GV57MG User Manual

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

TRACGV57MGUM001

Version: 2.01

Driving Smarter IoT

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0. Revision History

Version	Date	Author	Description of Change
1.00	2020-12-14	Oliver Ding	Initial
2.01	2021-06-17	Oliver Ding	Updated the pictures in Chapter 3.1, Chapter 3.2 and Chapter 3.3.

1. Introduction

GV57MG is a mini GNSS tracker designed for a wide variety of vehicle tracking applications. Its built-in GNSS receiver has superior sensitivity and fast time to first fix. The device boasts an IP67 compliant waterproof case. Its built-in Bluetooth can be used for data transmission. It supports LTE Cat M1/NB2 network on multiple bands for operation globally with a fallback to EGPRS.

1.1Reference

Table 1: GV57MG Protocol Reference

SN	Document Name	Remark
[1]	GV57MG @Track Air Interface Protocol	The air protocol interface between GV57MG and backend server.

1.2 Terms and Abbreviations

Table 2: Terms and Abbreviations

Abbreviation	Description
IN1	Digital Input1
VIN	External DC Power Input
GND	Ground
OUT	Digital Output
IGN	Ignition

2. Product Overview

2.1 Check Parts List

Before starting, check whether all the following items have been included with your GV57MG. If anything is missing, please contact your supplier.

Figure 1. Appearance of GV57MG

2.2 Parts List

Name	Picture
GV57MG Locator	
User Cable	
GV57MG UART Cable 0.5M(Optional)	

GV57MG USB Cable 0.5M(Optional)	

Table 3: GV57MG Parts List

2.3 Interface Definition

GV57MG has a 5-Pin cable. The figure of the 5-Pin cable is shown below.

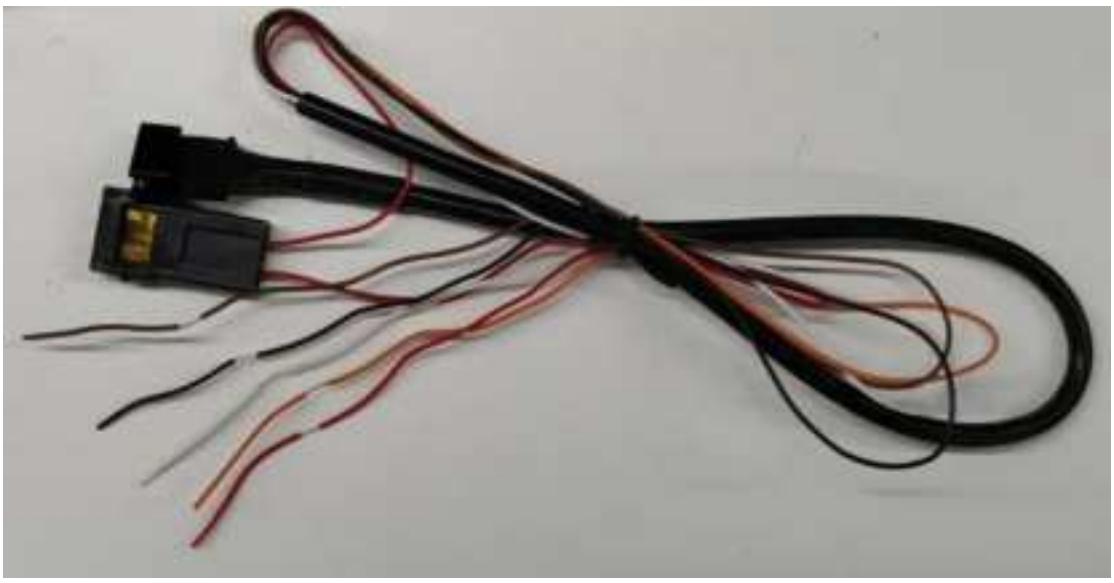

Figure 2. GV57MG 5-Pin Cable

Index	Description	Color	Remark
1	IN1	Orange	Digital Input1,negative trigger
2	VIN	Red	External DC Power Input, 8-32V
3	GND	Black	Ground
4	OUT	Brown	Digital Output, open drain, 150mA max
5	IGN	White	Ignition input, positive trigger

Table 4: Description of 5-pin Connections

3. Getting Started

3.1 Installing a SIM Card

Step 1: Remove the top cover (ensure the device is not powered unplug the 5-Pin cable and turn off the battery).

Note: Waterproof equipment. Don't disassemble repeatedly.

Step 2: Put the SIM card into the SIM card holder. Press down on the SIM card slightly to make it slide into the slot.

Step 3: Place the top cover on the bottom cover, and tighten both covers until they snap.Make sure that the seal ring is in place and there is no obvious gap between covers and seal ring.

Step 4: Turn over the device and tighten the screws with screw cushion.

3.2 UART Interface

There is a UART interface on GV57MG used to connect to GV57MG UART Cable 0.5M. UART is used for configuration. The UART interface and USB interface use the same physical interface.

3.3 USB Interface

GV57MG has one USB interface which uses the same physical interface as UART interface. It is used for firmware download.

3.4 Power Connection

PWR (VCC, Red) / GND (Black) are the power input pins. The input voltage range for this device is from 8V to 32V. The device is designed to be installed in vehicles that operate on 12V/24V vehicle without the need for external transformers.

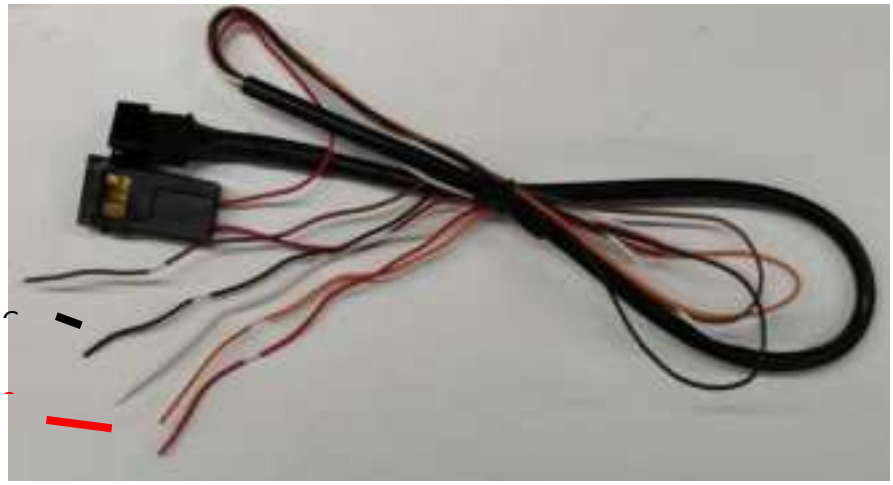

Figure 3. Typical Power Connection

3.5 Ignition Detection

Logical Status	Electrical Characteristics
Active	5.0V to 32V
Inactive	0V to 3V or open

Table 5: Electrical Characteristics of Ignition Detection

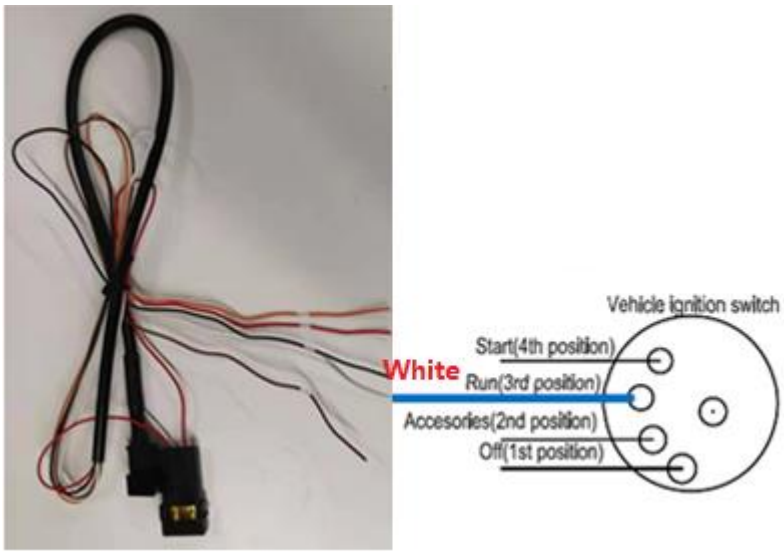

Figure 4. Typical Ignition Detection

IGN (White) is used for ignition detection.

An alternative to connecting to the ignition switch is to find a non-permanent power source that is only available when the vehicle is running, for example, the power source for the FM radio.

IGN signal can be configured for the device to start transmitting information to the backend server when the ignition is on, and enter the power saving mode when the ignition is off.

3.6 Digital Input

There is one general purpose digital input on GV57MG. It is a negative trigger.

Logical Status	Electrical Characteristics
Active	0V to 0.8V
Inactive	Open

Table 6: Electrical Characteristics of Digital Input

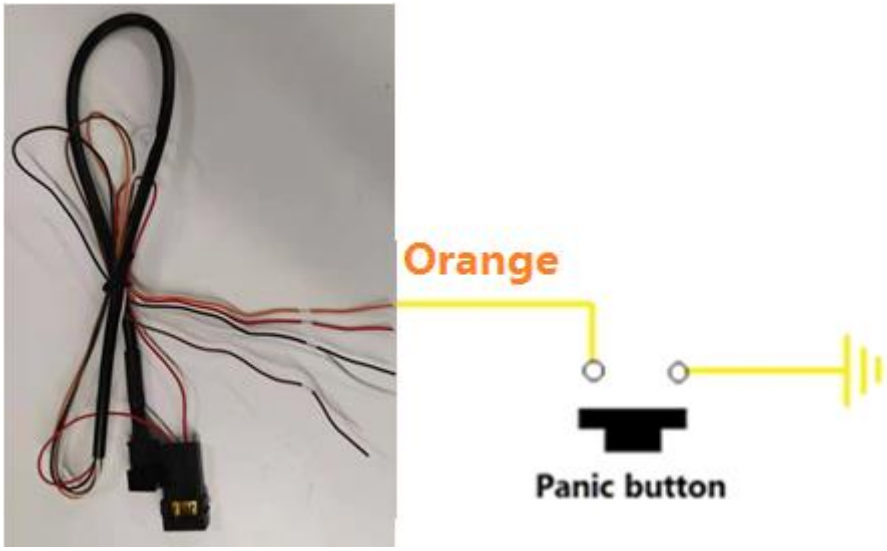

Figure 5.Typical Digital Input Connection

3.7 Digital Output

OUT (Brown) is a digital outputon GV57MG. It is of open drain type and the maximum drain current is 150mA.

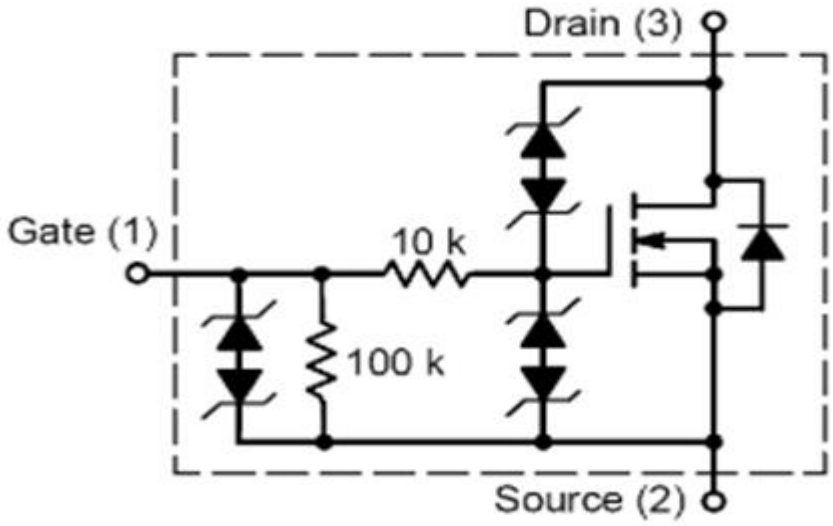

Figure 6. Internal Driver Circuit for Digital Output

Index	Description	Remark
1	Enable	<1.5V @ 150mA
2	Disable	Open drain

Table 7: Electrical Characteristics of Digital Output

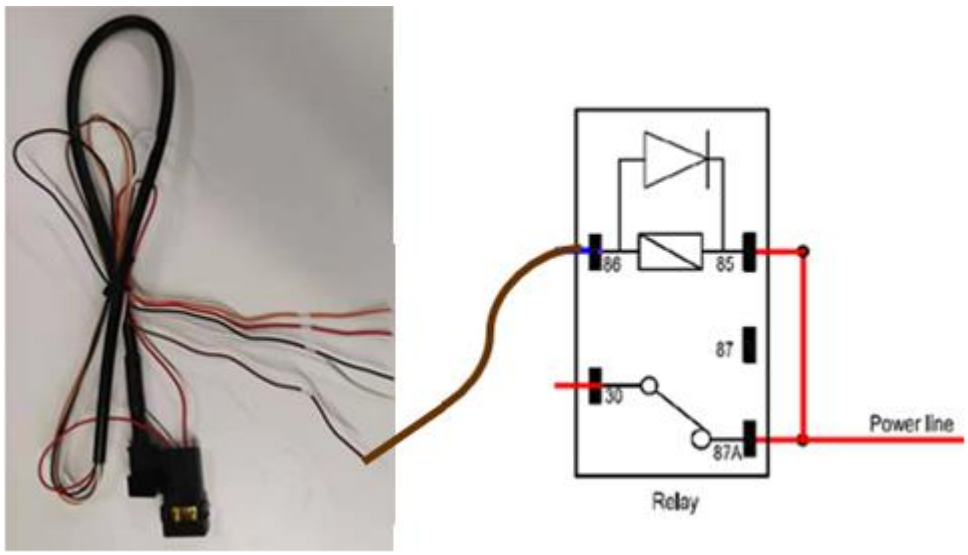

Figure 7.Typical Connection with a Relay

Note:

1. Many modern relays come with a fly backdiode pre-installed internal to the relay itself. If the relay has this diode, ensure the relay polarity is properly connected. If this diode is not internal, it should be added externally. A common diode such as a 1N4004 will work in most circumstances.

3.8 LED Status

GV57MG has two status LEDs that are CELL LED and GNSS LED.

Figure 8. GV57MG LEDs on the Case

LED	Device Status	LED Status
CELL LED (Green)	The device is searching cellular network.	Fast flashing
	The device has been registered to cellular network.	Slow flashing
	SIM card needs pin code to unlock.	ON
GNSS LED (Red)	GNSS is turned off.	OFF
	The device has got GNSS location information.	ON
	The device is searching for GNSS signal.	Fast flashing
	GNSS sends no data or data format error occurs.	Slow flashing

Table 8. Definition of Device Status and LED

Note:

1. The fast flashing of cell led is about 100ms ON/800ms OFF.
2. The slow flashing of cell led is about 100ms ON/2000ms OFF.
3. The fast flashing of GNSS led is about 100ms ON/100ms OFF.
4. The slow flashing of GNSS led is about 600ms ON/600ms OFF.

3.9 Motion Sensor Direction

GV57MG has an internal 3-axis accelerometer supporting motion detection. The following shows the directions of the motion sensor. The z-axis points vertically inward.

Figure 9. Motion Sensor Direction

4. Troubleshooting and Safety Information

4.1 Troubleshooting

Problem	Possible Reason	Solution
After GV57MG is turned on, the CELL LED always flashes quickly.	The signal is too weak; GV57MG cannot be registered to the network.	Please move GV57MG into places with good network coverage.
Messages cannot be reported to the backend server.	The IP address or port of the backend server is wrong.	Make sure the IP address for the backend server is an identified address on the internet.
GV57MG cannot power off.	The device is connected to ignition wire.	Disconnect ignition wire, and try again.
GV57MG cannot get successful GNSS fix.	The GNSS signal is weak.	Please move GV57MG to a place with open sky.
		It is better to let the surface (without LED indicators) face the sky.

4.2 Safety Information

- Do not disassemble the device by yourself.
- Do not put the device in overheated, too humid place, and avoid exposure to direct sunlight. Too high temperature will damage the device or even cause battery explosion.
- Do not use GV57MG on airplane or near medical equipment.

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.