

GV300N User Manual

GSM/GPRS/GPS Tracker

TRACGV300NUM001

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0. Revision History

Revision	Date	Author	Description of change
1.00	2014-11-17	Super Zhao	Initial
1.01	2015-04-01	Lizzy Li	Updated the format of the document.

1. Introduction

The GV300N is a powerful GPS locator designed for vehicle or asset tracking. It has superior receiver sensitivity, fast TTFF (Time to First Fix) and supports quad band GSM frequencies GSM850/GSM900/DCS/PCS. Its location can be monitored in real time or periodically tracked by a backend server or other specified terminals. The GV300N has multiple input/output interfaces that can be used for monitoring or controlling external devices. Based on the integrated @Track protocol, the GV300N can communicate with a backend server through the GPRS/GSM network to transfer reports of emergency, geo-fence boundary crossings, low backup battery and scheduled GPS position as well as many other useful functions. Users can also use GV300N to monitor the status of a vehicle and control the vehicle by its external relay output. System integrators can easily set up their tracking systems based on the full-featured @Track protocol.

1.1 Reference

Table 1. GV300N Protocol Reference

SN	Document name	Remark
[1]	GV300N @Track Air Interface Protocol	The air protocol interface between GV300N 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
MIC	Microphone
RXD	Receive Data
TXD	Transmit Data
SPKN	Speaker Negative
SPKP	Speaker Positive

2. Product Overview

2.1. Check Parts List

Before starting, check whether all the following items have been included with your GV300N. If anything is missing, please contact your supplier.



Figure 1. Appearance of GV300N

2.2. Parts List

Table 3. Parts List

Name	Picture
GV300N Locator	80*49*26 mm
User Cable	
GPS Antenna (Optional)	
DATA_CABLE_M (Optional)	

2.3. Interface Definition

The GV300N has a 16 PIN interface connector which contains the connections for power, I/O, RS232, microphone, speaker, etc. The sequence and definition of the 16PIN connector are shown in the following figure:



Figure 2. The 16 PIN Connector on the GV300N

Table 4. Description of 16 PIN Connections

Index	Description	Comment
1	MICP	Single end, 2-2.2k microphone, internal bias
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, 150 mA max
8	OUT2	Open drain, 150 mA max
9	EARP	Differential output, 32 ohm 1/4w speaker
10	EARN	
11	PWR	External DC power input, 8-32V
12	IN2	Digital input, negative trigger
13	IN1	Digital input, negative trigger
14	OUT1	Open drain, 150 mA max ,with latch circuit
15	AD1/IN3	Multifunction input, analog or digital input 0-16V
16	AD2	Analog input 0.3-16V

2.4. GV300N User Cable Color

Table 5. GV300N User Cable Color 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	Pink	4		12	Orange/Black	IN2
IGN	White	3		11	Red	PWR
AGND	Gray/Black	2		10	Purple/White	EARN
MICP	Gray	1		9	Purple	EARP

3. Get Started

3.1. Open the Case



Figure 3. Open the Case

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

3.2. Close the Case



Figure 4. Close the Case

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

3.3. Install a SIM Card

Open the case and ensure the unit is not powered (unplug the 16Pin cable and switch the internal battery to the OFF position). Slide the holder right to open the SIM card holder. Insert the SIM card into the holder as shown below with the gold-colored contact area facing down. Take care to align the cut mark. Close the SIM card holder. Close the case.

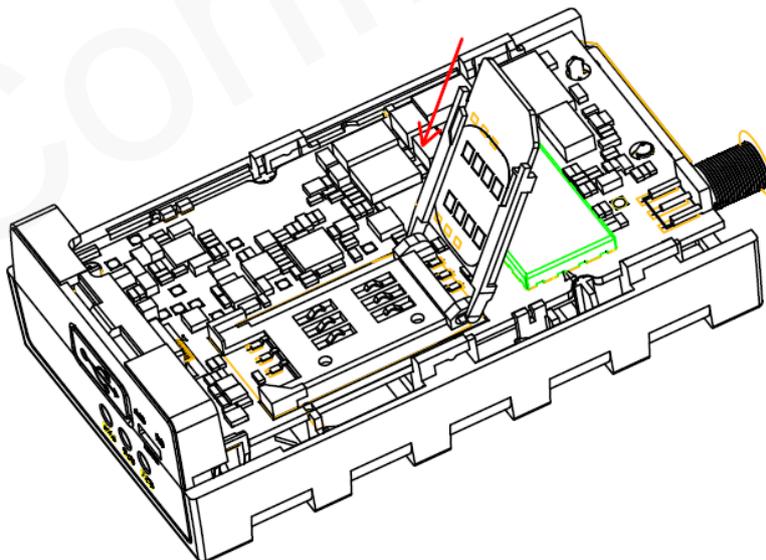


Figure 5. SIM Card Installation

3.4. Install the Internal Backup Battery

GV300N has an internal backup Li-ion battery.



Figure 6. Backup Battery Installation

3.5. Switch on the Backup Battery

To use the GV300N backup battery, the switch must be in the ON position. The switch on the case and the ON/OFF position are shown below.



Figure 7. Switch and ON/OFF Position

Note:

1. The switch must be in the “OFF” position when the GV300N is shipped on an aircraft.
2. When the switch is in the “OFF” position, the battery cannot be charged or discharged.

3.6. Install the External GPS Antenna (Optional)

There is a SMA GPS antenna connector on GV300N. The GV300N will automatically detect and use an external antenna when connected.



Figure 8. GPS Antenna of GV300N

3.6.1. GPS Antenna Specification

Table 6. GPS Antenna Specification

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

3.7. Power Connection

PWR (PIN11)/GND (PIN6) is the power input pin. 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.

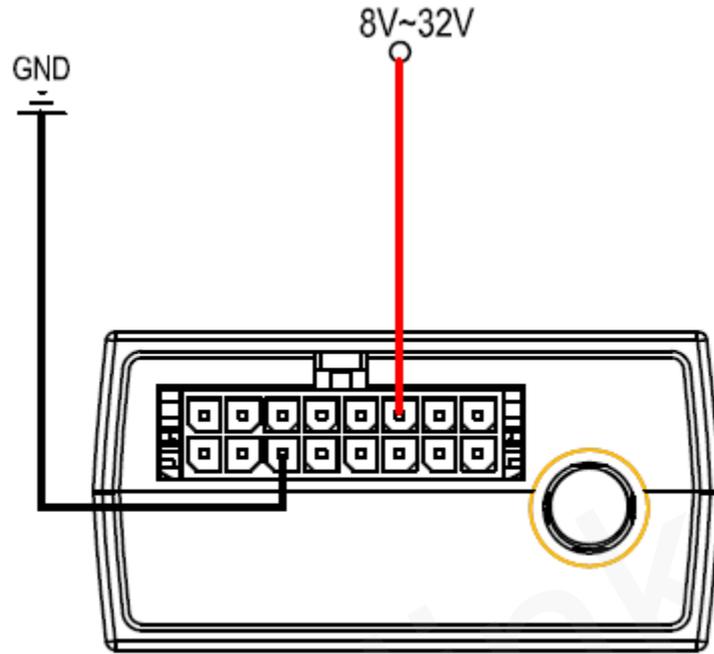


Figure 9. Typical Power Connection

3.8. Ignition Detection

Table 7. Electrical Characteristics of Ignition Detection

Logical status	Electrical characteristics
Active	5.0V to 32V
Inactive	0V to 3V or open

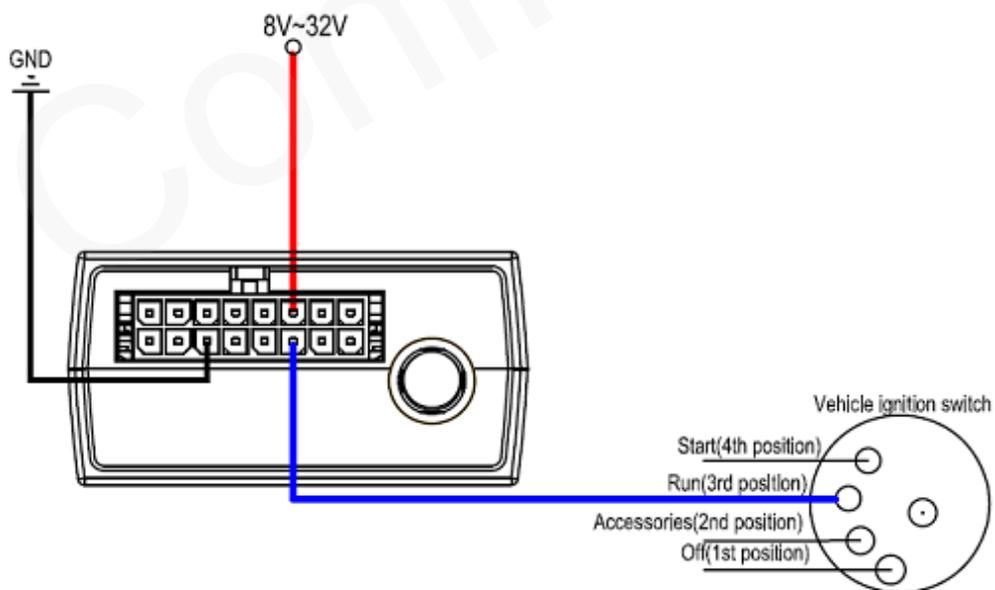


Figure 10. Typical Ignition Detection

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

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 ignition is on, and enter the power saving mode when ignition is off.

3.9. Digital Inputs

There are three general purpose digital inputs on GV300N. They are all negative triggers.

Table 8. Electrical Characteristics of the Digital Inputs

Logical status	Electrical characteristics
Active	0V to 0.8V
Inactive	Open

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

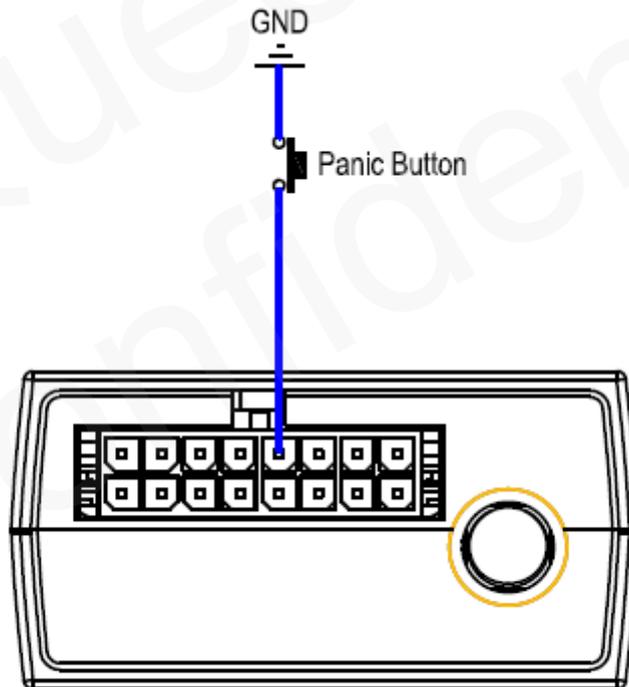


Figure 11. Typical Digital Input Connection

3.10. Analog Inputs

There are two analog inputs on GV300N, and the analog input voltage range is from 0 to 16V. The following diagram shows the recommended connection.

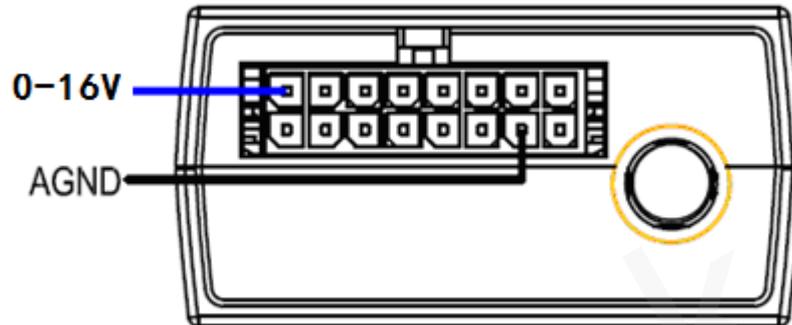


Figure 12. Typical Analog Input Connection

Note:

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

3.11. Digital Outputs

There are three digital outputs on GV300N. All are of open drain type and the maximum drain current is 150 mA. Each output has the built-in over current PTC resettable fuse.

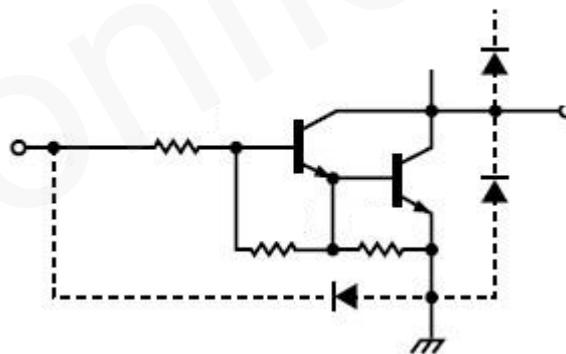


Figure 13. Digital Output Internal Drive Circuit

Table 9. Electrical Characteristics of Digital Outputs

Logical status	Electrical characteristics
Enable	<1.5V @150 mA
Disable	Open drain

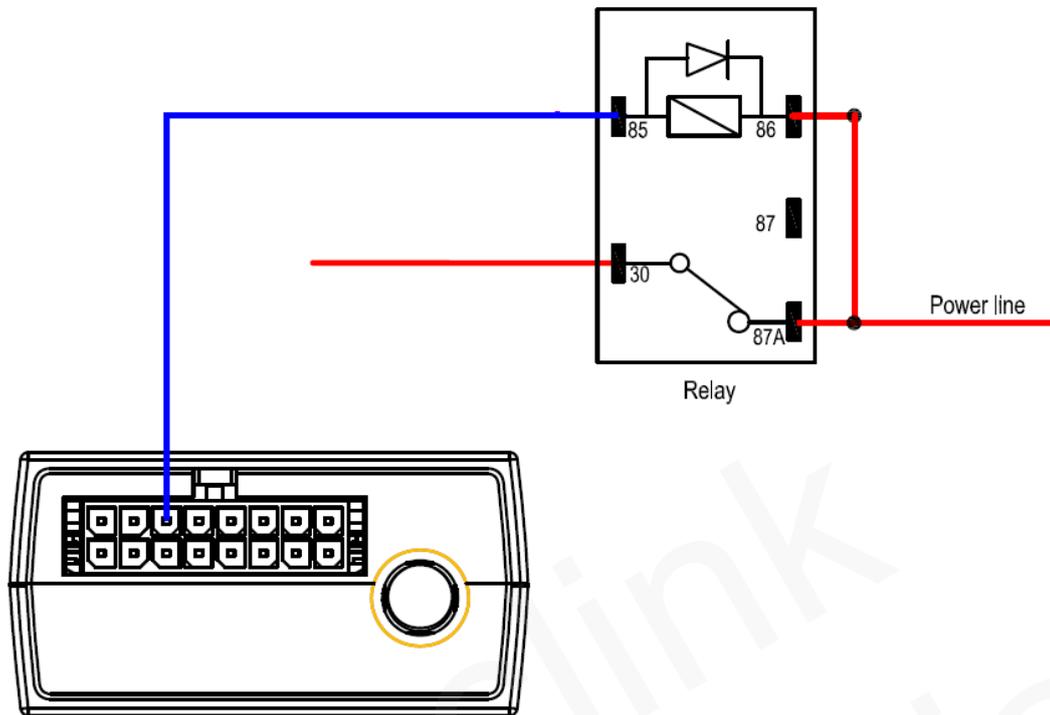


Figure 14. Typical Connection with Relay

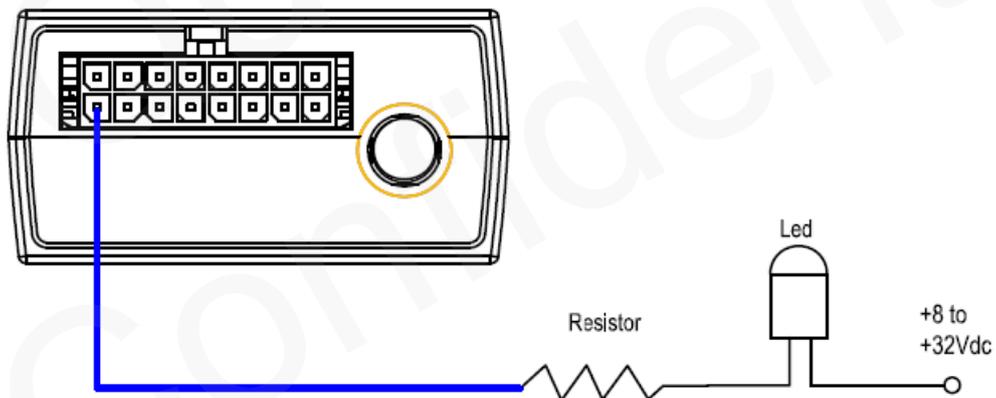


Figure 15. Typical Connection with LED

Note:

1. OUT1 will latch the output state during reset.
2. Many modern relays come with a flyback diode pre-installed internal to the relay itself. If the relay has this diode, ensure the relay polarity is properly connected. If this diode is not internal, it should be added externally. A common diode such as a 1N4004 will work in most circumstances.

3.12. Device Status LED

LED	Device status	LED status
GSM (Note 1)	Device is searching GSM network.	Fast flashing (Note 3)
	Device has registered to GSM network.	Slow flashing (Note 4)
	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 occurs.	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

Table 10. Definition of Device Status and LED

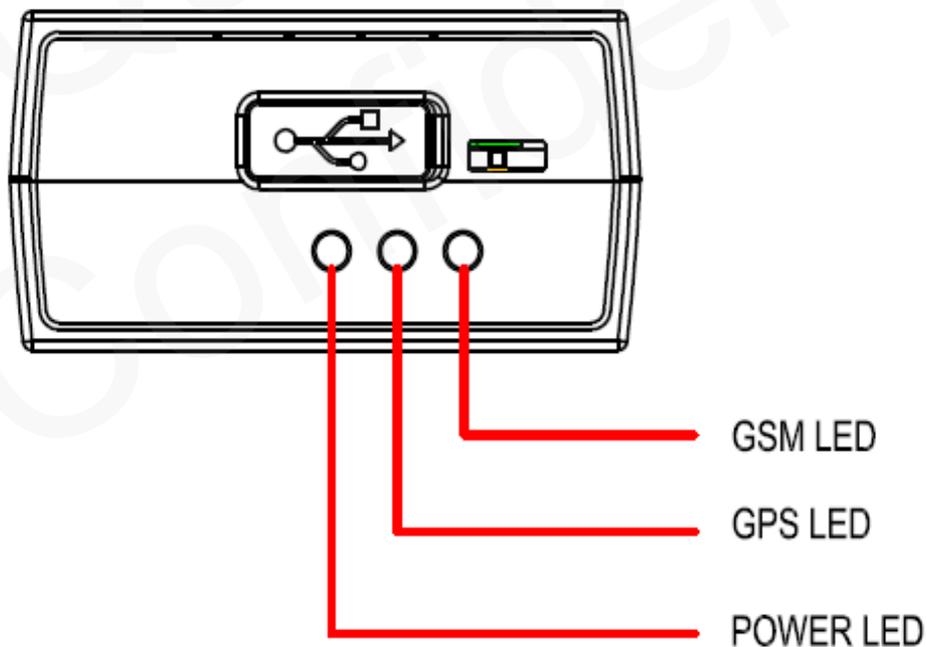


Figure 16. GV300N LED on the Case

Note:

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

3.13. Serial Port/UART Interface

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

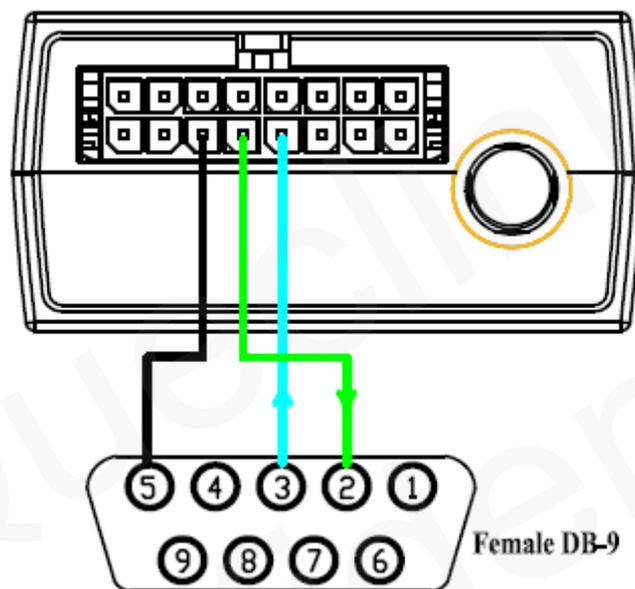


Figure 17. Typical Connection with RS232 Port