



# GV300TP User Manual

## GSM/GPRS/GPS Tracker

QSZTGV300TPUM001

Revision: R1.01

*International Telematics Solutions Innovator*

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## 0.Revision History

Revision	Date	Author	Description of change
1.00	2017-08-10	Eddy Qi	Initial
1.01	2019-08-18	Eddy Qi	Add Bluetooth notes

## 1. Introduction

The GV300TP 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. It has Bluetooth. The GV300TP has multiple input/output interfaces that can be used for monitoring or controlling external devices. Based on the integrated @Track protocol, the GV300TP 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 GV300TP 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 GV300TP Product

**Table 1.GV300TP Product**

Model No.	Technology	Operating Band
GV300TP	GSM/BLE	GSM850/GSM900: -2dBi; DCS1800: 1.1dBi; PCS1900: 0.7dBi Bluetooth: 1.5dBi

### 1.2 Reference

**Table 2.GV300TP Protocol Reference**

SN	Document name	Remark
[1]	GV300TP @Track Air Interface Protocol	The air protocol interface between GV300TP and backend server.

### 1.3 Terms and Abbreviations

**Table 3.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. Product Appearance



Figure 1. Appearance of GV300TP

### 2.2. Parts List

Table 4. Parts List

Name	Picture
GV300TP Locator	122*85.2*24.2 mm
Tracker Cable	

### 2.3.Interface Definition

The GV300TP has two connectors which include a 16 PIN interface connector and a 14pin interface connector. The 16 Pin interface connector contains the connections for power, I/O, RS232, microphone, speaker, etc and the 14Pin interface connector contains High speed CAN, Low speed CAN, K-LINE, L-LINE . The sequence and definition of these two connectors are shown in the following figure:

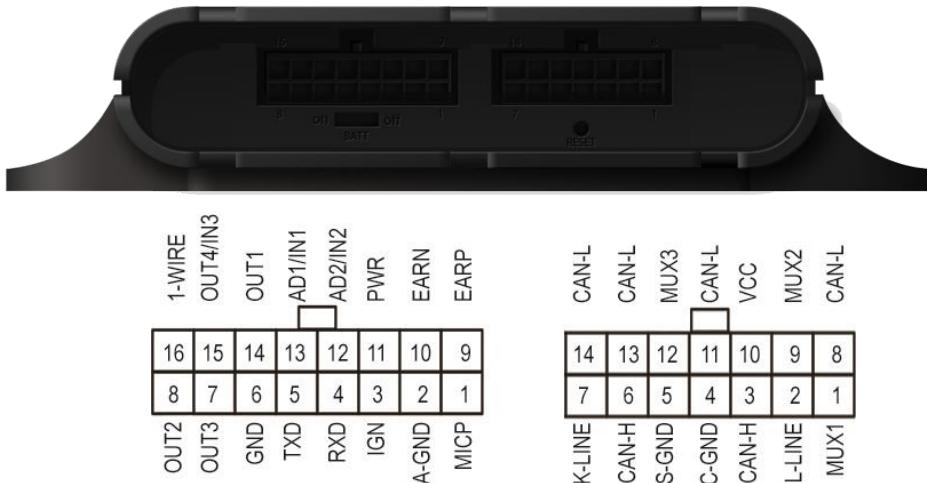


Figure 2.The 16 PIN Connector on the GV300TP

Table 5.Description of 16 PIN Connections

Index	PIN Name	Description
1	MICP	2-2.2k Microphone (+),Internal bias
2	AGND	Microphone Ground (-)
3	IGN	Ignition input, positive trigger
4	RXD	RS232 Connect to external device TX
5	TXD	RS232 Connect to external device RX
6	GND	Power and digital ground
7	OUT3	Voltage output 3(5V/ 1-WIRE power support)/ Negative Output3
8	OUT2	Voltage output 2(12V)/ Negative Output2
9	EARP	Differential output, 32 ohm 1/4w speaker
10	EARN	
11	PWR	External DC power input, 8-32V

12	AD2/IN2	Analog Input 2/ Negative Triggered 2
13	AD1/IN1	Analog Input 1/ Negative Triggered 1
14	OUT1	Negative Output 1
15	OUT4/IN3	Voltage output 4(12V) / Negative Output4/ Negative Triggered 3
16	1-Wire	1-wire Bus

Table 6.Description of 14 PIN Connections

Index	PIN Name	PIN Features	Description
1	MUX1	OBD1	High Speed can bus CAN H/Low Speed can bus CAN H/ Single Wire can
2	L-Line	OBD15	L Line
3	CAN H	OBD3	High Speed can Bus CAN H
4	C-GND	Chassis Ground	Chassis Ground
5	S-GND	Signal Ground	Signal Ground
6	CAN-H	OBD6	High Speed can bus
7	K-LINE	OBD7	ISO K Line
8	CAN-L	OBD8	High Speed can bus CAN L
9	MUX2	OBD9	High Speed can bus CAN L/Low Speed can bus CAN L
10	VCC	VCC signal	VCC only used to detect for OBD port insert VCC=8-32V
11	CAN-L	OBD11	High Speed can bus CAN L
12	MUX3	OBD12	ISO K Line/High Speed CAN H
13	CAN-L	OBD13	High Speed can bus CAN L
14	CAN-L	OBD14	High Speed can bus CAN L

CAN Bus Matrix			
CAN Bus Group	CAN Bus type	GV300TP Pin	OBD Pin
1	High Speed CAN Bus	1 & 9	1 & 9
2		6 & 14	6 & 14
3		3 & 8	3 & 8
4		3&11	3&11
4	Fault Tolerant & Low Speed CAN Bus	1 & 9	1 & 9
5	Single Wire CAN Bus	1	1

ISO9141 Matrix			
ISO9141 Group	Line type	GV300TP Pin	OBD Pin
1	K Line	7	7
2	K Line	12	12
3	L Line	2	15

## 2.4.GV300TP User Cable Color

Table 7.GV300TP User Cable Color Definition

Definition	Color	PIN No	Cable	PIN No	Color	Definition
OUT2	Yellow	8		16	Brown/White	1-WIRE
OUT3	Brown	7		15	Green	OUT4/IN3
GND	Black	6		14	Blue	OUT1
TXD	White/Black	5		13	Orange	AD1/IN1
RXD	Pink	4		12	Orange/Black	AD2/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

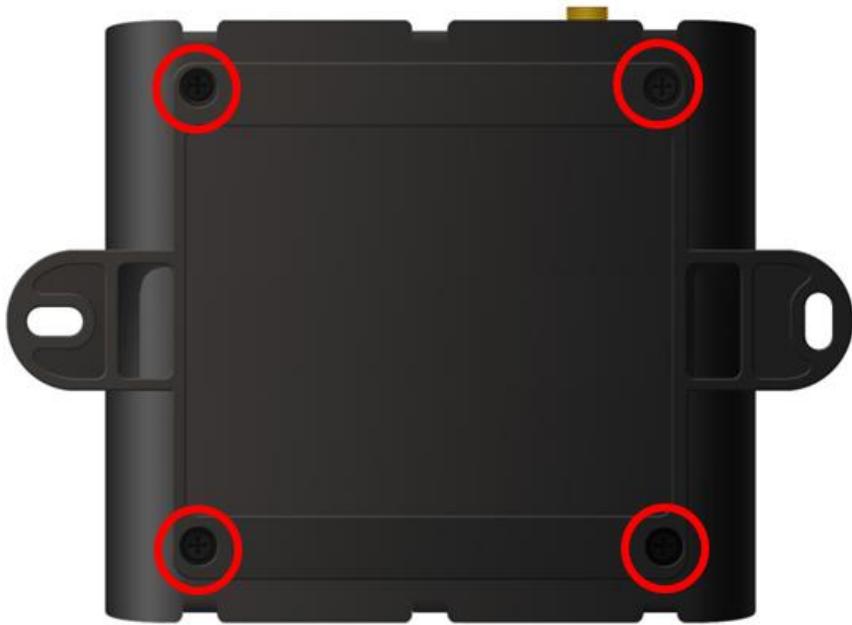


Figure 3. Open the Case

#### 3.2. 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 slot as shown below with the yellow colour contact area facing down. Take care to align the cut mark. Close the SIM card holder. Close the case.



Figure 4. SIM Card Installation

### 3.3. Install the Internal Backup Battery

GV300TP has an internal backup Li-ion battery, put the battery line on the right of plastic clip which can avoid the battery line to be damaged when install the screw of PCBA.



Figure 5. Backup Battery Installation

### 3.4. Switch on the Backup Battery

To use the GV300TP backup battery, the switch must be in the ON position. The switch on the case and the ON/OFF position are shown below.

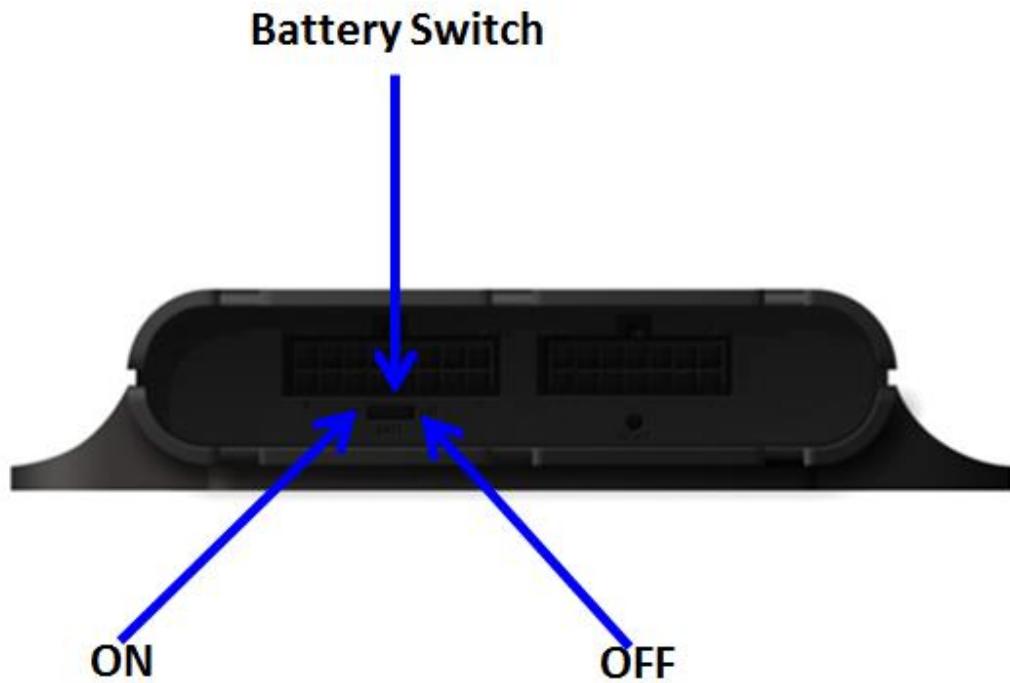


Figure 6. Switch and ON/OFF Position

**Note:**

1. The switch must be in the “OFF” position when the GV300TP is shipped on an aircraft.
2. When the switch is in the “OFF” position, the battery cannot be charged or discharged.

### 3.5. Install the External GPS Antenna

The GPS antenna is bought by the users themselves from a third party. GV300TP will automatically detect and use an external antenna when connected.



We recommend the users to use an external antenna with following specifications:

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

### 3.6. 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.

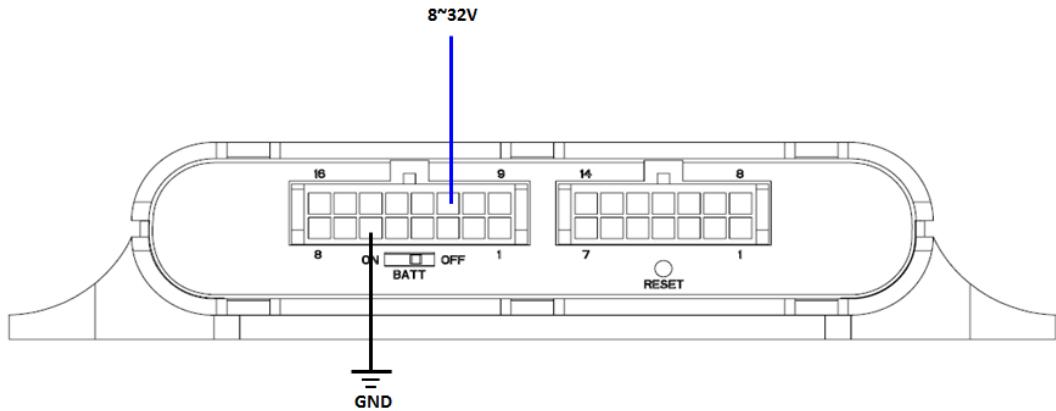


Figure 7.Typical Power Connection

### 3.7.Ignition Detection

Table 8.Electrical Characteristics of Ignition Detection

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

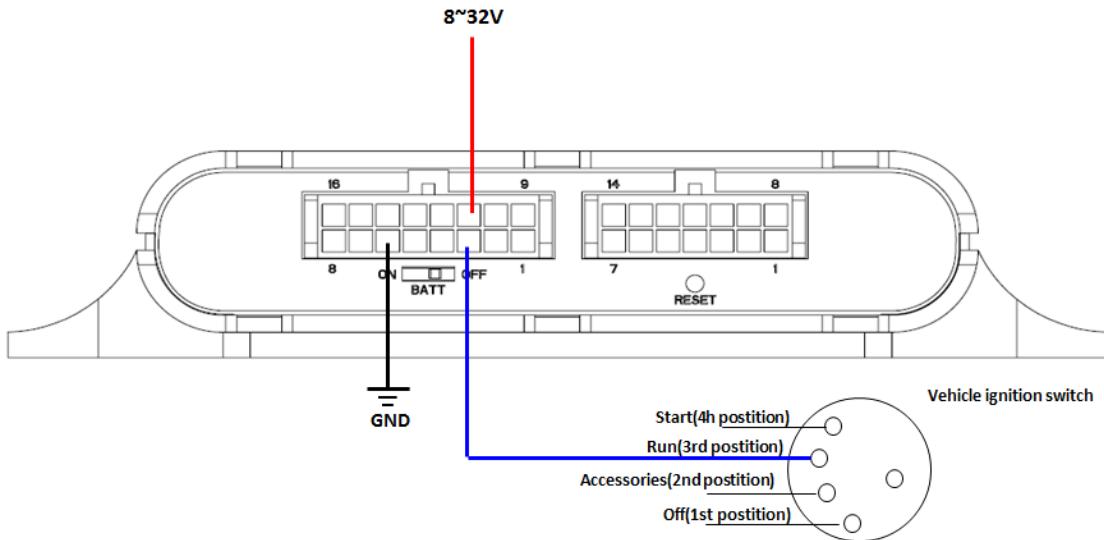


Figure 8.Typical Ignition Detection

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.

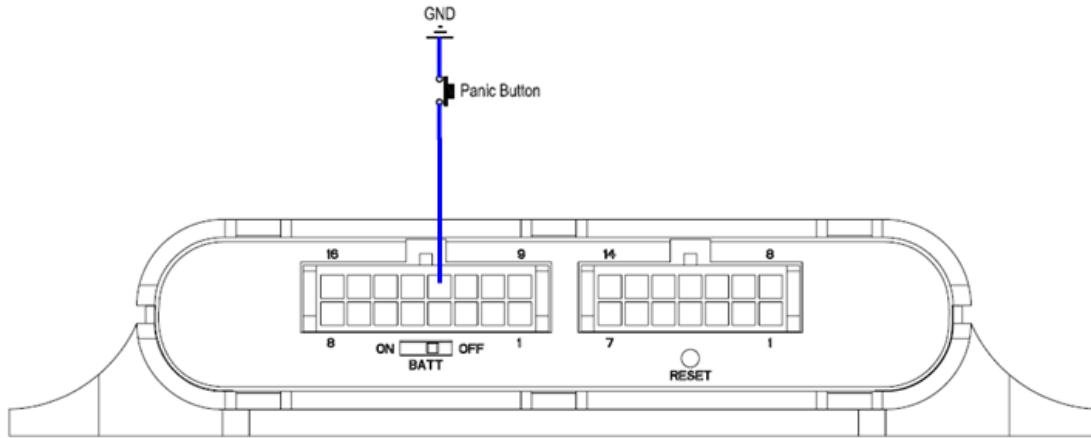
### 3.8.Digital Inputs

There are three general purpose digital inputs on GV300TP. They are all negative triggers.

**Table 9.Electrical Characteristics of the Digital Inputs**

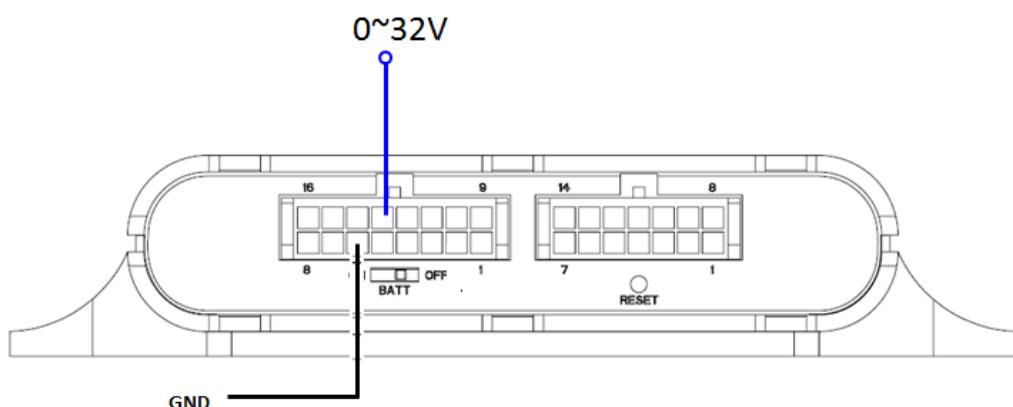
Logical status	Electrical characteristics
Active	0V to 0.8V
Inactive	Open

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

**Figure 9.Typical Digital Input Connection**

### 3.9.Analog Inputs

There are two analog inputs on GV300TP, and the analog input voltage range is from 0 to 32V. The following diagram shows the recommended connection.

**Figure 10.Typical Analog Input Connection**

**Note:**

PIN 12 and PIN13 are multifunction pins: it can be configured as a digital input or an analog input.

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

### 3.10.Digital Outputs

There are four digital outputs on GV300TP for negative outputs (PIN7, PIN8, PIN14 and PIN15), also three of them(PIN7, PIN8 and PIN15) can be configurable as positive outputs. As negative outputs, all are open drain type and the maximum drain current is 150 mA; As positive outputs, OUT3 (PIN7) outputs 5V powered for One-wire bus, and two others (PIN8, PIN15) can output voltage 12V@200mA for 12V system or 24V@200mA for 24V system. Each output has the built-in over current PTC resettable fuse.

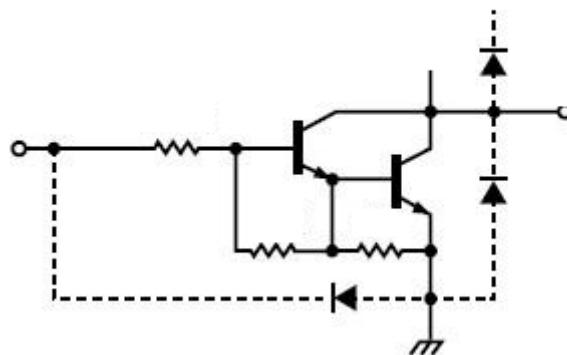


Figure 11.Digital Output Internal Drive Circuit

Table 10.Electrical Characteristics of Digital Outputs

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

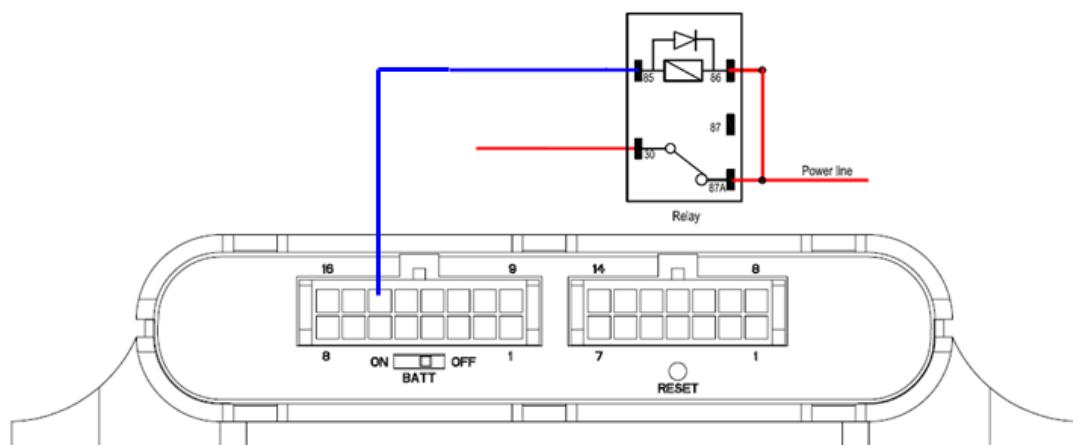
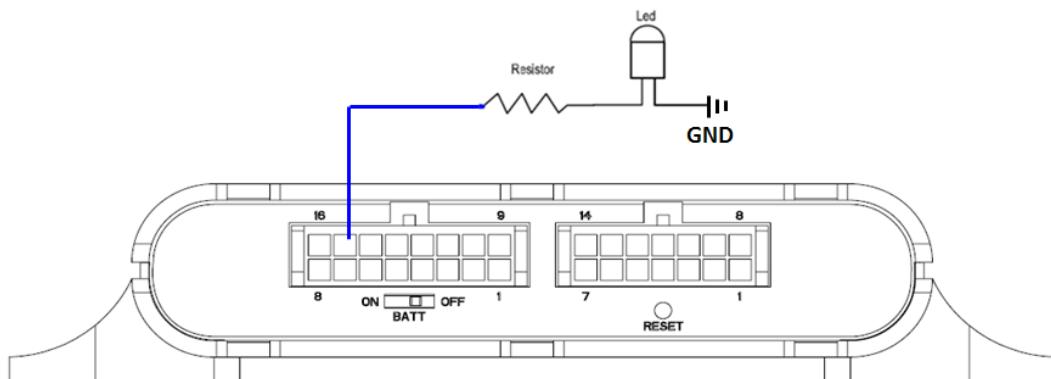


Figure 12.Typical Connection with Relay( Negative Output)



**Figure 13. Typical Connection with LED (Positive Output)**

**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.

### 3.11. Device Status LED



**Figure 14.GV300TP LED on the Case**

**Table 11. Definition of Device Status and 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

**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: for GSM LED is about 60 ms ON/780 ms OFF; for GPS LED and PWR LED is about 100 ms ON/100 ms OFF.
4. Slow flashing: for GSM LED is about 60 ms ON/1940 ms OFF; for GPS LED and PWR LED is about 600 ms ON/600 ms OFF.

### 3.12.Serial Port/UART Interface

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

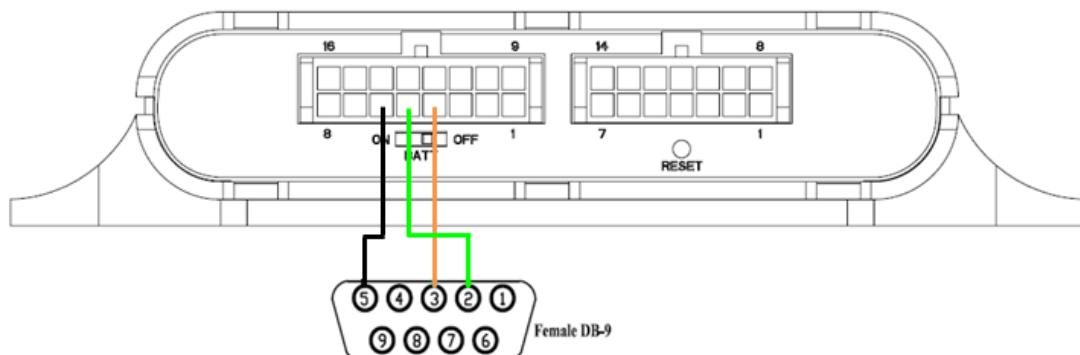


Figure 15.Typical Connection with RS232 Port

### 3.13.Reset Button

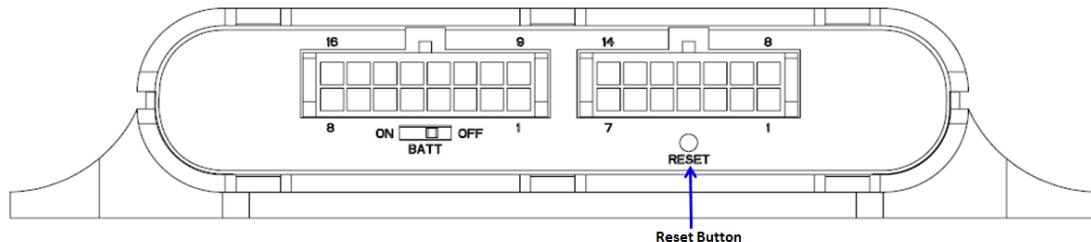


Figure 16. Reset Button

Use a thin pin to insert the hole and press the reset button if the device working in abnormal.

## 4.FCC Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance of 20 cm between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

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.

**NOTE:** The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.

**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
- This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.