

# **TZ-AVL05 (3G)**

## **User Guide**

### **Automatic Vehicle Location**



## **I. Welcome to use this car product**

- **We keep the final explanation right on this User Guide.**
- **Please don't unfold or maintain it, for fear damaging it, if you don't operate it according to the user's manual, it may damage the product or cause hurt**

to you, our company would not take responsibility for the loss in this situation.

- **Our tracking devices may not be used to violate the privacy rights of others, or in violation of local, county, state or federal statutes, and our company will not be responsible for inappropriate use of these products.**
- **AVL is a device that uses the Global Positioning System to determine the precise location of a vehicle, moving house, trailer or other asset which AVL is installed on and to record the position of the AVL at regular intervals. With U-blox GPS systems, it records not only position, but also velocity, Date time, direction, status of digital output ports, etc.**
- **The main purpose of using AVL is not only to locate the vehicles, but also to obtain information about the status of doors, windows and ignition, etc. Or remotely monitor cutting off gas and power supply, etc.**
- **Sometimes, if users want to upgrade the AVL version, then we will give users new software firmware to update it. In this situation, please contact our service center.**

- In order to acquire more important details, you should pay much attention to some signs and supplementary information, such as:

**【note】**: Means you must pay much attention, it includes many important details which you may overlook.

**【caution】** : Warning information on relative topic, you should read it carefully, for fear causing unwanted loss.

**【more information】** : More relative information about a certain topic, sometimes it is another easy way for the same purpose.

And if some words are marked in red color, that indicates the words should be paid much more attention.

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# TZ-AVL05(3G) User Guide

**V4.2.3**

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Thank you for using the car product, this one AVL05 added 3G function, can be used in the 3G/GSM network, which is mainly for tracking the vehicle, anti-theft, and remotely monitoring the car through I/O ports socket of AVL, etc. All of this function can be realized by using a mobile phone, or see the status of your car in a Server via GPRS. According to the user's different need, our company has different version as below:

## 1.1 Introduction

Software Function	
Single location	√
Tracking	√
Over-speed alarm	√
Geo-fence alarm	√
Sleep alarm	√
SOS alarm	√
GPRS Function	√
Heartbeat function	√
I/O ports trigger alarm	√
Low battery alarm	√
Exterior battery cut off alarm	√
acceleration and the brakes alarm	√
Direction change alarm	√
Fuel level monitoring	√
Distance tracking	√
Mileage report	√
ACC alarm function	
Anti-shifting of static GPS	√
Store data when there is no signal	√
<b>Physics Speciality</b>	
Inner Lithium battery	√
Charged by exterior DC	√
G_sensor	√
RTC clock chip	√
SOS button	√
Digital input	√(3 ports)
Digital output	√(3 ports)
Analog input	√(2 ports)
RS232	√
One_wire	√
TF	√

### 1.1.1 Key Feature

In the Basic Version, by using the AVL, user can track the vehicle via SMS or GPRS and monitor the status of the door, window, and engine of the car through I/O sockets. The more detailed function as below:

- Internal Polymer Lithium Ion Battery in the AVL
- Can be charged by exterior DC 9- 36 V
- Exterior battery cut off alarm
- Support mini USB port/OTA to update firmware
- Low power consumption
- Over-speed alarm
- Geo-fence alarm
- Low power alarm
- ACC alarm
- acceleration and the brakes alarm
- With Quectel 3G module and U-blox GPS chipset
- Support single location and continual tracking
- Can Real-time tracking your vehicle via map on PC
- GPRS function, send position data and alarm data to Server
- Remotely detect the status of the Windows or Doors or Engine close/open through the Digital Input sockets.
- Remotely cut the Oil/Engine power through the Digital Output socket.
- SOS button send out exact location for immediate rescue. After user press SOS button in the AVL, AVL unit will send out the location and SOS alarm to the preset number via SMS or a Server via GPRS
- With 32M memory, this can store about 16000 PCS data. When GPRS is lose connection, those data will be store and send when GPRS connection is recover.
- Distance tracking
- Detect the car of the fuel.
- With Microphone and headset function.
- Two-way conversation

- Prevent static drift
- RS232 interface to connect camera/ Magnetic card reader or RD01/RD04 etc(optional)
- Supports TF card(optional)
- One\_wire can connect Temperature sensor or connect IButton , identify the driver(optional)

## 1.2 Accessories

Thank you for your purchase of the AVL, after you get it, please checking all the accessories in the box:

	Accessories
<b>GSM Antenna</b>	✓
<b>GPS Antenna</b>	✓
<b>Cables</b>	✓
<b>User Manual CD</b>	✓
<b>Microphone and headset</b>	✓
<b>Below is Optional:</b>	
<b>Configure Cable</b>	✓
<b>Temperature sensor</b>	✓
<b>IButton</b>	✓
<b>Camera</b>	✓
<b>Magnetic card reader</b>	✓
<b>RD01/RD04</b>	✓
<b>Fuel sensor</b>	✓

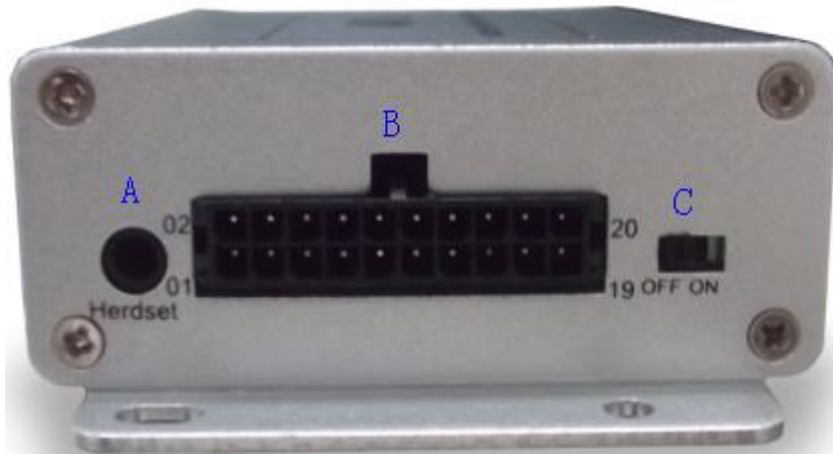
If there is any part damaged or absent, please contact your dealer as soon as possible, and if you have any questions or problems when using it, you can contact our service center.

### 1.3 Specification

<b>Feature</b>	<b>Characteristics</b>
<b>Dimension</b>	96mm*65mm*25mm
<b>Exterior Power Supply</b>	DC 9V -- 36V
<b>Inner lithium battery</b>	3.7V/850mAh
<b>Exterior GSM antenna</b>	Receive GSM signal better
<b>Exterior GPS antenna</b>	Receive GPS signal better
<b>Power Consumption when exterior voltage is 12V</b>	Active mode(avg.) < 100mA Sleep mode < 10mA
<b>Operating Temperature Range</b>	-20°C to +60°C
<b>Air pressure</b>	860Kpa --1060Kpa
<b>Humidity</b>	Up to 75% non-condensing
<b>Position accuracy</b>	10 meters
<b>3G chip</b>	AVL05_3G-T: 850/2100MHz@UMTS 850/900/1800/1900MHz@GSM  AVL05_3G-E: 900/2100MHz@UMTS 900/1800MHz@GSM  AVL05_3G-A: 850/1900MHz@UMTS 850/900/1800/1900MHz@GSM
<b>GPS chip</b>	U-blox (super-sensitivity and high accuracy )
<b>LED</b>	3 LED indicates (GSM,GPS signal and power status)
<b>Button</b>	SOS button
<b>I/O port</b>	3 digital input(1 positive input, 2 negative input) 3 digital output 2 analog input 1 RS232
<b>Options</b>	Ibutton/Temperature sensor 18B20/Camera/Magnetic card reader/TF card



## 1.4 Outside feature



### 1.4.1 Socket and Switch

Hardware	Function
A. Headset	Connect the microphone and headset
B. I/O Sockets	Expanding function, as below
A. Switch	Open/Close the unit
D.USB port	Support “USB Converter” to update firmware

E. GPS Antenna a socket	Connect Exterior GPS Antenna
F. GSM Antenna a socket	Connect Exterior GSM Antenna
G. Three LED	GSM LED(Left),Power & tremble Led, GPS Led
H. SIM Card Holder	Hold a SIM card

### 1.4.2 I/O ports



2)GND	4)Analog Input 1 ( ADA input)	6)Analog Input 2 ( ADB input)	8) GND	10) RS232_RXD	12)GND	14) GND	16 )GND	18) GND	20)V+ (12V-24V)
1)SOS Button (With GND)	3)Digital Output A	5)Digital Output B	7)Digital Output C	9) RS232_TXD	11)Digital Input 1 (negative)	13)Digital Input 2 (negative)	15)Digital Input 3 (positive)	(17) One_w ire	(19) VCC(5V)

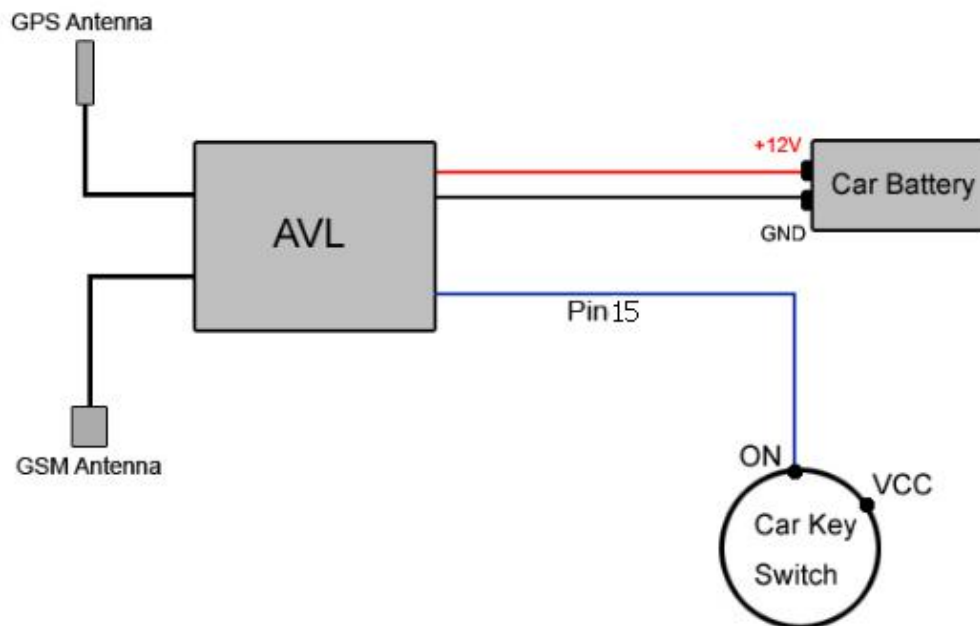
**Notes:** The sequence of the 20 sockets in the diagram are for the corresponding sockets in the above picture. Please do not confuse the direction, the Switch is the right side of I/O Sockets. The function is as below:

NO.	Function
I/O 01	When SOS Button cable is connected to GND(port 02), namely trigger, the unit will send out a data via SMS or GPRS, alarm type is “01”
I/O 02	GND, use for input GND
I/O 03	Using a phone can set the voltage value of the digital output through “025” instruction, high or low, by virtue of it, user can remote Control the Car fuel and power

I/O 04	AD input, Gather to the digital of voltage
I/O 05	The function is the same as I/O 03
I/O 06	AD input, Gather to the digital of voltage
I/O 07	The function is the same as I/O 03
I/O 08	GND, use for input GND
I/O 09	RS232_TXD, can connect camera,magnetic card reader, etc
I/O 10	RS232_RXD, can connect camera, magnetic card reader, etc
I/O 11	When this cable is connected to GND, Device will send a GPRS alarm data to Server. And when connect is lose , Device also will send a GPRS alarm data to server, alarm type is “50”, “51”,user can monitor the car door status( <a href="#">according to the customer's vehicle</a> )
I/O 12	GND, use for input GND
I/O 13	The function is the same as I/O 11,alarm type is “52”, “53”
I/O 14	GND, use for input GND
I/O 15	The function is similar as I/O 11, but the triggered voltage must be high, alarm type is “54”, “55”, through it , user can monitor the status of ignition or Car door status
I/O 16	GND, use for input GND
I/O 17	Connect port 18 and port 19, used for connect to temperature sensor or IButton
I/O 18	GND, the voltage is ‘0’, The cathode of power input socket
I/O 19	VCC, output 5V to a peripherals
I/O 20	The anode of power input socket

Note: The port that no mark is leave to customize.

### 1.4.3 Detect Car ON/OFF (Port 15)



Connect AVL Pin15 to the Car Key Switch , to the ON point.

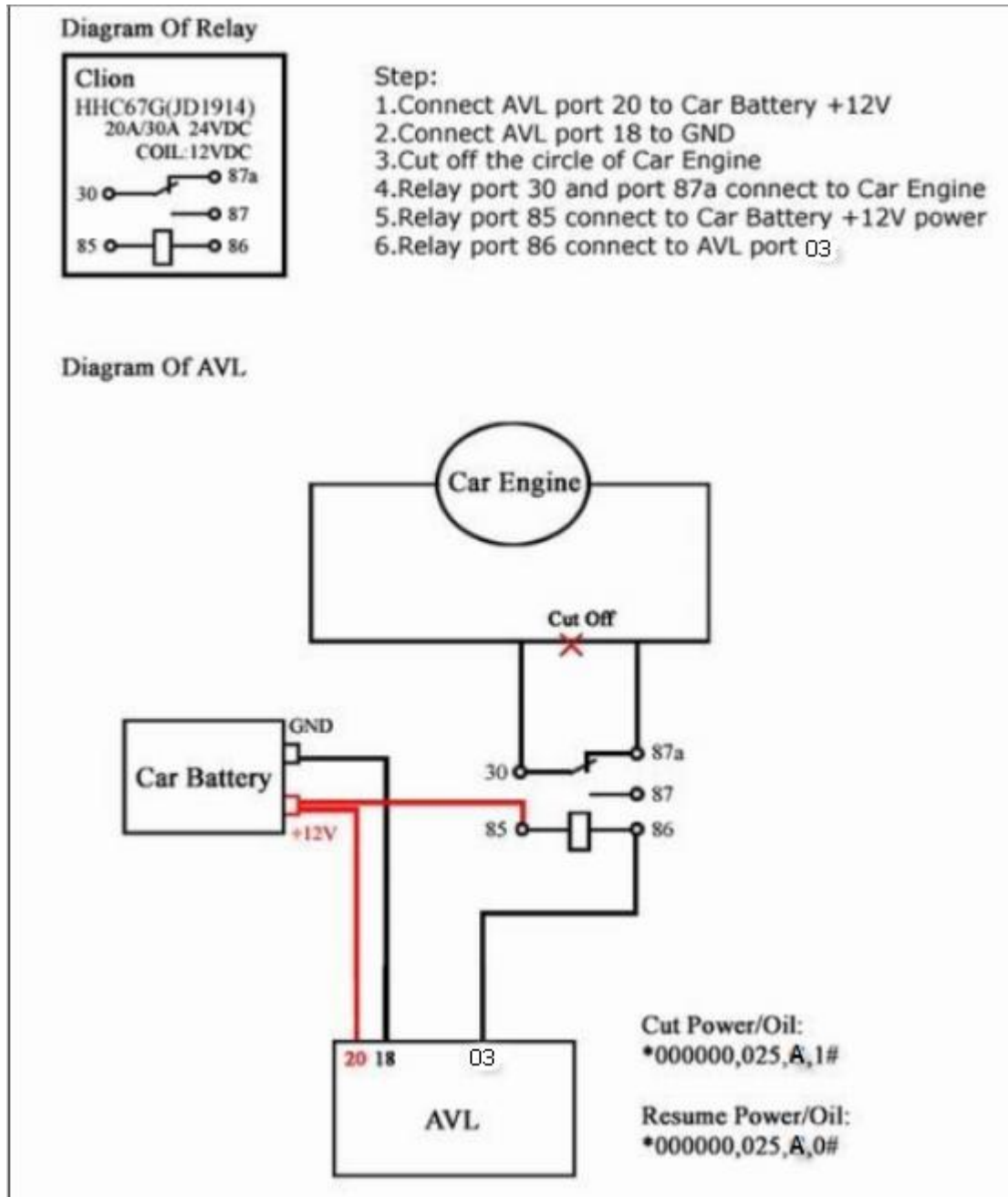
When Car Switch On, AVL will send Alarm to Server, type is 54

When Car Switch Off, AVL will send Alarm to Server, type is 55

When finish this connect, in every GPRS data will have the state of Engine

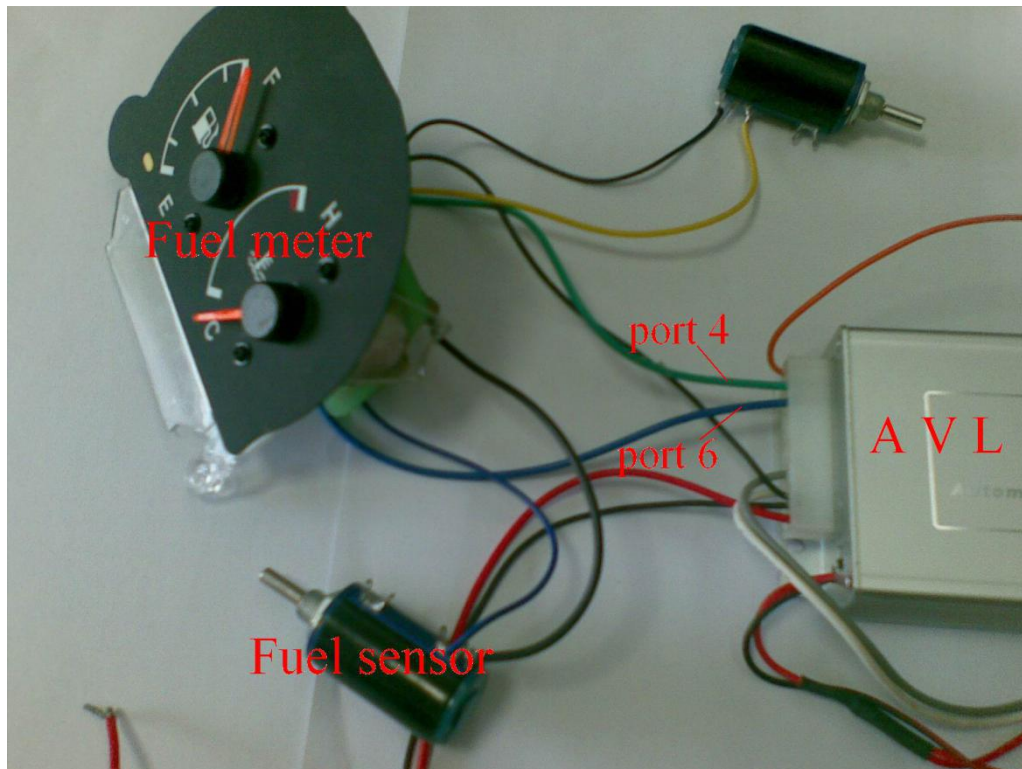
## 1.4.4 Connect Relay to control the Car Oil/Power.

(port 03/05/07)

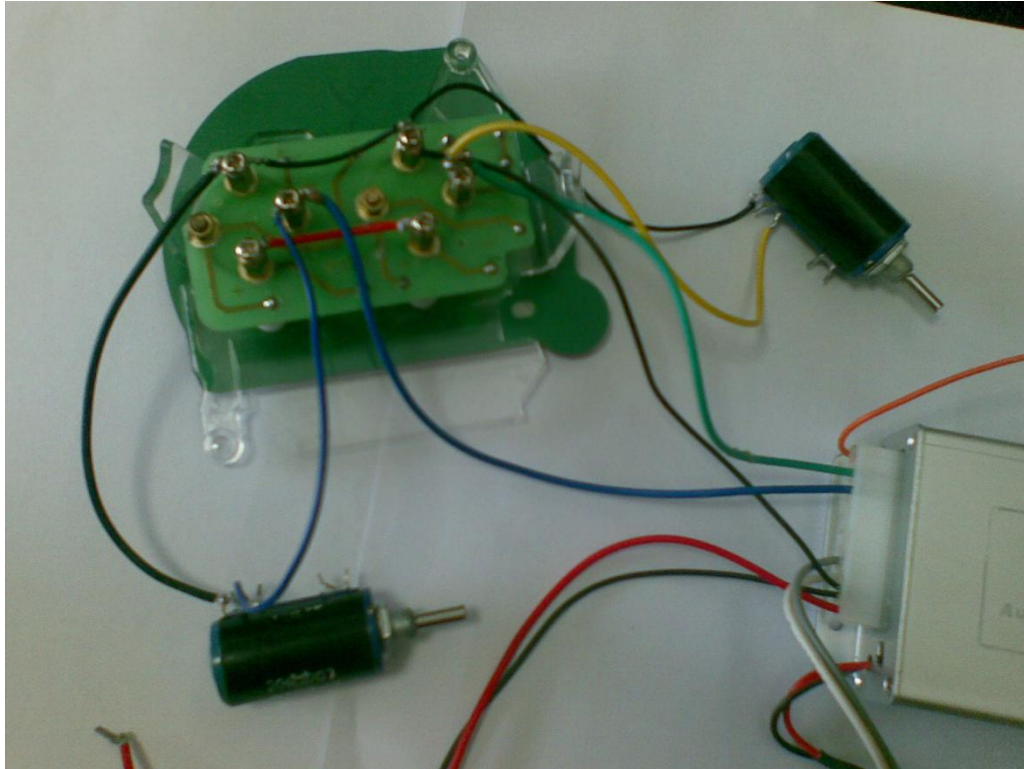


## 1.4.5 Connect to the fuel sensor to detect the fuel.(port 04/06)

Our AVL can get the voltage by the AD collection and according to the voltage change to know the fuel level in the tank. because the fuel tank in different car is different .so you need to find out the different relation between the voltage and fuel .our AVL can collect the voltage from 0-36V.so that mean if you want to know the fuel leave in the fuel tank, so you should work out the coordinate relation between voltage and fuel in your server. when the GPRS data come to the server, the server work out fuel level in the tank by analyze the GPRS data.



Picture 1 ( how to connection )



Picture 2 (About the fuel meter )

## II. Get started, please follow me!

### 2.1 Installation Guide

#### ♣ Step1: Inset a SIM card.

(1) Using a needle to press the yellow plastic (in the hole), then the cover of SIM card will pop-up, take the slipcover of SIM card out to put the SIM card in it, with the chip module up, as the below pictures shows:



(2) Put back the front cover, and move the sliding cover to the unit.

**【note】** :Please make sure the SIM card can communicate with other cards via SMS and call, and before installing the SIM card to the holder, please use a mobile phone to empty the SMS storage of the card.

♣ **Step2: Connect GSM Antenna and GPS Antenna to AVL unit.**

(1) Fasten the connection by turning the metal end of the antenna, until the connection is very firm.

As the below picture shows, the above socket is for GSM antenna, the below is for antenna in picture 1, picture 2 is GPS antenna, picture 3 is GSM antenna.



Picture 1





Picture 2 (GPS Antenna)



Picture 3 (GSM Antenna)

**【note】** : We would better to put the GPS antenna top to the open air out of the car to get more GPRS signal, or make sure that it will not be covered or shielded by any electromagnetic object.

**【more information】** :AVL relies on GSM and GSP system for location and communication, so we must make sure that GSM signal and GSP signal are in good state.

- GSM is the abbreviation of Global System for Mobile Communication. At first, you should insert a phone (SIM)card into the AVL, In virtue of GSM system, AVL and your mobile phone in hand can communicate with each other.

- GPRS is General Packet Radio Service, is a service technique based on GSM, by virtue of the service, the AVL can communicate with a Server.

- GPS is the abbreviation of Global Positioning System. There are 24 positioning satellites around the earth sending GPS signal to the AVL straightly. In order to receive signal, the top of GPS antenna cannot be shielded or covered by any electromagnetic object. The use can bring the top of GPS antenna to the open air for better GPS signal. If AVL is in a shielding environment temporary, please don't worry, because once the AVL leaves the shielding environment, it will regain GPS signal. Further, the product can provide accurate position

information under dynamic condition, the precision will be kept within 10 to 15 meters.

♣ **Step 3: Fix the AVL in your car and connect the AVL to the power of your car.**

(1) Connect the wires to the I/O socket, please make sure the wires has inserted to the I/O socket firmly. As below:



(2) look at the above pictures shows, Connect Pin20 to the anode of the Car Battery, and Pin18 to the GND of Car battery GND, please note that the exterior voltage must be between 9 V and 36V, please make sure to comply with it.

**【more information】** : AVL unit have lithium battery in it, and if AVL is cut off from the power of the car, lithium battery will supply power to the AVL. Once AVL is connected to the car power, lithium battery will be charged until it reaches full.

**【caution】** :After you have completed all the process, we must check that the wiring connections are firm and reliable, and the joints are wrapped with insulating tape tightly.

♣ **Step 4: Turn on the AVL, observe the three LED in the AVL.**

(1) Turn on the AVL, you will see the three LED flash at the same time.

It entered into initial mode.

(2) After about 25 S, the AVL will enter into work mode, Look at the picture, with various statuses as below.

● **LED Indicators**



LED1 (green color)	GSM Indicator
LED2 (orange color)	Tremble &Power sensor Indicator
LED3 (blue color)	GPS Indicator

LED	State	Meaning
Tremble sensor LED (orange LED)	light 0.1s dark 0.1s	System Initial
	light	Trembling
GSM LED (green LED)	light 0.1s dark 0.1s	System Initial
	light 0.1s dark 2.9s (flash)	GSM receiver work well
	light 1s dark 2s (glow periodically)	No GSM signal
GPS LED (blue LED)	light 0.1s dark 0.1s	System Initial
	light 0.1s dark 2.9s (flash)	GPS receiver work well
	light 1s dark 2s (glow periodically)	No GPS signal

When AVL is in work mode, if GSM signal is in good state, the green led will flash, similarly, if GPS signal is in good state, the blue led will flash, if the green led is not flashing, that indicates the GSM signal is not good, if the blue led is not flashing, then you should check if there is something upon the GPS antenna top. Further, if you find the three led are dark, maybe the AVL entered into "sleep-mode" or there is no power in the AVL unit.

## 2.2 Send instructions and track a vehicle

### ♣ Ask for a present position of your vehicle

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

Edit a message as following format, and send it to the AVL:

SMS Format: **\*+Password+, +000#** (*init password is : 000000*)

For example: **\*000000,000#**

The AVL will send a SMS back to you, including longitude &latitude data.

**【note】** : \* is the begin letter, 0 is a number zero, not a letter. And please do not enter spaces or hyphens in the SMS. And the use must make sure that the AVL

unit is not in "sleep" mode.

#### ♣ Modify your password

Before you use the AVL, you should modify your password, for fear controlling the AVL by other people, you can use the "001" instruction.

SMS Format: **\*+Password+, +001+, @@@@#@#**

For example: if you want modify your password to 123456, you can send "**\*000000,001,123456#**" to the SIM card in the AVL. If you send it successfully, after a few seconds, it will send "Receive:'001'OK \*000000,001,123456#" to you automatically. After this, your password will be 123456. Then when you do the next process, you should bear the password in mind.

**【note】** : If you have changed your password, the password in SMS command isn't 000000 anymore, it must be the modified password, please note it.

#### ♣ Track your vehicle

Tracking report function can be turned on or off according to the requirements of the user, by using "002" instruction, you can set a time interval (X), report times(Y). That is to say, you can receive position report at X mins interval, and report Y times before it stops.

SMS Format: **\*+Password+, +002+, X,+Y #**

For example: **\*000000,002,2,30#**

If the AVL received it successfully, it will send one SMS back to check it, then send you position message every 2 mins, 30 times.

**【more information】** : X means Time interval (Unit: min)

It can be one of 0~999, X=0 means stop tracking;

Y can be one of 0~999, Y=999 means it will not stop tracking(until another stop instruction)

Y=0, Disable this function

## 2.3. Machine Setting

### 2.3.1 GPRS Setting Step by Step

This is a wonderful function, by virtue of GPRS, user can track the car, and view status of the car conveniently on PC. The GPRS ID of AVL , is use the IMEI number of GSM module. You can send sms command **\*000000,801#** to AVL to check it.

**【note】** :Please note that, in the bellow steps, **\$\$\$\$\$\$** is user password.

- Step1: Make sure that your SIM card in the AVL has GPRS function.
- Step2: Set APN

Every country has its APN, please refer to the attachment.

SMS format: **\*\$\$\$\$\$,011,APN,Username,Password#**

For example: **\*000000,011,cmnet,,#**

The user name and password can be null, “cmnet” is a Chinese`s APN.

After you send the SMS, it will send one SMS back to check it.

- Step3: Set IP Address & port number

By sending the SMS command, you can connect your AVL to Server by gprs.

SMS format: **\*\$\$\$\$\$,015,1,IP,PORT#**

For example: **\*000000,015,1,gateway.gotracking.net,54930#**

gateway.gotracking.net is the server`s domain address, 54930 is the port..

If you want to send GPRS data to ours server test, must let us activate IMEI, If client have the server by oneself, pls make sure the IP and port is correct.

- Step4 Set GPRS time interval

SMS format: **\*\$\$\$\$\$,018,X,Y#**

X is the time interval, Y is the times of data has been sent.

For example: **\*000000,018,300,999#**

This command is to set up the time interval is 5 mins and no times limit.

- Step5: Enable GPRS function

Send a SMS as following format.

SMS format: \*\$\$\$\$\$,016,X#

For example: \*000000,016,1#

X must be 1, meaning: Enabling GPRS function.

And, X is 0 means close GPRS function.

### 2.3.2 Set according to the digital input 3 status send GPRS data

SMS format: \*\$\$\$\$\$,047,X,Y#

X=0 , disable this function; X=1,enable this function(default)

For example: \*000000,047,1,60#

Enable this function, the machine will 60 seconds send a GPRS data when digital input 3 detected engine off, if the digital input 3 detected engine ON, the machine will send GPRS data intervals in accordance with the 018 instructions.

if you needn't according to the digital input 3 status send GPRS data, please disable it .

For example: \*000000,047,0,60#

### 2.3.3 Set the sleep mode

If machine no vibration or Digital Input3 didn't detected engine on , the machine will auto into sleep mode, all LED lights are off, machine will not send any data .

If disable 047 command, the machine will only according to whether vibration into sleep,Even if the the digital input 3 detected engine OFF.

SMS format: \*\$\$\$\$\$,046,X,Y,Z,ABCDEFG#

X=0 , disable this function; X=1,enable this function(default)

Y, no task time ( no vibration or Digital Input3 didn't detected engine on)

Z, vibration wake up time

ABCDEFG=0, (reserved)

For example: \*000000,046,1,60,10,000000#

When enable sleep function, in 60 seconds , the machine no vibration or Digital Input 3 didn't detected engine on, will into sleep, when continuous vibration after 10 seconds, the machine is awakened.

the conditions of the awakening as shown below:

- 1) Calling and send SMS(command) to device
- 2) Trigger I/O port
- 3) Connect or Disconnect the external power supply
- 4) Enable heartbeat function send heartbeat data .(please see the 040 command )

### 2.3.4 Set the heartbeat function

The heartbeat data will wake up it when machine into sleep .

SMS format: \*\$\$\$\$\$,040,X,Y#

X=0 , Disable the heartbeat function;

X=1, Enable the heartbeat function;

Y, The heartbeat time interval data

For example: \*000000,040,1,10#

10 mins send a heartbeat data , then wake up the machine .

### 2.3.5 Set ACC alarm function

Buzzer will be called when the engine is on, until brush magnetic card or effective magnetic card, buzzer will stop, the device will send login data ( 1C alarm type), if brush with the same card again, the device will send logout data (1D alarm type), the buzzer will call again,if you brush with the different card, the different card will login, the buzzer will not call, If there is have not read magnetic card ID, the driver will not change status (1A alarm type).

• Step1: Set detection engine function

SMS format: \*\$\$\$\$\$,047,X,Y#

X=0 , disable this function; X=1,enable this function(default)

For example: \*000000,047,1,60#

Enable this function, the machine will 60 seconds send a GPRS data when digital

input 3 detected engine off, if the digital input 3 detected engine ON, the machine will send GPRS data intervals in accordance with the 018 instructions.

• **Step2: Set magnetic card reader function**

SMS format: \*\$\$\$\$\$,130,X#

X=0 , Camera working mode(default);

X=1, Magnetic card reader working mode(standard);

X=2, Magnetic card reader working mode(custom);

X=3,Tzone RD01/RD04;

For example: \*000000,130,1#

Enable Magnetic card reader function((standard);

• **Step3: ACC alarm function**

SMS format: \*\$\$\$\$\$,132,X,Y#

X=0, Disable this function(default)

X=1, enable function

Y: select Output port (connect buzzer).

Y=0,disable (default);

Y=1,OUTB;

Y=2,OUTC;

Y=3,Magnetic card reader of the buzzer(custom)

For example: \*000000,132,1,1#

when ACC ON , buzzer called until brush magnetic card, buzzer connect outputB.

**Step4: Setting up effective magnetic card type**

(If you need to choose magnetic card type, please set this instruction, if you needn't, please don't set this instruction)

SMS format: \*\$\$\$\$\$,133,A,X1,X2,X3,X4,X5,X6,X7,X8,X9,X10#

A=0, disable this function(default);

A=1, enable this function;

X1-X10: magnetic card type (1-4 characters);Maximum support 10 types

For example: \*000000,133,1,12,24,45#

Enable 12/24/45 magnetic card t type, when brush these types of magnetic card,



buzzer stops.

## 2.4 Machine peripherals Settings

### 2.4.1 Set the one\_wire(port 17/18/19)

One\_wire connect temperature sensor or Ibutton

SMS format: \*\$\$\$\$\$,028,X,Y#

X=0 , Enable temperature sensor function (default);c

X=1, Enable the Ibutton function;

Y, Whether Credit card after Digital OUPUT B will output 3 seconds 0v voltage(can connect Ibutton led)

Y=0 don't output 3 seconds 0v voltage , Y=1, will output 2 seconds 0v

For example: \*000000,028,1,1#

When enable the Ibutton function , if output C connet Ibutton, Ibutton LED will be bright for 3 seconds after credit Ibutton card.

### 2.4.2 Set the RS232 (port 8/9/10/19)

RS232 can connect Camera / Magnetic card reader/RD01/RD04

#### Camera

- Step: Immediately take pictures

SMS format: \*\$\$\$\$\$,202#

a photo taken immediately

you also can set 200 or 201 command to take pictures

#### Magnetic card reader

- Step1: Set COM 1 working mode

SMS format: \*\$\$\$\$\$,130,X#

X=0 , Camera working mode(default);

**X=1, Magnetic card reader working mode(standard);**

**X=2, Magnetic card reader working mode(custom);**

**X=3,Tzone RD01/RD04;**

(RD01/RD04 requirements: must use hex format, don't include the ID card reader, 115200 baud rate, the customer should be set 134 command corresponding to the types of the tag to receive)

Note: when use this function, please enable 047 command, set 130 command (enable Magnetic card reader function) and 131 command Y set is 0.

For example: **\*000000,130,1#**

**Enable Magnetic card reader function(standard).**

● **Step2: Select the Magnetic card track**

**SMS format: \*\$\$\$\$\$,131,X#**

**X: 1:track 1;**

**2 :track 2;**

**3: track 1 and 2;**

**4 :track 3;**

**6 :track 2 and 3;**

**7 :track 1 and 2 and 3(default);**

**Y: Whether Credit Magnetic card after Digital OUPUT C will output 3 seconds 0v voltage (can connect buzzer)**

**Y=0 don't output 3 seconds 0v voltage , Y=1, will output 3 seconds 0v voltage(default)**

For example: **\*000000,130,7,1#**

When enable the magnetic card reader function , all the track can be read, if output C connect buzzer, the buzzer will be loud for 3 seconds after credit magnetic card.

**RD01/RD04**

The deivce can connect RD01/RD04, and receives the TAG01/02/03/04/0/201 data

● **Step1: Set COM 1 working mode**

**SMS format: \*\$\$\$\$\$,130,X#**

**X=0 , Camera working mode(default);**

**X=1, Magnetic card reader working mode(standard);**

**X=2, Magnetic card reader working mode(custom);**

**X=3,Tzone RD01/RD04;**

(RD01/RD04 requirements: must use hex format, don't include the ID card reader, 115200 baud rate, the customer should be set 134 command corresponding to the types of the tag to receive)

Note: when use this function, please enable 047 command, set 130 command (enable Magnetic card reader function) and 131 command Y set is 0.

**For example: \*000000,130,3#**

**Enable Tzone RD01/RD04 function**

- **Spte2: Set the COM receives the card type of card reader**

**SMS format: \*\$\$\$\$\$,134,X#**

**X=0, tag01/tag02(default);**

**X=1, tag03;**

**X=2, tag04;**

**X=3, tag06;**

**X=4, tag201;**

**For example: \*000000,134,0#**

**Enable COM receive TAG01/TAG02**

## 2.5 Common questions and solution

While you are operate your AVL, if you detect any question, please check if the following paragraph can help you.

■ **Q: You sent one SMS to the AVL, then if you receive one SMS, reading "Set error....." in a few mins. What happened?**

■ **A: your SMS command must have a format error, please check it:**

(1): **Has your password been modified? And is the password right?**

(2): **W must be capital letter, and, if your password is initial, then, 0 is a number, not a letter.**

(3): There is no space in the SMS, and you must check the symbol in the SMS.

- Q: When I call the AVL for a position, why is the AVL busy now?
- A: (1) please check if GSM signal is in good state, Check if the green led is flashing. If the green led is growing periodically, not flash. That indicates the GSM signal is not in good state, you should wait for a minutes or remove it to anther position. If the green led is dark, the AVL must be in "sleep mode", please note (2).

(2) If you find the there leds are dark at the same time, the AVL is in "sleep mode", you must wake it up, or you can turn off the "sleep mode" function. You can use "046"SMS command, please refer to the SMS instruction list. You can send: "**\*\$\$\$\$\$\$,046,0,10,10,10#**"to the AVL(\*\*\*\*\* is your password ).

If the AVL send a suscessful SMS back, it indicates the AVL will never enter into sleep (until you change it).

## 2.6 The Format of the GPRS

**AVL05(3G) GPRS data is hex format. The GPRS command at the same as sms command in this user guide.**

Please refer to the document AVL05 3G GPRS Protocol.

## III. Attachment

### 3.1 SMS instruction list.

If you want to know more about the AVL, and design your special AVL, you can refer to the SMS instruction list.

NO.	SMS Instruction	Format	Note
000	Request one position	*\$\$\$\$\$,000#	
001	Modify user password	*\$\$\$\$\$,001,@@#@#@#@#	\$\$\$\$\$ is old password @@@@@ is new Password (default:000000)
002	Set the time intervals of position notice SMS  The Position SMS will send to the preset SOS number.	*\$\$\$\$\$,002,X,Y#	X ( Max 3 Digital) =0, Stop send position SMS (default) =[1,60000] Time interval (Unit: mins) Y (Max 3 Digital) =[1,999) times send SMS Y=0, Disable this function (default) Y=999, continue send SMS
003	Set a preset phone number for SOS button	*\$\$\$\$\$,003,P,F,phone Number#	P= 0,Disable this function (default) P= 1, Camera get picture F = 0, Disable this function (default) F =1, send an alarm SMS to the phone Number Notice : phone Number( must <25 digits)
004	Set low power alarm  When the AVL voltage is lower than the preset value, AVL will send one lower power alarm GPRS data to the Preset Server.	*\$\$\$\$\$,004,XXX,YYY#	XXX is the low power alarm voltage, eg: 3.8v,XXX=380 (default:360) YYY is the auto shut down voltage, eg: 3.5v,YYY=350 (default:340) For example: *\$\$\$\$\$,004,380,350#
005	Set over speed alarm  When the AVL speed higher than the preset value, AVL will send one over speed alarm GPRS data to the Preset Server.	*\$\$\$\$\$,005,S,X,Y,Z,A#	S=1 Enable speed alarm, S=0 Disable speed alarm. (default) X=[10<XXX<250] (The speed preset value) unit is km/h Y is the times over speed

			<p>[1,999],unit is second Z=[10,360],( The time interval to send speed alarm) unit is second. A:beeper will call when over speed A=0,disable (default); A=1,OUTB as beeper pin A=2,OUTC as beeper pin</p>
006	<p>Set Geo-fence alarm When the AVL move out preset scope, AVL will send one Geo-fence GPRS data to the Preset Server.</p>	<p>*\$\$\$\$\$,006,+lat1,+long1,+lat2,+long2,X,Y#</p>	<p>Lat=[-9000.0000,+9000.0000] Long=[-18000.0000,+18000.0000] X is for time interval send alarm message. Y=0, Disable GEO-fence alarm. (default) Y=1, Into GEO-fence alarm. Y=2, Out of GEO-fence alarm. <b>Note:</b>Long1&gt;long2&amp;lat1&gt;lat2 Make sure the position of north latitude and east longitude set it (+),otherwise set it (-) Format:+AAAAA.BBBB Make sure set the two positions have the same digit after comma.</p>
008	<p>Extend setting</p>	<p>*\$\$\$\$\$,008,ABCDEFG#</p>	<p>A=0, Disable position report function which get position SMS by Calling A=1, Enable position report function which get position SMS by Calling (default) B=0, Send the SMS in Text format.(default) B=1, Send the SMS in NMEA format. C=1, AVL do NOT hung up when one call incoming C=0, AVL hung up after 4~5 rings when call incoming (default) D=0</p>

			<p>D=1,disable all sms function.  E=0, ADB Normal AD collect (default)  E=1, ADB Oil collect.(The average of two minutes to collect)  F=0, ADA Normal AD collect (default)  F=1, ADA Oil collect.(The average of two minutes to collect)  The difference of two method is:  Normal AD collect will output the AD value currently  AD collect percent will output the value of fuel percent.  G=0, ADA/ADB is less than 1v will filter, display is 0 (default)  G=1, ADA/ADB is less than 1v not filtered</p>
011	Set APN,Username,Password	*\$\$\$\$\$,011,APN,Username,Password#	<p>APN : APN string (must &lt; 28 chars)  (default:cmnet)  User name: Your username (must &lt; 28 chars)  Password: Your password (must &lt; 28 chars)  * If haven't username or password, then left it blank.  For example:  *000000,011,CMNET,,## (It haven't username and password)</p>
015	Set IP Address & port number	*\$\$\$\$\$,015,0,IP,PORT#	<p>IP : xxx.xxx.xxx.xxx  PORT : [1,65535]</p>
016	Enable/Disable GPRS function	*\$\$\$\$\$,016,X#	<p>X=0 Disable GPRS unction (default)  X=1 Enable GPRS Function  This is the last step of GPRS setting.</p>
018	Set the time intervals of GPRS Data	*\$\$\$\$\$,018,X,Y#	<p>X (3 Digital)  =0 stop send time interval GPRS</p>

			<p>= [10,999] Time interval (Unit: sec) (Default:300) Y (3 Digital) =0, stop send time interval GPRS = [1,999] After send YYY times stop. =999, continue send GPRS un-stop(default)</p>
019	Set the GPRS mode	*\$\$\$\$\$,019,X#	<p>X=0, Use the UDP mode X=1, Use the TCP mode (default)</p>
025	Enable/Disable I/O port	*\$\$\$\$\$,025,X,Y#	<p>X=A means OUTA X=B means OUTB X=C means OUTC Y=0, Out port is low (the oil of circuit is restore) (default) Y=1, Out port is high ( the oil of circuit will cut off ) For Example: *000000,025,A,1#</p>
028	Ibutton function	*\$\$\$\$\$,028,X,Y#	<p>X:1: enable; 0 :disable(default); Y:Credit card light Ibutton LED function(connect Output B ) 0= disable this function (Default); 1= enable this functuon; If select 1 , Ibutton LED will be bright for 3 seconds after credit card.(Output B)</p>
040	Heart Beat function (only send heartbeat data in sleep mode )	*\$\$\$\$\$,040,X,Y#	<p>X=0 Disable the heart beat function X=1 Enable the heart beat function(default) Y, the heart beat interval, unit is minute[1,1440], unit:min,default:60</p>
046	Sleep function	*\$\$\$\$\$,046,X,Y,Z,ABCDEFG#	<p>X=0, disable sleep</p>



			<p>Function (default)</p> <p>X=1 Enable sleep Function</p> <p>Y: the time of freedom, means if there is no duty [10-600]unit:sec, 60 is default.</p> <p>Z: the time of wake up from sleep module when the AVL19 begin motive. [5-600], unit is sec, default 5s.</p> <p>A,B,C,D,E,F,G: reserved</p>
047	Detection engine function	*\$\$\$\$\$,047,X,Y#	<p>X=0 Disable function(default)</p> <p>X=1 Enable Function, digital input 3 connect to engine</p> <p>Y: set the time interval GPRS data when engine off</p> <p>Y=0, ban this feature</p> <p>Y:[1,3600]set the time interval ,unit:second, Default:600</p> <p><b>Note: this command invalid when the machine into sleep mode.</b></p>
113	Set Oil sensor	*\$\$\$\$\$,113,A,B#	<p>A,B=[0,2000], the real voltage is [0,20V].</p> <p>A is the empty fuel of corresponding voltage, (default:0)</p> <p>B is the full fuel of corresponding voltage. (default:0)</p> <p><b>*note: Every different types of car have different corresponding relation.</b></p> <p><b>Pls test it by yourself, then set the command.</b></p> <p><b>Eg: *00000,113,100,500#</b></p> <p><b>Explain: it means empty fuel of corresponding voltage is 1V,and the he full fuel of corresponding voltage is 5V,if</b></p>

			the AVL detect the voltage is 4V, then the value of fuel percent is $(4-1)/(5-1)=75\%$ .
116	OutA Change switch	*\$\$\$\$\$,116,A#	A=1, active 117 command set . A=0, Don't active 117 command set (default:0)
117	Set OutA Change	*\$\$\$\$\$,117,A,B,C,D#	A=[0,999]km/h , the thresold of speed. (default:50) B=[0,60000] ms, the interval of outA off (default:500) C=[0,60000] ms, the interval of OutA on (default:500) D=[0,99], the times of OutA change (default:3)  If the speed is lower than, the OutA will off B seconds, then restore C seconds, repeat it D times.  *note : because of the safety, you had better set the parameter like this: *000000,117,60,500,3000,5#
118	Extend 2 setting	*\$\$\$\$\$,118,ABCDEFG#	A=0, Take picture 320*240 (default) A=1, Take picture 640*480 B=C=D=E=F=G=0, reserved
119	All data transmission mode	*\$\$\$\$\$,119,X#	X=0 GPRS transmission (Default) Y=1 SMS transmission
120	Acceleration and deceleration alarm	*\$\$\$\$\$,120,A,B,C#	A=0 Disable this function (Default) A=1 Active this function. B= [0,2000] Acceleration 0.1m/S <sup>2</sup> C= [0,2000] deceleration 0.1m/S <sup>2</sup>
121	Mileage send GPRS data	*\$\$\$\$\$,121,X,Y#	X=0 Disable this function (Default)

			<p>X=1 Active this function.                  Y=[0,60000] ,Mileage range ,                  unit:km;  <b>Note: 018 command is invalid                  when enable this command</b></p>
122	Roaming send GPRS interval time	*\$\$\$\$\$,122,X,Y#	<p>X=0 Disable this function                  (Default)                  X=1 Active this function.                  Y=[1,999] Roaming time                  interval (Unit:min)</p>
43	ACK function	*\$\$\$\$\$,123,X#	<p>X=0, Disable ACK                  function(Default)                  X=1, enable ACK function</p>
130	Set com 1 working mode	*\$\$\$\$\$,130,X#	<p>0: camera (default)                  1: Magnetic card reader                  (standard)                  2: Magnetic card reader                  (custom)                  3:Tzone RD01/RD04,  <b>(RD01/RD04 requirements:                  must use hex format, don' t                  include the ID card reader,                  115200 baud rate, the                  customer should be set 134                  command corresponding to                  the types of the tag to                  receive)</b></p>
131	Set Magnetic card working mode	*\$\$\$\$\$,131,X,Y#	<p>X:                  1:track 1;                  2 :track 2;                  3: track 1 and 2;                  4 :track 3;                  6 :track 2 and 3;                  7 :track 1 and 2 and 3(default)                  Y:when swipe card , buzzer                  will call.(connect output C)                  Y=0, disable this                  function(default)                  Y=1,buzzer will be loud for 3                  second after credit card.(Output                  C)</p>

132	ACC alarm function (when ACC ON , buzzer called until brush magnetic card)	*\$\$\$\$\$,132,X,Y#	<p>X=0, Disable this function(Default) X=1, enable function Y: select Output port (connect buzzer). Y=0,disable (default); Y=1,OUTB; Y=2,OUTC; Y=3,Magnetic card reader of the buzzer(custom) <b>Note: when use this function, please enable 047 command, set 130 command (enable Magnetic card reader function) and 131 command Y set is 0.</b></p>
133	Setting up effective magnetic card type	*\$\$\$\$\$,133,A,X1X2,X3,X4,X5,X6,X7,X8,X9,X10#	<p>A=0, disable this function (default); A=1, enable this function; X1-X10: magnetic card type (1-4 characters); Maximum support 10 types</p>
134	Set the COM receives the card type of card reader	*\$\$\$\$\$,134,X#	<p>X=0, tag01、tag02(default); X=1, tag03; X=2, tag04; X=3, tag06; X=4, tag201; <b>Note: RD01 can't receive TAG06</b></p>
200	Camera Time taking pictures	*\$\$\$\$\$,200,X,Y#	<p>X= [1,999]/Min Picture interval (default:10) Y= [0,999]/Times The number of photographs (default:0)</p>
201	Set IO picture state	*\$\$\$\$\$,201,X#	<p>X=0 ,Disable this function (Default) X=1, take picture when the digital input 1 connected X=2, take picture when the digital input 1 connection break off X=3, take picture when the digital input 1 for both</p>

			connected and connection break off
202	Take picture	*\$\$\$\$\$,202#	Take one picture
204	Select GPRS data type in log	*\$\$\$\$\$,204, X#	X=0: ASCII(default); X=1: HEX X=2: HEX+ASCII
400	Angle Alarm	*\$\$\$\$\$,400,X,Y#	X=0, Disable this function (Default) X=1, Active this function. Y= [1,360] Angle range
500	Clear data flash	*\$\$\$\$\$,500#	Clear stored in the flash memory inside the machine
600	Reboot time	*\$\$\$\$\$,600,X,Y#	X=0,Disable his function X=1, Active this function. (Default) Y= [10,9999]/ Minutes, Reboot time interval (default: 1440)
801	Reading the IMEI number	*\$\$\$\$\$,801#	This command to ask AVL reply the IMEI number and the firmware of version.
990	Initialization Tracker	*\$\$\$\$\$,990,099#	It will set all parameter to factory default value (Excluding the Password).
991	Reboot by SMS command	*\$\$\$\$\$,991#	It will reboot by this SMS command.

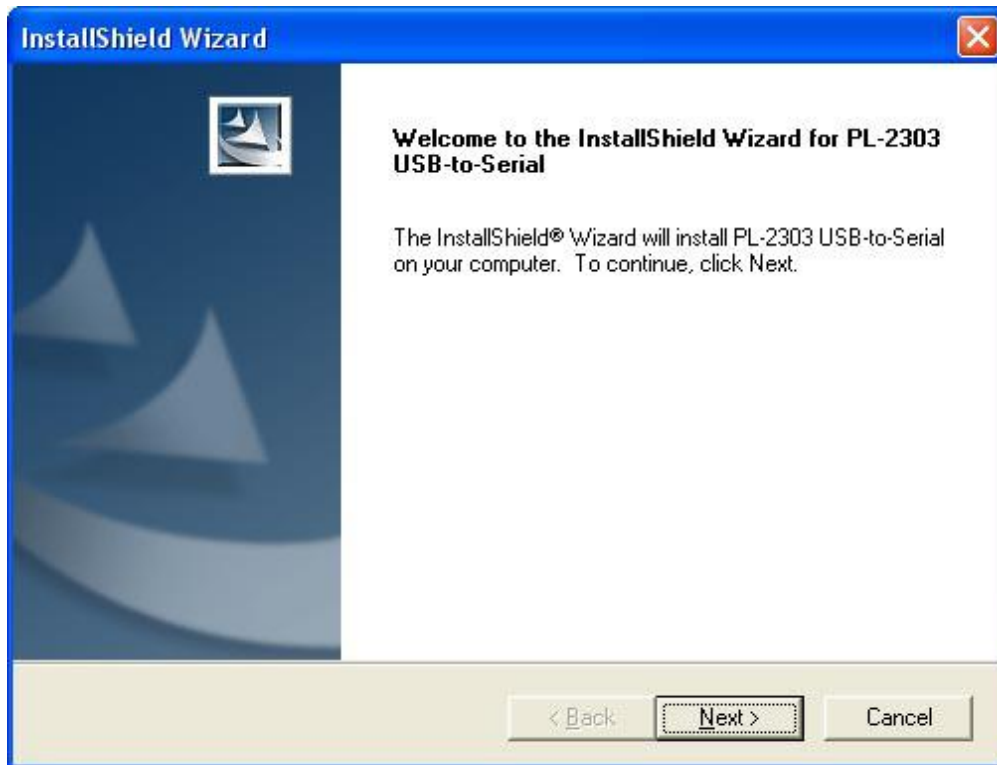
\$\$\$\$\$ is user's password , and initial password is 000000

## 3.2 Update the firmware of the AVL

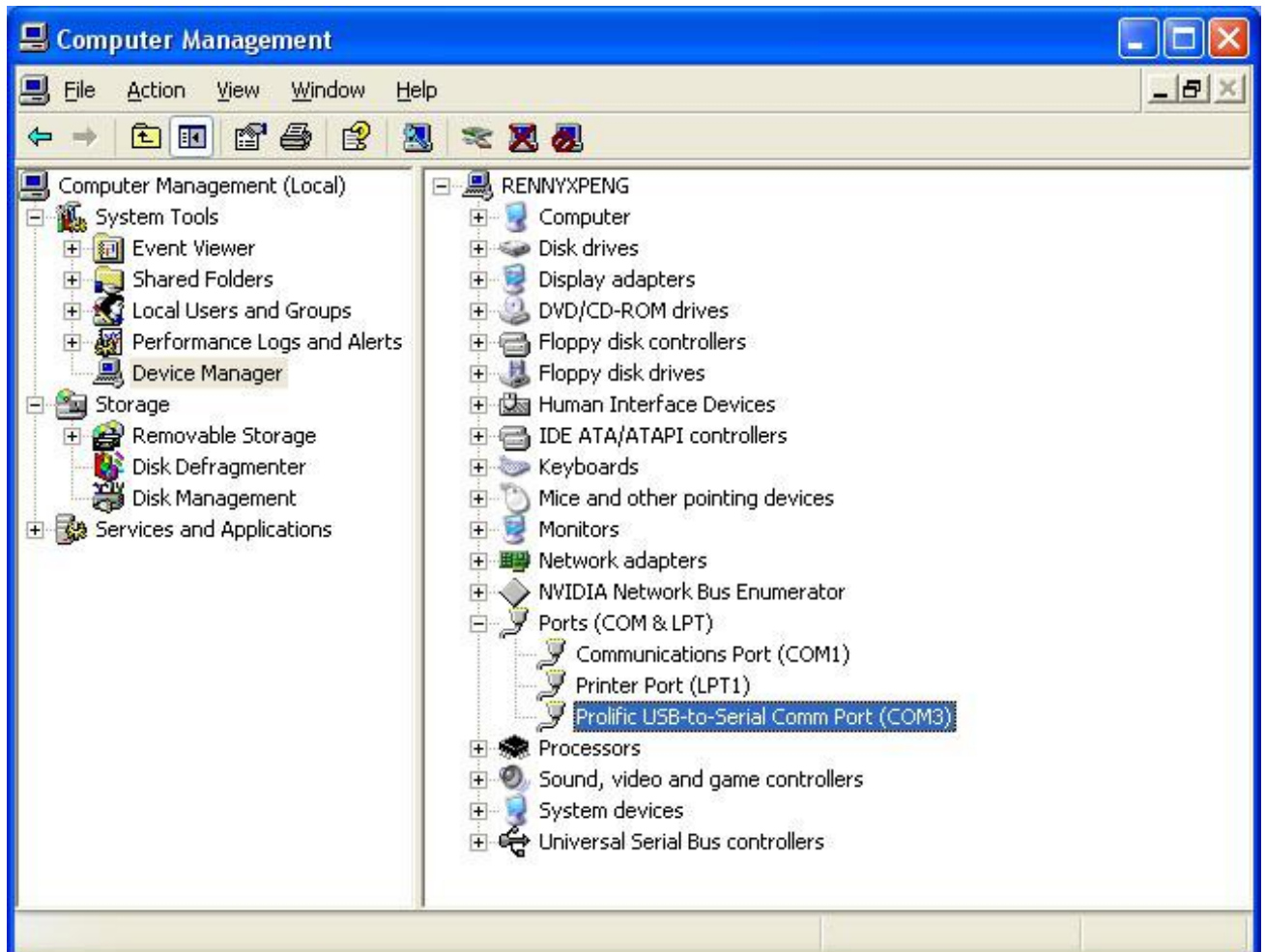
### 3.2.1 IAP Update User Guide

#### 1) Install RS232 cable driver

##### A. At the first, Install the Driver for “USB Converter”

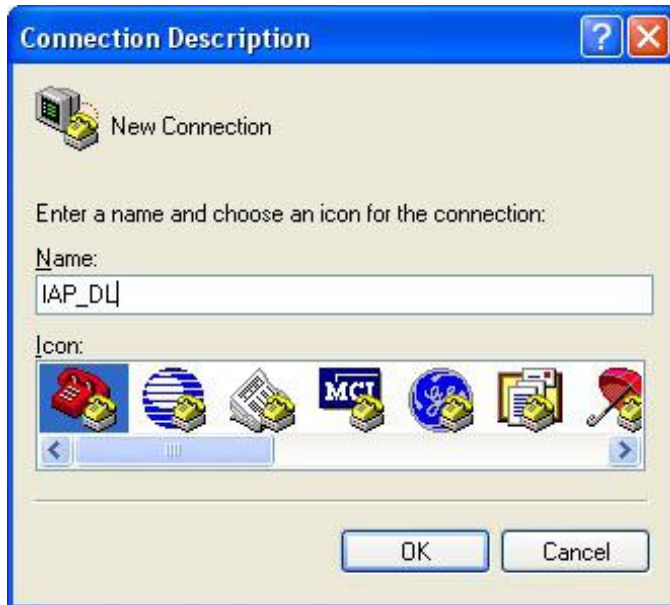


**B. Connect the AVL unit to PC through RS232 cable, View the com port that the cable used**



2) Turn on AVL device

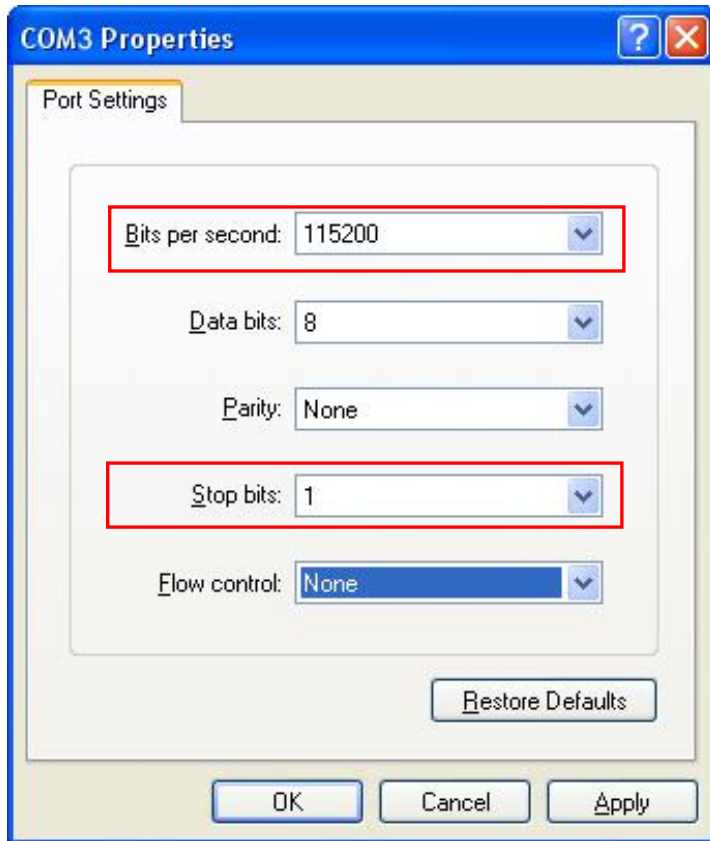
3) Build a New Hyper terminal connect, fill the name, example as IAP\_DL



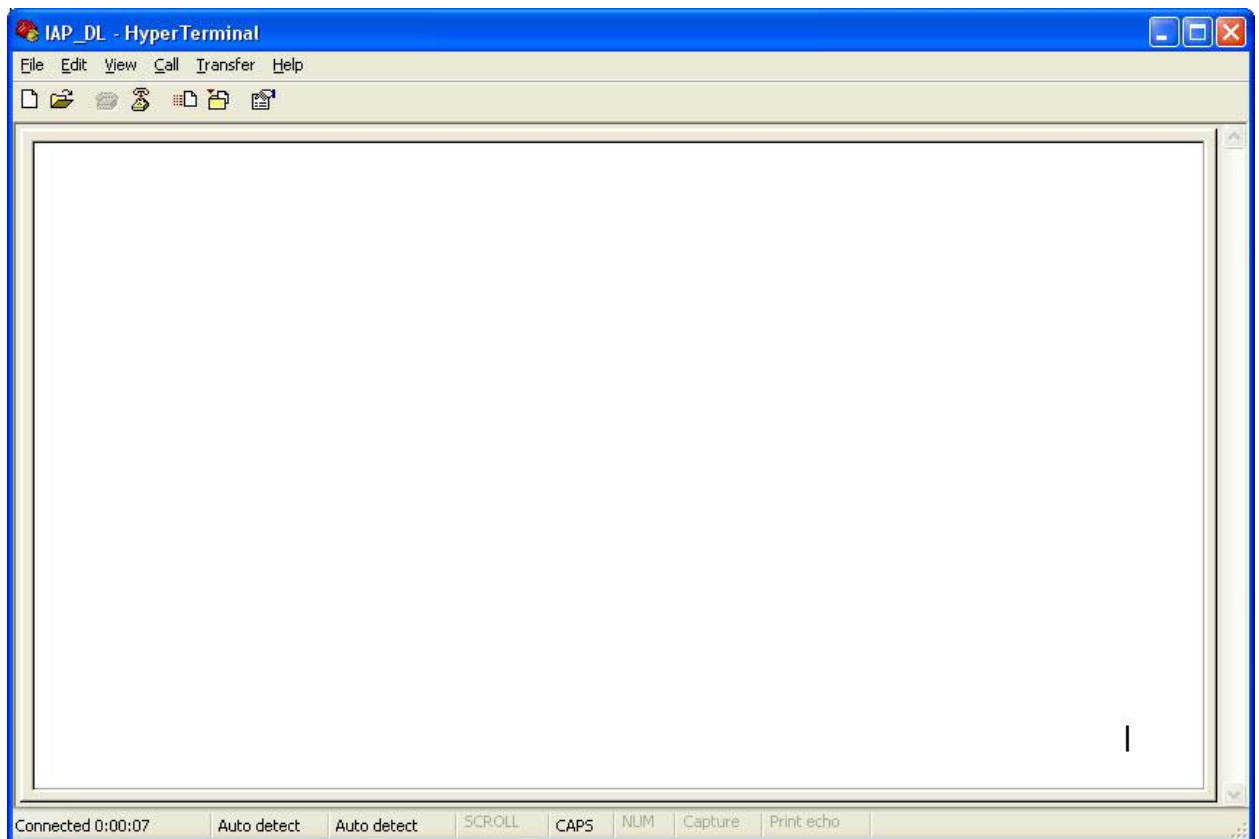
4) Choose the Com Port that the RS232 Cable used



Choose all the option same as picture show below (All setting must the same as the picture)



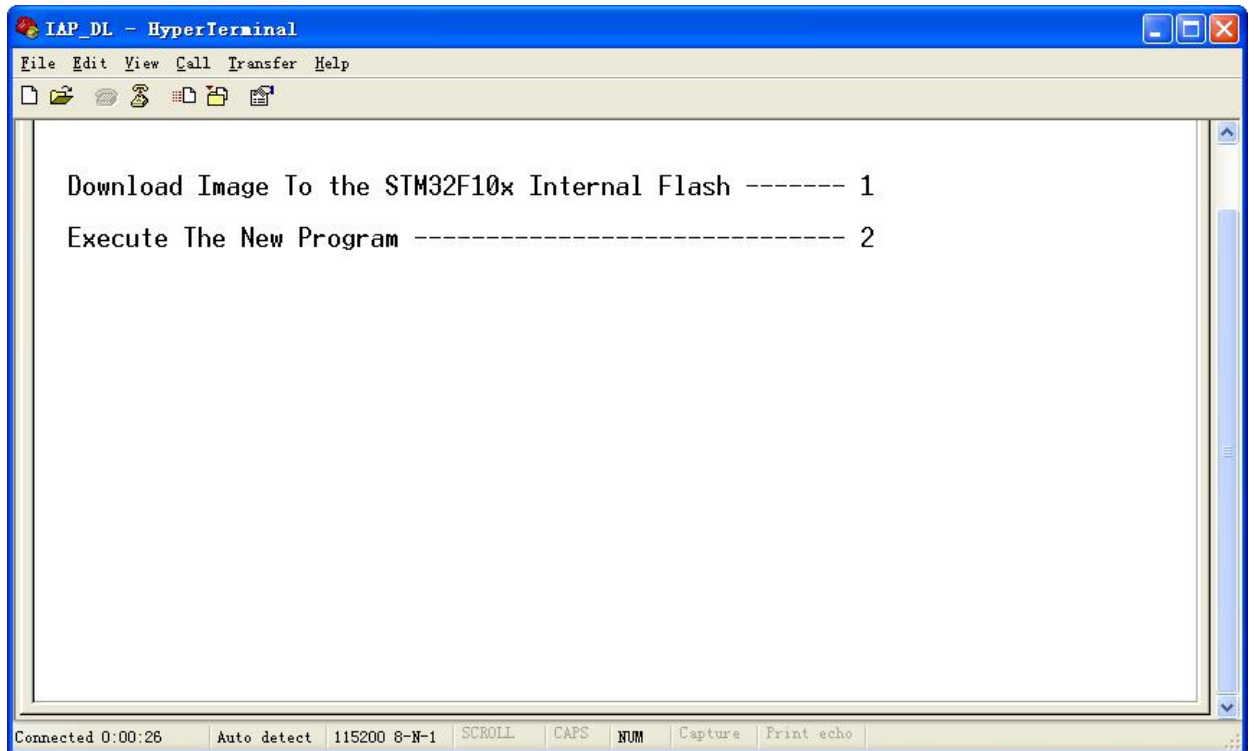
### 5) Into Configure Mode



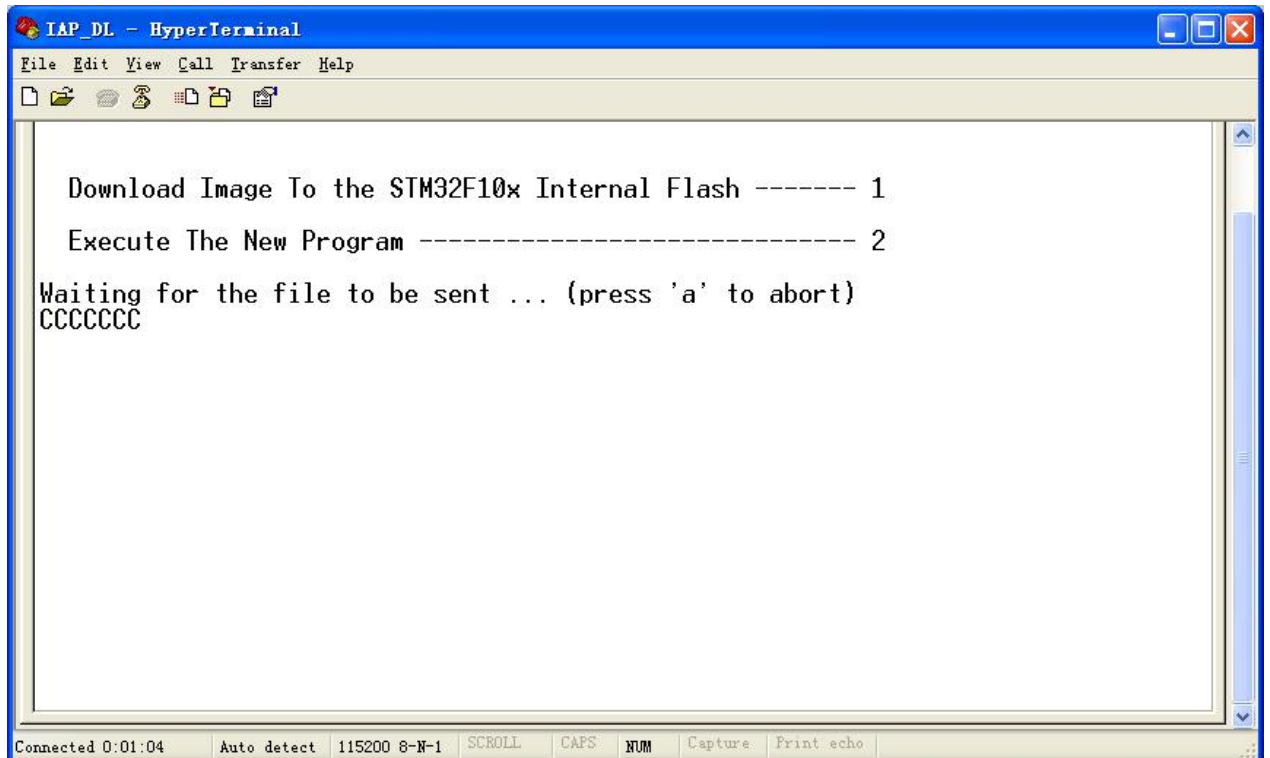


6) Turn Off AVL device

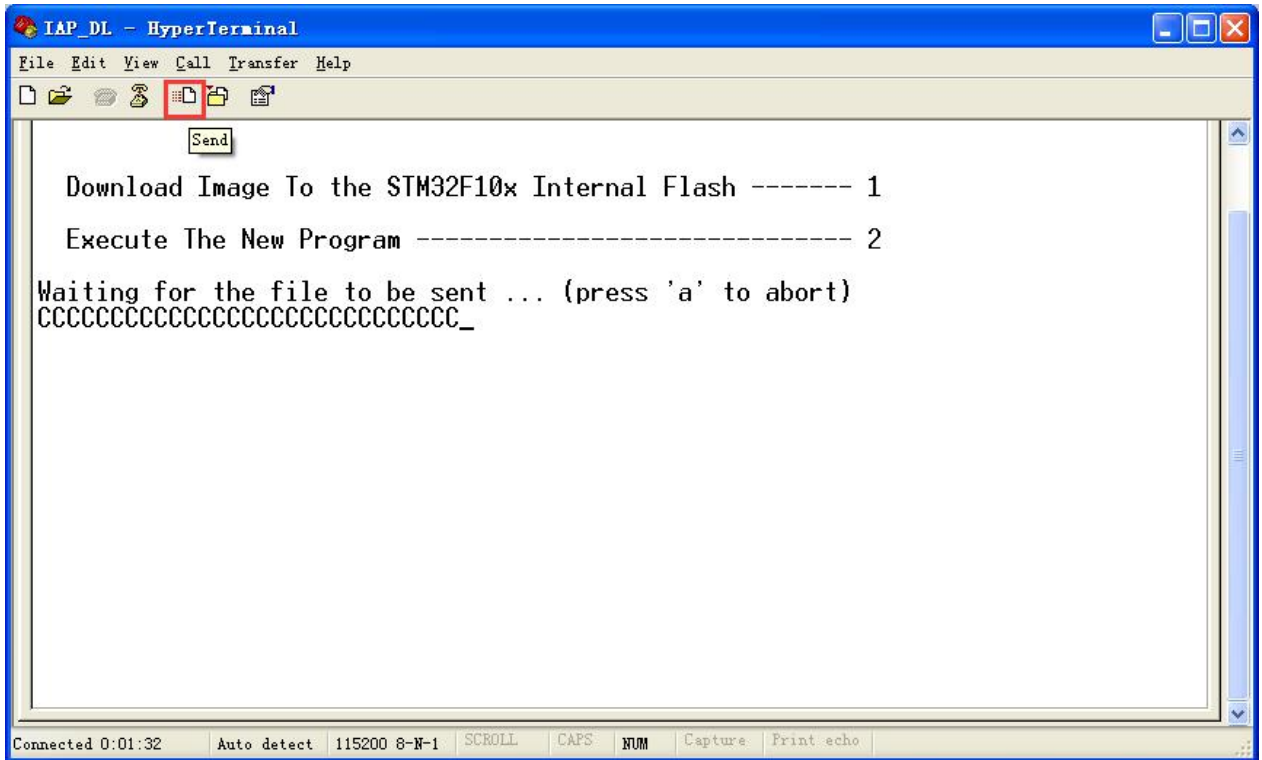
7) Press the SOS button and Turn on Power at the same time, Device all indicator will keep light at same time, Hyper terminal will display the interface like the picture follow



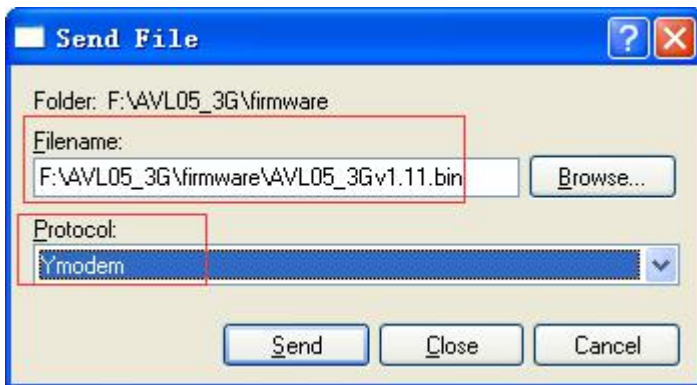
8) Press Keypad 1, Hyper terminal will display( **waiting for the file to be sent ...CCCCC**).



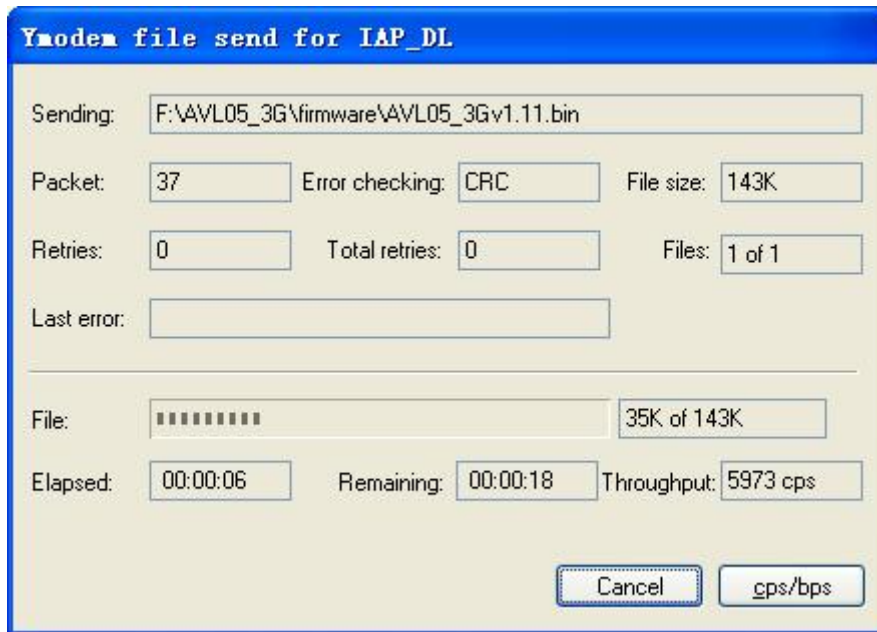
9) Then choose Send file (Send-> Send File)



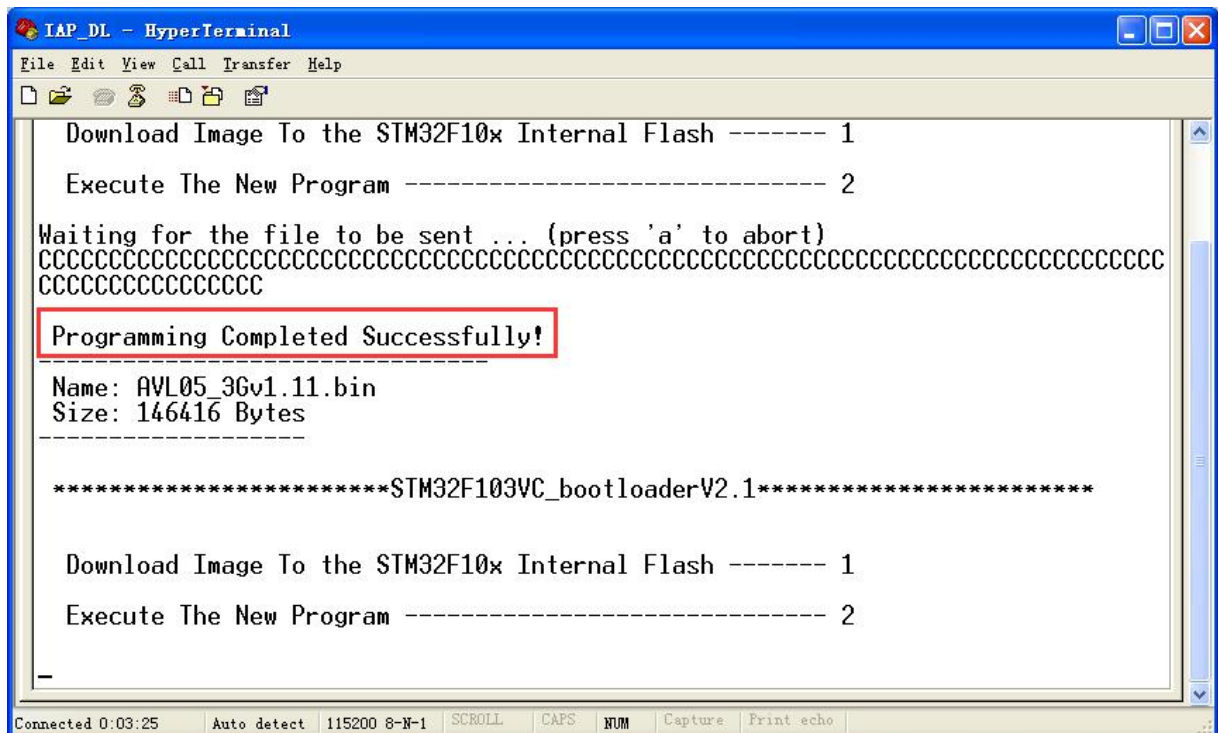
10) Choose the firmware that you want to Update;  
Protocol Choose: Ymodem



11) Press Send button, Will display a New Windows that show the update process.



12) When finish Update,will appear "**Programming Completed Successfully!**", GSM and GPS light is always on, press Keypad 2 end the upgrade mode,GPS and GSM light will flashing,the firmware updates finished,machine running.



### 3.3 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.printel.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