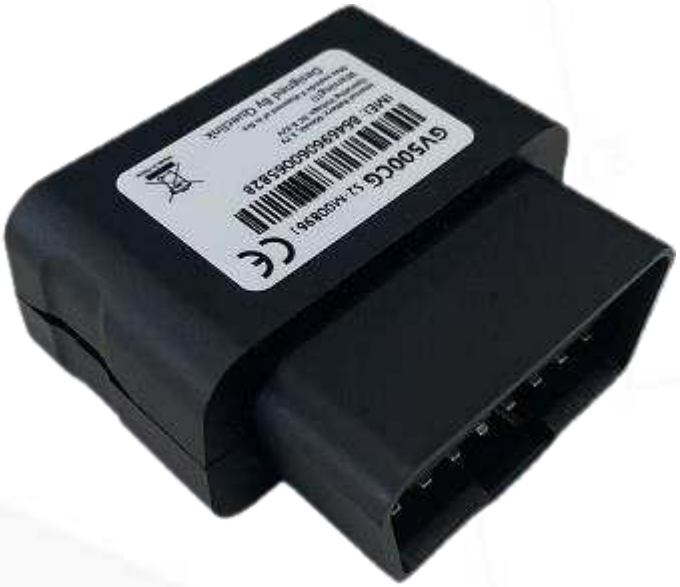
GV500CG User Manual

GSM/GPRS/LTE Cat1 GNSS Tracker

TRACGV500CGUM001

Version: 1.00



Driving Smarter IoT

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Document Title	GV500CG User Manual
Revision	1.00
Date	2024-01-19
Status	Release
Document Control ID	TRACGV500CGUM001

General Notes

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0. Revision History

Revision	Date	Author	Description of Change
1.00	2024-01-19	Eden Cao	Initial.

1. Introduction

The GV500CG is a compact 4G OBD tracker, integrated LTE Cat1 ensuring a reliable and futureproof network, the competitive minimum size make it possible to be installed on all cars without any abruptness and incompatibility. The product also featured with driver behavior monitoring, crash detection, mileage recording as well as BLE connectivity which is ideal for insurance applications and connected car service.

1.1. Reference

Table 1: GV500CG Protocol Reference

SN	Document Name	Remark
[1]	GV500CG @Track Air Interface Protocol	The air protocol interface between GV500CG and the backend server.

1.2. Terms and Abbreviations

Table 2: Terms and Abbreviations

Abbreviation	Description
PWR	External Power Supply
GND	Ground
OBD	On-Board Diagnostics

2. Product Overview

2.1. Appearance

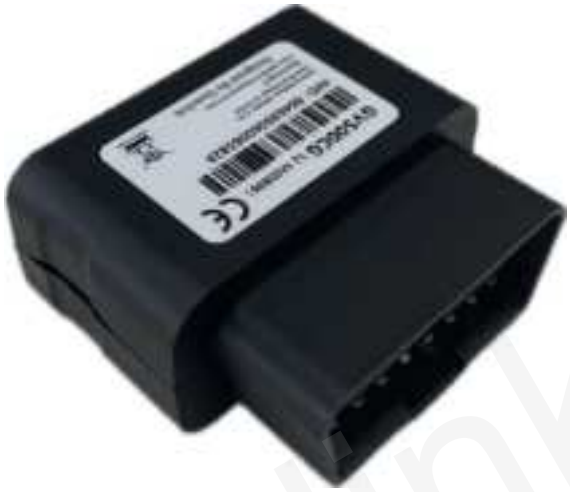


Figure 1: Appearance of GV500CG

2.2. Interface Definition

GV500CG has an OBD II connector, which is used for device external power supply. The order and definition of the OBD II connector are shown below:

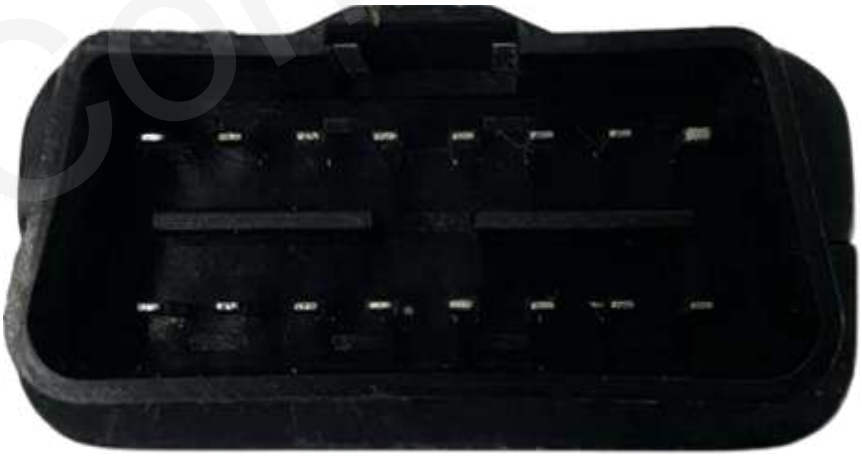


Figure 2: OBD PIN Definition of GV500CG

Table 3: OBD PIN Description

Index	Item	Description
1	SW_CAN	SW_CAN of ISO 11898 and ISO 15765
2	J1850_BUS+	J1850 Bus positive line of J1850 PWM and J1850 VPW
3	MS_CAN_H	MS_CAN_H line of ISO 11898 and ISO 15765
4	GND	Power and digital ground
5	GND	Power and digital ground
6	HS_CAN_H	HS_CAN_H line of ISO 11898, J1939 and ISO 15765
7	K_Line	K line of ISO 9141, ISO 9141-2 and ISO 14230
8	Reserved	
9	Reserved	
10	J1850_BUS-	J1850 Bus negative line of J1850 PWM and J1850 VPW
11	MS_CAN_L	MS_CAN_L line of ISO 11898 and ISO 15765
12	Reserved	
13	Reserved	
14	HS_CAN_L	HS_CAN_H line of ISO 11898, J1939 and ISO 15765
15	L_Line	L line of ISO 9141, ISO 9141-2 and ISO 14230
16	PWR	External DC power input, 8-32V

Note: GV500CG uses only PIN4, PIN5 and PIN16 for power supply, and other functions are not supported.

2.3. LED Description

GV500CG has three status LED lights, which are GNSS LED, CEL LED and PWR LED.

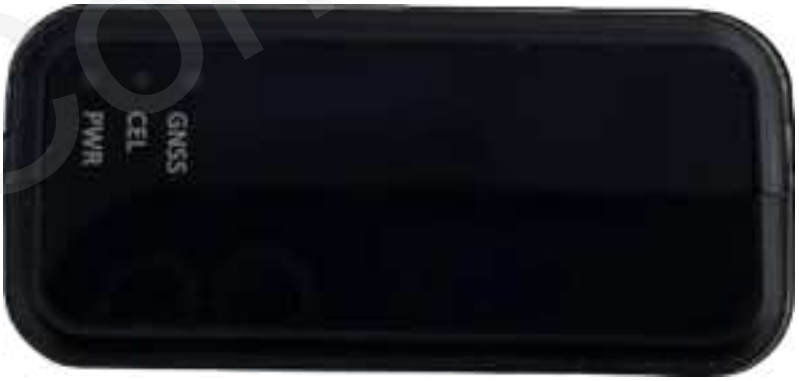


Figure 3: LED Lights of GV500CG

Table 4: LED Description

LED	Device Status	LED Status
GNSS	GNSS chip is powered off.	OFF
	GNSS sends no data or data format error occurs.	Slow flashing
	GNSS chip is searching GNSS information.	Fast flashing
	GNSS chip has gotten GNSS information.	ON
CEL	The device is searching network.	Fast flashing
	The device has been registered on the network.	Slow flashing
	SIM card needs pin code to unlock.	ON
PWR	No external power and internal battery voltage is lower than 3.6V.	OFF
	No external power and internal battery voltage is lower than 3.7V.	Slow flashing
	The external power supply has been connected to the device and the internal battery of the device is charging.	Fast flashing
	The external power supply has been connected to the device and the internal battery of the device is fully charged.	ON

Note:

1. The three LED lights can be configured to be turned off after a period time by using the configuration tool.
2. Fast flashing: About 100ms ON/ 200ms OFF.
3. Slow flashing: About 200ms ON/ 1000ms OFF.

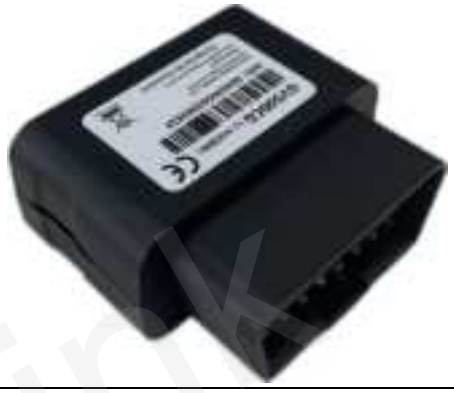
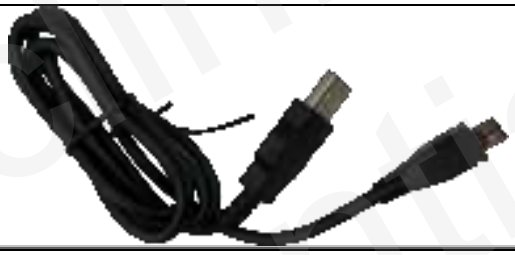
2.4. Power Connection

PWR(PIN16)/GND(PIN4&PIN5) 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 or 24V vehicle without the need for external transformers.

3. Get Started

3.1. Parts List

Table 5: Parts List

Name	Picture
GV500CG Locator	50mm*46mm*23mm 
USB-MICRO[C&D]-ST CABLE (Optional)	

3.2. Turn on/Turn off

- Turn on: Connect the device to external power, and it will be turned on automatically. CEL LED light will be on.
- Turn off: Set <*Battery Working Mode*> in **AT+GTCFG** to **0** to disable the backup battery, and then disconnect the device from the external power.

3.3. Open the Case

Figure 4: Open the Case

Insert the triangular-pry-opener into the gap of the case as shown in the figure, and push the opener up until the case is unsnapped. The GV500CG device has 2 gaps. When GV500CG is shipped, the case of GV500CG is not closed completely, which allows the user to open it relatively easily for SIM card and battery installation.

3.4. Install a SIM Card

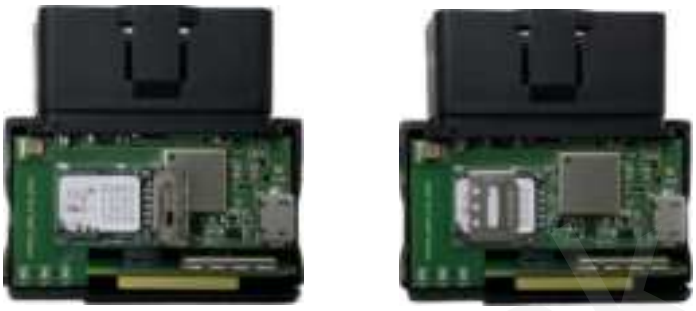


Figure 5: SIM Card Installation

Open the case and ensure the device is not powered. Slide the holder to open the SIM card holder. Insert the SIM card into the holder as shown above with the gold-colored contact area facing down. Take care to align the cut mark. Close the SIM card holder. Close the case.

3.5. Close the Case

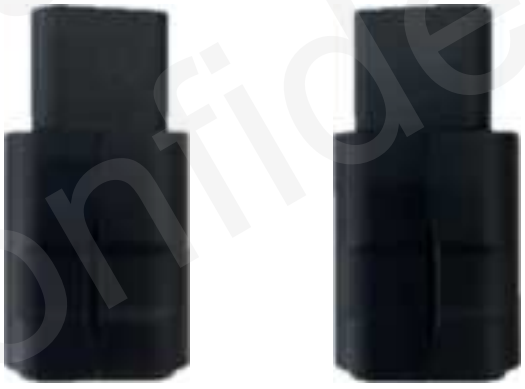


Figure 6: Close the Case

Put the upper cover on the lower cover, and press the covers to make sure they are closed completely.

3.6. Motion Sensor Direction

GV500CG has an internal 3-axis accelerometer supporting driving behavior monitoring, crash detection and motion detection. The following figure shows the directions of the motion sensor.

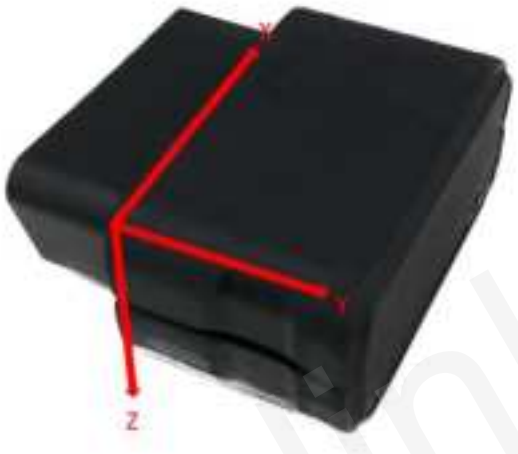


Figure 7: Motion Sensor Direction

Note:

1. The opposite direction of the OBD port is the positive direction of the Y-axis.
2. The long side to the short side of the OBD port is the positive direction of the Z-axis.
3. The positive directions of the three axes are perpendicular to each other, as shown in the figure above.

4. Troubleshooting and Safety Information

4.1. Troubleshooting

Table 6: Solutions to Possible Trouble

Trouble	Possible Reason	Solution
After GV500CG is turned on, the CEL LED always flashes quickly.	The signal is too weak, and the device cannot be registered on the network.	Please move the device to places with good GSM 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.
Unable to power off the device.	The device is inserted into the OBD port of the vehicle.	Plug and unplug the device again.
The device cannot get successful GNSS fix.	The GNSS signal is weak.	Please move the device to a place with open sky, and it is better to let the top surface (the surface with LED indicator) face the sky.

4.2. Safety Information

- Please do not disassemble the device by yourself.
- Please do not put the device on overheated or too humid place, and avoid exposure to direct sunlight. Too high temperature will damage the device or even cause battery explosion.
- Please do not use GV500CG on the airplane or near 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.

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user′s manual of the end product which integrates this module.

The end user manual shall include all required regulatory information/warning as show in this manual.

OEM/Host manufacturer responsibilities

OEM/Host manufacturers are ultimately responsible for the compliance of the Host and Module. The final product must be reassessed against all the essential requirements of the

FCC rule such as FCC Part 15 Subpart B before it can be placed on the US market. This includes reassessing the transmitter module for compliance with the Radio and EMF essential requirements of the FCC rules. This module must not be incorporated into any other device or system without retesting for compliance as multi-radio and combined equipment