



# GSM/GPRS/GPS Tracker **GV500**

## User Manual

TRACGV500UM001

Revision: 1.01



<http://www.queclink.com>

[sales@queclink.com](mailto:sales@queclink.com)

|                            |                   |
|----------------------------|-------------------|
| <b>Document Title</b>      | GV500 User manual |
| <b>Version</b>             | 1.01              |
| <b>Date</b>                | 2014-03-19        |
| <b>Status</b>              | Release           |
| <b>Document Control ID</b> | TRACGV500UM001    |

### **General Notes**

Queclink offers this information as a service to its customers, to support application and engineering efforts that use the products designed by Queclink. The information provided is based upon requirements specifically provided to Queclink by the customers. Queclink has not undertaken any independent search for additional relevant information, including any information that may be in the customer's possession. Furthermore, system validation of this product designed by Queclink within a larger electronic system remains the responsibility of the customer or the customer's system integrator. All specifications supplied herein are subject to change.

### **Copyright**

This document contains proprietary technical information which is the property of Queclink Limited., copying of this document and giving it to others and the using or communication of the contents thereof, are forbidden without express authority. Offenders are liable to the payment of damages. All rights reserved in the event of grant of a patent or the registration of a utility model or design. All specification supplied herein are subject to change without notice at any time.

***Copyright © Shanghai Queclink Wireless Solutions Co., Ltd. 2013***

## Contents

|                                                  |    |
|--------------------------------------------------|----|
| Contents .....                                   | 2  |
| Table Index.....                                 | 3  |
| Figure Index .....                               | 4  |
| 0. Revision history .....                        | 5  |
| 1. Introduction.....                             | 6  |
| 1.1. Reference.....                              | 6  |
| 1.2. Terms and Abbreviations .....               | 6  |
| 2. Product Overview .....                        | 7  |
| 2.1. Description .....                           | 7  |
| 2.2. Parts List.....                             | 7  |
| 2.3. Interface Definition .....                  | 8  |
| 3. Getting Started .....                         | 9  |
| 3.1. Opening the Case .....                      | 9  |
| 3.2. Closing the Case.....                       | 11 |
| 3.3. Installing a SIM Card .....                 | 12 |
| 3.4. Installing the Internal Backup Battery..... | 13 |
| 3.5. Device Status LED .....                     | 13 |
| 4. OBD II-related features.....                  | 15 |
| 4.1. Communication Protocols .....               | 15 |
| 4.2. OBD II Parameters .....                     | 15 |

## Table Index

|                                                    |    |
|----------------------------------------------------|----|
| TABLE 1: GV500 PROTOCOL REFERENCE .....            | 6  |
| TABLE 2: TERMS AND ABBREVIATIONS .....             | 6  |
| TABLE 3: PART LIST .....                           | 7  |
| TABLE 4: DESCRIPTION OF OBD II CONNECTIONS .....   | 8  |
| TABLE 5: DEFINITION OF DEVICE STATUS AND LED ..... | 14 |
| TABLE 6: COMMUNICATION PROTOCOLS LIST .....        | 15 |

## Figure Index

|           |                                         |    |
|-----------|-----------------------------------------|----|
| FIGURE 1. | APPEARANCE OF GV500 .....               | 7  |
| FIGURE 2. | THE OBD II CONNECTOR ON THE GV500 ..... | 8  |
| FIGURE 3. | OPENING THE CASE.....                   | 10 |
| FIGURE 4. | CLOSING THE CASE .....                  | 11 |
| FIGURE 5. | SIM CARD INSTALLATION.....              | 12 |
| FIGURE 6. | BACKUP BATTERY INSTALLATION .....       | 13 |
| FIGURE 7. | GV500 LED ON THE CASE.....              | 13 |

## 0. Revision history

| Revision | Date       | Author  | Description of change                                                                       |
|----------|------------|---------|---------------------------------------------------------------------------------------------|
| 1.00     | 2013-8-16  | Leo LEI | Initial                                                                                     |
| 1.01     | 2014-03-19 | Cid Xu  | Updated Introduction information;<br>Updated the pictures;<br>Updated 4.2 OBD II Parameters |

## 1. Introduction

The GV500 is a vehicle tracking device that plugs into a vehicle's OBD II port. Its compact design allows easy installation. Its internal OBD reader can obtain information from the vehicle's on-board computer and relay it over GPRS networks. Its built in GPS receiver has superior sensitivity and fast time to first fix. Its quad band GPRS/GSM subsystem supports 850/900/1800/1900 MHz allowing the GV500's location to be monitored in real time or periodically tracked by a backend server and mobile devices. Its built in 3-axis accelerometer allows motion detection and extended backup battery life through sophisticated power management algorithms. 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, geo-fence boundary crossings, driver behaviour, low battery or scheduled GPS position and many other useful functions.

### 1.1. Reference

**Table 1: GV500 Protocol Reference**

| SN  | Document name                       | Remark                                                       |
|-----|-------------------------------------|--------------------------------------------------------------|
| [1] | GV500 @Track Air Interface Protocol | The air protocol interface between GV500 and backend server. |

### 1.2. Terms and Abbreviations

**Table 2: Terms and Abbreviations**

| Abbreviation | Description                     |
|--------------|---------------------------------|
| PWR          | External Power Supply           |
| GND          | Ground                          |
| OBD          | On-Board Diagnostics            |
| SAE          | Society of Automotive Engineers |

## 2. Product Overview

### 2.1. Description

GV500 is based on the OBD II interface GPS vehicle tracking device, compact design and easy to install. GV500 contains an OBD II connector which complies with J1962 standard, a 10PIN USB connector, an internal GSM antenna, an internal GPS antenna and three LEDs.



Figure 1. Appearance of GV500

### 2.2. Parts List

Table 3: Part List

| Name                    | Picture                                                                              |
|-------------------------|--------------------------------------------------------------------------------------|
| GV500 Locator           | 48mm*25mm*48mm                                                                       |
| DATA_CABLE_M (Optional) |  |

## 2.3. Interface Definition

The GV500 has an OBD II connector. It contains power supply and interfaces of CAN bus, K-line, L-line and J1850 bus. The sequence and definition of the OBD II connector are shown in following figure:



**Figure 2. The OBD II connector on the GV500**

**Table 4: Description of OBD II Connections**

| Index | Description | Comment                              |
|-------|-------------|--------------------------------------|
| 1     | PWR         | External DC power input, 8-32V       |
| 2     | L-line      | L line of ISO 9141-2 and ISO 14230-4 |
| 3     | CAN-L       | CAN-L line of ISO 15765-4            |
| 4     | J1850-      | Bus negative line of SAE J1850       |
| 5     | K-line      | K line of ISO 9141-2 and ISO 14230-4 |
| 6     | CAN-H       | CAN-H line of ISO 15765-4            |
| 7     | GND         | Power and digital ground             |
| 8     | GND         | Power and digital ground             |
| 9     | J1850+      | Bus positive line of SAE J1850       |

## 3. Getting Started

### 3.1. Opening the Case

Insert the triangular-pry-opener into the gap of the case as shown below, push the opener up until the case unsnapped.





**Figure 3. Opening the Case**

### 3.2. Closing the Case

The battery is glued to top cover, so before closing the case you should let the battery connector plugged in. The step of closing case is shown as following:



Figure 4. Closing the Case

### 3.3. Installing a SIM Card

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



Figure 5. SIM Card Installation

### 3.4. Installing the Internal Backup Battery



**Figure 6. Backup Battery Installation**

There is an internal backup Li-ion battery.

### 3.5. Device Status LED



**Figure 7. GV500 LED on the Case**

**Table 5: Definition of Device status and LED**

| LED             | Device status                                                                           | LED status               |
|-----------------|-----------------------------------------------------------------------------------------|--------------------------|
| CEL<br>(note1)  | Device is searching GSM network                                                         | Fast flashing<br>(Note3) |
|                 | Device has registered to GSM network.                                                   | Slow flashing<br>(Note4) |
|                 | SIM card needs pin code to unlock.                                                      | ON                       |
| GPS<br>(note 2) | GPS chip is powered off                                                                 | OFF                      |
|                 | GPS sends no data or data format error.                                                 | Slow flashing            |
|                 | GPS chip is searching GPS info.                                                         | Fast flashing            |
|                 | GPS chip has gotten GPS info.                                                           | ON                       |
| OBD<br>(note 2) | No external power and internal battery voltage is lower than 3.46V. GV500 is power off. | OFF                      |
|                 | No external power and internal battery voltage is below 3.55V                           | Slow flashing            |
|                 | External power in and internal battery is charging                                      | Fast flashing            |
|                 | External power in and internal battery is fully charged                                 | ON                       |

**Note:**

- 1 - CEL LED cannot be configured.
- 2 - GPS LED and OBD LED can be configured to turn off after a period of time using the configuration tool
- 3 - Fast flashing is about 60ms ON/ 780ms OFF
- 4 - Slow flashing is about 60ms ON/ 1940ms OFF

## 4. OBD II-related features

### 4.1. Communication Protocols

GV500 could monitor the OBD II system via not only communication protocols which defined by SAE but also some special protocols. The list of protocols is shown as follow:

**Table 6: Communication Protocols List**

| No. | Protocol   | Comment                         |
|-----|------------|---------------------------------|
| 1   | J1850 PWM  | 41.6kb/s F ORD                  |
| 2   | J1850 VPW  | 10.4kb/s GM/Chrysler            |
| 3   | ISO 9141-2 | 5 Baud init automatic baud rate |
| 4   | ISO 14230  | 5 Baud init 10.4kb/s            |
| 5   | ISO 14230  | Fast init 10.4kb/s              |
| 6   | ISO 15765  | ID 11bits 500kb                 |
| 7   | ISO 15765  | ID 29bits 500kb                 |
| 8   | ISO 15765  | ID 11bits 250kb                 |
| 9   | ISO 15765  | ID 29bits 250kb                 |
| 10  | J1939      | ID 29bit 250kb                  |
| 11  | CAN_USER1  | 11*bits 125*kb                  |
| 12  | CAN_USER2  | 11*bits 50*kb                   |
| 13  | VW TP2.0   | Volkswagen CAN protocol         |

### 4.2. OBD II Parameters

GV500 can read the following parameters through OBD II system.

- 1) Vehicle identification number (VIN):
- 2) OBD Power Voltage
- 3) Parameter identification (PID)
- 4) Revolutions per minute of the engine (RPM)
- 5) Vehicle speed
- 6) Engine Coolant Temperature
- 7) Fuel Consumption
- 8) Distance Statistics
- 9) Malfunction Indicator Lamp (MIL)
- 10) Diagnostic Trouble Codes (DTC)
- 11) Throttle Position
- 12) Engine Load
- 13) Fuel Level Input

**Note:**

1 - The VIN is the unique identifier of Vehicle. Please note that not all Vehicle support getting the VIN from OBD II system, because the Vehicle manufacturers are responsible for defining the data return from OBD II system.

2 - Distance Statistics: GV500 could get the distance in two cases: distance accumulated since MIL is activated and distance accumulated since DTCs were cleared.

**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.

**FCC RF Exposure Statement:**

For the product, under normal use condition is at least 20cm away from the body of the user, the user must keep at least 20cm distance to the product.