# Industrial edge computing gateway

# WE-X280 Instruction Manual

## Preface

● This manual is an instruction manual for various functions, wiring methods, operation methods, etc. of the product.

● Please read this manual carefully before operation, use this product correctly, and avoid unnecessary losses caused by incorrect operation.

● After you finish reading, please keep it in a place where it is easy to access it at any time for easy reference.

## Note

● If there are any changes to the contents of this manual due to function upgrades, please refer to the newly released document.

● We strive to be correct in the content of this manual, so if you find an error, please contact us.

## version

U-WE-X280-CN1 First Edition August 2025

## Confirm the package contents

After opening the box, check the contents of the package before you begin. If you find that the model and quantity are wrong, or if there is physical damage to the appearance, please contact us.

The product packaging content is shown in the standard configuration list.

Product standard configuration list

| Serial number | Name | quantity | Note: |
|---|---|---|---|
| 1 | Industrial edge computing gateway | 1 | |
| 2 | 24V DC power supply | 1 | |
| 3 | 4G antenna | 1 | |

| | | | |
|---|---|---|---|
| 4 | LoRa antenna | 1 | |
| 5 | Ethernet cable | 1 | |
| 6 | Instructions | 1 | |
| 7 | Certificate of conformity | 1 | |

Note: Customized products may be slightly different from standard products, please refer to the order.

**Table of contents**

# 第1章 Product Overview:

## 1.1 Product Introduction

The WE-X280 industrial edge computing gateway supports LoRa wireless and RS485 wired convergence networks, connects wired and wireless node devices, and connects edge devices to the WES-AIOT device management platform through 4G full Netcom mobile communication or Ethernet communication. WE-X280 has stable and reliable uplink and downlink network connection and high-performance edge computing capabilities, combined with Shidian Technology's rich field equipment and WES-AIOT cloud platform, to provide industry customers with complete industrial IoT terminals, edges, pipes, clouds, and application complete solutions, which are widely used in office buildings, commercial real estate, factories and other applications such as energy conservation and emission reduction, digital operation and maintenance.

## 1.2 Measurement principle

The WE-X280 gateway accesses terminal sensor data through a multi-source industrial network (RS485/LoRa), uses an

edge computing engine to perform high-precision digital conversion, exception cleaning, protocol unification, and business logic calculation of the original signal, and finally transmits it to the cloud platform through 4G/Ethernet dual-channel encryption. Its essence is a three-level industrial IoT collaborative architecture of "device-side data collection→edge intelligent processing→ and cloud collaboration", which transforms physical signals into business information that can be directly applied.

## 1.3 Product features:

- The mobile app can monitor the meter anytime and anywhere.
- Support 4G full Netcom, Ethernet, LoRa and RS485
- High-gain antenna and multiple verification mechanisms ensure stable online.
- One machine connects 128 wired/wireless transmission and sensing equipment
- Expandable to 16 IO node devices
- MQTT + custom JOSN report/query

- It can be connected to the WES-ALOT cloud platform and third-party devices

# 第2章 Technical parameters

表1 Technical parameters

| Communication interface | |
|---|---|
| 4G communication port | Antenna Interface Type: SMA Female<br>The SIM card slot is external<br>The following frequency bands are supported for full Netcom network access:<br>FDD LTE: B1/3/5/8<br>TDD LTE: B34/38/39/40/41 |
| LORA communication port | Antenna Interface Type: SMA Female<br>It supports the 410.125~490.125MHz frequency band<br>Maximum transmit power of 22dBm<br>Maximum -147dB receive sensitivity<br>Signal coverage capability of 5KM in open sight distance |
| BLE interface | Local configuration available |

| | |
|---|---|
| 1*I/O module expansion interface | Expand up to 16 I/O modules |
| 1* ETH port | RJ45 interface, 10M/100M adaptive |
| 2* RS485 interface | |
| **UI** | |
| Key input | Refer to the UI specification definition, multi-function buttons |
| LED indicator | System indicator, cloud connection status indicator, IO status indicator, automation rule indicator, two RS485 indicators, LoRa indicator, CAN indicator |
| screen | 1.3 inches, 1:1 |
| **Electrical specifications** | |
| Power input | 24VDC power supply |

| environmental conditions | |
|---|---|
| Work environment | Working temperature: -20~70° C |
| | Working relative humidity: 5% ~ 95% |
| Storage environment | Storage temperature: -40~80°C |
| | Storage Relative Humidity: 5% ~ 95% |
| Protection level | Water and dust resistance: IP20<br>ESD: 4KV contact, 8KV non-contact |
| **Other parameters** | |
| Access certification | CE |
| 1*TF card slot | The TF card slot is external and supports disconnecting and continuing transmission |
| Appearance dimensions | 38 (width) * 110 (height) * 117 (depth) mm |
| weight | 205g |

| | |
|---|---|
| Shell material | ABS/PC |
| Installation method: | Rail mounting |

# 第3章 Product structure and size

## 3.1 Dimensions

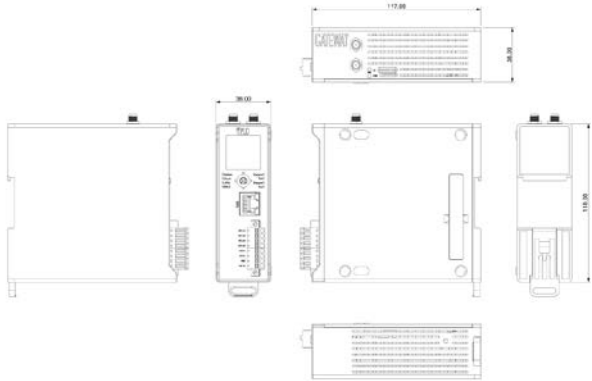

图1 Product dimensions

## 3.2 Process connection

This gateway comes with two RS485 serial ports, and the serial port adopts an industrial-grade terminal interface.

The antenna interface is an SMA female socket. Screw the SMA male of the mating antenna onto the ANT antenna interface and make sure to tighten it so as not to compromise signal quality.

## 3.3 Material:

Housing material: ABS/PC

Cable sheath material: PVC or polyurethane PU

Process connection material: 304SS or 316LSS

# 第4章 Installation and maintenance

## 4.1 Arrival inspection

After the product arrives, the user should first check the packaging quality of the product, the packaging box should be intact and the logo should be clear. If the packaging has been obviously damaged, contact the storage and transportation department in time to find out the problem and responsibility and notify our company. If the packaging is not damaged and other problems, the product can be taken out of the box and the integrity of the product can be counted.

## 4.2 Installation conditions:

（1）A place that is easy to operate and maintain should be chosen for installation.

（2）It should be installed as far away from vibration and heat sources as possible.

## 4.3 Operation and maintenance

4.3.1 Operation

The customer does not need to make any adjustments to the transmitter to be put into operation. Before putting it into

operation, please strictly check the installation and whether the electrical connections are correct. After confirming that the electrical connection is correct, turn on the power supply and put it into operation.

4.3.2 Maintenance

Gateways generally do not need regular maintenance, but in order to receive good results and improve reliability, please check whether the wiring connection is reliable and whether the cable is damaged or aged.

It is strictly forbidden to pull the cable with force.

## 4.4 Installation diagram

In the direction shown in the figure below, the gateway can be snapped directly onto the 35mm rail.

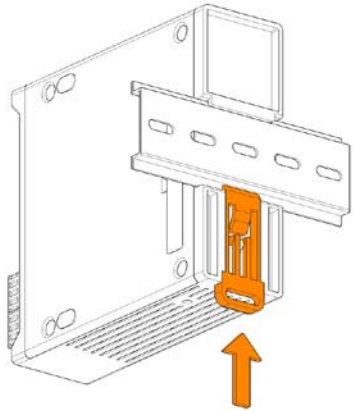

图2 Installation diagram

# 第5章 operation

## 5.1 Display and operating unit

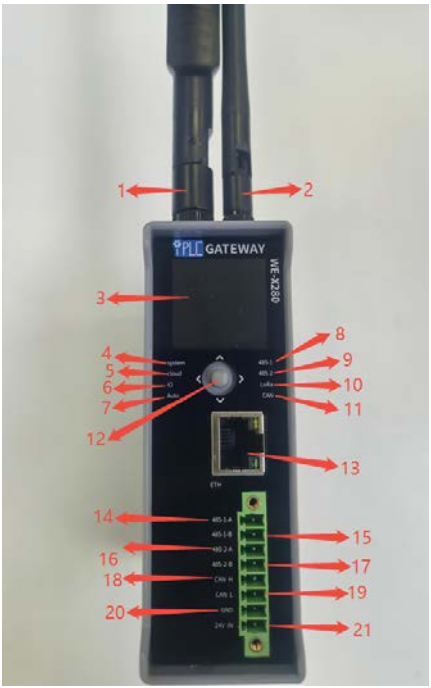


图3 Gateway schematic

### 5.1.1 Interface Description

表2 Interface description

| Serial number | Description |
|---|---|
| 1 | 4G antenna |
| 2 | LoRa antenna |
| 3 | screen |
| 4 | System indicator |
| 5 | Cloud indicator |
| 6 | IO indicator |
| 7 | Automation indicator |
| 8 | 485-1 indicator |
| 9 | 485-2 indicator |
| 10 | LoRa indicator |
| 11 | CAN indicator |
| 12 | button |
| 13 | Ethernet interface |
| 14 | 485-1A interface |
| 15 | 485-1B interface |
| 16 | 485-2A interface |

| Serial number | Description |
|---|---|
| 17 | 485-2B interface |
| 18 | CAN H interface |
| 19 | CAN L interface |
| 20 | The power supply is negative |
| 21 | The power supply is positive |

### 5.1.2 Key Instructions

The host has a button, click Confirm, and the left and right arrow keys.

### 5.1.3 Indicator Light Description

There are 8 indicator lights in total. The indicator light is the most intuitive display of the operating status of the gateway, and the operating status of the gateway can be judged conveniently, quickly and accurately from the status of the indicator light.

表3 Indicator light description

| Indicator light | labeling |
|---|---|

| | |
|---|---|
| system | 1. Extinguish: The system shuts down |
| | 2. Evergreen: The system is powered on, and there is no fault or alarm |
| | 3. Orange: The system is powered on, alarm |
| | 4. Red: System power-on, fault |
| | 5. OTA green, 0.25s period flash mob |
| | 6. Factory reset, 0.1s cycle flash |
| cloud | 1. Turn off, no local network connection, no cloud connection |
| | 2. White, flashing (0.5s), Local network connection, no cloud connection |
| | 3. Green, always-on, local network connection, cloud connection |
| IO | White with data flashing (0.5s) |
| AUTO | Solid white with automatic mode |
| 485-1 | 1. Green, flashing (0.5s), with data |
| 485-2 | 1. Green, flashing (0.5s), with data |

| | |
|---|---|
| lora | 1. Green, flashing (0.5s), with data |
| CAN | / |

### 5.1.4 Fault and alarm information

表4 Fault Code Common

| Public fault type | Position | Description |
|---|---|---|
| Plate temperature failure | bit0 | Abnormal temperature or hardware failure |
| Battery failure | bit1 | Abnormal battery or hardware failure |
| Bluetooth malfunction | bit2 | Bluetooth hardware failure |
| Network failure | bit3 | Abnormal communication module or hardware failure |
| Show faults | bit4 | Shows hardware failure |

表5 Alarm Code Common

| Alarm type | Position | Description |
|---|---|---|
| Plate temperature | bit0 | Position when the threshold is exceeded |
| Low battery | bit1 | Position below the set threshold |
| Bluetooth connectivity | bit2 | Bluetooth interception status |
| Ambient noise | bit3 | The current environmental noise interference intensity exceeds the threshold |
| Communication signal strength | bit4 | The signal is low or not positioned at any time |
| Identify (configure) the state | bit5 | Position when the device is in the identification (configuration) state |

## 5.2 The device is on the cloud

This product can bind devices through the "World Power Equipment Assistant" WeChat applet or web terminal to realize remote monitoring, abnormal alarms, data reports and other functions.

### 5.2.1 Device cloud platform

**(1) Mini program**

Search for the mini program "World Electric Device Assistant" in WeChat and add the mini program.

**(2) Web**

Web address: https://www.west-iot.com/wessass

### 5.2.2 Guidelines for the use of mini programs

**Step 1: Log in to the "World Power Equipment Assistant" WeChat applet**

Scan the QR code below - enter the account password - log in to the mini program

图4 World Electric Equipment Assistant QR code and login

Or search for the mini program "World Electric Equipment Assistant" on WeChat

**Step 2: Bluetooth connection gateway**

Enter the Smart Management System - click "+" at the bottom of the screen - click "Search Device" - click on the gateway with the same model and SN code selected

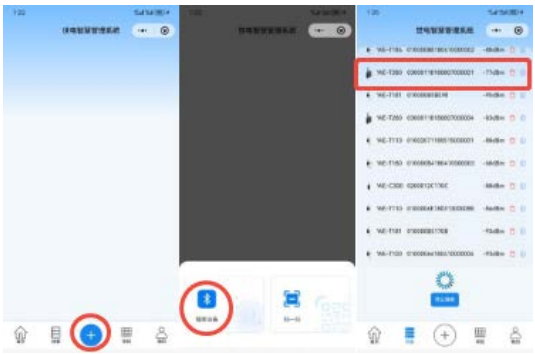

图5 Bluetooth connection gateway

**Step 3: Mini program query and synchronize device information**

When the device is successfully connected, the status light is green. You can view the information and status of the device through the mini program, modify the configuration of the

device, etc


图6 Gateway device information

Click "Information" to query and synchronize the device network information on the device information page


图7 Gateway device information

Click Status to query the status information of the device on the device status page.


图8 Gateway device status

Click Configure and click Query to query all attribute values of the device. Check the attribute you want to modify, then modify the attribute value, and then click "Sync".


图9 Gateway configuration information

Click Event - Click Query to query the alarm, fault and other event information of the device.

图10 Gateway event information

Click O&M to restart, restore, identify, and upgrade the device.


图11 Gateway O&M

**Step 4: Project management**

Click Projects - Select Projects - Click - Click - Device Management.

Click the + sign in the upper right corner of the device management page, select the product, and select the addition method, which can be added manually, scanned or added by scanning the QR code.

**Scan the code to add:**

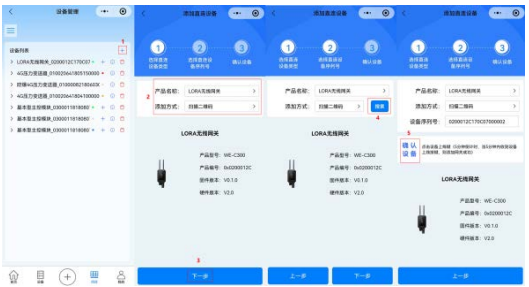

图12 Scan the device QR code to add

**Add manually:**

图13 Add manually

**Bluetooth adds:**

图14 Bluetooth added

**Step 5: Add LoRa sub-devices under Gateway**

Click the + sign after the gateway name, select the network type, and select the add method.

Select Add manually: Click Next, click Add, select the device name, device serial number, fill in the device network address, click Next, and click Save.

图15 Manually add sub-devices

Select Bluetooth: Click Search, click Get device information for a searched device, click Next, and click Save.

图16 Bluetooth search to add sub-devices

Note: The LoRa over-the-air baud rate, LoRa network ID, and LoRa network channel of the LoRa sub-device must be consistent with each other.

### 5.2.3 Guidelines for Using Cloud Platforms

**Step 1 Enter the official website of "World Power Industrial Interconnection Project Center" through the website https://hnsd.weixinzjit.com/wessass/#/login and log in to your account**


图17 Cloud platform login page

**Step 2 Go to the platform and click on the action button (icon) of the project to enter the project.**

图18 List of projects

**Step 3 Click "Device Management", click the "+" button on the right side of the device list, add a gateway, select "Basic Master Module" from the drop-down box of the gateway product name, and click "Next"**

图19 Device addition

**Step 4 Enter the device serial number and click "Next"**

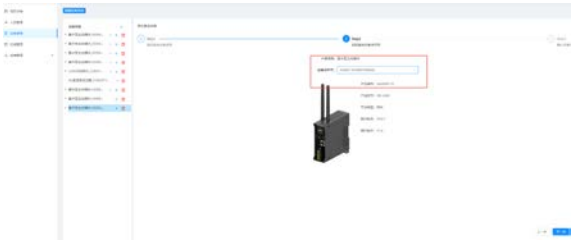

图20 Device addition

**Step 5 Click Done, add done**

图21 Device addition

### 5.2.3 Add a sub-device under the gateway

**Step 1 Click the " ＋ " button on the right side of the gateway in the device list, select LoRa for the network, select Add manually, and click Next.**

图22 Device addition

**Step 2: Click Add Sub-Device, select the product and serial number, fill in the device network address, and click Next.**

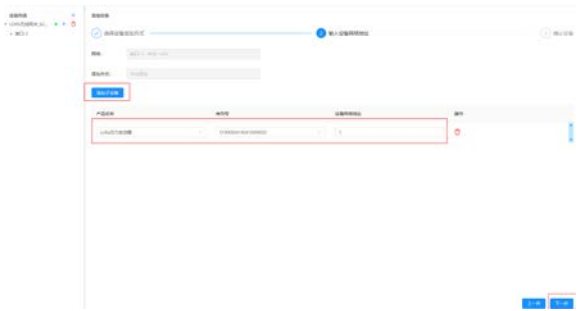

图23 Device addition

**Step 3, click Save.**

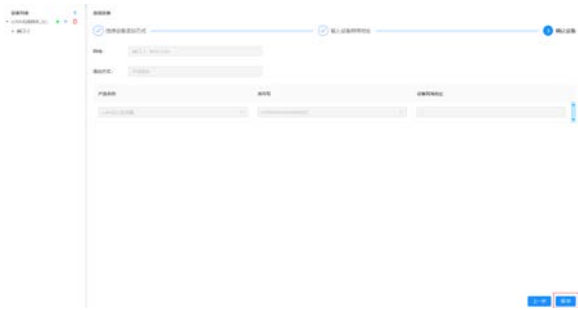

图24 Device addition

Note: The LoRa over-the-air baud rate, LoRa network ID, and LoRa network channel of the LoRa sub-device must be consistent with each other.

## 5.3 Typical topology


图25 Typical topology diagram

# 第6章 Fault analysis and troubleshooting

The following table lists the problems that may arise with the industrial edge computing gateway and the solutions, if your problem is not listed or the solution cannot handle your problem, please contact our company.

表6 Common fault analysis and troubleshooting

| Fault phenomenon | Cause analysis | Elimination methods |
|---|---|---|
| The indicator light does not come on at all | The power supply is not connected | Replug it in |
| The SIM card is not readable | The card is not inserted/the card is not charged/the card is bound | Reinsert<br>Check card fee renewal<br>The card is unbound |
| There is no | There are bugs in | Check the procedure |

| | | |
|---|---|---|
| data on the platform | general procedures | |
| system lights up but cloud doesn't light up | Too weak local signal/misconfigured network | Check the network |

# 第7章 Warranty and after-sales service

The company promises to customers that if there is a product quality problem during the warranty period, the company will implement an unconditional three-guarantee service for products with quality problems, that is, free repair, replacement or return. All non-customized products are guaranteed to be returned or exchanged within 7 days (excluding damaged products), and customized products are subject to the warranty agreed in the contract.

**Disclaimer**

During the warranty period, product failures caused by the following reasons are not covered by the three guarantees:

(1) Product failure caused by improper customer use.

(2) Customers disassemble, repair and modify the product by themselves, causing product failure.

# Appendix Data Communications

**1. Input register**

| Function code 4 | | | | | |
|---|---|---|---|---|---|
| Gateways Equipment Information | Starting address | offset address | Definition | Example | |
| | 0x0000~ 0x000F | 0x0000 | PID byte1\byte2 | 0x0200 | products PID |
| | | 0x0001 | PID byte3\byte4 | 0x012c | |
| | | 0x0002 | SN byte1 byte2 | 0x0200 | products SN |
| | | 0x0003 | SN byte3 byte4 | 0x012c | |
| | | 0x0004 | SN byte5 byte6 | 0x170B | |
| | | 0x0005 | SN byte7 byte8 | 0x1000 | |
| | | 0x0006 | SN byte9 byte10 | 0x0001 | |
| | | 0x0007 | fw version byte3 byte2 | 0x0001 | Firmware version 1.2.3 correspondence |
| | | 0x0008 | fw version byte1 byte0 | 0x0404 | |

| | | | | | |
|---|---|---|---|---|---|
| | | | | | The value is 0x0001 0x0203 |
| | | 0x0009 | hw version | 0x0030 | Hardware version 1.2 correspondence The value is 0x0102 |
| | | 0x000A~ 0x000F | Reserved | 0x0000 | |
| ter mi na | | 0x0010 | subnet1 netaddress0~15 | 0x180E | Start low Count. Take the |
| | | 0x0011 | subnet1 | 0x0000 | |

| | | | | | |
|---|---|---|---|---|---|
| l Equipment table | | | netaddress16~31 | | address 0x0010 as an example, 0x180E corresponds Binary 0001 1000 0000 1110 indicated exists Wired terminals 1,2,3, 11,12 |
| | | 0x0012 | subnet1 netaddress32~47 | 0x0000 | |
| | | 0x0013 | subnet1 netaddress48~63 | 0x0000 | |
| | | 0x0014 | subnet2 netaddress64~79 | 0x0000 | |
| | | 0x0015 | subnet2 netaddress80~95 | 0x0010 | |
| | | 0x0016 | subnet2 netaddress96~111 | 0xC220 | |
| | | 0x0017 | subnet2 netaddress112~127 | 0x0020 | |
| | | 0x0018- | Reserved | | |

| | | | | | |
|---|---|---|---|---|---|
| | | 0x001F | | | |
| terminal Equipment online table | | 0x0020 | subnet1 netaddress0~15 | 0x180E | Start low Count Take the address 0x0020 as an example 0x180E correspond Binary 0001 1000 0000 1110 indicated Wired terminals |
| | | 0x0021 | subnet1 netaddress16~31 | 0x0000 | |
| | | 0x0022 | subnet1 netaddress32~47 | 0x0000 | |
| | | 0x0023 | subnet1 netaddress48~63 | 0x0000 | |
| | | 0x0024 | subnet2 netaddress64~79 | 0x0000 | |
| | | 0x0025 | subnet2 netaddress80~95 | 0x0000 | |
| | | 0x0026 | subnet2 netaddress96~111 | 0x0000 | |
| | | 0x0027 | subnet2 netaddress112~127 | 0x0000 | |

| | | | | | |
|---|---|---|---|---|---|
| | | | | | 1,2,3, 11,12 online |
| | | 0x0020-0x00FF | Reserved | 0x0000 | |
| terminal Equipment Inform | 0x0100 + (Netaddress N)*0x80 | 0x0000 | net address N PID byte1、byte2 | 0x0100 | products PID |
| | | 0x0001 | netaddress N PID byte3、byte4 | 0x0064 | |
| | | 0x0002 | netaddress N SN byte1 byte2 | 0x0100 | products SN |
| | | 0x0003 | netaddress N SN byte3 byte4 | 0x0064 | |
| | | 0x0004 | netaddress N SN byte5 byte6 | 0x170B | |
| | | 0x0005 | netaddress N SN byte7 byte8 | 0X1500 | |
| | | 0x0006 | netaddress N SN | 0X0001 | |

| | | | | | |
|---|---|---|---|---|---|
| ati<br>on | | | byte9 byte10 | | |
| | | 0x0007 | netaddress N fw version byte3 byte2 | 0X0003 | Firmware version 1.2.3 correspondence The value is 0x0001 0x0203 |
| | | 0x0008 | netaddress N fw version byte1 byte0 | 0X0000 | |
| | | 0x0009 | netaddress N hw version | 0X0300 | Hardware version 1.2 correspondence The value is |

| | | | | | |
|---|---|---|---|---|---|
| | | | | | 0x0102 |
| | | 0x000A~<br>0x000F | netaddress N<br>Reserved | 0X0000 | |
| | | 0x0010 | device attribute1 | 0X0000 | |
| | | 0x0011 | device attribute2 | 0X0000 | |
| | | 0x0012 | device attribute3 | 0X0000 | |
| | | 0x0013 | device attribute4 | 0X0000 | |
| | | 0x0014 | device attribute5 | 0X0000 | |
| | | 0x0015 | device attribute6 | 0X0064 | |
| | | 0x0016 | device attribute7 | 0XFFFF | |
| | | 0x0017 | device attribute8 | 0XFC92 | |
| | | 0x0018 | device attribute9 | 0X00D4 | |
| | | 0x0019 | device attribute10 | 0X00C9 | |
| | | 0x001A | device attribute11 | | |
| | | 0x001B | device attribute12 | | |
| | | 0x001C | device attribute13 | | |
| | | 0x001D | device attribute14 | | |

| | | | | | |
|---|---|---|---|---|---|
| | | 0x001E | device attribute15 | | |
| | | 0x001F | device attribute16 | | |

**Remarks:**

1) The wired terminal device corresponds to subnet1, with an address range of 0-63, and the wireless terminal device corresponds to subnet2, with an address range of 64-127

2) The starting address of the terminal device = 0x0100+(Netaddress N)*0x80 = 256+(Node screen display address +64)*128, for example, the starting address of a wireless terminal with address 6 is 256+(6+64)*128=9216

3) For more information about the endpoint device attributes, see the node device attributes table

### 1. Holding register

| Function code 3 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Holding regis | Group | Register index | Register count | Definition | Commnet | default | Example |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | ter | | | | | | | |
| IP acquisition method | 0x0000~0x0080 | gateway modbus table | 0x00 | 1 | Local IP request mode | RW | 0 | 0: Dynamic 1: static |
| IP address | | | 0x01 | 2 | Local IP address | RW | 192.168.1.100 | |
| Gatewa | | | 0x03 | 2 | Local gw ip address | RW | 192.168.1.1 | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| y ad dr es s | | | | | | | | |
| Su bn et ma sk | | | 0x05 | 2 | subnet mask | RW | 255.2 55.25 5.0 | |
| Cl ou d co nn ec ti vi ty | | | 0x07 | 1 | IOT server rqeust mode | RW | 0 | 0: IP method 1: DNS Domain name resolu tion |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Cloud IP address | | | 0x08 | 2 | Iot ip | RW | | C0 A8 1E AB is 192.168.30.171 |
| Cloud port | | | 0x0A | 1 | Iot server port no | RW | 5088 | |
| Cloud domain | | | 0x0B | 32 | iot name | RW | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| name | | | | | | | | |

**2. Node device attribute table (continuously updated)**

| Product model | WE-T110 | WE-T100 | WE-T113 |
|---|---|---|---|
| PID | 0x0100006E | 0x01000064 | 0x01000071 |
| Product Name | Wireless LORA Temperature transmitter | Wireless LORA Pressure transmitter | Wireless LORA Temperature and humidity transmitter |
| Attribute register 1 | Device status | Device status | Device status |
| Attribute register 2 | Equipment alarm code High position | Equipment alarm code High position | Equipment alarm code High position |
| Attribute register 3 | Equipment alarm code | Equipment alarm code | Equipment alarm code |

| | | | |
|---|---|---|---|
| | low | low | low |
| Attribute register 4 | Device error code High position | Device error code High position | Device error code High position |
| Attribute register 5 | Device error code low | Device error code low | Device error code low |
| Attribute register 6 | Battery | Battery | Battery |
| Attribute register 7 | temperature value | The pressure value is high | temperature value |
| Attribute register 8 | Device temperature | Pressure value low | Humidity value |
| Attribute register 9 | Signal strength | Device temperature | Device temperature |
| Attribute register 10 | | Signal strength | Signal strength |
| Attribute | | | |

| | | | |
|---|---|---|---|
| register 11 | | | |

| Properties | Step length | unit |
|---|---|---|
| Battery | 1 | % |
| temperature | 0.1 | Degree Celsius (°C) |
| Humidity | 1 | % |
| stress | 1 | Pa |
| carbon dioxide | 1 | Parts per million (ppm) |
| level | 0.01 | Meter (m) |

WES

For more inquiries, please scan the QR code