GV300 User Manual

GSM/GPRS/GPS Tracker

TRACGV300UM001

Revision: 1.03

International Telematics Solutions Innovator

www. queclink .com

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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.
1.02	2016-06-12	Super Zhao	Added Chapter 3.13.1 “Connection with CAN100 Device”.
1.03	2019-03-29	Young Chen	Added the description for the motion sensor direction.

1.Introduction

GV300 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. GV300 has multiple input/output interfaces that can be used for monitoring or controlling external devices. Based on the integrated @Track protocol, GV300 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 GV300 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.

1.1Reference

Table 1.GV300 Protocol Reference

SN	Document name	Remark
[1]	GV300 @Track Air Interface Protocol	The air protocol interface between GV300 and backend server.

1.2Terms 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 GV300. If anything is missing, please contact your supplier.

Figure 1.Appearance of GV300

2.2.Parts List

Table 3.Parts List

Name	Picture
GV300 Locator	80*49*26 mm

User Cable	
GPS Antenna (Optional)	
DATA_CABLE_M (Optional)	

2.3.Interface Definition

GV300 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 2.16-PIN Connector on GV300

Table 4.Description of 16-PIN Connection

Index	Description	Remark
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.GV300 User Cable Color

Table 5.GV300 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.Getting Started

3.1.Open the Case

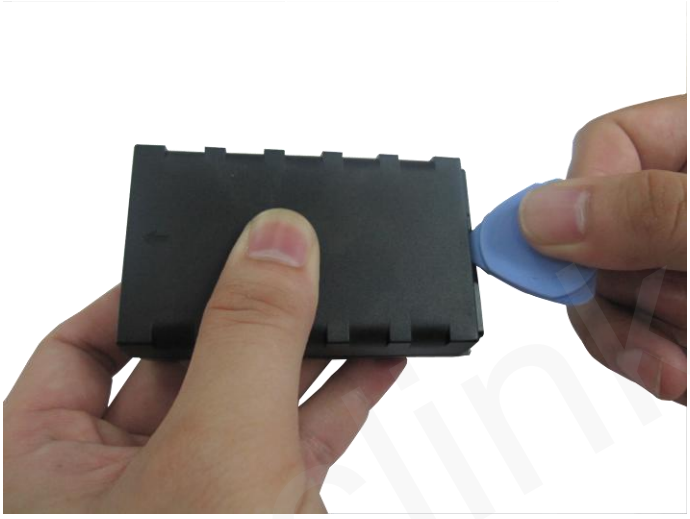

Figure 3.Open the Case

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.

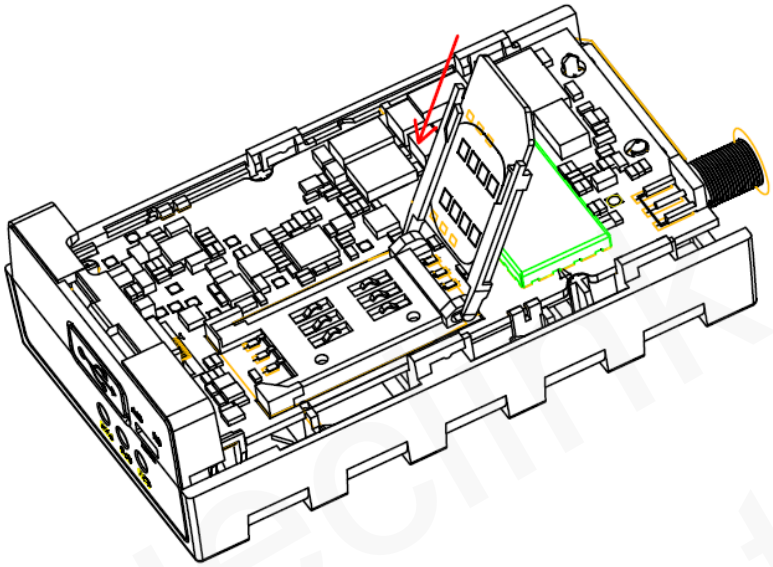

Figure 5.SIM Card Installation

3.4.Install the Internal Backup Battery

GV300 has an internal backup Li-ion battery.

Figure 6.Backup Battery Installation

3.5.Switch on the Backup Battery

To use GV300 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 GV300 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 GV300. GV300 will automatically detect and use an external antenna when connected.

Figure 8.GPS Antenna of GV300

3.6.1. GPS Antenna Specifications

Table 6.GPS Antenna Specifications

GPS Antenna	Specifications
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.

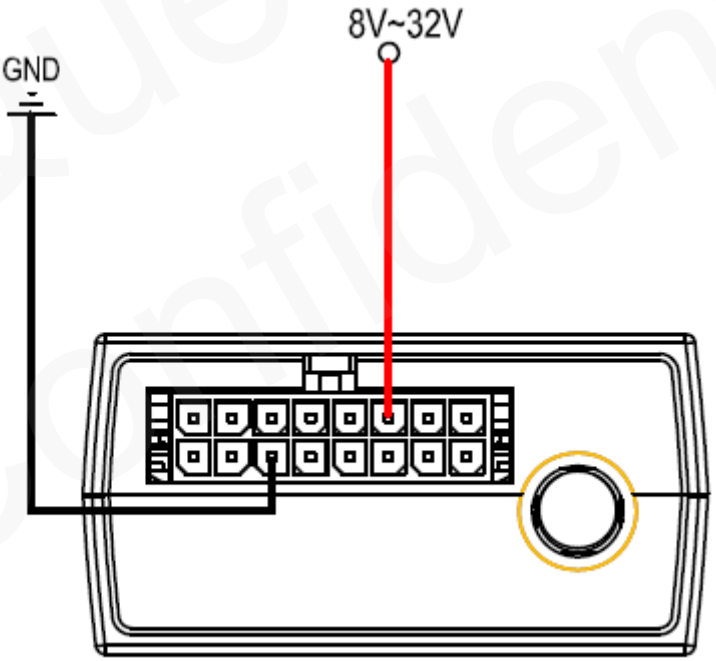

Figure 9.Typical Power Connection

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

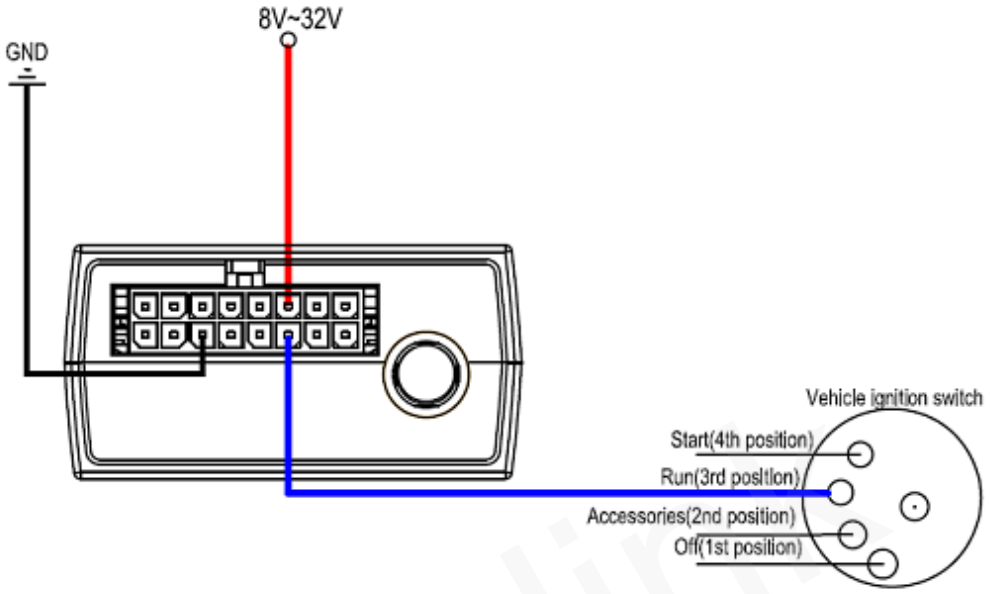

Figure 10.Typical Ignition Detection

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 GV300. They are all negative triggers.

Table 8.Electrical Characteristics of Digital Inputs

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

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

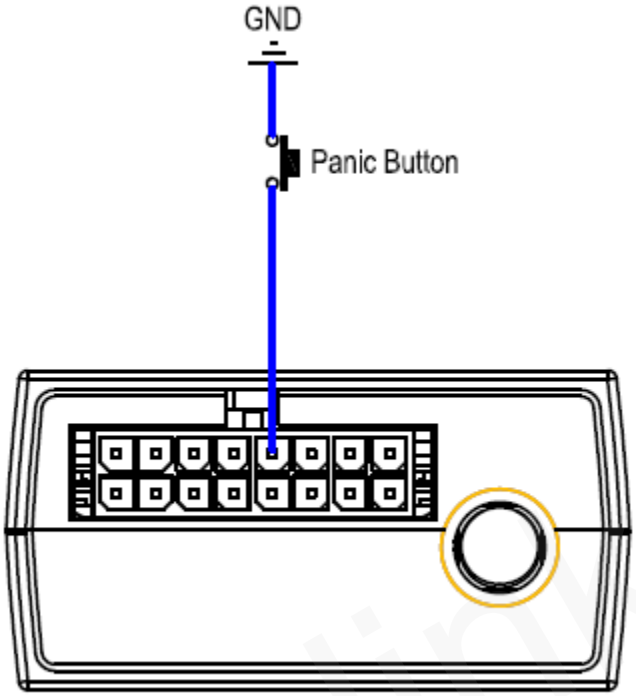

Figure 11.Typical Digital Input Connection

3.10.Analog Inputs

There are two analog inputs on GV300, and the analog input voltage range is from 0 to 16V. The following diagram shows the recommended connection.

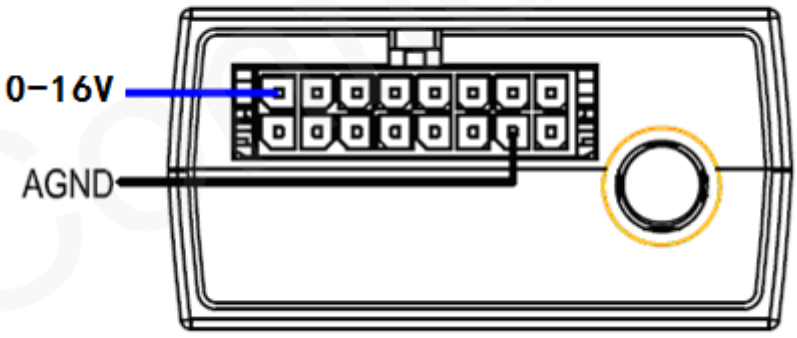

Figure 12.Typical Analog Input Connection

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 GV300. 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.

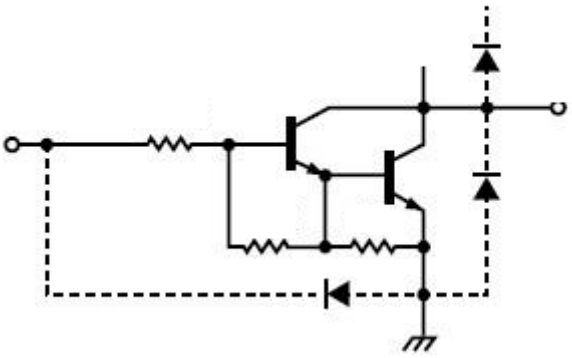

Figure 13.Digital Output Internal Drive Circuit

Table 9.Electrical Characteristics of Digital Outputs

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

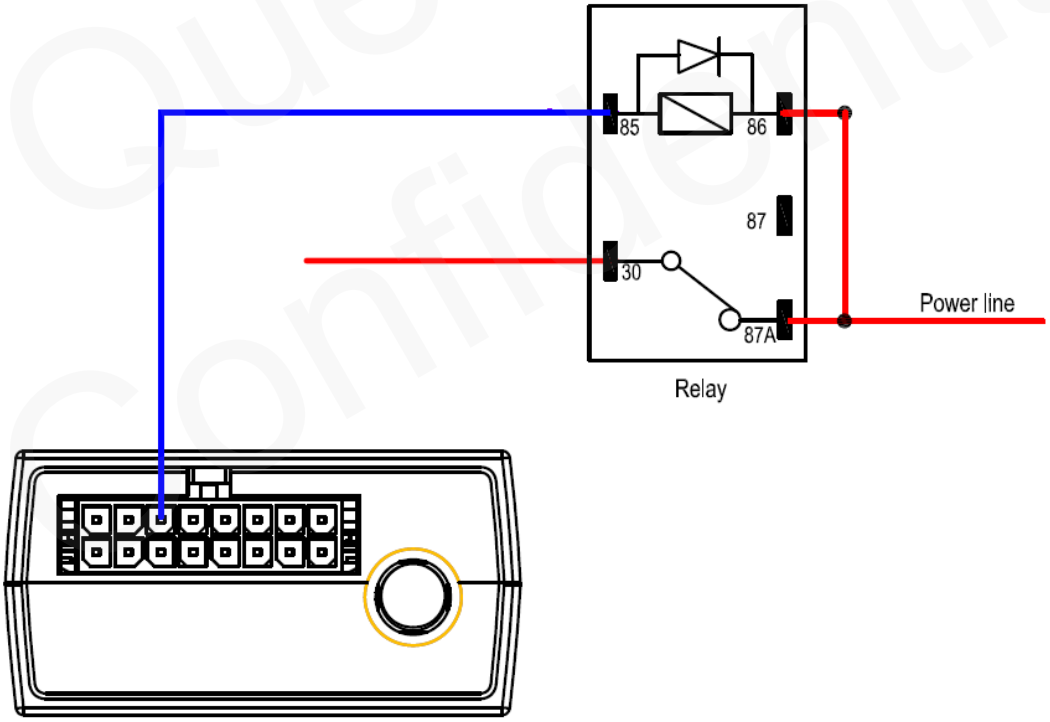

Figure 14.Typical Connection with Relay

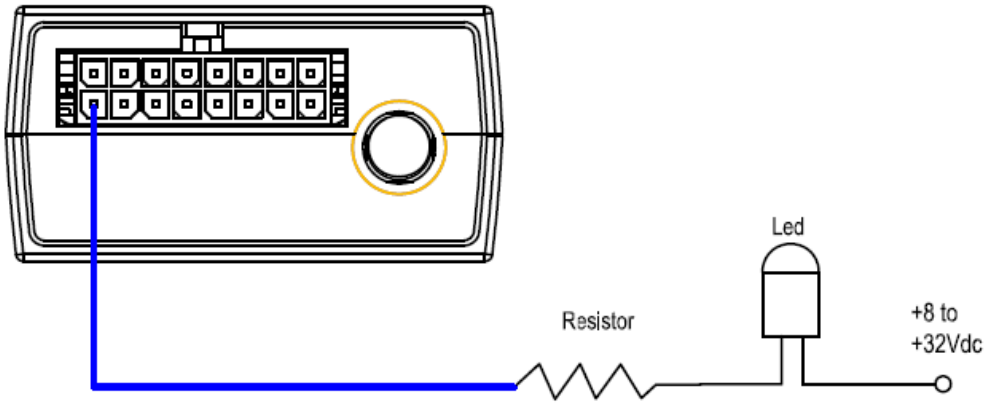

Figure 15.Typical Connection with LED

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

Table 10.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 information.	Fast flashing
	GPS chip has gotten GPS information.	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

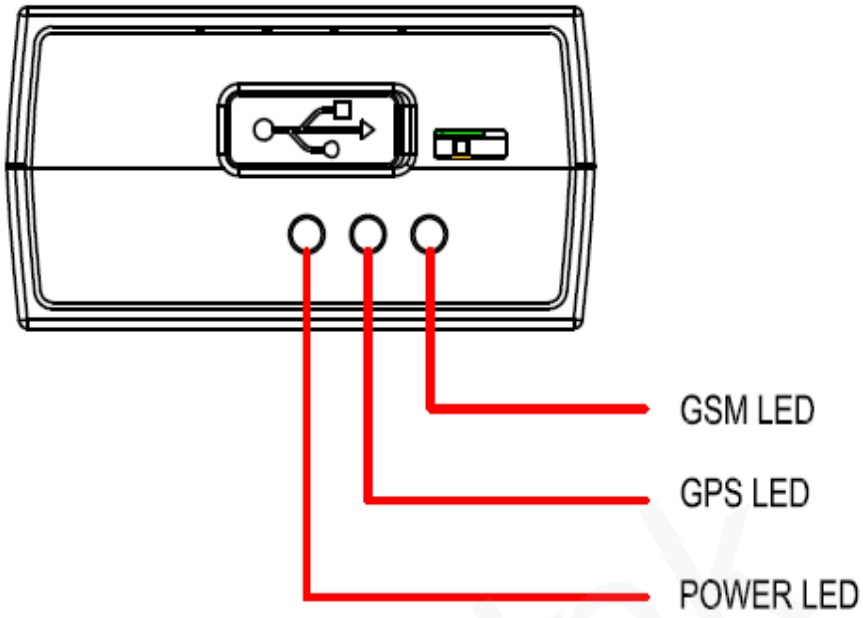

Figure 16.GV300 LED on the Case

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

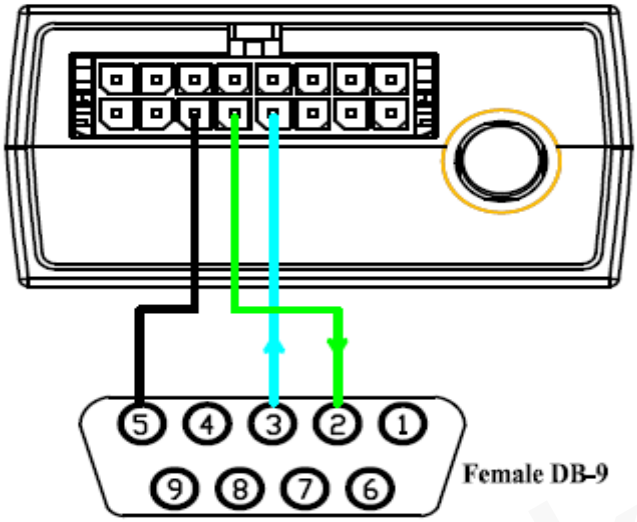

Figure 17.Typical Connection with RS232 Port

3.13.1.Connection with CAN100 Device

GV300 can communicate with CAN100 device. For CAN100 device, only RS232 serial ports are used. The following picture shows the external interface of CAN100 device. Refer to Figure 19.

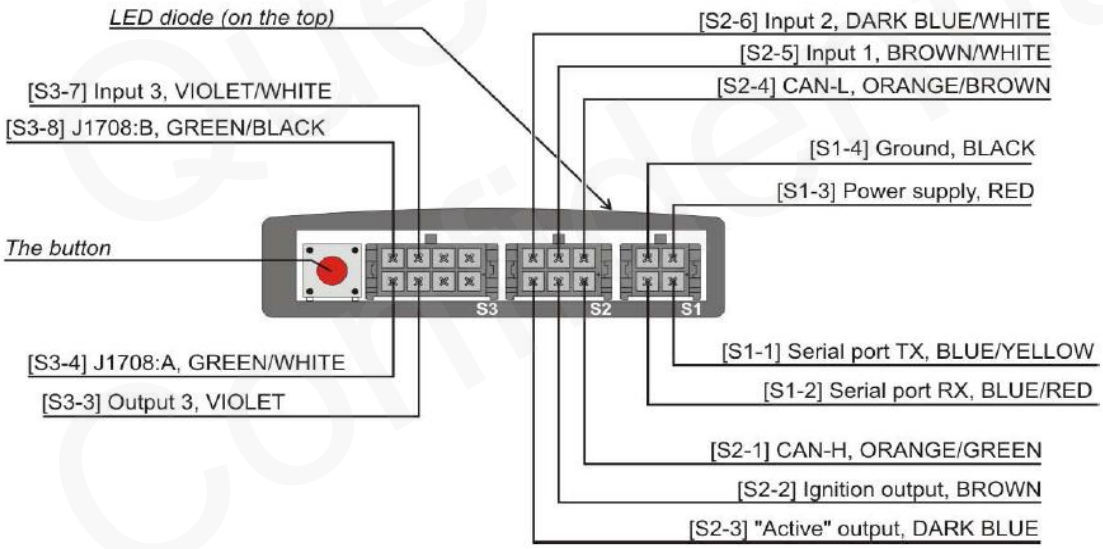

Figure 18.The External Interface of CAN100 Device

The following table 11 shows the definition of CAN100 device's external interface.

Pin No.	Pin Name	Cable Color
S1-1	TX	Blue/Yellow
S1-2	RX	Blue/Red
S1-3	Power Supply	Red
S1-4	Ground	Black

Table 11. External Interface of CAN100 Device

The Following table 12 shows how to connect with GV300.

GV300				CAN100		
Pin No.	**Pin Name**	**Color**	**Connection**	**Pin No.**	**Pin Name**	**Color**
4	RXD	Green or Pink	←----→	S1-1	TX	Blue/Yellow
5	TXD	White/Black	←----→	S1-2	RX	Blue/Red
11	Power	Red	←----→	S1-3	Power Supply	Red
6	Ground	Black	←----→	S1-4	Ground	Black

Table 12. CAN100 Device Connection with GV300

Note: Regarding how to decide whether the CAN100 device's serial port is RS232 or TTL, please refer to CAN100 specifications.

3.14.Motion Sensor Direction

GV300 has an internal 3-axis accelerometer supporting driving behaviour monitoring and motion detection. The following shows the directions of the motion sensor. The Z axis faces inwards vertically.

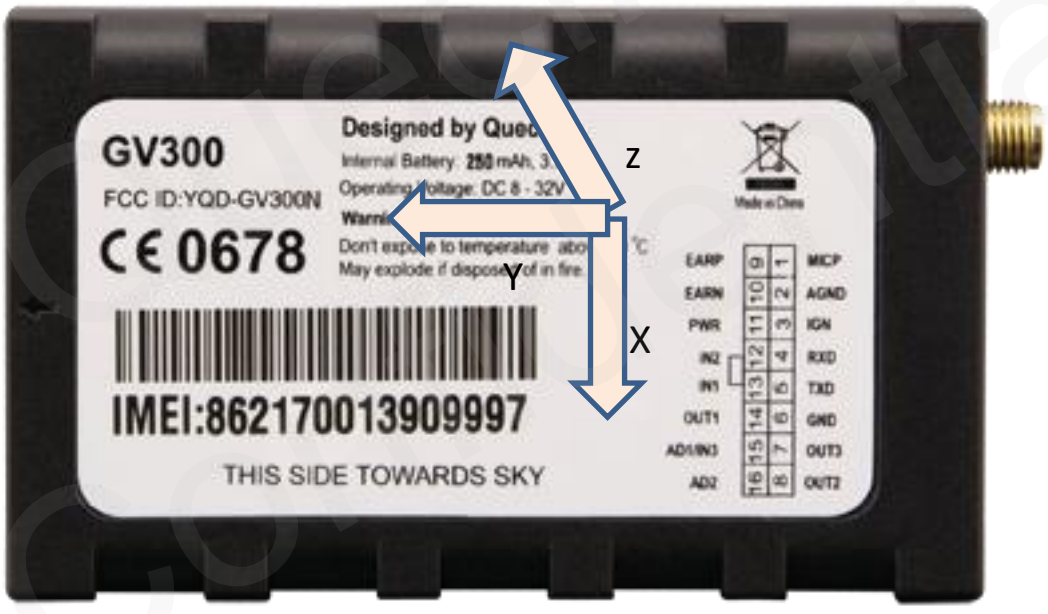

Figure 19.Motion Sensor Direction

4.GV300 Certification

4.1.FCC Certification

GV300 has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules.

This device complies with part 15B, part 22 and part 24 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference; (2) this device must accept any interference, including interference that may cause undesired operation.

Power output is ERP for part 22 and EIRP for part 24. End-users and installers must be provided with antenna installation instructions and transmitter operating conditions to satisfy RF exposure compliance.

GV300 FCC IDENTIFIER: YQD-GV300

4.2.European CE 0678

GV300 has been manufactured in accordance with the European R&TTE directive. This product complies with the European CE/LVD (Low-Voltage Directive; 2006/95/EC) standard (IEC 60950-1: 2005 (2nd Edition)+A1: 2009; EN 60950-1: 2006+A11: 2009+A1: 2010).

4.3.Anatel Certification

GV300 has been homologated (tested) in Brazil and is ANATEL@APPROVED for all installations in Brazil.

Anatel ID: 0633-12-7782