

StarFinder AVL User's Manual & Reference Guide

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Federal Communications Commission (FCC) Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

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Starfinder GPRS AVL



Starfinder GPRS AVL Hardware

Starfinder GPRS AVL Software

FAQ

Trouble Shooting

Starfinder GPRS Unit consists of GSM module, which is used for receiving and sending data over GSM network; GPS module, which is used for receiving GPS signal; and microcontroller which is used for coordinating the operations between different modules; EEPROM, which is used for saving settings and log data; Two Input ports and Two Output ports which are used for telemetric and telecontrol, RF panic receiver which is used for receiving RF panic signal from Key pad.

Starfinder GPRS Unit Overview

Input Ports and Application

Output Ports and Application

GPS Receiver

GSM/GPRS Modem

RF Panic

Geofence

Data Log and Download

Configuration Via Serial Port

LEDs for Operation Status Indication

Power Supply

Internal Charger and backup Battery

Installation

Environment Requirement

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Starfinder GPRS Unit Overview

Starfinder GPRS Unit INTRODUCTION

GPRS(General Packet Radio Service), which is based on GSM technology, has many advantages in terms of cost and speed over SMS. Since GPRS is always on line, Starfinder GPRS Unit is ideally to be used for real-time tracking.

Most GPRS devices use dynamic IP, Starfinder GPRS unit can only work in client mode and GPRS server works in server mode, that means always Starfinder intends to connect to GPRS server which is always listening at certain port waiting for the Starfinder Unit to connect. The server machine in which the GPRS server program is running must have static IP so that it can be located by Starfinder GPRS Unit. You must ensure that the server's internet connection has a static IP address, please contact your Internet Service Provider to confirm it. It is important before configuring the Starfinder GPRS Unit that you know your GPRS server has static IP address.

Apart from the IP address other GPRS network parameters are also required to be configured before you can use GPRS communications. This is necessary because different GPRS operators

require different settings for connecting to their network. Most GPRS network providers will have a quick start guide that shows the most important GPRS parameters for their network. The following GPRS parameters are required for Starfinder GPRS Unit using GPRS service:

- APN (Access Point Name)
- APN User Name
- APN User Password
- GPRS Dial Number

Once the Starfinder GPRS Unit has been configured via the serial port. it is necessary to run Starfinder Client/Server software on the machine with the internet connection. Client and Server software can either install on the same machine or in different machine. You also can have more than one Client softwares running in different machines at the same time. You may prefer to install Starfinder Client/Server Software as well as GPRS gateway to receive data. configuration via the serial port.

If running on a corporate IT network or from behind a firewall assistance may be required from your network administrator to configure the network for operation. By default the GPRS Server use port 80 and requires both incoming and out coming TCP/IP access on this port to be routed to the external Internet connection.

Starfinder GPRS Unit Features:

- Simple to Install. Small in size for easy concealment.
- Providing REAL Time Tracking by GPRS which is always online with TCP/IP connection.
- Automatically connect to GPRS server when power on.
- Automatically reconnect when GPRS connection outages occur.
- Easy to setup by using Hyperterminal and serial port.
- 2 INPUT which can connect to car alarm and In-car panic button respectly.
- 2 OUTPUT to Power Windows/Doors, Engine immobilizer, Sirens remotely controllable.
- Programmable data logger to record up to 32Kbytes GPS data coordinates into Memory based on time, distance and events.
- Programmable position report based on time, distance and events, or by request
- Small consumptive power, wide range input voltage with power supply circuit which is specially design for automotive application.
- NMEA-0183 output to Laptop or PDA for In-car use Navigation.
- Built-in backup battery and it's charger circuit which is provided in module as a option. (External backup battery are also possible by using reserved external backup battery port)
- Three LEDs used to indicate the different operating states like power ON/Off, GPS states, and GSM modem states.

The basic function of Starfinder GPRS Unit is for reporting the position information to the control center, there are two methods to let the Starfinder report the position and other information:

Report Position by Event

Report Position by Request

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Report Position by Event

Many events can trigger the Starfinder Unit to send report message to control center:

- Input1(Opto1): when opto1 has input signal, the Starfinder will send position report to the control center together with the event code
- Input2(Opto2): when opto2 has input signal, the Starfinder will send position report to the control center together with the event code
- RF panic: when RF panic key is pressed, the Starfinder will send position report to the control center together with the event code
- Geofence: when the geofence is set in Starfinder, the Starfinder will keep checking and comparing the geofence with current position, whenever the Starfinder Unit find the vehicle is out of geofence, then a geofence event will be triggered, the Starfinder will send position report to the control center together with this event code
- Main power lost: when the Starfinder installed the backup battery and charger, then Starfinder will be able to be triggered by main power lost event when car battery stop working and the Starfinder will send position report to the control center together with this event code
- Time Based: When the Starfinder is configured with the time interval of message reporting, the Starfinder will send position message reporting at certain time interval
- Distance Based: when the Starfinder is configured with the distance interval of message reporting, the Starfinder will send position message reporting at certain distance the vehicle has moved.

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Report Position by Request

In addition to get position report automatically, Starfinder GPRS Unit also allows to report position by request, when operator at the control center can get the current position by using the Starfinder Client Software to send a "get position request" command, then when the Starfinder GPRS Unit receives this command, it will send it's current position report to the Control Center.

The Starfinder can respond the following requests:

- Request System Information: this command can be used to inquiry the Starfinder's firmware version, the Starfinder's Unit number, memory size, Unit ID.
- Request Position: this command can be used to inquiry the current position of the vehicle

- Request Current Settings: this command can be used to inquiry the current settings in Starfinder Unit such as: data log time interval, data log distance interval, message report time interval, message report distance interval, geofence center point's lat/long, and deviation.
- Request Current Status: this command can be used to inquiry the current status of the Starfinder Unit such as: Relay1/Relay2 is On or Off, Events states
- Request Current Mileage: this command can be used to inquiry the current mileage information of the vehicle

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Remote Control

Remote control is one of Starfinder GPRS Unit's functions:

There are two devices in Starfinder GPRS Unit which are used for remote control: Relay1 and Relay2.

From the client software in the control center, you can send control command to turn ON or OFF both Relay1 and Relay2.

Relay1 is normal open(In the normal condition, the relay's contact is disconnect) which most customers use it to connect to Horn/Alarm system

Relay2 is normal close(In the normal condition, the relay's contact is connect) which can be usually connect to vehicle's ignition circuit.

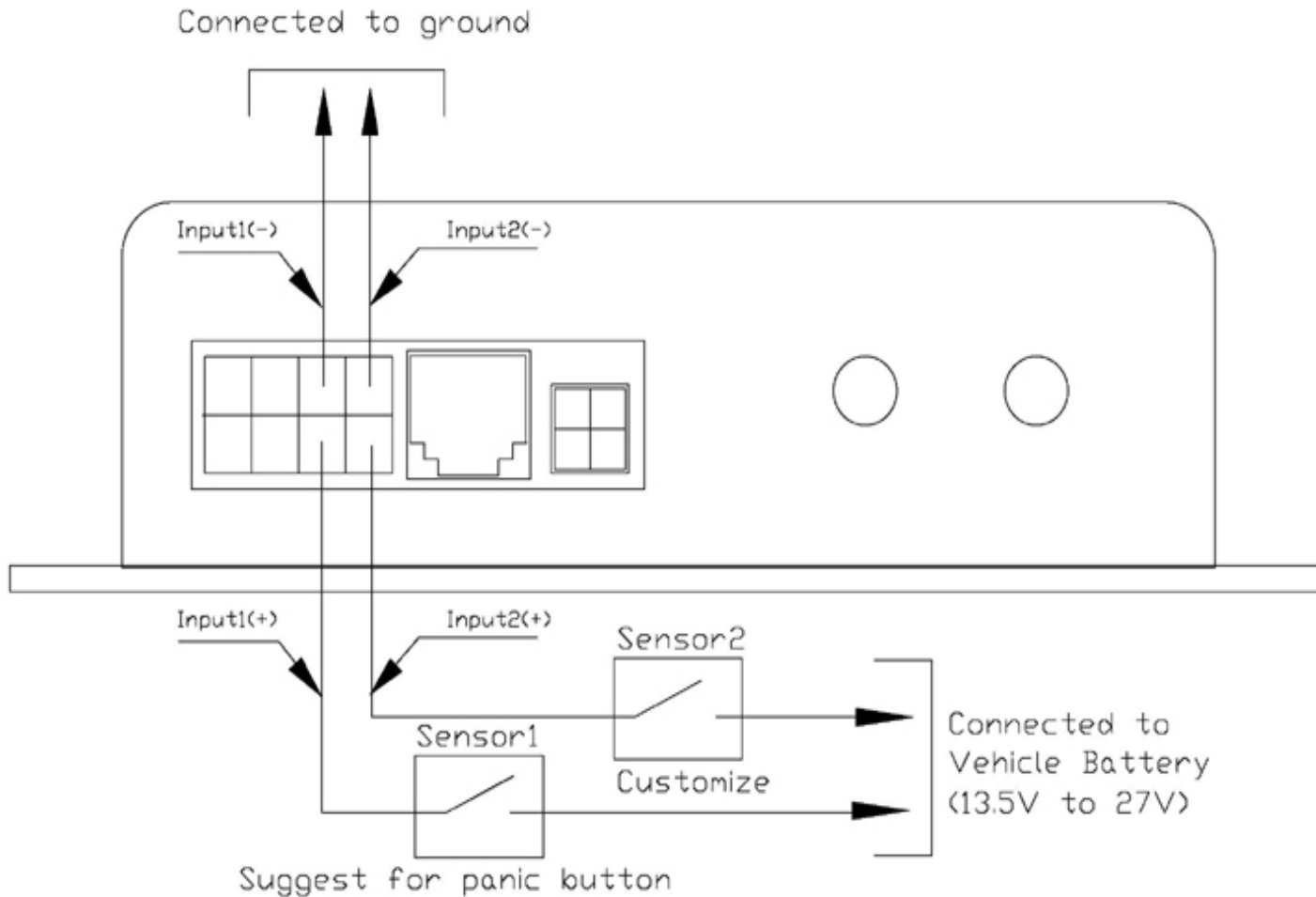
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Input Ports and Application

The input ports in Starfinder Unit are designed for catching the events of the Starfinder which must be reported to the control center together with the position.

Starfinder has two optocoupler ports: Input1(OPTO1) and Input2(OPTO2), the input DC signal can be from 3V to 27V. Usually these input ports can connector such as the door sensor, ignition sensor etc. Please pay attention the parity, the positive terminal connect to input signal's "+", and the negative terminal connect to input signal's "-". Reversed connection will result in it fail to work or even damage the opto-couple components.

The two inputs events can trigger the Starfinder send position report to control center together with the correspond event information which trigger this report message



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Output Ports and Application

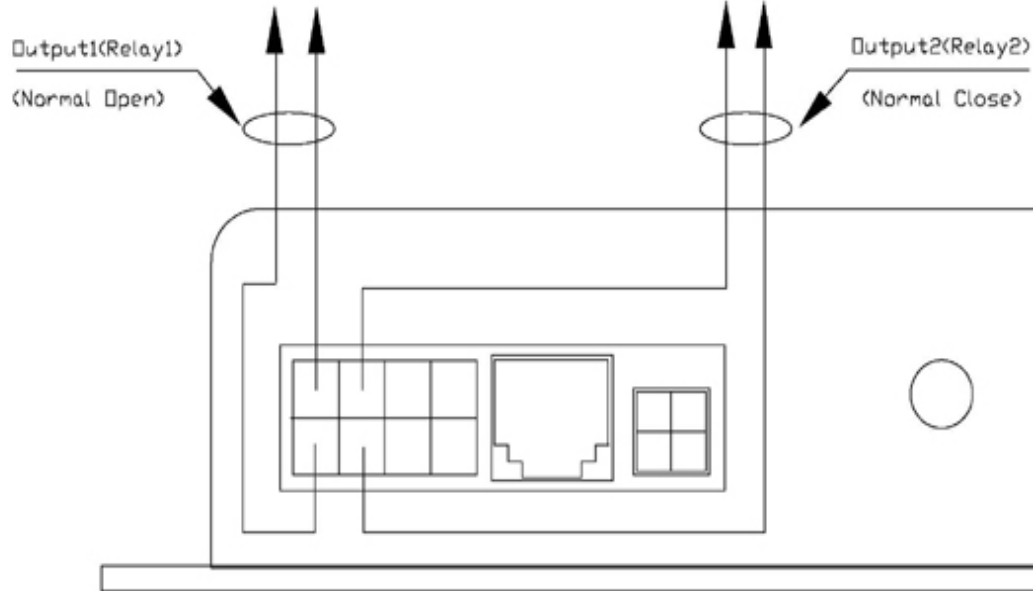
Output ports are designed so that the control center can control the vehicle remotely. Starfinder has two output switches (Relay1 and Relay2) for connecting or disconnecting remotely which is controlled by control center.

Relay1 is normal open (the contact is disconnect at the condition of no power), it can be used for horn alarm trigger or other switch which need connect at emergency. This relay normally disconnect, when receive a switch on command from control center, this relay will connect and keep connecting for 1min then disconnect again. This feature is useful for trigger the such as horn alarm circuit to emit siren for 1 min and turn off to save the battery power.

Relay2 is normal close(the contact is connect at the condition of no power), it is suggested used for vehicle ignition control. It can disable the vehicle when it is safety for the vehicle own when he doesn't want to user to start this vehicle.

Suggest connect to Horn/Alarm

Suggest connect to Engine Ignition



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GPS Receiver

GPS receiver specifications

GPS RECEIVER SPECIFICATIONS

General characteristics

Navigation methods	All-In-View, 2-satellite solution
Parameter	Value
Channels	16 parallel
RF connector	SMA female
RF frequency	1575.42MHz (L1 band, C/A)
RF input impedance	50 ohms
RF sensitivity	-133dBm or less
Active antenna bias voltage	3V

Position datum	WGS-84
Navigation methods	All-In-View, 2-satellite solution

Performance

Parameter	Value
Position accuracy	20m 2DRMS (PDOP=2.5, HDOP=1.5)
Velocity accuracy	0.3m/s (PDOP=2.5, HDOP=1.5)
Position update rate	1Hz
Hot start time	7-20 seconds
Warm start time	33-50 seconds
Cold start time	35-60 seconds
Reacquisition(loss < 5 minutes)	2-6 seconds
Reacquisition (loss > 5 minutes)	6-10 seconds

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GSM/GPRS Modem

FEATURES:

Dual-band EGSM/GPRS component (EGSM 900/1800 MHz, EGM 850 / 1900 MHz)
designed for M2M and automotive applications

* Compliant with ETSI GSM Phase 2+ standard

- Class 4 (2W @ 900 MHz)
- Class 1 (1W @ 1800 MHz)

APPROVALS

The modules is approved worldwide under test standards including

- Radio and Telecommunication Terminal Equipment (R&TTE) and Global Certification Forum
- Certification Criteria (GCF-CC), EMC, Safety and Chinese approvals

VOICE FEATURES

* Voice features (GSM mode) :

- Telephony, Emergency calls
- Full Rate, Enhanced Full Rate, Half Rate (FR/EFR/HR)
- Echo Cancellation and Noise Reduction
- Full duplex hands free

DATA FEATURES

* Data circuit asynchronous, transparent and non transparent up to 14400 bits/s

* Fax Group 3 (Class 1 and 2)

- GPRS packet Data features :

* GPRS Class 2 (SMS Version) or Class 10 (GPRS Version)

* Coding Schemes : CS1 to CS4

* PBCCH support

MESSAGE SERVICES

* Point to point (MT/MO) and Cell Broadcast

GSM SUPPLEMENTARY SERVICES

- * Call Forwarding, Call Barring
- * Multiparty
- * Call Waiting, Call Hold
- * USSD

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RF Panic

The RF Panic can be used to trigger the Starfinder and a position report to the control center as together with the RF Panic event. The DIP switch code of the key in which the 434MHZ or 418MHZ RF module built-in should be preset to match the 434MHZ RF receiver DIP switch code in the Starfinder in order to let the RF Panic work.

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Geofence

The Starfinder GPRS Unit has a built-in geofence setting function, which can provide a square like area geofence, in order to set a geofence, the geofence center point latitude/longitude, the deviation from the center point latitude and longitude must be set, the event mask bit for geofence should be enable. The Starfinder Unit will keep comparing the deviation between the current latitude/longitude and geofence's center point latitude/longitude, if the deviation is greater than set deviation, a out-of-geofence event will be triggered, and a position report together with out-of-geofence event will be sent to control center.

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Data Log and Download

- The standard Starfinder GPRS Unit has 32kbytes memory for data log which can save around 450 records. If saving data 5mins a record, then these memory can save around 8 hours GPS data, if you chose 64Kbytes data, then you save 900 records.
- You can download these data over the air or via a serial port locally. Through the air just send Get ALL Logged Data command then you can download all logged data. To download through serial port, you need run hyperterminal and configure it to 9600-8-N-1 can connect to Starfinder GPRS Unit, then press Enter you also can get all logged data

Log Data by Event

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Log Data by Event

The data log is event based, the following events will trigger the Starfinder data the position and the event into memory:

- Input1(Opto1): when opto1 has input signal, the Starfinder will record the position information and the event code if the event mask is set.
- Input2(Opto2): when opto2 has input signal, the Starfinder will record the position information and the event code if the event mask is set.
- RF panic: when RF panic key is pressed, the Starfinder will record the position information and the event code if the event mask is set.

- Geofence: when the geofence is set in Starfinder, the Starfinder will keep checking and comparing the geofence and current position, whenever the Starfinder Unit find the vehicle is out of geofence, then out of geofence event will be triggered, the Starfinder will record the position information and the event code if the event mask is set.
- Main power lost: when the Starfinder installed the backup battery and charger, then Starfinder will be able to be triggered by main power lost event when car battery stop working and the Starfinder will record the position information and the event code if the event mask is set.
- Time Based: When the Starfinder is configured with the time interval of log data, the Starfinder will record the position information and the event code at certain time interval if the event mask is set.
- Distance Based: when the Starfinder is configured with the distance interval of log data, the Starfinder log the data at certain distance the vehicle has moved.

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NMEA-0183 Output

Starfinder GPRS Unit can also output standard \$GPRMC NMEA sentence at the baudrate of 4800b/s at it's RS232 port. If you have laptop or PDA which installs the electronic map, you can connect it to the Starfinder Unit using DB9 cable for In-car self-navigation.

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Configuration Via Serial Port

To configure the Starfinder GPRS Unit according to the following steps:

- Connect Starfinder RS232 port to PC's com port, then start run hyperterminal by PC->Start->All Programs->Accessories->Communications->Hyper Terminal, to create a new one with name Starfinder, and configure it as 9600-N-8-1 and connect to serial port.
- Power on Starfinder AVL GPRS Unit, the following text will appear:

Starfinder GPRS AVL Firmware V1.34GPRS

(R)ALL Right Reserved 2004

Do you want to set parameters(Y/N)

You can press "Y" to start configure

then Starfinder will ask you:

AVL Unit ID(e.g. 99999999): your Unit Id input here then press "Enter"(should be less than 8 characters)

then Starfinder will ask you:

AVL Password(e.g.00000000): your Unit's password put here then "Enter"(should be less than 8 characters)

then Starfinder will ask you:

GPRS Dial Number(e.g. *99#): provided by your GPRS service provider

then Starfinder will ask you:

GPRS APN(e.g. internet.fido.ca): provided by your GPRS service provider

then Starfinder will ask you:

GPRS APN User Name(e.g. fido): provided by your GPRS service provider

then Starfinder will ask you:

GPRS Password (e.g. fido): provided by your GPRS service provider

then Starfinder will ask you:

Your GPRS Server IP (e.g. 64.119.108.239): The static IP address of the PC in which gprs server is running

then Starfinder will ask you:

Your GPRS Server Port (e.g. 80): the port which you chose for the TCP/IP connect between Starfinder GPRS unit and gprs server, the default is 80

Then you will find:

Settings Saved!

The configuration is completed.

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LEDs for Operation Status Indication

There are three LEDs for indicating the operation state of the Starfinder Unit.

LED Status	On	Off	Flash
Red LED	Starfinder Power On	No Power / Power Failure	NA
Green LED	GPS Signal OK	Module Failure	No GPS Signal
Yellow LED	GSM Module Power On	GSM Module Power Off / Failure	GSM Module In Network



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Power Supply

The Power Consumption

Starfinder power supply is specifically designed for automotive application which can work stable under high power noise environment and wide range input voltage from 9V to 48V.

The Starfinder AVL System typically consumes around 140mA at 13.8V with an extra 50mA current when each relay is activated. The following table summarizes power consumption measured during normal operation.

State	Voltage	Current
Both relays inactivate	13.8V	140mA

One relays activate	13.8V	190mA
Both relays activate	13.8V	240mA

Note: Starfinder AVL has a option to switch the high accuracy GPS to an alternative low power 16Ch. GPS receiver with GPS shut down feature. The current consumption can drop down to 50mA in stand-by mode. MOQ will be required.

Although the average current for Starfinder is around 200mA, but the GSM modem's peak current when transmitting can be great up to 2A, so using power adapter to test the Starfinder could cause the it malfunction.

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Internal Charger and Backup Battery

The Starfinder can also install internal battery charger and backup battery. In the normal condition, the backup battery works in standby mode, the battery charger will detect the voltage of back up battery all the time, the backup battery's voltage will drop down with the time pass since the self discharging, whenever the battery charger detect the backup battery's voltage drops to certain value, the charger circuit will start to charge it, the battery will change from standby mode to charging mode, when the battery's full, then charger will cut off the charge circuit from backup battery, then the backup battery will change to standby mode again.

Starfinder also detects the main battery input, when Starfinder detects the main power lost, it will switch to backup battery automatically and send position report to inform the control center together with the power lost event. So the control center not only can get the position report but also know that this position report is caused of the main power lost event.

The backup battery can work for at least 2 hours when main power lost

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Installation

The Starfinder Installation includes the following contains:

The Starfinder Unit

GSM Antenna

GPS Antenna

Input Signal Cable

Output Control Cable

Power Cable

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The Starfinder Unit

The Starfinder Unit should be install inside the vehicle at which the Unit is not easy to be found and access. The hiddener the better. Bed environment such as high temperature, high humidity, and high dust should be avoided. Some place like under the dash board, in the trunk, under seat between the door would be ideal.

Making using of the three LEDs which can indicate the operation states of Starfinder Unit during installation would be greatly helpful.

- The Red LED on tells you the Starfinder is powered on
- Green LED flashing tells you Starfinder is working but the GPS signal is still not available. Only when the Green LED is constantly on, the Starfinder has catch the valid GPS signal.
- Yellow ON tells you the GSM modem is powered on, when SIM card inserted and yellow LED flashes, it tells us the GSM has accessed to the GSM network.

Using there LEDs can speed up the installation procedure greatly.

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GSM Antenna

The GSM antenna installation is much flexible, can be anywhere inside the vehicle except enclosure by a metal case, but still require to be hidden and cannot be seen and touched directly.

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GPS Antenna

The GPS Antenna should be install hidden under some non-metal material, like under the carpet beside the window. Never under any metal material which will cause the GPS antenna doesn't work. The GPS antenna has very high direction, so please always let the antenna top side face to the sky.

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Input Signal Cable

The input signal cables which are connected two input ports of the Starfinder and the input signals such like panic button or door open/close sensor. These cables are also required to be cabling hidden without being found by people. The positive terminal should connect to vehicle battery, the negative terminal can connect to the input sensor one terminal and the sensor's another terminal connects to ground.

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Output Control Cable

The output control cables which are connected two output ports of the Starfinder and connect in serial into the vehicle electric circuit such as horn/alarm circuit(Relay1) and car ignition circuit(Relay2). These cable should be thick enough which can pass up to 10A constant current. These cables are also required to be cabling hidden without being found by people. In order to connect these output port to the existing vehicle electric circuit, we need to cut the exiting circuit at one point, then connect the one of the output terminal at one end of the existing circuit, the other terminal connect to the other end of the existing circuit. Then when switch ON/OFF the Relay1/Relay2, we can start and stop these vehicle's existing electric circuit's operation remotely. Since the great current could be in these cable, a 10A in-line fuses are suggested to connect in serial into the circuit for protection purpose.

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Power Cable

The power cable should connect directly to the vehicle battery's two terminals. Connect to

cigarette light is not recommended. because when you shut down the car, the power supply from the battery to cigarette socket will be cut, then Starfinder will stop working.

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Environment Requirement

ENVIRONMENT AND MECHANICS

* Operating temperature range : - 30C to + 60C

* Storage temperature range : - 40C to + 85C

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Starfinder GPRS AVL Software

Starfinder Software consists of Starfinder firmware (software embedded in the Starfinder Unit) which is used to control the Starfinder Unit whole hardware functionality, GPRS Server which is a proxy server to pass the data between Starfinder GPRS Unit and Starfinder Client Software, Starfinder PC server which is used to connect Starfinder Client and GPRS Server, Starfinder Client Software which is an application to monitor and control the Starfinder remotely in real time.

Software Overview

GPRS Server Software

Starfinder Client Application Software

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Software Overview

Starfinder GPRS Software is of a Client/Server architecture. The gprs server responsible for pass data between Starfinder GPRS unit and Starfinder Client software. The GPRS server consists of GPRS gateway and Laipac Server which is used to connect gprs gateway and Starfinder client software



The port configuration can be changed in laipacGPRS.ini in C:\windows or C:\WINNT

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GPRS Server Software

GPRS Server is a proxy server which is used to pass data between Starfinder GPRS Unit and Starfinder Client software, and responsible for maintain the multi- Starfinder Units connection to Client software.

GPRS Server Setup

GPRS Server Settings

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GPRS Server Setup

Install GPRS Server in the next steps:

1. Find the CD Rom in Starfinder Unit Package.
2. Insert CD Rom in to your Server PC.

3. Run CD Drive:\AVLGRSPInstallation\GPRS_win32_service1.1\setup\setup.exe

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GPRS Server Settings

Follow the following steps to complete the GPRS server settings:

1. Start Settings.exe software from desk top
2. Press create a new unit, then a dialog box new unit will pop up, fill in the Unit ID and Password of the Starfinder Unit you are going to install, then press ok to exit
3. Press save this unit's data button to save this configuration
4. Press Add new IP for selected Unit, then a dialog box named IP Address will pop up, fill in the Client software's PC IP address into it then press ok to exit
5. Press save this unit's data button to save this configuration
6. After completed, press Exit to exit configuration

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Starfinder Client Application Software

The Starfinder AVL client software is a control terminal which is used to monitor, configure and control the vehicle in real time and responsible for the history data saving and replaying. In order to use Starfinder Client Software, you need to install, configure client software and create customer account for each user, and use control panel to control each vehicle

GPRS Client Software Setup

GPRS Client Software Configuration

Customer Account Setup

Starfinder Control Panel

Starfinder Database

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GPRS Client Software Setup

The following steps are for installing the GPRS Client Software:

1. Find the CDRom in Starfinder Unit Package.
2. Insert CDRom in to your Server PC.
3. Run CD Drive:\AVLGRSPInstallation\AVLClient2.16Setup(Mappoint)\setup.exe if your map format is mappoint or Run CD Drive:\AVLGRSPInstallation\AVLClient2.16Setup(GeoObj)\setup.exe if your map format is

mapinfo/arcview/autoCAD/bmp

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GPRS Client Software Configuration

Before using GPRS Client software, the following settings are required:

- Network settings: goto Starfinder AVL Client 2.16->Network->Configuration:

1) put the IP address of the PC in which the GPRS Server is running

2) put the port# for the connection between Laipac Server and Starfinder Client software, to check what this port# should be, you can goto c:\windows\laipacGPRS.ini, you can find the pcserver =5063, so please put 5063 in the client software's port# text box

3) Press OK to exit

- Goto Starfinder AVL Client software->Vehicle->Set Vehicle Property;

please check Unit ID and Password, both of them should match the Unit ID and Password which you just programmed into the Starfinder GPRS Unit, if not, you can goto C:\program files\LaipacStarfinder\StarfinderAVL\Program\then open data.mdb, find the property filed and edit the Unit ID and Password,manual to match the parameters in the Starfinder Unit. Close Access to exit

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Customer Account Setup

- To create a new vehicle account, you can use the temporary Vehicle1 or Vehicle2 to create new on. The change the account information on the new temporary account.
- For Unit ID and Password which you cannot edit in set vehicle property, then goto C:\program files\LaipacStarfinder\StarfinderAVL\Program\then open data.mdb, find the property filed and edit the Unit ID and Password,manual to match the parameters in the Starfinder Unit. Close Access to exit

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Starfinder Control Panel

The Starfinder Control Panel is used to configure, control and send request from Control Center to the Starfinder GPRS Unit.

It consists of three parts: Request; Configuration and Control

Request	Configuration	Output Control
Get System Information	Data Logging	Set Relay1 On
Get Current Position	Login	Set Relay1 Off
Get All Logged Data	Message Sending	Set Relay2 On
Get Current Status	Geofence Settings	Set Relay2 Off
Get Current Settings	Set Mileage	
Get Mileage		

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Database

For current version Starfinder GPRS AVL, the data base is integrate with client software. Each client software has its own data base which is Microsoft's Access.

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FAQ

The FAQs intend to help you quick start using Starfinder AVL GPRS system. Reading these first might help you to save time on familiar with Starfinder :

Can I use normal AC power adaptor for Starfinder testing?

Why I've got position, but my vehicle's still not shown on the map?

How many client software can I install to connect to GPRS server?

Why when the client software connects to GPRS server, a lot of data arrive?

How much time the Starfinder can catch the valid GPS signal?

What is the accuracy of the Starfinder locating?

How much time the car battery can last for Starfinder when car's parking?

How can I know the GPRS Server is running and accessible?

Can I run the GPRS server on a PC with internal IP?

How many records can Starfinder Unit log?

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Can I use normal AC power adaoptor for Starfinder testing?

No, usually the AC power adaptor's voltage is not stable, it will change with the load, and although the Starfinder is average current is around 200mA, The power supply must be able to provide sufficient current in a transmit burst which typically rises to 2A. Beyond that, the power supply must be able to account for increased current consumption if the module is exposed to inappropriate conditions, for example antenna mismatch. Most AC adaptor cannot meet this requirement, so we strongly suggest our customers use 12V/2A switch mode power or car battery rather than AC power adaptor for Starfinder testing.

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Why I've got position, but my vehicle's still not shown on the map?

For some languages which are not English, the number format is different from English. For example, in English the number 3.4, but in Spanish, it would be represented as 3,4. The Starfinder's protocol need use "," to sperate the different field in a sentence, which will cause the Starfinder fails to parse different fields from a sentence. To solve the problem, you need

change the PC's Regional and Language Options. Please goto PC->Start->Control Panel->Regional and Language Options->Regional Options->Select English(Canada)->Press OK to exit. After this changing, your vehicle will be shown on the map.

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How many client software can I install to connect to GPRS server?

There is no restriction, you connect as many as you want. But the overall performance will be going down with more and more client software connect to the gprs server. The limitation is from the much many data the GPRS traffic can handle at the same time.

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Why when the client software connects to GPRS server, a lot of data arrive?

When the Starfinder Unit has connected to the GPRS Server, but the client PC which is in the client IP list of the GPRS Server doesn't connect to GPRS Server, then all data from Starfinder Unit to GPRS server will be saved in the GPRS server's inbox, whenever the client connects to GPRS server, then all data in the inbox will send to client, even though the Starfinder Unit is not working at this moment. These output data won't stop until all inbox data has been emptied

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How much time the Starfinder can catch the valid GPS signal?

Depends on the GPS starting mode, there are three kind of GPS starting modes: hot start, warm start and cold start.

For hot start, the synchronous time is:	8sec
For warm start, the synchronous time is:	38sec
For cold start, the synchronous time is:	48sec

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What is the accuracy of the Starfinder locating?

Depends on the GPS, usually the GPS module's position accuracy will be < 20m

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How much time the car battery can last for Starfinder when car's parking?

Depends on the capacity of the car battery and the power consumption of Starfinder GPRS unit. Normally a car battery's capacity is around 14Ah, the Starfinder operation current is from 60mA to 300mA depends on the operating mode (idle, sending/receiving message sometimes, sending/receiving message frequently). So according these conditions, the Starfinder can work for around 47hrs to 233hrs(2days to 10days).

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How can I reset the password if I forget the Unit's password?

The only way is to uninstall the Starfinder Unit, use DB9 cable to connect Starfinder's RS232 port and PC's com port, start Hyperterminal (configure to 9600-8-N-1), use Starfinder's serial port local setting function to reprogram the Starfinder Unit, input a new password, and update the client software's vehicle property's Unit Password in the data base, then you can control this Starfinder Unit again from client software.

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How can I know the GPRS Server is running and accessible?

First get the server's IP, for example: 64.119.108.239, then get the port number at which the GPRS Server is listening, for example: 80, then goto PC->Start->Run->telnet 64.119.108.239 80, if you can find the GPRS respond you with \$AVREQ,*42, then that means the GPRS server is running and accessible. Second, after you configure the client network with server IP 64.119.108.239 and port# 5063, then press connection ball, the connection ball can turn green can also prove the GPRS server is running. The first method can also check the connection to GPRS server at port 80 is not blocked by the firewall, sometime, even the GPRS server is running, but the firewall may not allow it to be accessed, if you already know the GPRS server is running, but you still cannot connect by telnet, then there should be firewall blocks it, please unblock it if you know how to do that or ask your network admin to do it. The same can happen to the connection between GPRS server and Client software. For the windows XP which has updated with Windows XP pack 2 might have the windows firewall enabled, so please go to PC->Start->Control Panel-> Windows Firewall ->Exception Tab-> configure the software and port, let the windows operating system not block the GPRS connection at related port number.

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Can I run the GPRS server on a PC with internal IP?

Yes, but you have to properly configure the router.

- First, your router should have a public and static IP
- Since your GPRS server at specific port with TCP/IP connection, so you should configure the router, when it receive the data from the specific port. the router should know pass this data to the PC on which the GPRS server is running.
- When you configure the Starfinder GPRS unit, you cannot input the internal IP of the machine on which the GPRS server is running although this IP address might be a static IP, but it is a internal IP which can not be saw from public. You should configure the Starfinder Unit with the router's IP, since the router has been configured properly, the router responsible to redirect the data traffic to the server machine with GPRS server.

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How many records can Starfinder Unit log?

Starfinder has 32Kbytes memory for data log which can save upto around 450 records, if you configure the Starfinder to log data 1 record each 2 minutes, then it can log around 15 hours data.

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Trouble Shooting

The trouble shooting lists the most common problems for our customers experience and provide some procedures for solving the problems step by step.

Starfinder GPRS Unit doesn't respond any command

Client Software receives data, but the vehicle doesn't not shown on the map

The communication's ok, but the client software cannot receive valid GPS signal

GSM Yellow LED not blink

Starfinder Unit cannot be configured via RS232

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Starfinder GPRS Unit doesn't respond any command

There are many reasons which will cause the Starfinder Unit doesn't respond your command. Please check these possible reasons one by one using the following steps.

Possible reasons from Starfinder Unit

Possible reasons from GPRS server

Possible reasons from Client Software

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Possible reasons from Starfinder Unit

The following reasons from Starfinder Unit can cause Starfinder doesn't respond the command:

- Is the yellow LED flashing?

When SIM card is inserted, power is on, the yellow LED should flash, otherwise the GSM module somehow has problem, then the Starfinder Unit won't work. The power supply; GSM antenna, the SIM card, or GSM modem itself could cause the GSM modem doesn't work.

- Does the GSM antenna connect correctly?

The GSM antenna must be connected and the antenna cable, connector shouldn't loose or break inside. The GSM signal strengthens must be enough.

- During testing, the power supply must meet the Starfinder's requirement, many AC/DC adaptors cannot meet this requirement unless it is a good quality switch power which can provide peak current up to 2A, and voltage be greater than 9V.

- Is the Unit ID programmed correct?

If the Unit ID is not correct, the Starfinder software will ignore the response although the Starfinder Software has receive this message.

- Is the Password programmed correctly?

If the password is not programmed correctly, Starfinder will not respond the command sent by Starfinder client software

- Is the GPRS dial number correct?

The GPRS needs a special dial number for accessing GPRS gateway, you can ask your GPRS service provide give you this number, usually this number will look like *99#, *99***1#, *98***2#...etc. If this number is not correct, The Starfinder GPRS Unit will not be able to access to GPRS network.

- Is the APN set correctly?

The APN is also one of the most important parameters for Starfinder to connect to GPRS network. Is looks like the URL which we use to visit a web site. It looks like "internet.fido.ca", "internet.ca", "airtelwap.es"....etc., please ask your GPRS service provider gives you this parameter.

- Are the APN User Name and APN Password correct?

The APN user name and password are also required for Starfinder GPRS Unit to connect to GPRS network. Also ask your service provider provide these parameters to you.

- Is the GPRS server IP programmed correctly?

The GPRS server's IP is static IP address, which the Starfinder GPRS Unit is going to connect to. If this IP is not provided correctly to Starfinder Unit, this connect will not be able to setup.

- Is the Port Number setting correct?

To setup an internet connection, not only an IP address must be correct, but also the Port number, the server listens at specific port, the Starfinder GPRS unit must send the connection request at this same port, mismatch port number between Starfinder GPRS unit and GPRS server can also cause fail to connect

- Does the SIM card's GPRS service which you are using activated?

Make sure that the SIM card's GPRS service is activated.

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Possible reasons from GPRS Server

The following reasons from GPRS server can cause the Starfinder Unit doesn't respond the command from Starfinder Client Software

- The GPRS server software must be installed at your Server machine.
- The firewall shouldn't block the port and the IP from Starfinder Unit.
- If the Server is behind the Router (Firewall), the firewall must be configured properly so that the router understand to pass all GPRS data traffic to the GPRS server
- The GPRS Server's Settings kit(You can find it, which is a icon named Settings, on your server's desktop) must be used to add the Starfinder Unit which you are going to track into the list, this settings software can add the Unit ID, Unit's password and the Client software's

IP into its list. So that both Starfinder Unit and Client software can connect to GPRS server.

- Check the two port number setting in GPRS server: goto PC -> Start -> Run -> %systemroot%, then open laipacGPRS.ini, you will find the following information like:

```
[options]
gserverport=80
pcserverport=5063
```

In here, port 80 is for the connection between Starfinder Unit and GPRS server, port 5063 is for the connection between Laipac Server and Client Software. these ports setting at Starfinder Unit, GPRS server, and Client software must match each other, for example, if Starfinder Unit Port number is set to 80, the gserverport in laipacGPRS.ini must be set to 80 also, the pcserverport in laipacGPRS.ini is set to 5063, then at Client software network configuration, you also have to set to 5063, otherwise, the connection won't set up and no data can send and receive.

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Possible reasons from Client Software

The following reasons from Client Software can cause the Starfinder Unit won't respond the command from Starfinder Client Software

- Check the client software network setting; goto-> Starfinder Client 2.16-> menu Network->Configuration, you will find three text box; Server IP, Port# and Server ID, Server IP is the PC in which the GPRS server software is running, if this IP is not correct client software won't connect to gprs server; Port# should be the same as which is configured in laipacGPRS.ini, or the client also connect to server, the Server ID is for internal control only, just fill in with any number.
- goto Starfinder AVL Client 2.16->Vehicle->Set Vehicle Property, please check ensure that the Unit ID and Password match the Starfinder's Unit ID and Password which you just programmed into Starfinder Unit and GPRS server list. If not match, goto C:\program files\laipacStarfinder\StarfinderAVL\Program, open data.mdb, change the Unit ID and Password to the same as which have programmed into Starfinder Unit, if this Unit ID or the password in the command sent from Client software to Starfinder Unit doesn't match, this command won't be executed by Starfinder Unit. When you send a command from control panel, the command only send to the vehicle which is high light in the vehicle list, and the Unit ID in the command send from the client software should match which is programmed into the Starfinder Unit.

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Client Software receives data, but the vehicle doesn't show on the map

Some reasons might result in the Starfinder cannot show on the map although the client software received the data from Starfinder Unit:

- No available GPS data received, go to Starfinder->vehicle->Control Panel->Request->Position, when GPS sentence's coming, please check the GPS status, if it

is "A", then this GPS signal is available, if it is "V", then it is invalid GPS signal, the vehicle won't be shown on the map

- The Vehicle's Unit ID and which you are current high light on the client software doesn't match. The Starfinder software only show current high light vehicle. To high light a vehicle, just put the mouse to a vehicle in the left top corner vehicle list and click on it.
- For some languages which are not English, the number format is different from English. Please refers to FAQ Why I've got position, but my vehicle's still not shown on the map?

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The communication's ok, but the clinet software cannot receive valid GPS signal

Please check using the following steps:

- Is the Green LED on the Starfinder Unit constantly on? If not, then the Starfinder GPRS Unit doesn't receive valid GPS signal
- Is the Starfinder works indoor or the GPS antenna is under some metal material? If yes, then please adjust the GPS antenna position so that it can see the sky
- Is the GPS antenna's cable installed wrong? For example, using GSM antennas as GPS antenna, the connection between GSM antenna and GPS antenna's been exchanged. If yes, then the Starfinder won't receive valid GPS signal, so please connect each antenna to the right antenna port.
- Is the GPS antenna fail? Checking this by changing a another GPS antenna which is known working fine, if problem solved, then this is cause of GPS antenna's fail, otherwise continue to next step to check.
- Is the GPS module fail? If all of above steps have been checked, the problem remains, then it causes of the GPS module which may fail, please return the Unit and fix it.

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GSM Yellow LED not blink

GSM Yellow LED doesn't blink means the GSM modem doesn't access to GSM network yet. Please check using the following steps:

- Is the SIM insert into Starfinder Unit's SIM card holder?
- Is the GSM antenna connect to Starfinder?
- Is the GSM antenna cable or connector broken? When you use Starfinder unit during test, the GSM cable connector screw and unscrew too many times could cause the GSM cable or connector broken inside then the GSM module cannot receive signal.
- Is the power supply for Starfinder Unit qualify? The poor power supply can cause the GSM modem cannot get enough power to work, the GSM modem need peak up to 2A when

transmit data, lower than that will cause the GSM modem doesn't work

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Starfinder Unit cannot be configured via RS232

When you configure the Starfinder via RS232, but there are no texts appear on the Hyperterminal or there are texts but when you type PC's keyboard, the Starfinder doesn't respond you. You can check according to the following steps:

- Change another DB9 cable, sometime the defect cable can cause the connection not reliable
- Try to Starfinder to another PC
- Don't power on the Starfinder Unit before connect the Starfinder Unit and PC using DB9 cable and pressed the connection button on the Hyperterminal tools bar
- Somehow the Hyperterminal cannot show the Starfinder Logo and prompt when start, you can try to type 'Y' maybe the other text will appear.
- If tried all of above the problem remains, then the Starfinder's RS232 fail and need to be fixed

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