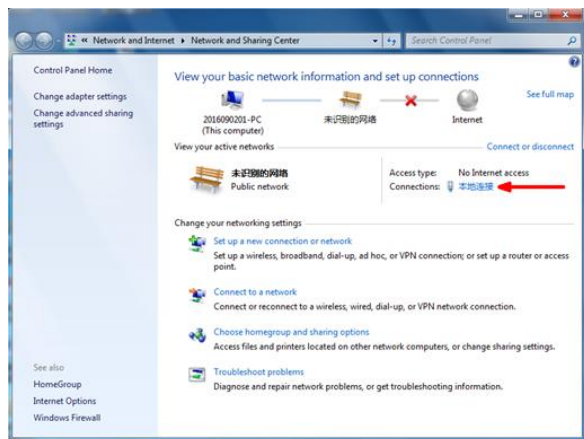
At this point, the status bar will show "finish->COM2", and pop up dialog box "A virtual serial port is created". Remember the "COM2" virtual serial port. In the following step, the device address settings will need it.



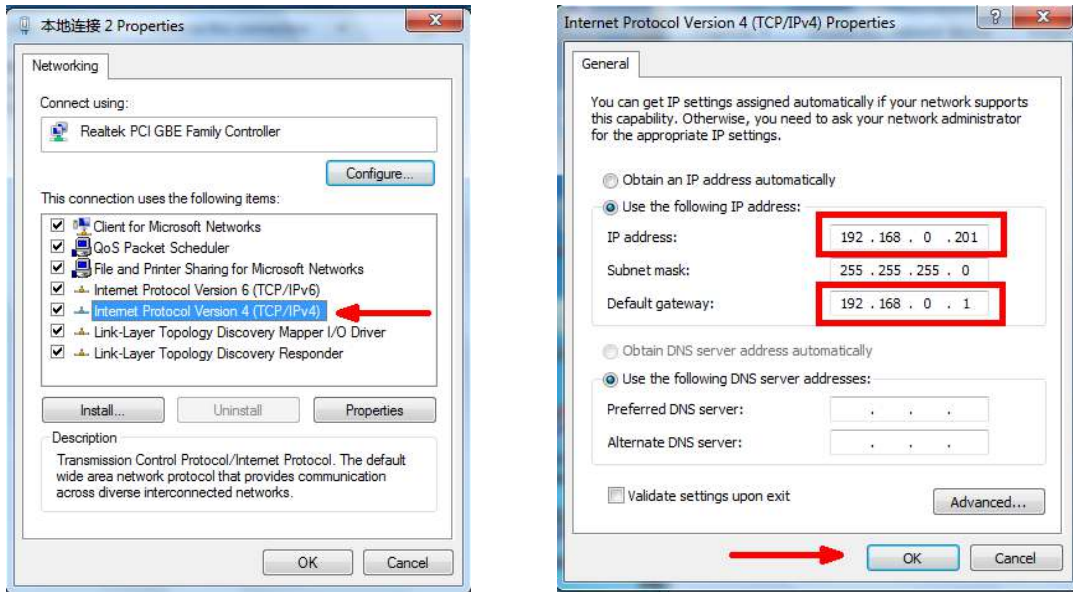
2. Modify the IP and gateway for the PC connection

Only when IP and gateway are in the same frequency band, and are specified parameters, PC can be connected, and set the USR-K2 port.

Enter PC local connection, in the pop-up "local connection state" get into the "property".



Double click on the "Internet protocol version 4 (TCP/IPv4)" to set the parameters, the specific parameters are as follows



Finally, click the 'OK' to save the settings.

3. Configure USR-K2 parameters

3.1. USR-K2 network port restore factory settings.

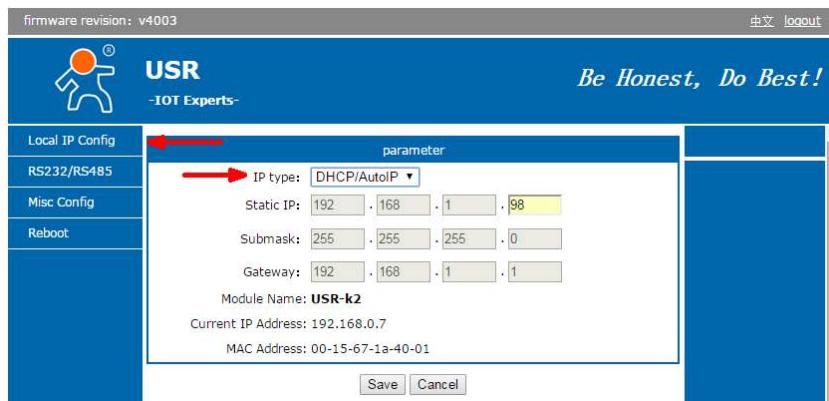
Device in the power-off state, hold down the button "RESET" on the bottom of the device, then power on the device again, after 5 seconds, release the button.

3.2 In the PC browser change into the "192.168.0.7", on the authentication page, enter the "admin" for both the user name and password.



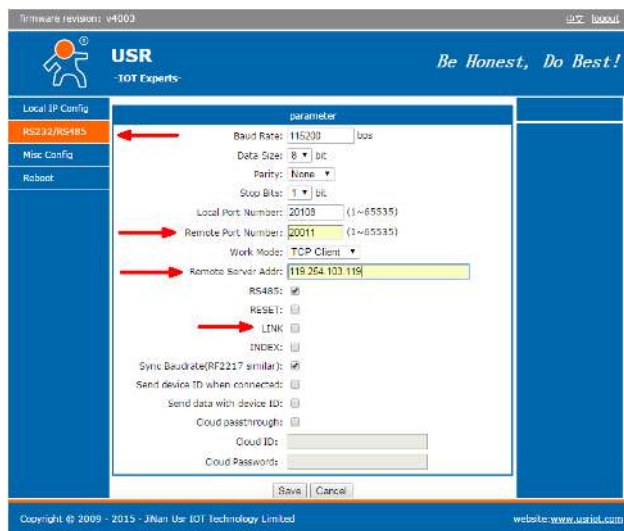
3.3 In the interface, mainly set the "Local IP Config" and the "RS232/RS485" two settings.

3.3.1 In the "Local IP Config" interface, IP mode select the "DHCP/Auto IP", and save.



3.3.2 In the "RS232/RS485" interface, set parameters according to the QLEAR site, and save. Specific settings as shown below

If the customer does not use the site to collect data, the corresponding parameters will make the corresponding changes.



3.4 Set up completed, click on the "Reset Module", then the system will pop up the prompt of set up successfully.

At this point, the device with USR-K2 network port, can upload monitoring data to the QLEAR site through the Ethernet, and the user can check the data as needed.

Special Notice

MSD is designed for detecting indoor air quality. The product contains multiple gas sensors and dust sensors, so the product should not be used in construction site or decoration site. If there is going to be a construction project, the MSD product should be removed until the project is over.

In addition, MSD is a precise measuring device, if customers need to decorate the house after installation the unit, please protect it by wrappages from paint coating and dust entering the unit. Do not apply the MSD cover with other pigments, avoid plugging stoma, and paint into the MSD gas chamber.

MSD is suitable for ceiling installation, wall installation. Do not use this product outdoors straightly.

Product installation location should be selected: to prevent direct sunlight, away from the heat source, away from the power or electrostatic precipitator equipment to avoid affecting product accuracy.

The product should avoid dropping, impact caused by sensor beam deviation in the gas chamber can lead deviation of CO₂ measurement; The product should avoid long-term exposure to high concentrations of total organic volatile gases, or sensor poisoning cannot be restored. For example, the concentration is several times greater than the MSD TVOC range. When multiple MSDs are wired and connected and sharing a power supply, make sure that the power supply wiring uses the polarity of the power supply at the same name and that the wrong connection will cause the damage of equipment.

The product should be maintained every half a year after started using, if the decoration or gray environment or larger environment, the maintenance interval should be shorten. Maintenance includes: clean the strainer, use an air pump or air suction tube to clean the dust inside the product. Each time after being placed in construction site, the product needs to be maintained to keep on normal using. If the measured value deviation, or interring dust and debris cannot be cleaned, please go back to the factory to re-clean and calibration (paid maintenance).

Do not use the cigarette to test PM_{2.5} measurements. Because most of the cigarette particles are in 0.1 to 0.5 microns. While particles are <0.3 micron, the resolution of laser detection is greatly reduced, so the cigarette concentration does not represent the true PM_{2.5} concentration. A 1/3 burning cigarette placed in a sealed box, the concentration will be higher than 10000ug / m³. Blow a cigarette smoke to the box and then close the box, the concentration is also more than 5000ug / m³. Therefore, PM_{2.5} measurements with cigarettes can cause too much deviation of the measured values.



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