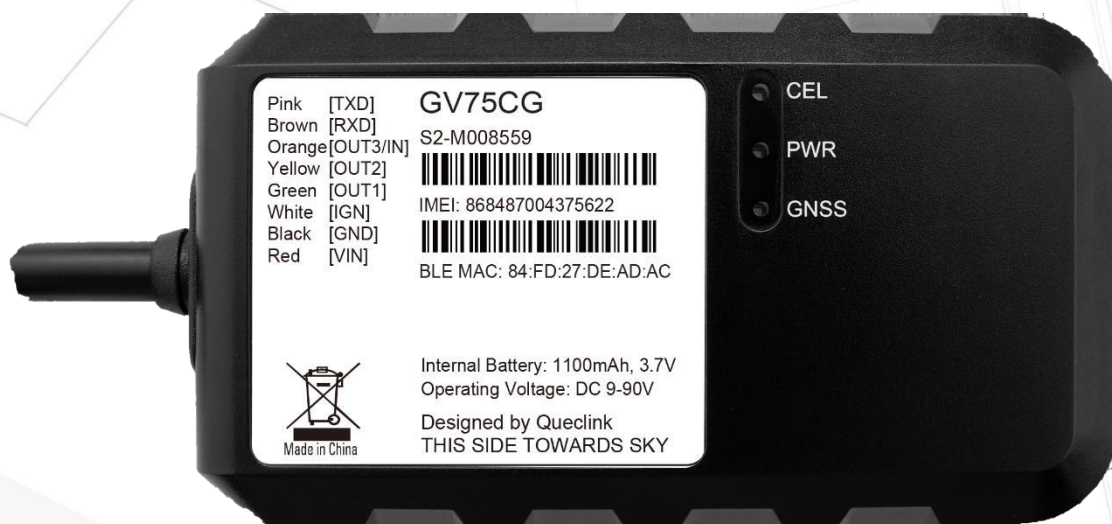


GV75CG User Manual

GSM/GPRS/LTE Cat1 GNSS Tracker

TRACGV75CGUM001

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0. Revision History

Revision	Date	Author	Description of Change
1.00	2024-12-27	Daniel Cheng	Initial.

1. Introduction

The GV75CG is a compact GNSS tracker designed for a wide variety of vehicle tracking applications. It has multiple I/O interfaces that can be used for monitoring or controlling external devices. The GV75CG supports LTE CAT1/GSM. The built-in GNSS receiver has superior sensitivity and fast initial positioning. Its built-in 3-axis accelerometer allows motion detection and sophisticated power management algorithms extend battery life. System integration is straightforward as complete documentation is provided for the full featured @Track protocol. The @Track 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: GV75CG Protocol Reference

SN	Document Name	Remark
[1]	GV75CG @Track Air Interface Protocol	The air protocol interface between GV75CG and the backend server.

1.2. Terms and Abbreviations

Table 2: Terms and Abbreviations

Abbreviation	Description
TXD	Transmit Data
RXD	Receive Data
OUT3/IN	Digital output3/Digital input
OUT2	Digital output2
OUT1	Digital output1
IGN	Ignition input, positive trigger
GND	Power and digital ground
PWR	External DC power input

2. Product Overview

2.1. Appearance

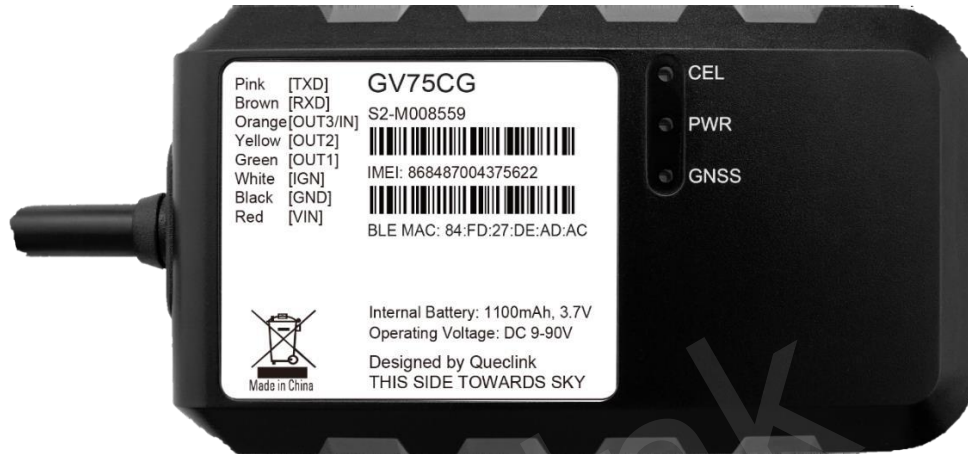
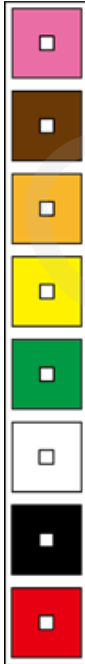


Figure 1: Appearance of GV75CG

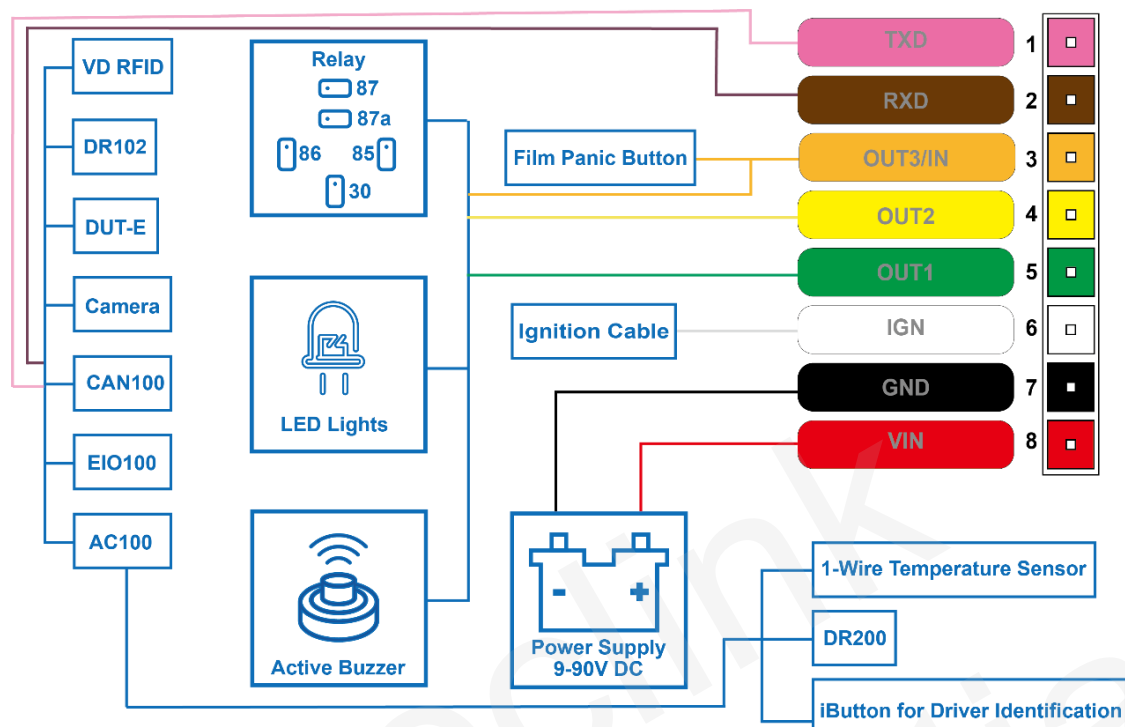
2.2. Interface Definition

GV75CG has an 8-PIN interface connector. It contains the connections for power and I/O. The sequence and definition of the 8-PIN connector are shown in the following figure:

Table 3: Description of 8-PIN Connections

Interface	PIN Number	PIN Name	Description
	1	TXD	RS232_TXD
	2	RXD	RS232_RXD
	3	OUT3/IN	Negative trigger input or 1 digital output, open collector/drain, maximum output current 150mA
	4	OUT2	Digital Output, open drain, 150mA max
	5	OUT1	Digital output with internal latch circuit, Open drain, 150mA max
	6	IGN	Ignition input, positive trigger
	7	GND	Power and digital ground
	8	VIN	External DC Power Input, 9-90V

2.3. Wiring Scheme



2.4. LED Description

GV75CG has three status LED lights, namely GNSS LED, CEL LED and PWR LED.

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.

2.5. Power Connection

VIN(Red)/GND(Black) are the power input pins. The input voltage range for this device is from 9V to 90V. The device is designed to be installed in vehicles that operate on 9V to 90V vehicle without the need for external transformers.

2.6. Ignition Detection**Table 5: Electrical Characteristics of Ignition Detection**

Logical State	Electrical State
Active	5.0V to 32V
Inactive	0V to 3V or Open

IGN(White) is used for ignition detection. It is strongly recommended to connect this pin to ignition key RUN position.

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 to start transmitting information to the backend server when the ignition is on, and enter power saving mode when the ignition is off.

2.7. Digital Output

There are two digital outputs on GV75CG. All two digital outputs are of open drain type and the maximum drain current is 150mA.

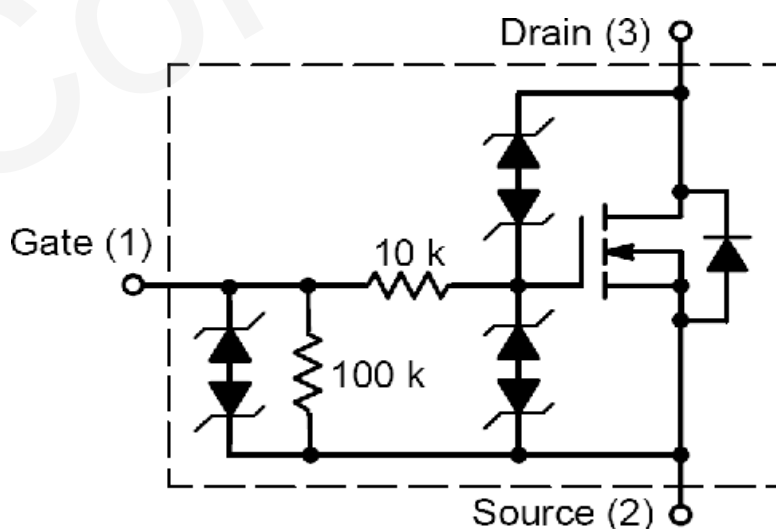
**Figure 2: Digital Output Internal Drive Circuit**

Table 6: Electrical Characteristics of Digital Output

Logical State	Electrical Characteristics
Enable	<1.5V @150mA
Disable	Open drain

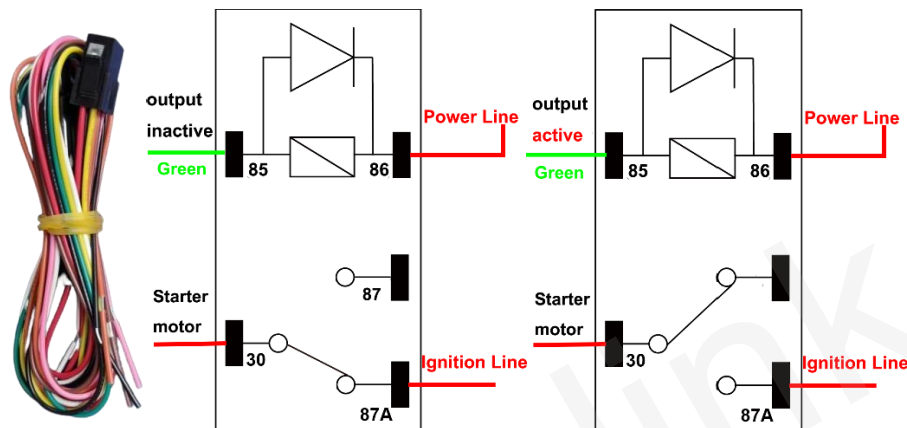


Figure 3: Digital Output Internal Drive Circuit

Note:

The above wiring diagram applies to Relay models MAH-112-C-4D2 and MAH-124-C-4D2.

Ignition Line mentioned is an example only. Many modern relays already have the built-in freewheeling diodes. If the relay includes this diode, ensure that the polarity of the relay is connected correctly. If not, please add an external diode, such as a common 1N4004 diode, which is suitable for most applications.

2.8. Digital Input/Digital Output

There is one special I/O that can be configured as a digital input or a digital output with 150mA max drive current.

Table 7: Electrical Characteristics of Digital Input

Logical State	Electrical Characteristics
Active	0V to 0.6V
Inactive	Open

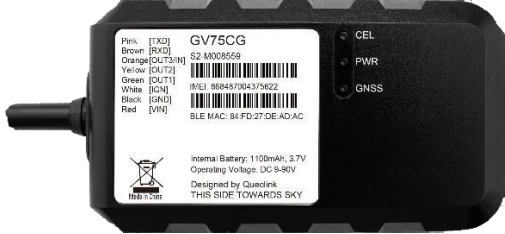
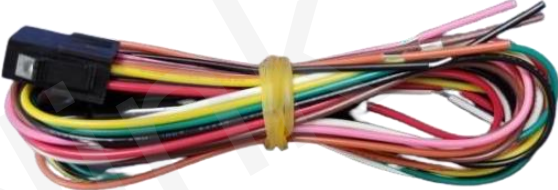

2.9. RS232 Interface

There are two lines dedicated to the RS232 interface (TXD and RXD). TXD/RXD is standard RS232 signal.

3. Get Started




3.1. Parts List

Table 8: Parts List

Name	Picture
GV75CG Locator	<p>95mm*52mm*18.3mm</p>  <p>The image shows a black, rectangular GV75CG Locator device. It has a small antenna on the left side. The top surface features a label with the following information: Pin: [TXD], Brown: [RXD], Orange: [OUT3], Yellow: [OUT2], Green: [OUT1], White: [GN], Black: [GND], Red: [VCC]. The label also includes the model number GV75CG, S2-M008559, a barcode, and the IMEI number 868457004375622. On the right side, there are three status LEDs labeled CEL, PWR, and GNSS. At the bottom, it specifies 'Incapac Battery: 1100mAh, 3.7V', 'Operating Voltage: DC 9-80V', 'Designed by Queclink', and 'THIS SIDE TOWARDS SKY'.</p>
User Cable	 <p>The image shows a multi-colored User Cable with a USB connector on one end and a multi-pin connector on the other. The cable is bundled with a yellow tie.</p>
USB-MICRO[C&D]-ST CABLE (Optional)	 <p>The image shows a black USB-MICRO[C&D]-ST CABLE (Optional) with a USB connector on one end and a micro-USB connector on the other.</p>

3.2. External Cable Interface

Table 9: User Cable Color Definition

Definition	Color	PIN No.	Cable
TXD	Pink	1	 
RXD	Brown	2	 
OUT3/IN	Orange	3	 
OUT2	Yellow	4	 
OUT1	Green	5	 
IGN	White	6	 
GND	Black	7	 
VIN	Red	8	 

3.3. 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 <Backup Battery On> in **AT+GTCFG** to **0** to disable the backup battery, and then disconnect the device from the external power.

3.4. Open the Case



Figure 4: Open the Case

Use a screwdriver to unscrew the screws.

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.

When GV75CG is shipped, the case of GV75CG is not closed completely, which allows the user to open it relatively easily for SIM card and battery installation.

3.5. Install a SIM Card



Figure 5: SIM Card Installation

Open the case and ensure the unit is not powered. Slide the holder up 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.

3.6. Install the Internal Battery



Figure 6: Battery Installation

3.7. Close the Case



Figure 7: Close the Case

Put the upper cover on the lower cover, and press the covers to make sure they are closed completely. Tighten the screws on the four corners with the screwdriver and insert rubber plugs to close the device.

3.8. Motion Sensor Direction

GV75CG 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 8: Motion Sensor Direction

Note:

1. The opposite direction of the cable bundle is the positive direction of the X-axis.
2. The Z-axis is in the positive direction above the front housing surface.
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 10: Solutions to Possible Trouble

Trouble	Possible Reason	Solution
After GV75CG is turned on, the CEL LED always flashes quickly.	The signal is too weak, and GV75CG cannot be registered on the network.	Please move GV75CG 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 GV75CG.	Unable to power off GV75CG if charger is connected.	Disconnect charger, and try again.
GV75CG cannot get successful GNSS fix.	The GNSS signal is weak.	Please move GV75CG to a place with open sky.
		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 GV75CG on the airplane or near medical equipment.

FCC Warning

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.

Changes or modifications not expressly approved by the party responsible for compliance 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.

Radiation Exposure Statement

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 and your body.