LoRaWAN
CH_4 Temperature and Humidity
User Manual

Content

1. Overview

Based on LoRa™ spread spectrum modulation technology, terminals are capable of ultra long distance communication. A wireless monitoring device that integrates data collection, monitoring, and transmission. This product is equipped with a methane (CH_4) sensor and a temperature and humidity sensor. The use of non dispersive infrared (NDIR) principle for detecting methane gas in the air has good selectivity and is oxygen independent. This sensor is equipped with emergency reporting of data anomalies, and can proactively report anomalies based on pre-set threshold values according to the on-site environment. It supports standard LoRaWAN protocol and TDMA networking protocol for ad hoc networks.

2. Technical Parameters

Power Supply	5~28VDC
Weight	120g
Operating Emperature	-20℃～60℃
Measuring Principle	Principle of Non Dispersive Infrared (NDIR)
Measuring Range	CH_4:0～100% LEL
	Temp:-40~+80 ℃
	Humi:0~99.9 %RH
Resolution Ratio	CH4:1%LEL
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：0000000000000001 DevEUI：aaaa202404150001 AppKey：00001111222233334444555566667777 MAC Version：LoRaWAN 1.0.3

2.1 Product List

- LoRaWAN CH_4 Temperature and Humidity Sensor　1 piece
- TYPE-C data cable　1 piece

3. Configuration and Installation

3.1 LW302 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 LW302 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 .

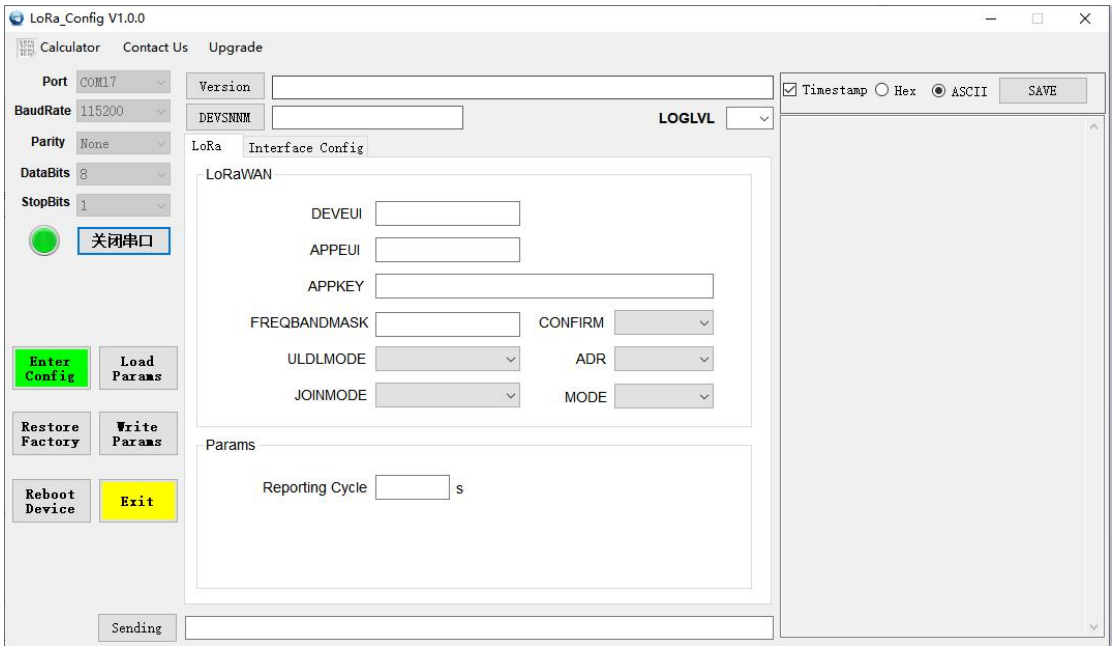
2. Connect the LW101 to the PC using a USB cable and check if there is a COM port. If not, please recheck the equipment wiring and driver installation.

3. Open the configuration tool LoRa_config LoRa_config V1.0.0 .open the corresponding COM port .

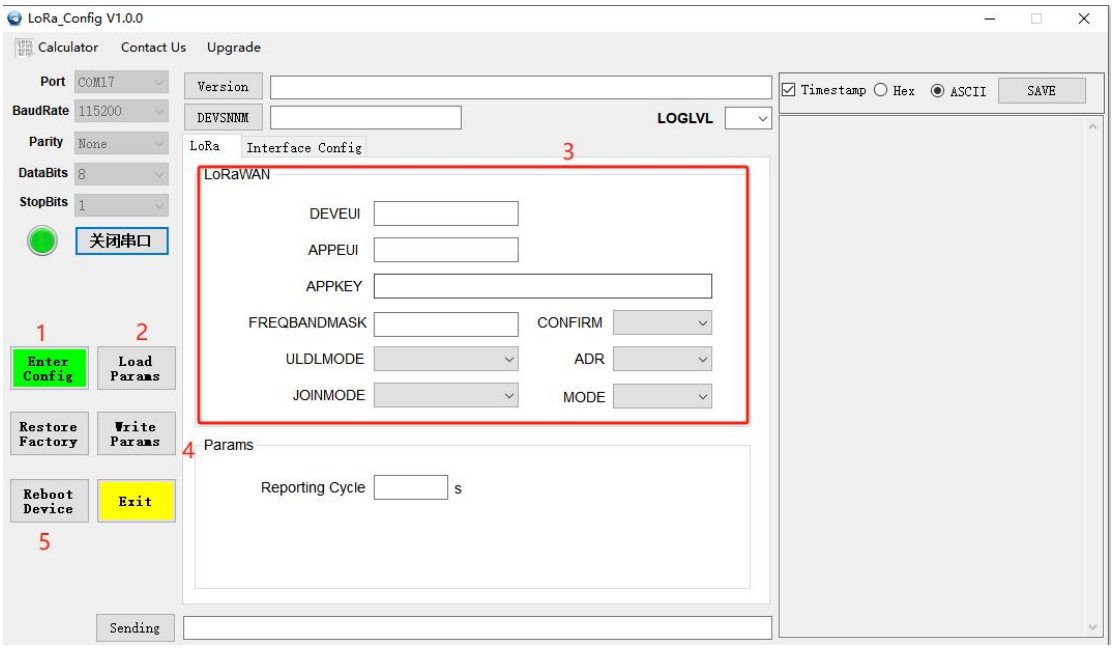
Port default parameters:

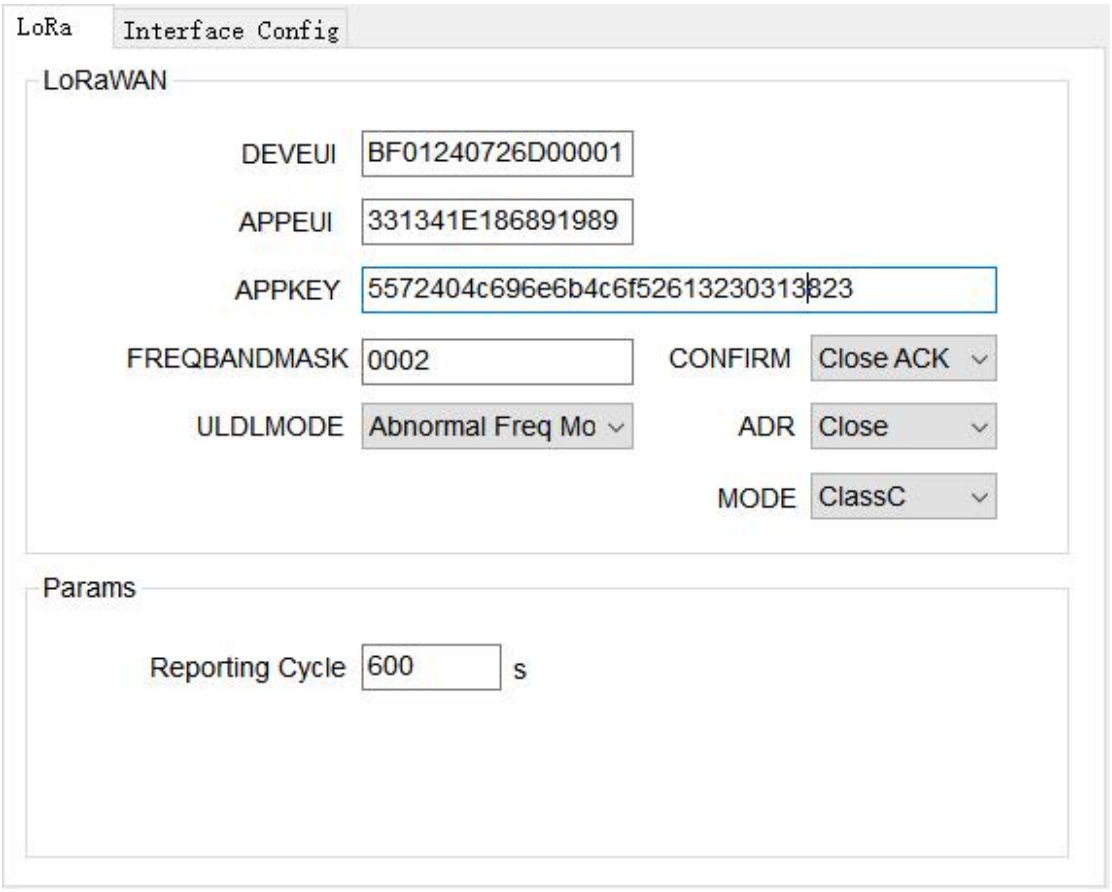
BaudRate	115200bit/s
Parity	None
DataBits	8
StopBits	1

As follows:



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





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

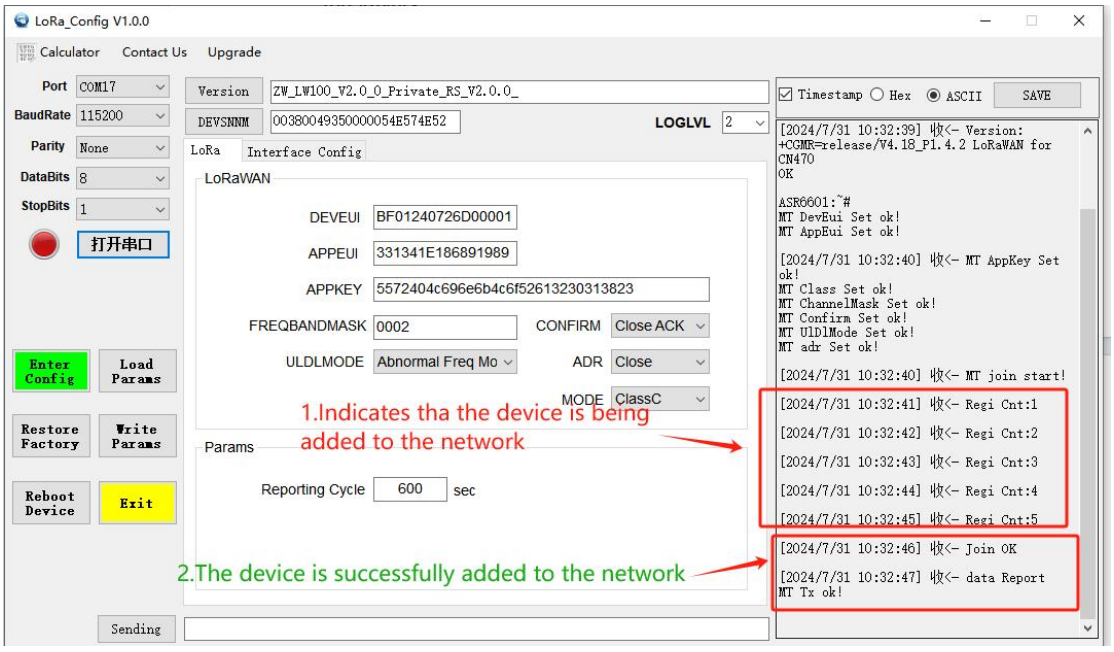
FREQBANDMASK	Set frequency group mask	
ULDLMODE	Set up uplink and downlink same frequency but different frequency	
CONFIRM	Set uplink transmission type	
ADR	Set adaptive speed	
MODE	Set device working mode	

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 **5572404c696e6b4c6f526132330313823**.
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：

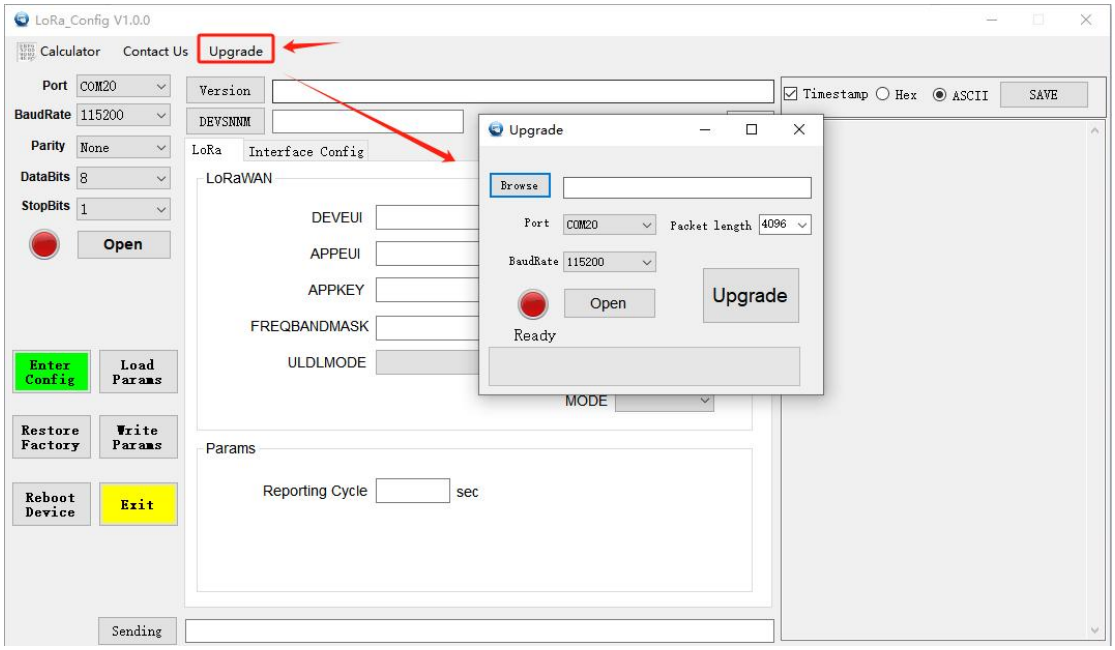


The device is equipped with a built-in LED indicator light, which is located next

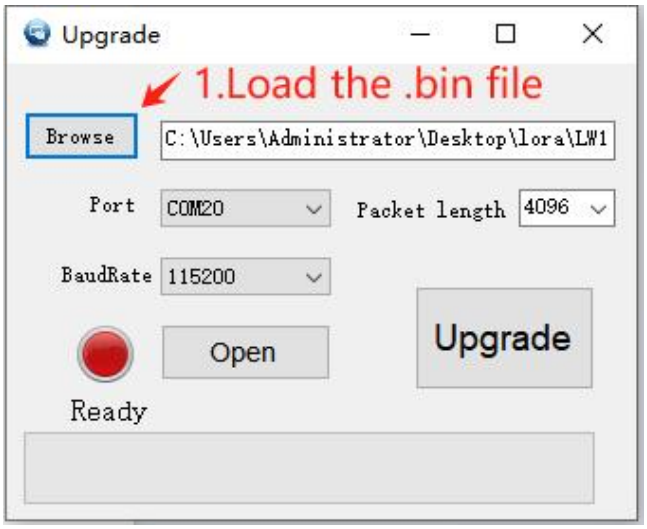
to the antenna interface and can be seen as a green light through the casing.

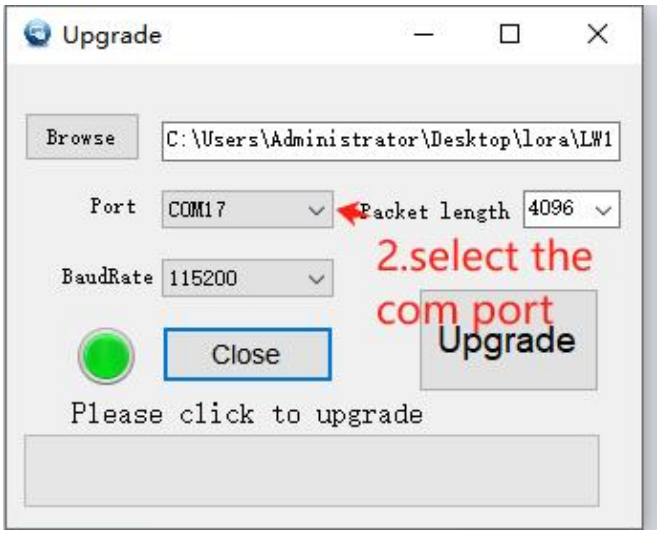
LED	Status	Describe
Green indicator light	Flicker	Add to the network
	Light	Successfully added to the network

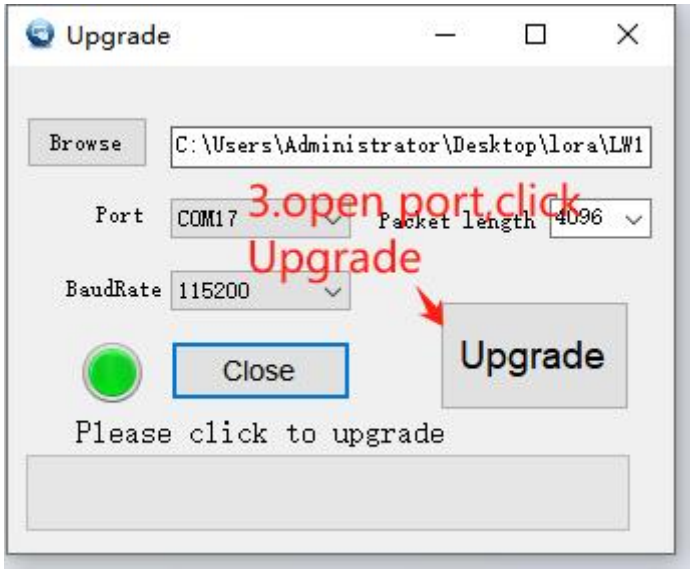
Firmware upgrade:

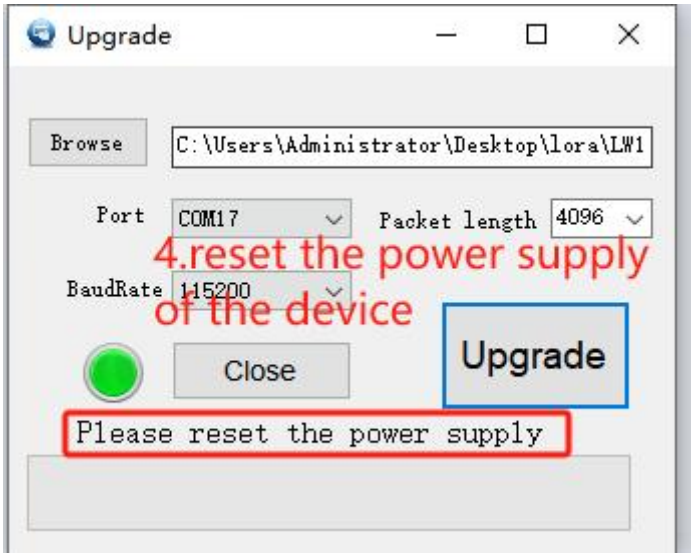


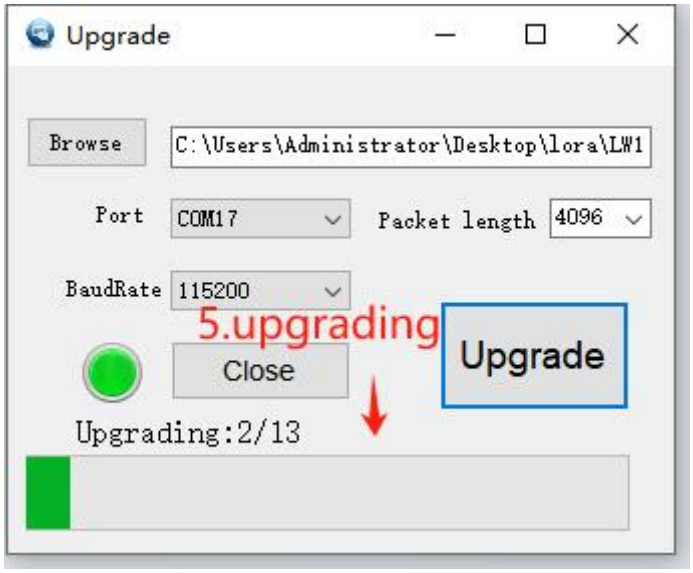
Click to upgrade → Pop up upgrade window

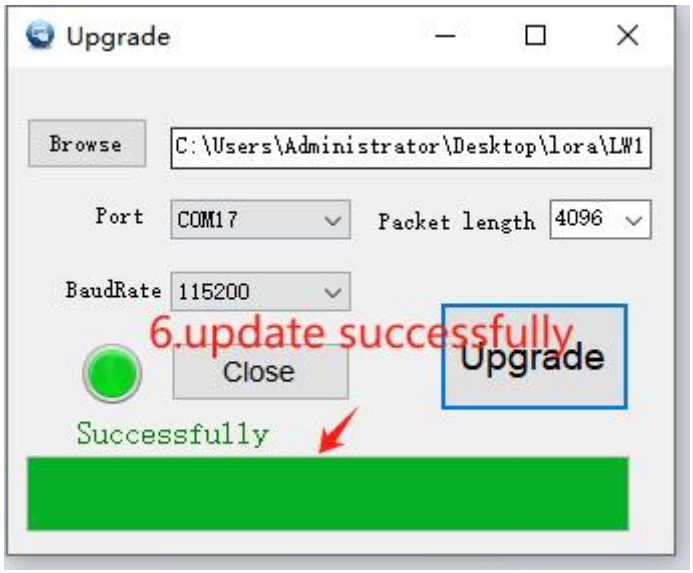



Upgrade
Browse
C:\Users\Administrator\Desktop\lora\LW1
Port
COM17
Packet length
4096
2.select the com port
BaudRate
115200
Close
Upgrade
Please click to upgrade


Upgrade
Browse
C:\Users\Administrator\Desktop\lora\LW1
3.open port,click Upgrade
Port
COM17
Packet length
4096
BaudRate
115200
Close
Upgrade
Please click to upgrade


Upgrade
Browse
C:\Users\Administrator\Desktop\lora\LW1
Port
COM17
Packet length
4096
4.reset the power supply of the device
BaudRate
115200
Close
Upgrade
Please reset the power supply





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 LW302 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		
			CH_4	Temp.	Humi.
01	02	06	000C	0109	0207
1	2	6	12	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	CH_4	Temperature	humidity
Unit	LEL	℃	%
Range	0-100%LEL	-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