Welcome

Thank you for choosing Ursalink UG85 LoRaWAN Gateway.

This guide teaches you how to install the UG85 and how to log in the web GUI to configure the device. Once you complete the installation, refer to the Ursalink UG85 User Guide for instructions on how to perform configurations on the device.

Related Documents

This Quick Start Guide only explains the installation of Ursalink UG85 LoRaWAN Gateway. For more functionality and advanced settings, please refer to the relevant documents as below.

<table>
<thead>
<tr>
<th>Document</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ursalink UG85 Datasheet</td>
<td>Datasheet for the Ursalink UG85 LoRaWAN Gateway.</td>
</tr>
<tr>
<td>Ursalink UG85 User Guide</td>
<td>Users can refer to the guide for instruction on how to log in the web GUI, and how to configure all the settings.</td>
</tr>
</tbody>
</table>

The related documents are available on Ursalink website: [http://www.ursalink.com](http://www.ursalink.com).

Declaration of Conformity

UG85 is in conformity with the essential requirements and other relevant provisions of the CE, FCC, and RoHS.

For assistance, please contact
Ursalink technical support:
Email: support@ursalink.com
Tel: 86-592-5023060
Fax: 86-592-5023065
1. Packing List

Before you begin to install the UG85 LoRaWAN Gateway, please check the package contents to verify that you have received the items below.

1.1 Package Contents

- 1 × UG85
- 1 × Ethernet Cable
- 1 × Power Adapter
- 1 × Stubby LoRa Antenna
- 1 × 6-Pin Pluggable Terminal
- 1 × DIN Rail Kit
- 4 × Setscrews
- 1 × Warranty Card
- 1 × GPS Antenna (Optional)
- 1 × Magnetic Cellular Antenna (Optional)
- 1 × Stubby Wi-Fi Antenna (Optional)
- 1 × Stubby Cellular Antenna (Optional)

Note: If UG85 support cellular function, stubby cellular antenna is default choice.

⚠️ If any of the above items is missing or damaged, please contact your Ursalink sales representative.
2. Hardware Introduction

2.1 Overview

A. Front Panel

UG85 Front Panel

- 1. WIFI/LTE Antenna
- 2. GPS Antenna
- 3. LoRa Antenna
- 4. LED Indicator Area
  - POWER: Power Indicator
  - SYSTEM: Status Indicator
  - LORA: LoRa Indicator
  - WIFI: WIFI Indicator
  - LTE: Cellular Status Indicator
  - LAN: Ethernet Port Status Indicator
- 5. Serial Port & I/O
- 6. Ethernet WAN/LAN Port
- 7. Console Port
- 8. Power Connector
- 9. SIM and Reset Button Holder

2.2 Dimensions (mm)
2.3 Pinouts

<table>
<thead>
<tr>
<th>PIN</th>
<th>RS232</th>
<th>DI</th>
<th>DO</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>---</td>
<td>---</td>
<td>OUT</td>
<td>Digital Output</td>
</tr>
<tr>
<td>2</td>
<td>---</td>
<td>IN</td>
<td>---</td>
<td>Digital Input</td>
</tr>
<tr>
<td>3</td>
<td>GND</td>
<td>---</td>
<td>---</td>
<td>Ground</td>
</tr>
<tr>
<td>4</td>
<td>---</td>
<td>COM</td>
<td>COM</td>
<td>Common Ground</td>
</tr>
<tr>
<td>5</td>
<td>RXD</td>
<td>---</td>
<td>---</td>
<td>Receive Data</td>
</tr>
<tr>
<td>6</td>
<td>TXD</td>
<td>---</td>
<td>---</td>
<td>Transmit Data</td>
</tr>
</tbody>
</table>

2.4 LED Indicators

<table>
<thead>
<tr>
<th>LED</th>
<th>Indication</th>
<th>Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>POWER</td>
<td>Power Status</td>
<td>On</td>
<td>The power is switched on</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Off</td>
<td>The power is switched off</td>
</tr>
<tr>
<td>SYSTEM</td>
<td>System Status</td>
<td>Green Light</td>
<td>Static: Start-up</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Blinking slowly: the system is running properly</td>
<td></td>
</tr>
<tr>
<td>LoRa</td>
<td>LoRa Status</td>
<td>Green Light</td>
<td>Packet Forwarder mode is running well.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Off</td>
<td>Packet Forwarder mode is running off.</td>
</tr>
<tr>
<td>WIFI</td>
<td>WIFI Status</td>
<td>Green Light</td>
<td>WIFI is connected</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Off</td>
<td>WIFI is disconnected</td>
</tr>
<tr>
<td>LTE</td>
<td>Cellular Status</td>
<td>Off</td>
<td>SIM1 or SIM2 is registering or fails to register (or there are no SIM cards inserted)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Green Light</td>
<td>Blinking slowly: SIM1 or SIM2 has been registered and is ready for dial-up</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Blinking rapidly: SIM1 or SIM2 has been registered and is dialing up now</td>
<td></td>
</tr>
<tr>
<td>LAN</td>
<td>Ethernet Port Status</td>
<td>Off</td>
<td>Disconnected</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Green Light</td>
<td>Blinking: Transmitting data</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Static: Connected</td>
</tr>
</tbody>
</table>

www.ursalink.com
## 2.5 Reset Button

<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SYSTEM LED</strong></td>
<td><strong>Action</strong></td>
<td></td>
</tr>
<tr>
<td>Reboot</td>
<td>Blinking</td>
<td>Press and hold the reset button for about 5-15 seconds.</td>
</tr>
<tr>
<td></td>
<td>Static Green</td>
<td>Release the button and wait for system to reboot.</td>
</tr>
<tr>
<td>Reset</td>
<td>Blinking</td>
<td>Press and hold the reset button for more than 15 seconds.</td>
</tr>
<tr>
<td></td>
<td>Static Green →</td>
<td>Release the button and wait.</td>
</tr>
<tr>
<td></td>
<td>Rapidly Blinking</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Off → Blinking</td>
<td>The gateway is now reset to factory default.</td>
</tr>
</tbody>
</table>
Environmental Requirements

- Power Input: 9-48 VDC
- Power Consumption: Typical 3.3W (Max 6.4 W)
- Operating Temperature: -40°C to 70°C (-40°F - 158°F)
- Relative Humidity: 0% to 95% (non-condensing) at 25°C/77°F

3.1 SIM Card Installation

A. Unscrew the cover of the SIM card then take it off.

B. Put SIM card into the slot and screw it up.

3.2 Antenna Installation

Rotate the antenna into the antenna connector accordingly.
The external antenna should be installed vertically always on a site with a good cellular signal.
3.3 Connect the UG85 to a Computer

3.4 Mount the gateway

The gateway can be placed on a desktop or mounted to a wall or a DIN rail.

3.4.1 Wall Mounting (Measured in mm)

Use 4 pcs of M3 × 6 flat head Phillips screws to fix the gateway on the wall.

⚠️ Recommended torque for mounting is 1.0 N·m, and the maximum allowed is 1.2 N·m.

3.4.2 DIN Rail Mounting (Measured in mm)

Use 2 pieces of M3 × 6 flat head Phillips screws to fix the DIN rail to the gateway, and then hang the DIN rail on the mounting bracket. It is necessary to choose a standard bracket.

⚠️ Recommended torque for mounting is 1.0 N·m, and the maximum allowed is 1.2 N·m.
3.5 Power Supply Installation

A. Take out the terminal from the gateway and unscrew the bolt on terminal.
B. Screw down the bolt after inserting power cable into the terminal.

If you insert wires into the reverse holes, the gateway will not start and you must switch the wires into the correct holes.

<table>
<thead>
<tr>
<th>Color</th>
<th>Polarity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>+</td>
</tr>
<tr>
<td>Yellow</td>
<td>-</td>
</tr>
</tbody>
</table>
Getting Started

4. PC Configuration for UG85 Web GUI

Please connect PC to LAN port of UG85 directly. PC can obtain an IP address, or you can configure a static IP address manually. The following steps are based on Windows 10 operating system for your reference.

① Click “Search Box” to search “Control Panel” on the Windows 10 taskbar.

② Click “Control Panel” to open it, and then click “View network status and tasks”.

③ Click “Ethernet” (May have different names).

④ Click “Properties”.
5) Double Click “Internet Protocol Version 4 (TCP/IPv4)” to configure IP address and DNS server.

6) Method 1: click “Obtain an IP address automatically”;

Method 2: click “Use the following IP address” to assign a static IP manually within the same subnet of the gateway.

(Note: Remember to click “OK” to finish configuration.)
5. Access to UG85 Web GUI for Cellular Connection

This chapter explains how to log in UG85 Web GUI, and connect the gateway to cellular network.

Ursalink UG85 provides web-based configuration interface for management. If this is the first time you configure the gateway, please use the default settings below:

IP Address: 192.168.1.1
Username: admin
Password: password

5.1 Log in the Gateway

⚠️ Make sure your PC is connected to the same network as shown in Section 4.

A. Open a Web browser on your PC (Chrome and IE are recommended), type in the IP address, and press Enter on your keyboard.
B. Enter the username and password, click “Login”.

⚠️ If you enter the username or password incorrectly more than 5 times, the login page will be locked for 10 minutes.

C. When you log in with the default username and password, you will be asked to modify the password. It’s suggested that you change the password for the sake of security. Click “Cancel” button if you want to modify it later.
D. After you log in the Web GUI, you can view system information and perform configuration of the gateway.

5.2 Configure the Cellular Connection

Take inserting SIM card into SIM1 slot as an example; please refer to the following detailed operations.

A. Click “Network” → “Interface” → “Cellular” → “Cellular Setting” to configure the cellular info.
B. Enable SIM1.
C. Choose relevant network type. “Auto”, “4G First”, “4G Only”, “3G First”, “3G Only”, “2G First” and “2G Only” are optional.
D. Click “Save” and “Apply” for configuration to take effect.
If you select “Auto”, the gateway will obtain ISP information from SIM card to set APN, Username, and Password automatically. This option will take effect when the SIM card is issued from a well-known ISP.

If you select “4G First” or “4G Only”, you can click “Save” to complete the configuration directly.

If you select “3G First”, “3G Only”, “2G First” or “2G Only”, you should manually configure APN, Username, Password, and Access Number.

UG85 have two cellular interfaces, named SIM1 & SIM2. Only one cellular interface is active at one time. If both cellular interfaces are enabled, SIM1 interface takes precedence by default.

5.3 Check the Cellular Connection Status

5.3.1 Check the Cellular Connection Status by Web GUI of Router

Click “Status” → “Cellular” to view the status of the cellular connection. If it shows “Connected”, it means
SIM1 has dialed up successfully.

5.3.2 Check the Cellular Connection Status by Hardware

On the other hand, you can check the status of LTE indicator. If it keeps on green light statically, it means SIM has dialed up successfully.

5.4 Check if Network Works Properly by Browser on PC

Open your preferred browser on PC, then type any available web address into address bar and see if it is able to visit Internet via UG85.
6. Packet Forwarder Testing

6.1 Node Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Channel Plan</td>
<td>AS923</td>
</tr>
<tr>
<td>Frequency</td>
<td>923.4MHZ, 923.2MHZ</td>
</tr>
<tr>
<td>Join Type</td>
<td>OTAA</td>
</tr>
<tr>
<td>Device EUI</td>
<td>60C5A8FFE0003F9</td>
</tr>
<tr>
<td>Application EUI</td>
<td>70B3D57ED0007AC2</td>
</tr>
<tr>
<td>App Key</td>
<td>32F2A3F5BA8D0B236459CF06D0512B5</td>
</tr>
</tbody>
</table>

6.2 Configure The Things Network

A. Gateway Configuration

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gateway EUI</td>
<td>24E124FFFE0132E</td>
</tr>
<tr>
<td>Frequency Plan</td>
<td>Asia 920-923MHZ</td>
</tr>
<tr>
<td>Server ID</td>
<td>Switch-router (ttn.opennetworkinfrastructure.org)</td>
</tr>
</tbody>
</table>

B. Applications Configuration
6.3 Packet Forwarder Configuration

A. Click “LoRaWAN” → “Packet Forwarder” → “General” to configure the general setting.

B. Click “Radios” to configure the center frequency and channels.
C. Click “Traffic” to view the data communication of UG85.

6.4 Check Data Transmission on The Things Network

A. Click “Gateways”, you can check the Gateways status.

B. Click “Applications” and select the Applications, then go to “Data”, you can find the data from the Node.
7. Network Server Testing

Note that only gateway with activated built-in Network Server version supports this function.

7.1 Node Parameters

<table>
<thead>
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</tr>
<tr>
<td>Application EUI</td>
<td>70B3D57ED0007AC2</td>
</tr>
<tr>
<td>App Key</td>
<td>1A98A25536993A882154B81551F18A76</td>
</tr>
</tbody>
</table>

7.2 Network Server Configuration

A. Click “LoRaWAN” → “Network Server” → “General” to configure the general setting. Note that the channel plan of the nodes and network server need to be the same.

B. Add a new Application and choose HTTP or MQTT protocol to send data to another server.
C. Add a new Profiles for the device.
D. Add device

7.3 Package Forwarder Configuration

Click “LoRaWAN” → “Packet Forwarder” → “Radios” to configure the center frequency and channels. **Note** that node frequency needs to be included in the channels frequency.
7.4 Check the Packets

Click “LoRaWAN” → “Network Server” → “Packets” to check the packets from the node on network server.

[END]