GL502MG User Manual

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

QSZTRACGL502MGUM0100

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0. Revision History

Revision	Date	Author	Description of Change
1.00	2020-11-25	Heymi Lin	Initial

1. Introduction

GL502MG is an IP68 waterproof GNSS tracker that features up to 10 years standby time powered by internal batteries and supports Wi-Fi positioning. The device is ideal for asset monitoring & Iot management that require real-time monitoring. GL502MG supports LTE Cat M1/NB2 network on multiple bands for operation in America, Europe, and Oceania with a fallback to GPRS.

1.1. GL502MG Product

Table 1. GL502MG Product

Model No.	Region	Technology	Operating Band (MHz)
GL502MG	Worldwide	eMTC/NB-IoT	GSM: GSM850/GSM900/ DCS1800/PCS1900 LTE-TDD: B39 (for Cat.M1 only) LTE-FDD: B1/B2/B3/B4/B5/B8/B12/B13/B 18/B19/B20/B25/B28

1.2. Reference

Table 2. GL502MG Protocol Reference

SN	Document Name	Remark
[1]	GL502MG @Track Air Interface Protocol	The air interface protocol between GL502MG and backend server

1.3. Terms and Abbreviations

Table 3. GL502MG Terms and Abbreviations

Abbreviation	Description
RXD	Receive Data
TXD	Transmit Data
GND	Ground

2. Product Overview

2.1. Product Appearance

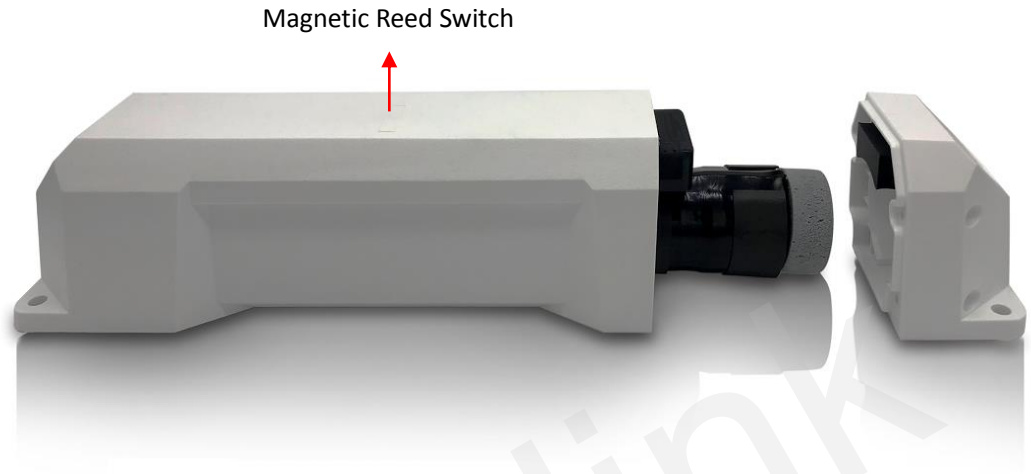

Figure 1. GL502MG Product View

2.2. Magnetic Reed Switch Description

Table 4. Magnetic Reed Switch Description

Magnetic Reed Switch Function	To power on the device: Use a magnet (1.2 mT minimum) to approach magnetic reed switch. Then the switch will be triggered and the device will be powered on.
Note: 1, To power on the device, set the battery switch on the PCB to ON position first; 2, Once powered on, to cut off the power, set the battery switch on the PCB to OFF position.	

2.3. LED Description

Figure 2. GL502MG LEDs

There are two LEDs on GL502MG. 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. GL502MG LED Description (work separately)

LED	Event	State
CELL LED (Green)	Searching network	Fast flash
	The device has been registered on network	Slow flash
	SIM is locked by PIN	Solid on
	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:

1, The LEDs will be on about 5 minutes after power on. After that, they will always be off.

2, The LEDs will not be visible because the PCB is inside opaque plastic housing.

2.4. Parts List

Table 6. GL502MG Parts List

Name	Picture	Description
GL502MG Locater		EGPRS/LTE Cat-M1/LTE Cat-NB2/GNSS Tracker
Magnetic Buckle Kit (Optional)		Used to install GL502MG
Steel Cable & Steel Plates (Optional)		Used to provide extra protection from falling in case the magnetic buckle loosens
GL502MG Data Cable (Optional)		USB data cable which can be used for firmware upgrade and configuration

3. Interface Definition

GL502MG has a 12-pin (two sides) Type-C interface. The sequence and definition of the 24-pin connector are shown in the following figure:

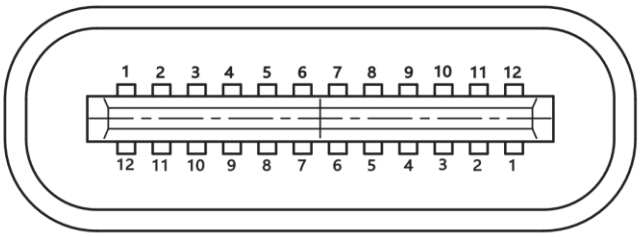

Figure 3. 12-pin (two sides) Type-C Interface of GL502MG

Table 7. Description of 24-pin Connections

Pin No.	Pin Name	Function Description
1	GND	GND
2	GND	GND
3	VBUS	USB PWR
4	VBUS	USB PWR
5	N/A	N/A
6	N/A	N/A
7	N/A	N/A
8	USB DP	USB DP
9	USB DM	USB DM
10	N/A	N/A
11	UART_RXD	Debug Receive Data
12	UART_TXD	Debug Transmit Data

4. Getting Started

4.1. Opening and Closing the Case

Figure 4. GL502MG Screw Position

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

4.2. Turning on/off the Device

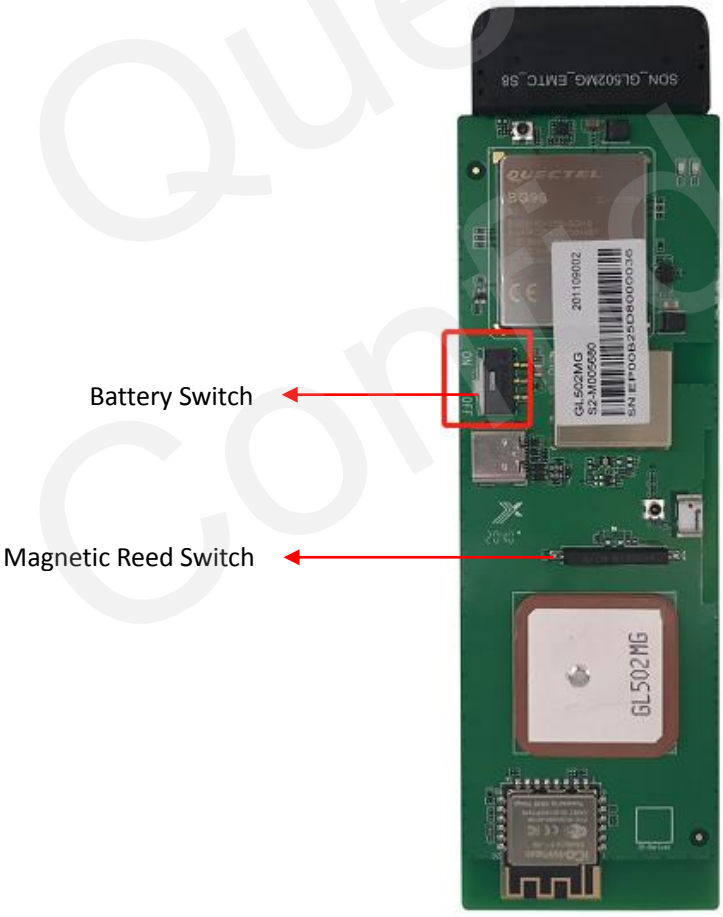

Figure 5. GL502MG Battery Switch and Magnetic Reed Switch

To turn on: Set the battery switch on the PCB to ON position first. And use a magnet to approach magnetic reed switch. Then the switch will be triggered and the device will be powered on.

To turn off: Set the battery switch on the PCB to OFF position.

Note: When leaving factory, the internal battery switch is at "ON" position by default if SIM card is pre-inserted so the user only needs to use a magnet to make the device working and at "OFF" position if the SIM card will be installed by the users themselves.

4.3. Installing a SIM Card

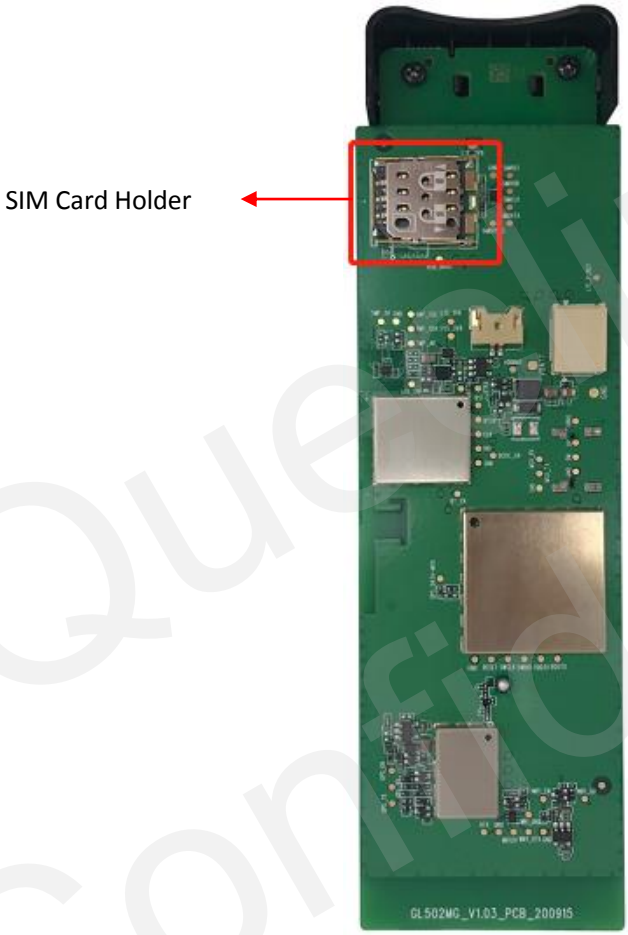

Figure 6. GL502MG SIM Card Holder

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.

6. Troubleshooting and Safety Info

6.1. Troubleshooting

Table 8. GL502MG 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 Type-C when the device is configured by using Type-C.	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

- Magnetic Buckle Kit (Optional)
- Steel Cable & Steel Plates (Optional)
- GL502MG Data Cable (optional)