EBYTE

成都亿佰特电子科技有限公司

Chengdu Ebyte Electronic Technology Co.,Ltd.

Wireless Modem

User Manual

LoRaWAN Gateway
E890-470LG27



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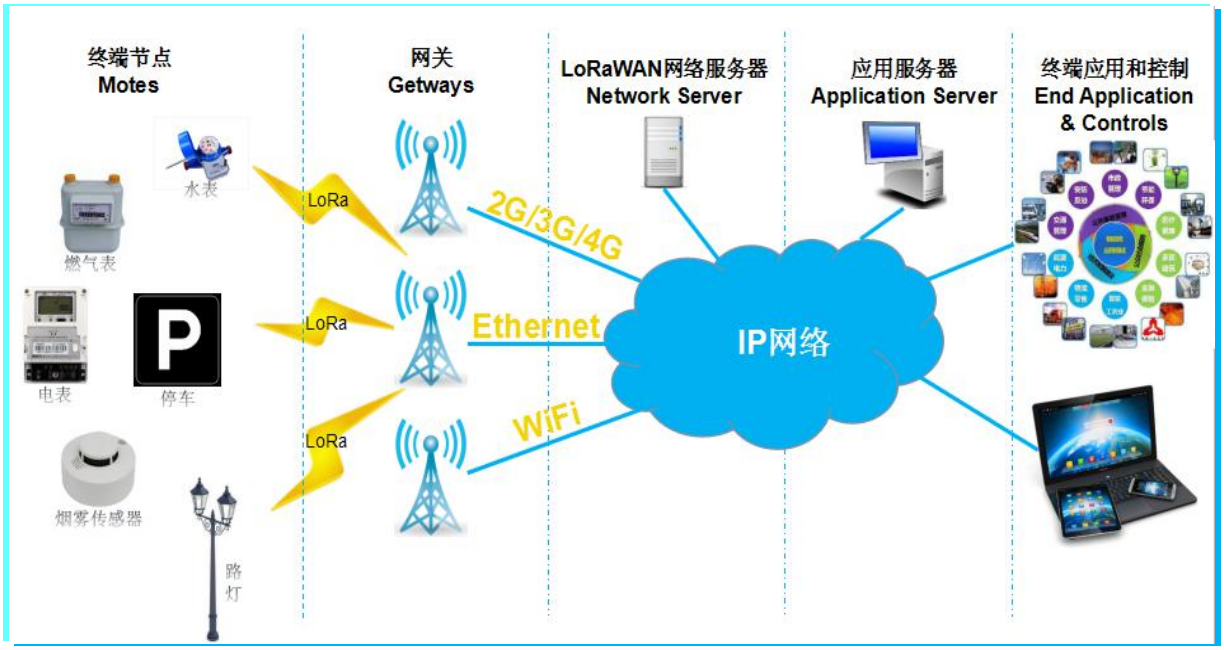
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1.Overview

1.1 Introduction

E890-470LG27 is a LoRaWAN gateway designed and manufactured by Chengdu Ebyte Electronic Technology Co., Ltd. It is a standard Internet of Things relay device. As an information converter of the LoRaWAN communication system, E890-470LG27 is responsible for connecting the network servers and the terminal nodes to achieve the data communication protocol conversion and forwarding from the terminal devices to the servers. With the LoRa physical layer function, E890-470LG27 gateway supports the LoRaWAN communication standard, uplink multi-channel concurrency. Using the CN 470-510MHz frequency band, and having frequency hopping anti-interference functions in the working frequency band, The E890-470LG27 can be connected by a large number of various LoRa nodes. The E890-470LG27 supports 4G / 3G / 2G, supports Bluetooth wireless configuration management nearby, supports high-precision clock synchronization, and provides conditions for low-cost / low-power positioning. E890-470LG27 can be powered by civilian power. The -40 to 70 ° C operating temperature enables E890-470LG27 to be suitable for indoor industrial-grade equipment in harsh environments.

1.2 Network Diagram



Network Diagram Image

A LoRaWAN network architecture contains mainly four sectors: terminal, LoRaWAN gateway, NS (network server), and application server. Taking advantage of long distance characteristics of LoRa technology, by single-hop transmission, the LoRaWAN gateway and the terminal can be connected with each other from long distance by a star network. The terminal sector contains typical applications such as water meters, electricity meters, gas meters, smoke sensors, smart parking, street lights. One terminal node can send data to multiple LoRaWAN gateways at the same time, then the LoRaWAN gateway will process for forwarding the data of LoRaWAN protocol between the NS and the terminal by transfer the LoRaWAN data on the LoRa radio frequency transmission and TCP/IP respectively. In this way, data will be transmitted from the terminal nodes to the network server.

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2.Parameters:

E890-470LG27 LoRaWAN Gateway Parameters:

No.	Name	Details
1	Working Frequency	CN 470-510MHz/AS 923MHz
2	RX Sensitivity	-146dBm @SF12，125KHz BW
3	TX Sensitivity	Max +27dBm
4	LoRa Antenna Type	SMA Interface
5	4G	TD-LTE/FDD-LTE/GSM/GPRS/EDGE
6	4G Antenna Type	SMA Interface
7	Bluetooth	2.0+, 2.4GHz
8	Bluetooth Antenna Type	PCB
9	Ethernet Port	RJ45
10	Power Input	DC +12V--1.5A
11	Working Temp.	-40℃～+70℃
12	Power Consumption	Max 12W
13	Housing Material	ABS
14	Dimension	120mm×120mm×28mm
15	Installation Method	Mounting and Hanging

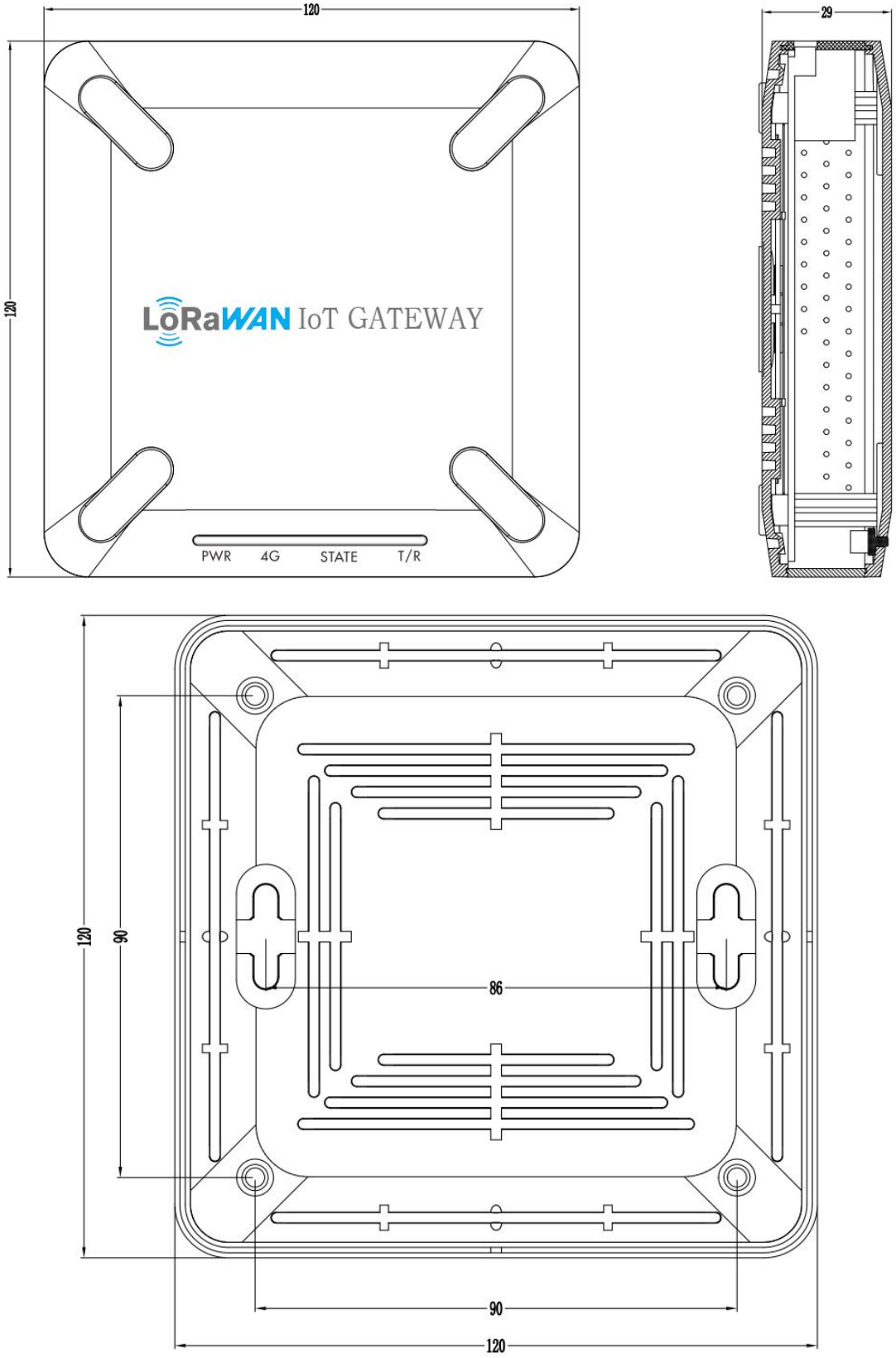
TG-18W Power Supply Parameters

No	Name	Details
1	Power Input	110/240VAC（50/60Hz）
2	Power Output	12V/1.5ARipple current≤100mV
3	Isolation Voltage	2500VAC（Input to Output）
4	Working Temp.	-40℃～+70℃
5	Protection Functions	Protection for short circuit, over current, over voltage
6	EMC Performance	Anti-static discharge 8KV, anti-group pulse 4KV, anti-lightning surge 4KV
7	Housing Material	Plastic
8	Dimension	8×5.2×3.7 mm

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Dimensions

E890-470LG27 LoRaWAN Gateway Dimension:120mm（Length）×120mm（Width）×29mm（Height）



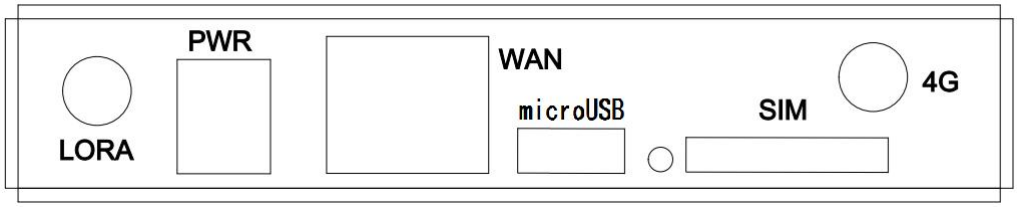
Image

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3. Ports and Installation

3.1 Ports:

Ports locations:



Ports Functions:

No.	Ports	Functions
1	LORA	To Install LoRa Antenna
2	PWR	To Connect to Power Input
3	WAN	To Connect to Ethernet Cable
4	microUSB	For Gateway Setting.
5	SIM	To Install SIM Card
6	4G	To Install 4G Antenna

Working Indicator LED light Drawing:



Indicator LED light functions:

No.	Name	Functions
1	PWR	Power Indicator
2	4G	4G Status Indicator
3	STATE	Working Status Indicator
4	T/R	Transmitting and Receiving Indicator

3.2 Notice

- Depending on the data communication method, users need to prepare by yourselves either the network cables (CAT5 network cables are recommended) or the first-generation big SIM card. The SIM card must be 4G cards with sufficient 4G traffic.
- If using 4G communication, user need to install the SIM card on the internal card slot of the SIM card port.
- If using Ethernet communication, connect the Ethernet network cable to the Ethernet port of the gateway.
- All antennas must be installed before they can be powered on for setting and use.

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4. Gateway Setting

4.1 Setting Steps:

After the above hardware connections is completed, turn on the power and then you are ready to start to setting the gateway parameters:

1. Install the E890-GateWay.apk LoRaWAN setting APP on the mobile phone. After the installation is completed, turn on the mobile phone's Bluetooth, click the gray button to search for the gateway device (the gateway EUI can be viewed on the back of the gateway), and click the corresponding gateway to establish a Bluetooth connection (for the first time login, you need to enter the password: 1234);

As shown below:



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At this point, the gateway has established a Bluetooth connection with the mobile phone and you can return to the previous menu: Gateway Settings—> Gateway Parameter Configuration—> Select the parameters you want to configure:

Common parameters:

- 4G mode setting: server IP, uplink port, downlink port, transmission protocol TCP / UDP;
- Ethernet mode setting: LoRa gateway IP, LoRa gateway subnet mask, Ethernet gateway IP, server IP, uplink port, downlink port, transmission protocol TCP / UDP;

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For example, the parameters setting here are:



As a standard LORAWAN gateway, two parameters in the advanced parameters need to be noted:
Network type selection: Public LoRaWan; Gateway working mode: standard



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After the gateway parameters are set, select the previously configured parameters and click "Read" to see if the parameters set are successful;

After confirming the setting is successful, (return) —> gateway reset — hardware reset —> click settings (restart gateway);

After confirming the successful restart, (return) —> terminal status read (need to reconnect Bluetooth) —> click read (check if the gateway is online)



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5. Shipping and Storage:

- When transporting and unpacking, this device should not be handled carefully. It should be transported and stored in accordance with GB / T15464-1995 ("General Technical Conditions for Instrument and Packaging").
- Do not connect the device to power when the device casing is obviously damaged due to severe shaking or high-level drop during shipping, unpacking, and installation, and contact the supplier as soon as possible.
- The device should be in the original package, the ambient temperature of the storage place is -50 ℃ ～ + 80 ℃, the average relative humidity should not exceed 75%, and no corrosive gas is in the storage environment .
- Stored in a warehouse, it should be placed on a rack with a stack height of no more than 10 boxes.

6. Appendix: Accessories List

No	Class	Name	Model	Qty
1	Device	LoRaWAN Gateway	E890-470LG27	1
		Power Supply	YG-18W	1
2	Accessories	LoRa Foldable Antenna	SMA Male 470MHz	1
		4G Foldable Antenna	SMA Male 4G	1

7. Revision History

Version	Date	Description	Issued by
1.0	2019/9/9	Format revision	Lyl

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