ED-GWL2010

An indoor light gateway based on Raspberry Pi 4B

EDA Technology Co.,Ltd
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Contents

1 Product Overview

ED-GWL2010 is an indoor light gateway designed based on Raspberry Pi 4B. This product uses the new generation of SX1302 and SX1303 baseband chip LoRa gateway modules, which have the characteristics of long transmission distance, large node capacity and high receiving sensitivity. In addition, this gateway has strong performance, light structure, and simple deployment, which can greatly simplify and shorten your development threshold and design time.

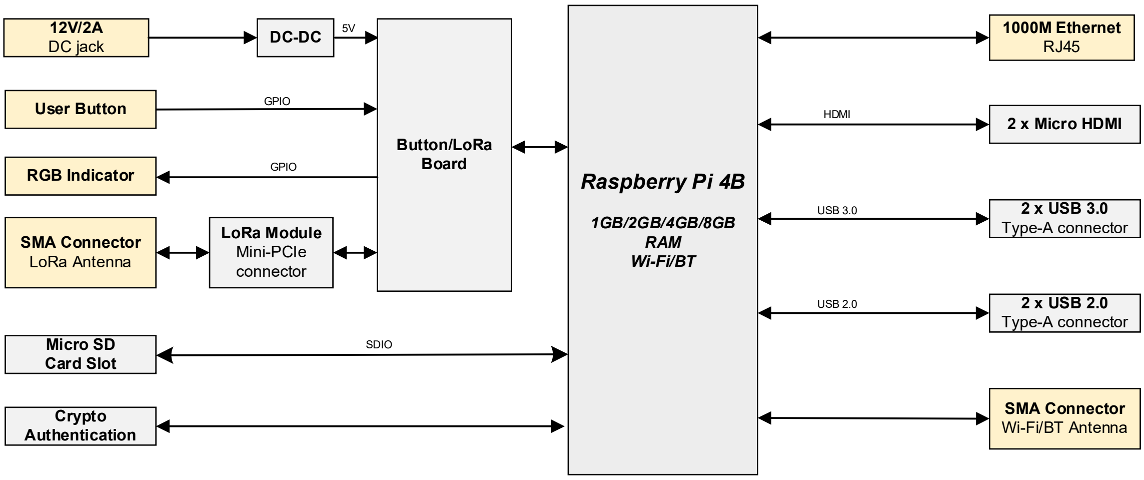
1.1 Target Application

- LoRa intelligent gateway
- Smart manufacturing
- Smart city
- Smart transportation

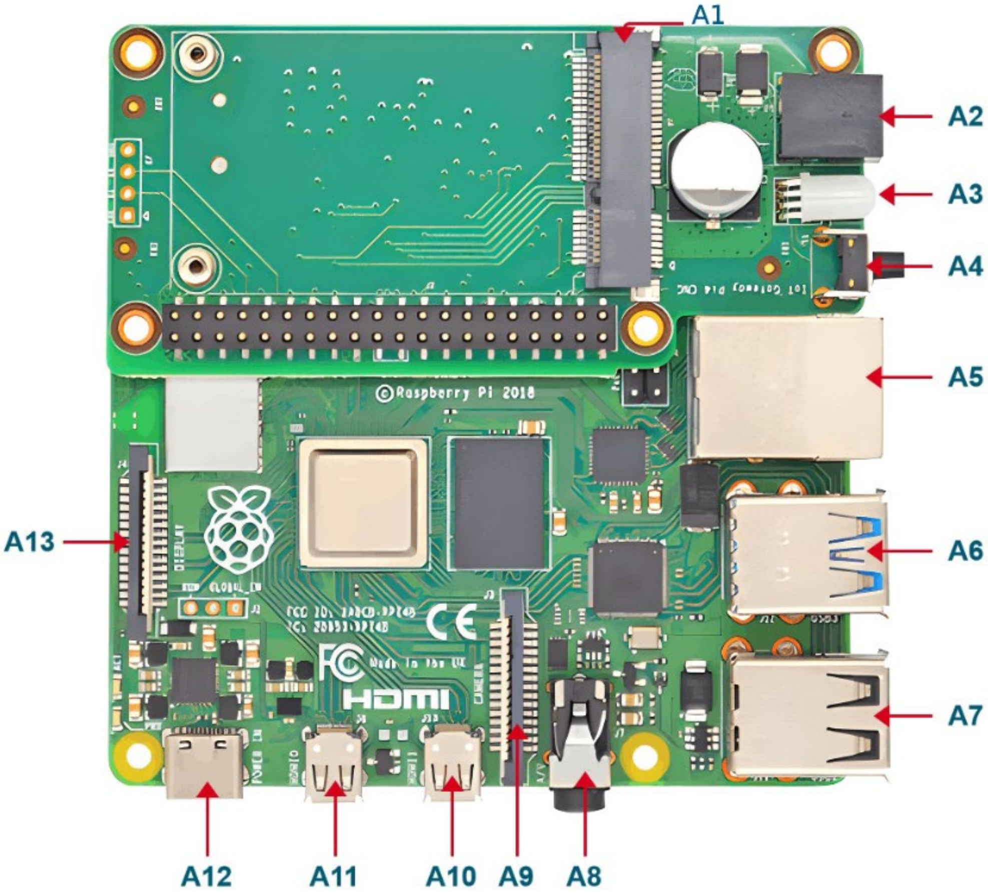
1.2 Specifications and Parameters

Function	Parameters
CPU	Broadcom BCM2711, quad core Arm Cortex-A72 (ARM v8) 64-bit SoC @ 1.5GHz
Memory	Options for 1GB, 2GB, 4GB, 8GB LPDDR4-3200 SDRAM
OS	Compatible with official Raspberry Pi OS
SD card	Options for 32GB, 64GB
Ethernet	1x Gigabit Ethernet
Wi-Fi/Bluetooth	2.4GHz & 5GHz dual-band Wi-Fi and Bluetooth 5.0
LoRa Frequency	Support optional 868MHz(EU868)/915MHz(US915)/470MHz(CN470)
User Button	Support custom function
RGB LED	Support multiple custom displays
Power Supply	DC 12V/2A
Internal IO	2x Micro-HDMI 1x CSI, support extended connection to Camera 1x DSI, support extended connection to Raspberry Pi 7-inch LCD screen 2x USB 2.0, type A connector 2x USB 3.0, type A connector
Expansion Performance	Built-in Crypto Authentication
Case Material	Metal Case
Dimensions	95mm(W) x 95mm(D) x 24mm(H)
Antenna	Supports optional Wi-Fi/BT external antenna Standard LoRa external antenna
Working Temperature	-25 ~ 50 C

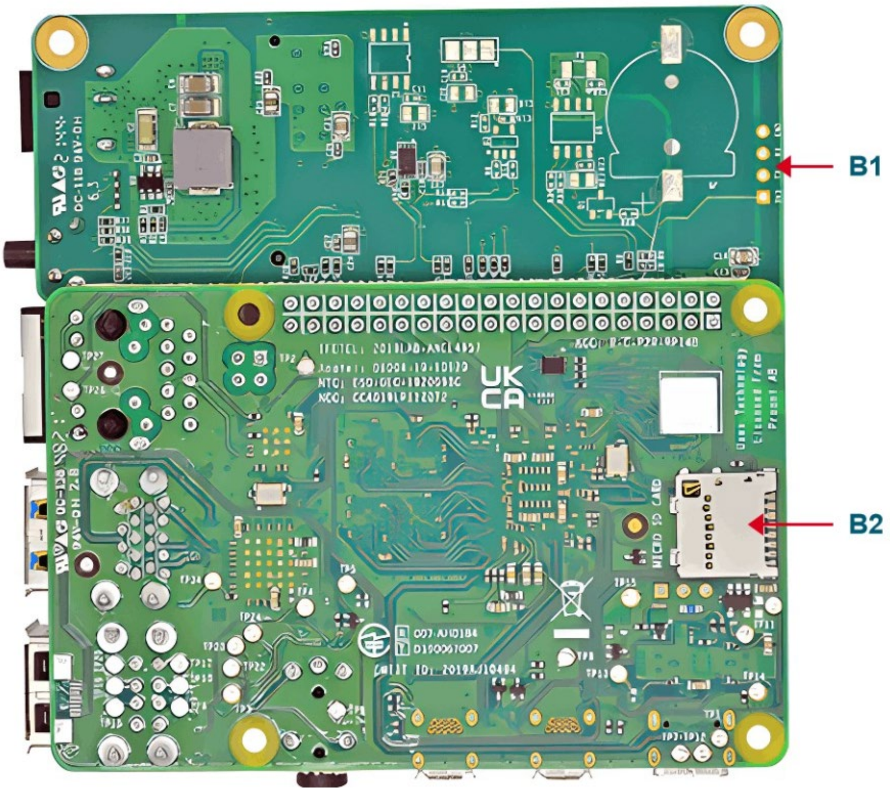
1.3 System Diagram



1.4 Functional Layout



Item	Function Description	Item	Function Description
A1	Mini PCIe	A2	Power interface
A3	RGB LED	A4	User-defined Button
A5	Gigabit Ethernet	A6	USB 3.0
A7	USB 2.0	A8	3.5mm audio jack connector
A9	CSI	A10	Micro HDMI
A11	Micro HDMI	A12	Pi4 power interface (no need to use)
A13	DSI	/	/

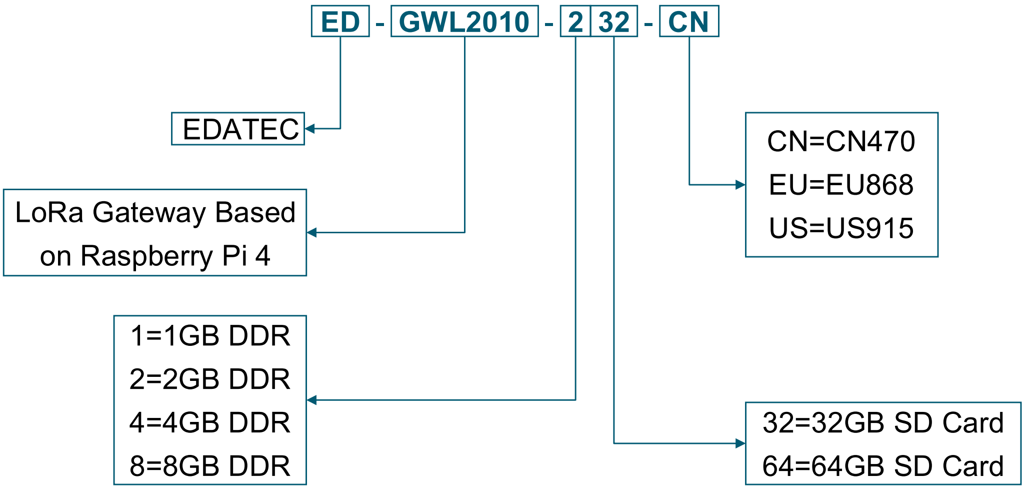


Item	Function Description	Item	Function Description
B1	Debug UART Port	B2	SD Card Slot

1.5 Packing List

- 1x ED-GWL2010 Unit
- [option]1x LoRa Antenna
- [optional]1x 2.4GHz&5GHz Wi-Fi/BT Antenna

1.6 Ordering Code



Example

P/N: **ED-GWL2010-232-CN**
Configuration: An indoor light gateway based on Raspberry Pi 4, with 2GB DDR, 32GB SD card and CN470 LoRa frequency.

2 Quick Start

2.1 Equipment List

- 1x ED-GWL2010 Unit
- 1x Wi-Fi/BT external antenna
- 1x LoRa external antenna
- 1x network cable
- 1x 12V@2A power supply

2.2 Hardware Connection

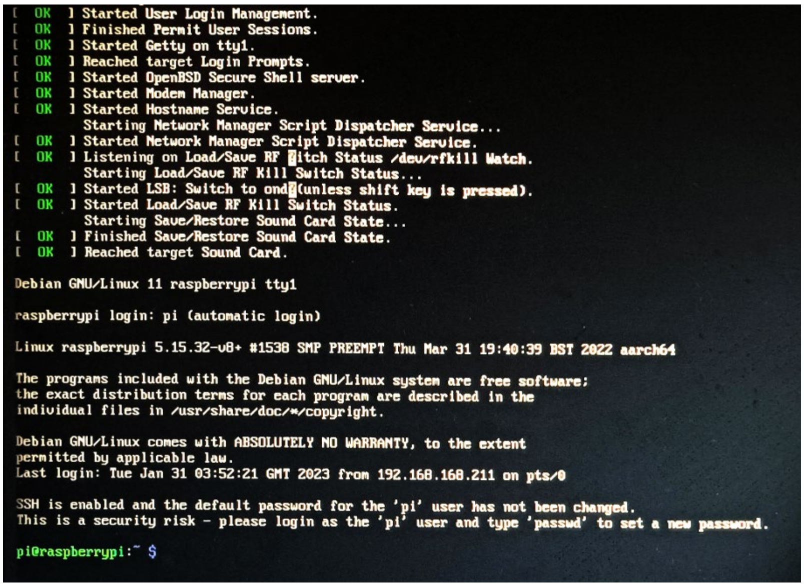
1. Install the Wi-Fi/BT external antenna.
2. Install LoRa external antenna.
3. Insert the network cable into the Ethernet port, and the network cable is connected with network devices such as routers and switches that can access the Internet.
4. Plug in the DC power input port (+12V DC) of ED-GWL2010 and supply power to the power adapter.

2.3 First Start

ED-GWL2010 does not have a power switch. After connecting to the power supply, the system will start to boot.

2.3.1 Raspberry Pi OS (Lite)

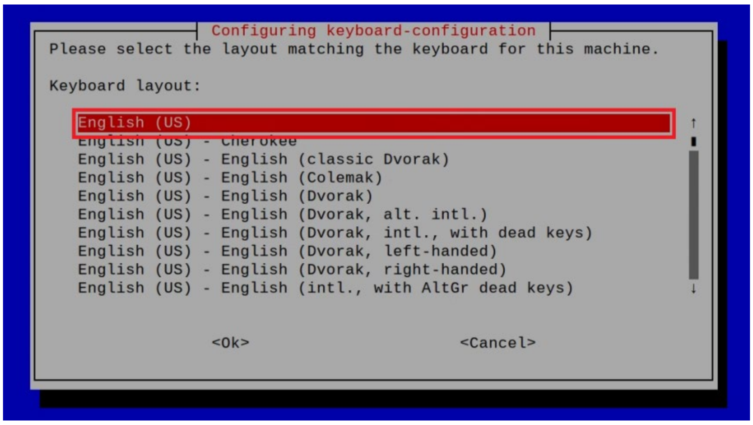
If you use the OS provided by us, after the system starts, you will automatically log in with the user name pi, and the default password is raspberry.



```
[  OK  ] Started User Login Management.
[  OK  ] Finished Permit User Sessions.
[  OK  ] Started Getty on tty1.
[  OK  ] Reached target Login Prompts.
[  OK  ] Started OpenBSD Secure Shell server.
[  OK  ] Started Modem Manager.
[  OK  ] Started Hostname Service.
         Starting Network Manager Script Dispatcher Service...
[  OK  ] Started Network Manager Script Dispatcher Service.
[  OK  ] Listening on Load/Save RF █itch Status /dev/rfkill Watch.
         Starting Load/Save RF Kill Switch Status...
[  OK  ] Started LSB: Switch to ond█(unless shift key is pressed).
[  OK  ] Started Load/Save RF Kill Switch Status.
         Starting Save/Restore Sound Card State...
[  OK  ] Finished Save/Restore Sound Card State.
[  OK  ] Reached target Sound Card.

Debian GNU/Linux 11 raspberrypi tty1

raspberrypi login: pi (automatic login)

Linux raspberrypi 5.15.32-v8+ #1538 SMP PREEMPT Thu Mar 31 19:40:39 BST 2022 aarch64

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Tue Jan 31 03:52:21 GMT 2023 from 192.168.168.211 on pts/0

SSH is enabled and the default password for the 'pi' user has not been changed.
This is a security risk - please login as the 'pi' user and type 'passwd' to set a new password.

pi@raspberrypi:~ $
```

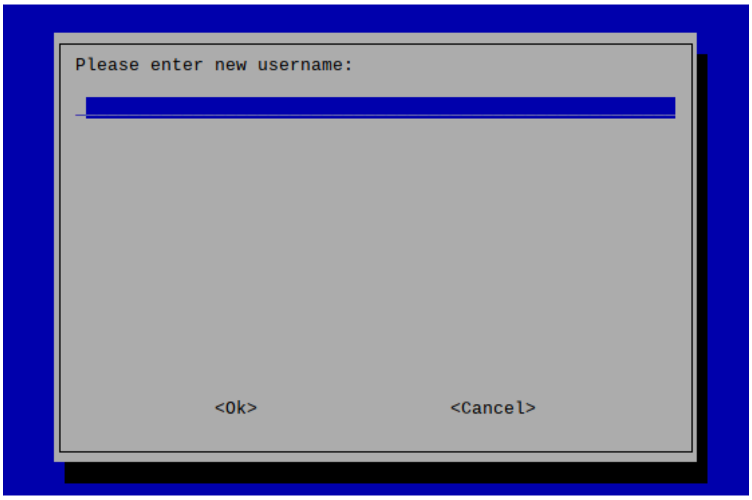
If you use the official OS, and OS is not configured before flashing to SD card, the configuration window will appear when you start it for the first time. You need to configure the keyboard layout, set the username and the corresponding password in turn.

1. Set the configuration keyboard layout



```
Configuring keyboard-configuration
Please select the layout matching the keyboard for this machine.

Keyboard layout:

  English (US)
  English (US) - Cherokee
  English (US) - English (classic Dvorak)
  English (US) - English (Colemak)
  English (US) - English (Dvorak)
  English (US) - English (Dvorak, alt. intl.)
  English (US) - English (Dvorak, intl., with dead keys)
  English (US) - English (Dvorak, left-handed)
  English (US) - English (Dvorak, right-handed)
  English (US) - English (intl., with AltGr dead keys)
```

2. Create a new user name



```
Please enter new username:

<Ok>                <Cancel>
```

Then set the password corresponding to the user according to the prompt, and enter the password again for confirmation. At this point, you can log in with the user name and password you just set.

2.3.2 Enable SSH

All the OS we provide have been enabled the SSH. If you use the official OS, you need to use a method to enable the SSH function.

2.3.2.1 Enable SSH via raspi-config command

1. Execute “**sudo raspi-config**” command
2. Choose **3 Interface Options**
3. Choose **I2 SSH**
4. Would you like the SSH server to be enabled? Select **Yes**
5. Choose **Finish**

2.3.2.2 Add Empty File to Enable SSH

Creat an empty file named ssh in the boot partition, and the SSH will be automatically enabled after the device is powered on.

2.3.3 Get The Device IP

- After the device is started, if the display screen is connected, you can use the **ifconfig** command to view the current device IP.
- After the device is started, if there is no display connected, you can check the IP assigned to the device through the router.
- After the device is started, if there is no display screen connected, you can download the Nmap tool to scan the IP under the current network.
  Nmap supports Linux, macOS, Windows and other platforms. If you want to use nmap to scan the

network segments from 192.168.3.0 to 255, you can use the following command:

```
nmap -sn 192.168.3.0/24
```

After waiting for a period of time, the result will be output:

```
Starting Nmap 7.92 ( https://nmap.org ) at 2022-12-30 21:19 中国标准时间
Nmap scan report for 192.168.3.1 (192.168.3.1)
Host is up (0.0010s latency).
MAC Address: XX:XX:XX:XX:XX:XX (Phicomm (Shanghai))
Nmap scan report for DESKTOP-FGEOUUK.lan (192.168.3.33)
Host is up (0.0029s latency).
MAC Address: XX:XX:XX:XX:XX:XX (Dell)
Nmap scan report for 192.168.3.66 (192.168.3.66)
Host is up.
Nmap done: 256 IP addresses (3 hosts up) scanned in 11.36 seconds
```

3 Wiring Guide

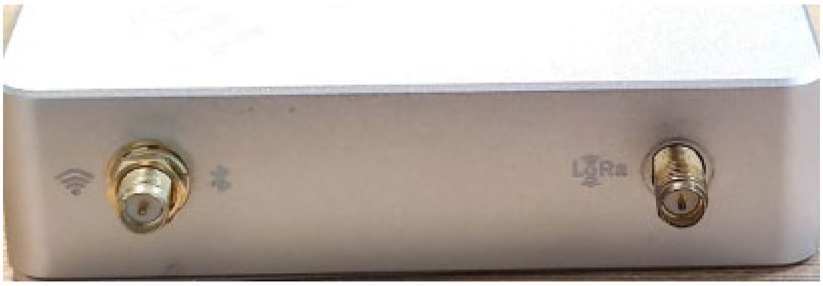
3.1 Internal I/O

3.1.1 Micro-SD Card

ED-GWL2010 contains a micro-SD card slot. Before powering on the device, please insert the micro-SD card with OS into the micro-SD card slot.

3.1.2 Antenna

ED-GWL2010 contains two external antennas, one is a Wi-Fi/BT antenna and the other is a LoRa antenna, which can be distinguished by the antenna labels.



According to the silk-screen instructions on the antenna interface on the device side, install the Wi-Fi/BT antenna on the left and the LoRa antenna on the right as shown in the above figure.

4 Software Operation Guide

4.1 Button

ED-GWL2010 contains a user-defined button inside the device, which is connected to the GPIO23 pin of CPU. It is at a high level by default. When the button is pressed, the pin is at a low level.

You can use the **raspi-gpio** command to test.

- Query the GPIO23 pin when the button is not pressed.

```
raspi-gpio get 23
GPIO 23: level=1 fsel=0 func=INPUT
```

level of 1 indicates that the GPIO23 pin is high.

- Query the GPIO23 pin When the button is pressed.

```
raspi-gpio get 23
GPIO 23: level=0 fsel=0 func=INPUT
```

level of 0 indicates that the GPIO23 pin is low.

4.2 LED Indication

ED-GWL2010 includes an RGB 3-color LED indicator, and the corresponding GPIO pins are as follows:

RGB LED PIN	GPIO
Blue	GPIO16
Green	GPIO20
Red	GPIO21

When the GPIO output is low, the corresponding LED is valid.
You can use the **raspi-gpio** command to operate, and the configuration parameter is **op**, which means output setting, **dl** setting pin is low level, and **dh** setting pin is high level.

The LED is displayed in blue.

```
sudo raspi-gpio set 16 op dl
sudo raspi-gpio set 20 op dh
sudo raspi-gpio set 21 op dh
```

The LED is displayed in green.

```
sudo raspi-gpio set 16 op dh
sudo raspi-gpio set 20 op dl
sudo raspi-gpio set 21 op dh
```

The LED is displayed in red.

```
sudo raspi-gpio set 16 op dh
sudo raspi-gpio set 20 op dh
sudo raspi-gpio set 21 op dl
```

The LED is displayed in yellow.

```
sudo raspi-gpio set 16 op dh
sudo raspi-gpio set 20 op dl
sudo raspi-gpio set 21 op dl
```

4.3 Ethernet Configuration

ED-GWL2010 includes one adaptive 10/100/1000M Ethernet interface.

The official OS of Raspberry Pi uses **dhcpcd** as the network management tool by default.

Static IP can be set by modifying “**/etc/dhcpcd.conf**”. For example, eth0 can be set, and users can set wlan0 and other network interfaces according to their different needs.

```
interface eth0
static ip_address=192.168.0.10/24
static routers=192.168.0.1
static domain_name_servers=192.168.0.1 8.8.8.8 fd51:42f8:caae:d92e::1
```

4.4 Wi-Fi

ED-GWL2010 supports 2.4GHz&5GHz IEEE 802.11 b/g/n dual-band Wi-Fi.

The official OS of Raspberry Pi uses dhcpcd as the network management tool by default.

1. Execute “**sudo raspi-config**” command.
2. Choose **1 System Options**
3. Choose **S1 Wireless LAN**
4. Select your country in the “Select the country in which the pi is to be used” window, and then select OK. This prompt only appears when setting up Wi-Fi for the first time.
5. Please enter SSID，input WIFI SSID name.
6. Please enter passphrase. Leave it empty if none, input password and then restart the device。

4.5 Bluetooth

ED-GWL2010 supports Bluetooth 5.0 and Bluetooth Low Energy (BLE). The Bluetooth function is enabled by default.

Bluetoothctl can be used to scan, pair and connect Bluetooth devices. Please refer to the ArchLinux-Wiki-Bluetooth guide to configure and use Bluetooth.

4.5.1 Basic Configuration Commands

Command	**Function Description**
bluetoothctl scan on	Enable Bluetooth scanning
bluetoothctl scan off	Disable Bluetooth scanning
bluetoothctl discoverable on	Enable Bluetooth discovery (which can be discovered by the other party)
bluetoothctl discoverable off	Disable Bluetooth discovery
bluetoothctl trust *device_MAC*	Trust device
bluetoothctl connect *device_MAC*	Connect device
bluetoothctl disconnect *device_MAC*	Disconnect device

4.5.2 Configuration Example

This chapter introduces how to configure Bluetooth through a configuration example.

Preparation:

The Bluetooth to be paired has been enabled and its name has been determined.

Steps:

1. Enter the Bluetooth view.

```
sudo bluetoothctl
```

2. Enable bluetooth.

```
power on
```

3. Scan Bluetooth device.

```
scan on
```

Returned display information:

```
Discovery started
[CHG] Controller B8:27:EB:85:04:8B Discovering: yes
[NEW] Device 4A:39:CF:30:B3:11 4A-39-CF-30-B3-11
```

4. Find the name of the turned-on Bluetooth device.

```
devices
```

Returned display information:

```
Device 6A:7F:60:69:8B:79 6A-7F-60-69-8B-79
Device 67:64:5A:A3:2C:A2 67-64-5A-A3-2C-A2
Device 56:6A:59:B0:1C:D1 Lefun
Device 34:12:F9:91:FF:68 test
```

5. Pairing target devices.

   pair *34:12:F9:91:FF:68*

   34:12:F9:91:FF:68 is target device's device_MAC

   Returned display information:

```
Attempting to pair with 34:12:F9:91:FF:68
[CHG] Device 34:12:F9:91:FF:68 ServicesResolved: yes
[CHG] Device 34:12:F9:91:FF:68 Paired: yes
Pairing successful
```

TIP:

The Bluetooth device to be connected also needs to confirm the pairing request, otherwise the pairing will fail.

6. Add as trusted device.

   trust *34:12:F9:91:FF:68*

   34:12:F9:91:FF:68 is target device's device_MAC

   Returned display information:

```
[CHG] Device 34:12:F9:91:FF:68 Trusted: yes
Changing 34:12:F9:91:FF:68 trust succeeded
```

4.6 LoRaWAN

ED-GWL2010 supports LoRaWAN open source service platform ChirpStack. Please refer to the following steps for installation and configuration.

4.6.1 Install LoRa Service and ChirpStack Client

We install it by APT.

- Add **edatec APT** warehouse

```
$ curl -sS https://apt.edatec.cn/pubkey.gpg | sudo apt-key add -
$ echo "deb https://apt.edatec.cn/raspbian stable main" | sudo tee /etc/apt/sources.list.d/edatec.list
$ sudo apt update
$ sudo apt install -y ed-gwl-pktfwd
```

- Install ChirpStack

```
$ sudo apt install -y apt-transport-https dirmngr
$ sudo apt-key adv --keyserver keyserver.ubuntu.com --recv-keys 1CE2AFD36DBCCA00
$ echo "deb https://artifacts.chirpstack.io/packages/4.x/deb stable main" | sudo tee
/etc/apt/sources.list.d/chirpstack.list
$ sudo apt update

$ sudo apt install -y chirpstack-gateway-bridge
```

- Modify “config.txt”

```
[all]
dtparam=i2c_arm=on
dtparam=spi=on

gpio=16=op,dl
gpio=20=op,dl
gpio=21=op,dl
```

Modify “/etc/modules”, add i2c-dev at the end

```
i2c-dev
```

ED-GWL2010 use i2c-1 and spidev0.0。

4.6.2 Configuring LoRa Service

4.6.2.1 Pktfwd Config

```
# update region
$ cat /etc/ed_gwl/region
EU868   # EU868 / US915
```

pktfwd use 1700 as UDP port

```
$ sudo systemctl restart ed-pktfwd.service
```

4.6.2.2 chirpstack-gateway-bridge Configuration

You can use **nano** to edit the configuration file “chirpstack-gateway-bridge.toml”.

```
$ sudo nano /etc/chirpstack-gateway-bridge/chirpstack-gateway-bridge.toml
```

```
# This configuration provides a Semtech UDP packet-forwarder backend and
 # integrates with a MQTT broker. Many options and defaults have been omitted
 # for simplicity.
 #
 # See https://www.chirpstack.io/gateway-bridge/install/config/ for a full
 # configuration example and documentation.


 # Gateway backend configuration.
 [backend]
 # Backend type.
 type="semtech_udp"

   # Semtech UDP packet-forwarder backend.
   [backend.semtech_udp]

   # ip:port to bind the UDP listener to
   #
```

```
  # Example: 0.0.0.0:1700 to listen on port 1700 for all network interfaces.
  # This is the listener to which the packet-forwarder forwards its data
  # so make sure the 'serv_port_up' and 'serv_port_down' from your
  # packet-forwarder matches this port.
  udp_bind = "0.0.0.0:1700"

# Integration configuration.
[integration]
# Payload marshaler.
#
# This defines how the MQTT payloads are encoded. Valid options are:
# * protobuf:  Protobuf encoding
# * json:      JSON encoding (easier for debugging, but less compact than 'protobuf')
marshaler="protobuf"

  # MQTT integration configuration.
  [integration.mqtt]
  # Event topic template.
  event_topic_template="eu868/gateway/{{ .GatewayID }}/event/{{ .EventType }}"

  # Command topic template.
  command_topic_template="eu868/gateway/{{ .GatewayID }}/command/#"

  # MQTT authentication.
  [integration.mqtt.auth]
  # Type defines the MQTT authentication type to use.
  #
  # Set this to the name of one of the sections below.
  type="generic"

    # Generic MQTT authentication.
    [integration.mqtt.auth.generic]
    # MQTT server (e.g. scheme://host:port where scheme is tcp, ssl or ws)
    server="tcp://127.0.0.1:1883"

    # Connect with the given username (optional)
    username=""

    # Connect with the given password (optional)
    password=""
```

- “event_topic_template / command_topic_template” needs to modify the prefix with gateway zone.

  Example:

  ```
  event_topic_template="eu868/gateway/{{ .GatewayID }}/event/{{ .EventType }}"
  ```

  If you use the US915 or CN470 module, please change the prefix “eu868” to “us915_0/cn470_10”.

  ```
  event_topic_template="us915_0/gateway/{{ .GatewayID }}/event/{{ .EventType }}"
  ```

- The server address of “integration.mqtt” needs to be your chirpstack server.

  ```
  $ sudo systemctl restart chirpstack-gateway-bridge.service
  ```

After modify “chirpstack-gateway-bridge.toml” config, need restart “chirpstack-gateway-bridge” service.

4.6.2.3 Reboot

```
$ sudo reboot
```

4.6.3 Install ChirpStack Server

To configure a cloud server, **docker** needs to be installed on the server before configuration.

Install docker：https://docs.docker.com/get-docker/

Install docker-compose

```
sudo apt install docker-compose
```

4.6.3.1 Config chirpstack-docker

We use docker container to deploy ChirpStack server.

```
$ git clone https://github.com/chirpstack/chirpstack-docker.git
```

Need to config “docker-compose.yml” of “chirpstack-docker”.

```
$ cd chirpstack-docker
$ nano docker-compose.yml
# Remove the chirpstack-gateway-bridge, because we run the bridge on gateway.
```

Delete the red font part.

```
$ nano docker-compose.yml

version: "3"

services:
  chirpstack:
    image: chirpstack/chirpstack:4
    command: -c /etc/chirpstack
    restart: unless-stopped
    volumes:
      - ./configuration/chirpstack:/etc/chirpstack
      - ./lorawan-devices:/opt/lorawan-devices
    depends_on:
      - postgres
      - mosquitto
      - redis
    environment:
      - MQTT_BROKER_HOST=mosquitto
      - REDIS_HOST=redis
      - POSTGRESQL_HOST=postgres
    ports:
      - 8080:8080

  chirpstack-gateway-bridge-eu868:
    image: chirpstack/chirpstack-gateway-bridge:4
    restart: unless-stopped
    ports:
      - 1700:1700/udp
    volumes:
      - ./configuration/chirpstack-gateway-bridge:/etc/chirpstack-gateway-bridge
    depends_on:
      - mosquitto

  chirpstack-rest-api:
    image: chirpstack/chirpstack-rest-api:4
    restart: unless-stopped
    command: --server chirpstack:8080 --bind 0.0.0.0:8090 --insecure
    ports:
      - 8090:8090
    depends_on:
      - chirpstack

  postgres:
    image: postgres:14-alpine
    restart: unless-stopped
    volumes:
      - ./configuration/postgresql/initdb:/docker-entrypoint-initdb.d
      - postgresqldata:/var/lib/postgresql/data
    environment:
      - POSTGRES_PASSWORD=root

  redis:
    image: redis:7-alpine
    restart: unless-stopped
    volumes:
      - redisdata:/data

  mosquitto:
    image: eclipse-mosquitto:2
    restart: unless-stopped
    ports:
      - 1883:1883
    volumes:
      - ./configuration/mosquitto/mosquitto.conf:/mosquitto/config/mosquitto.conf

volumes:
  postgresqldata:
  redisdata:
```

Start chirpstack service

```
$ docker-compose up -d
```

4.6.3.2 Logs Into chirpstack Service Management Interface.

Enter the server's IP address and port number 8080 in the PC browser, and the login interface will appear when the network is normal.

The default administrator user name and password are as follows:

```
user: admin
psw : admin
```

4.6.4 Adding LoRa Gateway and Terminal

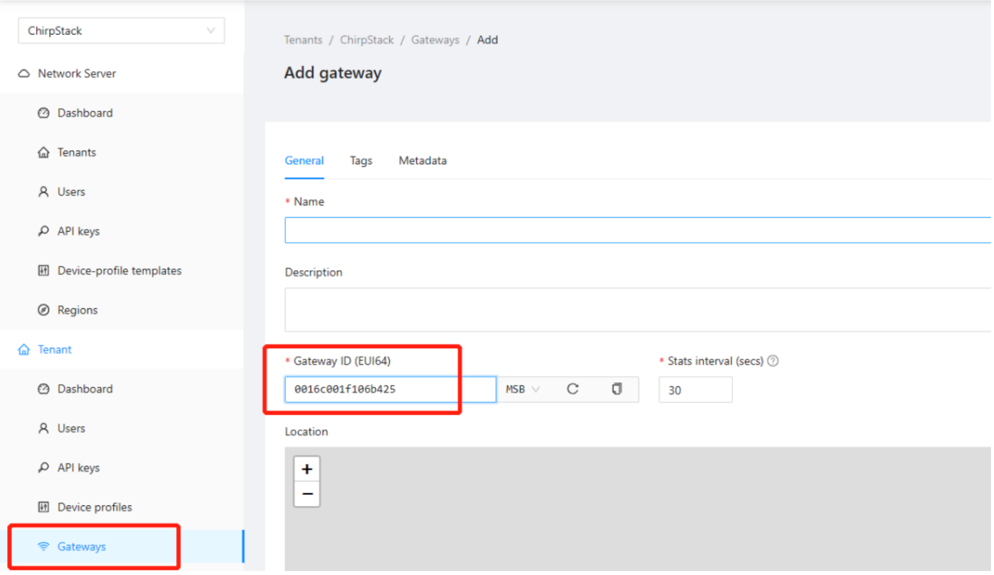
4.6.4.1 Gets LoRa Gateway ID

Execute the following command to get the ID of LoRa gateway. When adding LoRa gateway to chirpstack server, you need to add the corresponding gateway ID.

```
$ /opt/ed-gwl-pktfwd/ed-gateway_id
```

4.6.4.2 Add LoRa Gateway

Open chirpstack management interface in PC browser, click Gateway -> Add gateway, fill in the Gateway ID corresponding to the device, set the Name, and then click Submit. If the network connection is correct, wait a moment to see that the added gateway becomes Online.



Tenants / ChirpStack / Gateways / Add

Add gateway

* Name

Description

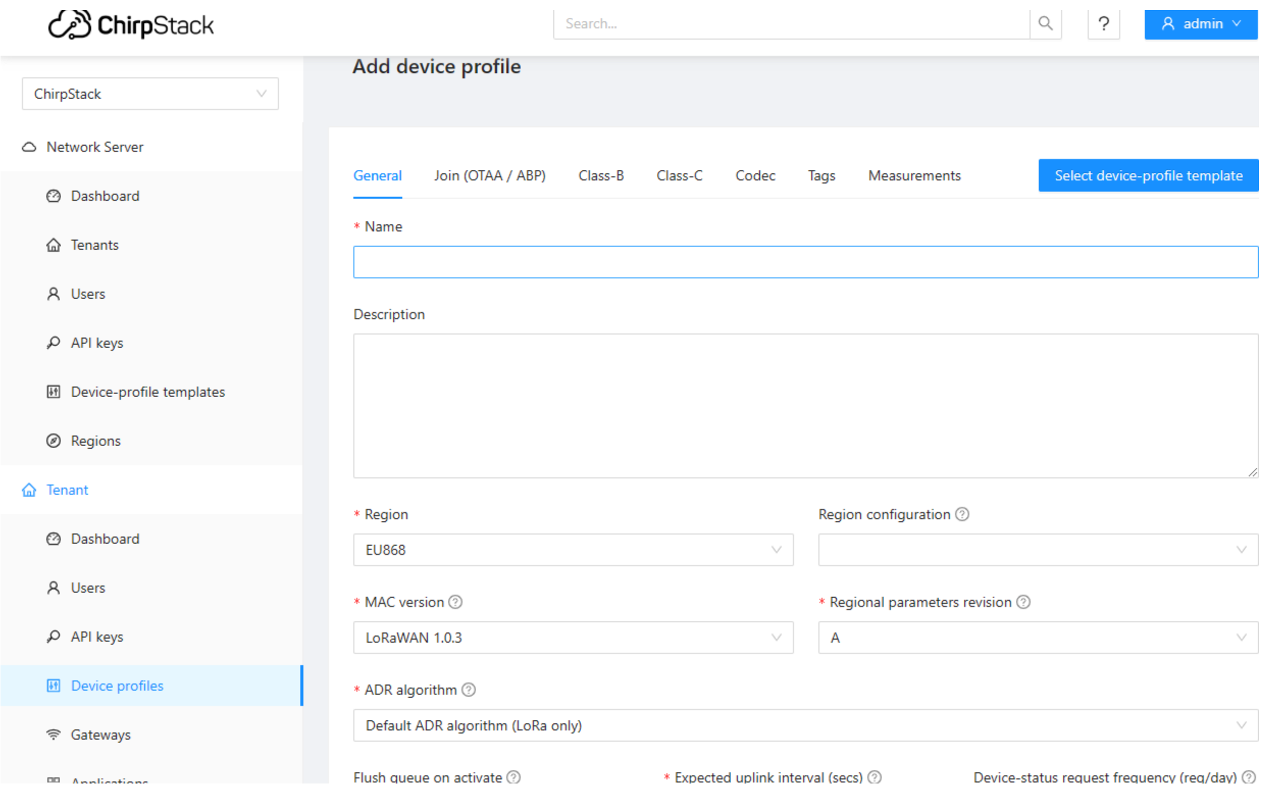
* Gateway ID (EUI64): 0016c001f106b425 MSB

* Stats interval (secs): 30

Location

4.6.4.3 Add Device Profile

Click device profile-> add device profile to further improve the device information.



Search...

? admin

ChirpStack

Network Server

Dashboard

Tenants

Users

API keys

Device-profile templates

Regions

Tenant

Dashboard

Users

API keys

Device profiles

Gateways

Applications

Add device profile

General | Join (OTAA / ABP) | Class-B | Class-C | Codec | Tags | Measurements

Select device-profile template

* Name

Description

* Region: EU868

Region configuration

* MAC version: LoRaWAN 1.0.3

* Regional parameters revision: A

* ADR algorithm: Default ADR algorithm (LoRa only)

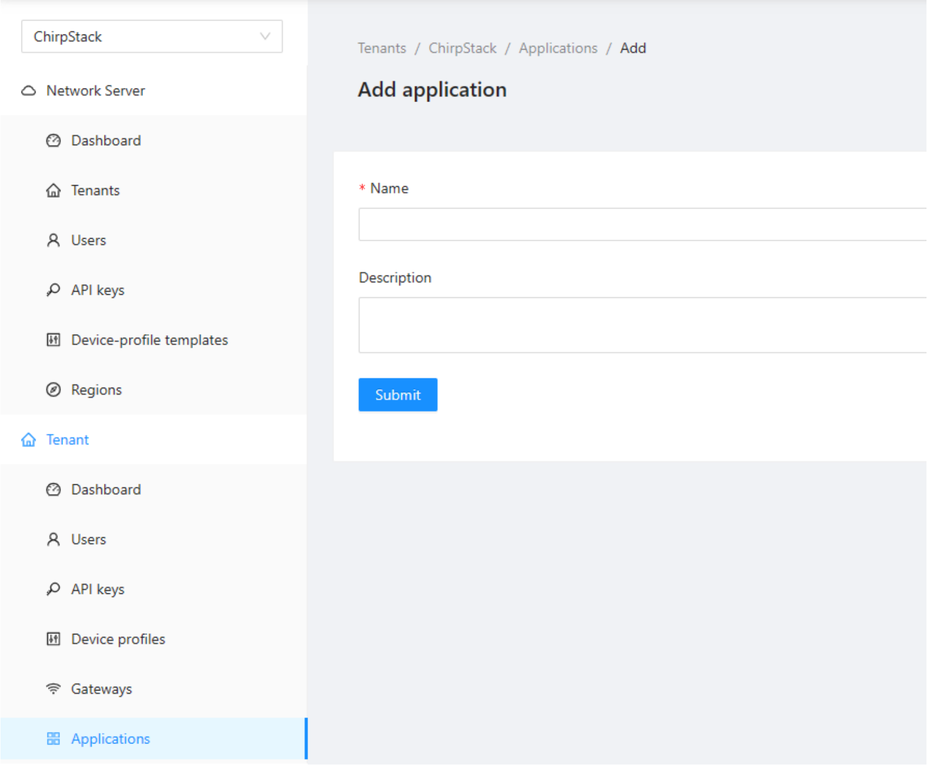
Flush queue on activate

* Expected uplink interval (secs)

Device-status request frequency (req/day)

4.6.4.4 Add Application

Click Applications -> Add application



ChirpStack

Network Server

Dashboard

Tenants

Users

API keys

Device-profile templates

Regions

Tenant

Dashboard

Users

API keys

Device profiles

Gateways

Applications

Tenants / ChirpStack / Applications / Add

Add application

* Name

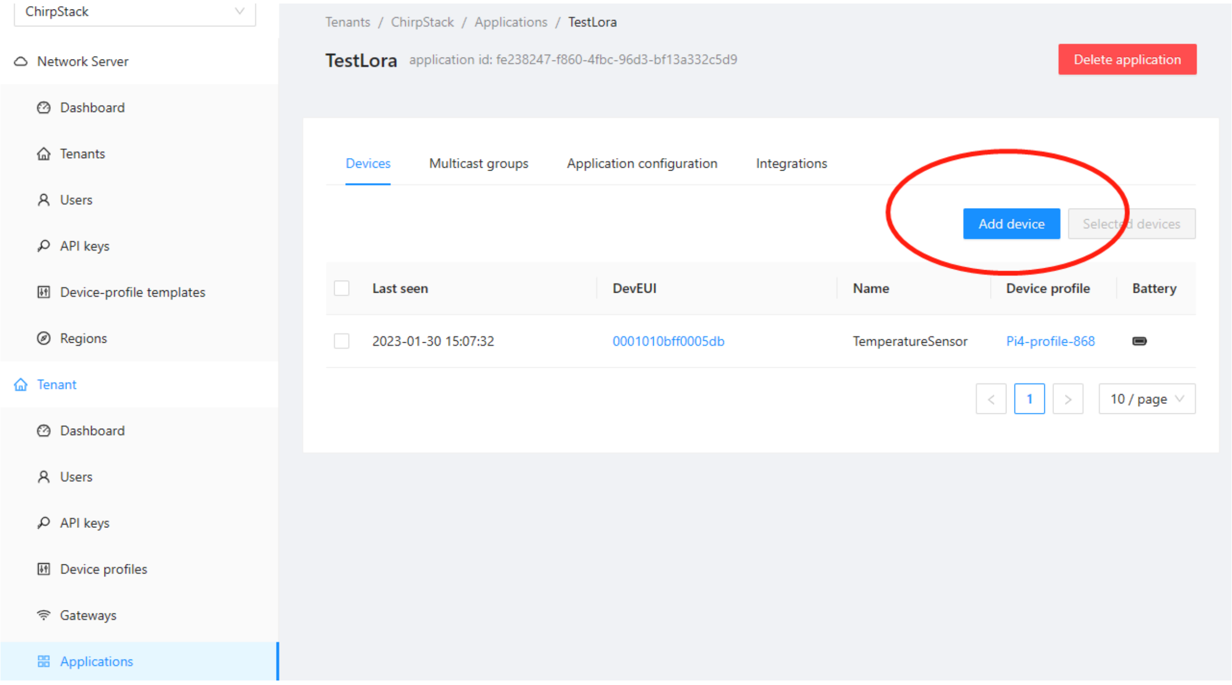
Description

Submit

4.6.4.5 Add Device

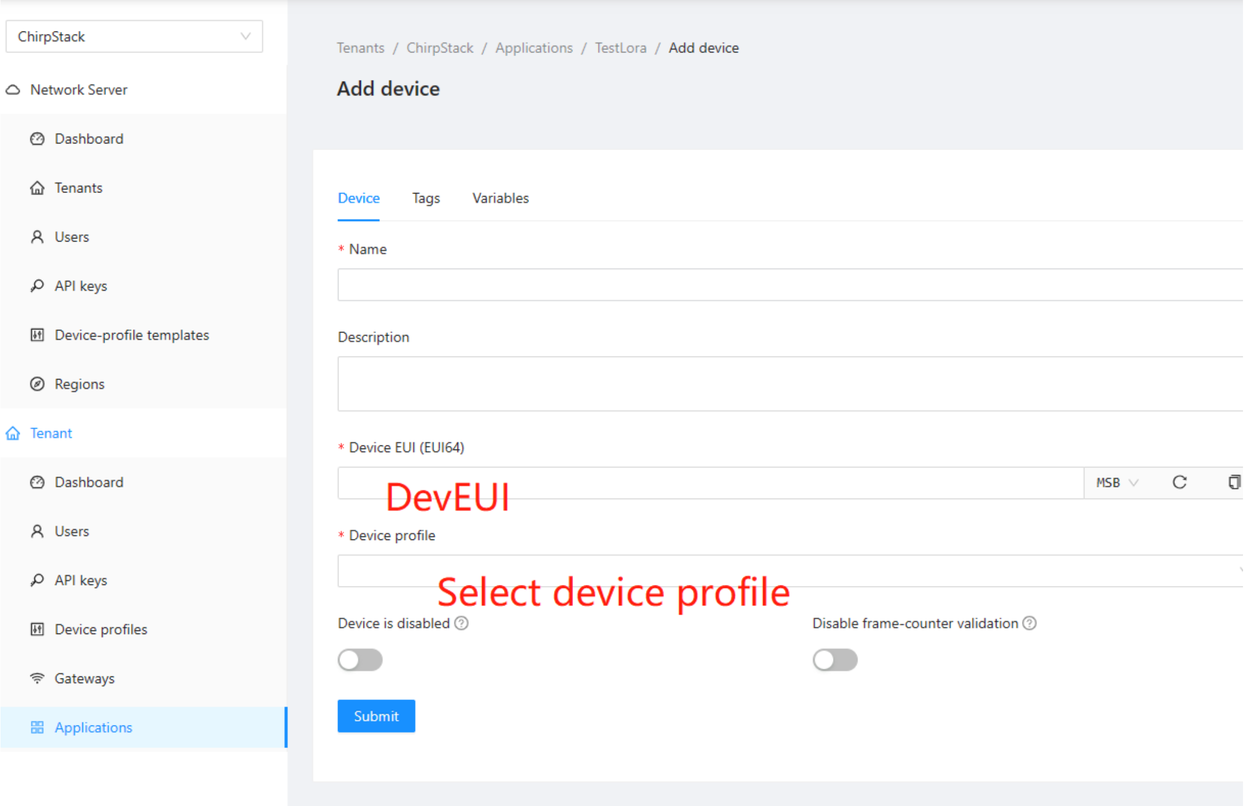
You should know the DevEUI and AppKey of LoRa terminal products, which are provided by LoRa terminal equipment manufacturers.

Click Application -> your application -> Add device to add LoRa terminal device



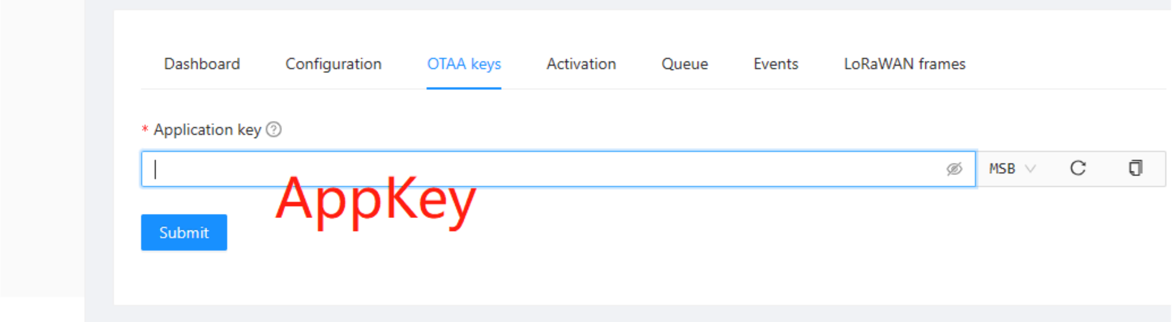
TestLora application id: fe238247-f860-4fbc-96d3-bf13a332c5d9

Last seen	DevEUI	Name	Device profile	Battery
2023-01-30 15:07:32	0001010bff0005db	TemperatureSensor	Pi4-profile-868	▬



DevEUI

Select device profile



Wait a few minutes to see the device become online.

5 Operating System Installation

5.1 Image Download

We have provided the factory image. If the system is restored to factory settings, please click the following link to download the factory image.

Raspberry Pi OS Lite, 32-bit

- Release date: February 9th, 2023
- System: 32-bit
- Kernel version: 5.15
- Debian version: 11 (bullseye)
- Downloads: https://1drv.ms/f/s!Au060HUAtEYBgQDcbpWTp7mNb88L?e=cFOdiM

5.2 System Flash

5.2.1 Tool Preparation

It is recommended to use the official burning tool of Raspberry Pi:
Raspberry Pi Imager (https://downloads.raspberrypi.org/imager/imager_latest.exe)
Formatting tool:
SD Card Formatter (https://www.sdcardformatter.com/download/)

5.2.2 Flash

1. Download the image.
2. Connect the SD card to the computer through the card reader.
3. Open SD Card Formatter, select SD card letter, and click Format below to format.
4. After formatting, open Raspberry Pi Imager, select the image you want to burn in the first item, select

the custom image for the local image, and select the memory card for the second item.

5. Click Burn after setting, and wait for the burn to end.
6. After burning, remove the SD card and insert the device to start.

5.3 Install BSP Online Based on The Original Raspberry Pi OS.

Refer to chapter 4.6 LoRaWAN for installation of lorawan.

6 FAQ

6.1.1 Default Username and Password

User name：pi
Password： raspberry

7 About Us

7.1 About EDATEC

EDATEC, located in Shanghai, is one of Raspberry Pi's global design partners. Our vision is to provide hardware solutions for Internet of Things, industrial control, automation, green energy and artificial intelligence based on Raspberry Pi technology platform.

We provide standard hardware solutions, customized design and manufacturing services to speed up the development and time to market of electronic products.

7.2 Contact Us

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