

GV50CNA User Manual

LTE Cat1/GNSS Tracker

TRACGV50CNAUM001

V1.00



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History

Version	Date	Author	Description of Change
1.00	January 2, 2024	Oliver Ding	Initial.

1. Introduction

The GV50CNA is a compact GNSS vehicle tracking device that support LTE Cat1. The device has multiple I/O interfaces that can be used for monitoring or controlling external devices. The built-in GNSS receiver has superior sensitivity and fast initial positioning. The full-featured @Track Air Interface Protocol provides complete documentation, so it's easy to learn system integration. The protocol supports a wide variety of reports including emergency alarms, geo-fence boundary crossings, external power supply monitoring, and position reports.

1.1 Reference

Table 1: GV50CNA Protocol Reference

SN	Document Name	Remark
[1]	GV50CNA @Track Protocol Pro	The air protocol interface between GV50CNA and backend server.

1.2 Terms and Abbreviations

Table 2: Terms and Abbreviations

Abbreviation	Description
OUT1/IN1	Digital Output1/Input1
VIN	External DC Power Input
GND	Ground
OUT2	Digital Output2
IGN	Ignition

2. Product Overview

2.1 Overview


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



Figure 1. Appearance of GV50CNA

2.2 Parts List

Table 3: GV50CNA Parts List

Name	Picture
GV50CNA Locator	

User Cable	
GV50CNA USB Cable (Optional)	

Note: The GV50CNA USB cable are optional accessories and may not be delivered along.

2.3 Interface Definition

The GV50CNA has a 5-PIN pitch connector cable that is used to connect to the power and I/Os. You can find the cable in Figure 2, and its sequence and description in Table 4.

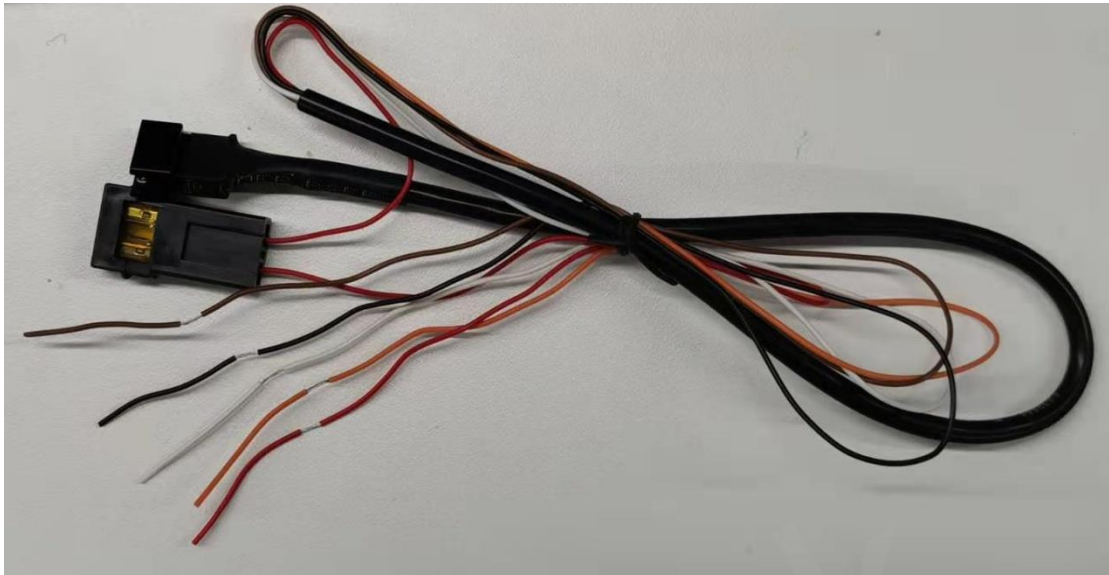


Figure 2. GV50CNA 5-PIN Pitch Connector Cable

Table 4: Description of 5-PIN Connections

Index	Description	Color	Remark
1	OUT1/ IN1	Orange	Digital Output1/Input1, open drain, 150mA max
2	VIN	Red	External DC Power Input, 8-32V
3	GND	Black	Ground
4	OUT2	Brown	Digital Output, open drain, 150mA max
5	IGN	White	Ignition input, positive trigger

3. Getting Started

3.1 Installing a SIM Card

Step 1

Open the top cover.



Note: Please unplug the 5-PIN pitch connector cable and ensure the device isn't powered up. Don't disassemble the device repeatedly, otherwise, it may affect the waterproof performance of the device.

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. The words or logo on the SIM card should be facing up. 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 and the seal ring.



3.2 USB Interface

The GV50CNA has a USB interface that is used for firmware download by using the USB cable.

Please install the driver(Queclink_Driver_AsrV2.0.1.0) for the USB cable before you using the USB cable.



Note: The USB cable of the GV50CNA are oriented when plugged into the corresponding connector. The cables need to be vertically down and the connector direction of the cables needs to be as shown below.



3.3 Power Connection

The PIN 2 (VIN, red) and the PIN 3 (GND, black) are used for power input. The power source you connect to the PINs has to be 8V to 32V for the GV50CNA to work. The device is designed to be installed in vehicles that operate on 12V/24V systems without the need to use external transformers.

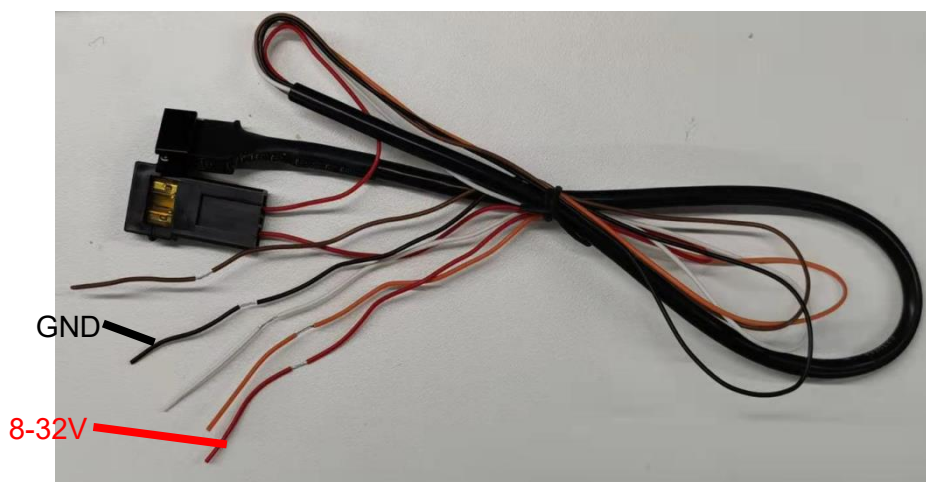


Figure 3. Typical Power Connection

3.4 Digital Output/Input Connection

The PIN 1(OUT1/IN1, Orange) is an open-drain digital output1/input1. The maximum drain current for the device is 150mA. It can be used either as a digital output or a (negative trigger) digital input based on your needs.

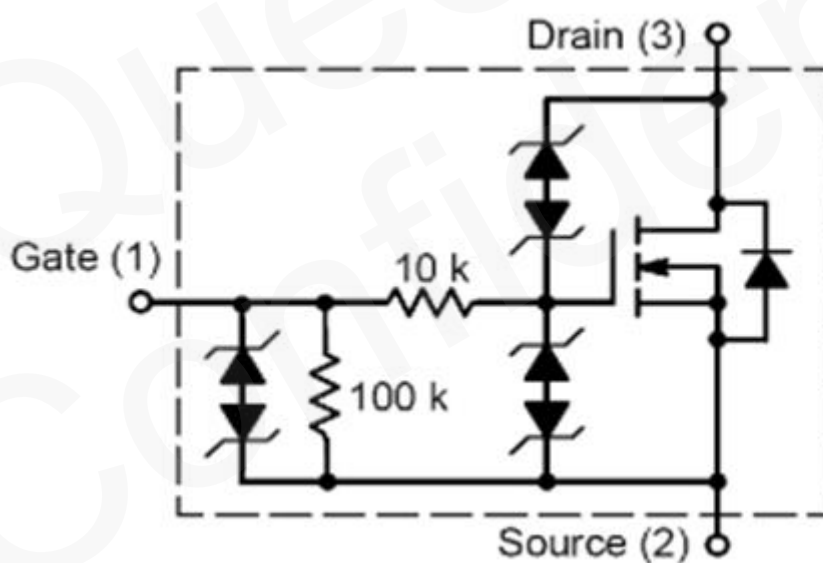


Figure 4. Internal Driver Circuit for Digital Output

Table 5: Electrical Characteristics of Digital Output

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

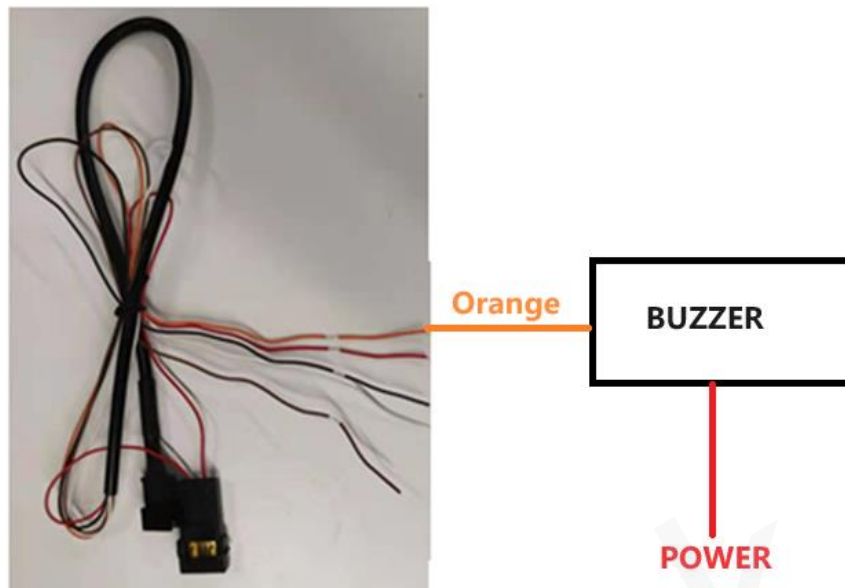


Figure 5. Typical Connection with a Buzzer as Digital Output

Table 6: Electrical Characteristics of Digital Input

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

The following screenshot shows the recommended connection of a digital input

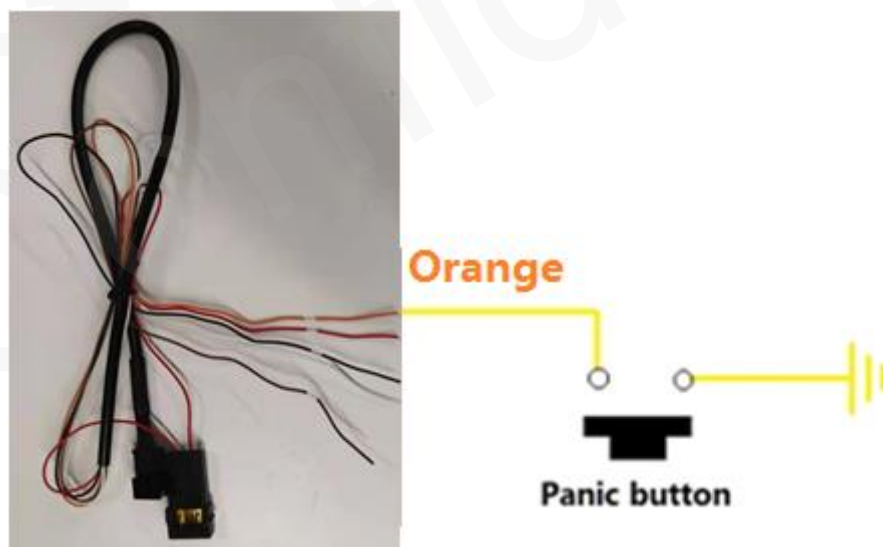


Figure 6. Typical Digital Input Connection

3.5 Digital Output

The PIN 4 (OUT2, brown) is an open-drain digital output. The maximum drain current for the device is 150mA.

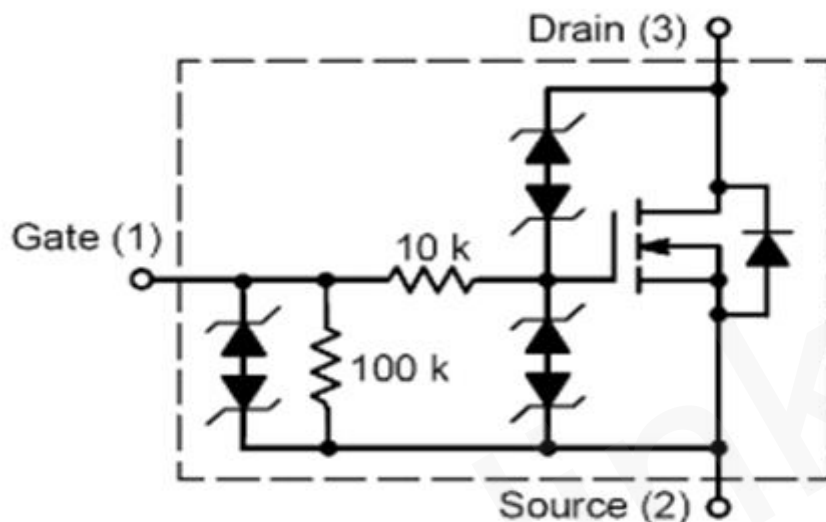


Figure 7. Internal Driver Circuit for Digital Output

Table 7: Electrical Characteristics of Digital Output

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

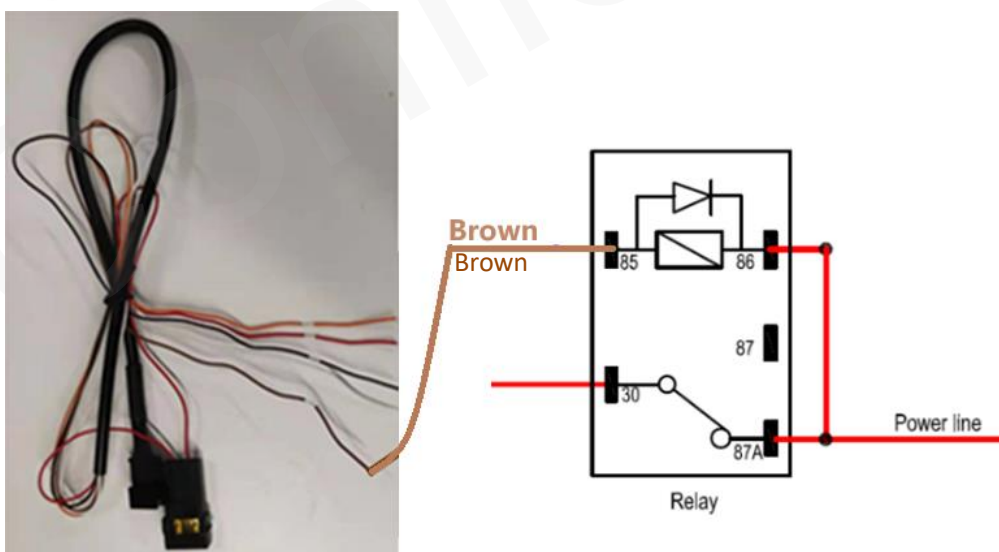


Figure 8. Typical Connection with a Relay (MAH-112-C-4D2)

Note: Many modern relays already have a freewheeling diodes inside. If the relay has

such a diode, make ensure the relay is connected with the correct the polarity when using it. If it is not built in, the diode should be added externally to the relay. A common diode such as 1N4004, will work in most cases.

3.6 Ignition Detection

Table 8: Electrical Characteristics of Ignition Detection

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

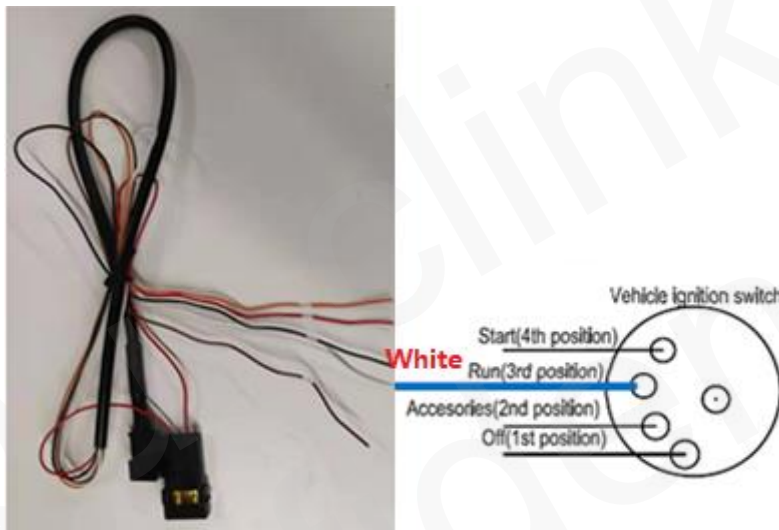


Figure 9. Typical Ignition Detection

The PIN 5 (IGN, white) is used for ignition detection. We recommend that you connect it to the RUN position of the vehicle ignition switch as shown (Figure 4).

If you look for an alternative, we recommend that you find a power source that is available only when the vehicle is started, for example, the 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.

3.7 LED Status

The GV50CNA has two status LEDs that are Cellular LED and GNSS LED respectively.



Figure 10. GV50CNA LEDs on the Case

Table 9. 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 to on network.	Slow flashing
	The SIM card needs pin code to unlock.	Solid green
GNSS LED (Red)	GNSS is turned off.	OFF
	The device has got GNSS location information.	Solid red
	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 indicator is on and 200ms when it is off.
2. The slow flashing of the Cellular LED is about 200ms when the LED indicator is on and 1000ms when it is off.
3. The fast flashing of the GNSS LED is about 100ms when the LED indicator is on and 100ms when it is off.
4. The slow flashing of the GNSS LED is about 600ms when the LED indicator is on and 600ms when it is off.

3.8 Motion Sensor Direction

The GV50CNA has an internal 3-axis accelerometer that supports motion detection. The following screenshot shows the directions of the motion sensor. The z-axis points vertically inward.



Figure 11. 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; Or 2. The device isn't registered on 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 power off.	The device is connected to the power cord (that is external DC power input).	Please disconnect the power cord 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. Or
		2. Let the side without LED indicators face up.

4.2 Safety Information

- Don't disassemble the device by yourself.
- Don't 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.
- Don't use the device on the airplane or near the medical equipment.

FCC Caution.

a、 § 15.19 Labeling requirements.

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.

b、 § 15.21 Changes or modification warning.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

c、 § 15.105 Information to the user. 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.

*RF warning for Mobile device:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.