

# GPS+GSM+GPRS

## AVL Automatic Vehicle Tracker

### PST-AVL01



Please read it carefully before installation and operation

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# I Hardware installation

## A. Working Directions:

Thank you for your purchase of PST-AVL01 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 in order 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 PST-AVL01 mobile number ,without taking precautions. Otherwise, your privacy may be compromised along with other safety problem.

## B. System Introduction

PST-AVL01 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.



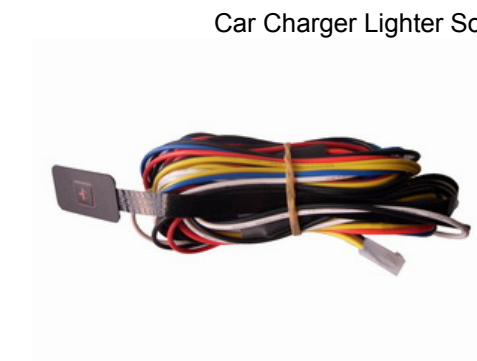
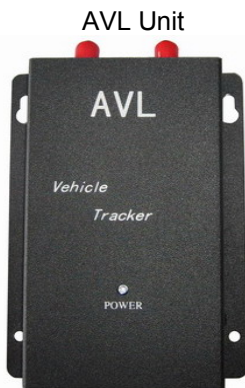
Following are the function descriptions for the PST-AVL01 products.

**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).

**C. Wiring Installation**

**1. Product Parts List**



## 2. Precaution before Installation

Check if all the parts are included.

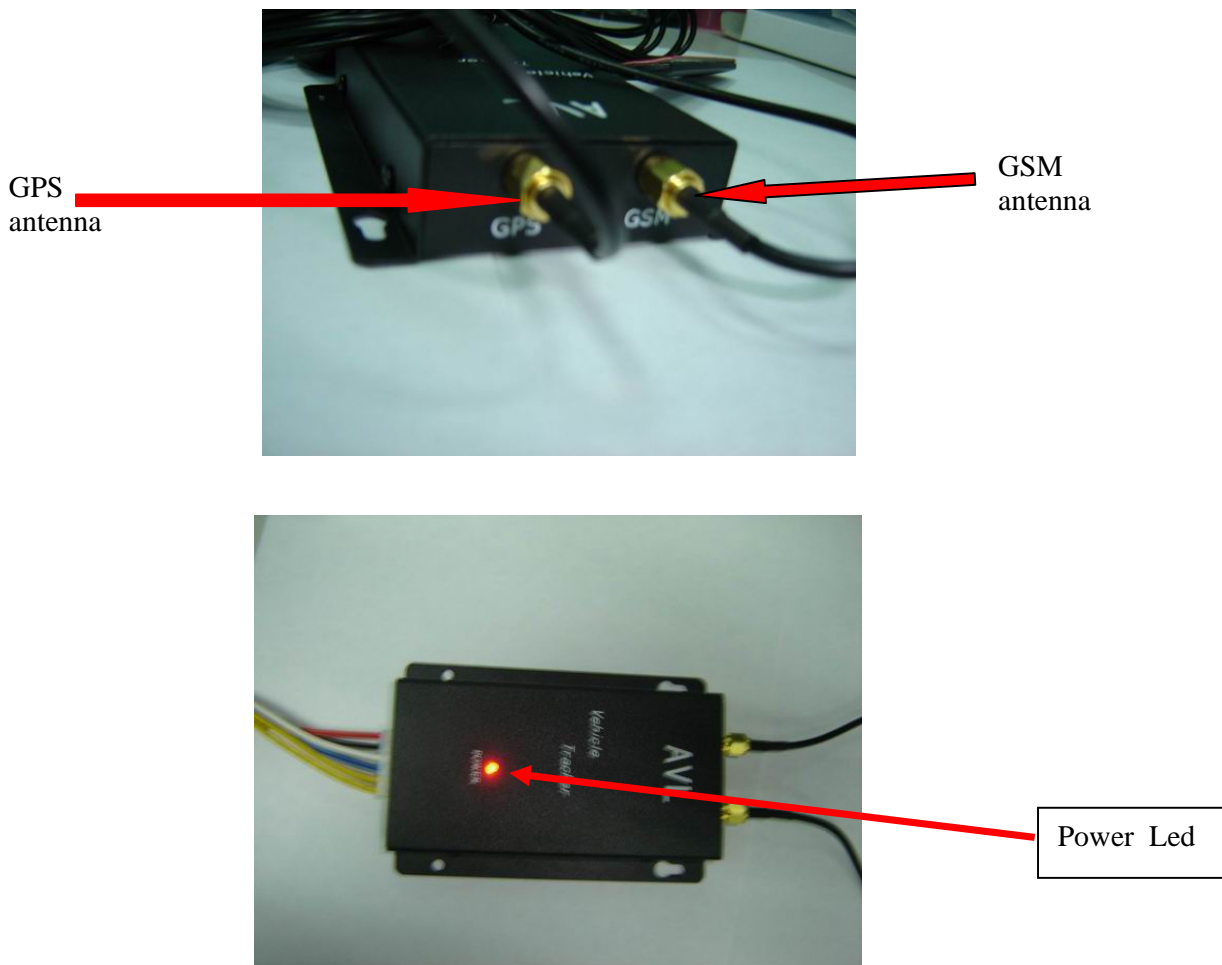
Prepare a SIM card for GSM communication. Use some other mobile phone to confirm that the PIN code has not been set, and that it can dial out and receive telephone calls without problem.

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.

Find a suitable place inside the car for installing the unit.

Check if all the wiring has been connected correctly; then connect the AVL unit to the power source.

## 3. Panel Description





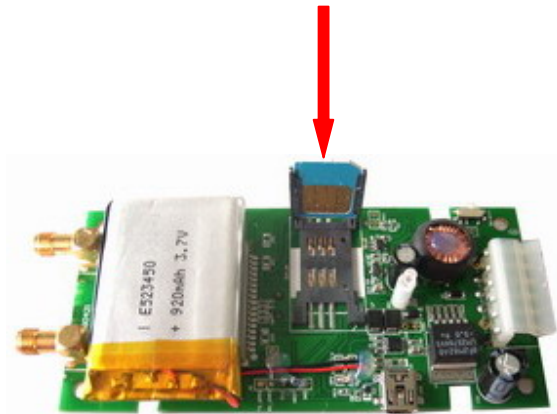
#### 4. Installation:

##### 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

- (1) Unscrew and remove the front cover of your locator.
- (2) 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.



(3) 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.

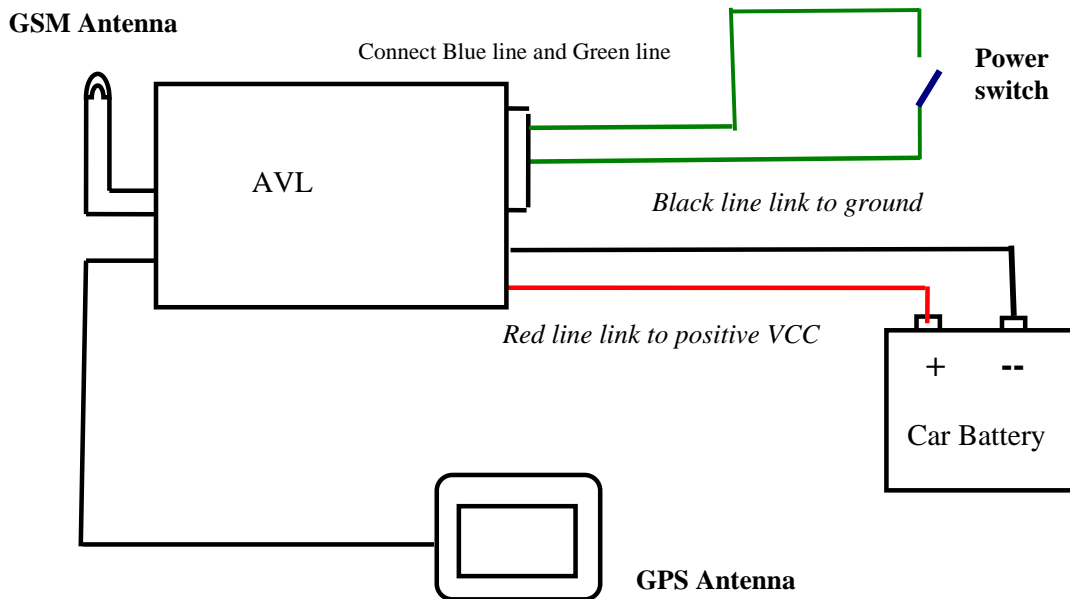
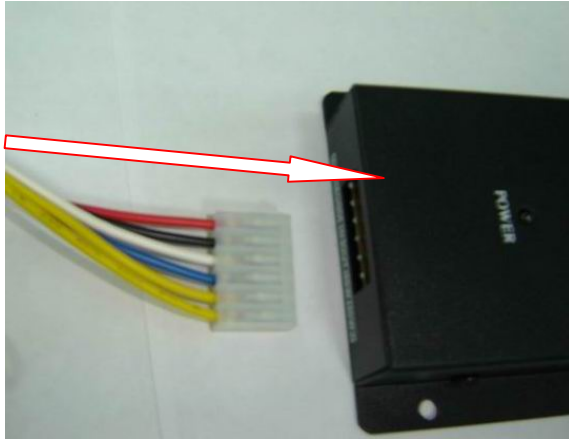
GPS antenna can pick up signals through glass and plastic, but will not “see the sky” through metal or

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

PST-AVL01 connects to the car charger lighter socket.

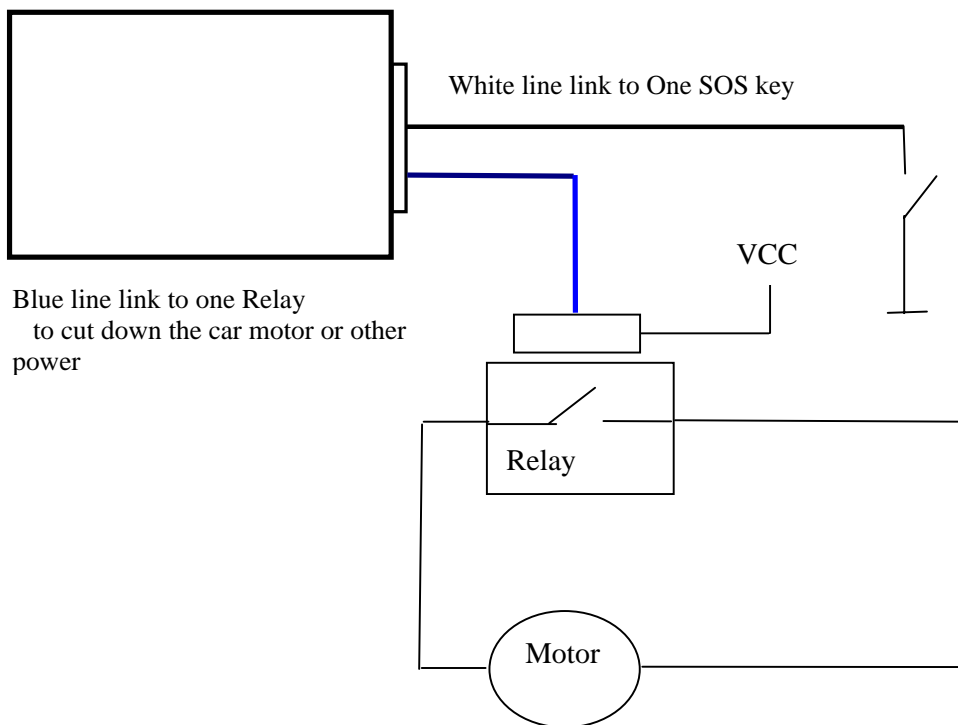




Other Lines:

Pin	Colour	function
1	Red	DC IN ( power input ) Input voltage : 9V~35V Suggested : 12V
2	Black	GND
3	white	IN :Control signal input ( for example, you can input one pressing key single) See following application example
4	Blue	Out :Control signal output See following application example
5	Yellow	SW1 : Connect the power switch
6	Yellow	SW2 : Connect the power switch

Pin IN and OUT1 application example:



**OUT1 Pin operation :**

- (1) 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

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

(3) Send one following SMS to cut off the current of the relay.:  
W\*\*\*\*\* ,020,1,0

IN Pin operation:

- (1) connect one SOS key as above picture show.
- (2) Send one following SMS to set SOS alarm phone number of aid canter  
W\*\*\*\*\* ,003,1,1,Tel number  
Tel number: the SOS alarm phone number of aid centre , like 008613866668888
- (3) When someone press the SOS key, the aid centre will receive the SOS Alarm SMS  
---- “ SOS Alarm”

## 6. 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.

## 7. Description of the LED Indicators

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

## 8. Inspection Item after Installation

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

## D. Operating Instructions

### 1. 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 PST-AVL01; it will report its location back to you by SMS .

Edit a message as following format, then send it to PST-AVL01:

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

For example: **W000000,000**



The PST-AVL01 send back one SMS ,which including the position information



Position Data means :

Longitude = 114 degree - 04 cent - 57.74 second

Latitude = 22 degree - 32 cent - 40.05 second

Tips:

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

- (a) Make a cell phone call to PST-AVL01
- (b) After listening the ring of PST-AVL01, hold off the dialup
- (c) Then, after 10 second, the cell phone will receive the Position SMS.

## 2. 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 , PST-AVL01 will send one position message at a preset time interval.

**Step1.Edit a message as following format, then send it to PST-AVL01:**

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

(Note : XXX Unit: preset minute interval

-- if XXX=000 it is STOP tracking )

For example : **W000000,002,005**

(its means is PST-AVL01 will send Position Data every 5 minute.)



**Step2. PST-AVL01 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 PST-AVL01 is in tracking mode now and preset time interval is 5 minutes.

**Step3. PST-AVL01 will send back position SMS at preset time interval.**

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

## 3. Stop tracking function.

This function is used to turn off tracking report function.

Edit a message as following format, then send it to PST-AVL01:

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

For example : **W000000,002,000**

The PST-AVL01 will reply by one SMS-----**Stop Timer OK**. This message means tracking report function is turned off.

## E. 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) <ul style="list-style-type: none"> <li>• Maximum download speed is 85.6kbps</li> <li>• Maximum upload speed is 21.4kbps</li> </ul>
Circuit-Switched Data Rate	14.4kbps
Interface	Full duplex 3V CMOS-level Serial interface for AT commands protocol
Dimensions	<b>11.4 x 8.0 x 2.0 (cm)</b>

## II. Track GPS Location by Google Earth/Maps

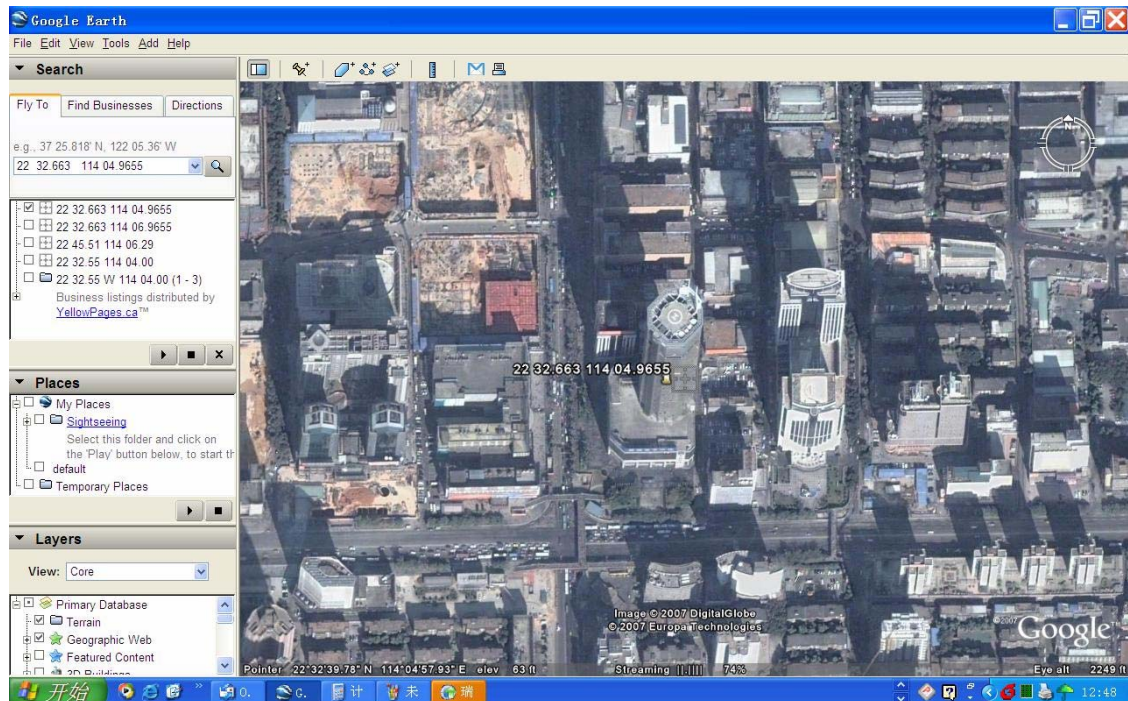
You can get the latitude & longitude data by sending “W+Password+, +000” SMS command Code to the GPS Tracker PST-AVL01. Input the received latitude & longitude data to **Google Earth** (from earth.google.com) or **Google Maps** (maps.google.com), then you can find the position fix in the map. Please find below the example.

1) Send a SMS Command Code“W+Password+, +000” to the GPS Tracker PST-AVL01.For example ,the init password is : 000000 ,the SMS command code is: **W000000,000**

2) GPS Tracker will send back some data similar to below, with latitude/ longitude figures.



3) Start the Google Earth software.(For more information about Google Earth software, please refer to <http://earth.google.com/>). Input the latitude/ longitude data into the column of “Search” and click on search button, Google Earth will display the position map for you ,as following picture shows:



### III More Professional SMS Instruction

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

	SMS Instruction	Format	Note
1	Request one position	W***** ,000	
2	Modify user password	W***** ,001,#####	***** is old password ##### is new password
3	Set the time interval of position refresh	W***** ,002,XXX	XXX(3 digital) =000,stop =[1,999] time interval (unit: mins)
4	Set a preset phone number for SOS button  When this button is pressed, PST-AVL01 will dial the preset number.	W***** ,003,1,1,TelNumber	TelNumber: Preset Tel number (TelNumber must <16 digits )
5	Set low power alarm  When the PST-AVL01 voltage is lower than the preset value, PST-AVL01 will send one lower power alarm SMS to the SOS preset number.	W***** ,004,X	X (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
5	Set over speed alarm  When the PST-AVL01 speed higher than the preset value, PST-AVL01 will send one over speed alarm SMS to the SOS preset number.	W***** ,005,XX	XX (the speed preset value) =00 , close =[01<XX<20] (unit: 10Km)
6	Set Geo-fence alarm  When the PST-AVL01 move out preset scope, PST-AVL01 will send one Geo-fence SMS to the SOS preset number.	W***** ,006,XX	XX ( preset distance to original place ) =00 close =01 30m =02 50m =03 100m =04 200m =05 300m =06 500m =07 1000m =08 2000m
8	Extend setting  (note: Please use this instruction carefully)	W***** ,008,ABCDEFGG###	A=0 , Close position report function which get position SMS by Calling PST-AVL01 A=1 , Open position report function which get position SMS

			<p>by Calling PST-AVL01</p> <p><b>B=0</b>, position SMS format be analyzed in order to read easily.</p> <p>For example:  <i>Longitude = 114 degree - 04 cent - 57.74 second</i>  <i>Latitude = 22 degree - 32 cent - 40.05 second</i></p> <p><b>B=1</b>, position SMS format is NMEA 0183 Format</p> <p>For example:  <i>\$GPRMC,072414.000,V,3114.3763,N,12131.3255,E,0.00,0.00,050805,*00</i></p> <p><b>C=0</b>, PST-AVL01 do NOT hung up when one call incoming .</p> <p><b>C=1</b>, PST-AVL01 hung up after 4~5 rings when call incoming</p> <p><b>D=0</b>, PST-AVL01 do NOT send one notice SMS to SOS preset number when the AVL01 power on</p> <p><b>D=1</b>, PST-AVL01 do send one notice SMS to SOS preset number when the AVL01 power on</p> <p><b>E=0</b>, PST-AVL01 do NOT shut down automatically when the power voltage lower than 3V</p> <p><b>E=1</b>, PST-AVL01 will shut down automatically when the power voltage lower than 3V</p> <p><b>F=0</b>, PST-AVL01 do NOT send the notice SMS to the SOS preset number when the GPS signal is weak</p> <p><b>F=1</b>, PST-AVL01 send the</p>
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			notice SMS to the SOS preset number when the GPS signal is weak ###, end char  (default value should be : ABCDEFG=1011110 )
9	Set sleep mode for saving power.	W*****,021,XX###	XX=00 close sleep mode XX=01 sleep XX=02 deep sleep
	<b>GPRS setting</b>		
9	Set the phone number for PST-AVL01 for GPRS	W*****,010,tel	tel : telephone number according the SIM card of AVL01  (tel must be < 14 digits)
10	Set APN	W*****,011,APN	APN : APN string
11	Set IP Address &port number	W*****,012,IP,PORT	IP: xxx.xxx.xxx.xxx PORT: [1,65536]
12	Open / Close GPRS function	W*****,013,X	X=0 close GPRS X=1 open GPRS
<b>New functions since October 2008 HOT!</b>			
1	Set time zone	W*****,032,T	T=0 GMT time 1≤T≤65535(Unit: minute) It means based on GMT time, you can add or deduct your time zone; "+" can be omitted, "-" must input. For example, China time zone is +8, the SMS to be sent is: W000000,032,480
2	Set SOS alarm SMS content	W*****,033,1,char	Char for setting SOS alarm SMS content, at most support 32 characters, For example: W000000,033,1,Help me

### III GPRS communication setting

step1: make sure that your SIM card in PST-AVL01 have the GPRS faction

Step2: Set the phone number of PST-AVL01 by send one SMS:

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

For example : **W000000,010,1386668888**

PST-AVL01 will response one SMS to check it.

“123” can be considered to be the device’s name. (Tracker ID must be < 14 digits)

If there are several devices ,you can use their Tracker ID to differ from each other.

PST-AVL01will response one SMS to confirm the setting.

Like “set SIM OK/120”

Step3 : Set IP address and Port by send one SMS

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

For example : **W000000,012,202.116.11.12,8000**

Make sure that the IP should be the Extranet IP. If your pc is in Intranet ,you must know your Extranet IP . You can know your PORT from the router’ s configuration.

Now there are two ways of getting your IP address and PORT:

**First** ,you can get your IP and port through the DOS Order: ipconfig .

**Second** , the IP address and PORT can be got from IT supports, such as some IT support websites..

FORMAT:

IP: xxx.xxx.xxx.xxx

PORT: [1,65536]

For example :**W000000,012,202.116.11.12,8000**

PST-AVL01 will response one SMS to check it.

Like “Set IP ok /**202.116.11.12#8000**”

Step4: Set APN

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

APN is your username when you use the GPRS function ,and it is used to be connected to the internet.

For example : **W000000,011, CMNET**

Step5: Enable GPRS function

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

For example: **W00000, 013, 1**

PST-AVL01 will response one SMS to check it.

Like “set APN OK /**CMNET**”

( Note: 1 PST-AVL01 default value is GPRS Disable  
2 SMS **W0000,013,0** is disable GPRS function )

Step6 : According to GPP communication protocols of PST-AVL01, the server can analyses the GPRS data.

Or According to NMEA V3 protocol , the server can analyses the GPRS data.

## Attachment :Worldwide APN (Access Point Name) List

Country	Mobile operator	Access point name
Argentina	Personal	gprs.personal.com
Argentina	Unifon	internet.gprs.unifon.com.ar
Australia	Telstra	telstra.internet
Australia	Optus	internet
Australia	Three	3netaccess
Australia	Vodafone	internet
Austria	Max Online	gprsinternet
Austria	One	wap.one.at
Belgium	Orange	orangeinternet
Belgium	Mobistar	web.pro.be
Belgium	Proximus	internet.proximus.be
Bermuda	AT&T	proxy
Bermuda	Mobility	net.bm
Brazil	Claro	claro.com.br
Brazil	Oi	gprs.oi.com.br
Brazil	TIM	tim.br
Bulgaria	Mobitel (Mtel)	inet-gprs.mtel.bg
Canada	Fido	internet.fido.ca
Canada	Rogers AT&T	internet.com
Chile	Entel PCS	imovil.entelpcs.cl bam.entelpcs.cl
Chile	Telefonica GSM	web.tmovil.cl
China	China Mobile	cmnet
Croatia	VIPNET	gprs.vipnet.hr
Czech Republic	Eurotel	internet
Czech Republic	Oskar	internet
Czech Republic	Oskar prepaid cards	ointernet
Czech Republic	T-Mobile	internet.t-mobile.cz

Denmark	TDCmobil	internet
Denmark	Orange	web.orange.dk
Egypt	Vodafone	internet.vodafone.net
Dominican Republic	Orange Dominicana	orangenet.com.do
Finland	Telia Mobile	internet
Finland	DNA	internet
Finland	Sonera	internet
Finland	Radiolinja	internet
Finland	Saunalahti	saunalahti
France	Orange	orange.fr
France	SFR	websfr
France	Bouygues Telecom	eBouygTel.com
Germany	D2 Vodafone	web.vodafone.de
Germany	E-Plus	internet.eplus.de
Germany	O2	internet
Germany	Quam	quam.de
Germany	T-Mobile D1	internet.t-d1.de
Greece	Vodafone	internet.vodafone.gr
Greece	Teletet	gint.b-online.gr
Greece	Cosmote	internet
Hungary	Vodafone (Prepaid "Optimized")	vitamax.internet.vodafone.net
Hungary	Vodafone (Prepaid "Standard")	vitamax.snet.vodafone.net
Hungary	Vodafone (Postpaid "Optimized")	internet.vodafone.net
Hungary	Vodafone (Postpaid "Standard")	standardnet.vodafone.net
Hong Kong	CSL	internet
Hong Kong	Orange	web.orangehk.com
Hong Kong	New World	internet
Hong Kong	People	internet
Hong Kong	SmarTone	internet

Hong Kong	Sunday	internet
India	Orange, Hutch	www
Iceland	Siminn	gprs.simi.is
India	BPL Mobile	bplgprs.com
India	Airtel	airtelgprs.com
Indonesia	Telkomsel	internet
Ireland	O2	internet
Ireland	Vodafone	live.vodafone.com
Israel	Cellcom	internetg
Israel	Orange	internet
Italy	TIM	uni.tim.it ibox.tim.it
Italy	Vodafone Omnitel	web.omnitel.it
Italy	Wind	internet.wind
Latvia	Latvia Mobile Telefone	internet.lmt.lv
Luxembourg	LUXGSM	web.pt.lu
Luxembourg	Tango	internet
Malaysia	Celcom	celcom.net.my
Mexico	Movistar	internet.movistar.mx
Mexico	Telcel	internet.itelcel.com
Montenegro	Monet	gprs.monetcg.com
Netherlands	T-Mobile	internet
Netherlands	KPM Mobile	internet
Netherlands	Orange	internet
Netherlands	O2	internet
Netherlands	Vodafone (normal)	web.vodafone.nl
Netherlands	Vodafone (business)	office.vodafone.nl
New Zealand	Vodafone NZ	www.vodafone.net.nz
Norway	Netcom	internet.netcom.no

Norway	Telenor	internet
Pakistan	UFone	ufone.internet
Paraguay	Personal	internet
Paraguay	Tigo	internet.tigo.py
Philippines	Smart	internet
Philippines	Globe	internet.globe.com.ph
Poland	Era	erainternet
Poland	Idea	www.idea.pl
Poland	PlusGSM	www.plusgsm.pl
Portugal	Optimus	internet
Portugal	TMN	internet
Portugal	Vodafone (Telcel)	internet.vodafone.pt
Romania	Connex	internet.connex.ro
Romania	Orange	internet
Russia	BeeLine	internet.beeline.ru
Russia	Megafon	internet.nw
Russia	MTS	internet.mts.ru
Russia	PrimTel	internet.primtel.ru
Saudi Arabia	Saudi Telecom	Jawalnet.com.sa
Serbia-Montenegro	Mobtel Srbija	internet
Serbia-Montenegro	Telekom Srbija	gprsinternet
Singapore	M1	sunsurf
Singapore	Singtel	internet
Singapore	Starhub	shwapint
Slovakia	Eurotel	internet
Slovakia	Orange	internet
South Africa	MTN	internet
Spain	Amena	amenawap

Spain	Telefonica (Movistar)	movistar.es
Spain	Vodafone	airtelnet
Sweden	Telia	online.telia.se
Sweden	Vodafone SE	internet.vodafone.net
Switzerland	Swisscom	gprs.swisscom.ch
Switzerland	Orange CH	internet
Switzerland	sunrise	internet
Switzerland	UMC	www.umc.ua
Taiwan	Chunghwa Telecom	internet
Taiwan	Far EasTone	fetnet01
Taiwan	KG Telecom	internet
Taiwan	Taiwan Cellular	internet
Thailand	AIS	internet
Thailand	DTAC	www.dtac.co.th
Turkey	Avea	internet
Turkey	Aycell	aycell
Turkey	Telsim	telsim
Turkey	Turkcell	internet
UK	Jersey Telecom	pepper
UK	O2	mobile.o2.co.uk
UK	T-Mobile	general.t-mobile.co.uk
UK	Vodafone UK	internet
UK	Orange	orangeinternet
Ukraine	Kyivstar GSM	www.kyivstar.net
Ukraine	UMC	www.umc.ua
USA	T-Mobile	internet2.voicestream.com
USA	AT&T	proxy
USA	Cingular	isp.cingular
Venezuela	Digital TIM	gprsweb.digitel.ve