

GSM/GPRS/GPS Tracker **GV65 Plus**

TRACGV65PUM001

Revision:1.01

User Manual



International Telematics Solutions Innovator

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0 Revision History

Revision	Date	Author	Description of change
1.00	2014-12-17	Lulu Gao World Chu Richard Deng Pam Pan	Initial
1.01	2015-01-23	World.Chu	Add acc sensor xyz description

1. Introduction

The GV65 Plus is a powerful GPS locator designed for vehicle or asset tracking. It has superior receiving sensitivity, fast TTFF (Time to First Fix) and supports quad-band GSM frequencies 850/900/1800/1900. Its location can be monitored in real time or periodically tracked by a backend server or other specified terminals. The GV65 Plus has multiple input/output interfaces that can be used for monitoring or controlling external devices. Based on the integrated @Track protocol, the GV65 Plus can communicate with a backend server through the GPRS/GSM network to transfer reports of emergency, geo-fence boundary crossings, scheduled GPS position and many other useful reporting features. Users can also use GV65 Plus 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. GV65 Plus Protocol Reference

SN	Document name	Remark
[1]	GV65 Plus @Track Air Interface Protocol	The air protocol interface between GV65 Plus 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 GV65 Plus. If anything is missing, please contact your supplier.



Figure 1. Appearance of GV65 Plus

2.2. Parts List

Table 3. Parts List

Name	Picture
GV65 Plus Locator	73mm*54mm*22.7mm
User Cable	
GPS Antenna (Optional)	
DATA_CABLE_M (Optional)	

2.3. Interface Definition

The GV65 Plus has a 10 PIN interface connector. It contains the connections for power, I/O, etc. The sequence and definition of the 10PIN connector are shown in the following figure:




Figure 2. The 10 PIN Connector on the GV65 Plus

Table 4. Description of 10 PIN Connections

Index	Description	Comment
1	VIN	External DC power input, 8-32V
2	GND	GND
3	OUT2	Open drain, 150 mA max
4	ADC_IN	Fuel ADC input
5	OUT1	Open drain, 150 mA max ,with latch circuit
6	DATA_1W	1-wire data bus
7	/IN2	Digital input, negative trigger
8	/IN1	Digital input, negative trigger
9	IGN	Ignition input, positive trigger
10	VDD_1W	1-wire device power output

2.4. GV65 Plus User Cable Colour

Table 5. GV65 Plus User Cable Colour Definition

Definition	Colour	PIN No.	Cable	PIN No.	Colour	Definition
GND	Black	2		1	Red	VIN
ADC_IN	Green	4		3	Yellow	OUT2
DATA_1W	White/Black	6		5	Blue	OUT1
/IN1	Orange	8		7	Orange/Black	/IN2
VDD_1W	Purple	10		9	White	IGN

3 Get Started

3.1. Open the Case



Figure 3. Open the Case

Insert the triangular-pry-opener into the gap on both sides 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. Press the front case and the back case until it snaps.

3.3. Install a SIM Card

Open the case and ensure the unit is not powered (unplug the 10Pin cable). Slide the holder right to open the SIM card. 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. The Internal Backup Battery



Figure 6. Internal Backup Battery

There is an internal backup Li-ion battery,

3.5. Switch ON/OFF the Internal Backup Battery

The control bit of Backup Battery Switch in GTCFG is designed to control whether the backup battery of GV65 Plus is working. As to the detailed explanation of GTCFG command, please refer to related content in "GV65 Plus @Track Air Interface Protocol".

<Backup Battery Switch>: Control to switch on/off the backup battery.

I 0: switch off the backup battery.

I 1: switch on the backup battery.

<Backup Battery Charge Mode>: Control the charge mode of the backup battery.

I 0: When the main power supply is connected, charge the backup battery on need.

I 1: When the main power supply is connected, only charge the backup battery when ignition on is detected. The charge process will begin 3 minutes after the ignition on. The charge process is stopped when ignition off.

Note:

1-The Backup Battery switch must be set to "OFF" when shipped on an aircraft.

2-When the Backup Battery switch is set to "OFF"; the battery cannot be charged or discharged.

3-To reset the device: Remove the external DC power and second switch off the backup battery. And then supply the external power. **When external power is resupplied or the device is reignited, the backup battery switch is "ON" by default.**

3.6. Install the External GPS Antenna (Optional)

There is a SMA GPS antenna connector on GV65 Plus. The GV65 Plus will automatically detect and use an external antenna when connected.



Figure 7. The External GPS Antenna of GV65 Plus

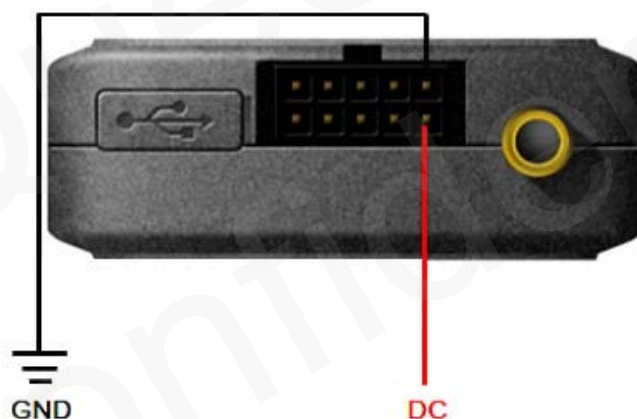
3.6.1. GPS Antenna Specification

Table 6. GPS Antenna Specification

GPS antenna	Specification
Frequency	1575.42MHz
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

VIN (PIN1)/GND (PIN2) 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**

3.8. Ignition Detection

Table 7. Electrical Characteristics of Ignition Detection

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

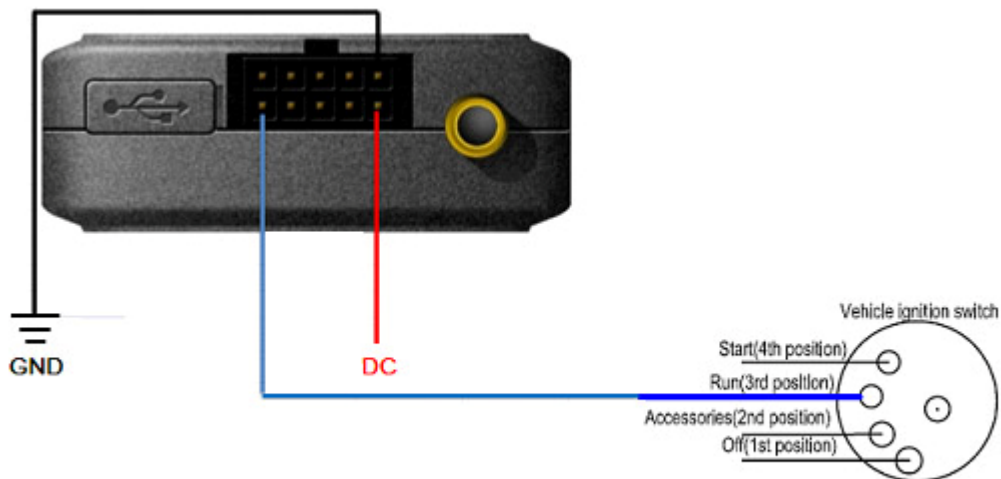


Figure 9. Typical Ignition Detection

IGN (Pin9) 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 power saving mode when ignition is off.

3.9. Digital Inputs

There are two general purpose digital inputs on GV65 Plus. 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 the two digital inputs.

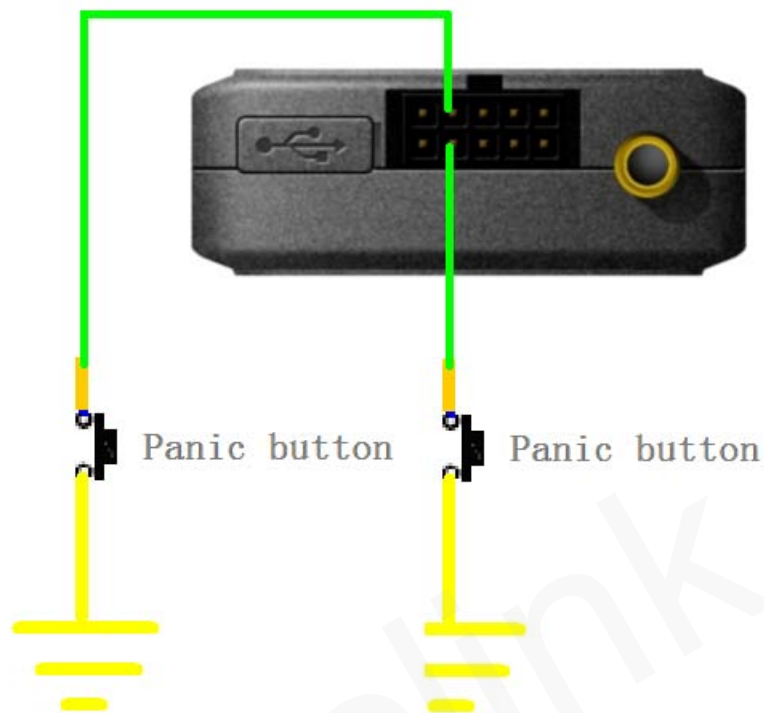


Figure 10. Typical Digital Input Connection

3.10. Analog Inputs

There is one analog input on GV65 Plus. The analog input voltage range could be selectable, including 0-12V and 0-30V, and the default range is from 0 to 30V. The following diagram shows the recommended connection.

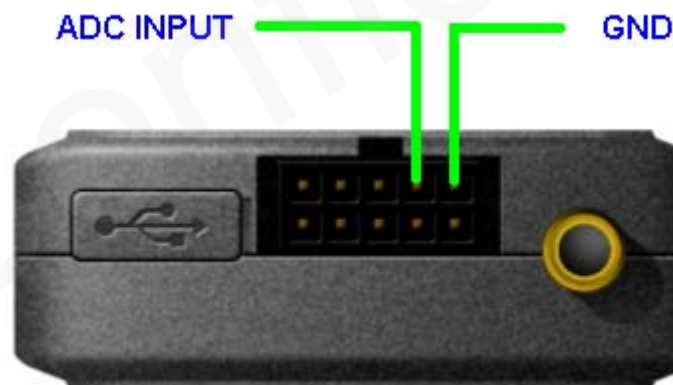


Figure 11. Typical Analog Input Connection

3.11. Digital Outputs

There are two digital outputs on GV65 Plus. 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.

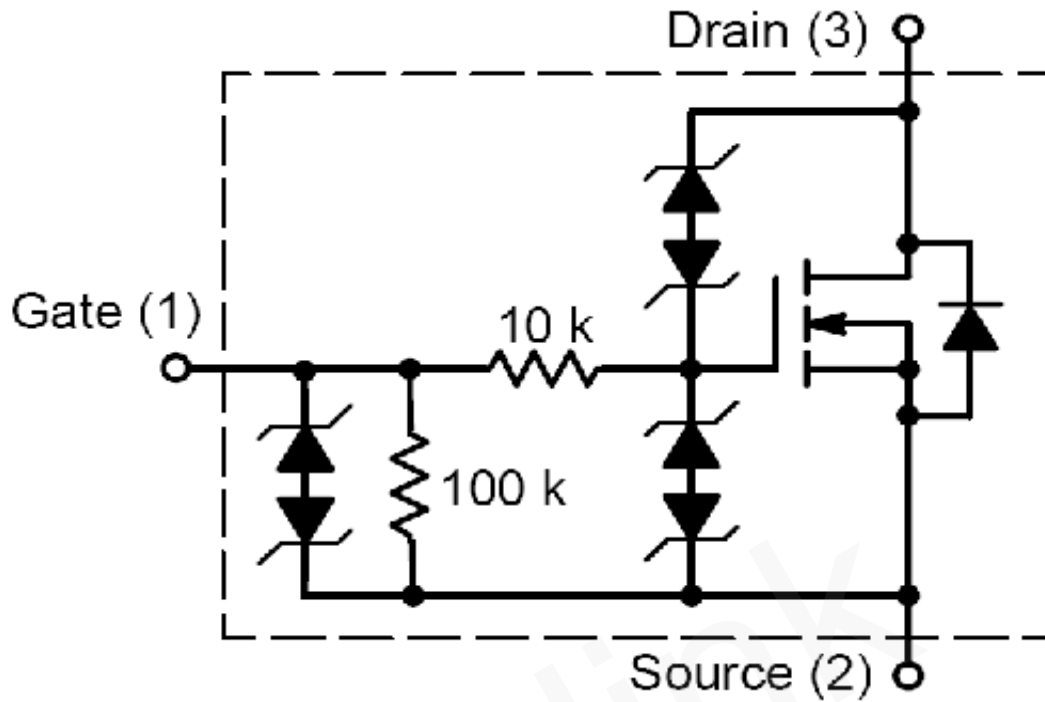


Figure 12. Digital Output Internal Drive Circuit

Table 9. Electrical Characteristics of Digital Outputs

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

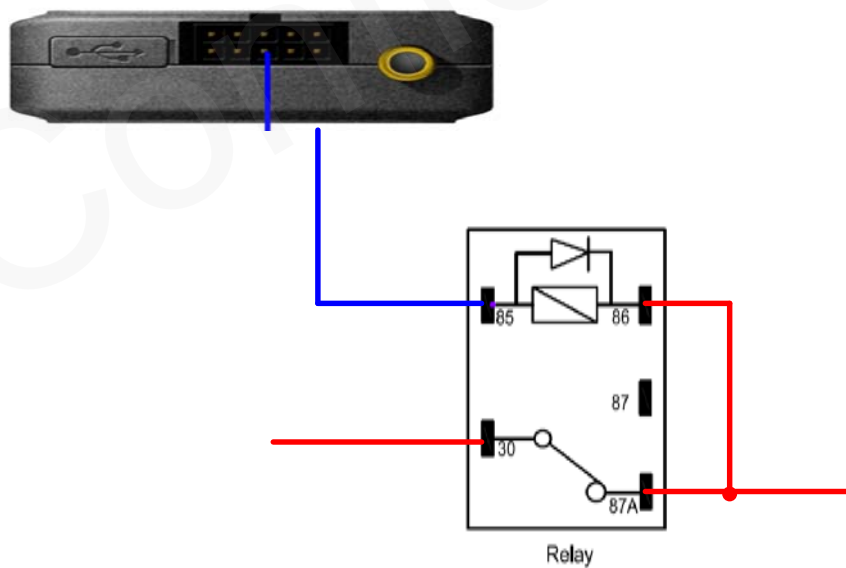


Figure 13. Typical Connection with Relay

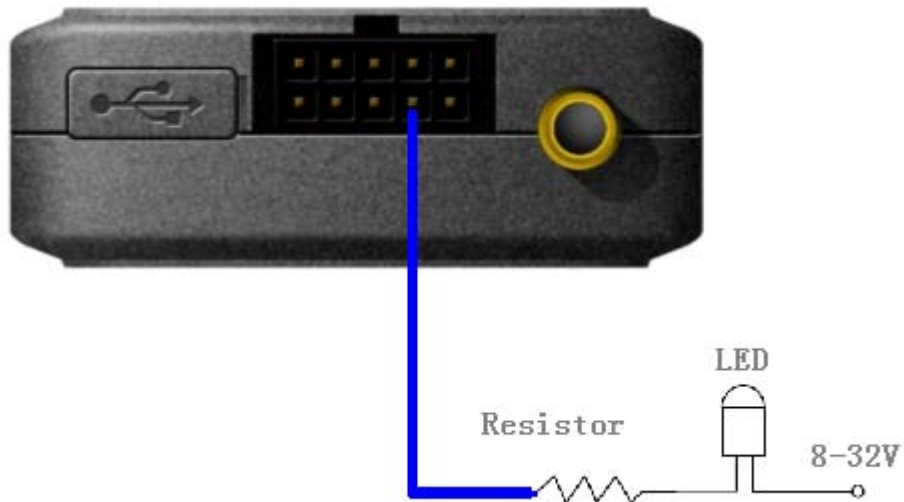


Figure 14. Typical Connection with LED

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



Figure 15. GV65 Plus LED on the Case

GV65 Plus has three status LEDs, namely, CEL, GPS and PWR.

Table 10. Definition of Device Status and LED

LED	Device status	LED status
GSM (note1)	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 is about 60 ms ON/780 ms OFF.
- 4 - Slow flashing is about 60 ms ON/1940 ms OFF.

3.13. 1-wire Device Connection

It has 1-wire bus on GV65 Plus, which supports temperature sensors and iButton. The bus includes 3 signals, namely, VDD-1W, DATA-1W and GND. VDD-1W is the power output for 1-wire device, and DATA-1W is the data signal, with which GV65 Plus can get information from 1-wire device.

The following diagrams show the recommended connection of 1-wire device.

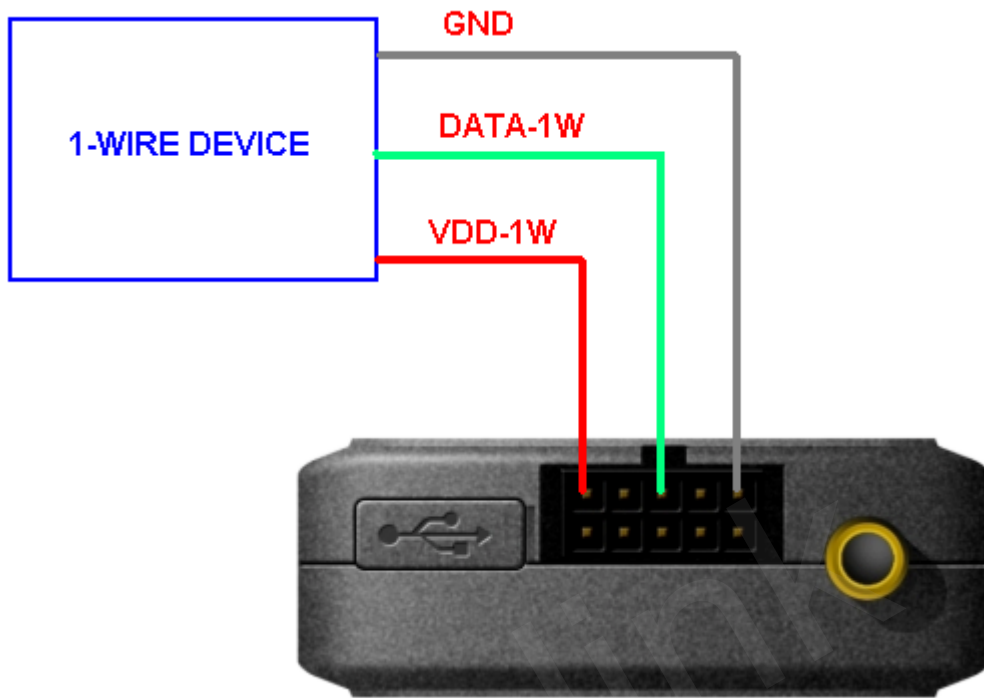


Figure 16. Typical Connection with 1-wire Device

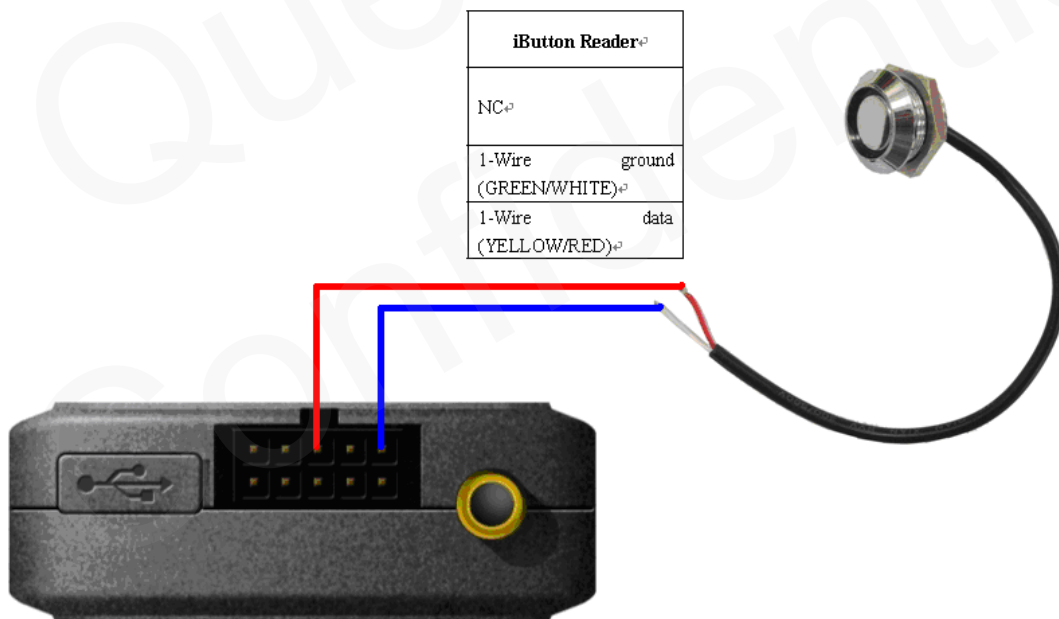


Figure 17. Typical Connection with iButton Reader

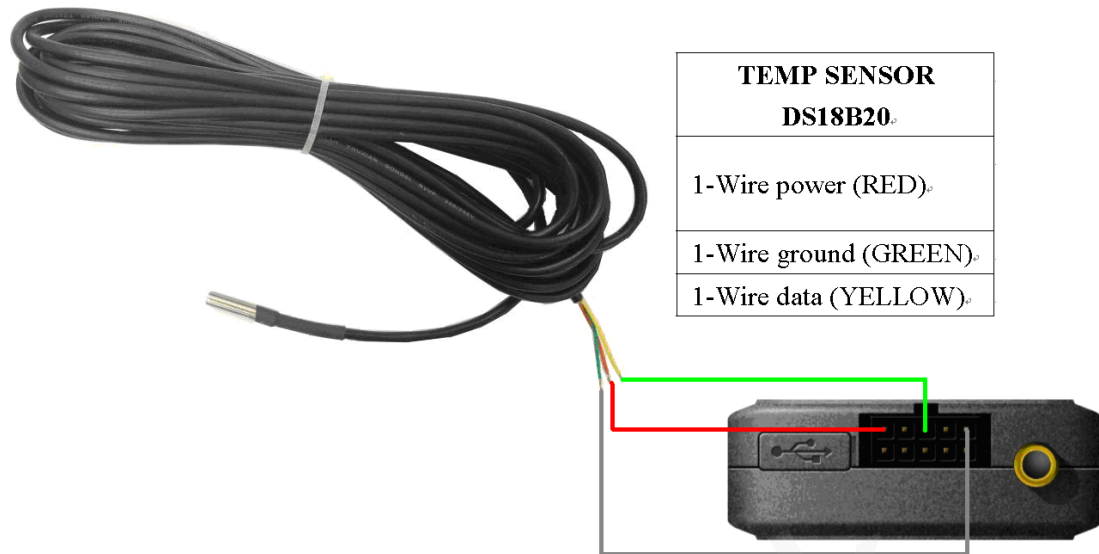


Figure 18. Typical Connection with Temperature Sensor

3.14. Motion Sensor Direction

GV65 Plus has an internal 3-axis accelerometer supporting driving behavior monitoring, power conservation and motion detection. The following is the direction of the motion sensor.

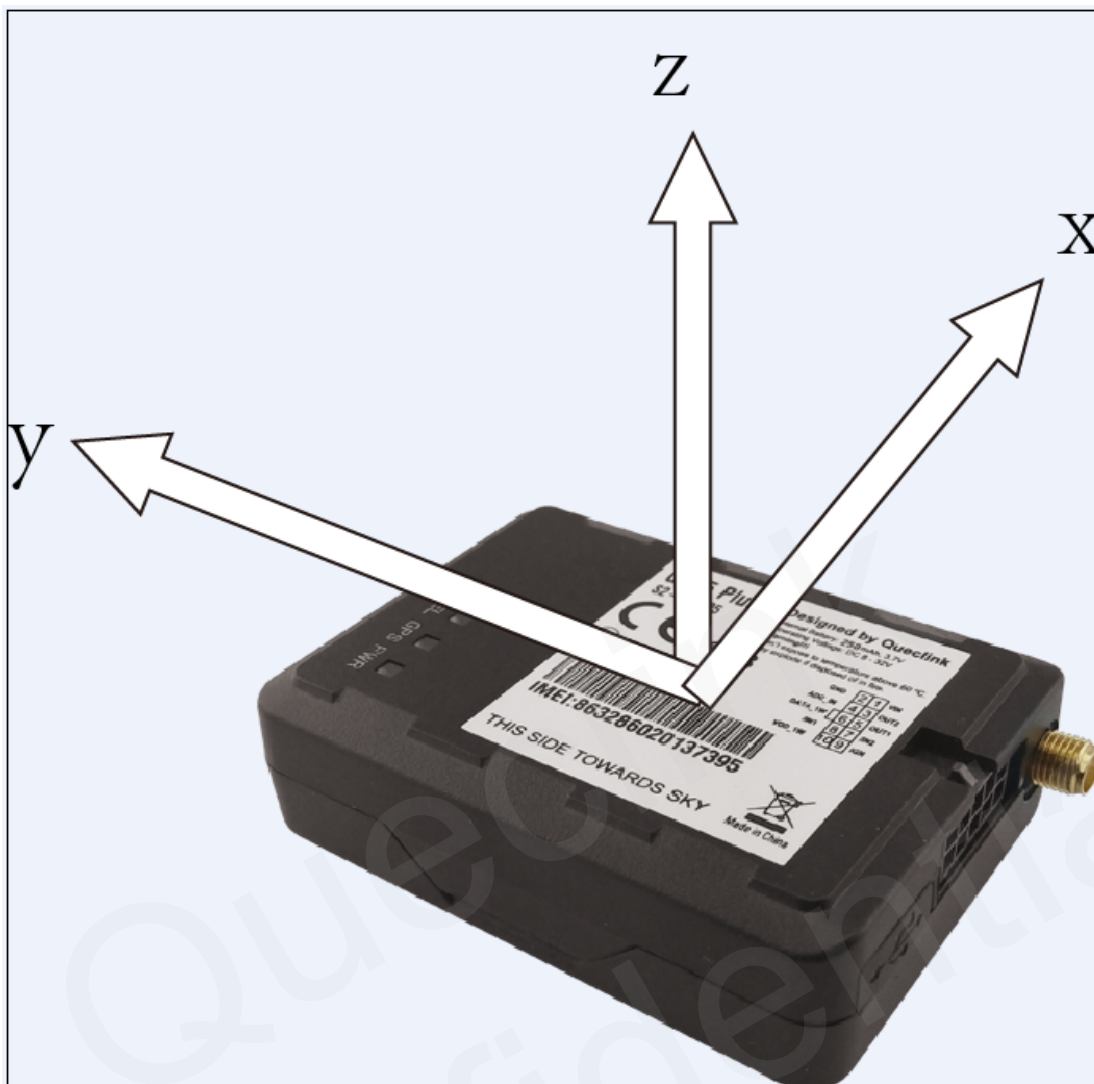


Figure 19. Motion sensor direction