



VT10

Vehicle GPS Tracker

Installation Instructions

V7.5

VT10 Vehicle Tracker

IMPORTANT – READ FIRST:

The purpose of this document is to establish the minimum standard required when installing TrackIt GPS devices in vehicles. The intention is to provide technical guidelines for cabling, connectors and componentry used in all installations to obtain a consistently high quality of workmanship across fleets nationwide.

1. A simcard has already been installed in the device.
2. Cut and dispose of any excess wiring in supply loom, staggering the lengths so as not to short against each other, the loom should then be insulated using insulation tape.
3. It is recommended to solder all wiring joints rather than crimping.
4. The earth (black wire) needs to be secured directly to the vehicle body (ground) to eliminate any feedback or interference with any of the vehicle's other circuits.

MAIN UNIT POWER SUPPLY

5. When installing the GPS TrackIt device, power supply to the unit should be taken from an uninterrupted battery power supply between 9-36V. 5A fuses **must** be added to the supply line (if not already included). The two red power supply wires can be spliced together as one wire. Power supply cannot be drawn from high fluctuating current circuits, particularly lighting circuits and hazard connections etc. Under no circumstances should power be taken from SRS or ABS systems.

IGNITION SWITCH SUPPLY

6. The ignition switch input on the TrackIt device must be fused and taken from a reliable supply. For example, directly from the vehicle's ignition switch or fuse box supply. It is not recommended to piggy-back an existing system such as a radio, heater, aircon etc as these circuits may backfeed (unless you use ferrite sleeves threaded through the main power loom) and create a false ignition alarm signal.

MAIN UNIT MOUNTING

7. When mounting the main unit the following points should be taken into consideration. The unit should be:
 - Positioned as close to the power source as possible thereby eliminating the need to run long lengths of wiring which may act as an antenna and cause electrical noise through the stereo.
 - Out of sight and not in a position where it can be easily tampered with.
 - Mounted securely to avoid vehicle shocks and vibrations.
 - In a dry area (ie not in the footwell which may become damp in wet weather)

ANTENNA MOUNTING (GPS)

8. When mounting the GPS antenna the following points should be taken into consideration. The GPS antenna should be:
 - Dome side up. Make sure GPS gets fix (blue LED flashes 0.1 second on and 2.9 seconds off). Blue LED stays 1 second on and 2 seconds off (can't get GPS fix) after the unit is turned on.
 - It must not have any metal covering the antenna or directly above it (pillars, roof,

dashboard brackets etc).

- Located as high as possible without being obvious.
- Kept away from AM/FM radio antenna. To avoid interference do not run the GPS/GSM antenna wiring along or over the AM/FM radio.
- Do not tie antennas with power loom – if this cannot be avoided, thread 1 x ferrite sleeve through red power loom. The ferrite sleeve works on eliminating interference especially with older radios.

ANTENNA MOUNTING (GSM)

9. When mounting the GSM antenna the following points should be taken into consideration. The GSM antenna should be:

- Ideally mounted at the base of the windscreen for maximum GSM reception. However, if an installation is covert and must be hidden the following should be taken into consideration:
- Make sure the unit is already connected to GSM network (Green LED flashes 0.1 second on and 2.9 seconds off). Green LED stays 1 second on and 2 seconds off (can't get GSM signal) after the unit is turned on.
- It must not have any metal covering the antenna or directly above it (pillars, roof, dashboard brackets etc).
- Located as high as possible without being obvious.
- Kept away from AM/FM radio antenna to avoid interference.
- Do not tie antennas with power loom – if this cannot be avoided, thread 1 x ferrite sleeve through red power loom. The ferrite sleeve works on eliminating interference especially with older radios.

INPUTS/OUTPUTS

10. The inputs/outputs on the device **MUST** comply with the following standards:

INPUT 1: SOS button (already wired)

INPUT 2: Crash sensor (optional)

INPUT 3: Car Alarm (optional)

INPUT 4: Ignition (MANDATORY)

INPUT 5: Door Sensor (optional)

OUTPUT 1: If a relay switch is being installed it **MUST** be wired to this output to immobilize the vehicle.

Once the device has been installed, please call (0508) TRACKIT and quote the D: number recorded on box. We can then complete the setup and confirm the unit is functioning correctly.

PLEASE NOTE: (AND ADVISE YOUR CUSTOMERS)

This device will draw a small amount of current which over a period of time will discharge your battery if the vehicle has prolonged periods of not being used. We strongly recommend that you attach a trickle charger to your vehicle whilst it is in storage to prevent your battery from being drained.

1. Product Overview

The VT10 is a GPS/GPRS based tracking device specially developed and designed for vehicle real-time tracking and fleet management. VT10 has inbuilt GPS module to obtain accurate position data and utilizes its GSM capability to send the position data to a specified mobile phone or server base for tracking and fleet management. With internal memory, VT10 can store GPS coordinates when there is no GPRS connection or at a specified interval requested by the user. One optional feature of VT10 is that a microphone can be linked out to be hidden somewhere inside the vehicle for listening to the cabin.

VT10 has the following functions and features:

- SMS and GPRS TCP/UDP Communication
- AGPS (with GSM Base Station ID)
- Track on Demand
- Track by Time Interval
- GSM Blind Area Memory
- Internal Memory for Logging
- Inbuilt Motion Sensor for Power Saving
- SOS Panic Button
- Movement Alarm
- Geo-fencing Control
- Low Battery Alarm
- Speeding Alarm
- GPS Blind Area Alarm (in/out)
- Power-cut Alarm
- Engine Cut (Stop Engine)
- I/O: 5 digital inputs (3 negative and 2 positive)



2 . For Your Safety

Read these simple guidelines. Not following them may be dangerous or illegal.

Proper Connection	When connecting with other devices, read the manuals carefully so as to carry out correct installation. Do not connect it to other incompatible devices.
Approved Parts	Use original parts, qualified batteries and peripheral equipment to avoid damage to VT10.
Safe Driving	Drivers should not operate this product while driving.
Qualified Service	Only qualified personnel can install or repair VT10.
Water Resistance	VT10 is not water resistant. Keep it dry. Install it inside the vehicle or use a waterproof bag if necessary.
Confidential Phone Number	For safety reasons, do not tell other people the mobile phone number of your VT10 without taking precautions of security settings.

3 . VT10 Characteristics

Items	Specification
Power Supply	+9V - +36V / 1.5A
Backup Battery	850mAh
Normal power consumption	85mA/h
Dimension	104mm x 62mm x 24mm
Installation Dimension	104mm x 83mm x 24mm
Weight	190g
Operating temperature	-20° to 55° C
Humidity	5% to 95% Non-condensing
Frequency	Quad Band GSM 850/900/1800/1900Mhz
GPS Module	latest GPS SIRF-Star III chipset
GPS Sensitivity	-158Db
GPS Frequency	L1, 1575.42 MHz
C/A Code	1.023 MHz chip rate
Channels	20 channel all-in-view tracking
Position Accuracy	10 meters, 2D RMS
Velocity Accuracy	0.1 m/s
Time Accuracy	1 us synchronized to GPS time
Default datum	WGS-84
Reacquisition	0.1 sec., average
Hot start	1 sec., average
Warm start	38 sec., average
Cold start	42 sec., average
Altitude Limit	18,000 meters (60,000 feet) max.
Velocity Limit	515 meters/second (1000 knots) max.
LED	2 LED lights to show GPS/GSM status.
Flash Memory	4MB
Button	One SOS Button
Interface	5 digital inputs (3 negative and 2 positive triggering); 2 analog inputs; 5 outputs.

4 . Getting Started

This section will describe how to set up your VT10.

4.1 Hardware and Accessories

VT10 is supplied in a box which includes:



VT10 with Battery GPS Antenna GSM Antenna Wires with SOS Button

4.2 View

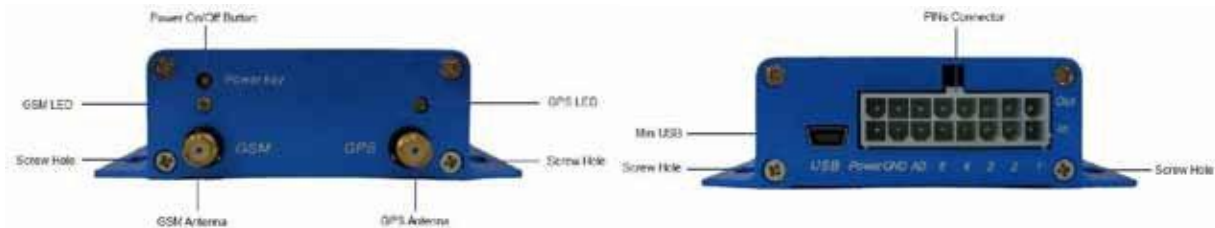


Front View

Side View

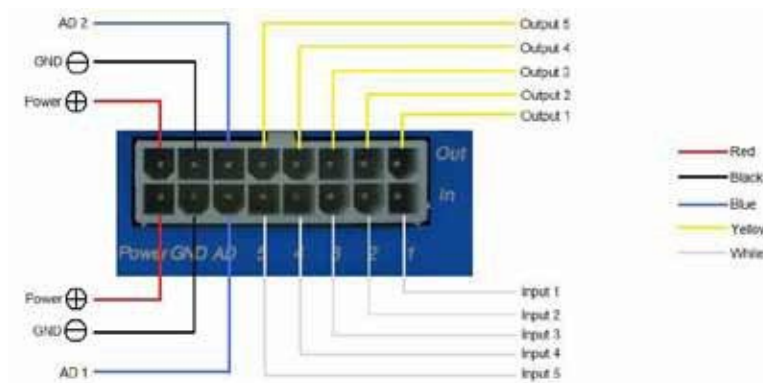
Back View

4.3 Functional Parts



GPS LED (Blue)	
On	One button is pressed or input is active.
Flashing (every 0.1 second)	The unit is being initialized
Flashing (0.1 second on and 2.9 seconds off)	VT10 has a GPS fix
Flashing (1 second on and 2 seconds off)	VT10 has no GPS fix
GSM LED (Green)	
On	One call is coming in / one call is being made
Flashing (every 0.1 second)	The unit is being initialized
Flashing (0.1 second on and 2.9 seconds off)	VT10 is connected to the GSM network
Flashing (1 second on and 2 seconds off)	VT10 is not connected to the GSM network
Power On/Off Button	Press and hold for 3~5 seconds to turn on/off VT10.
SOS Button	SOS button is connected with the wires. Press it to send SOS alarm to the preauthorized phone number.
Mini USB	Used for firmware update, configuration on PC and exporting stored data. (USB-to-Serial Adaptor is required for firmware update, configuration and exporting stored data)
SIM Card Holder	To insert SIM card here
GSM Antenna	Connector for GSM antenna
GPS Antenna	Connector for GPS antenna
Screw Holes	There are 4 screw holes on the tracker, 2 along either side that act as fixing points to the vehicle

PINs Connector



PIN	Color	Function
Power	Red	DC In (power input). Input voltage: 9V~36V. 12V suggested.
GND	Black	Ground
In	White	Digital Inputs. In1, In2 and In3 are negative triggering; In4 and In5 are positive triggering.
Out	Yellow	Outputs. Low voltage (0V) when effective and open drain when ineffective. Output open drain sink voltage (ineffective): 45V max. Output low voltage sink current (effective): 500mA max.
AD	Blue	10 Bits Resolution Analog Inputs. Input voltage: 0~6V.

DC Characteristics of PINs

PIN	In active	Active	Maximum
Input 1/2/3	Open drain or >1V	0V(GND)	45V
Input 4/5	Open drain or 0V(GND)	>3V	45V
Output 1/2/3/4/5	Open drain	0V (GND)	45V/500mA
DC IN	/	9-36V	45V

4.4 Connecting and Installation

Read this manual before using your VT10 and check if all parts are included in the packaging box.

4.4.1 Ensure that your VT10 has a working SIM installed.

- Check that the SIM is active (test the SIM in a phone to make sure it can send and receive SMS)
- If you require the function of sending an SMS location report to the authorized phone number when it makes a call to the VT10, please make sure the SIM installed supports displaying caller ID.

Before inserting SIM card, cut off the power for VT10.

Install SIM Card

- Unscrew and remove the front cover of VT10.
- Insert the SIM card by sliding it into the card slot with the chip module facing to the connectors on PCB.
- Put back the front cover and screw it up.

4.4.2 Antenna Connection

Connect the GSM Antenna to VT10.

Connect the GPS Antenna to VT10.

- GPS antenna is used to receive satellite signals in the sky. It should be fixed to face the sky (to be placed under the windscreen is recommended) and should not be covered or shielded by any objects containing metal.

4.4.3 Find a suitable place inside the car for installing VT10. Wiring connections must be firm and reliable and the joints should be wrapped with insulating tape tightly. The unused electrical wire should be properly insulated.

Check if all wirings have been connected correctly and then connect the AVL unit to the motor power.

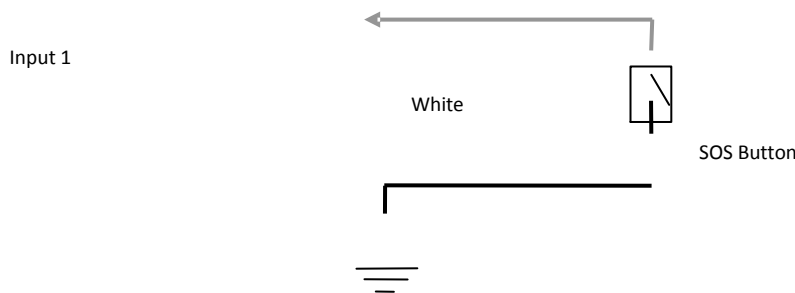
Make a missed phone call the VT10 using a mobile phone to check if the calling can go through and the VT10 replies with an SMS indicating longitude, latitude, speed and date.



5 . Application Examples for Inputs

5.1 SOS Button Connection

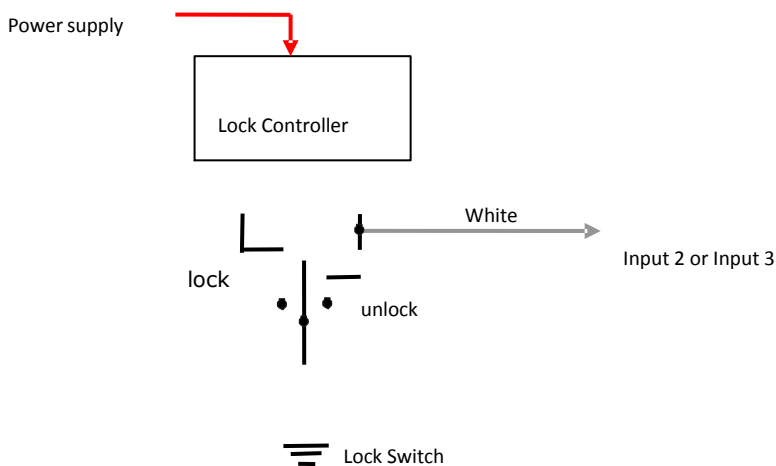
Connect the SOS button and wires as below picture shows:



Note: input voltage to Input must not over 45V

(Note: An SOS button is already connected to VT10 in standard packing)

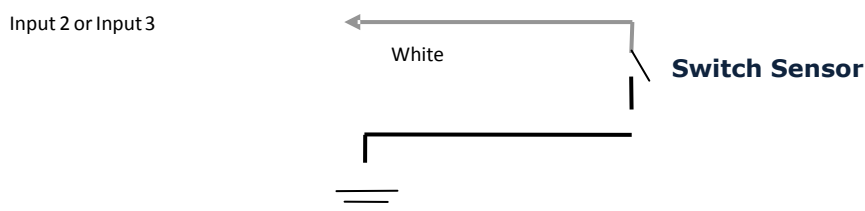
5.2 Detecting Lock Status of Car's Door or Trunk (Car Boot).



When the lock is opened, there will be negative triggering to Input 2 or Input 3.

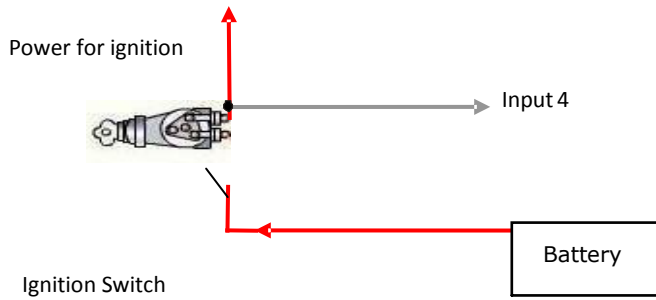
5.3 Connecting with Switch Sensors

The SMS alarm will be sent to the authorized phone number.



5.4 Ignition Detection

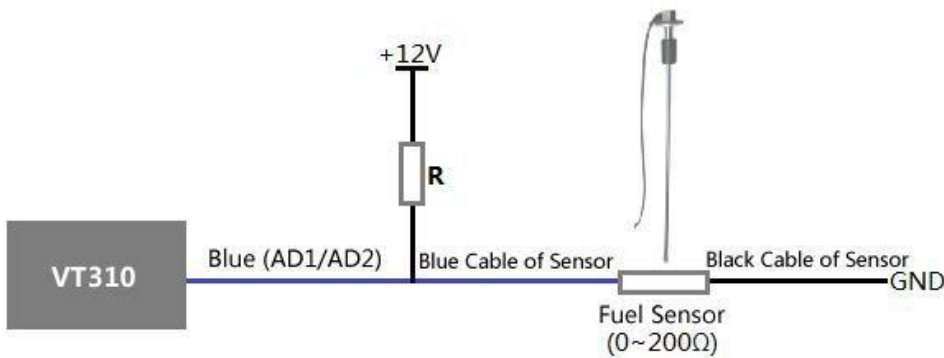
Input 4 (positive triggering) should be used for ignition detection.



5.5 Analog Input (AD1 and AD2)

Input voltage should be 0~6V.

Application Example - Fuel Level Sensor



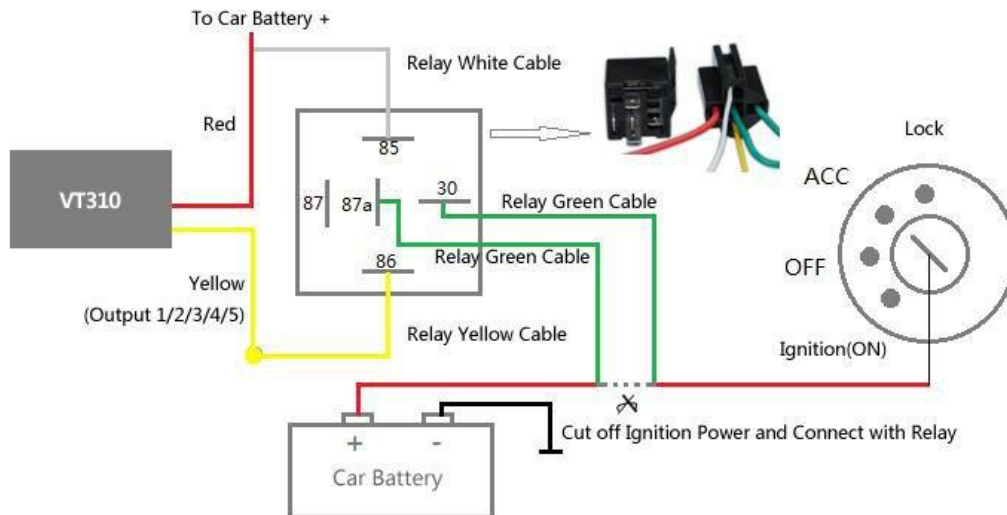
Fuel level sensors supplied by us are resistance-type sensors with output resistance: 0-200Ω(ohm).

For the circuit shown on the right picture, if VCC is 12V, R should be 200Ω (ohm) and if VCC is 24V then R should be 600Ω(ohm) to make the input range to AD1 or AD2 is 0-6V.

Below formula is for calculating the fuel percentage left for this fuel level sensor:

$$\text{Percentage Left} = \frac{\text{AD value}}{1024*2 - \text{AD value}} * 100\%$$

Note: The value must be converted into decimal, for example, 0x0267 is 615 in decimal.



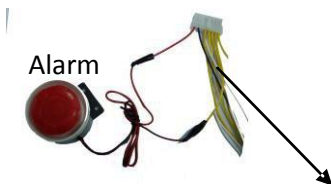
Calculate the correct VCC value according to relays parameter to comply with the following requirements:

Output open drain sink voltage (ineffective)	45V max
Output Low voltage sink current (effective)	500mA max

Normally two green wires are connected solidly (P1 and P2 are Normal Close[NC] in the relay), when output is open (Output be low voltage), two green wires will disconnect, the engine is then cut.

5.6 Connecting with Car Alarm

When the Output that connected to the car alarm is open, the alarm will start to work.



Output 3

Contacts

If you encounter any problems when using our products, and cannot solve them by yourself, please contact our technical support team by emailing support@trackit.co.nz. We will be pleased to help you.

VT10 Vehicle Tracker

IMPORTANT – BEFORE THE VEHICLE LEAVES YOUR WORKSHOP:

CALL the TrackIt Team (0508) TRACKIT and provide the device number/mobile or company/customer name to ensure the unit has been set up correctly for the customer.

You will also need to the following information to ensure the customer can monitor the unit:

Customer Name:

Company Name (if applicable):

Customer Phone Number:

Customer Email Address:

Customer Billing Address:

Payment Details: ie Credit Card Details