

LoRaWAN CO₂ Temperature and Humidity User Manual



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1. Overview

Based on LoRa™ spread spectrum modulation technology, terminals can perform ultra long distance communication. A wireless monitoring device that integrates data collection, monitoring, and transmission. This product is equipped with a carbon dioxide (CO₂) sensor and a temperature and humidity sensor. The non dispersive infrared (NDIR) principle is used to detect CO₂ in the air. This sensor is oxygen independent, stable in performance, and has a long lifespan. Built in temperature compensation. The sensor is equipped with an emergency reporting function for abnormal data, which can actively report anomalies based on preset thresholds according to the on-site environment. It supports standard LoRaWAN protocol and TDMA network protocol for self-organizing networks.

2. Technical Parameters

Power Supply	5~28VDC
Weight	120g
Operating Emperature	-20℃~60℃
Measuring Principle	Principle of Non Dispersive Infrared (NDIR)
Measuring Range	CO ₂ :0 ~ 5000 ppm
	Temp:-40~+80 ℃
	Humi:0~99.9 %RH
Resolution Ratio	±50ppm
Lifespan	> 5 years
Frequency	CN470/IN865/EU868/RU864/US915/AU915/ KR920/AS923-1&2&3&4
Mode	OTAA Class A/C(Default: Class C)
Reporting cycle	External power supply:10min(Default reporting cycle)
Communication Protocol	LoRaWAN,LoRa TDMA Networking

Equipment information (Reference)	AppEUI: 331341E186891989 DevEUI: aaaa202404150001 AppKey: 5572404c696e6b4c6f526132330313823 MAC Version: LoRaWAN 1.0.3
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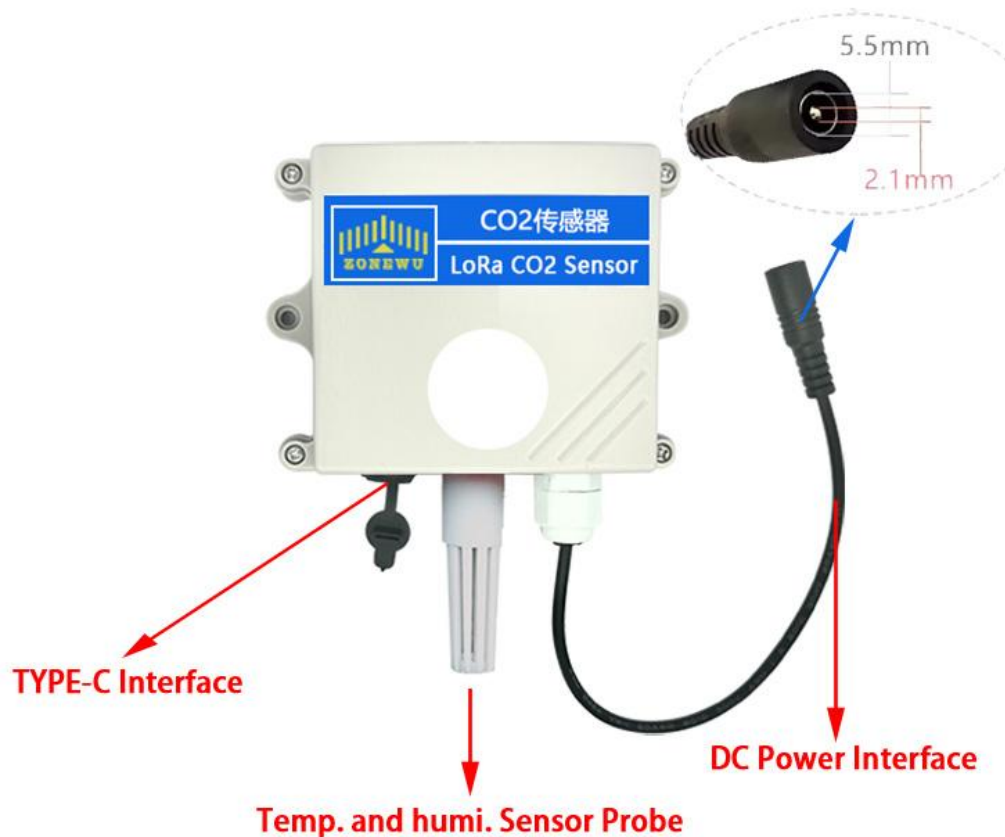
2.1 Product List

- LoRaWAN CO₂ Temperature and Humidity Sensor 1 piece
- TYPE-C data cable 1 piece

3. Configuration and Installation

3.1 LW303 Interface Description

Interface Description



- 1. TYPE-C Interface:**
Used for device serial port configuration. It can also serve as a power supply interface.
- 2. Temperature and humidity sensor probe:**
Used for monitoring environmental temperature and humidity values
- 3. DC Power Interface:**
DC5.5 * 2.1 female socket, power supply interface, DC5-28V.

3.2 LW303 Parameter Configuration Instructions

Configuration preparation:

- ◆ USB Type-C data cable
- ◆ Computer (Windows system)
- ◆ Configuration Tool Toolbox

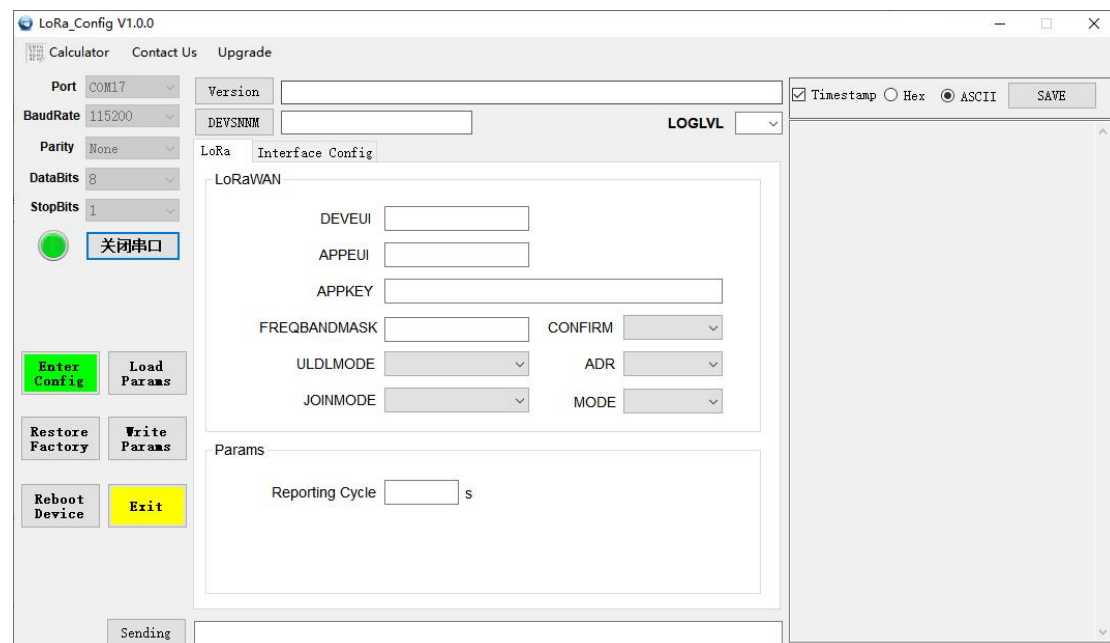
Download: <http://www.zonewu.com/en/Configuration-Tools.html>

1. Install serial port driver program.CH340 USB to serial port .
2. Connect the LW101 to the PC using a USB cable and check if there is a COM port. If not, please recheck the equipment wiring and driver installation.
3. Open the configuration tool LoRa_config  LoRa_config V1.0.0 .open the corresponding COM port .

Port default parameters:

BaudRate	115200bit/s
Parity	None
DataBits	8
StopBits	1

As follows:



4. 1.Enter Config → 2.Load Params → 3.LoRaWAN → 4.Write Params → 5.Reboot Device

LoRa_Config V1.0.0

Calculator Contact Us Upgrade

Port COM17 Version ☒ Timestamp ☐ Hex ☒ ASCII SAVE

BaudRate 115200 DEVSNNM LOGLV

Parity None DataBits 8 StopBits 1

1 Enter Config 2 Load Params

Restore Factory Write Params 4 Params

Reboot Device Exit

5

LoRa Interface Config

LoRaWAN

DEVEUI

APPEUI

APPKEY

FREQBANDMASK CONFIRM

ULDLMODE ADR

JOINMODE MODE

Reporting Cycle s

Sending

LoRa Interface Config

LoRaWAN

DEVEUI BF01240726D00001

APPEUI 331341E186891989

APPKEY 5572404c696e6b4c6f52613230313823

FREQBANDMASK 0002 CONFIRM Close ACK

ULDLMODE Abnormal Freq Mo ADR Close

MODE ClassC

Params

Reporting Cycle 600 s

LoRaWAN Interface:

Item	Describe	Notes
DevEUI	Node's globally unique identifier code	64bit
AppEUI	Node's application identifier code	64bit
AppKey	Assigned to the terminal by the application owner.	128bit

FREQBANDMASK	Set frequency group mask	
UPLDMODE	Set up uplink and downlink same frequency but different frequency	
CONFIRM	Set uplink transmission type	
ADR	Set adaptive speed	
MODE	Set device working mode	

The device will be configured with ternary parameters by default when it leaves the factory:

DevEUI: BF01240726D00001

AppEUI: 331341E186891989

AppKey: 5572404c696e6b4c6f52613230313823

NOTE: All sensors are shipped with AppEUI and AppKey default to 331341E186891989 and 5572404c696e6b4c6f52613230313823.

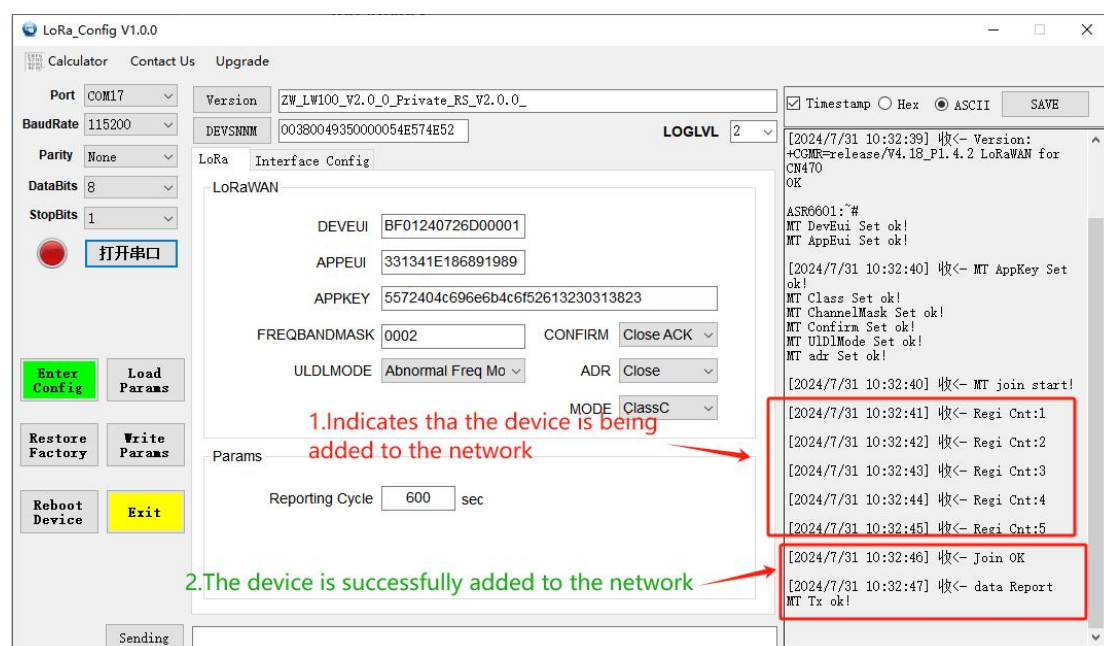
Users can customize according to their own applications

FREQBANDMASK: The frequency group mask for LoRaWAN operation, with 16 bits corresponding to 16 frequency groups. Default is 0001. Users need to configure it according to the actual application region.

Params Interface:

Item	Describe	Notes
Reporting cycle	adjustable range 1-65535, default is 600s (10min)	

Printing logs of device startup and network connection:

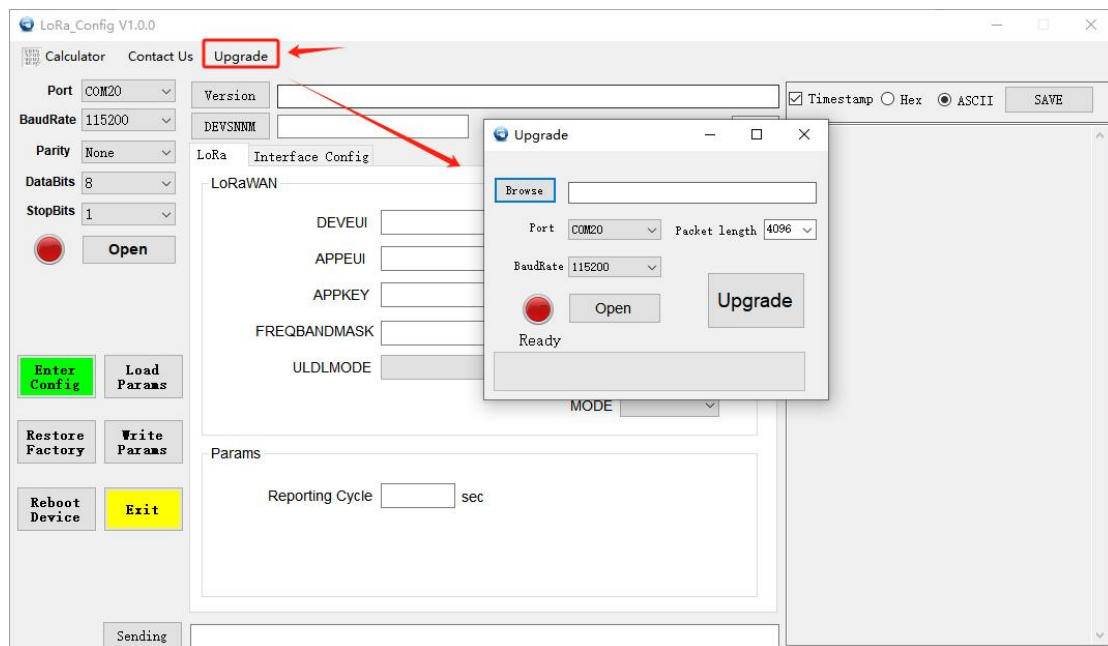


The device is equipped with a built-in LED indicator light, which is located next

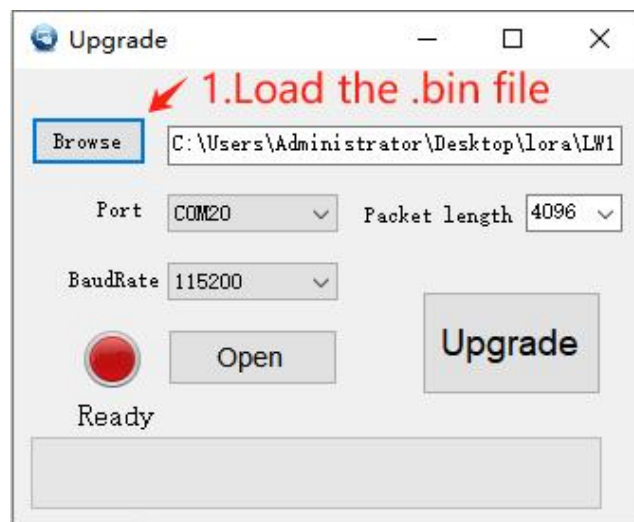
to the antenna interface and can be seen as a green light through the casing.

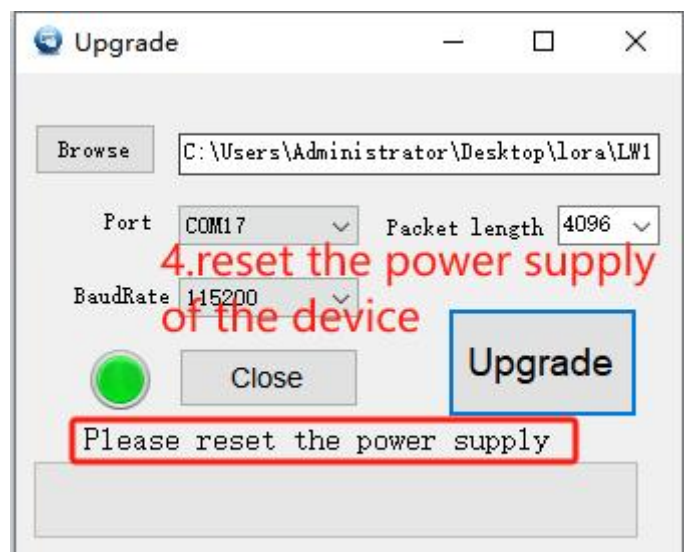
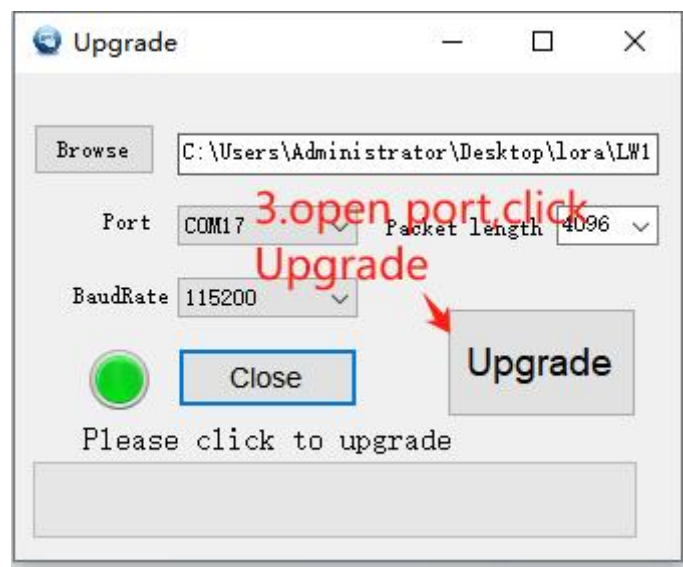
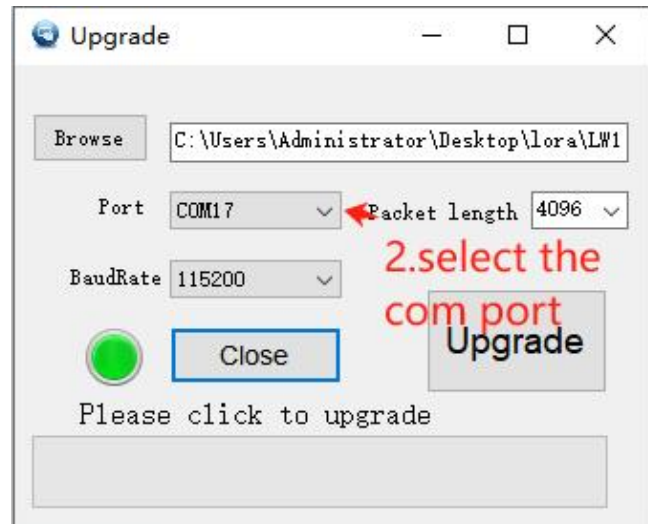
LED	Status	Describe
Green indicator light	Flicker	Add to the network
	Light	Successfully added to the network

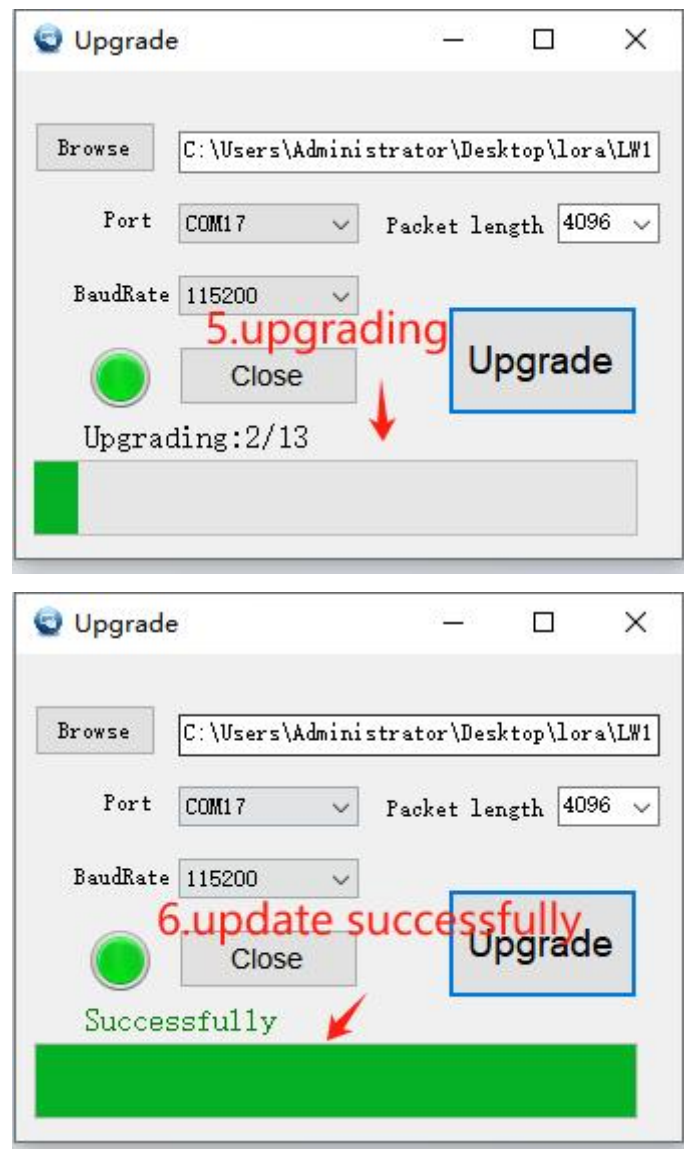
Firmware upgrade:



Click to upgrade → Pop up upgrade window

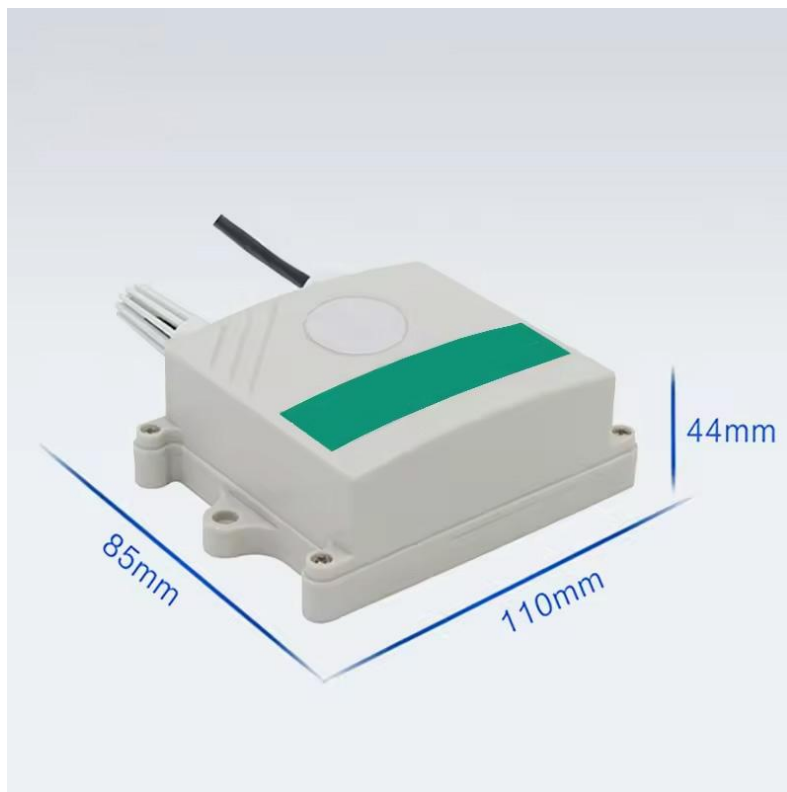






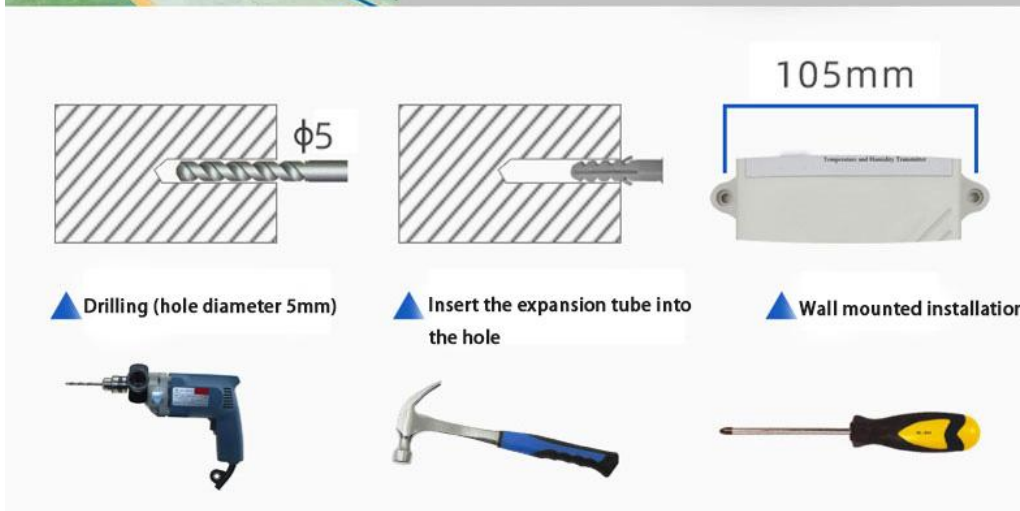
If there is an upgrade error during the upgrade process, you can close and reopen the upgrade window and follow the instructions to upgrade again.

3.3 LW303 Size and Installation



Product size

INSTALLATION INSTRUCTIONS



Installation instructions

4. Protocol Description

4.1 Data Format

The up/down data of the device is based on hexadecimal format. High position in front, low position in back.

address	code	length	data		
1 byte	1 byte	1 byte	2 byte	2 byte	2 byte

4.2 Upward Data

The device information is reported once during network access or restart.

Sensor address	Instruction type	Data Length	Data		
			CO ₂	Temp.	Humi.
01	03	06	01CC	0109	0207
1	3	6	460	26.5℃	51.9

Note:

1.If the received data is FFFF FFFF, it indicates that the sensor is not connected or the sensor is abnormal.

2.When the temperature is below 0 ℃, The temperature data is uploaded in the form of a supplementary code.

Temperature: FF9B H (hexadecimal)= -101=>Temperature= -10.1 ℃

4.2.1 Register Address Description

Register address	0001H	0002H	0003H
Parameter	CO ₂	Temperature	humidity
Unit	ppm	℃	%
Range	0-5000ppm	-40~+80 ℃	0~99.9 %RH
Data Type	uint16	int16	uint16
Sample Value	-	/10	/10
Operate	Read	Read	Read

4.3 Downward data

Support configuring devices through downstream commands. When the downlink command is in confirmation packet mode, the device will immediately send a reply packet after executing the command.

4.3.1 Restart the device

Starting byte (1byte)	Instruction type (1byte)	Trail byte (1byte)
0xFE	01	0xEF

Response:

Starting byte (1byte)	Instruction type (1byte)	Trail byte (1byte)
0xEF	01	0xFE

4.3.2 Set Reporting cycle

Starting byte (1byte)	Instruction type (1byte)	Reporting cycle (2byte)	Trail byte (1byte)
0xFE	02	X	0xEF

Response:

Starting byte (1byte)	Instruction type (1byte)	Reporting cycle (2byte)	Trail byte (1byte)
0xEF	02	X	0xFE