LEFOO

LFG61
Carbon Dioxide, Temperature And Humidity Transmitter
Product operation manual

Specification

1)Relative humidity

Sensor	Digital
Range	0%~100%RH
Output	RS485/Modbus, 0~10VDC, 4~20mA
Accuracy	±3%@ 20℃ & 20~80%RH
Pesponse time	≤10s(at 20℃, in slow-flowing air)

2)Temperature

| Sensor	Digital or RTD(see selection table)
Range	0~50℃, -20~60℃, etc
Output	RS485/Modbus, 0~10VDC, 4~20mA
RTD	See selection table and RTD calibration table
Accuracy	Digital sensor: ±0.5℃(@0~50℃),see table below RTD: Typical±0.2~0.5℃@25℃,see selection table

3)CO2

| Sensor	NDIR sensor with ABC self-calibration function
Sensor life	>5 years
Range	0~2000ppm, 0~5000ppm, etc
Accuracy	±(40±3%MV)ppm
Output	RS485/Modbus, 0~10VDC, 4~20mA
Response time(T_{90})	2min

Power Supply	16~35VDC/24VAC±20% Note: When using AC power, an isolation transformer is required.
Output Load	≥10KΩ(voltage type); ≤500Ω(current type)
Display Resolution	0.1℃, 0.1%RH, 1ppm
Display and Buttons	Optional LCD with unit display, backlight, and buttons
Relay	1×SPDT, 3A/30VDC, 3A/250VAC
Enclosure Material	Housing:PC; Probe:PA6
Operating Environment	Probe:-20~60℃&5%-95%RH(non-condensing) Housing:0~50℃&5~85%RH(non-condensing)
Storage Environment	-20~60℃
Protection Rating	IP65(excluding probe), IP30(including probe)

LFG61 Temperature Accuracy Curve
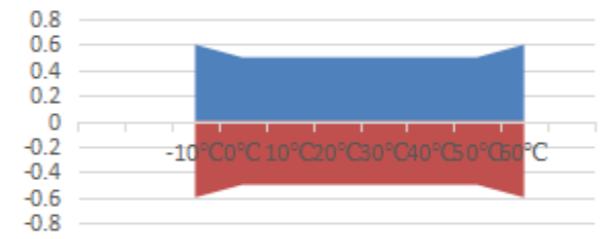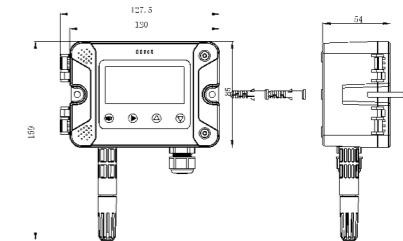
Dimensions

(Wall-mounted) Dimensions ▲
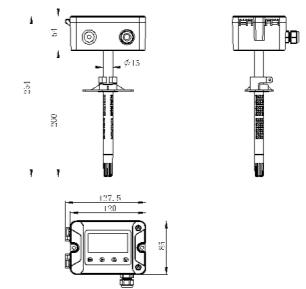
(Duct) Dimensions ▲

Wiring And Installation

Wiring Instructions
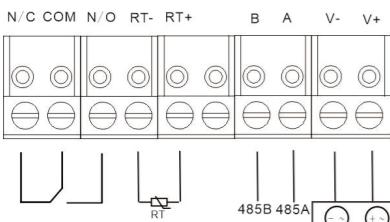
RS485 Output
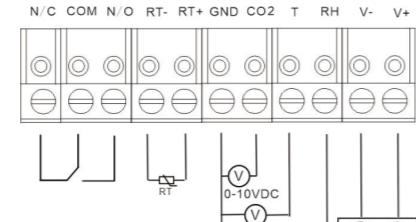
Voltage Output
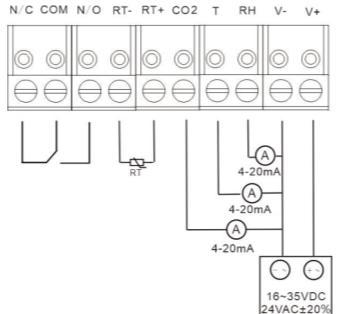
Current Output

Product Installation

① ② ③ ④ ⑤
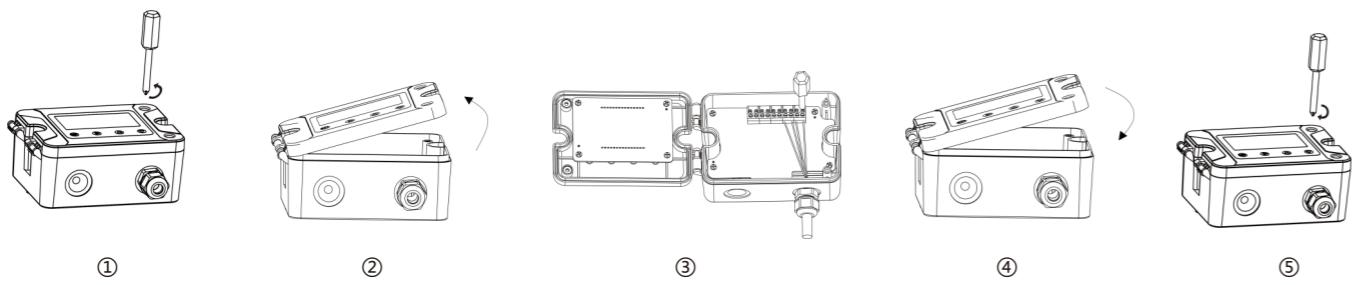
Wall-mounted Installation Cutout   Flange-mounted Installation Cutout
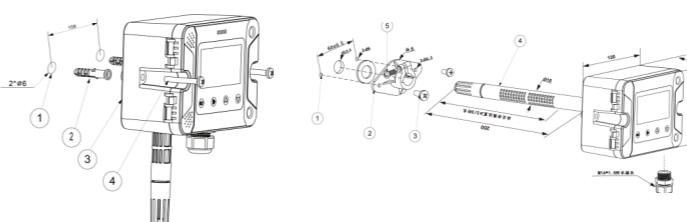
Wall-mounted Installation ▲   Duct Installation ▲

As shown in the above diagram, before installing, first complete the wiring in the following order: ①Loosen the screws ②Open the top cover ③Connect the corresponding wires according to the wiring diagram ④Close the top cover ⑤ Tighten the screws. After wiring, choose the installation method according to the product type:

Wall-mounted Installation:① Drill two parallel holes (Φ6 mm) on the wall, 108 mm apart.
② Insert plastic expansion anchors into the drilled holes.
③ Position the transmitter and adjust the mounting hole alignment.
④ Tighten the fixing screws.

Duct Installation:① Drill a through-hole (Φ15.5 mm) in the duct, and drill two additional holes (Φ6 mm) on both sides of the through-hole, 60 mm apart.
② Attach the flange sealing gasket to the duct.
③ Fix the flange onto the duct.
④ Insert the probe into the duct (the flange installation position must cover at least 2/3 of the probe length).
⑤ Tighten the flange screws to secure the probe.

Function Description

Button Instructions

Button	Function	Usage Instructions	Remarks
SET	Menu / Confirm Button	1. Long press SET for 3 s to enter the menu selection page. 2. On the menu page, single press SET to enter the parameter modification page; parameters that can be modified will flash on the screen. 3. On the parameter modification page, double press SET to return to the menu selection page. 4. On the menu page, long press SET to return to the main display.	
∧	Up / Increase	1. Press to select the menu page to modify. 2. Press to increase the current parameter by 1.	Some parameters exceeding limits will directly display upper/lower limit.
∨	Down / Decrease	1. Press to select the menu page to modify. 2. Press to decrease the current parameter by 1.	Some parameters exceeding limits will directly display upper/lower limit.
>	Shift	1. Change the flashing cursor position. 2. Double press during CO2 calibration to modify. 3. Double press during factory reset to modify.	

Display Interface

1.Slave Address Setting (F11 Addr) – Applicable for RS485 Version

Press and hold the "SET" key for 3 seconds to enter the menu selection page. Press the "∧""∨" key to switch to the slave address setting interface "F11 Addr". Short press the "SET" key, and the screen will flash to display the current slave address. The slave address can be set within the range of 1~255, with the default value being 1. The slave address consists of three digits. Press the " > " key to move the flashing cursor to the next digit. When a digit is flashing, press the "∧""∨" key to increase or decrease the number by 1.
After modifying the slave address, double-click the "SET"key to save the setting. The display will return to "F11 Addr". If you need to modify other parameters, press the "∧""∨" key to select the desired interface. If no further changes are needed, press and hold the "SET" key to return to the normal display interface. The modification method for other parameters is the same as for the slave address.

After pressing the SET key, the digits will start flashing.

After pressing the key, you can move the flashing digit to the position you want to modify.

Press the key to adjust the value by ±1 to the desired number.

Double-press SET to save and return.

Press and hold SET to return to the display interface.
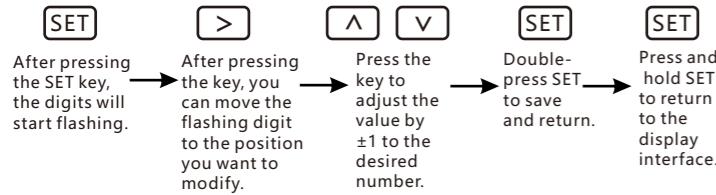
2.Baud Rate Setting (F12 bAud) – RS485 Version

In the F12 bAud interface, short press "SET" to enter the baud rate setting. Use the "^""v" keys to select the baud rate. There are 7 options (0–6):
0 → 4800; 1 → 9600 (default); 2 → 14400;
3 → 19200; 4 → 38400; 5 → 57600; 6 → 115200

3.Parity Setting (F13 PArt) – RS485 Version

In the "F13 Part"interface, short press "SET" to enter the parity setting. Use the "^""v" keys to select parity: non → No parity; odd → Odd parity; EvEn → Even parity.

4.Temperature Range Setting Interface (F11 tr-H, F12 tr-L) – Analog version

Taking the high temperature point as an example: in the "F11 tr-H" interface, short press the "SET" key to enter the high temperature range setting interface. Use the "^""v" keys to set the high temperature range. (The low temperature range is set in the "F12 tr-L" interface.) The maximum high temperature range can be set to 120°C, and the minimum low temperature range can be set to -40°C.
Note: The main unit of the product can only operate continuously within 0–50°C. Accuracy of CO2 cannot be guaranteed outside this range.

5.CO2 RANGE SETTING INTERFACE (F1 CO2)

In the "F1 CO2" interface, short press the "SET" key to enter the CO2 range setting interface. Use the "^""v" **keys** to adjust the CO2 range.The maximum can be set to 9999 ppm, with a step of 1000 ppm.

6.Temperature Unit Setting Interface (F2 t)

In the "F2 t" interface, short press the "SET" key to enter the temperature unit setting interface. The temperature unit can be set to C/F, where C = Celsius, F = Fahrenheit. Use the "^""v" keys to modify the parameter.

7.Humidity Parameter Switching Interface (F3 Hn)

In the "F3 Hn" interface, short press the "SET" key to enter the humidity parameter switching interface. Use the "^""v" keys to switch humidity parameters. The setting options are:rH = Relative Humidity; tF = Frost Point; td = Dew Point Temperature.

8.CO2 / Temperature / Humidity Offset Setting Interface (F4 cOFF, F5 tOFF, F6 rOFF)

Taking CO2 as an example: in the "F4 cOFF" interface, short press the "SET" key to enter the CO2 zero offset setting interface. Use the "^""v" keys to set the offset. Temperature offset is set in "F5 tOFF", and humidity offset in "F6 rOFF". The setting method is the same as for CO2.

9.CO2 Calibration Interface (F7 CA-CO2)

In the "F7 CA-CO2" interface, short press the "SET" key to enter the CO2 calibration page. The calibration status is initially "OFF".
Double press the " > " key to set the status to "ON",then double press "SET" to confirm and return to the "F7 CA-CO2" interface. The CO2 is then calibrated to 400 ppm, and the status returns to "OFF".

10.Temperature / Humidity Two-Point Linear Calibration Interface (F8 CA-t, F9 CA-H)

Taking temperature as an example: in the "F8 CA-t" interface, short press "SET" to enter the calibration setting interface. Short press "SET" again to enter the sub-interface (t-H, t-L, CAL).Input standard values in t-H and t-L.In the CAL interface, confirm to proceed to calculate slope and intercept.After calibration, the single-point compensation value is automatically reset to 0. Humidity calibration is in the "F9 CA-H" interface.

11.Backlight Switch Setting Interface (F10 bLEn)

In the "F10 bLEn" interface, short press the "SET" key to enter the backlight switch setting interface. Use the "^""v" keys to turn the backlight On/Off.

12.Relay Alarm Enable Setting Interface (F14 rL-1, F15 rL-2, F16 rL-3, F17 rL-4)

Enter the menu selection interface on the screen. Four of the options are for relay alarm settings:
F14 rL-1: Alarm parameter selection (CO2, Temperature, or Humidity).
F15 rL-2: Alarm mode selection.
F16 rL-3: If rL-2 is ON1 or ON2, the second row shows the alarm value, and the third row shows the hysteresis.If rL-2 is ON3 or ON4, the second row shows the alarm high point, and the third row shows the alarm low point.
F17 rL-4: Alarm switch setting.
In the "F15 rL-2" interface, short press "SET". The second row will flash, displaying the current alarm enable parameter.
Alarm enable has five options: OFF: Disable all alarms; ON1: Alarm Mode 1; ON2: Alarm Mode 2; ON3: Alarm Mode 3; ON4: Alarm Mode 4
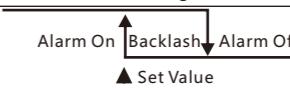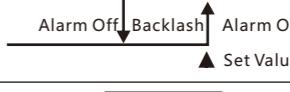
The default alarm enable parameter is OFF. The specific alarm mode descriptions are as follows:

Alarm mode				
Alarm Mode	Function	Setting Parameter 1	Setting Parameter 2	Function Diagram
ON1	Alarm when below set value	Alarm point	Hysteresis	Alarm On ⌐Backlash⌐ Alarm Off / ▲ Set Value
ON2	Alarm when above set value	Alarm point	Hysteresis	Alarm Off⌐ Backlash Alarm On / ▲ Set Value
ON3	Alarm within set range	High alarm point	Low alarm point	Alarm Off ↑ Alarm On ↓ Alarm Off / Alarm low point ▲ ▲Alarm high point
ON4	Alarm outside set range	High alarm point	Low alarm point	Alarm On ↓ Alarm Off ↑ Alarm On / Alarm low point ▲ ▲Alarm high point

Note: The relay alarm switch can only be turned on after selecting an alarm mode other than "OFF"; otherwise, "Err1" will be displayed. The choice of alarm mode will affect subsequent settings such as the alarm high point and hysteresis.

13.CO2 ABC Function Setting (F18 Abc)
In the "F18 Abc" interface, short press the "SET" key to enter the CO2 ABC status setting interface. Use the "^""v" keys to adjust: On = enable, OFF = disable. After enabling the ABC function, the sensor will continuously record the lowest sampled value over several days and slowly correct long-term drift by comparing it with the 400 ppm fresh air reference value.

14.Factory Reset Setting Interface (F19 FACS)
In the "F19 FACS" interface, short press the "SET" key to enter the factory reset setting interface. Double press the " > " key to set whether to restore factory parameters (On = restore, OFF = do not restore).

15.DIP Switch Description
For the 485 version:the 8-bit DIP switch sets the address, which can be set from 1–255. ON represents 1, OFF represents 0. On the DIP switch panel, numbers 1–8 correspond to bits from low to high.
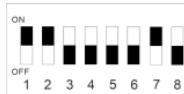
Example:At this point: Address = $1×2^0+ 1×2^1+ 1×2^6 = 67$. For the 4-bit DIP switch:The first two bits set the baud rate, which can be 1–3: 1 = 9600, 2 = 19200, 3 = 38400. The third bit sets the CO2 range: OFF = 0–2000 ppm, ON = 0–5000 ppm.The fourth bit controls the 120 Ω resistor between communication lines A and B: OFF = open, ON = closed.At factory settings, all DIP switches are 0. Default values are set by software: address 1, baud rate 9600, CO2 range 0–2000 ppm.

For the analog version:The first three bits of the 4-bit DIP switch select the temperature range. Each bit corresponds to a temperature range:1 = 0–50°C; 2 = 0–60°C; 3 = 0–80°C; 4 = 0–100°C; 5 = -20–60°C; 6 = -20–80°C; 7 = -40–60°C
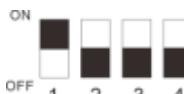
Example: At this point, the temperature range is 0–50°C. The fourth bit sets the CO2 range: OFF = 0–2000 ppm, ON = 0–5000 ppm.

Note: After any DIP switch change, power must be cycled for the settings to take effect. For the 485 version, if the address or baud rate DIP switch is set to 0, it can be changed via software or the menu. The DIP switch has the highest priority; when a switch is set, its corresponding function cannot be modified through software or the menu.

Precautions

Precautions

1. Keep the device away from heat sources, cold sources, and direct sunlight;
2. Do not use it in environments with oil fumes, organic solvents, or corrosive gases;
3. If the device will not be used for an extended period, store it in a dry environment;
4. Install the product at least 20 cm above the ground to prevent large dust particles or fibers near the floor from entering the sensor, which may cause contamination and reduce accuracy;
5. Avoid long-term use in environments with high dust concentration.

Common Issues – Analysis and Troubleshooting

Fault Description	Possible Cause	Solution
No output signal from the transmitter	1.The transmitter is not powered 2.Output wiring error	Reconnect according to the wiring diagram
Relay output of the transmitter does not match the settings	1.Incorrect output mode selection 2.Incorrect alarm point settings	Set the output mode correctly
"err1"appears in relay settings	Relay parameters F14–F17 are not fully configured	Check and complete all relay parameter settings

If the issue cannot be resolved using the methods above, please contact our after-sales service team.