G500 Gateway User Manual





1. Gateway Package

1.1 Package Content

Each gateway is shipped with the following items:

Item	Photo	Name	Quantity	Remarks
1	Sector A. T.	G500 Gateway	1	
2		GPS Antenna	1	
3	Q.	GPS Feeder	1	
4		4G/WiFi Antenna	1 or 2	Ethernet version: 1 4Gversion: 2
5		N Connector	1 or 2	Ethernet version: 1, 4G version: 2
6		Omni-directional Antenna	1	Optional
7	O	RF Feeder	1	Optional
8		Directional Panel Antenna	1	Optional
9		Wall Mounting Bracket for Gateway	1	Optional
10		Pole Mounting Bracket for Gateway	1	Optional

Sensing the World

11		Pole Mounting Bracket for Antenna	1	Optional
12		PoE Adaptor	1	Optional
13		Industrial Din-rail Power Supply	1	Optional
14		Switching Power Supply	1	Optional
15	And the second s	USER MANUAL	1	
16	And	DATESHEET	1	
17	Pidder Piddet • reasons and the first of the f	CERTIFICATE, WARRANTY CARD	1	

1.2 Unpacking the Gateway

The gateway and accessories are placed in two layers in the carton.

- Ensure that all items listed in the Package Contents section are included in the carton.
- Check each item for possible physical damage.

If any item is damaged or missing, please notify EasyLinkin sales.





2. Ports Introduction





NOTE: For single-channel gateway, RF1 port is plugged up as shown below. (RF1 port with a red circle)



Side panel:





3. Installation Guide

3.1 Mounting Modes



Pole Mounting

Wall Mounting

Two different mounting modes:

- Pole mounting: Attach the gateway (and power supply) to bracket for gateway (Item 10) and the antennas to the bracket for antenna (Item 11), then mount two brackets to the pole through derrick. Gateway position can be adjusted flexibly according to deployment location.
- Wall mounting: Attach the gateway to bracket (item 9), then mount the bracket to the wall with expansion screws. Antenna can be installed separately.



Choose the installation mode that is a better fit to the surrounding environment and construction requirements.

3.2 Precautions

Please pay attention to the following notes when installing and using gateway:

- The gateway way should be mounted high on the location with no obstructions.
- Lightning protection is recommended for all installations.
- Different antennas can be chosen (Omni-directional antenna or directional antenna) depending on environment.
- Municipal power supply is required in installation site.
- Broadband access is required in installation site.
- The gateway can choose to use Omni-directional or directional antenna according to the surrounding environment.
- Installation of the gateway must be done by professionals and shall strictly comply with construction requirements for communication equipment.

4. Connections

4.1 Connecting to the GPS Antenna

The GPS antenna kit includes a GPS antenna and a feeder.



GPS antenna kit

Feeder: Double trimming N Female to N-Male, RG-58 impedance (50Ω).

Follow these steps to connect GPS antenna to gateway:

Step 1: Connect the N-Female of feeder to GPS antenna.

Step 2: Connect the N-Male of feeder to gateway.





Installation instructions:

- Location requirements
- Make sure there is at least 90° clearance upward and it can track satellites as many as possible, at least 4 satellites.



90° clearance upward air

- Keep the feeder as short as possible to reduce signal loss.(The longer the feeder, the greater the signal loss will be)
- For tower installation, keep the horizontal distance between the mounting pole and the tower at least 30 cm.
- GPS antenna should not be installed under the microwave antenna, the high-voltage wire or the TV transmitting tower. It should not be exposed to the main lobe radiation of the mobile antenna.
- Keep antenna lower than the lightning rod and under its protection zone.
- When GPS antenna is installed on the top of the building, do not install the antenna in the position where the two sides of the floor intersect.
- ➢ GPS feeder requirements:
- Length is from 80m to 100m, choose 1/4" feeder
- Length is from 100m to 120m, choose 1/2" feeder



- Length exceeds 120m, choose 7/8" feeder
- Length is less than 80m, choose Φ9 feeder

4.2 Connecting to the WiFi Antenna

The WiFi antenna kit includes a 0.16mi white fiberglass epoxy WiFi antenna and a N connector (N-J to N-K 90°right-angle elbow connector).



Follow these steps to connect Wi-Fi antenna to gateway,

- Step 1: Connect the N Female of connector to WiFi antenna.
- Step 2: Connect N Male of connector to gateway.



4.3 Connecting to the 4G Antenna

The 4G antenna kit includes a 0.16m white fiberglass epoxy WiFi antenna and a N connector (N-J to N-K 90°right-angle elbow connector).

Follow these steps to connect 4G antenna to gateway:

- Step 1: Connect N Female of connector to 4G antenna.
- Step 2: Connect N Male of connector to gateway.



Note: Other antennas with different length such as 0.6m/0.9m can be selected according to different application requirements.



• Antenna specification

White fiber glass epoxy Omni-directional antenna, gain 4.6/6.5dBi, N female connector

RF feeder

Various feeders can be proposed to adapt to environment and gateway configurations. Typically N-J to N-J, SYV50-7 (50 Ω) with internal screws used.

4G antenna and RF feeder in the standard package can be used directly for demo or test purpose. The selection of the antenna and RF feeder should depend on the project requirement.

No load at the antenna port for high-power equipment is strictly forbidden, which will void the warranty and may cause severe damage to RF circuitry.



4.4 LoRa Antenna

Selection of Omni-directional antenna or directional antenna can be decided according to the environment. Below is the common connection.

4.4.1. LoRa Omni-directional Antenna + Feeder

Antenna

White fiberglass epoxy Omni-directional antenna, gain 5dBi, N Female port.

• Feeder:

Various feeders can be proposed to adapt to environment and gateway configurations. Common choice: N-J to N-J, internal screw, SYV50-7 (50 Ω).



LoRa antenna and RF feeder in the standard package can be used directly for demo or test purpose. The selection of the antenna and RF feeder should depend on the site condition and project requirement.





4.4.2. LoRa Directional Antenna + Power Divider(optional) + Feeder

In general, one directional antenna requires one feeder to match; while two directional antennas require a power divider and three feeders to match.

- Power divider: (350-500MHz)/ 400MHz/433MHz/460MHz/ micro-strip 2 way power divider.
- Directional antenna: outdoor plate antenna, single polarized directional antenna.
- Feeder: N-J to N-J, internal screw, SYV50-7 (50Ω).



Power Divider



Single-polarized Directional Antenna Feeder



The selection of the feeder depends on the distance between gateway and LoRa directional antenna.

- For distance $\leq 2m$ (including the bend line), use default RF feeder in the package;
- For distance > 2m, add 1/2 RF feeder, use 1/2 RF feeder connector to make the RF feeder.



No load at the antenna port for high-power equipment is strictly forbidden, which will void the warranty and may cause severe damage to RF circuitry.

4.5 Ethernet Port





Ethernet waterproof connector

The Ethernet connector for outdoor gateway is a special waterproof connector. Following these steps to assemble the Ethernet cable from the gateway to a cable or DSL modern (broadband Ethernet device)



Step 1: Divide the waterproof connector into three parts: crystal head socket, waterproof silicon tube, black plastic tube. Make the Ethernet cable pass through black plastic tube, waterproof silicon tube in turn.



Cable pass through three parts in turn

Step 2: Make crystal head for Ethernet cable, plug the crystal head into the socket.



Step 3: Tighten the black plastic tube and crystal head socket.





Step 4: Connect the waterproof connector to the Ethernet port on gateway.

Step 5: Connect the other end of the cable to the broadband device (cable or DSL modem)



The complete Ethernet connection is as below:





4.6 Power Port

With the aviation waterproof power connector in the package, the power cable needs to be welded according to actual power supply.

Power port terminals:

- 1, 2 terminal: DC 12V+
- 3, 4 terminal: DC 12V-



The ground port is located on the left side of power port with a sign. Recommended grounding cable:

• Resistance is less than 5Ω



• Cross section area is less than 6 mm²

4. Power Supply

According to actual power supply environment, there are three modes.

5.1 Connecting the Power Adapter

For Indoor demo, the power adapter can be plugged into the AC outlet as shown below.



- 5.2 Connecting to PoE Power
- 5.2.1 PoE Switch

Major PoE switches which comply with 802.3at protocol can be used.

5.2.2 PoE Power Adapter

There are two optional PoE power adapters:

- 220V to 48V PoE adapter
- 48V to 48V PoE adapter





Input: 220V,50Hz,0.6A Output: 48V, 0.7A



Input: 48VDC Output: 48V,0.35A

5.3 Connecting to DC12V Power

If DC12V power is available, connect the connector end to the power port of gateway and the other end of power supply wire into external DC 12V power directly.



5.4 Other Power Supply

For switching power supply or DIN-rail power supply, please refer to the actual project for gateway installation.





Switching Power Supply



DIN-rail Power Supply

Note: Cable assembly and installation shall be done by a professional electrician.

6. Power Supply

6.1 Portable Installation for Demo Purpose





6.2 Wall Mounting



- Select the location on a wall for gateway and antenna installation.
- Mount the gateway to the wall bracket using screws (M6*20mm).
- According to wall bracket's pitch of holes, mark drilling locations in the wall. Drill the holes and install the expansion screws (M8*70mm).
- Mount the wall bracket to the wall by tightening the screws.
- Fix the Omni-directional antenna and the GPS antenna to the antenna bracket using screws.
- Mount the antenna bracket to the wall by tightening the screws.
- Install the RF feeder, GPS feeder, power cable and RJ45 Ethernet cable.
- Ground gateway by connecting a grounding cable to earth ground and then attaching it to the gateway ground port located on the left bottom of the device using a screw.





6.3 Pole Mounting



Pole mounting installation is same as the wall mounting except that the gateway bracket and antenna bracket are mounted on the pole.

6.4 Installation Notes

- Keep antennas lower than the lightning rod and under the protection zone.
- There is a trade-off between installing the antenna as high as possible and keeping the feeder run short to reduce signal loss. (The longer the feeder, the greater the signal loss will be)
- The antenna and feeder shall be wrapped with tape or even grease clay for water protection.
- Make sure the Ethernet cable is wrapped with DN 20PVC hose before entering the computer room
- Layout of RF coaxial cable shall be firm and clean.
- It is important to mount the antenna vertically, while mounting horizontally or at an angle will significantly degrade performance.
- Please make sure mounting location is obstruction-free.
- Grounding is recommended for gateway and lightning protector installation.
- Waterproof should be considered on site.
- Gateway should be installed at a location convenient for personnel maintenance.



7. Trouble Shooting

Issues	Possible Causes	Solutions		
The LEDs are not on after	Power adapter has not	Plug the adapter again.		
the gateway power on	been plugged properly.			
	Power plug is damaged	Check power plug voltage using multimeter, if		
		no voltage means the power adapter is		
		damaged.		
		Please select another power plug.		
GPS LED is not on	4G module can not	Make sure SIM card is inserted properly in		
	connect to the Internet	slot , connection between the 4G antenna and		
	properly	gateway is normal.		
		If the problem persists, return 4G module to		
		factory for maintenance.		
Warning LED (red light) is	RF module is damaged or	Please return the RF module to factory for		
on	with bad contact.	maintenance.		
Ethernet LED is not on	The connection failure	Please try different cable or connector.		
	may be caused by	If the problem persists, return gateway to		
	damaged Ethernet cable	factory for maintenance.		
	or connector			
LED is always on or off	Status LED is always on	please return the gateway to factory for		
	indicates the gateway is	maintenance.		
	running in the small			
	system phase, Status LED			
	is always off indicates the			
	gateway can not enter the			
	OS			

If the problem persists, -return gateway to factory for maintenance.

Notes: Diagnosis shall be done after power on for at least 3min (except for Issue 1).



8. Support

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

Contact Information: Email: Service@EasyLinkin.com Phone: +86 0755 2692 5175 Website: www.EasyLinkin.com

Address:

Room 2404, Yisibo Mansion, Haitian 2nd Road, Nanshan District, Shenzhen, China.