GL521MG User Manual

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

QSZTRACGL521MGUM0100

Version: 1.00

Document Title	GL521MG User Manual
Version	1.00
Date	2021-11-28
Status	Released
Document Control ID	QSZTRACGL521MGUM0100

General Notes

Queclink offers this information as a service to its customers, to support application and engineering efforts that use the products designed by Queclink. The information provided is based upon requirements specifically provided to Queclink by the customers. Queclink has not undertaken any independent search for additional relevant information, including any information that may be in the customer's possession. Furthermore, system validation of this product designed by Queclink within a larger electronic system remains the responsibility of the customer or the customer's system integrator. All specifications supplied herein are subject to change.

Copyright

Contents

0. Revision History

Revision	Date	Author	Description of Change
1.00	2021-11-28	Heymi Lin	Initial

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	GSM850/GSM900/DCS1800/PCS1900 LTE-FDD: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B26/B27/B28/B66/B85 LTE-FDD: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B28/B66/B71/B85

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

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-NB2/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 Accessory Kit		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/cm^2, 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

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.

NOTE: The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications 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
- This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance of 20 cm between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter