GL521MG User Manual

EGPRS/LTE Cat-M1/LTE Cat-NB2/GNSS Tracker

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0. Revision History

Revision	Date	Author	Description of Change
1.00	2021-11-26	Heymi Lin	Initial
1.01	2022-4-22	Heymi Lin	Modified Wireless Charger Accessory Kit information in Chapter 2.4 Parts List.

1. Introduction

GL521MG is an IP67 waterproof GNSS tracker that features up to 1-year standby time powered by internal batteries and supports wireless charging. The device is ideal for asset monitoring & lot management that require tamper detection & temperature monitoring. GL521MG supports LTE Cat M1/NB2 network on multiple bands for operation in America, Europe, and Oceania with a fallback to GPRS.

1.1. GL521MG Product

Table 1. GL521MG Product

Model No.	Region	Technology	LTE Category	Operating Band
GL521MG	Global	GSM/LTE	eMTC/NB-IoT	Cat M1/Cat NB2: **Cat M1:** B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B26/B27/B28/B66/B85 **Cat NB2:** B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B28/B66/B71/B85 **EGPRS:** 850/900/1800/1900MHz

1.2. Reference

Table 2. GL521MG Protocol Reference

SN	Document Name	Remark
[1]	GL521M Series @Track Air Interface Protocol	The air interface protocol between GL521MG and backend server

1.3. Terms and Abbreviations

Table 3. GL521MG Terms and Abbreviations

Abbreviation	Description
RXD	Receive Data
TXD	Transmit Data
GND	Ground

2. Product Overview

2.1. Product Appearance

STATUS
GPS

LEDs

Light Alarm Sensor

Key

Light Tamper Sensor

Figure 1. GL521MG Product View

2.2. Key Description

Table 4. GL521MG Key Description

Key Functions	To power on: Long press for more than 3 seconds To check the device status: Press the key for one time To power off (needs to be configured): Long press for more than 3s after power on

2.3. LED Description

Figure 2. GL521MG LEDs

There are two LEDs on GL521MG. They can work separately and in combination to indicate the status of the device. For the details when they work separately, please see the table below:

Table 5. GL521MG LED Description (work separately)

LED	Event	State
Status LED (Green)	Searching network	Fast flash
	The device has been registered on network	Slow flash
	SIM is locked by PIN	Solid on
	Network modem off	Solid off
GPS LED (Blue)	GPS is in the process of fixing	Fast flash
	GPS is on and GPS gets fix	Slow flash
	GPS off	Solid off

Fast flash: 100ms on/200ms off
Slow flash: 200ms on/1000ms off
Note: The LEDs will be on about 5 minutes after power on. After that, they will always be off.
When they work in combination, the details are described as below:

Table 6. GL521MG LED Description (work in combination)

During power on	Both the LEDs will be on to indicate the device is being powered on.
When checking the device status	Both the LEDs will be on to indicate the device still works.
During power off	Both the LEDs will flash simultaneously to indicate the device is being powered off.
During charging	Both the LEDs will flash simultaneously to indicate the device is being charged.
When fully-charged	Both the LEDs will be solid on to indicate the device is fully charged.

2.4. Parts List

Table 7. GL521MG Parts List

Name	Picture	Description
GL521MG Locater		EGPRS/LTE Cat-M1/LTE Cat-NB1/GNSS Tracker
GL521MG Back Glue		Used to install GL521MG
GL521MG Magnetic Case (Optional)		Used to install GL521MG on metal surface for convenient taking off
GL521MG Plastic Bracket (Optional)		Used to hold GL521MG Series on plastics bracket which is installed on surfaces where screw holes can be drilled
GL521MG Data Cable (Optional)		USB data cable which can be used for firmware upgrade and configuration

GL521MG Wireless Charger Cradle (Optional)		To hold the wireless charger and GL521MG when doing wireless charging
GL521MG Wireless Charger Accessory Kit-single set without cradle (Optional)		For battery charging **Note:** Remove the magnetic case when charging the device with the wireless charger kit
GL521MG Wireless Charger Accessory Kit-combo set with cradles (Optional)		For battery charging **Note:** Remove the magnetic case when charging the device with the wireless charger kit

3. Interface Definition

GL521MG has an internal 4-pin connector. It can be used to configure the device. The definition of the pins is in the following table.

Figure 3. 4-pin Connector of the GL521MG

Table 8. Description of 4-pin Connections

Index	Pin Name	Description
1	USB_5V	Not used
2	RXD	MCU UART RXD
3	TXD	MCU UART TXD
4	GND	Power and digital ground

4. Getting Started

4.1. Opening and Closing the Case

Figure 4. GL521MG Screw Position

To open/close the case: Unfasten or tighten the 4 screws at backside.

4.2. Turning on/off the Device

Figure 5. GL521MG Power Key

To turn on: Long press the key for more than 3 seconds.

To turn off (needs to be configured): Long press for more than 3s after power on.
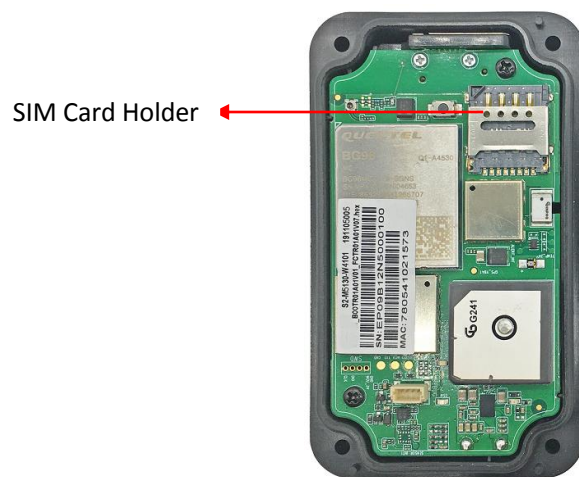
4.3. Installing a SIM Card

Figure 6. GL521MG SIM Card Holder

Power off the device first and then install the SIM card.

5. Installation Precautions

◆ Firmly install the device to a reliable surface to prevent falling off.

◆ Make the side with antenna face sky to have better signal reception.

◆ Do not install the device under metal surface or in enclosed environments having difficulty in getting GPS and network signal.

Note: If the magnetic or plastic bracket is used to hold the device, please apply the force to fasten the bracket screw as follows, otherwise, the device case may be damaged.

(0.6±0.2kgf/cm², excessive force may cause damage to the device).

6. Troubleshooting and Safety Info

6.1. Troubleshooting

Table 9. GL521MG Troubleshooting List

Trouble	Possible Reason	Solution
After the device is turned on, the Status LED always flashes quickly.	The signal is too weak. The device isn't registered to the network.	Please move the device to a place with good network coverage.
Messages can't be reported to the backend server by network.	APN is not right.	Ask the network operator for the right APN.
	The IP address or port of the backend server is wrong.	Make sure the IP address for the backend server is an identified address in the internet.
There is no response from UART when the device is configured by using UART.	The port is not ready or the device is not powered on.	Please check the port and the device to ensure they are working properly.
The device can't get GPS fix.	The GPS signal is weak.	Move the device to a place under open sky.
		It is better to make the side with antenna face the sky.

6.2. Safety Info

● Do not disassemble the device by yourself.

● Do not put the device in the overheated or too humid place, and avoid exposure to direct sunlight. Too high temperature will damage the device or even cause battery explosion.

● Do not use the device on the airplane or near medical equipment.

7. Appendix: Supported Accessories

● GL521MG Wireless Charger Accessory Kit