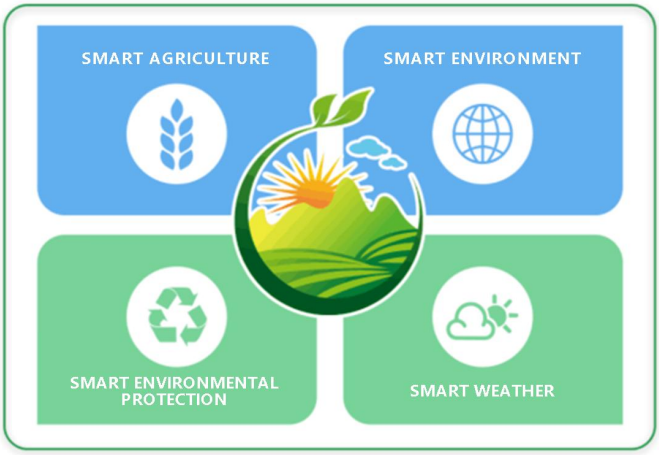
FENGTU

Ultrasonic Weather Station Manual



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Brief Introduction：

☞Technical data, applications for FT-WQX series products, before you use please read it.

☞How to fix and connect the device and the operation.

☞Communication protocol.

Version:WQX004

Date：2022.11

Notice before operation:

Error:if operate maybe will damage the device.

Warning:if operate maybe the device can’t work properly.

Attention:notice for operation.

Warranty：

Guarantee: 12months. From the day reached destination port.

After sale service: 24hours online service. If the quality problem, we will send new to customer’s site.

SO2\NO2\CO\O3\PM2.5\PM10, the calibration period is 1 year (Will decrease when making incorrect maintaining or under rugged surroundings)

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Ⅰ、Brief introduction

1.1 Summary

According to the years experience of meteorological environment monitoring, we focus on research and development and produces the FT-WQX series ultrasonic weather stations. It can integrate ambient temperature, ambient humidity, barometric pressure, wind speed, wind direction, rainfall, global radiation, illuminance, noise, PM2.5, PM10, CO, SO2, NO2, CO2, O3 etc. FT-WQX is highly integrated, with good appearance, free-installation, no wiring, easy after sale service. It can completely replace the traditional and mechanical weather station.

1.2 Features

a. Real-time measurement is with advanced sensor technology
b. 24h/7day, full time working, no matter heavy raining, snow or ice
c. High accuracy, stable
d. Nice appearance and compact structure
e. Highly integrated, easy to install
f. Free-maintaining, no need calibrating at site
g. The shell is ASA engineering plastic. Non-discoloring.

1.3 Application

Meteorological monitoring, urban environmental monitoring, wind power generation, sailing, airport, tunnel, agriculture etc.

Ⅱ、Parameters

2.1 Ultrasonic weather station series

Model / Item	WQX2	WQX5	WQX6	WQX7
Ambient Temperature		√	√	√
Ambient Temperature		√	√	√
Barometric Pressure		√	√	√
Wind Speed	√	√	√	√
Wind Direction	√	√	√	√
Rainfall			√	√
Illuminance				√

2.2 Ultrasonic weather station series

Model / Item	WQX8	WQX9	WQX10	WQX12
PM2.5	√	√	√	√
PM10	√	√	√	√
CO				√
SO2				√
NO2				√
O3				√
TEMP	√	√	√	√
Humidity	√	√	√	√
Pressure	√	√	√	√
Wind speed	√	√	√	√
Wind direction	√	√	√	√
Rainfall		√	√	√
Illumination			√	
Global radiation		√		
Noise	√		√	
Ultraviolet ray				

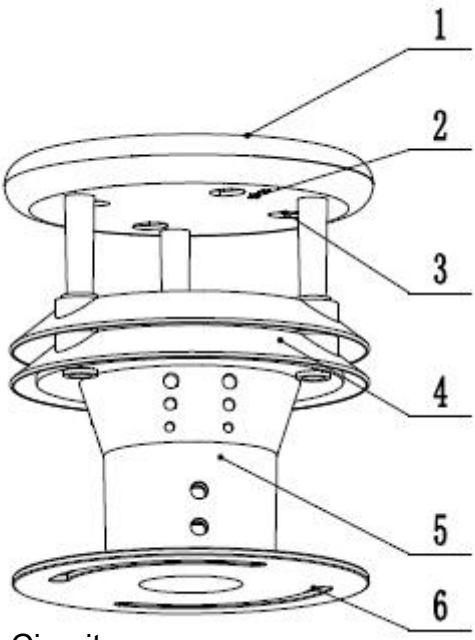
2.3 Technical datas

Parameters	Range	Resolution	Accuracy	Configuration
$PM_{2.5}$	0-1000ug/m³	1ug/m³	±10%(<500ug)	Optional
PM_{10}	0-1000ug/m³	1ug/m³	±10%(<500ug)	Optional
TSP	0-1000ug/m³	1ug/m³	±10%(<500ug)	Optional
CO	0-20ppm	0.01ppm	±5%F.S	Optional
NO2	0-1ppm	0.001ppm	±5%F.S	Optional
SO2	0-1ppm	0.001ppm	±5%F.S	Optional
O3	0-1ppm	0.001ppm	±5%F.S	Optional
TEMP	-40-60℃	0.01℃	±0.3℃ (25℃)	Optional
RH	0-100%RH	0.1%	±3%RH	Optional
Wind speed	0-60m/s	0.01m/s	±0.1m/s	Optional
Wind direction	0-360°	1°	±2°	Optional
Pressure	30-110Kpa	0.01Kpa	±0.25%	Optional
Rainfall(optics)	0-4mm/min	0.01mm	≤±4%	Optional
Rainfall(piezo)	0-4mm/min	0.01mm	≤±4%	Optional
Illumination	0-20W LUX	1lux	<±3%	Optional
Solar Radiation	0-1800W/m2	1W/㎡	<±3%	Optional
Noise	30-120dB	0.1dB	±1.5dB	Optional
CO2	400-5000PPM	1PPM	(±50+5%)PPM	Optional

Ⅲ、Drawings

3.1 WQX2 Ultrasonic weather station

(Ultrasonic wind speed, wind direction)

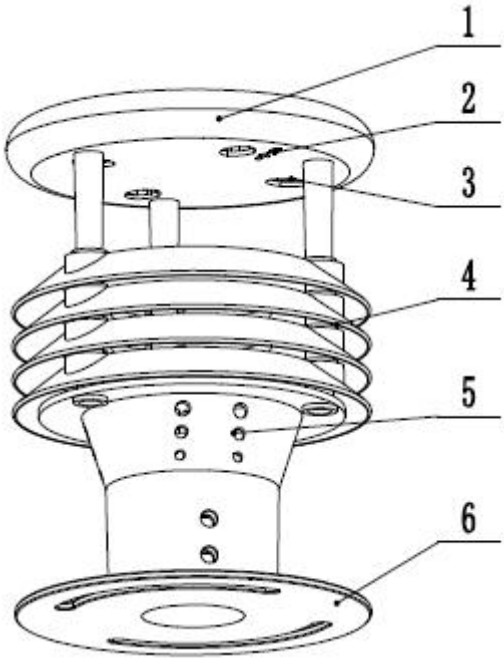


1. Pilot Circuit
2. North Arrow
3. Ultrasonic Probe
4. Thermometer Shelter
5. Pedestal
6. Flange

※Option:Electronic compass,GPS

3.2 WQX5 Ultrasonic weather station

(Ambient temperature, ambient humidity, wind speed, wind direction, barometric pressure)

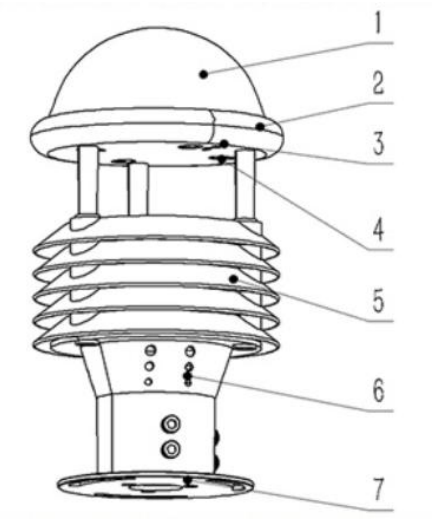


1. Pilot Circuit
2. North Arrow
3. Ultrasonic Probe
4. Thermometer Shelter
5. Temp, humidity, pressure sensors
6. Flange

※Option: Electronic compass, GPS

3.3 WQX6 Ultrasonic weather station

(Ambient temperature, ambient humidity, wind speed, wind direction, barometric pressure, rainfall)

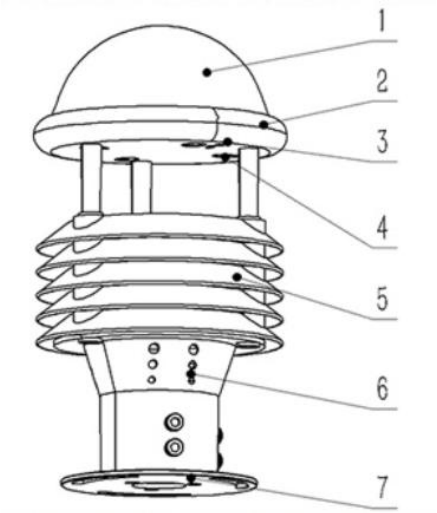


1. Rainfall Sensor(optics)
2. Pilot Circuit
3. North Arrow
4. Ultrasonic Probe
5. Thermometer Shelter
6. Temp, humidity, pressure sensors
7. Flange

※Option: Electronic compass, GPS

3.4 WQX7 Ultrasonic weather station

(Ambient temperature, ambient humidity, wind speed, wind direction, barometric pressure, rainfall, illumination/global radiation)

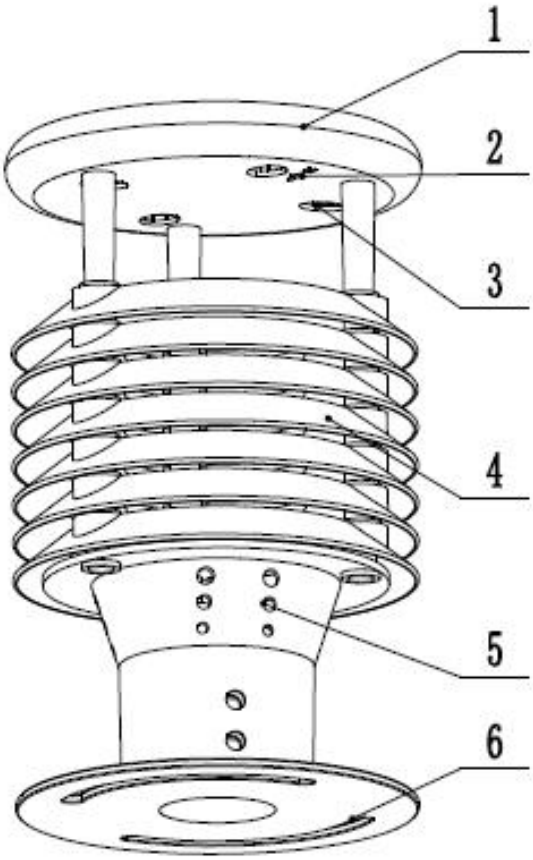


1. Rainfall/Radiation sensor
2. Pilot Circuit
3. North Arrow
4. Ultrasonic Probe
5. Thermometer Shelter
6. Temp, humidity, pressure sensors
7. Flange

※Option: Electronic compass,GPS

3.5 WQX8 Ultrasonic weather station

(Ambient temperature, ambient humidity, wind speed, wind direction, barometric pressure, PM2.5, PM10, noise)

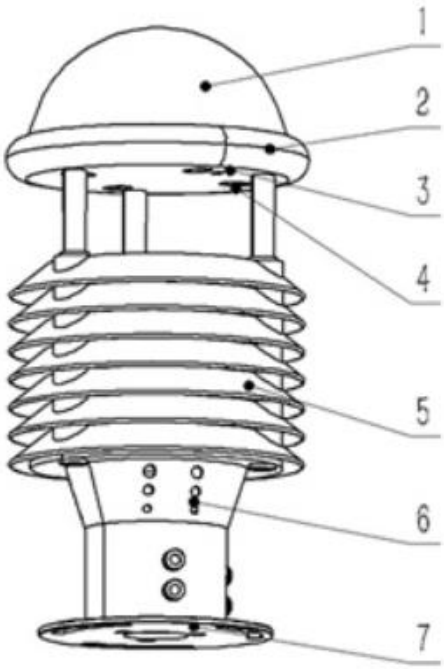


1. Pilot Circuit
2. North Arrow
3. Ultrasonic Probe
4. Thermometer Shelter, PM2.5, PM10
5. Other sensors
6. Flange

※Option: Electronic compass, GPS

3.6 WQX9 Ultrasonic weather station

(Ambient temperature, ambient humidity, wind speed, wind direction, barometric pressure, rainfall, global radiation,PM2.5, PM10)

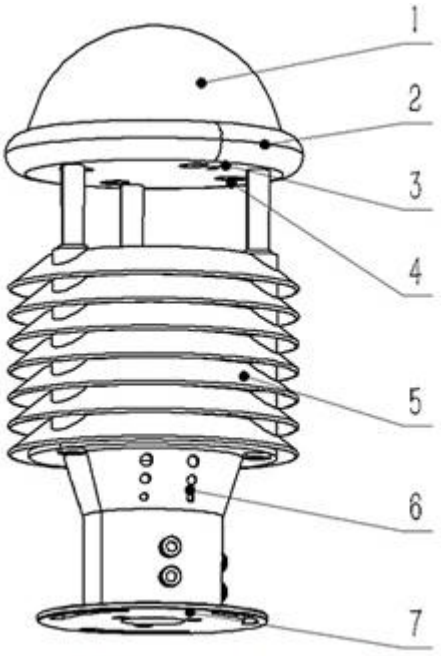


1. Rainfall/global radiation
2. Pilot Circuit
3. North arrow
4. Ultrasonic probe
5. Thermometer shelter
6. Other sensors
7. Flange

※Option:Electronic compass, GPS

3.7 WQX10 Ultrasonic weather station

(Ambient temperature, ambient humidity, wind speed, wind direction, barometric pressure, rainfall, illumination, PM2.5, PM10, noise)

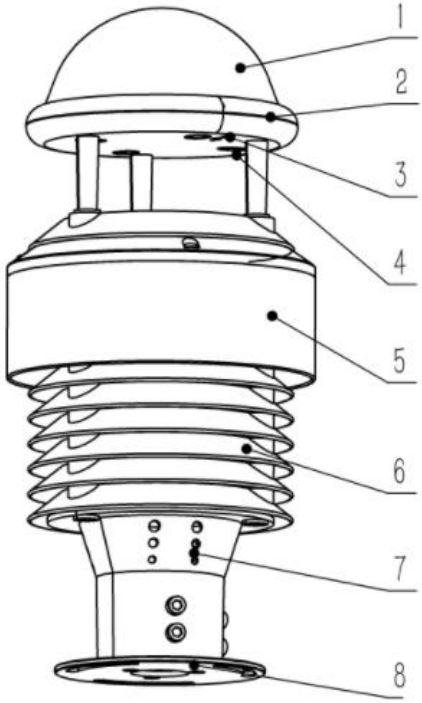


1. Rainfall/global radiation sensor
2. Pilot Circuit
3. North Arrow
4. Ultrasonic Probe
5. Thermometer Shelter
6. Other sensors
7. Flange

※Option:Electronic compass,GPS

3.8 WQX12 Ultrasonic weather station

(Ambient temperature, ambient humidity, wind speed, wind direction, barometric pressure, rainfall, PM2.5, PM10, CO, NO2, SO2, O3)

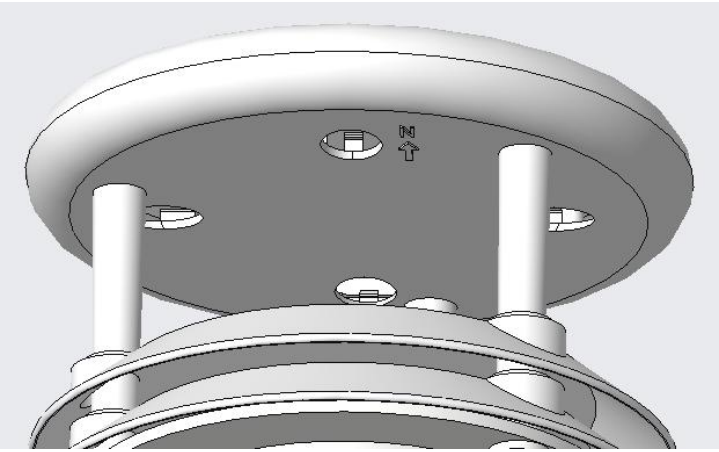


1. Rainfall sensor(optics)
2. Pilot Circuit
3. North Arrow
4. Ultrasonic Probe
5. Gas Sensors
6. Temp, humidity, pressure and other sensors
7. Air hole
8. Flange

※Option:Electronic

Ⅳ、Installation

4.1 Direction confirmation



Notice:Locating arrow

When installing, the locating arrow should be due north.The device sets due north as 0°, and increase by clockwise. If with electronic compass, then no need this step.

When confirm the due north direction, better use the equipment with magnetic declination correction. If have not, can adjust according to the longitude and latitude at device.

4.2 Installation site selection

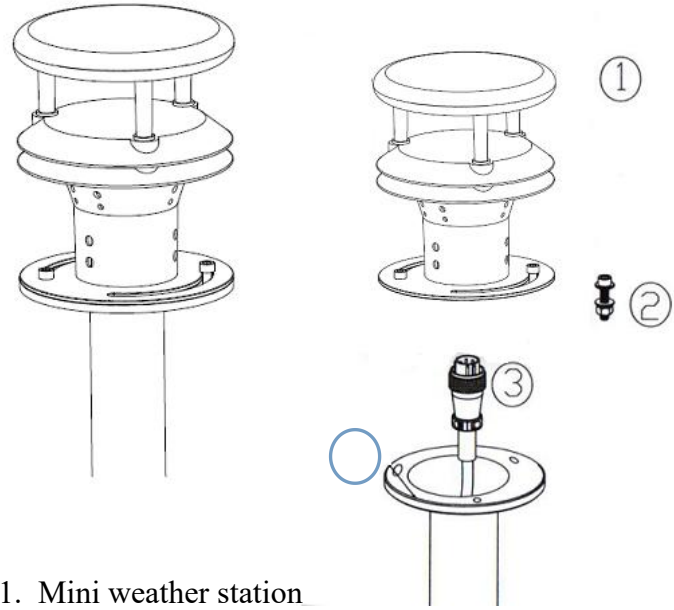
When choose site, better follow the below advice:

1. Make sure there is no similar ultrasonic devices.

2. The site is open wide will be better. Follow the wind is better.
3. The height is over than 1.5m.
4. For radiation data, should install at open wide site.

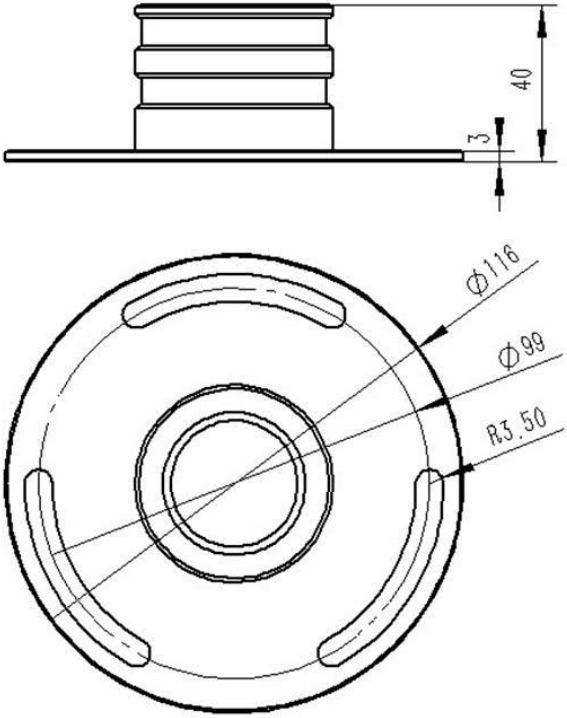
4.3 Fixing

4.3.1 Flange fixing

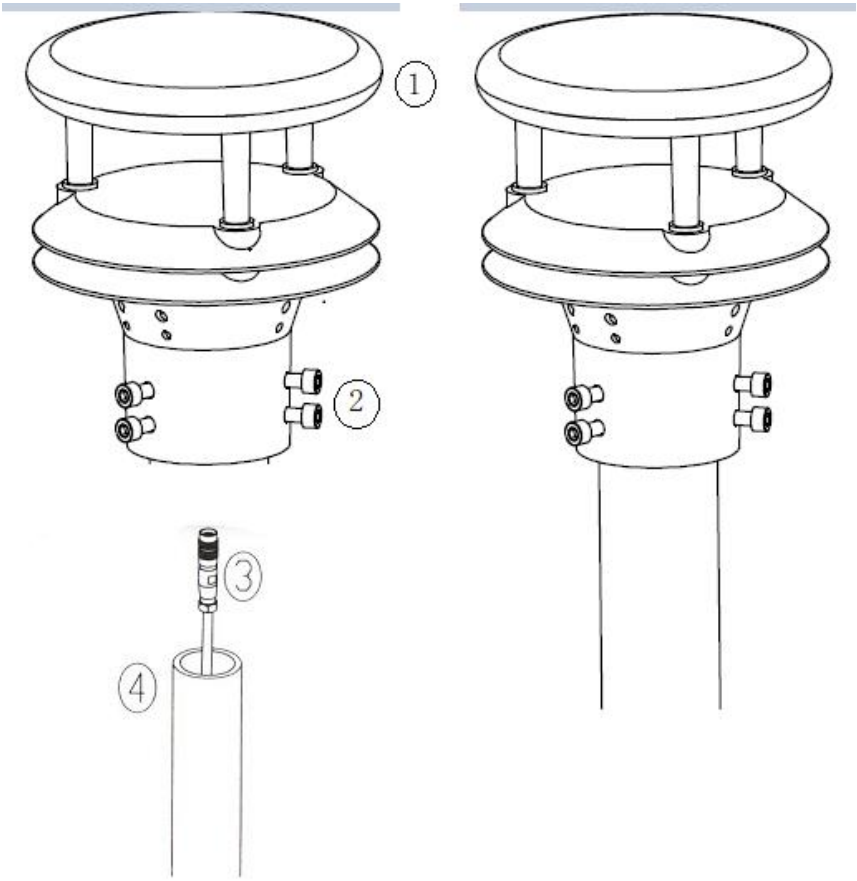


1. Mini weather station
2. Bolt
3. Telecommunication cable and RS485 plug(RS232 can be accepted)

4.3.2 Flange size

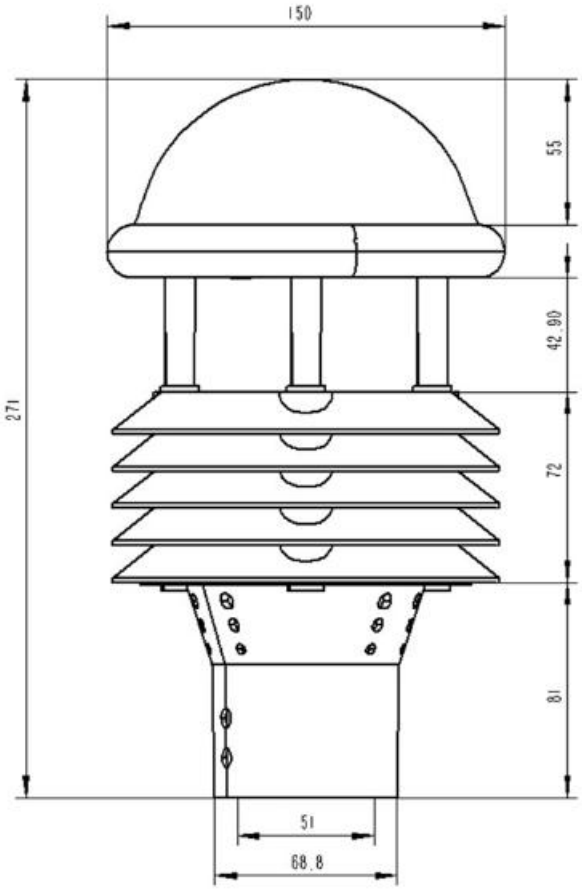


4.3.3 Telescopic fixing

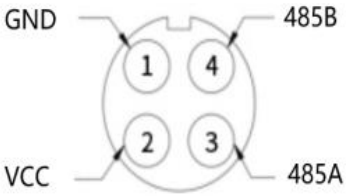


1. Mini weather station
2. Bolt
3. Telecommunication cable and RS485 plug(RS232 can be accepted)
4. Sensor support

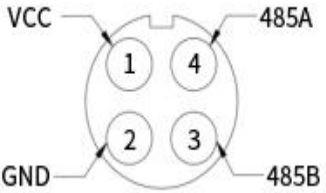
4.4 Product size(WQX6）



4.5 Wire map



Plastic waterproof terminal



Metal aviation head

Color Wires:

Wire:Red+ Black:- Green:485A Blue:485B

4.6 Wiring

Item		Remark
VCC	Positive pole	DC12V
GND	Power Ground	
485A	RS485A	
485B	RS485B	

Maybe will damage the device if wrong wiring.

Ⅴ、System parameter

Stability: <1%

Response time: < 2 s

Warm up time: 10S(SO2\NO2\CO\O3 12h)

Working current: DC12V≤60ma

Consumption：DC12V≤0.72W；

Lifetime: more than 3 years,except SO2\NO2\CO\O3\PM2.5\PM10 (1year without rugged surroundings).

Output:RS485、MODBUS (option:RS232)

Shell material: ASA engineering plastic

Work environment: Temperature:-30～70℃, Work humidity:0-100%

Storage condition: -40~60℃

Standard wire length:3m

Max. Wire length: RS485 200m

Ⅵ、Error description

Item	Solutions
No communication	Check the power supply and communication configuration parameters
Data exception	Check the sensor if clean Check if have interference

If the problem is not solved, please contact us. Don’t disassemble the equipment! If disassembled without permission, will lost the guarantee policy.