SYSOLUTION

6 in 1 Air Quality sensor R66

Specification

Version: Ver.1.1

Update Record

No.	Version	Remark	Date
1	Ver.1.0	Initial Release	2022.08.03
2	Ver.1.1	Update content	2024.07.29

Note: The document is subject to change without prior notice.

Product Introduction

The six-in-one air quality sensor R66 is designed by Xixun technology Company for the smart city and intelligent environmental monitoring fields, mainly to measuring the atmosphere PM2.5, PM10, ambient temperature, relative humidity, illumination and noise parameters. The product has a beautiful appearance and high degree of integration.

Applicable fields

R66 can be applied to urban grid-based environmental monitoring and controlling, intelligent street lights, scenic environmental monitoring, factories or mines, construction sites (site dust monitoring), urban roads, highways, public places and other places involved in air quality monitoring.

Product Features

1. real-time measurement with advanced sensing technology.
2. all-weather workability and strong weather resistance.
3. high measurement accuracy and stable performance.
4. compact and beautiful structure.
5. high integration, easy installation and disassembly.
6. maintenance-free, no field calibration required.
7. adopt ASA engineering plastic outdoor applications of strong UV resistance.
8. free test software, can provide quality inspection report for some parameters.

Parameter Description

Noise: High-precision electret pickups are selected to measure environmental noise in

A-weighting mode. With small size, high precision, high sensitivity and other characteristics.

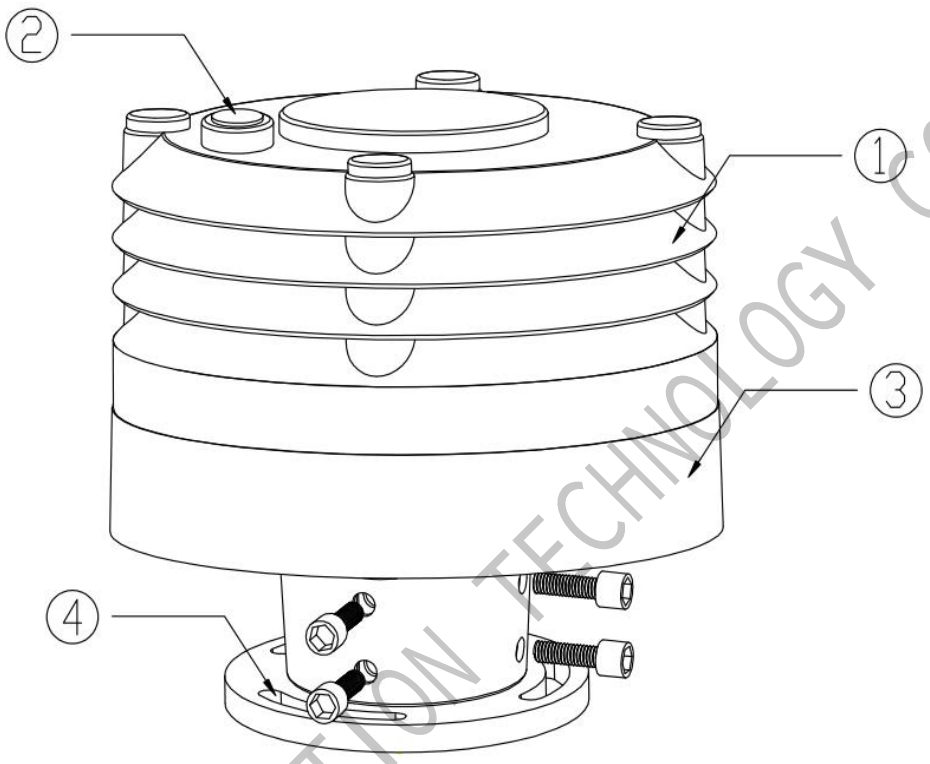
PM2.5, PM10: Digital universal particle concentration sensor based on laser scattering principle, which can continuously collect and calculate the number of suspended particles of different particle sizes in the air per unit volume, i.e. particle concentration distribution, and then convert into mass concentration, and output in the form of universal digital interface.

Illumination/radiation/photosynthesis: choose different specifications of optical components with special filters to measure light, total radiation, photosynthesis, UV and other data, integrated design without moving parts.

Product Images

Product Labels

Temperature, humidity, light level, noise, PM2.5, PM10



Number	Description
1	Shutter box (temperature, humidity) monitoring
2	Illumination
3	PM2.5, PM10, noise monitoring
4	Bottom fixing flange

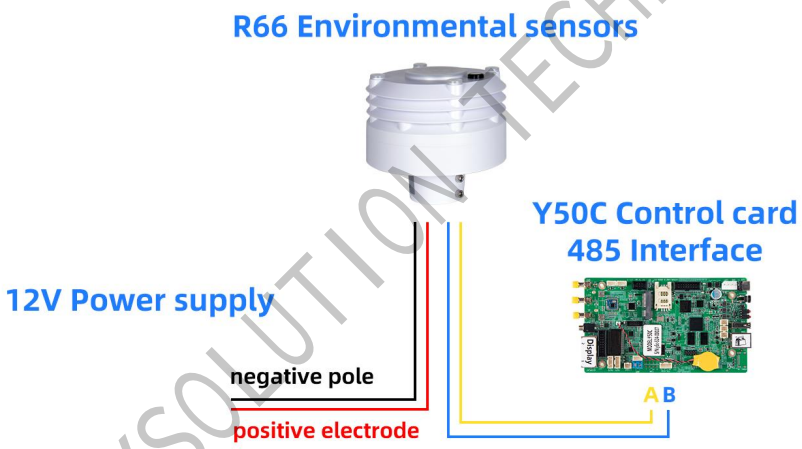
Product Parameters

Type	Parameter
Measurement principle	PM2.5、PM10： Laser Principle Air temperature, humidity: Switzerland Sensirion digital temperature and humidity sensor; light level: photoelectric principle, Germany ROHM digital light sensor chip; noise: sound sensor
Power supply range	DC12V～24V
Measurement Range	PM2.5/PM10：0～1000μg/m³；Temperature：-40～85℃；Humidity：0～100%RH Light：0～100 KLux； Noise：30～130dB
Accuracy	PM2.5/PM10: ± (10±10%) (<500ug/m³) Temperature: ±0.3℃ (at 25℃) Humidity: ±3%RH at 10%-80%, no condensation Illumination: ±3% of reading or 1% F-S; Noise: ±1.5dB
Power	<1w(12V)
Signal output	Default 485 output, MODBUSRTU protocols Expandable function: GPS positioning
Working environment	Temperature -40～85℃ Humidity 5～100%RH No condensation
Installation method	Sleeve fixed, with optional flange adapter.
Shell material	ASA material
Protection level	IP65

Product Wiring Definition

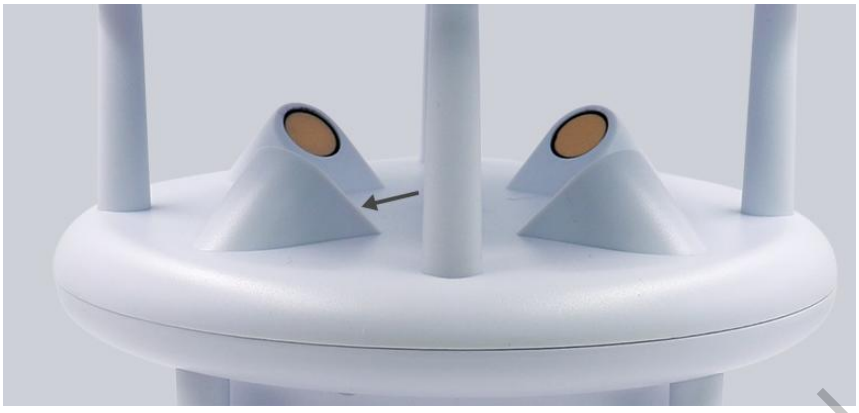
R66 Wiring Definition	
Red line	Positive power supply (DC12V or DC24V)
Black line	Power negative (DC12V or DC24V)
Yellow line	485 output A
Blue line	485 output B

Wiring diagram (take Y50C as an example)



Installation

Direction Option



Note: Arrow indicating location（R66 has no wind speed and wind direction is not considered, and R68 integrated wind speed and wind direction need to be installed according to the standard)

When installing the device, the arrow of the positioning indicator marked on the device should point to the north direction. The value of north of the device is 0°, increasing clockwise. 90 degrees is east.　Electronic compasses do not require pointing north installation.

ATTENTION It is best to use a device with magnetic deflection correction when looking north, or if not, adjust it according to the latitude and longitude of the device installed.

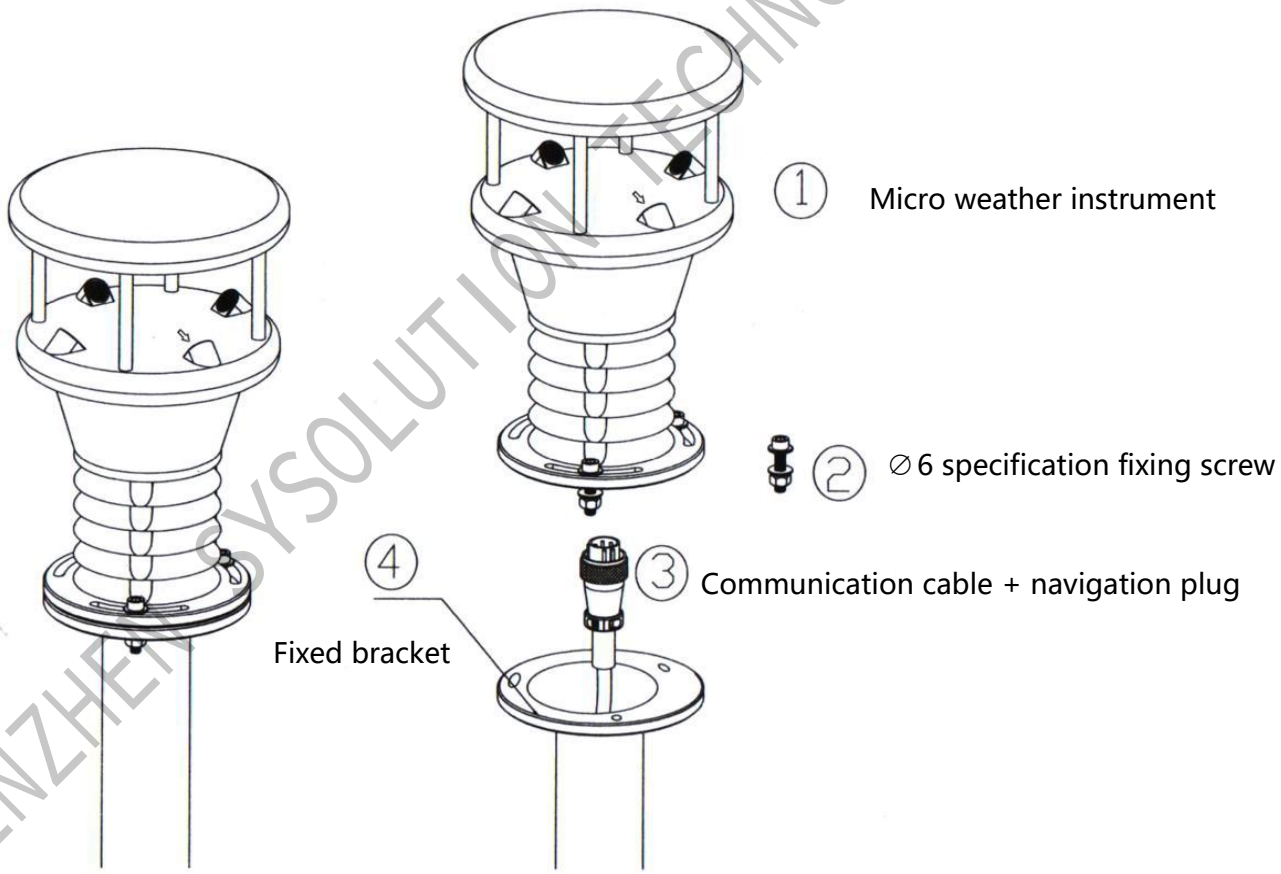
Installation Position Selection

When selecting an installation position, observe the following principles:

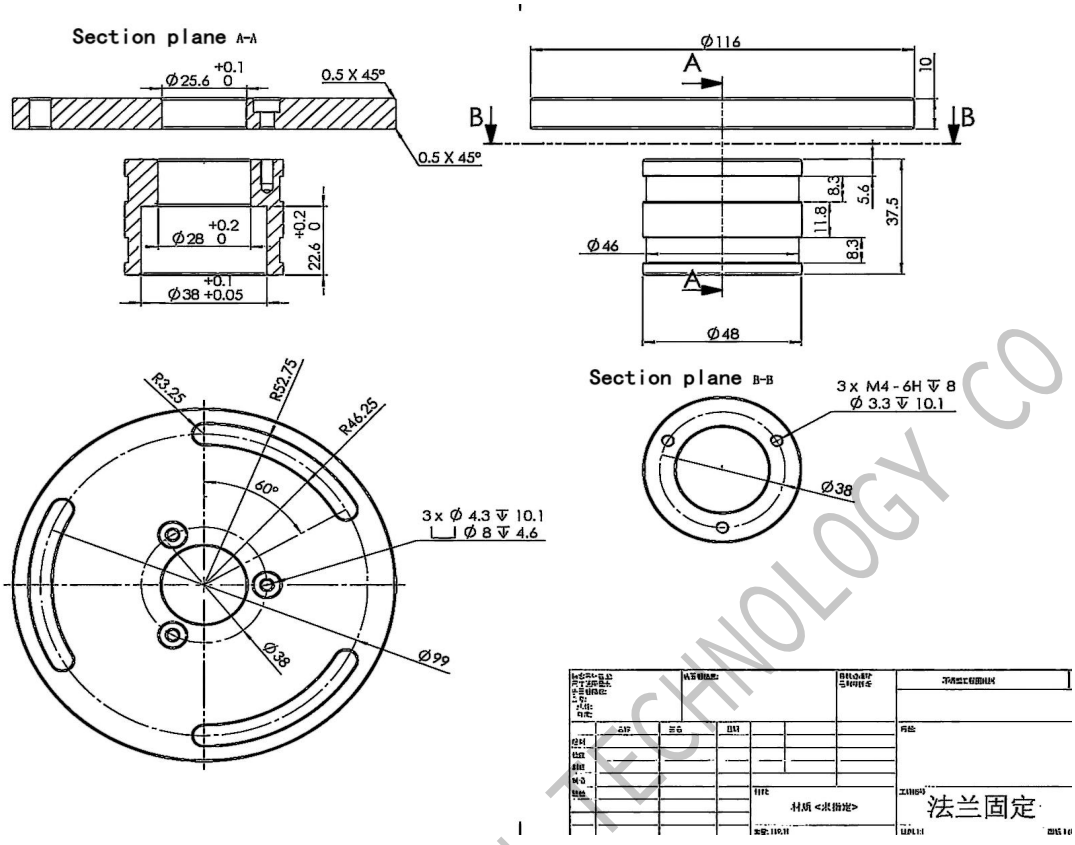
1. Ensure that there is no ultrasonic equipment of the same type around to avoid mutual interference;
2. The installation site should be open land, downwind side;

3. The installation height should not be less than 1.5m, and the installation distance from the nearest obstacle should be more than 10 times the height of the brick building;
4. If radiation parameters are included, it should be installed in an open field; The whole height Angle range is from sunrise to sunset, and the elevation Angle of obstacles within the range is no more than 5° without any shadow falling on the sensor, avoiding thermal radiation, steam and bright color buildings.

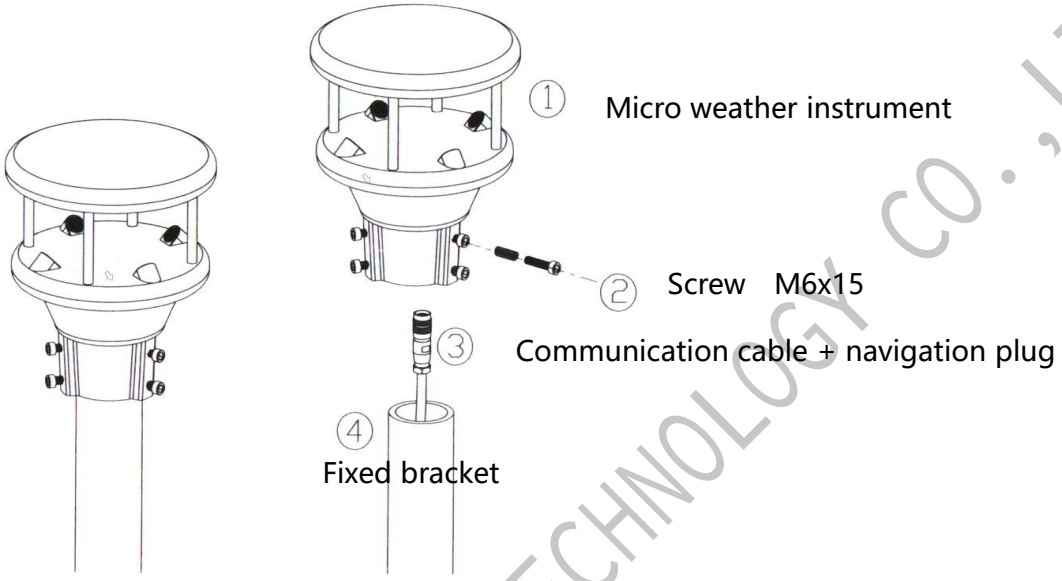
Flange Fixing



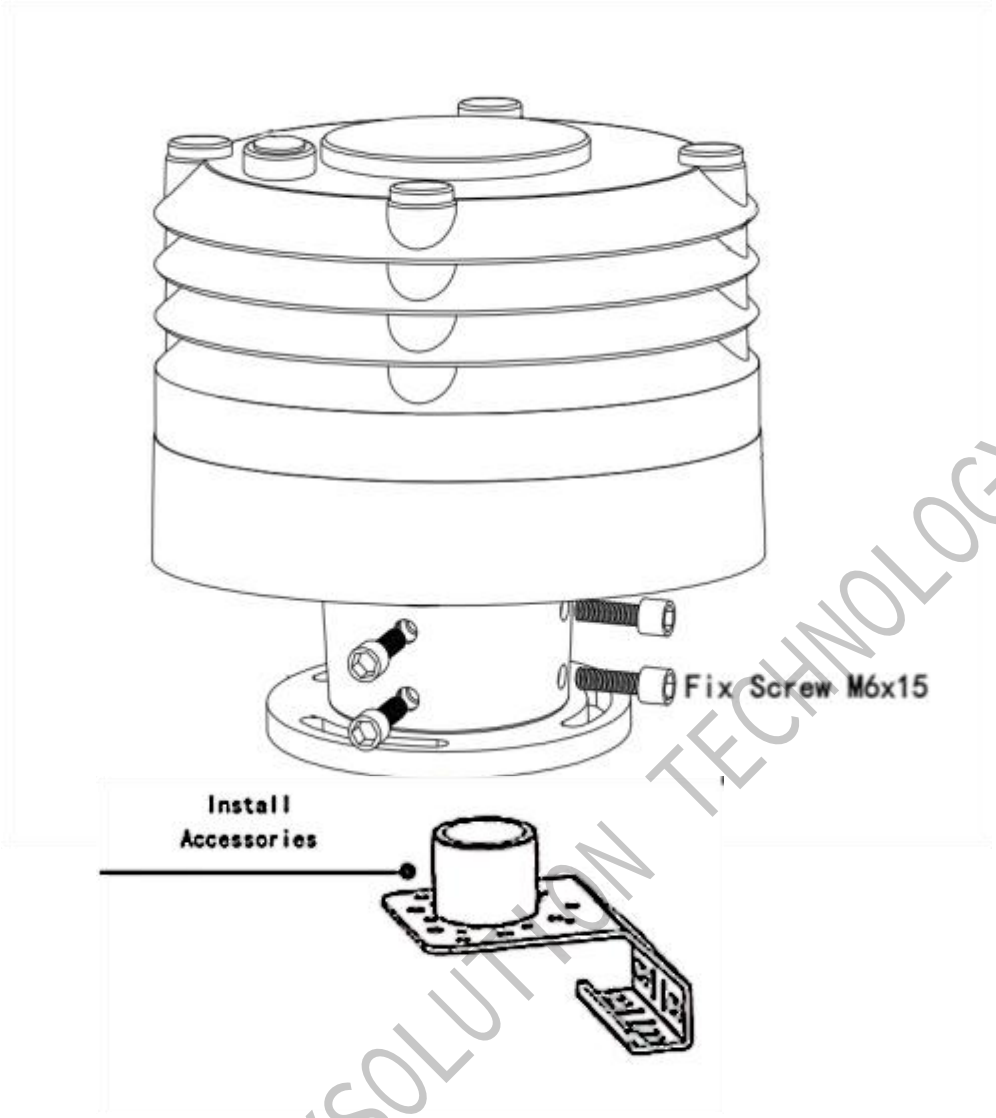
Flange disc size



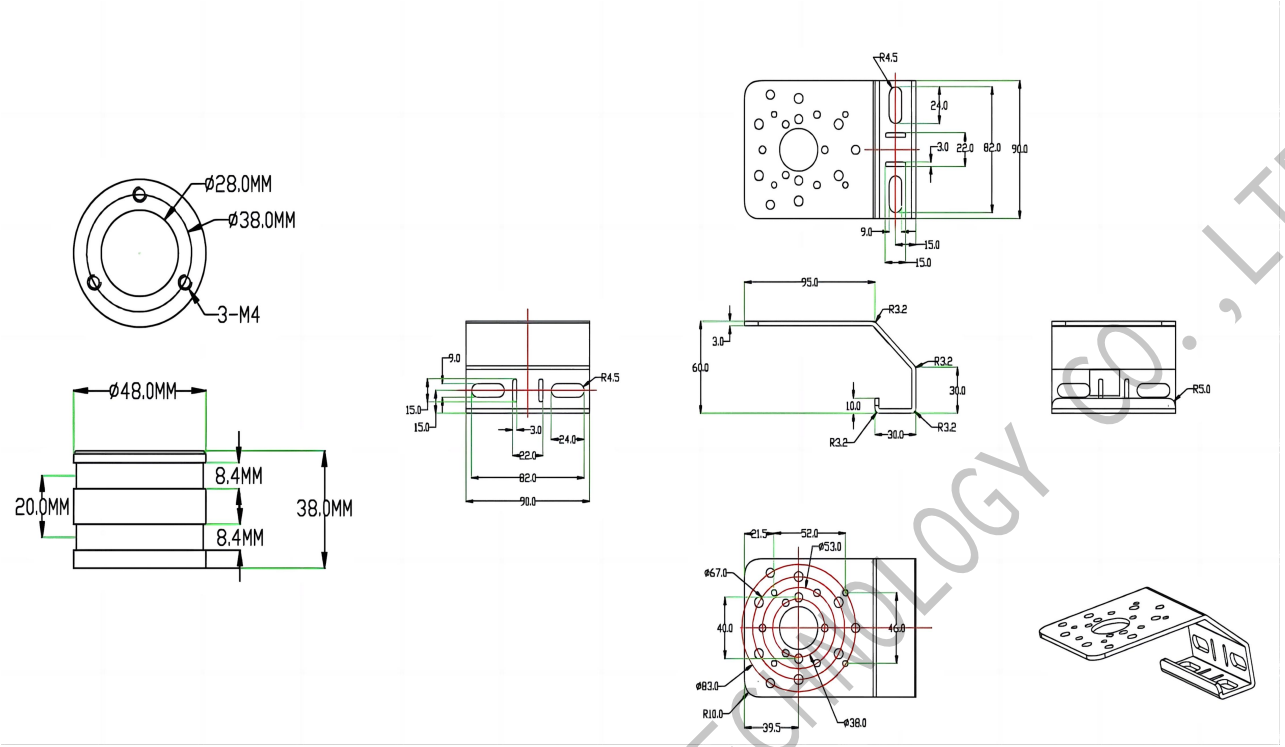
Installation method 2:Sleeve Type Fixation (Outer aperture 47 / 48mm)



Installation method 3: Bend plate installation



Bend plate size



Attention： The above installation methods do not include standard accessories such as flange plates, sleeves, and bending plates. Users need to bring their own or entrust Xixun to customize, which will take about 7 days for delivery;

MODBUS Protocols

Baud Rate	Data bit	Stop bit	Check digit
9600	8	1	NO

Communication protocols

Inquiry Frame

Parameters	Values	
Address Code (1byte)	0x01	
Function Code (1byte)	0x03	
Start Address (2byte)	0x00,0x00	
Data Length (2byte)	0x00,0x0D	
Checksum Low (1byte)	0x65	
Checksum High (1byte)	0xCE	

Answer Frame

Parameters	Hex value	Unit	Decimal value
Address Code (1byte)	0x01		
Function Code (1byte)	0x03		
Number of valid bytes (1byte)	0x1A		
Humidity(2byte)	0x02 0x0A	0.1%RH	52.2

Temperature(2byte)	0x00 0xE5	0.1℃	22.9
Reserved Fields (4byte)	0x00 0x00 0x00 0x00		
PM2.5(2byte)	0x00 0x13	1ug/m³	19
Reserved Fields (4byte)	0x00 0x00 0x00 0x00		
Light value (4byte)	0x00 0x00 0x00 0x74	1lux	116
PM10(2byte)	0x00 0x14	1ug/m³	20
Reserved Fields (4byte)	0x00 0x00 0x00 0x00		
Noise (2byte)	0x02 0x73	0.1dB	62.7
Checksum Low (1byte)	0x7F		
Checksum High (1byte)	0x53		

The humidity, temperature, PM2.5, PM10, light value and noise data in the above response frames are all examples.