Find'n'Secure™
Automatic Tracking & Security Software

EMBARC
Information Technology (P) Ltd.

# FS-35 USER MANUAL


## Embarc Information Technology Co. Pvt. Ltd

Version 1.0
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Thank you for purchasing FindnSecure GPS/GPRS Vehicle Tracking and Security device. Please read all Instructions carefully before operation, to ensure your complete understanding and to obtain the best possible performance from the unit.

# Contents

# I. General Description

FS-35 is a Vehicle tracking product which could meet the high-end requirements of some clients. It has a well designed housing and offers friendly and extended ports for re-development. The whole system is stable and reliable after 5 years real operation and service. The general functions are as below:

- ***Real time vehicle online location tracking***
- ***Vehicle dynamic datas and status real time monitoring***
- ***Vehicle driving track replay***
- ***Route control & management***
- ***Real time fuel consumption monitoring;***
- ***Geo-fencing***

And besides those functions, it could also integrate below additional devices to meet some specific requirements of analyse in real application and operation.

- ***Camera***
- ***Bar code scanner***
- ***Printer***
- ***Taximeter agreement converter box***
- ***Dispatch screen***
- ***Identification Recognition***
- ***RFID***
- ***other sensor***


| | |
|---|---|
| Overall dimension | 121X82X29mm (LXWXH) |
| Boxed dimensions | 264X221X90 mm(LXWXH) |
| Device quality | 0.85kg (include standard accessory) |

# II. Product Specification

| | |
|---|---|
| **GSM** | |
| Band (MHz) | 850/900/1800/1900 |
| Module Manufacturer | SIMCOM |
| Model No. | 300 |
| Antenna (internal/external) | External |
| **GPS** | |
| Module Chipset | MTK/SiRF3 |
| Channels | 12 |
| Cold Start | 40 seconds |
| Warm Start | 15 seconds |
| Hot Start | 2 |
| Accuracy (meters) | <15m |
| Antenna (internal/external) | External |
| **I/O** | |
| Digital Inputs | 13 |
| Digital Outputs | 8 |
| Analog Inputs | 1--3 |
| Analog Outputs | 0 |
| I/O Expandability | Yes |
| **SERIAL PORTS** | |
| # Ports | Up to 3 |
| Internal / External | internal |
| Port Interface | RS232 |
| External device | Support RFID/Printer/Scanner /Camera/therm sensor/Dispatch screen |
| **INTERNAL MEMORY** | |
| Buffer Size (Mbytes) | SRAM 128KB/FLASH 2MB if you need we can expand a SD(2GMB) |
| **BATTERY** | |
| Capacity (mAH) | 350mAH |
| Battery Life (hours) | 2 Hours |
| Internal / External | Internal |
| **WORKING CONDITION** | |
| Working voltage and current | 10v~~33v, |
| Working cu | 0.1 A |
| working/storage temperature | -20℃ ~ +70℃ |
| Relative humidity | 20 ~ 95% |

# III. Function Introduction

## 1. Highlight In Basic Function:

- Initiative anti-thief (to identify the driver before driving by RFID, Parking Anti-Tow Alarm)
- Economize GPRS Data Flow Control Function (when the "ACC" is off, stop the data upload by setup anti-explosion command, ACC on, start to upload data to control center)
- 7×24 Real-time protection

## Highlight in high end Application:

- The extensibility for the optional function: Hardware can integrated RFID; CCD camera; temperature Sensor; dispatch screen(voice communication); handle keyboard, barcode scanner machine to meet the Needs of real application in each area, also has reserve com port suitable for secondary development.
- Completeness and Customization in software; It has photo transmission Statistics; tracking asset management ; temperature control; dispatch Information; 16 Geo-fencing set up; the path of site planning; track playback ; real-time monitoring of fuel consumption; historical data query; remote control, etc

## 2. 14 channels vehicle signal detecting:

It can detect the following signal: ACC, engine, brake, left indicator, right indicator, air conditioner, door, low voltage, high voltage, backup battery, fuel and power break, SOS,GPS antenna open, GPS antenna short circuit, over speed alert, external device. Control center can check out this state any time and monitor the signal.

## 3. Three alert type:SMS;GPRS;vehicle voice and light and 12 channels alert.

Enter geo-fencing alert, out of geo-fencing alert over time parking alert, GPRS module re-start alert, fatigue driving alert, Over speed alert, Robbed alert backup battery alert 、 illegal open door alert, illegal ignition alert, fuel consumption alert, GPS antenna on alert, GPS short circuit alert. This kind of alert can be setting as different state, such as only stop to sending alert or sending alert one time after receiving control center confirmation.

**4.** Support 16 channels geo-fencing, alarm methods that can be selected: enter alarm, out alarm, alarm all, no alarm. The path of site planning, route planning.

**5.** Blind area data re-report, 512KB build-in memory suitable for storage data when enter into no signal area, it will upload these data when signal renew, avoid data lost.

**6.** Explode resistance function:  it will be required to turn off all of wireless device when refueling in some special position. This function is used to stop the GPRS data transfer when ACC off, and when the ACC on, it will upload data again.

**7. History data checking**:

Support history track checking and playback,
Fuel consumption history checking,
Alarm information history checking.

**8.** Support TCP and UDP data transfer model

**9.** Real-time fuel consumption monitor and history fuel consumption checking.

**10.** 24 hours/7 days online, GPRS transfer, restart when disconnecting remote control restart unit.

**11.** GPRS/GSM/RS232 command format is the same, support setting by RS232/GPRS/GSM;  all of the command is ASCII code, easy to used and check.

**12.** Supporting setup and inquire command by vehicle owner mobile phone and control center, suitable for management.

**13.** Real-time monitor function, uploading data about car state and position in preset time and preset times.

**14. Listen-in function**:

The monitor center should send an command to unit to dial designated number to listen-in

**15.** Data transmitted unvarnished (DTU) function (for additional device' s information transfer). Support uploading information from external device to the control center, also support sending information from control center to the external device.

**16. Storage protect function.**:

Stop to work when voltage higher or lower than limited.

**17.** Build-in backup battery

**18.** Remote control fuel and power break, interval shut off power and fuel.

**19.** Build-in 2MB memory suitable for history data storage, can save 15 days data (one message every minute), can be download the data through GPRS and RS232.

**20.** Fatigue driving, time can be setting, monitor fatigue driving state. After alert, not only uploading to the center, but also save in the build-in storage even if power off.

**21.** Electronic mileage and GPS mileage statistic. Support synchrony between electronic mileage and GPS mileage.

**22.** Support back up IP

**23.** Support different 9 kind's baud external device, cover normal baud.

**24.** Remote control open and closed door

**25.** Support buzzer (need to setting buzzer)

**26.** Support at most 8 CCD cameras at the same time.

# IV. Operation Instructions and Installation

## 1. Check the accessory and appearance;

Picture 1

Picture 2

## 2. Initialization and test

**2.1** Make sure the SIM card which is inserted into the FS-35 has the GPRS service; Then open the box and insert the card inside the FS-35. Please reference picture 2

**2.2** Connect the GPS and GSM antenna, and connect the power wire to the power. (Power supply for FS-35, current should be around 300mA, voltage should between 12V to 24V.)

**2.3** Use a cell phone to Send S03 command to the SIM card which you inserted into the FS-35, Format example: (2080808888,1,S03,129,1,your cell phone telephone number) 2080808888 is the FS-35 ID number. After you use this command, your cell phone will receive the message feedback each time you are sending command. If successfully, you will receive: like: （2080808888,1,S03,129,13924661010）

**2.4** Use a cell phone to Send S01 command to check if the first step is succeed. Format (20808xxxxx,1,S01,129) If successfully , you will receive like: （2080808888,1,S01,129,FINDNSECURE）

**2.5** Use a cell phone to Send S02 command to set up the APN, Server IP, and port. Format (2080808888,1,S02,111,1,122.160.144.32,21000,APN) , 122.160.144.32 is the static IP address of our server,21000 is the port.


Connect it with the server and start data transfer by GPRS. APN is an example. Please check your local APN' s name. and take care that the capital letter if they has.

PS.each command should be edit exactly the same as in the sample, no more space, exactly the same bracket,etc..

There are three methods to initialize this unit:

① Use cell phone to set IP address, Port, APN.

② Server software to send command to set IP address, Port, APN.

③ Connect to computer through RS232 port to set IP address, Port, APN.

| **The command format just as following:** | |
|---|---|
| **(2080808888,1,S02,111,1,122.160.144.32,21000,airtelgprs.com)** | |
| **2080808888** | terminal ID |
| **1** | Protocol version |
| **S02** | Command type |
| **111** | Data serial number |
| **1** | Means that setting IP, PORT, APN |
| **122.160.144.32** | IP address of server |
| **21000** | Port |
| **airtelgprs.com** | India communication APN |

**2.6 Check the GPS and GSM LED indicator to see if the LED work normally or not.**

When the power is on, number one indicator and number 2 indicator will be flash at the same time, than die, number 1 indicator is GSM indicator, used to show GSM running state, and number 2 indicator is GPS indicator. GPRS indicator state:


① Flash one time about every second, shows that GPRS haven't connect to the internet, there is no signal

② Flash about 20 times every second, shows that GPRS is connecting to the internet. But there is no data uploading.

③ Flash one time every 5 seconds, shows that GPRS haven't connect to internet, but there is GPRS signal.

④ Flash 20 times every seconds, than last stopping for one or two seconds, shows that GPRS has linked to the internet, and are uploading data

**GPS indicator state**:

① Last bright: shows GPS has located

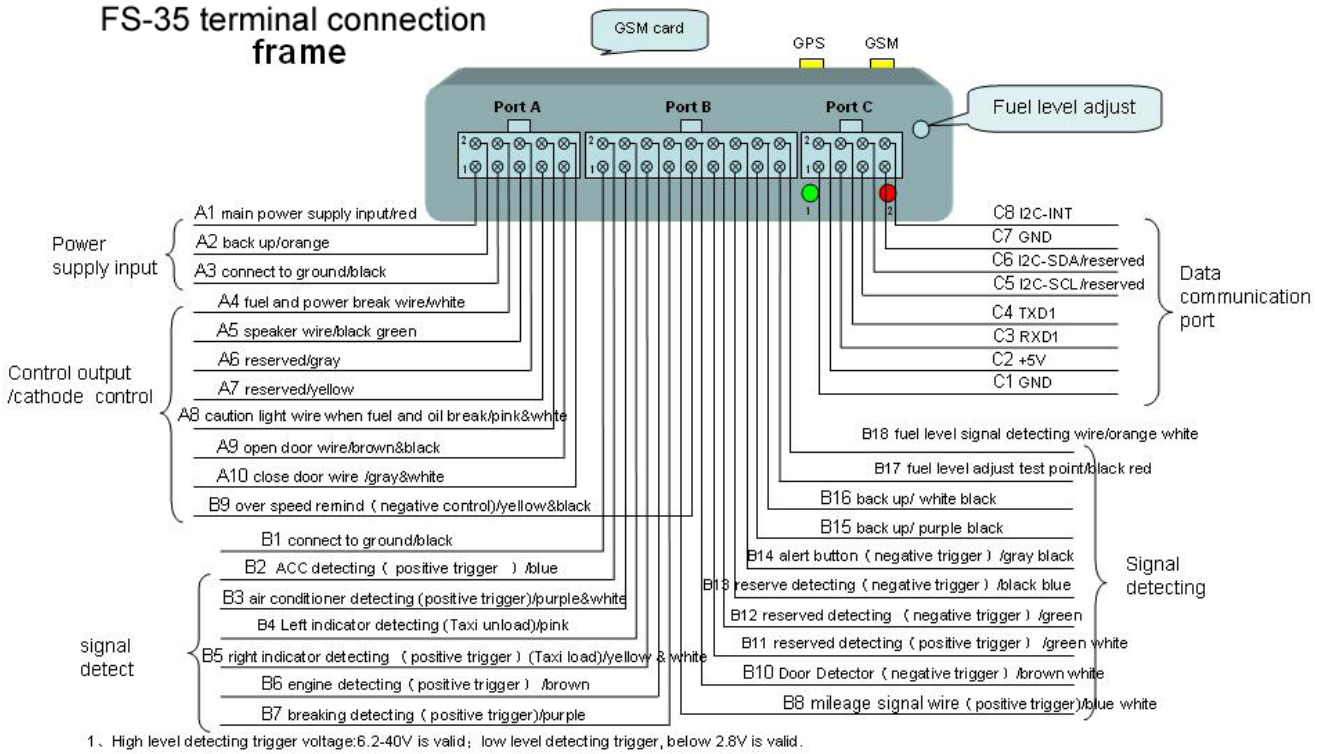
② Flash: shows GPS not locating, but can receive GPS data.

③ Lasting not bright: can't receive GPS data, may be module or unit damaged.

**2.7** After these settings go to the demo software to check your FS-35 is start uploading datas through GPRS or not.

**3.** The demo terminal software's user name and password will be send by sales people in Embarc. After successfully track the car in demo software, please go through all the layout of the software and all the detailed command of each function according to the User manual and product protocols.

**4.** After you familiar with the software layout and all the blocks, you can start to connect the FS-35 all the wires to the vehicle according to the diagram as below. P.S. We recommend you to find a professional staff to finish this procedure.




Working parameter explain:

1、High level detecting trigger voltage:6.2-40V is valid；low level detecting trigger, below 2.8V is valid.

2、Control the bearing current of the fan-out to be 0.35v;the Max moment bearing current is 0.5V,

3、GP5000 rating working voltage:12V-24V,normal working voltage:10v-33v(if over this range, the main body will start back up job or shut down), the max bearing input voltage:60v,working current is about 0.1A.

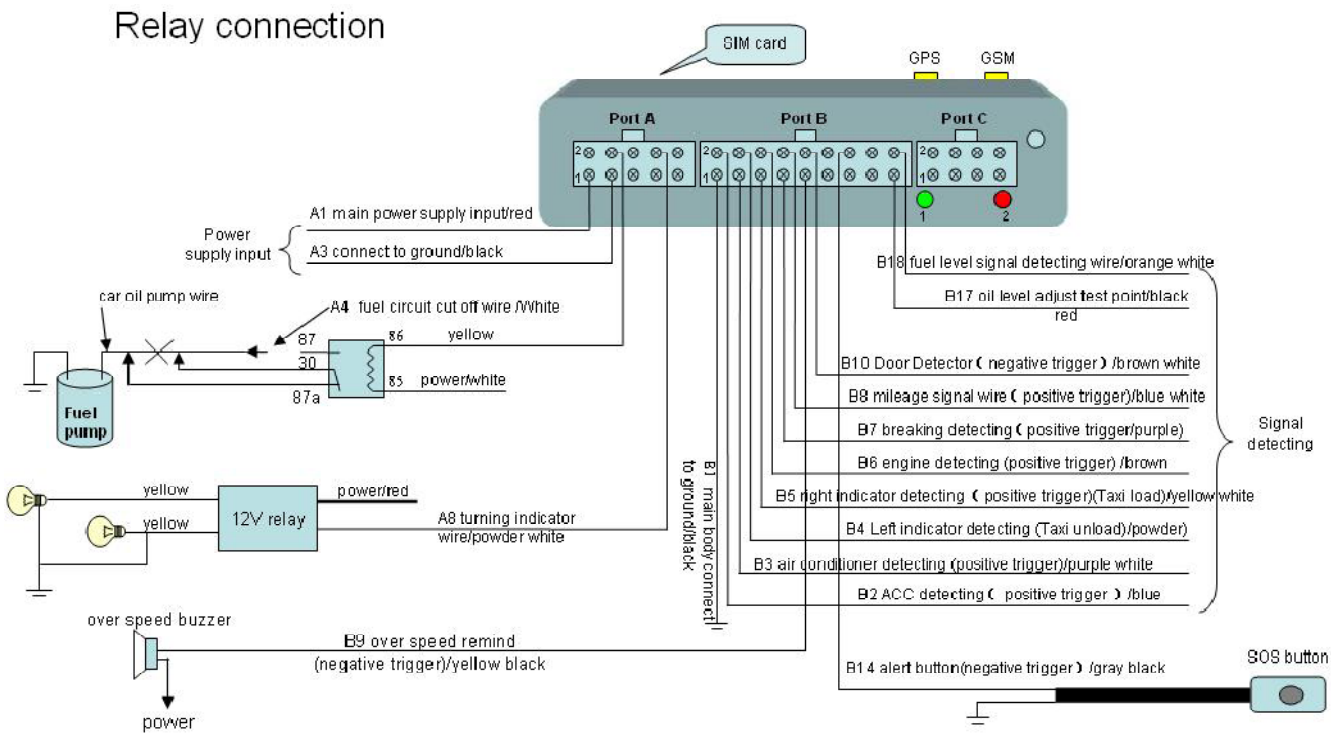
4、The port of data communicating is TTL level.

5、Mileage signal detecting trigger voltage range is 1.8-30V,if the electric mileage，if the mileage has speed ratio, use this value multiply 8 ,such as:650:1(mileage value)X8=5200(the setting value of GP5000 )

6、Green indicator1,bright 0.2 second and than lasting not bright 1 second, denotes that there is no signal, flash quickly denotes that there is GSM signal and has connected to the center network.

7、Red indicator 2: flash shows that GPS haven't located，lasting bright shows that GPS has located, if it don't bright it shows that the GPS model has trouble.

8、Fuel level signal detecting voltage range is 1.8—18V(in this range, the voltage of fuel level adjust point can be set as 9v), when setting oil guage function, must connect to the engine and detecting.




**5.** After you successfully connect to the vehicle, you can follow the software instructions to try and test each functions in software one by one.

# V. Standard accessory and optional device

| Item | Accessory | Unit | Remark | Picture |
|---|---|---|---|---|
| 1 | Wiring harness<br>GPS antenna<br>GPRS antenna | Set | standard |  |
| 2 | SOS button | Piece | standard | |
| 3 | Fuel and power break relay | Piece | standard | |
| 4 | camera | Piece | option |  |
| 5 | Bar code scanner | Piece | option |  |
| 6 | Dispatch screen | Piece | option |  |
| 7 | Temperature sersor | Piece | option |  |
| 8 | Door magnetic | Piece | option | |
| 9 | Driving recorder and printer | Piece | option |  |

| | | | | |
|---|---|---|---|---|
| 10 | RFID reader ( active ) | Set | option |  |
| 11 | RFID reader ( passive ) | Set | option |   |

# VI. Trouble shooting

| Item | Troubles | solution |
|---|---|---|
| 1 | Insert SIM card, power on, there is no GSM signal | Check the connection of antenna and power supply, make sure of that working current at least 100ma,working voltage is 12-24v. |
| 2 | There is GSM signal, GPRS can' t be connected to GPRS network | Check if APN setting right, if it is other GPRS transfer function except wap |
| 3 | There is no GPS signal | Check GPS antenna connection and make sure of that antenna face sky |
| 4 | There are some data not in the preset range when filter speed in the condition of below 50 | You should select “Digital” when filter speed |
| 5 | software defaulted function: filter the datas when the ACC is OFF | When ACC is off, device will stop uploading the datas to server. Use S11 to stop this function. |
| 6 | Not enough data when check history data | Check the time format of your computer, the right format is yyyy-mm-dd |
| 7 | There are no speed showing uploading in driving process | It will be no speed showing if you don' t connect the electric mileage wire in the situation of starting electric mileage. Send S06 command to set speed ratio as 0 and start GPS mileage, or connect the electric mileage wire and setting correct speed ratio. |
| 8 | There are datas uploading when ACC on, but there are no data when ACC off. | Explode resistance function has started. When this function start, it will stop to upload data when ACC off. Send S11 to closed explode resistance function |

# Ⅶ. Remark

1. Please turn off the power before insert and take out SIM card to avoid damage.

2. Please operate correctly when connect to the GPS and GPRS antenna, and make sure of that there are no metal covert above the GPS antenna. As much as possible to avoide passing movement part of the vehicle when arranging the wire connection.

# Ⅷ. Vehicle tracking system frame