TZ-AVL10 User Guide

Automatic Vehicle Location

V1.0.1

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 LOCOSYS 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.

Catalog

Thank you for using the car product, AVL10 the most notable feature is the long standby time, stylish, easy to install,which is mainly for tracking the vehicle, anti-thief, and remotely monitoring the car through I/O ports socket of AVL, etc. All of this function can be realize by using a mobile phone, or see the status of your car in a Server via GPRS. According to the user's the different need, our company has different version as below:

1.1 Introduction

Software Function	
Single location	√
Tracking	√
Over-speed alarm	√
Geo-fence alarm	√
Wake up alarm	√
Sleep alarm	√
SOS alarm	√
GPRS Function	√
Heartbeat function	√
I/O ports trigger alarm	√
Low battery alarm	√
Exterior battery cut off alarm	√
Inner Lithium battery	√
Charged by exterior DC	√
Tremble Senor-based	√
Anti-theft Alarm	√
SOS button or Button A	√
Digital input	√ (1 ports)
Digital output	√ (2 ports)
Analog input	√ (1 ports)

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**
- **The standby time can reach three months**

- **Can be charged by exterior DC 9-36 V**
- **Can be charged by USB 5V (If you see the configuration cable of the power supply line can't 5 V, may be we cut off, because the configuration of the line 5 V power supply will let the machine running problems)**
- **Exterior battery cut off alarm**
- **Support mini USB port to update firmware**
- **Low power consumption**
- **Over-speed alarm**
- **Geo-fence alarm**
- **Low power alarm**
- **With QUECTEL M35 GSM/GPRS module and LOCOSYS GPS chipset**
- **Support single location and continual tracking**
- **Can Real-time tracking your vehicle via map on PC**
- **GPRS function, receiving position data and alarm data on Server**
- **Anti-theft alarm, support alarm when someone tremble your car once you park it and send an alarm report to you via SMS or GPRS data**
- **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**
- **the button A can to dial the specified phone**
- **With 32Mbit 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.**
- **Detect the car of the fuel.**
- **With Temperature sensor(The machine itself working environment temperature)**
- **With Microphone and listen-in function.**

1.2 Accessories

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

	Accessories
Cables	✓
User Manual CD	✓
USB cable	✓
Below is Optional:	
Configure Cable (Optional)	✓
Car Charge (Optional)	✓

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

Feature	Characteristics
Dimension	122mm*81mm*30.8mm
Exterior Power Supply	DC 9V – 36V
USB charge	5V
Inner lithium battery	DC 3.6V – 4.2V/4500mh
the Built-in GSM antenna	Receive GSM Signal better
the Built-in GSM antenna	Receive GPS signal better
Power Consumption when exterior voltage is 12V	Active mode(avg.) < 50mA Sleep mode < 5mA
Charging time	About 6 hours can be full
Standby Time	More than 3 months
Air pressure	860Kpa –1060Kpa
Humidity	Up to 75% non-condensing
Position accuracy	10 –15 meters

GSM chip	**QUECTEL M35 (4 Frequency GSM 850/ 900/1800 /1900MHZ is optional)**
GPS chip	**LOCOSYS (super-sensitivity and high accuracy)**
LED	**3 LEDs indicates GSM signal, GPS signal, and change**
Button	**2 buttons, SOS button, button A**

1.4 Outside feature

1.4.1 Socket and Switch

Hardware	Function
A. Three LED	GSM LED(Right), Power Led(Red), GPS Led(Blue)
B. Power	Power on /off the unit
C.SOS button	Send an SOS alert and information
D.Button A	Call the specified number
E. USB Port	Support "USB Converter" to update firmware
F. I/O Sockets	Expanding function, as below

1.4.2 I/O ports

Interface from left to right, in accordance with the order

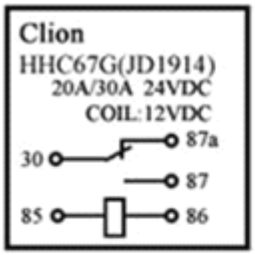
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Digital Output A	Digital Output B	Analog Input	Digital Input 1	GND	SOS	GND	V+(9-24)

The 8 socket function is as below:

NO.	Function
I/O 1	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 window or door close/open
I/O 2	The function is the same as I/O 1
I/O 3	AD input, Gather to the digital of voltage
I/O 4	he triggered voltage must be high, alarm type is "50", "51", through it , user can monitor the status of ignition or Car window status *At present, most of customers use this cable to connect to the engine of car.
I/O 5	GND, use for input GND(connect SOS button)
I/O 6	When SOS Button cable is connected to GND(port 05), namely trigger, the unit will send out a data via SMS or GPRS, alarm type is "01"
I/O 7	GND, the voltage is '0', The cathode of power input socket
I/O 8	The anode of power input socket

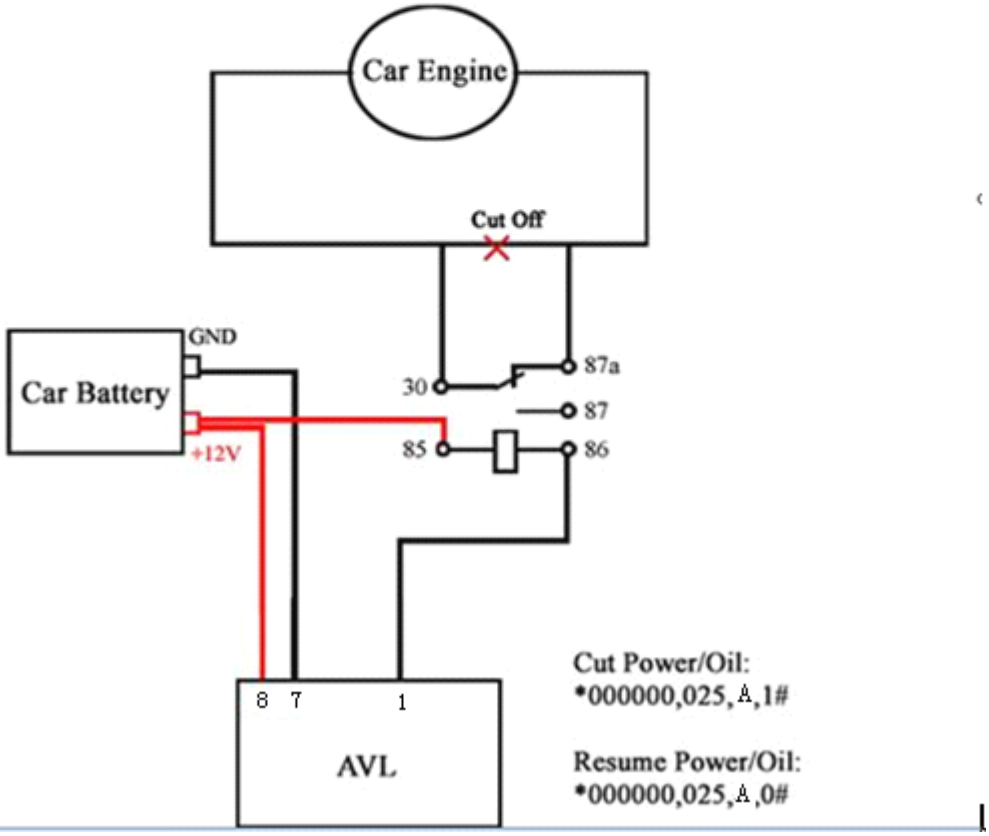
1.4.3 Connect Relay to control the Car Oil/Power. (port 1/2)

Diagram Of Relay



Step:
1.Connect AVL port 8 to Car Battery +12V
2.Connect AVL port 7 to GND
3.Cut off the circle of Car Engine
4.Relay port 30 and port 87a connect to Car Engine
5.Relay port 85 connect to Car Battery +12V power
6.Relay port 86 connect to AVL port 1

Diagram Of AVL



1.4.4 Connect to the fuel sensor to detect the fuel.(port 3)

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 0-18V.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.

1.5. Getting Start

This section will describe how to setup your AVL10 after installation.

1.5.1 Hardware Features

Wall-Charger

Configure Cable (option)

USB Cable

CD

I/O interface cable

1.5.2 View

Front View Side View Back View

1.5.3 Light and Button Functionality

The AVL10 has one buttons and three LED lights with three different colors to indicate the status of the unit.

Red LED - indicating change status	
Off	No charge / the charge is complete
On	Charging

Blue LED - indicating GPS status	
On	One button is pressed
Flashing (0.1 second)	The unit is being Initialized
Flashing (on for 0.1 second and off for 2.9 seconds)	AVL10 has a GPS fix
Flashing (on for 1 second and off for 2 seconds)	AVL10 has no GPS fix

Green LED - indicating GSM status	
On	One call is coming in
Flashing (0.1 second)	The unit is being Initialized/Receive a text message
Flashing (on for 0.1 second and off for 2.9 seconds)	AVL10 is connected to the GSM network
Flashing (on for 1 second and off for 2 seconds)	AVL10 is not connected to the GSM network

Power Button	To turn on/off AVL10
SOS Button	When it is pressed, AVL10 will send an emergency information to the preprogrammed phone number by SMS.
Button A	When it is pressed,Call to the specified number/ exit the upgrade mode

1.5.4 First Use

Please read this manual before using your AVL10

Please read this manual before using your AVL10

4.4.1 Ensure that your AVL10 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 if the SIM card holder is locked-

If you require the function of sending an SMS location report to the authorized phone number when it makes a call to the AVL10, please make sure the SIM installed supports displaying caller ID.

4.4.2 Line of the proposed machine configuration does not provide 5V charge, because the machine will lead to the 5V power supply configuration lines connected to the computer, configure the line machine to run a problem, we will configure the line within the red 5V power line cut, if your configuration still provide the 5V line, please cut the red 5V power cord configuration line, only with the 5V USB power supply or external power supply 9-24V

4.4.3 Check the LED

Check that the Green LED (GSM) is flashing 0.1 second on and 2.9 seconds off.

Check that the Blue LED (GPS) is flashing 0.1 second on and for 2.9 seconds off.

2.1 Use the command to set device by SMS

Notes: $$$$$$ is the password, and the default is:000000

If you want to modify the password :

The command of format:

***$$$$$$,001,@@@@@@#**

Explication: $$$$$$: the old password

@@@@@@: the new password

For example: *000000,001,123456#

After you send the command of SMS to device, it will reply to your mobile phone: Receive:'001'OK

***000000,001,123456#**

2.1.1 Use the GPRS function

Notes: At first of all, make sure the SIM card insert to the device and have the GPRS function.

Step1: Set the APN (Access Point Name)

Different network of provider have the different APN at every country, if you don't know, pls refer to the attachment.

Format: *$$$$$$,011,APN,Username,Password#

Notes: The username and password could to be null1.

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

Explication: The China Mobile's APN is "cmnet", and the username and password are empty.

After you send the command of SMS to device, it will reply to your mobile phone: Receive:'011'OK

***000000,011,cmnet,,#**

Step2: Set the server's IP & PORT

Format: *$$$$$$,015,0,IP,PORT#

For example: *000000,015,0,72.167.29.18,3308#

72.167.29.18 is our server's IP address,3308 is the port.

If client have the server by himself, pls make sure the IP and port is correct.

After you send the command of SMS to device, it will reply to your mobile phone:

Receive:'015'OK

***000000,015,0,72.167.29.18,3308#**

Step3: Set Time Interval GPRS

Format: *$$$$$$,018,X,Y#

X: the time interval (unit is sec),Y: the times of the data have to send by

GPRS.

For example:*000000,018,60,999#

The device will send GPRS every 1 mins and no times limit.

After you send the command of SMS to device, it will reply to your mobile phone: Receive:'018'OK

***000000,018,60,999#**

Step4: Open the GPRS function

Format: *$$$$$$,016,X#

X: close/open the GPRS function,

For example: *000000,016,1#

After you send the command of SMS to device, it will reply to your mobile phone: Receive:'016'OK

***000000,016,1#**

2.1.2 Set the don't vibration machine into sleep mode

Step1: open the sleep mode and the tremble sensor

Format: *$$$$$$,021,XY#

X: close/open the sleep mode

Y: close/open the tremble sensor

For example: *000000,021,11#

When you want to use the sleep mode of function, make sure open the sleep mode and tremble sensor

After you send the command of SMS to device, it will reply to your mobile phone: Receive:'021'OK

***000000,021,11#**

Step2: set the time of no tremble into the sleep.

Format: *$$$$$$,044,X#

X: After the tremble sensor don't tremble for X second, tracker will into sleep mode(unit：sec)

For example：*000000,044,60#

If the device have not tremble for 60 sec, the device will into the sleep mode.

After you send the command of SMS to device, it will reply to your mobile phone: Receive:'044'OK

*000000,044,60#

Step 3: set the time of tremble to wake up the device

Format: *$$$$$$,043,X#

X: After the tremble sensor continuance vibration for X second, device will wake up.

For example: *000000,043,30#

If the tremble sensor continuance vibration for 30 sec, device will wake up.

After you send the command of SMS to device, it will reply to your mobile phone: Receive:'043'OK

*000000,043,30#

If you want to save more power, you can choose to disable the wake up from tremble function

Format: *$$$$$$,045,1#

X=1:Disable the wake up from tremble function

2.1.3 Set the don't send GPRS data into sleep mode

Step1: open the sleep mode

Format: *$$$$$$,021,XY#

X: close/open the sleep mode

Y: close/open the tremble sensor

When you want to use the sleep mode of function, make sure open the sleep mode .

Not by the vibration sensors into sleep, don't need to open the tremble

sensor

After you send the command of SMS to device, it will reply to your mobile phone: Receive:'021'OK

***000000,021,10#**

Step2:Set the sleep waiting time, not send GPRS data calculated

Format: *$$$$$$,021,X#

X: Set the wait time,unit:Second

For example: *000000,022,60#

Wait for 60 second period if there is no GPRS data, the machine goes into Sleep

022 command waiting for sleep must set up more than 018 interval GPRS data sent a short time, the machine will enter the sleep

After you send the command of SMS to device, it will reply to your mobile phone: Receive:'022'OK

***000000,021,60#**

Step 3: set the time of tremble to wake up the device

Format: *$$$$$$,043,X#

X: After the tremble sensor continuance vibration for X second, device will wake up.

For example: *000000,043,30#

If the tremble sensor continuance vibration for 30 sec, device will wake up.

After you send the command of SMS to device, it will reply to your mobile phone: Receive:'043'OK

***000000,043,30#**

If you want to save more power, you can choose to enable the wake up from tremble function

Format: *$$$$$$,045,1#

X=1:Enable the wake up from tremble function

2.1.4 Set the interval SMS

Step1: Set the SOS number

Format: *$$$$$$,003,0,F,CallNumber,SMS Number#

When the device send to SMS to mobile phone by interval, should to set a SOS number which the number of the mobile phone to receive the data.

For example: *000000,003,0,1,008613800755500, 008613800755500##

When set the SOS number, pls append the 00 and international number as the example.86 is the international number for china.

After you send the command of SMS to device, it will reply to your mobile phone:

Receive:'003'OK

***000000,003,0,1,008613800755500, 008613800755500#**

Step2: Set the interval time for SMS.

Format: *$$$$$$,002,X,Y#

X: Time interval (unit:mins)

Y: the times of the data have to send by SMS

For example:*000000,002,1,999#

The device will send SMS every 1 mins and no times limit.

After you send the command of SMS to device, it will reply to your mobile phone:

Receive:'002'OK

***000000,002,1,999#**

2.1.5 Other useful commands

- **Get current location:**
  ***$$$$$$,000#**

- **Get the IMEI from the device:**
  ***$$$$$$,801#**

- **Reboot the device by SMS:**
  ***$$$$$$,991#**

- **Initialization the device**
  ***$$$$$$,990,099#**

Wake up the machine there are five ways:

1.wake up from tremble
2.wake up from press SOS/Button A and High-power frequency trigger(digital input)
3.wake up from calling
4.wake up from SMS
5.wake up from Heart Beat

3.1 The format of the GPRS

The GPRS command server sent to device must be 8-bit ASCII format. The GPRS command must be same as sms command in this user guide.

The data of the device send to the server:

Format：$$(2 Bytes) + Len(2 Bytes) + IMEI(15 Bytes) + | + AlarmType(2 Bytes) + GPRMC + | + PDOP + | + HDOP + | + VDOP + | + Status(12 Bytes) + | + RTC(14 Bytes) + | + Voltage(8 Bytes) + | + ADC(8 Bytes) + | + LACCI(8 Bytes) + | + Temperature(4 Bytes) | + Mile-meter(14 Bytes)+ | Serial(4 Bytes) + | + Checksum (4 Byte) + \r\n(2 Bytes)

The format of ASCII:

$$B0353358019462410|AA$GPRMC,102156.000,A,2232.4690,N,11403.6847,E,0.00,,180610,,*15|02.0|01.2|01.6|000000001010|20120618102156|14181353|00000000|279311AA|0000|0.7614|0080|D2B5

Code	Explanation
$$	2Bytes, indicates header of command from tracker unit to call centre, in ASCII

	code (hex is 0x24).
Len	2Bytes, indicates length of all command, including header and end (the array is first high to low).
IMEI	15Bytes, at most 20 bytes.
Alarm type	2Bytes, the GPRS data trigger type.
DATA	GPRMC string
	PDOP
	HDOP
	VDOP
	Status (12bytes)
	RTC (14bytes)
	Voltage(8bytes)
ADC	8bytes,the ADC value.
LACCI	Location information elements
Temperature	Temperature information
Milemeter	Mileage data
Serial ID	4bytes, sign every GPRS data, the range is [0001-9999], then circle it again from 0001 to 9999.
Checksum	4Bytes, means CRC check of all the data ahead, CRC-16 modbus (Polynomial = 0xA001， initialize data is 0xffff) checksum, not including its own byte and end characters. For example: $$B0353358019462410\|AA$GPRMC,102156.000,A,2232.4690,N,11403.6847,E,0.00,,180909,,*15\|02.0\|01.2\|01.6\|000000001010\|20090918102156\|14181353\|00000000\|279311AA\|0000\|0.7614\|0080\|D2B5 D2B5= CRC-16 modbus ($$B0353358019462410|AA$GPRMC,102156.000,A,2232.4690,N,11403.6847,E,0.00,,180909,,*15|02.0|01.2|01.6|000000001010|20090918102156|14181353|00000000|279311AA|0000|0.7614|0080|).
\r\n	2Bytes, end char (hex format is 0x0d,0x0a).

- Alarm type
  - 0x01 SOS button is pressed
  - 0x49 Button A is pressed
  - 0x09 Auto Shutdown Alarm

- 0x10 Low battery Alarm
- 0x11 Over Speed Alarm
- 0x13 Recover From Over Speed
- 0x30 Parking Alarm
- 0x42 Out Geo-fence Alarm
- 0x43 Into Geo-fence Alarm
- 0x50 IO-1 Close —digital input 1closed (port 4)
- 0x51 IO-1 Open —digital input 1 opened (port 4)
- 0x54 IO-3 Close —reserve
- 0x55 IO-3 Open —reserve
- 0x56 IO-4 Close —reserve
- 0x57 IO-4 Open —reserve
- 0x60 Begin Charge
- 0x61 End Charge
- 0x77 Angle Alarm
- 0x88 Heartbeat
- 0x91 Into Sleep Mode
- 0x92 Wakeup From Sleep Mode
- 0xAA Interval GPRS data

- Status(12 Bytes) —— Status：
  - Byte 01 —— SOS button
  - Byte 02 —— Button A button
  - Byte 03 —— reserve
  - Byte 04 —— reserve
  - Byte 05 —— reserve
  - Byte 06 —— reserve
  - Byte 07 —— Digital Input 1
  - Byte 08 —— reserve
  - Byte 09 —— out 1(port 1)
  - Byte 10 —— out 2(port 2)
  - Byte 11 —— reserve
  - Byte 12 —— reserve
- Voltage(8 Bytes) ——Value of the voltage：
  - Format：ABBBIIII
  - A —— Charge Status (0 = Off Charge , 1 = On Charge)
  - BBB —— Battery Voltage (For example, 367 mean 3.67V)
  - IIII —— Input Charge Voltage (For example, 1251 mean 12.51V)
- ADC(8 Bytes) —— AD collection：
  - Format：CCCCDDDD
  - CCCC —— ADA collect (For example, 1251 mean 12.51V)
  - DDDD —— ADB collect (For example, 1251 mean 12.51V)
- LACCI(8 Bytes) —— Location information elements：
  - Format：LLLLCCCC
  - LLLL —— Location area code

- CCCC —— Cell ID

- Temperature(4 Bytes) —— Temperature（reserve for the device has no temperature sensor）:
  - Format：STTT
  - Precision is 0.1℃
  - The first byte “S” mean sign， such as “0/1/-”
  - Eg：0345 mean +34.5℃，1234 mean +123.4℃，-123 mean -12.3℃
- Mile-meter(14 Bytes) —— Location information elements：
  - Format is AAAA.BBBBKm.
  - Four bytes after the radix point.
- Serial(4 Bytes) —— Serial number：
  - Format：SSSS
  - Every time reboot the device or reset,the serial number will initialize to 0001.
  - Every GPRS message send out will add one
  - After the serial number to 9999, restart from 0001 again

This is the AVL10GPRS data short format communication protocol.

Code	Explanation
$$	2Bytes, indicates header of command from tracker unit to call centre, in ASCII code (hex is 0x24).
IMEI	5Bytes
Alarm type	2Bytes, the GPRS data trigger type.
GPRMC	Positioning logo
	Alarm type
	speed
	Direction
\r\n	2Bytes, end char (hex format is 0x0d,0x0a).

Format： $$(2 Bytes) + IMEI(5 Bytes) ＋Alarm Type(2 Bytes) + GPRMC(33 Bytes) + \r\n(2 Bytes)

$$07311AAA2232.3502N11403.8126E0.00*95.13

- Alarm type
  - 0x01 SOS button is pressed
  - 0x49 Button A is pressed
  - 0x09 Auto Shutdown Alarm
  - 0x10 Low battery Alarm
  - 0x11 Over Speed Alarm
  - 0x13 Recover From Over Speed
  - 0x14 Forward acceleration alarm
  - 0x15 Reverse acceleration alarm

- 0x30 Parking Alarm
- 0x42 Out Geo-fence Alarm
- 0x43 Into Geo-fence Alarm
- 0x50 IO-1 Close
- 0x51 IO-1 Open
- 0x52 IO-2 Close
- 0x53 IO-2 Open
- 0x54 IO-3 Close
- 0x55 IO-3 Open
- 0x56 IO-4 Close
- 0x57 IO-4 Open
- 0x60 Begin Charge
- 0x61 End Charge
- 0x77 Angle Alarm
- 0x88 Heartbeat
- 0x91 Into Sleep Mode
- 0x92 Wakeup From Sleep Mode
- 0xAA Interval GPRS data

4.1. SMS instruction list.

If you want to know more about the AVL10, and design your special AVL10, you can refer to the SMS instruction list.
$$$$$$ is user`s password, and initial password is 000000

	SMS Instruction	Format	Note
1	Request one position	*$$$$$$,000#	
2	Modify user password	*$$$$$$,001,@@@@@@@#	$$$$$$ is old password @@@@@@@ is new Password
3	Set the time intervals of position by SMS The Position SMS will send to the preset SOS number.	*$$$$$$,002,X,Y#	X (Max 5 Digital) =0, Stop send position SMS =[1,60000] Time interval (Unit: mins) Y (Max 3 Digital) =[1,999） times send SMS Y=0, Disable this function Y=999, continue send SMS
4	Set a preset phone & SMS number for SOS button	*$$$$$$,003,0,F,CallNumber, SMS Number#	F = 0, Disable this function =1, Only send an alarm SMS to the preset SMS Number

			Notice :Tel Number and SMS Number (must <25 digits)
5	Set low power alarm When the AVL10 voltage is lower than the preset value, AVL10 will send one lower power alarm GPRS data to the Preset Server.	*$$$$$$,004,XXX,YYY#	XXX is the low power alarm voltage, eg: 3.8v,XXX=380 YYY is the auto shut down voltage, eg: 3.5v,YYY=350 For example： *$$$$$$,004,380,350#
6	Set over speed alarm When the AVL10 speed higher than the preset value, AVL10 will send one over speed alarm GPRS data to the Preset Server.	*$$$$$$,005,S,X,Y,Z#	S=1 Enable speed alarm, S=0 Disable speed alarm. X=[10<XXX<250] (The speed preset value) unit is km/h Y is the times over speed [10,999],unit is second Z=[10,360],(The time interval to send speed alarm) unit is second.
7	Set Geo-fence alarm When the AVL10 move out preset scope, AVL10 will send one Geo-fence GPRS data to the Preset Server.	*$$$$$$,006,+lat1,+long1,+lat2,+long2,X,Y#	Lat=[-9000.0000,+9000.0000] Long=[-18000.0000,+18000.0000] X=[10,360] is for time interval send alarm message. Y=0, Disable GEO-fence alarm. Y=1, Into GEO-fence alarm. Y=2, Out of GEO-fence alarm. Note:Long1>long2&lat1>lat2 Make sure the position of north latitude and east longitude set it (+),otherwise set it (-) Format:+AAAAA.BBBB Make sure set the two position have the same digit after comma.
8	Extend setting	*$$$$$$,008,ABCDEFG#	A=0, Disable position report function which get position SMS by Calling A=1, Enable position report function which get position SMS by Calling B=0, Send the SMS in Text format. 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 D=0 E=0, ADB Normal AD collect E=1, ADB Oil collect.(The average of two minutes to collect) F=0, ADA Normal AD collect F=1, ADA Oil collect.(The average of two minutes to collect) G=0
9	Change band	*$$$$$$,009,S#	S=0, work in 900/1800 S=1, work in 850/1900 S=2, Automatic selection *note: the default of parameter is S=2, Automatically select the frequency band, if the unit of GSM module support three frequency(900/1800/1900), then you could set the parameter to S=0, if the unit of GSM module support the four frequency(850/900/1800/1900), then you could set the parameter to S=1.
10	Set APN,Username,Password	*$$$$$$,011,APN,Username,Password#	APN : APN string (must < 28 chars) User name: Your username (must < 28 chars) Password: Your password (must < 28 chars) * If haven't username or password, then left it blank. For example: *000000,011,CMNET,,## (It haven't username and password)
11	Set DNS	*$$$$$$,014,X,DNS1,DNS2#	X=0 Disable the DN X=1 Enable the DNS DNS is the domain name server , xxx.xxx.xxx.xxx

12	Set IP Address & port number	*$$$$$$,015,0,IP,PORT#	IP : xxx.xxx.xxx.xxx PORT : [1,65535]
13	Set the time intervals of GPRS Data	*$$$$$$,018,X,Y#	X (3 Digital) =0 stop send time interval GPRS =[10,999] Time interval (Unit: sec) Y (3 Digital) =0, stop send time interval GPRS = [1,999] After send YYY times stop. =999, continue send GPRS un-stop
14	Enable/Disable GPRS function	*$$$$$$,016,X#	X=0 Disable GPRS unction X=1 Enable GPRS Function This is the last step of GPRS setting.
15	Set the GPRS mode	*$$$$$$,019,X#	X=0, Use the UDP mode X=1, Use the TCP mode
16	Sleep wait time	*$$$$$$,020,X#	X = [20-65535]/s X does it not send GPRS data, the machine goes into sleep mode
17	Tremble sensor switch	*$$$$$$,021,XY#	X = 0 Disable Sleep mode X = 1 Enable Sleep mode Y = 0 Disable the tremble sensor Y = 1 Enable the tremble sensor
18	Set the Module	*$$$$$$,022,X,Y#	X=0, Close the GPS module when into sleep X=1, Open the GPS module when into sleep. Y=0, Close the GSM module when into sleep Y=1, Open the GSM module when into sleep
19	Enable/Disable I/O port	*$$$$$$,025,X,Y#	X=A means the output port 1 X=B means the output port 2 Y=0, Out port is low (the oil of circuit is restore) Y=1, Out port is high (the oil of circuit will cut off) For Example:

			*000000,025,A,1#
20	Into sleep mode when without tremble for preset time	*$$$$$$,044,X#	After the tremble sensor don't tremble for X second, tracker will into sleep mode 30< X <65536 (Unit : second) For Example, configure AVL05 into sleep mode after no tremble for 30 second: *000000,044,30#
21	Wake up from Tremble	*$$$$$$,043,X#	After the tremble sensor continuous tremble for X second, tracker will wake up X=[1,255) (Unit : second) AVL05 Wake up from sleep mode after no tremble for 10 second: *000000,043,10#
22	Open or close wake up from tremble	*$$$$$$,045,X#	X=0 Enable the wake up from tremble function (Default) X=1 Disable the wake up from tremble function
23	Heart Beat Switch	*$$$$$$,040,X#	X=0 Disable the heart beat function(Default) X=1 Enable the heart beat function
24	Heart Beat Intervals	*$$$$$$,041,X#	X is the heart beat interval, unit is minute [1<X<9999] X=0, Disable this function.
25	Heart Beat Init	*$$$$$$,042,0#	When receive this command, the heart beat will re-count time
26	Reading the IMEI number	*$$$$$$,801#	This command to ask AVL10 reply the IMEI number and the firmware of version.
27	Initialization Tracker	*$$$$$$,990,099#	It will set all parameter to factory default value (Excluding the Password).
28	Reboot by SMS command	*$$$$$$,991#	It will reboot the AVL10 by this SMS command.
29	Map Link	*$$$$$$,100#	the device wil reply a sms link .after clicking the sms link, you will get a segment of googl map for the device location on your cell phone.

30	Parking alarm	*$$$$$$,110,X#	X=1 Enable Tremble alarm function, then if the AVL05 is Trembling for 5s continually, it will alarm(0x30), X=0 Disable Tremble alarm function
31	Set Oil sensor	*$$$$$$,113,A,B#	A,B=[0,2000], the real voltage is [0,20V]. A is the empty fuel of corresponding voltage, B is the full fuel of corresponding voltage. *note: Every different types of car have different corresponding relation. Pls test it by yourself ,then set the command. Eg: *000000,113,100,500# Explain: it means empty fuel of corresponding voltage is 1V,and the he full fuel of corresponding voltage is 5V,if the AVL detect the voltage is 4V,then the value of fuel percent is (4-1)/(5-1)=75%.
32	Extend Setting	*$$$$$$,118,ABCDEFGH#	H=0, Long GPRS H=1, Short GPRS
33	Clear data flash	*$$$$$$,500#	Clear stored in the flash memory inside the machine
34	GPRS data transmission in the form	*$$$$$$,119,X#	X=0，only GPRS data X=1， only SMS data, all gprs data will change to sms data also
35	Acceleration and deceleration alarm	*$$$$$$,120,A,B,C#	A=0 Disable this function (Default) A=1 Active this function. B= [0,2000] Acceleration 0.1m/S'2 B= [0,2000] deceleration 0.1m/S'2
36	Angle Alarm	*$$$$$$,400,X,Y#	X=0, Disable this function (Default) X=1, Active this function.

			Y= [1,360] Angle range
37	Reboot time	*$$$$$$,600,X,Y#	X=0,Disable this function (Default) X=1, Active this function. Y= [10,9999]/ Minutes, Reboot time interval

5.1. Q&A

1. Question: Unit will not turn on
Answer: 1) Battery needs to charge.
2) The switch is broken.
Resolution: 1) Recharge the unit for 3 hours.
2) Needs to repair.

2. Question: Turn on the unit, and come into sleep mode.
Answer: 1) The battery needs to charge
2) The device needs to initialize after update new firmware.
Resolution: 1) Charge the unit.
2) Please don`t turn off and on after you update the new firmware.

3. Question: Unit will not reply with SMS
Answer: 1) The unit don`t register the GSM network.
2) The signal is poor
3) Wrong password or wrong command format
4) The SIM is GT08 has run out of credit
Resolution: 1) Check the SIM card has enough money for work.
2) Check the unit registers the GSM network.
3) Check the CSQ value of the GSM signal.
4) Please care about the command format, attention it is "," not a "， ".

4. Question: GSM function can`t work normal
Answer: 1) There is no GSM signal.
2) Not insert the SIM card
3) SIM card has PIN code active
4) SIM card damaged
5) Battery is low
Resolution: 1) Compare with a mobile to check the GSM signal.
2) Make sure you insert a SIM card and the SIM can work.
3) Remove the PIN code of the SIM card.
4) Charge the unit to ensure the GSM start working.

5. Question: Can`t receive the GPS

Answer: 1) Unit doesn`t have a open sky
2) Bad GPS reception
3) Battery is low

Resolution: 1) Move the unit to an open sky. Tall buildings, trees, cloud or heavy rain will case the bad GPS reception.
2) Place the front side of the unit towards sky.
3) Charge the unit and get enough power for the unit working.

6. Question: Can`t connect the server via the GPRS.

Answer: 1) SIM card in GT08 doesn`t support GPRS function.
2) The APN is not correct.
3) GPRS function is closed.
4) Incorrect IP and Port
5) GSM signal is weak.

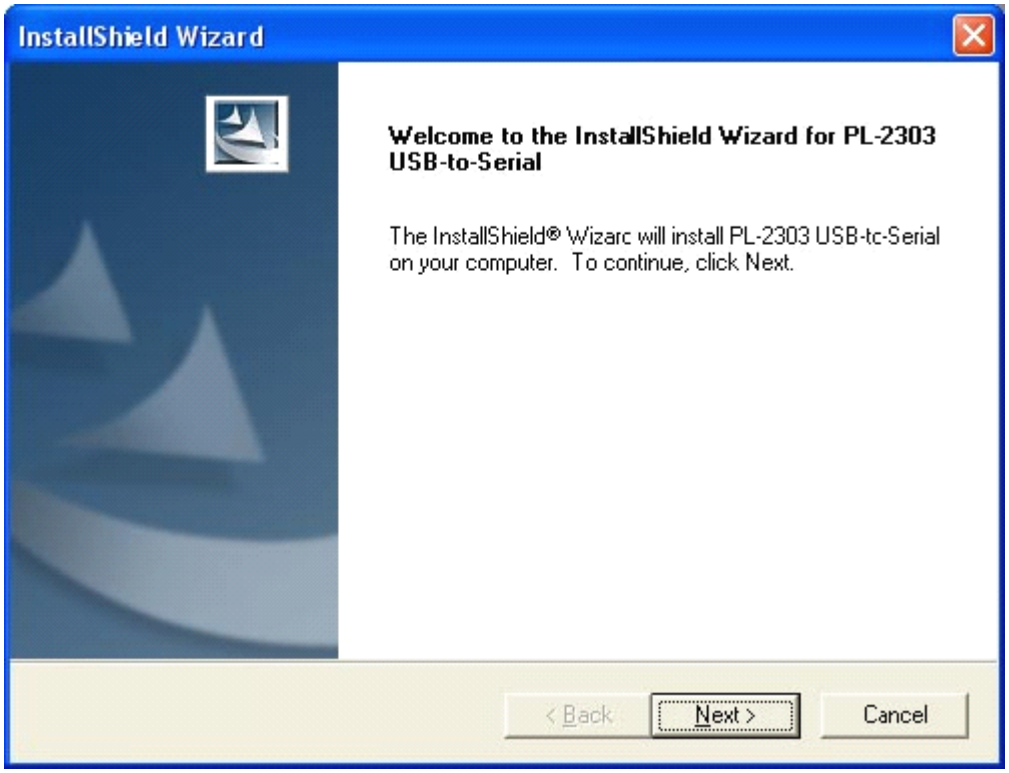
Resolution: 1) Open the GPRS function for the SIM card.
2) Make sure the APN correct.
3) Open the GPRS function for the unit (016 command).
4) Get the correct socket of the server.
5) Move the device to a good GSM signal area.

6.1.Update the firmware of the AVL

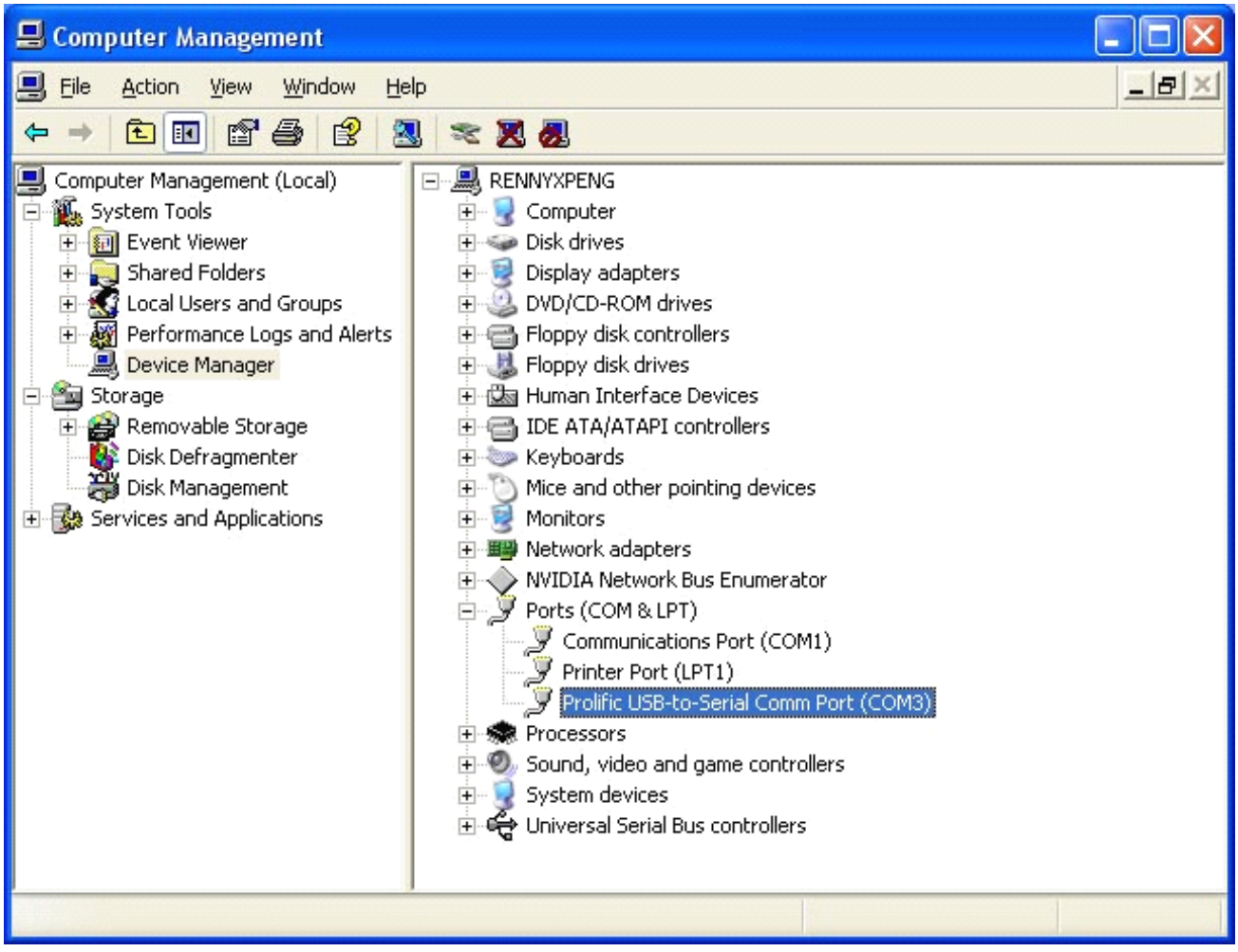
IAP Update User Guide

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

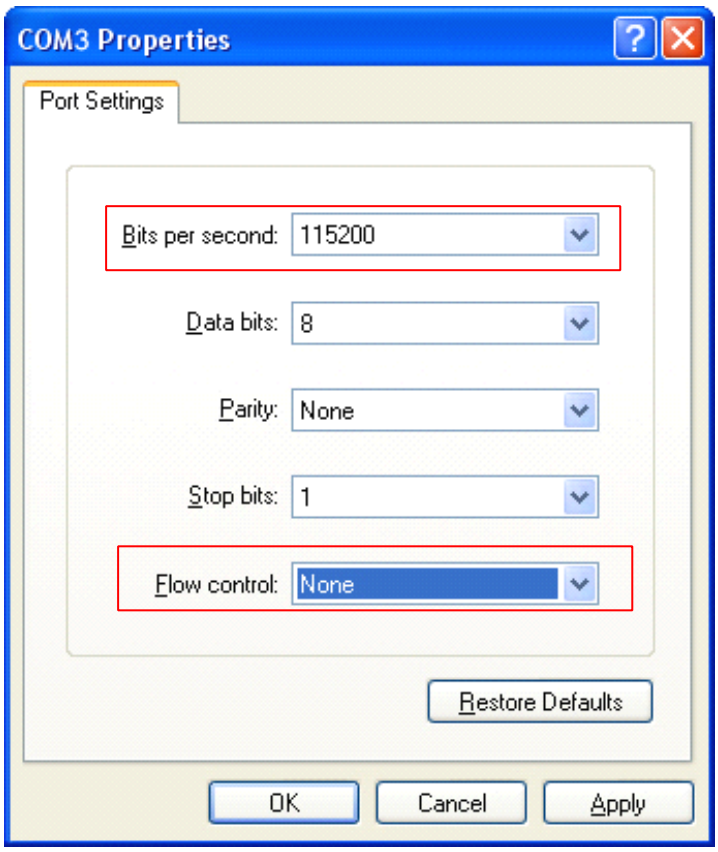


2）Turn on AVL device

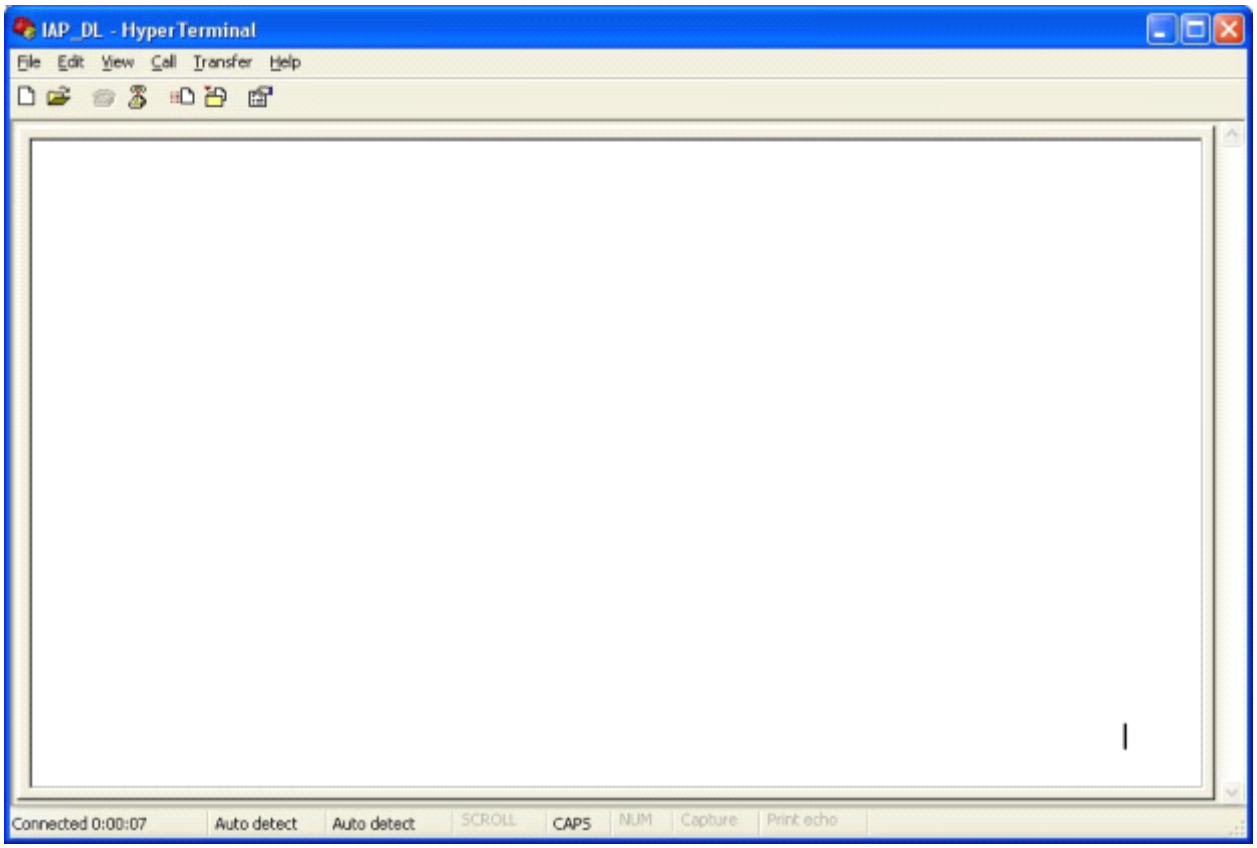
3）Build a New Hyper terminal connect, fill the name, example as IAP_DL

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)

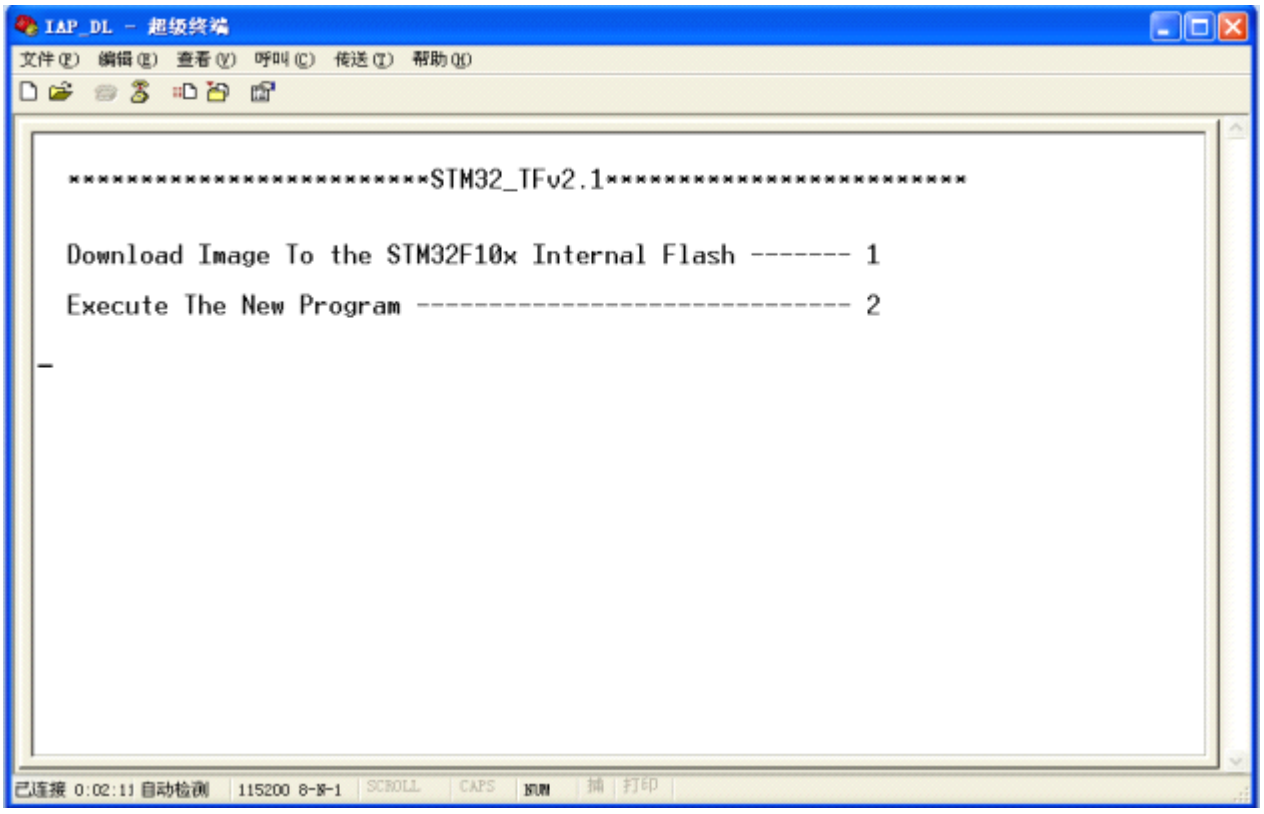


5）Into Configure Mode

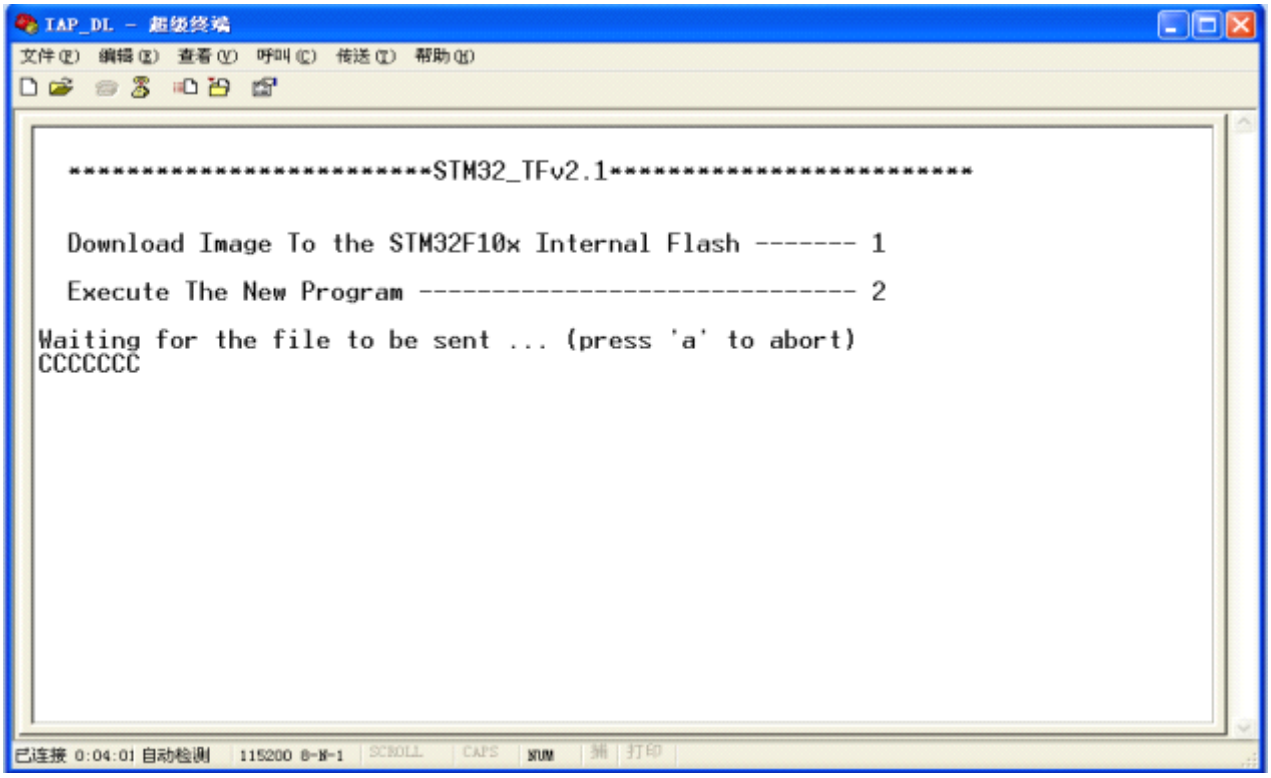


6）Turn Off AVL device

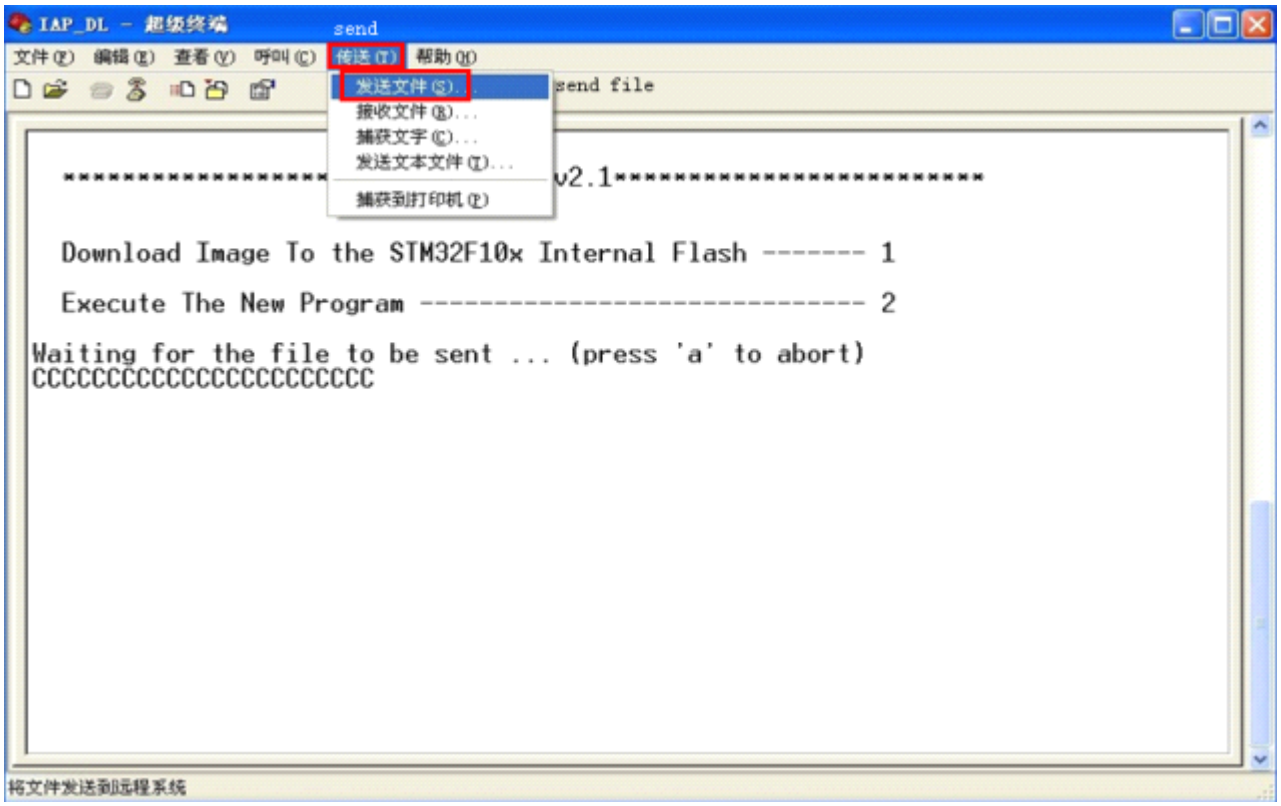
7）Press the SOS button and Turn on Power at the same time，Device all indicator will keep light at same time，Hyper terminal will display the interface like the picture follow



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

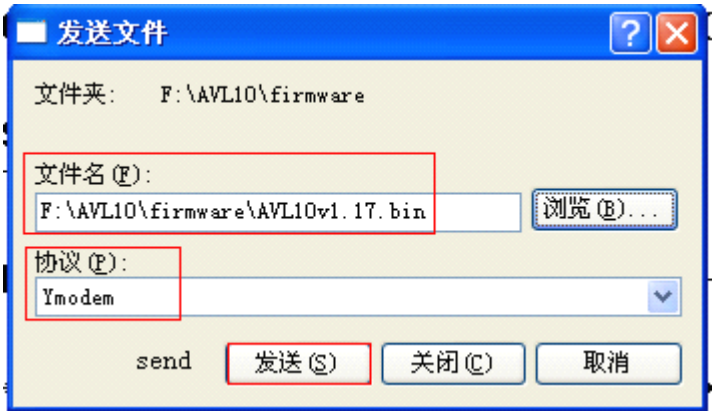


9）Then choose Send file（Send-> Send File）at soon as possible, because the update mode will keep for 92 seconds, if out of this time update will not be process succeed.



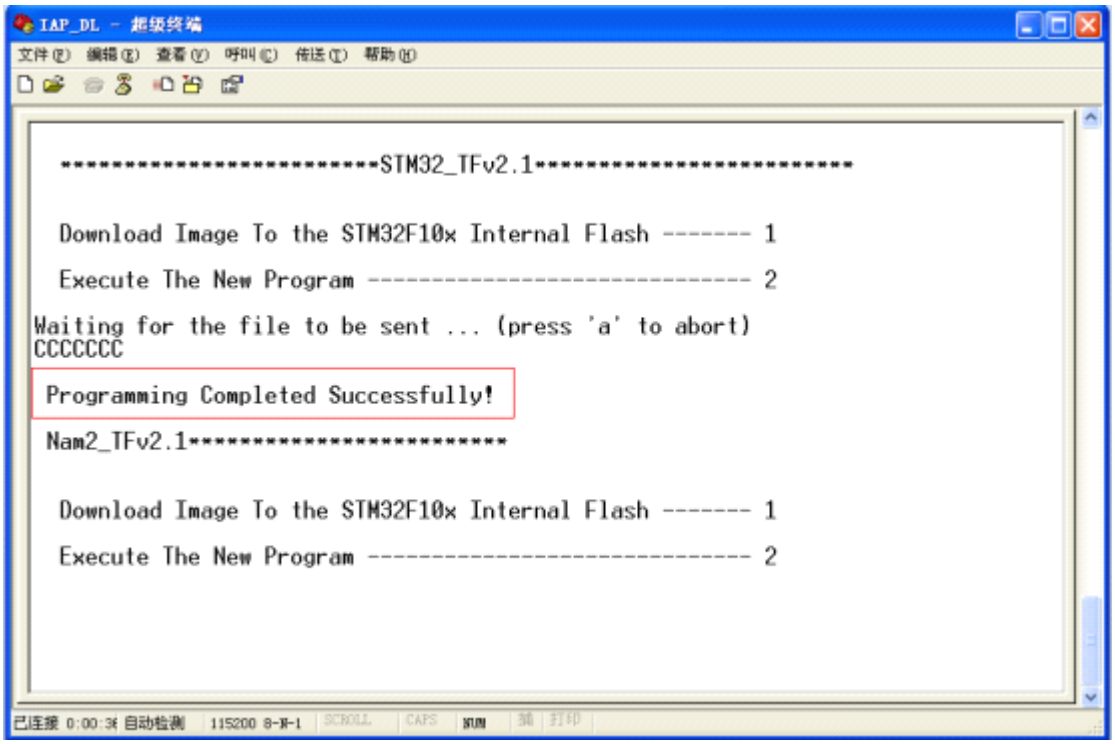
10）Choose the firmware that you want to Update;

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 or press the Button C end the upgrade mode,GPS and GSM light will turn off.



13）Turn On AVL10 again.(at this times the firmware will load the parameter to the unit). Then the firmware updates finished.

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	Mobiltel (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
Eygpt	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	Telestet	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