LEFOO

LFG60

ALL-IN-ONE AIR QUALITY TRANSMITTER

PRODUCT OPERATION MANUAL

TECHNICAL PARAMETERS

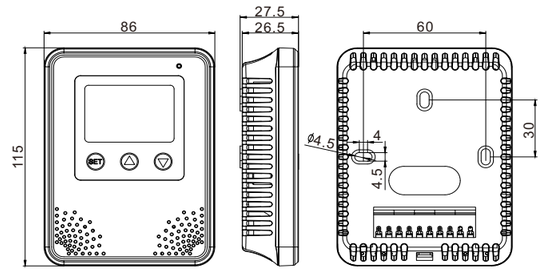
Temperature	
Sensor	Digital temperature sensor
Range	0~50℃
Accuracy	±0.5℃@20℃； ≤±1℃@0~50℃
Response time	10~30S (20℃, slow flow air)
Relative humidity	
Sensor	Digital humidity sensor
Range	0~100%RH
Accuracy	Typical ± 3% RH @ 20℃ & 20 to 80% RH
Response time	≤10S (20℃, slow flow air)
PM2.5/PM10	
Sensor	Laser dust sensor, detection particle size 0.3~10μm
Range	PM2.5:0~500μg / m³, with a particle size of 0.3~2.5μm
	PM10:0~600μg / m³, particle size 0.3~10μm
Precision/consistency	PM2.5: ±10μg / m³@0~100μg /m³, ±10%FS@100~500/600μg /m³, @25℃
Resolution ratio	1μg /m³
Response time	Continuous measurement mode with single response time <1S, Integrated response time <10S
CO2	
Sensor	The NDIR sensor, with the ABC self-check function
Range	0~5000ppm
Accuracy	(±40ppm±3%MV)ppm
Response time(T_{90})	2min

VOC	
Sensor	Metal oxide semiconductor gas sensor
Range	0~2ppm
Resolution ratio	1ppb
Preheating time	First power-up for 1 hour; pre-heat for 3min
Formaldehyde	
Sensor	Electrochemical-type gas sensor
Range	0~1ppm
Accuracy	±10%FS@25℃
Response time(T_{90})	<120S

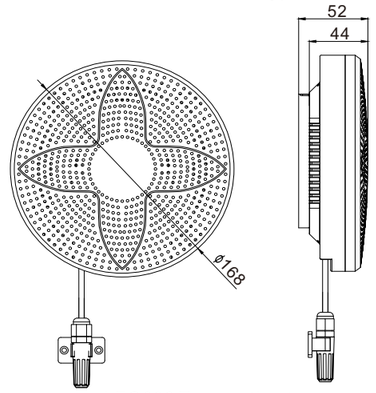
Power Supply Voltage	12～36VDC / 24VAC±20%
Output Signal	Isolation / non-isolated RS485
Work Environment	0~50℃ & 0 ~ 95% RH (no condensation)
Storage Temperature	-20~60℃ & 0 ~ 95% RH (no condensation)
Display and Buttons	Indoor type can be optional
LED pilot lamp	Indoor type can be optional Green: good air quality yellow: air quality is generally red: poor air quality
Levels of Protection	IP30
Way to Install	Indoor type, Top-suction type
Case Material	Indoor type: PC Top-suction type: ABS
Weight	Indoor type: 148g Top-suction type: 235g

Note: When using 24VAC as the power supply, it need be an isolated power supply.

OVERALL DIMENSIONS(mm)



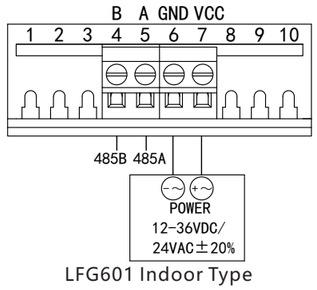
LFG601 Indoor type



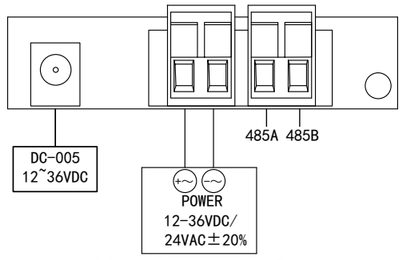
LFG602 Top-suction type

WIRING INSTRUCTIONS

According to the different types, the following indoor type and top suction connection mode. The top suction type is equiped with DC-005(5.5*2.1mm) power socket, can be powered by either power adapter (12~36VDC), or by direct terminals wiring (12~36VDC / 24VAC ± 20%), but these two power supply mode can not be connected at the same time!



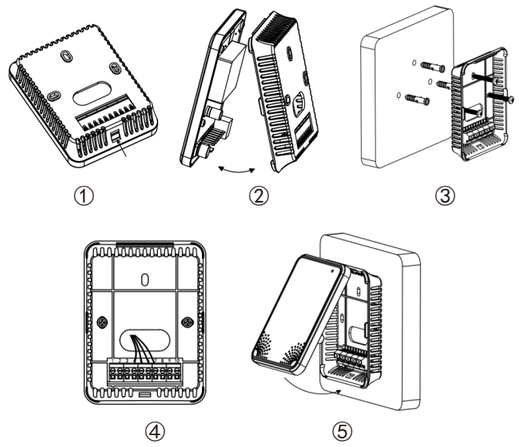
LFG601 Indoor Type



LFG602 Top-suction Type

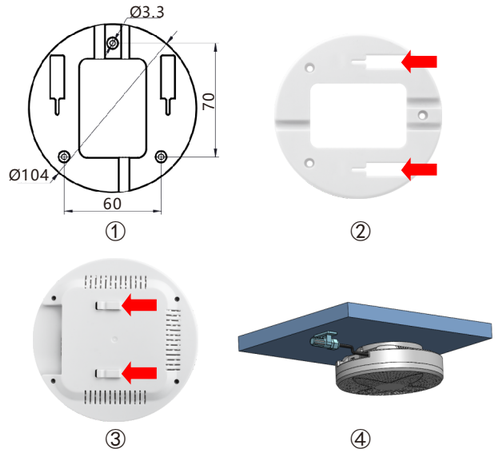
INSTALLATION INSTRUCTIONS

INDOOR TYPE



1.Press the open cover button under the back cover of the transmitter to open the transmitter (as shown in Figure 1 and 2);
2.Complete the electrical connection according to the wiring diagram, and pass the cable from the hole;
3.There are three mounting holes in the back cover of the transmitter, which shall be fixed on the wall with expansion screws (see Figure 3), or into the switch box embedded in the wall with screws (see Figure 4);
4.Align the front cover and the bottom to complete the installation (see Figure 5).

TOP SUCTION TYPE



1.Drill 25mm deep holes in the wall, fix the mounting base to the wall or roof, install the hose space as shown in Figure 1 (provided with ST3*20 screws and φ4*20 plastic expansion tubes);
2.Complete the electrical connection according to the wiring diagram;
3.After fixing the mounting base, clip the transmitter into the mounting base, as shown in Figure 2 and 3, once heard clipped sound means it has been installed in place;
4.Fix the external temperature and humidity clip with expansion screws to complete the installation, as Figure 4.

BUTTON OPERATION INSTRUCTIONS

BUTTON OPERATION INSTRUCTIONS

	Main interface function	Set the page function	Set the parameter function
SET	Long press to enter the setting page	1. Short press to enter the Settings page Set parameters (set parameter flicker) 2. Long press to return to the main interface	1. Short press to confirm the parameter setting (not flashing after confirming the setting parameters), and go to the next parameter setting or corresponding setting page 2. Long press to return to the main interface (confirm setting parameters, save new parameters)
Λ	Short press to switch the parameters displayed	Short press up to turn the setting page	1.Short press value increases 2. Long press value increases rapidly
V	Short press on / off backlight	Short press to turn to the setting page	1. Short press value decreases 2. Long press the value quickly

Note: Long press is the long press button 2S

MENU INTRODUCTION

1.THE PASSWORD PAGE

password:00000

Press "SET" key 2S on the main interface, enter the password input page, press "SET" key short, Enter"∧""∨" to set password "00003".

2.COMMUNICATION PARAMETER SETTING PAGE

ID: 1 SET
Baud:9600
AddrSW:1
0:Disable 1:ENA

Set the address ID, port rate and address dialing enable (0: disabled, 1: enable); short press "SET" key to modify the parameters through "∧""∨", short press" SET "key again to confirm the parameters, long press " SET " key to save the parameters.
Note: For address dial enabling settings,
1.If the enabling and address dialing code is not 0, the setting ID is not saved, and the software cannot modify the ID;
2.When enabling and the address dial code is 0, set the ID to save, and the software can modify the ID;
3.The address dial code is invalid when disabled.

3.COMMUNICATION VERIFICATION SETTING PAGE

Parity: 0 SET
0:None
1:Odd
2:Even

Set communication check; press "SET" and "∧""∨" to increase or decrease the parameters, then "SET" again to confirm the parameters, and "SET" to save the parameters.

Setting 0: no check; setting 1: odd check; setting 2: even check

4.SENSOR ENABLES THE SETTING PAGE

T&RH: 1 ON SET
VOC : 1 ON
CO_2 : 1 ON
ABC : 1 DIS

Set the sensor enabling state, if closed, the display page does not show the corresponding parameters, and the data is not updated:

T&RH 0: Temperature&humidity off / 1: Temperature&humidity on

VOC 0 : VOC off / 1 : VOC on

CO2 0 : CO2 off / 1 : Co2 on

ABC 0 : CO2 ABCSelf-check is off / 1 : CO2 ABCself-check is on①

HCHO: 1 ON SET
$PM_{2.5}$: 1 ON
IDLE : 0 DIS

HCHO 0:Formaldehyde off/1:Formaldehyde on

PM2.5 0:PM2.5 off/1 :PM2.5 on

IDLE 0:PM2.5 Normal normally/1:PM2.5 dormant②

When setting, the right bar will show the current set item status, short press "SET" key, through "∧""∨" to modify the parameters, again short press "SET" key to confirm the parameters, long press "SET" key to save the parameters.

Note: ① ABC self-check period is 8 days; ② once enter hibernation, PM2.5 and PM10 do not update the data

5.SINGLE POINT OF OFFSET SETTING PAGE

OffsetT : 0
OffsetRH : 0
OffsetVOC : 0
OffsetCO_2 : 0

Set the single point calibration deviation value of each parameter, press "SET" key, press "∧""∨" to increase or decrease the parameters (long press rapid increase or decrease), press "SET" key again to confirm the parameters, and press "SET" key to save the parameters.

OffsetHCHO: 0
Offset$PM_{2.5}$: 0
OffsetPM_{10} : 0

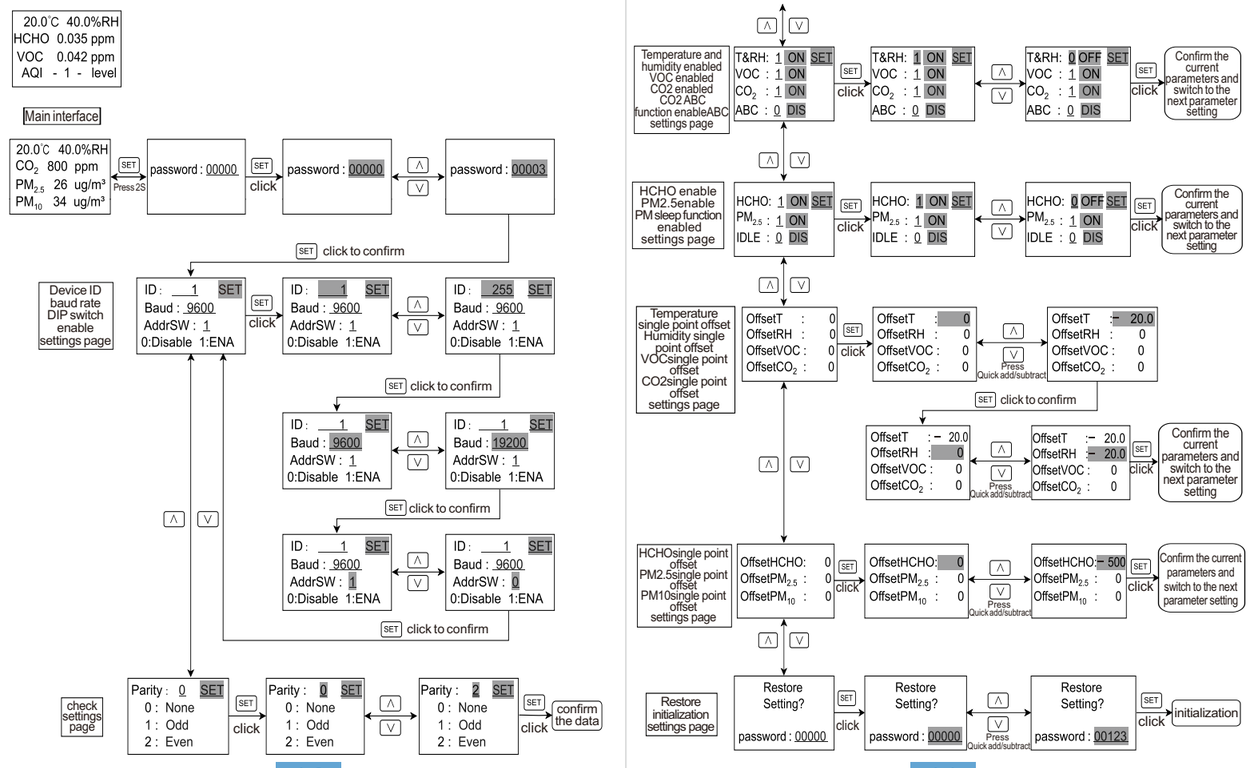
Note:Final transmitter output value is: display value (output)=actual measurement value+deviation value

6.INITIALIZE THE SETTING PAGE

Restore Setting?
password:00000

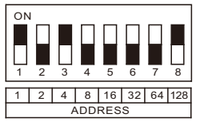
Restore the initial setting password, short press "SET" key, through "∧""∨" (long press "00123"), short press "SET" key again to restore the initial setting, need handle with care.

DIAGRAM OF MENU



OTHER FUNCTIONS

ADDRESS DIAL



If it is turned to the ON side, add the subscript ADDRESS column number accordingly.
As shown in the figure, the address is: 1+4+128=133, corresponding to 0x85 (hexadecimal).1 + 4 + 128=133, corresponding to 0x85 (sixteen).

Note: Power on again to update the DIP address; only when the DIP address is 0, the device ID address can be modified through software.the dial address is 0.

LED INDICATOR(FOR INDOOR TYPE ONLY)

	Green: Air quality good	Huang: Air quality is average	Red: Poor air quality
CO2(ppm)	< 800	800 ~ 1200	> 1200
PM2.5(ug/m³)	< 75	75 ~ 150	> 150
VOC(ppm)	< 0.220	0.220 ~ 0.650	> 0.650
HCHO(ppm)	< 0.100	0.100 ~ 0.500	> 0.500

Note: When the air quality is poor, the corresponding gas concentration value will become negative display indicator.

Note: VOC measures the Volatile Organic Compound concentration,and is used as an indicator of indoor air quality.Limits and recommendations are based on a large number of studies correlating health issues to prolonged exposure to high VOC levels. The table below is based on the recommended standards based on VOC levels from the German Federal Environment Agency (UBA).

AQI	VOC		Propose	Exposure restrictions
#	mg/m³	ppm		
5	10~25	2.2~5.5	Inevitable need for enhanced ventilation strengthen ventilation	one hour
4	3~10	0.65~2.2	Strengthen ventilation and find a source	<1 Month
3	1~3	0.22~0.65	Strengthen ventilation and find a source	<12 Months
2	0.3~1	0.065~0.22	Adequate ventilation	unrestricted
1	<0.3	0~0.065	Target value	unrestricted

PRECAUTIONS

Before use, please confirm: the power output voltage is correct; cut off the power during installation and wiring;

- Do not use this product as a safety or emergency stop device, or in any other application where personal injury may result;
- This product is suitable for ordinary indoor environment measurement. If the user places the instrument in an environment that exceeds the measurement range for a long time, the measurement accuracy may decrease; in environments with high water mist (such as hot springs, bathrooms) and oil fumes (such as kitchens) When used in normal environments, excessive dust accumulation, oil accumulation, and water intrusion may cause a decrease in accuracy or even damage;
- When installing and using the product, avoid direct sunlight or direct contact with heat/cold sources; avoid vibration, which has a certain impact on accuracy;
- The product installation position should be more than 20cm above the ground to prevent large particles of dust and floc near the surface from entering the sensor, causing sensor contamination and reduced accuracy;

- The product cannot be placed in an environment containing corrosive gases (such as various sulfides, etc.) for a long time, which will damage the touch sensor. If it is exposed to high concentrations of organic gases (such as methane, ethylene, benzene, etc.) for a long time, it will cause the sensor to zero. Drift occurs and recovery is slow; it is prohibited to store and use it in high-concentration alkaline gas for a long time;
- The air inlet of the sensor must not be blocked or contaminated. Special attention should be paid to protection in high-pollution environments such as during decoration.

Q&A

Fault	Analysis of causes	Solutions
Unable to communicate	1.A and B communication lines are connected reversely; 2. Incorrect power supply or loose wiring; 3. Address, baud rate or parity settings do not match; 4. Failure to communicate according to the communication protocol;	1.Check and perform correct wiring; 2.Check the power supply; 3.Check whether the communication test software is set correctly; check whether the product address and baud rate settings match; 4.Communicate according to the communication protocol;
VOC output is abnormal	1. Insufficient preheating time 2.Being in a high-concentration environment for a long time	1.Check the data after 1 hour of warm-up; 2.Place in a naturally ventilated environment for more than 24 hours; 3.Perform baseline initialization with reference to the communication protocol;
Abnormal formaldehyde output	1.Place for a long time; 2.Smells such as alcohol, perfume, citrus, etc. will cause the sensor value to be too high.	1. Preheat for 24 hours until the sensor is fully stable; 2. Check the data after eliminating interfering odors;