GPS Vehicle Tracker

USER MANUAL

VT310

Contents

1 Product Overview

VT310 is a GPS/GSM/GPRS tracking device which is specially developed and designed for vehicle real-time tracking and security. With superior GPS and GPRS modules, VT310 has good sensitivity and stable performance. It can get accurate GPS fix even in remote places.

Main Features:

Tracking via SMS or GPRS

Current location report

Tracking by time interval

Position logging capacity up to 260,000+ waypoints

Built-in motion sensor

Emergency alert

Geo-fencing control

Low battery alert

Speeding alert

Wiretapping

Alert when enter/exit GPS blind area

I/O: 5 digital inputs, 3 negative and 2 positive triggering; 5 outputs.

Rebranding acceptable
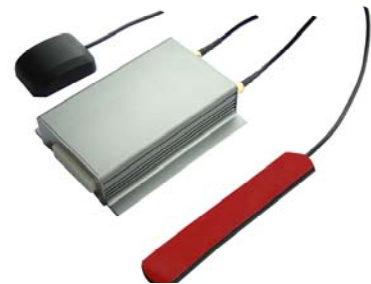
2 For Your Safety

Read these simple guidelines. Not following them may be dangerous or illegal. Read the full user manual for more information.

Proper Connection - When connecting with other device, read carefully its manual so as to carry out correct installation. Do not connect it to other incompatible devices.

Qualified Accessories - Use original parts, qualified batteries and peripheral equipments to avoid damage to VT310.

Safe Driving - Drivers should not operate this product while driving.

Qualified Service – Only qualified personnel can install or repair this unit.

Water Resistance – Your unit is not water resistant. Keep it dry. Install it inside the vehicle or use waterproof bag if necessary.

Confidential Phone Number - For safety reason, do not tell other people the mobile phone number of your VT310 without taking precautions of security settings.

3   VT310 Parameters

Dimension	103mm x 62mm x 25mm
Installation Dimension	103mm x 84mm x 25mm
Weight	165g
Frequency	GSM 900/1800/1900Mhz or GSM 850/900/1800/1900Mhz
GPS Module	SiRF-Star III
GSM Module	Simcom
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.
Backup Battery	850mAh
Power Supply	+9V - +35V / 1.5A
LED	2 LED lights to show GPS/GSM working status.
Flash Memory	8MB
Packing	In box of 210mm x 160mm x 70mm per unit

4 Getting Started

This section will describe how to setup your VT310 after installation. This manual will detail the use of VT310 after installation has taken place.

4.1 Hardware Features

VT310 includes:
• VT310 Main Unit
• GPS Antenna
• GSM Antenna
• Wires
• USB Cable
• CD including
   - User Manual
   - Other document or software if required

4.2 Light Functionality

Blue LED - indicating GPS status	
Flashing (0.1 second)	The unit is being Initialized
Flashing (on for 0.1 second and off for 2.9 seconds)	VT310 has a GPS fix
Flashing (on for 1 second and off for 2 seconds)	VT310 has no GPS fix
Green LED - indicating GSM status	
Flashing (0.1 second)	The unit is being Initialized
Flashing (on for 0.1 second and off for 2.9 seconds)	VT310 has a GSM fix
Flashing (on for 1 second and off for 2 seconds)	VT310 has no GSM fix
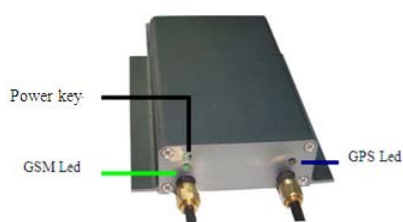
4.3 Connecting and Installation

Read this manual before using your VT310 and check if all parts are included in the packaging box.

Ensure that your VT310 has a working SIM installed.
  - Check that the SIM has not run out of credit (test the SIM in a phone to make sure it can send and receive SMS)
  - Check that the SIM Lock code is turned off

Before inserting SIM card, cut off the power for the AVL unit.

Install SIM Card
 - Unscrew and remove the front cover of your VT310.

- 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.


Connect the GSM Antenna to the unit.

Connect the GPS Antenna to the unit.
- 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 objects containing metal, such as the metallic windshield.

Find a suitable place inside the car for installing the unit. 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 unit to the motor power.

Installation Guide:
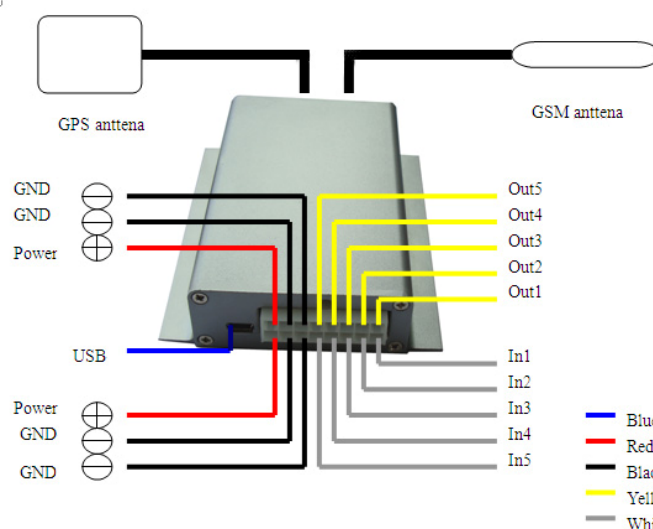
Descriptions of PINs

Pin	Color	Function
1	Red	DC In (power input) Input voltage : 9V~35V Suggested : 12V
2	Black	GND
3	White	Inputs
4	Yellow	Outputs

Mini USB Port

Connect the tracker with computer by USB cable for configuration and reading saved data.
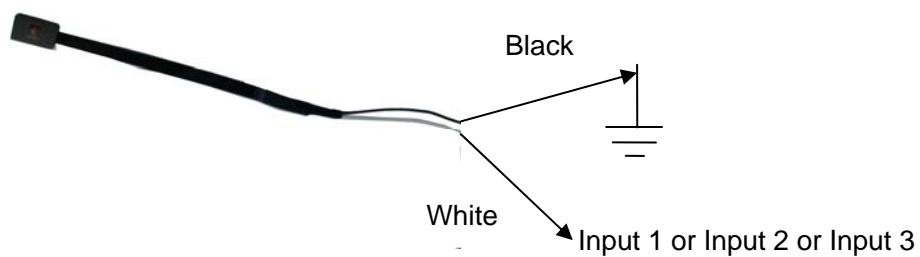
4.4 Examples of Interfacing Application

<u>For Input Ports</u>

1. SOS Button - Input 1 / Input 2 / Input 3

SOS Button

Black

White   Input 1 or Input 2 or Input 3

2. Ignition Detection - Input 4 / Input 5
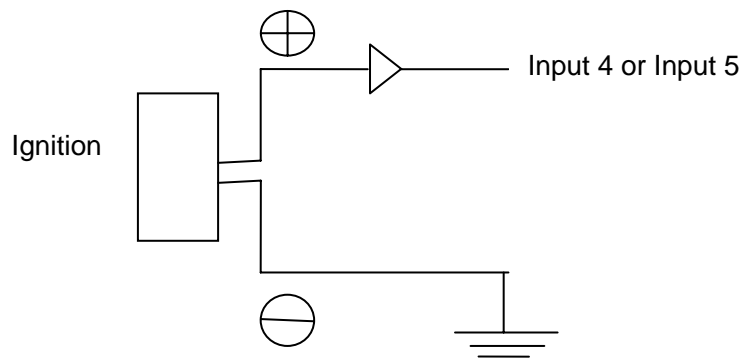
3. Detecting Lock Status of Car's Door: Locked or Unlocked - Input 4 / Input 5
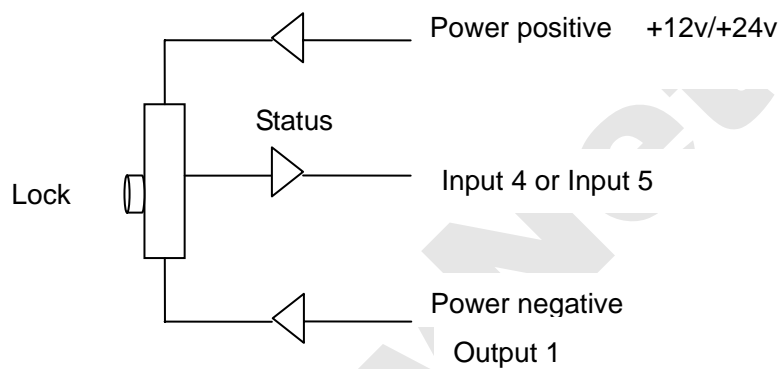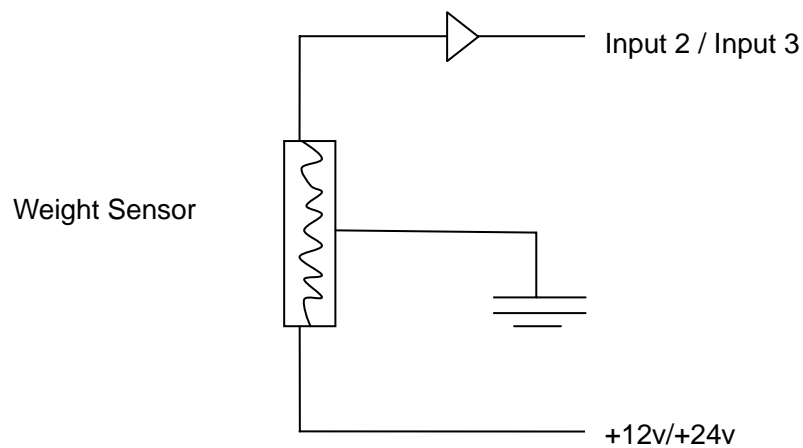

4. Detecting Lock Status of Trunk (Car Boot): Locked or Unlocked - Input 4 / Input 5
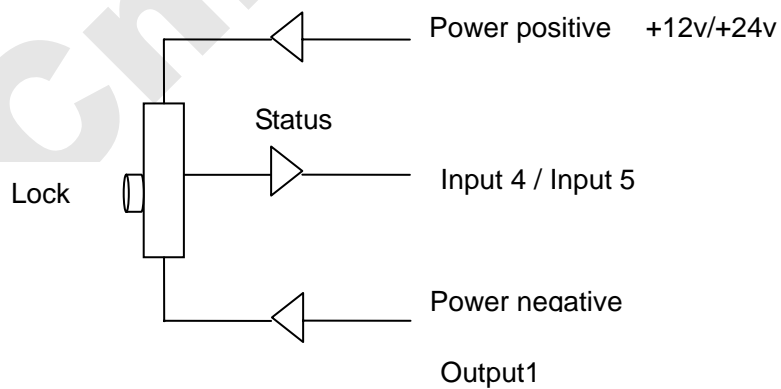
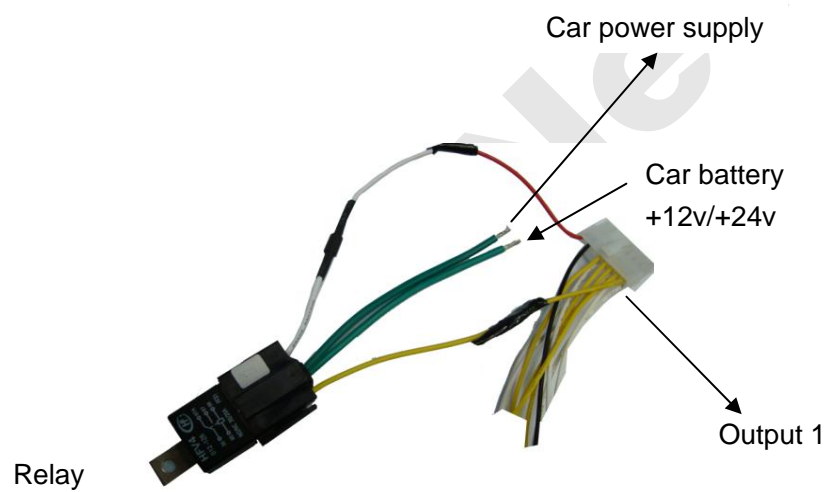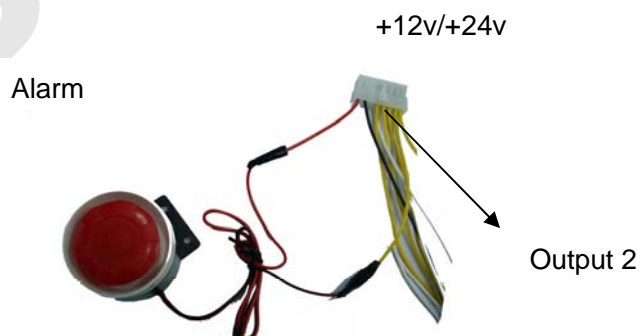5. Connecting with Sensors (such as weight sensor) - Input 2 / Input3

Input 2 / Input 3

Weight Sensor

+12v/+24v

For Output Ports
1. Engine Cut

Car power supply

Car battery
+12v/+24v

Output 1

Relay

2. Connecting with Car Alarm

+12v/+24v

Alarm

Output 2

5 SMS Command Details

VT310 will only accept commands from a user with the correct password. Commands with wrong password are ignored. The default password is 000000.

5.1 Basic Commands

5.1.1 Position Report

Description: To know the position of your VT310, send an SMS or make a telephone call directly to VT310 and it will report its location by SMS.

Command: W<password>,<000>

Notes: The default password is 000000.

Example:

SMS sent: W000000,000

SMS received: Longitude = 114 - 04 - 57.74/ Latitude = 22 - 32 - 40.05

Meaning: Longitude = 114 degree - 04 cent - 57.74 second

Latitude = 22 degree - 32 cent - 40.05 second

To get VT310's position by another easier way:

(a) Call VT310 using your mobile phone.

(b) After listening to the ring for 10 - 20 seconds, hang up the phone.

(c) Then, after 20 second, your mobile phone will receive a position SMS.

5.1.2 Set Interval for automatic timed reports

Description: Automatic timed reports will be sent to your mobile phone according to the time interval you set.

Command: W<password>,002,XXX

Notes: XXX is the interval in minute. If XXX=000 it will stop tracking

Example:

SMS sent: W000000,002,005

SMS received: Set Timer OK/005

Meaning: VT310 will report it's location by SMS every 5 minutes.

5.1.3 Stop automatic timed report

Description: Automatic timed reports will stop once VT310 receives stop command.

Command: W<password>,002,000

Example:

SMS sent: W000000,002,000

SMS received: Stop Timer OK/005

Meaning: VT310 will stop automatic timed report

5.2　Command List.

Description	Command	Remarks
Get current location	W******,000	Get current location of VT310
Change user's password	W******,001,######	****** is old password ###### is new password
Set interval for automatic timed reports	W******,002,XXX	XXX is the interval in minute. If XXX=000 it will stop tracking
Set preset phone number for SOS button	W******,003,F,P,T	F=0, to close this function; F=1, only sending SMS; F=2, only calling preset phone number; F=3, both SMS and calling (default) P is the button number and should be 1, or 2, or 3. If SOS button is linked to IN1, then P=1. T: Preset phone number (T must be less than 16 digits)
Set low power alarm When VT310 voltage is lower than the preset value, it will send one low 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
Set over speed alarm When VT310 speeds higher than the preset value, it 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)
Set Geo-fence alarm When the VT310 moves out of preset scope, it 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

Extend Settings	W******,008,ABCDEFG###	A=0, Close position report function when a call is made to VT310
		A=1, Open position report function to get position SMS by Calling VT310
		B=0, Analyze position SMS format to be read easily.
		For example:
		Longitude = 114 degree - 04 cent -57.74 second
		Latitude = 22 degree -32 cent -40.05 second
		B=1, position SMS format is in NMEA 0183 Format
		For example:
		*$GPRMC,072414.000,V,3114.3763,N, 12131.3255,E,0.00,0.00,050805,*00*
		C=0, VT310 does NOT automatically hang up when one call incoming.
		C=1, VT310 hangs up after 4~5 rings of an incoming call
		D=0, VT310 does NOT send one SMS to SOS preset number when VT310 is power on
		D=1, VT310 sends one SMS to SOS preset number when VT310 is power on.
		E=0, VT310 does NOT shut down automatically when the power voltage lower than 3V.
		E=1, VT310 shuts down automatically when the power voltage lower than 3V.
		F=0, VT310 does NOT send SMS to the SOS preset number when it enters/exits GPS blind area.
		F=1, VT310 sends alert SMS to the SOS preset number when it enters/exits GPS blind area.
		G=0, LED lights in normal status when VT310 works
		G=1, LED lights off when VT310 works
		### is the end character
		(default value is: ABCDEFG=1000100)

| Presetting by SMS for GPRS tracking		
Set ID for VT310 by SMS	W******,010,ID	Tracker ID must be less than 14 digits.
Set APN by SMS	W******,011,APN,APNName,APN Password	If no APN name and password required, just insert APN only; APN defaulted as 'CMNET'; APN + APN name + password not over 39 characters.
Set IP Address and Port by SMS	W******,012,IP, Port	IP: xxx.xxx.xxx.xxx Port: [1,65536]
Enable GPRS Function	W******,013,X	X=0, close GPRS (default); X=1, enable TCP X=2, enable UDP
Set Time Interval for Sending GPRS Packet	W******,014,XXXXX	XXXXX should be in five digitals and in unit of 10 seconds. XXXXX=00000, to close this function; XXXXX=00001~65535, time interval for sending GPRS packet and in unit of 10 seconds.
Output Control	W******,020,P,F	P =1, Out1 =2, Out2 =3, Out3 =4, Out4 =5, Out5 F =0, to close the output =1, to open the output
Output Control (Safe mode) This function is achievable when the speed is below 10km/h and GPS is available.	W******,120,ABCDE	ABCDE represents Out1, Out2, Out3, Out4, Out5 respectively. If A or B or C or D or E, =0, to close the output =1, to open the output =2, to remain previous status
Set sleep mode for saving power	W******,021,XX###	XX=00 close sleep mode XX=01 sleep XX=02 deep sleep **###** is the ending character
Set power saving mode when VT310 is still (In power saving mode, GPS stops working. GSM enters standby mode and stop sending out message until it is activated by an SMS or an incoming call)	W******,026,XX	XX=00, to close this function XX=01~99, to set this function. It is in unit of minute. Example: If XX=10, VT310 will enter power saving mode in 10 minutes after it is immobile.

Set phone number for wiretapping	W******,030,T	T is the telephone number for wiretapping and max. 16 digits
Set interval for logging *(Note: this interval is not relevant to the interval of continuous tracking)*	W******,031,X	X=0, to close this function X=[1, 65535] to set interval in second
Set time zone difference	W******,032,T	T=0, to close this function T=[1, 65535] to set time difference in minutes to GMT. Default value is GMT +, not necessary for those ahead of GMT. For example, either +120 or 120 is acceptable. -, required for those behind GMT. For example, -120.
Set character for SOS alert message	W******,033,P,Char	P is the button number. P=1, 2, or 3. Char is the character in SOS message and max 32 characters
Get version and serial number	W******,600	To get version and serial number of current firmware
Get IMEI	W******,601	To get IMEI

(Remarks: ****** is user's password, and the default password is 000000)

6 Tracking on Map

Download Google Earth from http://earth.google.com/

Start the Google Earth (For more information about Google Earth, please refer to http://earth.google.com/) as the following picture shows:
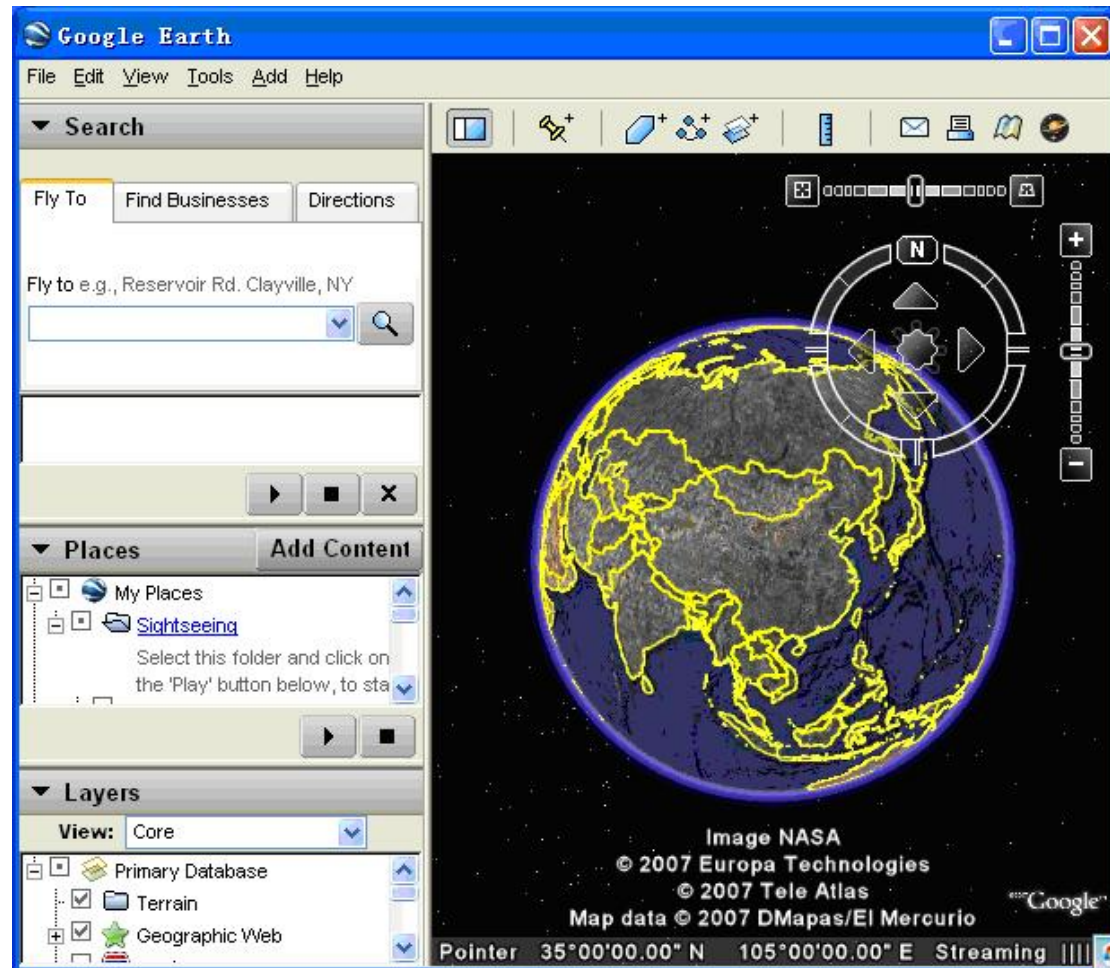
Input the latitude and longitude that you receive from the tracker by SMS and click the search button. Google Earth will display the location for you.
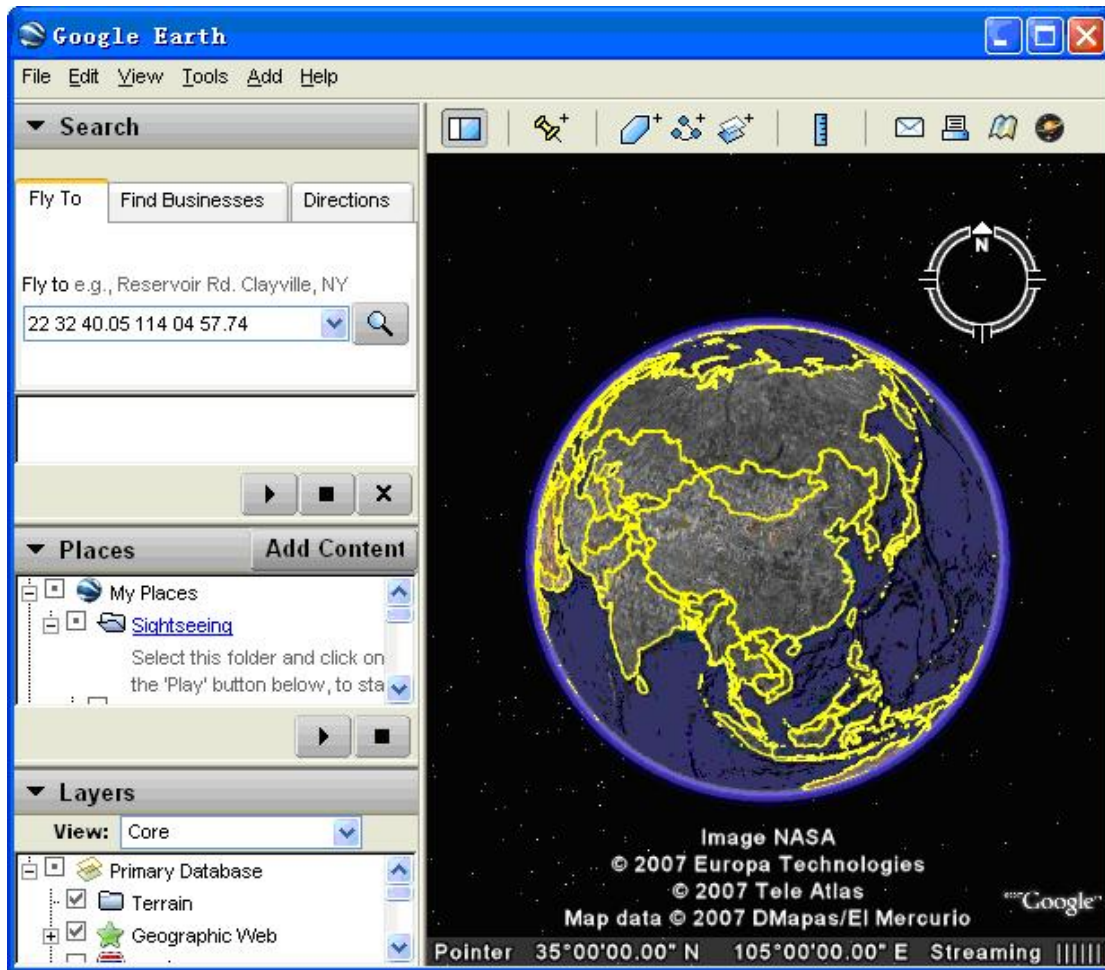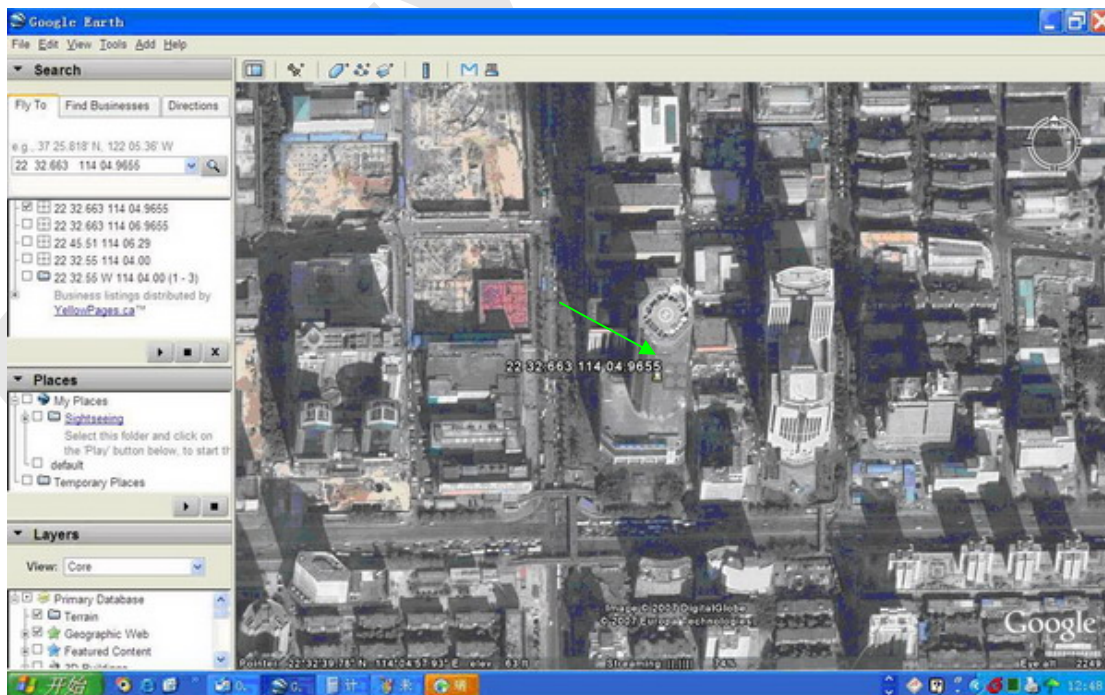
Example:
When you receive:
Latitude = 22 32 40.05N
Longitude = 114 04 57.74E

Type as the following picture shows:

(Note: you should input the latitude and longitude: 22 32 40.05 114 04 57.74)

Now you can find the location of your tracker:

Or you can start the Internet Explorer and connect to http://maps.google.com for displaying the location.

Or you can use local map software on PDA or
car navigation device to input the coordinates.

7   GPRS Settings

Tracking via GPRS, the user should set IP, Port and APN for VT310.

Ensure that your SIM card in VT310 supports GPRS connection prior to setting.

7.1   Set ID for VT310 by SMS
Command: W<password>,010,Tracker ID
Note: Tracker ID must be less than 14 digits.
Example: W000000,010,13616165678
VT310 will then reply an SMS ('Set SIM OK/120') to confirm this setting.

7.2   Set APN by SMS
Command: W<password>,011, APN,APN Name,APN Password
Note: If no APN name and password required, input APN only.
Example: W000000,011,CMNET
VT310 will reply an SMS (like 'Set APN OK /CMNET') to confirm this setting.

7.3   Set IP Address and Port by SMS
Command: W<password>,012,IP,PORT
Example: W000000,012,202.116.11.12,8000
VT310 will then reply an SMS ('Set IP ok /202.116.11.12#8000') to confirm this setting.

7.4   Set Time Interval for Sending GPRS Packet
Command: W<password>,014,time interval(in unit of 10 seconds)
Example: W000000,014,00003
VT310 will send a GPRS package every 30 seconds

7.5   Enable GPRS Function
Command: W<password>,013,X
Example: W00000,013,1
VT310 will response an SMS to confirm this setting.
Notes: The default setting is GPRS disable.
        Send W0000,013,0 to disable GPRS function.

For more information regarding GPRS settings, refer to <GTP communication protocols of VT310>.

8 Troubleshooting

Problem: Unit will not turn on	
Possible Cause:	**Resolution:**
Wiring was not connected properly	Check and make sure wiring connection is in order.
Battery needs charging	Recharge battery

Problem: Unit will not respond to SMS	
Possible Cause:	**Resolution:**
GSM antenna was not installed properly	Make VT310 connected to GSM network.
GSM Network is slow	Wait for SMS. Some GSM networks slow down during peak times or when they have equipment problems.
Unit is sleeping	Cancel sleeping mode
Wrong password in your SMS	Insert the correct password
The SIM in VT310 has run out of credit	Replace or top up the SIM card
No SIM card	Insert working SIM card. Check in phone that the SIM can send SMS messages.
SIM card has expired	Check in phone that the SIM can send SMS messages. Replace SIM card if needed.
SIM has PIN code set	Remove PIN code by inserting SIM in you phone and deleting the code.
SIM is warped or damaged	Inspect SIM, clean the contacts. If re-inserting does not help try another to see if it will work.
Roaming not enabled	If you are in a different country your SIM account must have roaming enabled.
Battery is low	Recharge the unit and the GSM will start working.

Problem: SMS from VT310 states 'Last……'	
Possible Cause:	**Resolution:**
Unit does not have clear view of the sky	Move the antenna of the unit to a location where the sky is visible.
VT310 is in an inner place	Wait for the target to come out