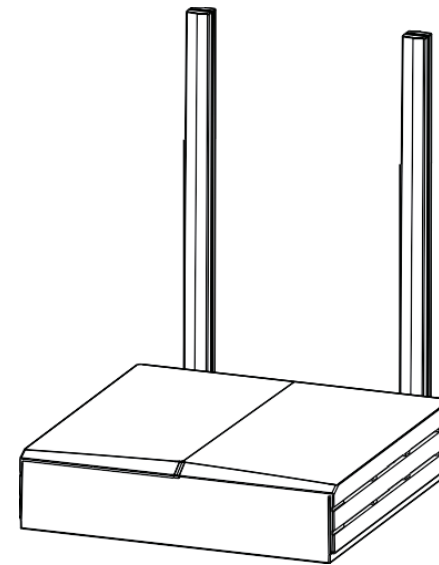


G200

USER MANUAL



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1. PRODUCT OVERVIEW INTERFACE AND LEDs

1.1 Brief Introduction

G200 Series gateway is a portable indoor gateway and complies with LoRaWAN™ protocol to provide low power, stable and secure wireless connectivity for devices and sensors.

G200 adopts star topology deployment and provide WiFi or Ethernet connection to network server. The solution is used in a wide area of applications such as smart energy, smart cities and agricultural IoT.

G200 meets the network requirements of long-range communications, strong anti-interference ability, high sensitivity and low power for many dispersed nodes to provide a low cost and high reliability indoor IoT solution.



1.2 Features

- **Low Cost**
Compact and portable, easy to install, cost effective for LoRa network deployment.
- **Stable Network**
The legal nodes can move freely within gateway coverage.
When one gateway is abnormal in the multi-gateway network, the node can be accessed through adjacent gateway.
- **Versatile Backhaul Options**
Support Ethernet/WiFi, support switch dynamically.
- **Easy Maintenance**
Support remote troubleshooting and firmware upgrade, support local connection for debugging.

2. INTERFACE AND LEDs

2.1 Interface



Port 1: LoRa Antenna (SMA-female)

Port 3: SIM Card Slot

Port 5: Ethernet (RJ45)

Port 7: WiFi Antenna (SMA-female)

Port 2: RESET

Port 4: Micro USB

Port 6: DC12V DC_IN

NOTE: 1、Port 2 : RESET hole, head into RESET hole with one end of paper clip for 6 seconds, then out. G200 restore factory defaults.

2.2 LED Status Indications

LEDs	Function definition
Flash blue and green every 1 second	• Normal NS connection • Normal data forward
Flash red and blue every 1 second	• Abnormal NS connection • Normal data forward
Flash red and green every 1 second	• Abnormal NS connection • Abnormal data forward
White lights up for 1 minute	Gateway power on, system initialization
Off	Gateway is not powered on

3. SPECIFICATION

LoRa Parameters	
Frequency Band	915MHz
Communication	LoRaWAN, Star Network
Modulation	LoRa
Mode	Half duplex
Sensitivity	-137dBm @SF-12/BW 125KHz
Max Transmitter Power	17 dBm (Typical)
Channel & Bandwidth	125KHz/250KHz/500MHz Configurable
Interface	Ethernet/WiFi
Communication Distance	Suburban 5Km, urban 3Km
Physical	
IP Grade	IP30
Size	142mm*142mm*35mm
Color	Off white
Material	PC+ABS
Input Voltage	DC12V(11.0 VDC ~ 14.0 VDC)
Installation	Desktop/Wall mount/Ceiling mount
Operating Temperature	0-60°C
Operating Humidity	0-90%RH
Thermal Methods	Radiator grille
Hardware	
Processor	MIPS RM9200
RAM	
Flash	16MB
WiFi	QCA9513
Security System	
System Encryption	AES128
Remote Management	
Upgrade and Maintenance	Remote monitoring of network status
	Support remote firmware upgrade, configuration backup and recovery

4. CONFIGURATION

G200 provides a friendly and easy way to configure network parameters and LoRa parameters. After the configuration/modification is completed, you need to click the Save & Apply button at the bottom right of the page to save. After all the configuration/modifications are completed, you need to restart the gateway to take effect.

4.1 Getting Started

Please follow the steps below to log in:

Step 1: Search AP **ELI-G200-XXXXXX**(XXXXXX is the last six hex number of G200 MAC) for G200, click connect, password:easylinkin.

Step 2: If connect is successful, open browser (recommend IE browser) and input IP address:192.168.3.1

Step 3: After entering login page, input username and password. Then enter the overview page, as shown below.

Username: admin (default)

Password: admin (default)

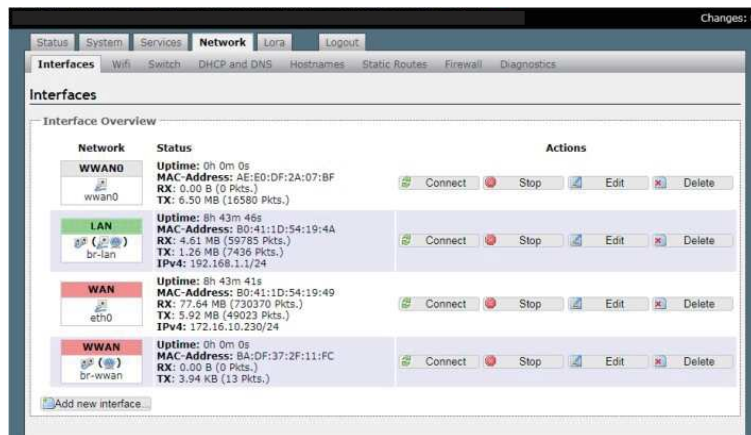
Status, System, Service, Network, LoRa and Logout tabs are displayed at the top of the page. If you want to change administrator password, please click **System-Administration** then input the new password and click **Save & Apply**.



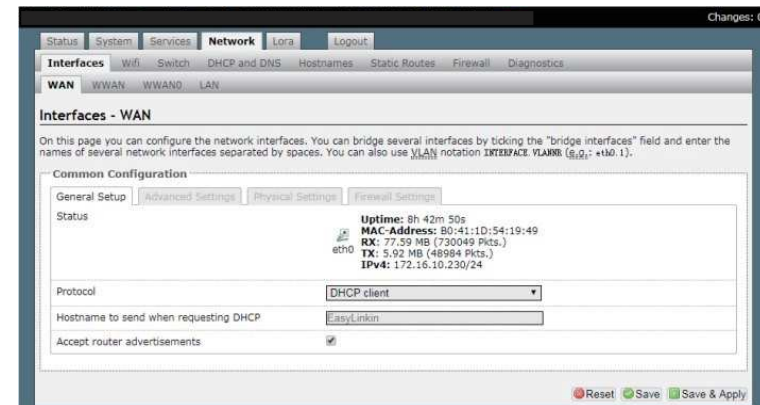
4.2 Modifying Network Parameters

Please follow the below steps to modify network parameters:

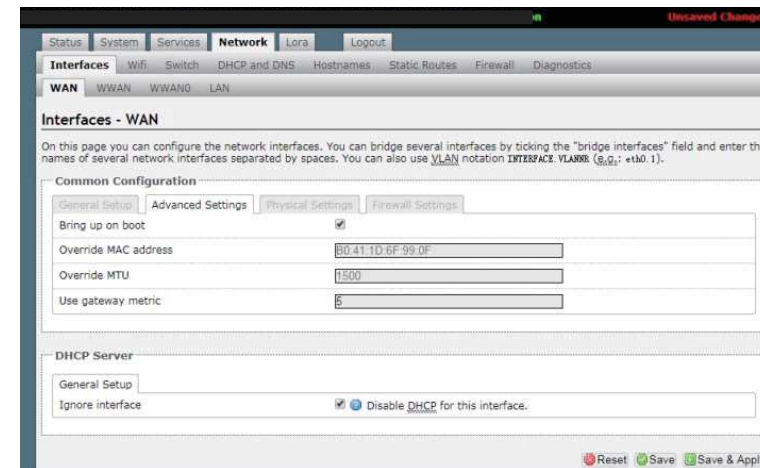
Step1: Click **Network-Interface**, then the Ethernet and WiFi configuration can be found in this page.



Step 2: Click **WAN-Edit**, the General Setup (Ethernet static IP configuration or DHCP configuration) can be modified. The default configuration is DHCP mode.



Step 3: The **Use gateway metric** needs to be configured to 5 during DHCP configuration.



Step 4: Set up static IP address.

Note: If gateway connect to LinkWAN platform (that is NS from Ali cloud platform) .Set up the following DNS address: 223.5.5.5 or 223.6.6.6

Step 5: Click **Save and Apply**. The configuration is active.

Step 6: Step 4: Click **Network- WiFi** to enter the WiFi configuration page.

SSID	MAC-Address	IPv4-Address	Signal	Noise	RX Rate	TX Rate
EASYLINKIN-1	00:00:00:00:00:00	?	-95 dBm	-95 dBm	0.0 Mbit/s	0.0 Mbit/s
EASYLINKIN-2	48:8A:D2:7D:0F:AD	192.168.1.161	-66 dBm	-95 dBm	55.6 Mbit/s	39.1 Mbit/s

Step 7: Click Edit in the Client mode. The ESSID of the AP will be connected can be set.

Step 8: Click Wireless Security, modify key, then click Save & Apply waiting for connecting.

Step 9: If WiFi parameters modification is done, the AP connected and IPV4 address acquired can be displayed in Associated Stations in WiFi page.

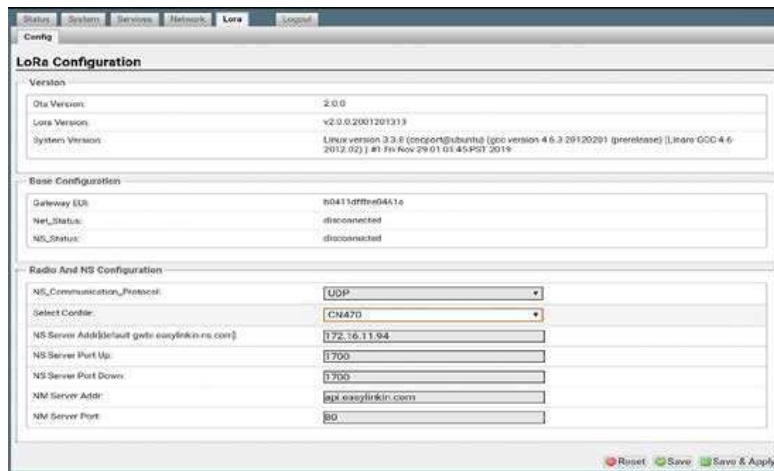


NOTE: The Master mode is only used by technicians, so please do not do any modification under this mode.

4.3 Modifying LoRa Parameters

Please follow the steps below to modify LoRa parameters:

Step 1: Click **LoRa** in overview page and enter LoRa configuration page, which is composed of three parts: Version Configuration, Base Configuration, Radio and NS Server Configuration.

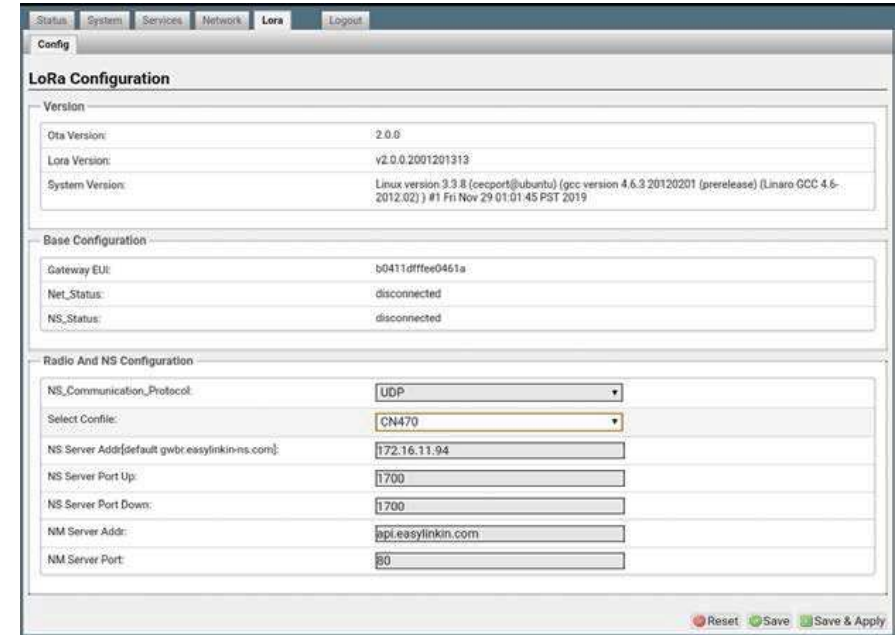


Step 2: Gateway EUI can be shown in Base Configuration.

Step 3: Different LoRa frequency band can be chosen in Radio Configuration.

Step 4: In the radio and NS configuration column, UDP and mqtt communication modes are supported.

In UDP mode, you can select the actual Lora band from the drop-down menu, and configure the NS Server addr (default: 0 gwbr.easylinkin - ns.com), NS Server Port up(default:1700), NS Server Port down(default:1700 , NM Server Addr(default: api.easylinkin.com), and NM Server Port (default:80)



In MQTT mode, you can configure the information of the MQTT proxy server. MQTT protbuf_coding_method is true for protobuf encoding and false for JSON encoding. After configuration, click the save & Apply button the bottom right corner of the page.

Config

LoRa Configuration

Version

Ota Version: 2.0.0

Lora Version: v2.0.0.2001201313

System Version: Linux version 3.3.8 (cecport@ubuntu) (gcc version 4.6.3 20120201 (prerelease) (Linaro GCC 4.6-2012.02)) #1 Fri Nov 29 01:01:45 PST 2019

Base Configuration

Gateway EUI: b0411dffff0461a

Net_Status: disconnected

NS_Status: disconnected

Radio And NS Configuration

NS_Communication_Protocol: MQTT

mqtt port: 1883

mqtt user name: lorun

mqtt password: Lorun@123

mqtt host: mqtt.lora.miotd.id

mqtt clean_session: 0

mqtt request_timeout_mis: 2000

mqtt keepalive_interval_mis: 60000

mqtt protobuf_coding_method: true

Select Config: CN470

Reset Save Save & Apply

Remarks:

Only UDP mode can configure ns server addr, and mqtt does not have this configuration item;

4.4 Customized Configuration

Step 1: Click **Select File**, select **CUSTOMIZE**, following information pop up .

UDP mode:

Config

LoRa Configuration

Version

Ota Version: 2.0.0

Lora Version: v2.0.0.2001201313

System Version: Linux version 3.3.8 (cecport@ubuntu) (gcc version 4.6.3 20120201 (prerelease) (Linaro GCC 4.6-2012.02)) #1 Fri Nov 29 01:01:45 PST 2019

Base Configuration

Gateway EUI: b0411dffff0461a

Net_Status: disconnected

NS_Status: disconnected

Radio And NS Configuration

NS_Communication_Protocol: UDP

Select Config: CUSTOMIZE

NS Server Addr(default gwbr easylinkin-ns.com): 172.16.11.94

NS Server Port Up: 1700

NS Server Port Down: 1700

NM Server Addr: api.easylinkin.com

NM Server Port: 80

Radio0 Center Frequency(HZ): 472600000

Channel 0 Offset(HZ): 300000

Channel 1 Offset(HZ): 100000

Channel 2 Offset(HZ): 100000

Channel 3 Offset(HZ): 300000

Radio1 Center Frequency(HZ): 473400000

Channel 4 Offset(HZ): 300000

Channel 5 Offset(HZ): 100000

Channel 6 Offset(HZ): 100000

Channel 7 Offset(HZ): 300000

Channel 8 Lora Std Enable: true

Channel 8 Lora Std Offset(HZ): 200000

Channel 8 Lora Std Bandwidth(HZ): 250000

Channel 8 Lora Std Spread_factor: 7

Channel 9 Fsk Enable: true

Channel 9 Fsk Offset(HZ): 300000

Keepalive Interval(S): 15

Stat Interval(S): 300

Reset Save Save & Apply

MQTT mode:

LoRa Configuration

Version

Ota Version: 2.0.0
 Lora Version: v2.0.0.2001201313
 System Version: Linux version 3.3.8 (cecpot@ubuntu) (gcc version 4.6.3 20120201 (prerelease) (Linaro GCC 4.6-2012.02)) #1 Fri Nov 29 01:01:45 PST 2019

Base Configuration

Gateway EUI: b0411dffee0461a
 Net_Status: disconnected
 NS_Status: disconnected

Radio And NS Configuration

NS_Communication_Protocol: MQTT
 mqtt port: 1883
 mqtt user name: lorun
 mqtt password: lorun@123
 mqtt host: mqtt.lora.miot.id
 mqtt clean_session: 0
 mqtt request_timeout_ms: 2000
 mqtt keepalive_interval_ms: 60000
 mqtt protobuf_coding_method: true
 Select Config: CUSTOMIZE
 Radio0 Center Frequency(HZ): 472600000
 Channel 0 Offset(HZ): -300000
 Channel 1 Offset(HZ): -100000
 Channel 2 Offset(HZ): 100000
 Channel 3 Offset(HZ): 300000
 Radio1 Center Frequency(HZ): 473400000
 Channel 4 Offset(HZ): -300000
 Channel 5 Offset(HZ): -100000
 Channel 6 Offset(HZ): 100000
 Channel 7 Offset(HZ): 300000
 Channel 8 Lora Std Enable: true
 Channel 8 Lora Std Offset(HZ): -200000
 Channel 8 Lora Std Bandwidth(HZ): 250000
 Channel 8 Lora Std Spread_factor: 7
 Channel 9 Fsk Enable: true
 Channel 9 Fsk Offset(HZ): 300000
 Keepalive Interval(S): 15
 Stat Interval(S): 300

Step 2. Set up parameters as needed. For example, keep alive intervals, frequency can be configured.

Step 3. After any modification, do not forget to click Save & Apply button.

4.5 Timezone Configuration

Step 1. Click **System** in overview page and enter System configuration page.

Step 2. Select corresponding time zone as needed. If connect to Ali LinkWAN platform, please choose UTC 0 time zone.

Step 3. After configuration, click Save & apply to make the settings effective.

System

Here you can configure the basic aspects of your device like its hostname or the timezone.

System Properties

General settings | Logging | Language and Style

Local Time: Sun Apr 7 16:38:04 2019 [Sync with browser]
 Hostname: EasyLinkin
 Timezone: Asia/Shanghai

Time Synchronization

Enable NTP client: ☒
 Provide NTP server: ☐
 NTP server candidates:
 asia.pool.ntp.org
 north-america.pool.ntp.org
 europe.pool.ntp.org
 0.debian.pool.ntp.org
 1.debian.pool.ntp.org

4.6 Restart Gateway

After all configurations/modifications are completed, select System->Reboot, and click the Perform reboot button to restart the gateway. All configurations/modifications will take effect after the gateway restarts.

System

Reboot

Reboots the operating system of your device.

[Perform reboot](#)

5. INSTALLATION

G200 Series gateway has three installation methods:

- Desktop: Put the gateway on a flat surface such as the top of a table. Then adjust antenna direction accordingly, which is suitable for temporary demonstration and debugging.
- Wall mounting: Attach gateway on the wall with the installation kit to mount it using the expansion tube and the adjustable screws.
- Ceiling mounting: Attach gateway on ceiling with installation kit to mount it using expansion tube and adjustable screws.

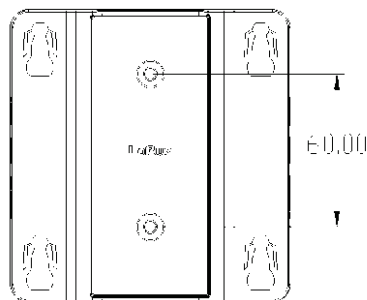
5.1 Wall Mounting

Install the gateway bracket:

Step 1: Select installation position on wall and mark the locations where the screw holes for the screws will be drilled.

Step 2: Drill holes ($\Phi 5$) in the wall and plug in plastic extension pipes (PA4.0*30mm), then place the gateway bracket onto the marked location with holes aligned.

Step 3: Tighten the screw.

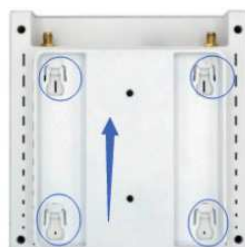


Place gateway into bracket:

Step 1: Connect WiFi/LoRa antennas.

Step 2: Connect power adapter, connect the Ethernet cable. When the gateway is power on, check the LED status. Make sure the gateway is working normally.

Step 3: Attach gateway to bracket, make the hook in the gateway align to the bracket grooves, push the gateway upward (in a direction shown with a blue arrow) and lock it to the bracket.

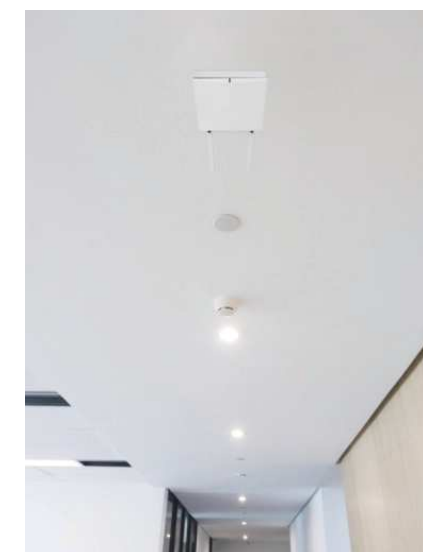
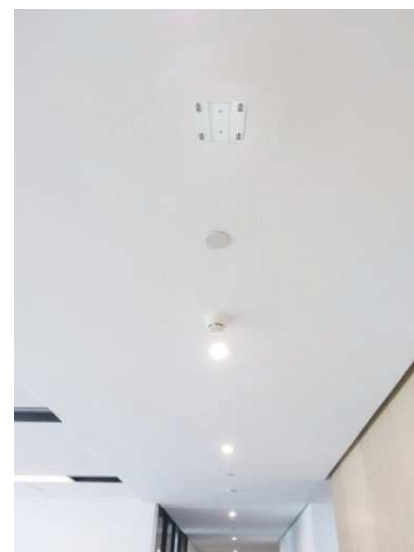


5.2 Ceiling Mounting

Ceiling mounting is almost the same as wall mounting except that the bracket needs to be installed under the ceiling.

NOTES:

- The gateway should be handled gently without violent collisions and drops.
- The gateway should be mounted on a flat and dry surface with little dust and good ventilation. Do not expose the gateway to rain, water leakage and any humidity.



6. PACKAGE LIST

No.	Photo	Name	Quantity(PCS)	Note
1		G200 Gateway	1	
2		Power Adapter	1	FCC/UL/CE/CCC
3		RF Antenna	1	
4		WiFi Antenna	1	
5		Bracket		
6		Product Specification	1	
7		Certificate & Warranty Card	1	

7. FCC STATEMENT

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help important announcement .

RF exposure warning :

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment shall be installed and operated with minimum distance 20cm between the radiator & body.

8. SUPPORT

If you have any question or problem with our gateway, please contact us for support.