

LEFOO

## LFS72 SERIES EXPLOSION-PROOF AIR VELOCITY TRANSMITTER

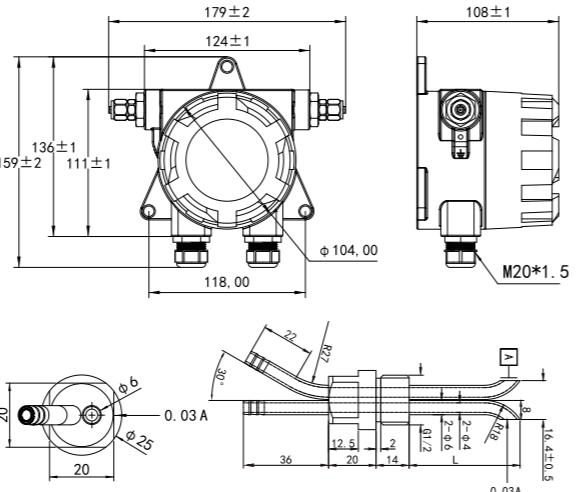
Product operation manual



### Features

LFS72 Explosion-proof Air Velocity Transmitter is suitable for gas flow measurement in Explosion-proof environments. It can convert the flow rate of gas into an electrical signal and transmit it to the control system. The range can be adjusted on-site through buttons, and the IP65 protection grade casing is used. It is suitable for energy management systems, VAV and fan control, environmental pollution control, smoke hood control, oven and boiler ventilation control and other fields.

### Dimensions (mm)



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### Specification

Measurement medium	Air or neutral gas
Range	Air velocity: 0~10 m/s, 0~20 m/s, 0~30 m/s, 0~40 m/s(Range can be customized.)
Overload pressure	10KPa
Accuracy	±3.0%FS(Air velocity > 3 m/s)
Working temperature	Main Unit: -20°C~70°C; Probe: -40°C~450°C
Compensation Temperature	-10°C~60°C
Storage Temperature	Main Unit: -40°C~80°C
Response Time	0.5s(default)/1.0s/2s/4s
Ingress Protection	IP65
Pressure Connection	Stainless steel 1/2" quick connection
Signal output	4~20mA/0~10VDC/RS485
Power Supply ①	12~30VDC/24VAC±20%
Power Consumption	≤1.5W
Shell Material	Cast Aluminum
Communication	RS-485 standard interface, Modbus RTU protocol
Certificates	ROHS, CE
Explosion-proof grade	Ex db IIC T6 Gb
Display	LCD digital display
Weight (Approximate)	Main Unit: 1362g

① When the product is powered by AC power, it is recommended to use an isolated AC power supply.

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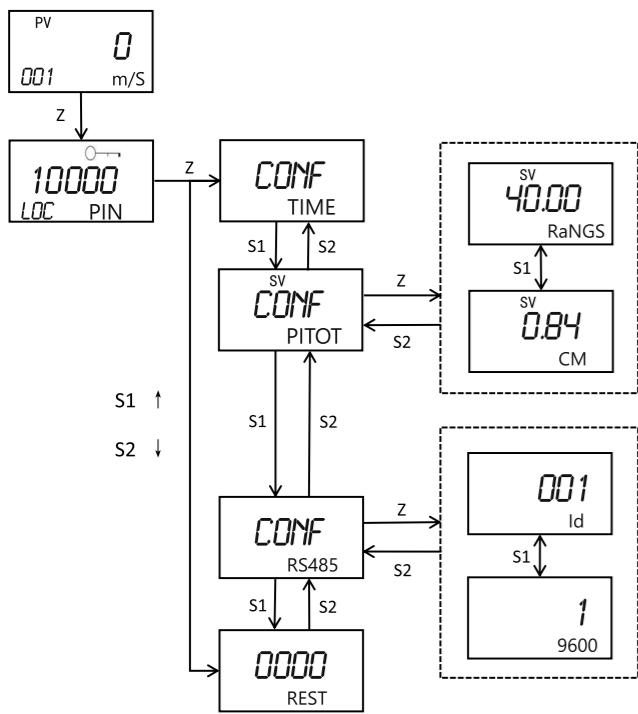
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### Function Introduction

#### [1] Button Description

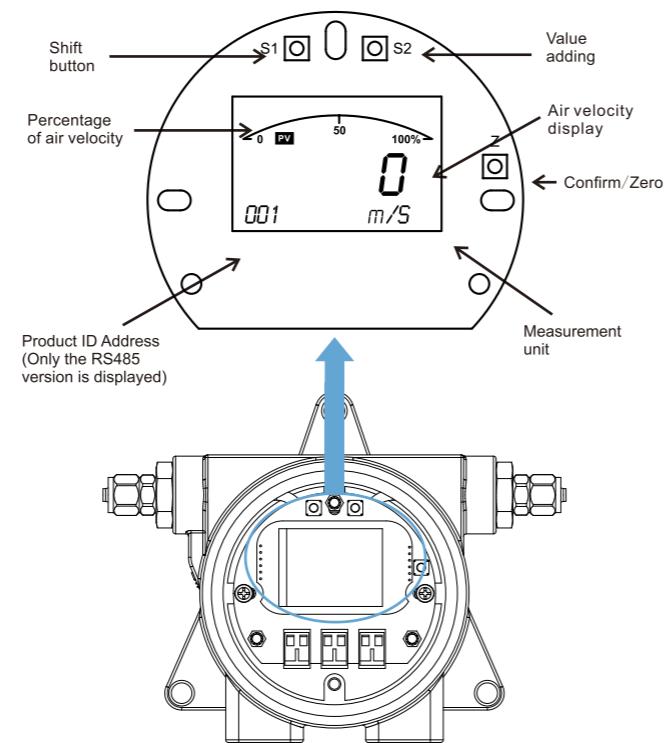
Button	Function	Using Instruction
Z	①Zero ②Back to main interface ③Enter secondary interface ④Confirm	1.Press the Z key twice in succession to enter the password setting menu; 2.In the main display interface, press and hold this button to perform the clearing operation; 3. In the setting interface, press and hold this button to return to the main display interface; 4.In the setting interface, short press to enter the next level setting menu; 5. In the setting interface, short press to modify or save the current parameters. When modifying parameters, the parameters to be modified will flash on the screen.
S1	①Switch setting interface ②Shift button	1.In the settings interface, scroll down to the settings menu; 2. Press this button to move the flashing state to the next number.
S2	①Switch setting interface ②Back to previous ③Value adding	1.In the settings interface, go up to the settings menu; 2.In the settings interface, return to the previous menu; 3. Add 1 to the digit of the value to be modified.

#### [2] Button Function Box



#### [3] Display Interface

##### 3.1. Air velocity display interface



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##### 3.2. Password input interface

Press button Z twice quickly to enter the password input interface. "PIN" will be displayed in the lower right corner of the screen. The default password is 10000. If you need to change parameter settings, you must first enter the correct password, otherwise the parameters cannot be modified. If the password is correct, "SUCC" will be displayed in the lower right corner of the screen, otherwise "Error" will be displayed. The screen will automatically jump to the next parameter setting interface.



Z Quickly press the Z key twice to enter the password input screen, and the leftmost digit is blinking.  
 S2 Press the S2 key, 0 increases to 1

Press the Z key once to confirm the current input value, and the screen displays the "SUCC" password in the lower right corner of the screen. The screen automatically jumps to the next parameter setting interface.

##### 3.3. Response time setting interface (TIME)

"TIME" appears in the lower right corner of the screen. Press the Z key once, and the screen will display the current response time setting parameters. Press the S2 key to switch the response time setting. There are 4 choices for the response time: 1/2/3/4.

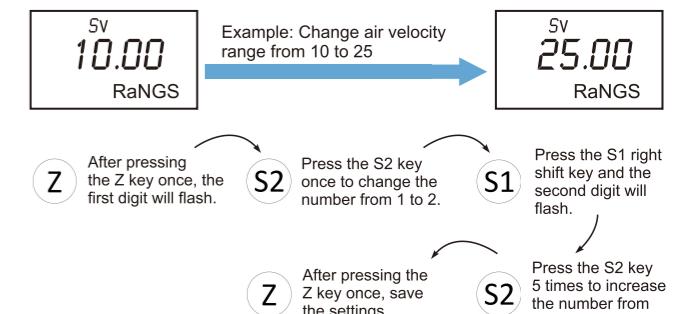
- 1: Response time 0.5s (default)
- 2: Response time 1s
- 3: Response time 2s
- 4: Response time 4s

After setting, press Z key once to save the setting parameters and return to the previous menu.

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3.4. Air velocity range and pitot tube coefficient setting interface(PITOT)  
 Ranges is displayed in the lower right corner of the screen, indicating the high point of the air velocity range (default is 30m/s).



CM is displayed in the lower right corner of the screen, indicating the setting of the pitot tube coefficient. The modification method is the same.

3.5. ID and baud rate setting interface (RS485 version available)  
 Id is displayed in the lower right corner of the screen, indicating product ID address setting (The setting method is similar to the previous step), ID address setting range: 1~255; The lower right corner of the screen displays 9600 or 19200, indicating the product baud rate setting.

- 1: Set the baud rate to 9600 (default).
- 2: Set the baud rate to 19200.

##### 3.6. Restore factory settings interface(REST)

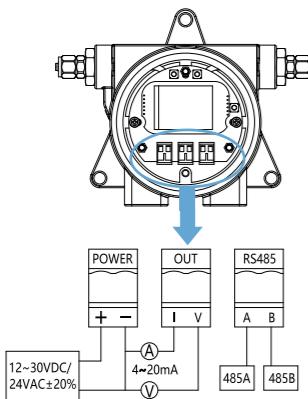
"REST" appears in the lower right corner of the screen. The password is set to 1234. After entering the password, the settings are restored to the factory default settings.

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## Wiring

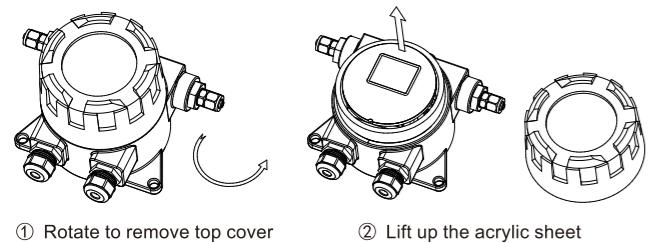
## NOTE:

Wiring should be performed by qualified technicians. When wiring, the transmitter must be powered off.



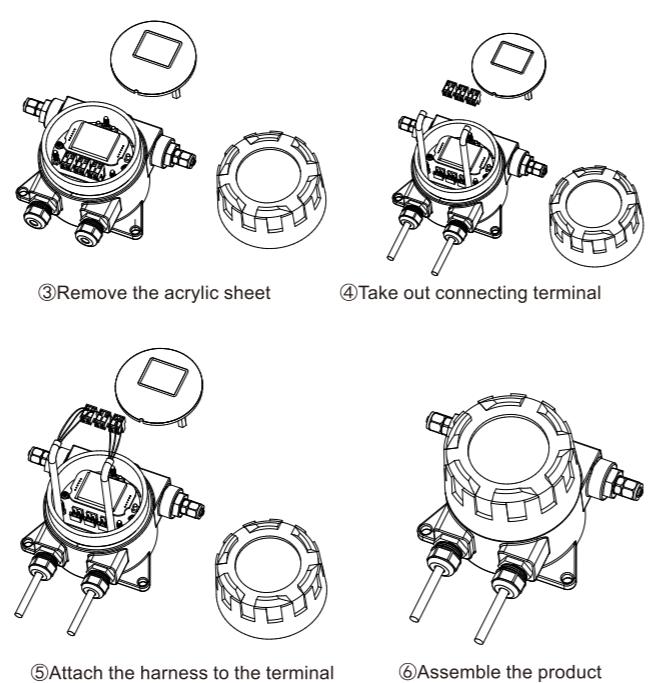
## Specific operation steps for wiring:

(Note: Wire diameter D must meet:  $7\text{mm} \leq D \leq 12\text{mm}$ )



① Rotate to remove top cover

② Lift up the acrylic sheet



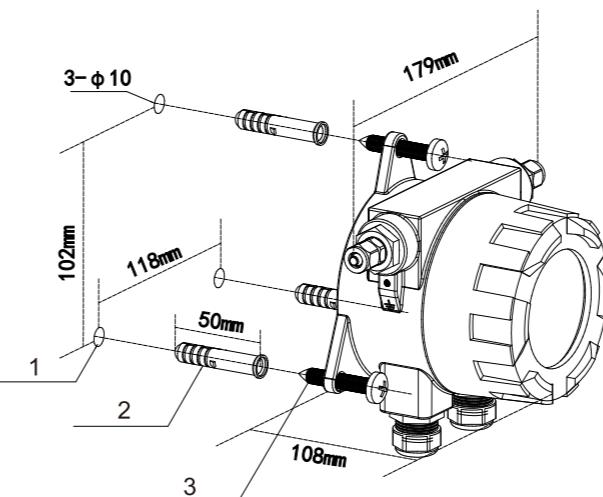
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## Installation



1. Drill
2. Embedding expansion pipes
3. Lock the product with screws

Master sends and reads a single register sequence					
Slave ID address	Function code = 0x03	Register starting address	Read the number of registers	CRC low	CRC high
8Bit	8Bit	16Bit	16Bit	8Bit	8Bit
Slave normal response sequence					
Slave address	Function code = 0x03	Data byte n	Data	CRC low	CRC high
8Bit	8Bit	8Bit	N*8Bit	8Bit	8Bit
Slave error response sequence					
Slave address	Error code = 0x83	Exception code = 0x02 or 0x03	CRC low	CRC high	
8Bit	8Bit	8Bit	8Bit	8Bit	8Bit

## Example of communication code

Master sends sequence	01	03	00 01	00 01	D5 CA
Slave normal response sequence	Slave ID	Function code	Register Start Address	Read the number of registers	CRC calibration
Slave error response sequence:	Slave ID	Function code	Data Length	Data	CRC calibration
	01	03	02	03 E8	D8 FA
	Slave ID	Function code	Exception code	C0 F1	CRC calibration
	01	83	02	C0 F1	CRC calibration

## 【3】 Register Address Reference Table

Register Address	Register Definition	Data Types	Read And Write Type	Specific Function Description
0x0001	Pressure value(Pa)	Signed Integer /16Bit	Read only	<p>① When the pressure range is <math>\leq \pm 100</math> Pa, the unit is 0.1 Pa. Pressure value = n (reading value)/10, for example: reading value 0 x 0001 = 0.1 Pa, reading value 0 x 03E8 = 100.0 Pa, reading value 0 x FFFF = -0.1 Pa, reading value 0 x FC18 = -100.0 Pa.</p> <p>② When the pressure range is <math>&gt; \pm 100</math> Pa, the unit is 1 Pa. Pressure value = n (reading value), for example: reading value 0 x 0001 = 1 Pa, reading value 0 x 03E8 = 1000 Pa, reading value 0 x FFFF = -1 Pa, reading value 0 x FC18 = -1000 Pa.</p>
0x0002-0x0003	Air velocity (m/s)	Float/32Bit	Read only	Adopt floating point number little-endian byte exchange mode; the unit is m/s. The example accepted data sequence is: 0A 3D 3F 57; then it is 0 x 3F570A3D (0.84)

## 【4】 Exception Code Analysis

Error code	Reason	Solution
0x02	Reading register starting address error	Check the register address reference table to see if the starting address of the read register is readable.
0x03	Wrong value written to register	Check the register address reference table to see if the value written to the register is in the list.

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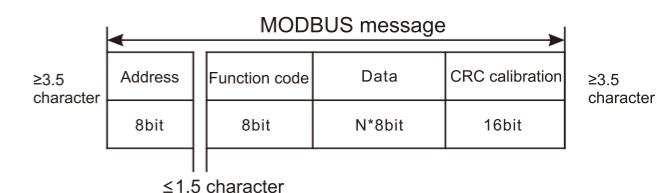
## Appendix: RS485 Communication Protocol

This protocol runs on the RS485 hardware platform and can realize remote one-to-many control and signal collection through the 485 bus. This communication protocol is implemented in accordance with the ModBus RTU standard protocol.

## 【1】 Character Format

Start : 1Bit Data : 8Bit Parity : None、Even  
Stop : 1 Bit Baud Rate : 9600bps, 19200bps

In RTU mode, the interval between two characters must be less than 1.5 character time, otherwise the message frame is considered incomplete and the receiving station discards the message frame. The interval between two message frames is at least 3.5 characters.



## 【2】 Communication Protocol

## 2.1、Read a single register (function code 0 x 03)

The host can use this function to read the register data of the slave, and can read one or more registers at the same time.

Sequence format: