

# GPS Vehicle Tracker GPS300

## **Operating Instruction**

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## **Working Directions**

Thank you for your purchase of GPS300 Automatic Vehicle Tracker. In order to realize the full functions of this product, please read this manual carefully before starting to use the product.

1. This product can only be maintained and repaired by qualified professional service personnel. If you detach this product for maintenance or repair, your warranty will be invalidated.
2. When connecting the other devices, read carefully their instruction manuals ,so as to carry out correct installation; do not connect incompatible device.
3. Please use genuine original parts and qualified batteries and peripheral equipments, so as to avoid damage to this product.
4. As this product is a high-tech product, please read carefully this manual before starting to use the product, so as to avoid inappropriate operation.
5. Drivers should not operate this product while driving a vehicle, thereby ,affecting safe driving.
6. This product can work properly only when GSM communication is in good condition.
7. Please reduce electromagnetic wave interference to the product; and use it properly.
8. GPS communication is liable to be affected by environmental shielding; may fail to carry out positioning during certain circumstances. It will resume the positioning function as soon as it leaves the shielding environment. This is normal. Please do not worry when encountering such problem.
9. Each signal sent out from the system will be confirmed for successful transmission in the base station of the mobile operator. However, if system stoppage occurs or if the mobile telephone is preset to a switch off state by the customer, it cannot ensure successful transmission.
10. For safety reason, do not tell the other people your GPS300 mobile number ,without taking precautions. Otherwise, your privacy may be compromised along with other safety problem.

## **System Introduction**

GPS300 is a high-tech product through cooperation with mobile operators. It combines GPS Global Positioning System and GSM/GPRS communication system, which can clearly inform you the position & situation of your car.

GPS is the abbreviation for Global Positioning System, which based on 24 position location satellites around the earth orbit. Their locating precision can be kept within 10 to 15 meters.

GSM is the second digital mobile communication system (GPRS, second and fifth digital mobile communication system), and at present it is the mobile communication system that has the largest coverage and owns the most number of users. This product combines GPS and GSM/GPRS technologies together. It uses GPS system to locate your car, and sends the position/ situation report back to you via GSM/GPRS communication system. Following are the function descriptions for the GPS300 products.

### **GPS Position Tracking Function**

With this function, the vehicle owner will be able to know the geographic coordinates, direction, and other related information of the car anytime in any place. The report methods can be via SMS short message service. You can also select a one time report or continuous report (tracking function).

## **Wiring Installation**

### **Product Parts List**

1. 1x AVL Panel
2. 1x GPS Antenna
3. 1x GSM Antenna
4. 1x Connection wires

### **Precaution before Installation**

1. Check if all the parts are included.
2. Prepare a SIM card for GSM communication. Use some other mobile phone to confirm that the PIN code has not been set, and that it can dial out and receive telephone calls without problem.
3. Before install the SIM card, make sure to cut off power from the AVL unit. The correct installation method is to push the tray completely into the AVL unit, until you feel it is hooked by something
4. Find a suitable place inside the car for installing the unit.
5. Check if all the wiring has been connected correctly; then connect the AVL unit to the power source.

## **Installation**

### **Step 1: Install GSM Antenna**

\* Connect the GSM Antenna to the unit.

\* Fasten the connection by turning the screw in the bottom. Please do not swing round the antenna itself.

### **Step 2: Install SIM Card**

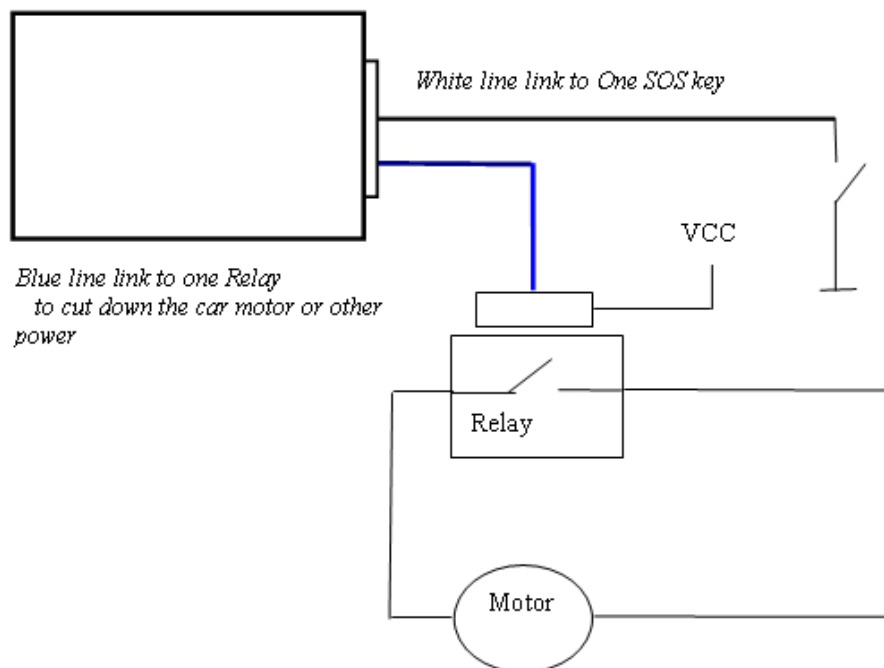
- Unscrew and remove the front cover of your locator.
- Insert the SIM card by sliding it into the card holder slot, with the chip module facing to the connectors on PCB, as direction shown in the picture.
- Put back the front cover and screw it up.
- Make sure to turn off the power before install the SIM card.
- Make sure to deactivate the PIN code, so that the SIM card can operate without PIN protection.
- Before install the SIM card to the GPS Tracker, please use a mobile phone to make sure the SIM card can make & receive phone calls without problem.
- Before install the SIM card to the GPS Tracker, please use a mobile phone to empty the SMS storage of the SIM card.

### Step 3: Connect GSM Antenna

### Step 4: Connect GPS Antenna

- GPS antenna is used to receive satellite signals in the sky. It should be positioned at a place where it will have an unobstructed view of the sky. The ideal location is top of the dashboard or close to the rear window of the car.
- GPS antenna can pick up signals through glass and plastic, but will not “see the sky” through metal or other conductive surfaces. To avoid distractions of GPS signal, make sure the antenna is not covered or shielded by any object containing metal, such as the metallic windshield.
- If your car is with metallic windshield, please cut a hole on the windshield above the place where you put the GPS antenna, so that the antenna can receive the GPS signals.

### Step 5: Connect power charging



### OUT1 Pin operation:

Connect the relay as above picture show, and calculate the correct VCC value according to the relay parameter to make sure to following requirement:

Out1 Input voltage	Must < 50V
Out1 input current	Must < 500mA

Send one following SMS to give the relay the current to drive it : **W\*\*\*\*\* ,020,1,1**

Send one following SMS to cut off the current of the relay.:

**W\*\*\*\*\*020,1,0**

### **IN Pin operation:**

Connect one SOS key as above picture show.

Send one following SMS to set SOS alarm phone number of aid center

**W\*\*\*\*\*003,1,1,Tel number**

Tel number: the SOS alarm phone number of aid centre , like 008613682400000

When someone press the SOS key, the aid centre will receive the SOS Alarm SMS ---- “ SOS Alarm”

### **Wiring Description**

- Connect the wiring correctly.
- The AVL unit should be connected to power source, after all the wiring work has been completed and checked.
- GPS antenna is used to receive satellite signals in the sky. It should be fixed to face the sky; and should not be covered or shielded by any object containing metal, such as the metallic windshield.
- 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.

### **Description of the LED Indicators**

SYSTEM STATE (RED LAMP)	
Flash	Work normally
Constant Glow	Charging
Constant Dark	In trouble or no power

### **Inspection Item after Installation**

After connected to the power source, the RED LED Indicator should be “constant glow” or “Flash”.

## **Operating Instructions**

### **Position Report Function**

No matter where you are, when you want to know the position of your vehicle, send a SMS message or make a telephone call to the GPS300. It will report its location back to you by SMS .

Edit a message as following format, then send it to PT300:

**Format: W+Password+, +000 ( init password is : 000000)**

For example: W000000,000

The GPS300 send back one SMS ,which including the position information

Position Data means :

Longitude = 114 degree - 14 cent - 58.74 second

Latitude = 22 degree - 33 cent - 41.05 second

**Tips:** Apply for one position service by another easier way:

Make a cell phone call to GPS300, After listening the ring of GPS300, hold off the dialup Then, after 10 second, the cell phone will receive the Position SMS.

### **Tracking Function**

Tracking report function can be turned on or off according to the requirements of the user. Tracking function will continually report vehicle position until it get stop command .In this tracking module , GPS300 will send one position message at a preset time interval.

**Step 1:** Edit a message as following format, then send it to GPS300:

**W+Password+,+002,+XXX**

(Note : XXX Unit: preset minute interval -- if XXX=000 it is STOP tracking)

For example : W000000,002,005 (Its means that GPS300 will send Position Data every 5 minute.)

**Step 2:** GPS300 will send back one SMS-----Set Time (preset time interval) OK.

In this example, the SMS is Set Time (005 Min) OK

This SMS means that GPS300 is in tracking mode now and preset time interval is 5 minutes.

**Step 3:** GPS300 will send back position SMS at preset time interval.

In this example, the SMS will send back at preset time interval :5 minutes

### **Stop tracking function.**

This function is used to turn off tracking report function.

Edit a message as following format, then send it to GPS300:

**Format: W+passwaord+,+002+,+000**

For example : W000000,002,000

The GPS300 will reply by one SMS-----Stop Timer OK. This message means tracking report function is turned off.

### **Displaying location on map**

**Download Google earth software from <http://earth.google.com/>**

#### **Start the Google Earth software.**

For more information about Google Earth software, please refer to <http://earth.google.com/> or you can start the Internet Explorer and type "http://maps.google.com" to connect to Google Map website for displaying the location map.

### Get the latitude & longitude.

You can get the latitude & longitude data by sending “W+Password+, +000” SMS command Code to the GPS Tracker GPS300. Input the latitude and longitude that you receive from SMS and click on search button. The Google earth will display the location map for you. Or you can use local map software on PDA or Car Navigation Device , input the Position Data.

### Hardware Specifications

Feature	Characteristics
Power Supply	+9V to +40V
Power Consumption For VBATT	Active mode(peak) < 1.0A Active mode(avg.) < 300mA Idle mode < 50mA Sleep mode < 5mA
Operating Temperature Range	-20°C to +60°C
Storage Temperature Range	-20°C to +70°C
Humidity	Up to 75% non-condensing
External Antenna	Connected via the 50Ω coax connector
External SIM Card	Connected via SIM Card connector
SIM card type	3V
Transmit Power	Class 4(2W) for E-GSM 900 and 850 Class 1(1W) for DCS 1800 Class 1(1W) for PCS 1900
Sensitivity	-104 dBm minimum for E-GSM 900 and 850 -102 dBm minimum for DCS 1800 -102 dBm minimum for PCS 1900
Speech Codec	Triple rate Codec: Half rate –ETS 06.20 Full rate –ETS 06.10 Enhance Full rate-ETS 06.50/06.06/06.08
GPRS	Multi-slot Class 8(4Rx , 1Tx , 5 slot Max.) Support all 4 coding schemes(CS-1, CS-2, CS-3 and CS-4) ● Maximum download speed is 85.6kbps ● Maximum upload speed is 21.4kbps
Circuit-Switched Data Rate	14.4kbps
Interface	Full duplex 3V CMOS-level Serial interface for AT commands protocol
Dimensions	11.4 x 8 x 2 (cm)

## More Professional SMS Instruction

\*\*\*\*\* is user password, and init password is 000000

SMS Instruction	Format	Note
Request one position	W*****,000	
Modify user password	W*****,001,#####	***** is old password ##### is new password
Set the time internal of position refresh	W*****,002,XXX	<b>XXX</b> (3 digital) =000,stop =[1,999] time internal (unit: mins)
Set a preset phone number for SOS button/ Call B button/ Call C button; When this button is pressed, GPS300 will dial the preset number.	W*****,003,1,1,TelNumber	<b>TelNumber:</b> Preset Tel number (TelNumber must < 16 digits)
Set low power alarm When the GPS300 voltage is lower than the preset value, GPS300 will send one lower power alarm SMS to the SOS preset number.	W*****,004,X	<b>X</b> (voltage preset value) =0 , close =1 , <3.3V send SMS alarm =2 , <3.4V send SMS alarm =3 , <3.5V send SMS alarm (default) =4 , <3.6V send SMS alarm =5 , <3.7V send SMS alarm
Set over speed alarm When the GPS300 speed higher than the preset value, GPS300 will send one over speed alarm SMS to the SOS preset number.	W*****,005,XX	<b>XX</b> (the speed preset value) =00 , close =[01<XX<20] (unit: 10Km)
Set Geo-fence alarm When the GPS300 move out preset scope, GPS300 will send one Geo-fence SMS to the SOS preset number.	W*****,006,XX	<b>XX</b> ( preset distance to original place ) =00 close =01 30m =02 50m =03 100m =04 200m =05 300m =06 500m =07 1000m =08 2000m
Extend setting <b>Note:</b> Please use this instruction carefully)	W*****,008,ABCDE FG###	<b>A</b> =0: Close position report function which get position SMS by Calling PT300 <b>A</b> =1: Open position report function which get position SMS by Calling PT300 <b>B</b> =0: Position SMS format be analyzed

		<p>in order to read easily.          For example:          Longitude = 114 degree - 04 cent -57.74 second          Latitude = 22 degree - 32 cent - 40.05 second  <b>B=1</b>: Position SMS format is NMEA 0183 Format.          For example:          \$GPRMC,072414.000,V,3114.3763,N,12131.3255,E,0.00,0.00,050805,*00  <b>C=0</b>: GPS300 do NOT hung up when one call incoming .  <b>C=1</b>: GPS300 hung up after 4~5 rings when call incoming  <b>D=0</b>: GPS300 do NOT send one notice SMS to SOS preset number when the GPS300 power on  <b>D=1</b>: GPS300 do send one notice SMS to SOS preset number when the PT300 power on  <b>E=0</b>: GPS300 do NOT shut down automatically when the power voltage lower than 3V  <b>E=1</b>: GPS300 will shut down automatically when the power voltage lower than 3V  <b>F=0</b>: GPS300 do NOT send the notice SMS to the SOS preset number when the GPS signal is weak  <b>F=1</b>: GPS300 send the notice SMS to the SOS preset number when the GPS signal is weak          ####: end char</p>
<p><b>Default value:</b> ABCDEFG=1011110</p>		
<p>Set sleep mode for saving power.</p>	<p>W*****,021,XX####</p>	<p><b>XX=00</b> close sleep mode  <b>XX=01</b> sleep  <b>XX=02</b> deep sleep</p>
<p><b>GPRS setting</b></p>		
<p>Set the tracker ID for GPRS</p>	<p>W*****,010,ID</p>	<p><b>ID</b>: telephone number according the SIM card of GPS300 or other number (ID must be &lt; 14 digits)</p>

Set APN	W*****,011,APN	<b>APN:</b> APN string
Set IP Address &port number	W*****,012,IP,POR T	<b>IP:</b> xxx.xxx.xxx.xxx <b>PORT:</b> [1,65536]
Open / Close GPRS function	W*****,013,X	<b>X=0</b> close GPRS (Default) <b>X=1</b> open TCP <b>X=2</b> open UDP
Set time interval of send a GPRS package	W*****,014,XXXXX	XXXXX:means times interval, (Unit: 10s) The max length of XXXXX is in 5 digits XXXXX=00001, means time interval is 10s

### **SMS Instruction Example:**

1. Send Instruction “ W\*\*\*\*\*,000” Meaning: Apply one position, GPS300 will reply one position SMS.
2. Send Instruction “W\*\*\*\*\*,002,005”  
Meaning: Set the time internal of position refresh, GPS300 will replay one position SMS each 5 minutes.
3. Send Instruction “W\*\*\*\*\*,003,3,1,(area number)+13888888444”  
Meaning: when the SOS button be pressed, the GPS300 will send one SMS to “13888888444”, and then dial up “13888888444”.
4. Send Instruction “W\*\*\*\*\*,005,03”  
Meaning: when the speed is up 30 km/h, the GPS300 will send one Alarm SMS the mobile phone linking to SOS alarm

### **GPRS communication setting**

**Step 1:** make sure that your SIM card in GPS300 have the GPRS function

**Step 2:** Set the tracker ID by send one SMS:

**SMS Format: W\*\*\*\*\*,010,ID**

For example : W000000,010,1001

GPS300 will response one SMS to check it.

**Step 3:** Set IP address and Port by send one SMS

**SMS Format: W\*\*\*\*\*,012,IP,PORT**

For example: W000000,012,74.220.201.235:8300

GPS300 will response one SMS to check it.

Note: Make sure that the IP should be the Extranet IP. If your pc is in Intranet, you must know your Extranet IP. You may need the help of you network administrator

**Step 4:** Set APN

**SMS format : W\*\*\*\*\*,011, APN**

For example: W000000,011, CMNET

Note: If APN has user name and password, please use W\*\*\*\*\*,011,APN,User name>Password.

**Step 5:** Set time interval of sending GPRS package

**SMS format: W\*\*\*\*\*,014 , XXXXX**

( XXXXX: Be sure that the time interval MUST be FIVE digits). Time interval is 10sec.

For example: W000000,014,00003

SMS meaning: Make GPS300 send a GPRS package every 30 seconds

GPS300 will response one SMS to confirm the setting . Like “set GPRS Timer ok/00003”

**Step 6:** Enable GPRS function

**SMS format: W\*\*\*\*\*,013,X**

For example: W00000, 013, 1

GPS300 will response one SMS to check it.

Note:

- 1. GPS300 default value is GPRS Disable**
- 2. SMS W0000,013,0 is disable GPRS function**

**Step 7:** According to NMEA V3 protocol, the server can analyse the GPRS data. If you want more information about protocol, please contact us.

## **Trouble shooting**

If you find some trouble in using GPS300, please refer the following:

1. Check GPS signal is normal
2. Please check following issue:
  - a. Working outdoor, GPS300 can get better GPS signal;
  - b. The front side of GPS300 should be placed toward sky;
  - c. Charging GPS300 for 3 hours for the tracker has enough power before usage
3. Check GSM signal is normal

Please try following issue:

- Whether the GSM network is strong enough to make the track unit work.
- You can judge it by calling someone through your cell phone.

- Whether the SIM card is installed correctly or not ,and try to pull out and insert SIM card to ensure it; try this operation a few times may help to ensure correct installation.
  - Whether there is enough deposit in SIM card or not;
  - Whether your SIM card in GPS300 support SMS function or not, (including send SMS and receive SMS)
  - Whether SIM card has specific requirement on cell phone or not,
  - For example whether the SIM card can only use in an appointed cell phone, other cell phone cannot use the SIM card
  - Whether SIM card is binding to the specific cell phone or not
  - Whether SIM card need some authorization when using it
  - For example, you need type one password when you use the kind of SIM cards
  - Whether the tracker has enough power to work, we strongly suggest it was charged at least 3 hours before use it.
4. The SMS which be replied by GPS300 is including the chars --- “Last .....”, It is indicate the GPS signal is weak.

### **Caution**

- a) This device is not design for water-proof, and you must use the water-proof bag accessory
- b) This device must work with GPRS/GSM network.
- c) Make sure enough deposit in the SIM card to avoid any inconvenience.