

GSM/GPRS/GPS Tracker GV500

User Manual

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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; Updated the pictures; Updated 4.2 OBD II Parameters
1.02	2015-09-15	Abside Yu	Update Document template; Update LED status and device pictures;

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
HS_CAN	High Speed CAN
MS_CAN	Medium Speed CAN
SW_CAN	Single Wire CAN

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, ISO 9141-2 and ISO 14230
3	HS_CAN_L	HS_CAN_H line of ISO 11898, J1939 and ISO 15765
4	MS_CAN_L	MS_CAN_L line of ISO 11898 and ISO 15765
5	J1850_BUS-	J1850 Bus negative line of J1850 PWM and J1850 VPW
6	K_Line	K line of ISO 9141, ISO 9141-2 and ISO 14230
7	HS_CAN_H	HS_CAN_H line of ISO 11898, J1939 and ISO 15765
8	GND	Power and digital ground
9	GND	Power and digital ground
10	MS_CAN_H	MS_CAN_H line of ISO 11898 and ISO 15765
11	J1850_BUS+	J1850 Bus positive line of J1850 PWM and J1850 VPW
12	SW_CAN	SW_CAN of ISO 11898 and ISO 15765

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:



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 4. SIM Card Installation

3.4. Installing the Internal Backup Battery



Figure 5. Backup Battery Installation

There is an internal backup Li-ion battery.

3.5. Device Status LED



Figure 6. GV500 LED on the Case

LED	Device status	LED status
CEL (note1)	Device is searching GSM network	Fast flashing (Note3)
	Device has registered to GSM network.	Slow flashing (Note4)
	SIM card needs pin code to unlock.	ON
GPS (note 1)	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 (note 1)	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

Table 5: Definition of Device status and LED

Note:

- 1 - GPS LED and OBD LED and CEL LED can be configured to turn off after a period of time using the configuration tool.
- 2 - Fast flashing is about 60ms ON/ 780ms OFF
- 3 - 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:

No.	Protocol	Comment
1	J1850 PWM	41.6kb/s FORD
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

Table 6: Communication Protocols List

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.

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.

This device complies with Part 15 of the FCC Rules. Its 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.

Note:

THE GRANTEE IS NOT RESPONSIBLE FOR ANY CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE PARTY RESPONSIBLE FOR COMPLIANCE. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT

This product has been tested and found to comply with the limits for Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This product 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 product 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.