



CDMA2000-1X/GPS Tracker **GV300C**

User Manual

Application Notes: TRACGV300CUM001

Revision: 1.01



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General Notes

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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.

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.

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0. Revision History

Revision	Date	Author	Description of change
1.00	2013-6-7	York.zhu	Initial
1.01	2013-11-14	Cid.Xu	Updated related images;

1. Introduction

The GV300C is a compact GPS tracker designed for a wide variety of vehicle tracking applications. The GV300C has multiple input/output interfaces that can be used for monitoring or controlling external devices. Its built in GPS receiver has superior sensitivity and fast time to first fix. It's dual band CDMA2000-1x subsystem supports 800/1900MHz allowing the GV300C's location to be monitored in real time or periodically tracked by a backend server and mobile devices. It's built in 3-axis accelerometer allows driver behaviour, motion detection and extended 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. GV300C Protocol Reference

SN	Document name	Remark
[1]	GV300C @Track Air Interface Protocol	The air protocol interface between GV300C and backend server.

1.2 Terms and Abbreviations

Table 2. Terms and Abbreviations

Abbreviation	Description
AGND	Analog Ground
AIN	Analog Input
DIN	Digital Input
DOUT	Digital Output
GND	Ground
RXD	Receive Data
TXD	Transmit Data
NC	No Connect

2. Product Overview

2.1. Check Part List





Before starting, check all the following items have been included with your GV300C. If anything is missing, please contact your supplier.



Figure 1. Appearance of GV300C

2.2. Parts List

Table 3. Part List

Name	Picture
GV300C Locator	80*49*26 mm
User Cable	
Extend Cable (Optional)	
GPS Antenna (Optional)	
DATA_CABLE_M (Optional)	

2.3. Interface Definition

The GV300C has a 16 PIN interface connector. It contains the connections for power, I/O, RS232, etc. The sequence and definition of the 16PIN connector are shown in following figure:




Figure 2. The 16 PIN connector on the GV300C

Table 4. Description of 16 PIN Connections

Index	Description	Comment
1	NC	Leave it floating
2	AGND	Analog Ground
3	IGN	Ignition input, positive trigger
4	RXD	UART RXD, RS232
5	TXD	UART TXD, RS232
6	GND	Power and digital ground
7	OUT3	Open drain, 150mA max
8	OUT2	Open drain, 150mA max
9	NC	Leave it floating
10	NC	
11	PWR	External DC power input, 8-32V
12	IN2	Digital input, negative trigger
13	IN1	Digital input, negative trigger
14	OUT1	Open drain, 150mA max ,with latch circuit
15	AD1/IN3	Multifunction input, analog or digital input 0-16V
16	AD2	Analog input 0.3-16v

2.4. GV300C User Cable Colour

Table 5. GV300C User Cable Colour definition

Definition	Color	PIN No	Cable	PIN No	Color	Definition
OUT2	Yellow	8		16	Brown/White	AD2
OUT3	Brown	7		15	Green	AD1/IN3
GND	Black	6		14	Blue	OUT1
TXD	White/Black	5		13	Orange	IN1
RXD	Green or Pink	4		12	Orange/Black	IN2
IGN	White	3		11	Red	PWR
AGND	Gray/ Black	2		10	Purple/White	NC
NC	Gray	1		9	Purple	NC

3. Getting Started

3.1. Opening the Case

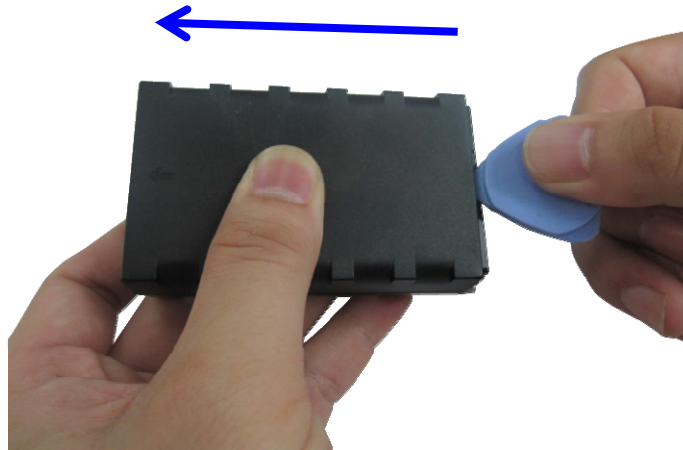


Figure 3. Opening the Case

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

3.2. Closing the Case



Figure 4. Closing the Case

Place the cover on the bottom in the position as shown in the following figure. Slide the cover against the direction of the arrow until it snapped.

3.3. Installing the Internal Backup Battery



Figure 5. Backup Battery Installation

There is an internal backup Li-ion battery,

3.4. Switch ON the Backup Battery

To use the GV300C backup battery, the switch must be at the ON position. Switch on the case and ON/OFF position are shown below.

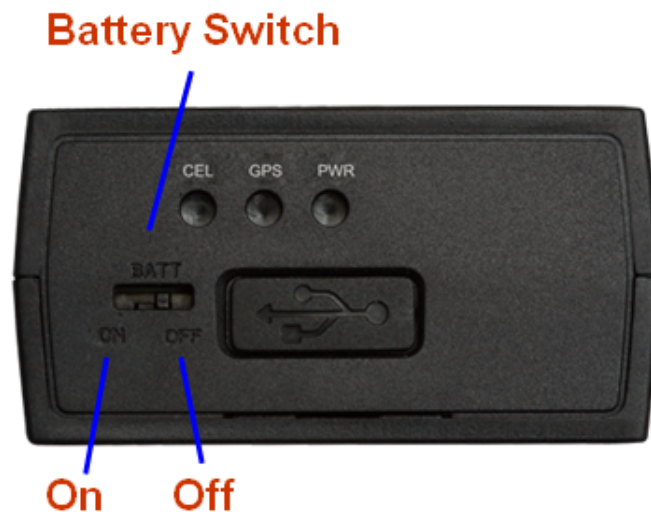


Figure 6. Switch and ON/OFF position

Note:

1. The switch must be on the “OFF” position when shipped on an aircraft.
2. When the switch is on the “OFF” position, the battery cannot be charged or discharged.

3.5. Installing the External GPS Antenna (Optional)

There is a SMA GPS antenna connector on GV300C. The GV300C will automatically detect and use an external antenna when connected.



Figure 7. GPS Antenna of GV300C

3.5.1. GPS Antenna Specification

Table 6. GPS Antenna Specification

GPS antenna:	Frequency: 1575.42MHz
Bandwidth:	>5MHz
Beam width:	>120 deg
Supply voltage:	2.7V-3.3V
Polarization:	RHCP
Gain:	Passive: 0dBi min Active: 15dB
Impedance:	50Ω
VSWR:	<2
Noise figure:	<3

3.6. Power Connection

PWR (PIN12) / GND (PIN6) 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 systems without the need for external transformers.

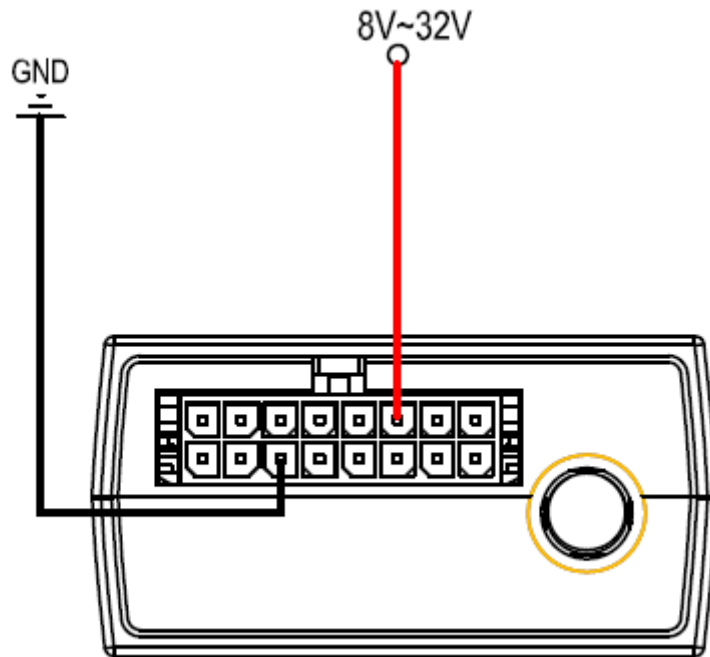


Figure 8. Typical Power Connection

3.7. Ignition Detection

Table 7. Electrical Characteristics of Ignition Detection

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

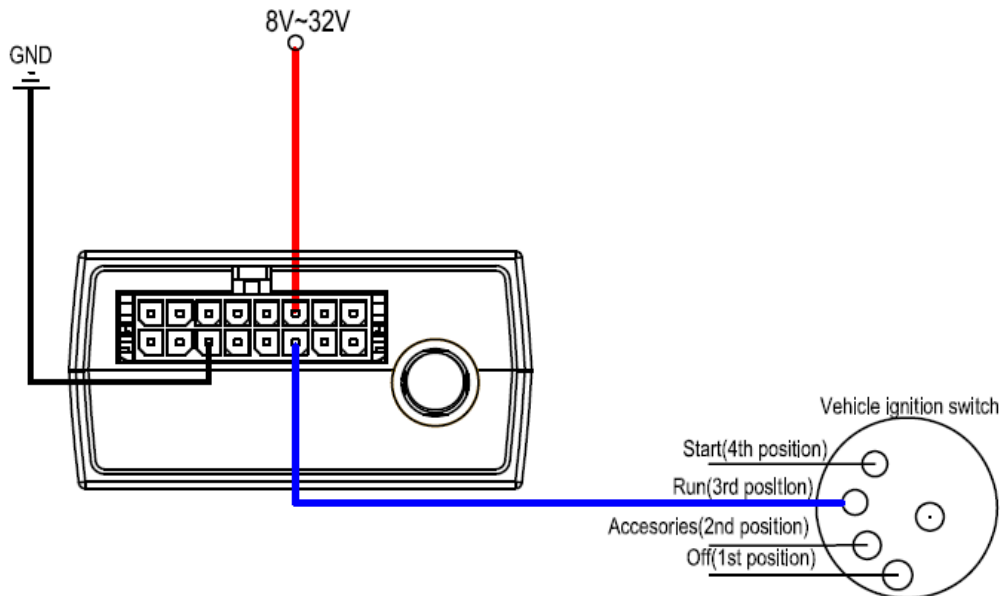


Figure 9. Typical Ignition Detection

IGN (Pin3) is used for ignition detection. It is strongly recommended to connect this pin to ignition key “RUN” position as shown up.

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 backend server when ignition is on; and enter power saving mode when ignition is off.

There are three general purpose digital inputs on GV300C. They are all negative trigger.

3.8. Digital Inputs

Table 8. Electrical Characteristics of the digital inputs

Logical State	Electrical Characteristics
Active	0V to 0.8V
Inactive	Open

The following diagram shows the recommended connection of a digital input.

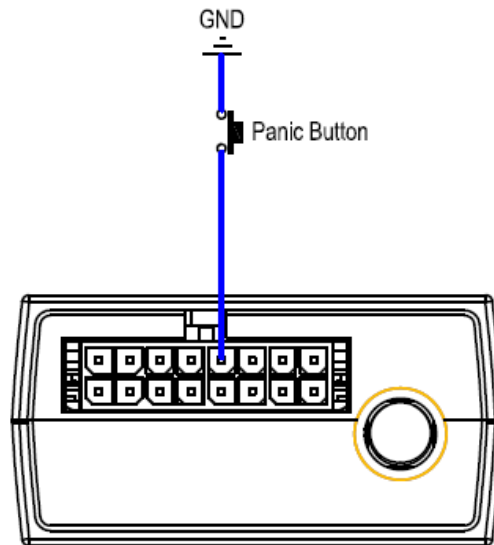


Figure 10. Typical Digital Input Connection

3.9. Analog Inputs

There are two analog inputs on GV300C, the analog input voltage range is from 0 to 16V. The following diagram shows the recommended connection.

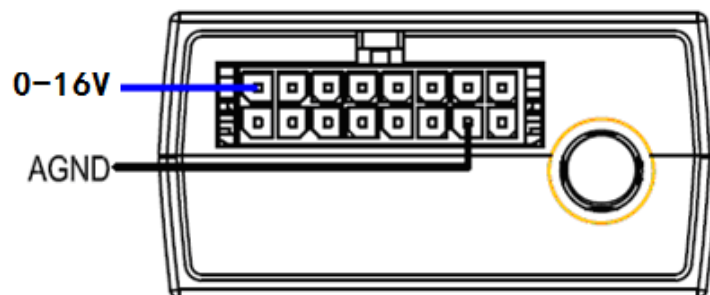


Figure 11. Typical Analog Input Connection

Note:

PIN 15 is a multifunction pin: it can be configured as a digital input or an analog input.

3.10. Digital Outputs

There are three digital outputs on GV300C. All are of open drain type and the maximum drain current is 150 mA. Each output has the built-in over current and recovery PTC fuse

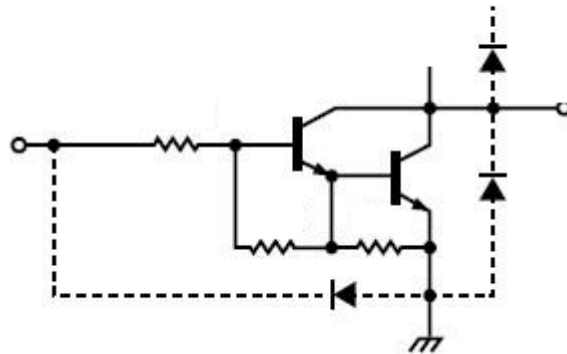


Figure 12. Digital Output Internal Drive Circuit

Table 9. Electrical Characteristics of Digital Outputs

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

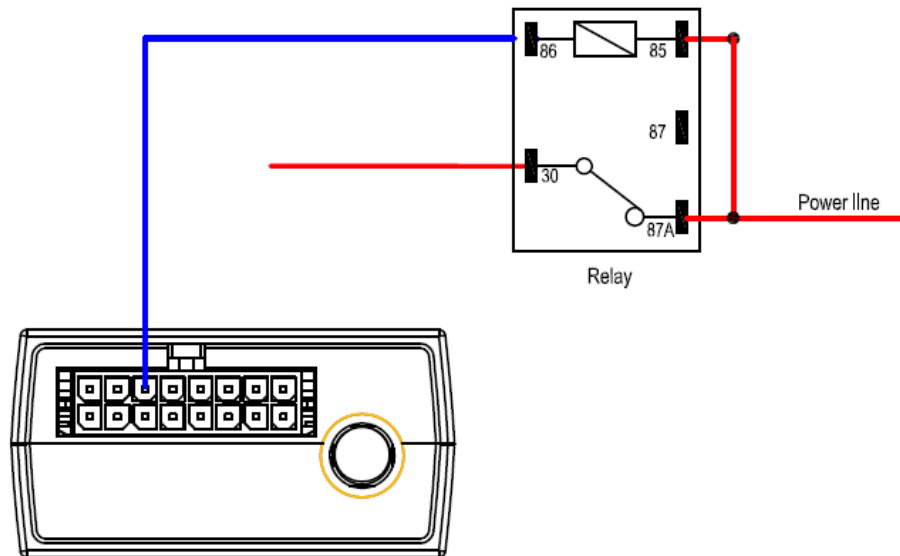


Figure 13. Typical Connection with Relay

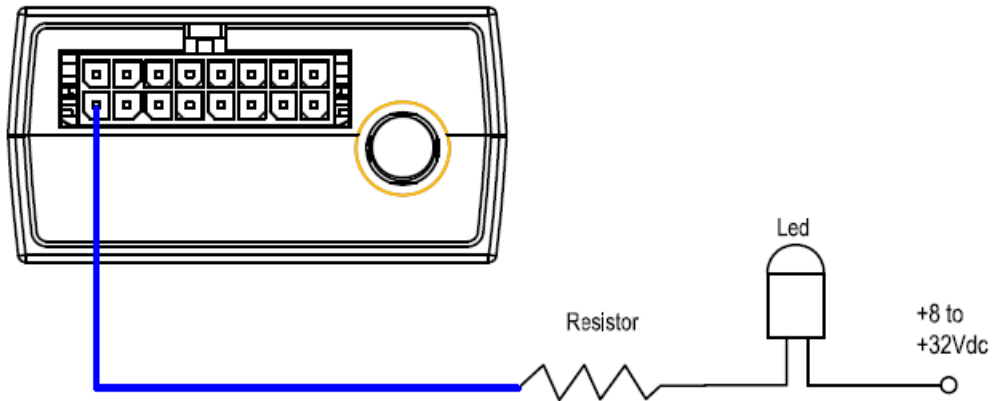


Figure 14. Typical Connection with LED

Note:

1. OUT1 will latch the output state during reset.
2. All outputs are internally pulled up to PWR pin by a diode. So no external fly back diode is needed when the output is connected to an inductive load.

3.11. Device Status LED

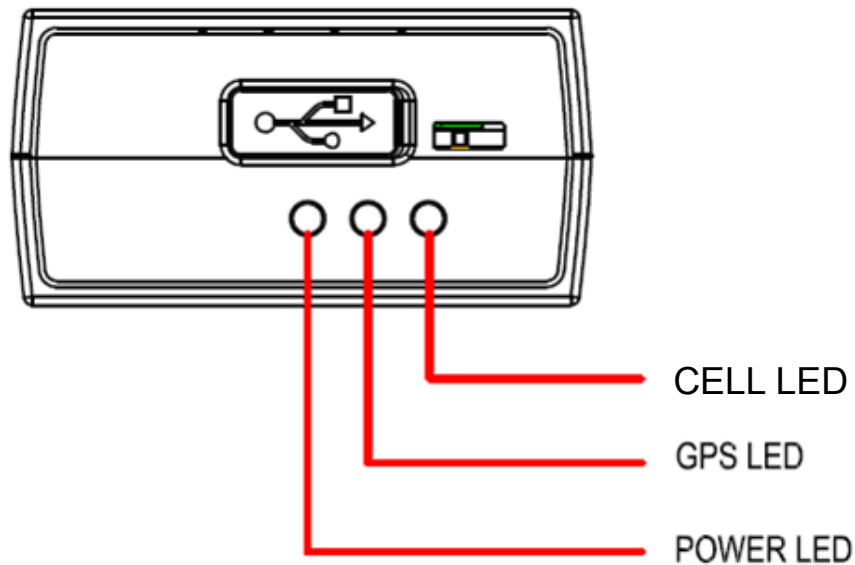


Figure 15. GV300C LED on the Case

Table 10. Definition of Device status and LED

Note:

1. CDMA2000 LED cannot be configured.

LED	Device status	LED status
CELL (note1)	Device is searching CDMA2000 network	Fast flashing (Note3)
	Device has registered to CDMA2000 network.	Slow flashing (Note4)
	SIM card needs pin code to unlock.	ON
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
PWR (note 2)	No external power and internal battery voltage is lower than 3.35V.	OFF
	No external power and internal battery voltage is below 3.5V.	Slow flashing
	External power in and internal battery is charging	Fast flashing
	External power in and internal battery is fully charged	ON

2. GPS LED and PWR 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

3.12. Serial Port / UART Interface

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

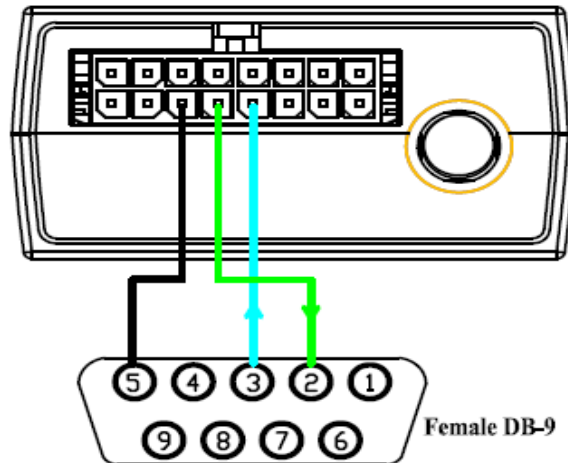


Figure 16. Typical Connection with RS232 Port

3.12.1. Connect With Garmin GPS Set

GV300C can communicate with Garmin GPS Set. The following typical connection is using Queclink AG100 cable.



Figure 17. GV300C connection with Garmin GPS set

Note:

GV300C some version maybe connects with Garmin GPS set by Garmin FMI10/FMI15 cable, please consult with Queclink for detail information.