GV50CG User Manual

GSM/GPRS/LTE Cat1 GNSS Tracker

TRACGV50CGUM001

Version: 1.00

Driving Smarter IoT

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History

Version	Date	Author	Description of Change
1.00	2023-10-12	Daniel Cheng	Initial.

1. Introduction

The GV50CG is a compact GNSS vehicle tracking device that supports EGPRS and LTE Cat 1. It is designed for a wide variety of applications such as stolen vehicle recovery, motorcycle monitoring and other basic tracking applications. The built-in GNSS receiver has superior sensitivity and fast initial positioning. The full-featured @Track Air Interface Protocol provides the complete documentation, so it's easy to learn system integration. The protocol supports a wide variety of reports including emergency alarm, geo-fence boundary crossings, external power supply monitoring and position reports.

1.1 Reference

Table 1: GV50CG Protocol Reference

SN	Document Name	Remark
[1]	GV50CG @Track Air Interface Protocol	The air protocol interface between GV50CG and backend server.

1.2 Terms and Abbreviations

Table 2: Terms and Abbreviations

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

2. Product Overview

2.1 Overview

To get started, please check the parts list first. If anything is missing, please contact your sales representative.

Figure 1. Appearance of GV50CG

2.2 Parts List

Table 3: GV50CG Parts List

Name	Picture
GV50CG Locator	
USB-MICRO[C&D]-ST CABLE (Optional)	

Note: The **USB-MICRO[C&D]-ST CABLE** is an optional accessory and may not be delivered along.

2.3 Interface Definition

The GV50CG has a 5-PIN pitch connector cable for connecting power and I/O. Please view the following **Figure 2** and **Table 4** for details.

Figure 2. GV50CG 5-PIN Pitch Connector Cable

Table 4: Description of 5-PIN Connections

Index	Description	Color	Remark
1	AIN/IN1	Orange	Analog Input/Digital Input1, negative trigger
2	VIN	Red	External DC Power Input, 9-90V
3	GND	Black	Ground
4	OUT	Brown	Digital Output, open drain, 150mA max
5	IGN	White	Ignition input, positive trigger

3. Get Started

3.1 Install a SIM Card

Step 1

Open the top cover.

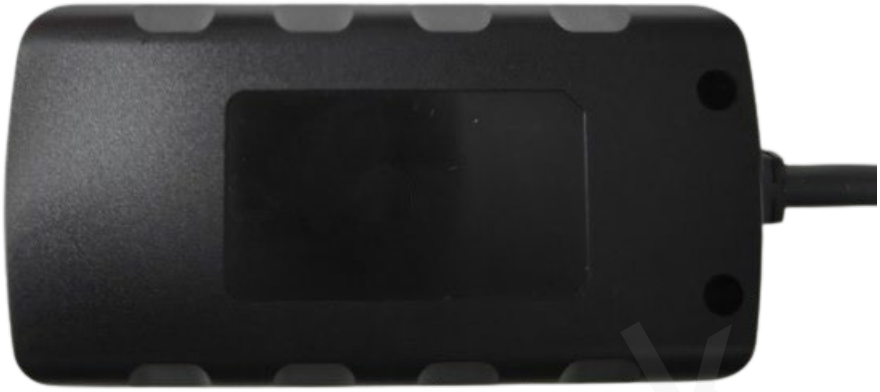
Note: Please unplug the USB-MICRO[C&D]-ST CABLE and ensure that the device is not powered on.

Step 2

Make sure the small notch in the corner of the SIM card matches the one in the SIM card tray so that it fits properly. Place the words or logo side of the SIM card facing up. Then slide the SIM card tray back into the SIM card slot.

Step 3

Press to close the top and bottom covers until you hear a snap. Make sure that there is a tight fit between the covers.



Step 4

Tighten the screws on the two corners with the screwdriver to close the device.

3.2 USB Interface

The GV50CG has a USB interface that is used for firmware download by using the **USB-MICRO[C&D]-ST CABLE**.

Note: Make sure that the USB-MICRO[C&D]-ST CABLE of the GV50CG is oriented correctly when plugged into the corresponding connector.

3.3 Power Connection

PIN 2 (VIN, red) and PIN 3 (GND, black) are used for power input. The power supply connected to the PIN must be 9V to 90V for the GV50CG to work properly.

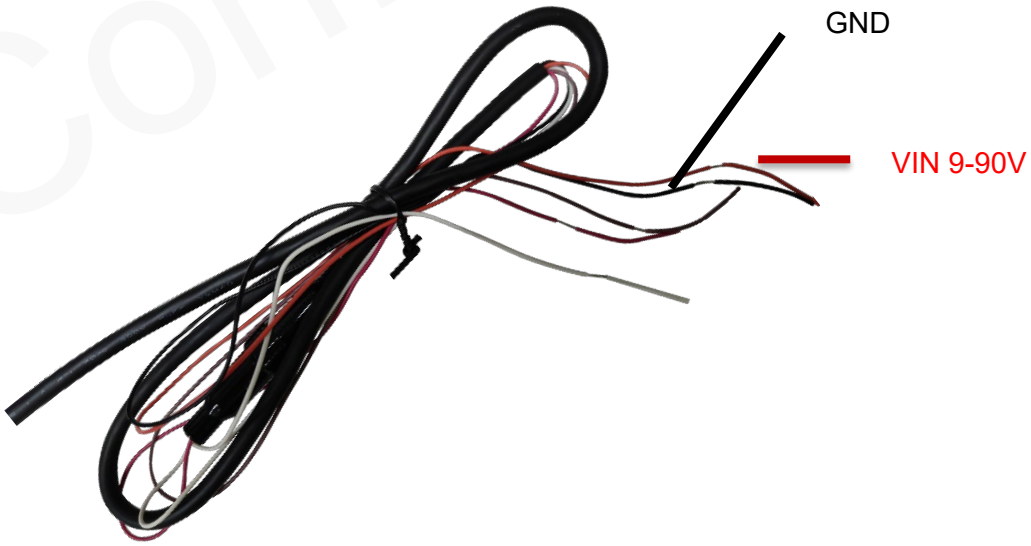


Figure 3. Typical Power Connection

3.4 Ignition Detection

Table 5: Electrical Characteristics of Ignition Detection

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

Figure 4. Typical Ignition Detection

PIN 5 (IGN, white) is used for ignition detection. We recommend connecting the PIN 5 to the RUN position of the vehicle ignition switch, as shown in **Figure 4**.

If you are looking for an alternative, we recommend that you find a power source that is only available when the vehicle is started, such as a power source for the FM radio. The device will send messages to the backend server as the IGN signal completes configuration when the ignition is on, and switch to the power saving mode when the ignition is off.

3.5 Digital Input/Analog Input

There is an input on the GV50CG that can be configured as an analog input or a digital input.

For the digital input, it is a negative trigger.

For the analog input, the range of input voltage is from 0V to 16V.

Table 6: Electrical Characteristics of Digital Input

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

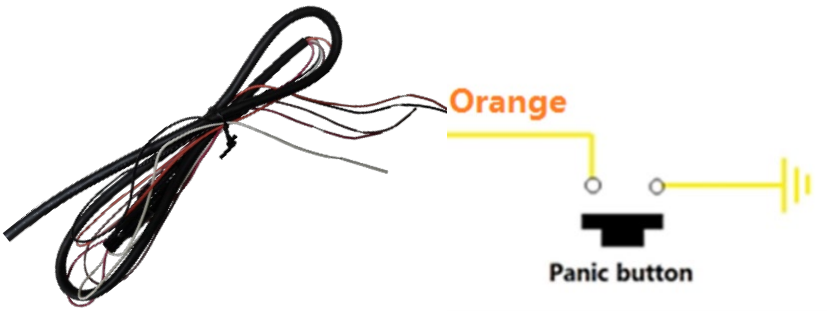


Figure 5. Typical Digital Input Connection

3.6 Digital Output

PIN 4 (OUT, brown) is an open-drain digital output. The maximum drain current for the device is 150mA.

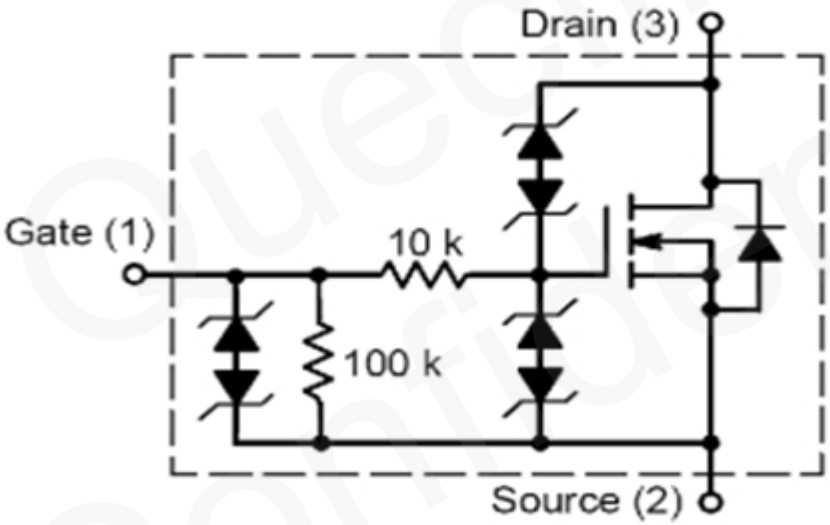


Figure 6. Internal Driver Circuit for Digital Output

Table 7: Electrical Characteristics of Digital Output

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

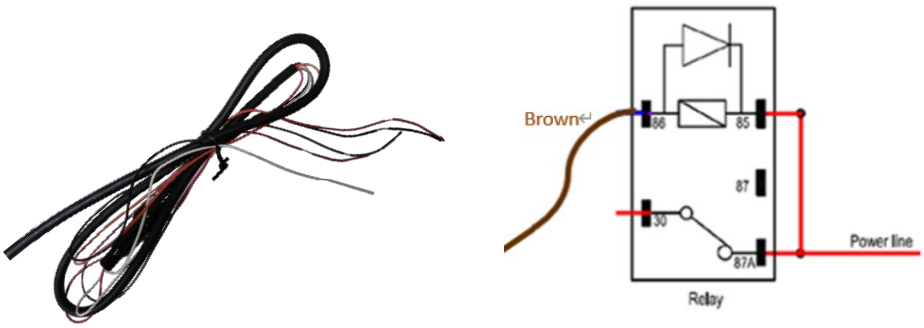


Figure 7. Typical Connection with Relay

Note:
Many modern relays already have the freewheeling diodes inside. If the relay has this diode, make sure the polarity of the relay is connected correctly when using it. If not built in, the diode should be added outside the relay. A common diode such as a 1N4004 will work in most circumstances.

3.7 LED Status

The GV50CG has two LED lights, namely Cellular LED and GNSS LED.

Figure 8. GV50CG LEDs on the Case

Table 8. Definition of Device Status and LED

LED	Device Status	LED Status
Cellular LED (Green)	The device is searching for network.	Fast flashing
	The device has been registered on the network.	Slow flashing
	The SIM card needs pin code to unlock.	Solid green
GNSS LED	GNSS is turned off.	OFF
	The device has got GNSS location information.	Solid blue

(Blue)	The device is searching for GNSS signal.	Fast flashing
	GNSS sends no data or data format error occurs.	Slow flashing

Note:

1. The fast flashing of the Cellular LED is about 100ms when the LED is on and 800ms when it is off.
2. The slow flashing of the Cellular LED is about 100ms when the LED is on and 2000ms when it is off.
3. The fast flashing of the GNSS LED is about 100ms when the LED is on and 100ms when it is off.
4. The slow flashing of the GNSS LED is about 600ms when the LED is on and 600ms when it is off.

3.8 Motion Sensor Direction

The GV50CG has an internal 3-axis accelerometer that supports motion detection. The following figure shows the directions of the motion sensor. The Z-axis points vertically up.

Figure 9. Motion Sensor Direction

4. Troubleshooting and Safety Information

4.1 Troubleshooting

Problem	Possible Reason	Solution
The Cellular LED flashes fast all the time when the device is on.	1. The cellular signal strength is weak. 2. The device isn't registered on the network.	Please place the device in an area with good network coverage.
Messages can't be reported to the backend server.	The IP address or port of the backend server is wrong.	Please check and make sure the IP address is identified by the Internet.
The device can't be powered off.	The device is connected to the ignition wire.	Please disconnect the ignition wire and try again.
The device can't get successful GNSS fix.	The GNSS signal is weak.	1. Please place the device in an open area. 2. Let the side without LED face up.

4.2 Safety Information

- DO NOT disassemble the device by yourself.
- DO NOT place the device in an environment with high temperature and high humidity. Avoid exposure to direct sunlight. The high temperature will damage the device and even cause a battery explosion.
- DO NOT use the device on the airplane or near the medical equipment.