



CDMA2000 1x/GPS Tracker **GV500VC**
User Manual

TRACGV500VCUM001

Revision: 1.00



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0. Revision history

Revision	Date	Author	Description of change
1.00	2015-7-30	Hazard Zhang	Initial

1. Introduction

The GV500VC is a vehicle tracking device that plugs into a vehicle's OBDII 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 CDMA2000 1x networks. Its built-in GPS receiver has superior sensitivity and fast time to first fix. Its dual band CDMA2000 subsystem supports BC0&BC1 allowing the GV500VC'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 extends 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: GV500VC Protocol Reference

SN	Document name	Remark
[1]	GV500VC @Track Air Interface Protocol	The air protocol interface between GV500VC 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


GV500VC is based on the OBD II interface GPS vehicle tracking device, compact design and easy to install. GV500VC contains an OBD II connector which complies with J1962 standard, a 10PIN USB connector, an internal CDMA antenna, two internal GPS antenna and three LEDs.



Figure 1. Appearance of GV500VC

2.2. Parts List

Table 3: Part List

Name	Picture
GV500VC Locator	48mm*25mm*48mm
MINI_USB_DATA_CABLE (Optional)	

2.3. Interface Definition

The GV500VC has an OBD II connector. It contains power supply and interfaces of CAN BUS, K-line, L-line, J1850 BUS, GMLAN Single Wire CAN (GMW3089) and Ford Medium Speed CAN (MS CAN). The sequence and definition of the OBD II connector are shown in following figure:



Figure 2. The OBD II connector on the GV500VC

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	HS-CAN-L	CAN-L line of ISO 15765-4
4	MS-CAN-L	CAN-L line of Ford Medium Speed CAN (MS CAN)
5	J1850-	Bus negative line of SAE J1850
6	K-Line	K line of ISO 9141-2 and ISO 14230-4
7	HS-CAN-H	CAN-H line of ISO 15765-4
8	GND	Power and digital ground
9	GND	Power and digital ground
10	MS-CAN-H	CAN-H line of Ford Medium Speed CAN (MS CAN)
11	J1850+	Bus positive line of SAE J1850
12	SW-CAN	GMLAN Single Wire CAN

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 shield 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 the Internal Backup Battery



Figure 5. Backup Battery Installation

There is an internal backup Li-ion battery.

3.4. Device Status LED

LED	Device status	LED status
CEL (note1)	Device is searching CDMA2000 1x network	Fast flashing (Note3)
	Device has registered to CDMA2000 1x network.	Slow flashing (Note4)



Figure 6. GV500VC LED on the Case

Table 5: Definition of Device status and LED

GPS (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 (note 2)	No external power and internal battery voltage is lower than 3.46V. GV500VC 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 - GPS LED, OBD LED, CEL LED all 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

GV500VC could monitor the OBD II system via not only all legislated OBD II protocols which defined by SAE but also some non-legislated OBD protocols. The list of protocols is shown as follow:

Table 6: Communication Protocols List

No.	Protocol	Comment	
1	J1850 PWM	41.6kb/s FORD	J1850
2	J1850 VPW	10.4kb/s GM/Chrysler	
3	ISO 9141	No header, no autoinit	K-LINE&L-LINE
4	ISO 9141-2	5 Baud init automatic baud rate	
5	ISO 14230	No autoinit	
6	ISO 14230	5 Baud init 10.4kb/s	
7	ISO 14230	Fast init 10.4kb/s	
8	ISO 15765	ID 11bits 500kbps	High Speed CAN
9	ISO 15765	ID 29bits 500kbps	
10	ISO 15765	ID 11bits 250kbps	
11	ISO 15765	ID 29bits 250kbps	
12	ISO 11898	ID 11bits 500kbps	
13	ISO 11898	ID 29bits 500kbps	
14	ISO 11898	ID 11bits 125kbps	Medium Speed CAN
15	ISO 11898	ID 29bits 125kbps	
16	ISO 15765	ID 11bits 125kbps	
17	ISO 15765	ID 29bits 125kbps	
18	ISO 11898	ID 11bits 33.3kbps	Single Wire CAN
19	ISO 11898	ID 29bits 33.3kbps	
20	ISO 15765	ID 11bits 33.3kbps	
21	ISO 15765	ID 29bits 33.3kbps	
22	J1939	ID 11bits	J1939
23	J1939	ID 29bits	

4.2. OBD II Parameters

GV500VC 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: GV500VC 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 keeping 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.