GVT-430

GPS Vehicle Positioning Tracker

User Manual V1.1

Contents

1. Products Overview

Tracker is a GPS/ GPRS based tracking device designed for heavy motorbike, intercity bus，school bus and fleet management And support WCDMA 3 G network.

It has built-in terminals of GPS module and GSM communication module, which are used for getting the location data and send it to authorized phone number via SMS, and tracking through free maps Google Earth or Google Map; at the same time, the GSM module can be sent data to the internet server, which can realize the checking, monitoring and managing of the device on computer.

2. For Your Safety

Read these simple guidelines. Not following them may damage to the tracker or not perform proper function of application.

Correct Connection	When connecting with other tracker, read carefully its manual so as to carry out correct installation. Do not connect it to other incompatible trackers.
Chosen Accessories	Use our chosen accessories to avoid damage to tracker.
Hidden Installation	In order to avoid damage by external force intentionally, please install tracker in a hidden place.
Protect from blasting	Follow related restrictions. Do not use tracker when blasting is in progress.
Repair and service	Only qualified engineer with technical support can repair tracker.

3. Tracker Characteristics

- 3G WCAMA
- SMS /GPRS tracking (support TCP/UDP)
- External GPS&GSM antenna (optional built in GPS & GSM antenna)
- Wide voltage range input 9-90v (for high power and electric motorcycle application)
- WiFi positioning (Optional)
- External battery 20,000 mAh for long time continuous secret tracking (Optional)
- Geo-fence alarm
- Overspeed detection
- Ignition detection
- ACC detection
- GPS antenna cut off /external power off alarm

Items	Specification
Charging Voltage	DC 9-90V/1.5A
Working current	70mA
Internal memory	8M
Dimension	88mm X 50mm X 20mm
Weight	90g
Built-in battery	820mAh
Operating Temperature	-20 ～ +55 °C
GSM Module	GSM850MHZ/EGSM900MHz/DCS1800MHz/PCS1900MHz WCDMA900MHz/WCDMA2100MHz * Two types of modules, when using, must confirm local 2 g (GSM) and the frequency of 3 g (WCDMA)
GPS Chipset	Ublox chipset
GPS Sensitivity	-161dB
GPS Frequency	L1, 1575.42 MHz
C/A Code	1.023 MHz
Channels	50 Channels
Position Accuracy	<10 M, 2D RMS
Velocity Accuracy	0.1 M/S
Time Accuracy	Satellite Time :1 millisecond time synchronization
Update Time	Average 0.1 second
Hot Start up	Average 1 second
Warm Start up	Average 31second
Cold Start up	Average 29 second
Cold Start up Max.	Altitude 18,000m (Max. 60,000 ft)
Max. Speed	515 m/s (max.1000 knots).
Max. Acceleration	Less than 4g
LED	Three LED for showing states of power、GPS、 GSM

4. Getting Started

This section will describe how to use the tracker.

4.1 Hardware and Accessories

GPS antenna

GSM antenna

external power connecting wire

4.2 Function key and Interfaces

The external GSM antenna port

The external GPS antenna port

4.3 LED indicator light and wire

Red LED- Power	
Always on	Charging
1s on and 3s off	Normally work
Blue LED- GSM	
0.3s on and 0.3s off	GSM module is initializing
Always on	Failed to registered network
1s on and 3s off	GSM module is registered network
0.1s on and 3s off	GSM module is registered network and GPRS function works well

Orange LED- GPS	
0.3s on and 0.3s off	GPS module initializing
1s on and 3s off	GPS module works well, but GPS position is not fixed
0.1s on and 3s off	GPS module works well and GPS position is fixed
port	
The external GSM antenna port	Connect the GPS antenna
The external GPS antenna port	Connect the GSM antenna
The external power connecting port	Connect the device

4.4 First Start

Please read this manual before using tracker and check if all parts are included in the packaging box.

4.4.1 Ensure that your tracker has a working SIM card.

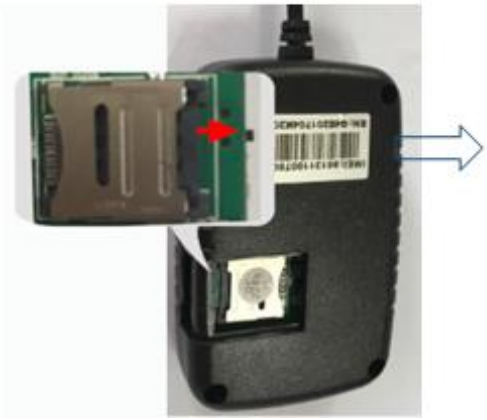
- Check that the SIM card has not run out of credit (Test the SIM card in a phone to make sure it can send and receive SMS)

- Check that lock code of the SIM card is turned off.

- If you require the function of sending an SMS location report to the authorized phone number when it makes a call to the tracker, please make sure the SIM card installed supports displaying caller ID.

4.4.2 Install SIM card and turn on, see pictures below:

1. Open the SIM holder and Insert SIM card



2. Turn on the switch behind the SIM card

3. Install the cover of the SIM card

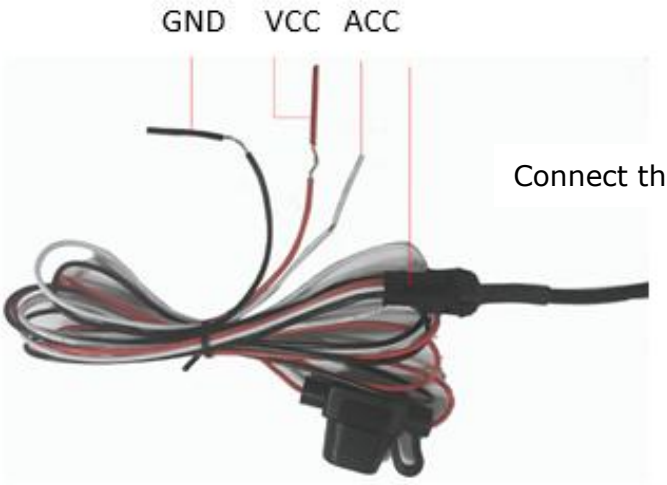
4.4.3 Install GSM antenna and GPS antenna, see pictures below:

GPS antenna

GSM antenna

When installing the antenna, please note that different antennas correspond to different port.

4.4.4 Install external power connecting wire



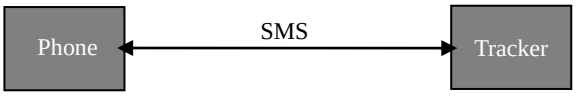
Connect the device

The external power connecting wire Connection method:	One end: black line、red line and white line connected to the corresponding position of the vehicle.
	The other end: Connect the device to the external power connecting port
The main purpose of the external power connecting wire:	1. After started, the vehicle charge the device.
	2. Vehicle ignition detection

5. Parameter Configuration

There are 3 ways to set parameter: set by SMS, set by GPRS.

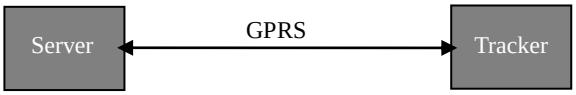
5.1 Set by SMS



Users can set the parameter of tracker by mobile phone SMS, see <command list> from the <Communication protocol>.

Note: all commands are SMS commands in this manual.

5.2 Set by GPRS.



Users can set the parameter of tracker by server, see <command list> from the <Communication protocol>.

6. Change Password

SMS Command: $SMS,000000;W001,123456;!
Describe: change user password
Explain:
All the SMS commands must be capitalized and please switch to English input method when you edit.

1. ‘000000’ is user’s password, the default password is ‘000000’. Device will only accept commands from a user with the correct password. Otherwise command will be ignored
2. ‘123456’ is the new password, password must be 6 digits

For example: $SMS,000000;W001,123456;!

7. Authorized number

SMS Command: $SMS,000000;W010,NO.,Phone Number,ABC;!

Description: Set authorized phone number and its related functions

Explain:

NO.: authorized number's serial number, range of: 1~3

Phone Number: authorized number, range of: 0~19 characters

A: range of: 0~1; when the parameter 'A' is 0, it means disable Geo-fence alarm, otherwise it means enable Geo-fence alarm. Default is 0

B: range of: 0~1; No monitoring function, Default is 0

C: range of: 0~1; No SOS emergency calling function, Default is 0

For example:

Read authorized No.1 and it's related authority：$SMS,000000;R010,1;!

Clear authorized No.1 and it's related authority：$SMS,000000;C010,1;!

Read all authorized number：$SMS,000000;R010;!

Clear all authorized number：$SMS,000000;C010;!

8. Three kinds of tracking mode

SMS Command: $SMS,000000;W016,X;!

Description: there are three kinds of mode: personal mode, smart mode, vehicle mode.

Explain:

X: tracker's work mode. Range of: 0~2 (0 means personal mode, 1 means smart mode, 2 means vehicle mode). Default: 1.

- **Personal mode**: When there are new data or alarms, GPS turns on the positioning function automatically. No matter the positioning succeeds or fails, GPS turns off the positioning function automatically, and upload new data or send out alert message.
- **Smart mode**: GPS always turn on when device is move; otherwise only when there are new data or alarms, GPS turns on the positioning function automatically. No matter the positioning succeeds or fails, GPS turns off the positioning function automatically, and upload new data or send out alert message.
- **Vehicle mode**: GPS always turn on whether tracker move or not.

Example:

$SMS,000000;W016,1;!

Read device mode:$SMS,000000;W016,1;!

Clear device mode:$SMS,000000;W016,1;!

9. Tracking by GPRS

SMS Command: $SMS,000000;W002,APN,Username,Password;W003,IP,Port;W004,ID;W005,X;W009,Y;!
Description: enable GPRS tracking function.
Explain:

1. APN: access point name of network
2. Username and Password are optional. If you don't know what they are, please just input APN only
3. APN + Username + Password should not be over 64 characters
4. IP: server' IP address or domain name
5. Port: Max. 65535
6. ID: device ID
7. X: GPRS upload interval, unit is 30s,X=1: Set the upload interval is Each every 30 send once.
8. Y: GPRS upload mode, range of: 0~20 means disable GPRS function, 1 means upload by TCP, 2 means upload by UDP

Example:$SMS,000000;W002,cmnet,,;W003,192.168.1.1,8088;W005,60;W009,1;!

10. Geo-fence

SMS command:

$SMS,000000;W018, NO.,name,lat,lng,radius;!

Describe: enable Geo-fence alarm. When the tracker moves in/out the preset geo-fence, tracker will send an alarm by SMS to the authorized number and send this data to server if GPRS is connected.

Explain:

NO.: serial number for geo-fence must be 1 to 5

name: max. 10 characters

lat: Latitude, format is dd.dddddd, the unit is degree, if it is northern latitude, minus is needed. Otherwise, omit it

lng: Longitude, formats is ddd.dddddd, the unit is degree, if it is east longitude, minus is needed. Otherwise, omit it

radius: Max. 99999.00, the unit is Km

Based on preset longitude and latitude as the center of the circle, and the preset radius, a circle is defined.

For example:

$SMS,000000;W018,1,school,22.12345,114.12345,10.50;!

$SMS,000000;W018,2,office,12.12345,-45.12354,10.75;!

11. Set the time zone

Set the time zone of SMS

SMS command:

$SMS,000000;W020,X;!

Describe: Choose time zone of SMS, time zone default is GMT 0.

Explain:

X=time zone value, please plus " - " in front if it is a negative, otherwise, ignore it. Unit is minutes (New York's time zone is -300minutes)

For example:

$SMS,000000;W020,480;!

12. Tracking by distance or angle

SMS Command: $SMS,000000;W006,X;W007,Y;!

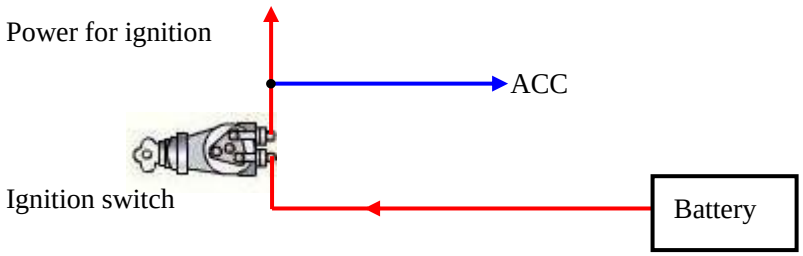
Describe: this command used for enable this function.

X is distance value, unit is meter; Y is angle value, unit is degree (Suggest X=150 Y=20)

For example:

$SMS,000000;W006,100;W007,15;!

13. Input application/Ignition detector



ACC used for ignition detection. The detection flag and alarm will be sent to the server through GPRS when flag changes. Please refer to <GPRS Communication Protocol> for more information.

14. Low battery alarm and automatically Power on/off

When the battery level is lower than 15%, it will send SMS to all authorized numbers or send alarm data to server. Tracker will be off automatically

if the power level is 0%; during charging, tracker will automatically switch on when power level is higher than 15%, and send a warning SMS to all authorized number.

15. Timer Switch

SMS Command:$SMS,000000;W038,on time,off time;!

Description: set the timer switch

Explain:

on time: timing boot time, range of:00:00~23:59,default: 00:00.

off time: timing shutdown time, range of:00:00~23:59,default: 00:00.

For example: $SMS,000000;W038,08:00,20:00;!

This command means to boot up at 08:00 and shutdown at 20:00.

16. Problems & Diagnostics

Problem: Tracker can not turn on	
Possible cause	Solution
Low power	Charging
Problem: Tracker can not reply with SMS	
Possible cause	Solution
GSM network is busy	Please wait a moment. Tracker maybe not react instantly when GSM network is busy or tracker is in failure.
Wrong password in your SMS or wrong SMS format	Write correct password or SMS format.

The SIM card has run out of credit		Replace or recharge value of the SIM card.
SIM card is damaged or warped		Inspect SIM, and clean the contact. If re-inserting does not help, try another one.
Problem: tracker cannot get the GPS location		
Possible cause		Solution
As a vehicle tracker	GPS external antenna is not installed	Install GPS external antenna.
	GPS external antenna is incorrectly installed	Reinstall GPS external antenna correctly (see 4.3.First start).
As a personal tracker	The GPS signal is weak.	Move the unit to a location where the sky is visible. Tall buildings, trees, and heavy rain, can cause problems with the GPS reception.
	The front side of tracker is down	Place the front side of tracker towards clear sky.
Problem: Tracker Fails to Connect to Server via GPRS		
Possible cause		Solution
SIM card in tracker does not support GPRS function		Enable SIM card GPRS function.
GPRS function of tracker is turned off		Turn on GPRS function of tracker.
Incorrect IP address or PORT		Get the right IP address and PORT and reset to tracker.
GSM signal is weak		Move the tracker to a location with good GSM reception.