

GPS Vehicle Tracker (RFID + Camera)

USER MANUAL

(Model: TK510)



Version 4.0

(Date: Jan.3, 2017)

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Preface

TK510 GPS Vehicle tracker is the most advanced & cost-effective solution for vehicle security, real-time tracking & fleet management. It has the following unique functions:

- ✧ Camera for snapping & monitoring via MMS, email or platform;
- ✧ RFID car alarm system with long-distance tag;
- ✧ Crash alarm, fuel leaking alarm, speed limiter & fatigue driving alarm.

Read it Firstly:

Please read this manual thoroughly before you use the device; please keep it for future reference.

Attention:

(1) Please keep the device away from heavy water, high temperature, heavy dust or strong magnetism.

(2) Please prepare a valid GSM SIM card in advance.

(3) For safety, please keep the SIM number of your tracker in secret

Warning:

We strongly suggest user let the professional car electrician to install the system.

I. Features & Functions

1. Industrial design with high performance ARM7 processor;
2. GPS tracker + RFID Car alarm with long-distance tag;
3. Active RFID Driver ID identification or Mifare1 IC card reading (optional)
4. Track on command or by time interval or by distance;
5. Arm/disarm by SMS, phone call;
6. Arm/disarm automatically by 2.4G RFID tag(optional);
7. Check the car's real physical address (such as city name, street name..);
8. Track by mobile SMS to get the latitude, longitude, speed, direction & odometer etc.
9. Check the location directly by the Google map's URL;
10. Over-speed alert, Geo-fence alert, movement alarm;
11. Snap photo and send out via MMS &Email when there is SOS alarm, ACC On alarm or door open alarm, snap the photo via platform;
12. Speed limiter, when the speed is over limitation, the siren will sound to warn driver & relay will response to slow down the car automatically;
13. Crash alarm, when there is crash & it can detect it automatically;
14. Fatigue driving alarm, if continuous driving time is over the limitation, the siren will sound to warn the driver;
15. Check the coordinates via LBS, even there is no any GPS signal..
16. Support voice monitoring & 2-way talking;
17. Cut off engine to stop the car safely by SMS/GPRS;
18. Trace optimization when vehicles turns a corner;
19. Built-in shock sensor for power saving & triggering alarm
20. Power failure alarm, with built-in rechargeable backup battery;
21. SOS alarm & anti-tamper alarm, once the wiring harness is disconnected, it will trigger this alarm;
22. Support analog input for fuel/temperature monitoring, fuel loss alarm;
23. I/O: 5 digital inputs, 2 analog inputs & 5 digital outputs(2 impulse outputs);
24. Lock/unlock the car door remotely by SMS/platform or automatically according to the status of arm/disarm;
25. Wide working voltage range, from 6V-45VDC, suitable for car or big truck.
26. There are 3 types of working mode for power saving flexibly.
27. 8M-bit offline data logger, it can store up to 9,090 waypoints.
28. SMS content in multi-languages(English, Arabic, Spanish, Portuguese).

II. How to Operate it

The default user password is **111111**.

If the user password is changed, user should send the SMS command with the new user password instead of **111111**.

XXX is the control code, all the letters must be **capital letters or in small letters**, command with mixed capital letter & small letter is not recognized by system.

Authorize the Alarm-received Phone No.

SMS command: **111111*10** Mobile #1 ***20** Mobile #2 *****

In case of alarm, if user wants to get the alarm SMS from the tracker, he/she needs send the following SMS to program the tracker firstly, otherwise, the alert information can't be received correctly.

Example: User sends the SMS **111111*10** 13922713571 ***20** 13711189059 ***** to the tracker's SIM card number, if there is any alarm, system will send SMS to both of these two mobiles. In case of SOS alarm, the system will only send alarm to the mobile #2

Arm/Disarm by Phone Calling

User could also use the 1st alarm-received mobile phone to call the tracker's SIM card number, so as to arm/disarm the system.

Arm: After hearing several ring tones, if the systems hang up the call automatically, and call back you, it means that the system is armed.

Disarm: After hearing several ring tones, if the system hangs up the call automatically, and don't call back you, it means that the system is disarmed.

Note:

- (1) There is no communication fee for this operation, it is a very convenient way to arm & disarm the system.
- (2) The SIM card inside the device must have the function of Caller ID Display.
- (3) Only the 1st **alarm-received mobile phone** can realize this function.

Check the Vehicle's Status

SMS command: **111111CHK** (or **111111chk**)

This instruction is used to inquiry the vehicle's location & system's status.

The system will send back the SMS, includes the similar information, such as "Armed....."

User could also use the 2nd alarm-received mobile phone to call the tracker's SIM card number, the tracker will hand up the calling & send back the location directly.

Arm/Disarm the System by SMS

SMS command: **111111ARM** (or **111111arm**)

This SMS instruction is used to arm the system

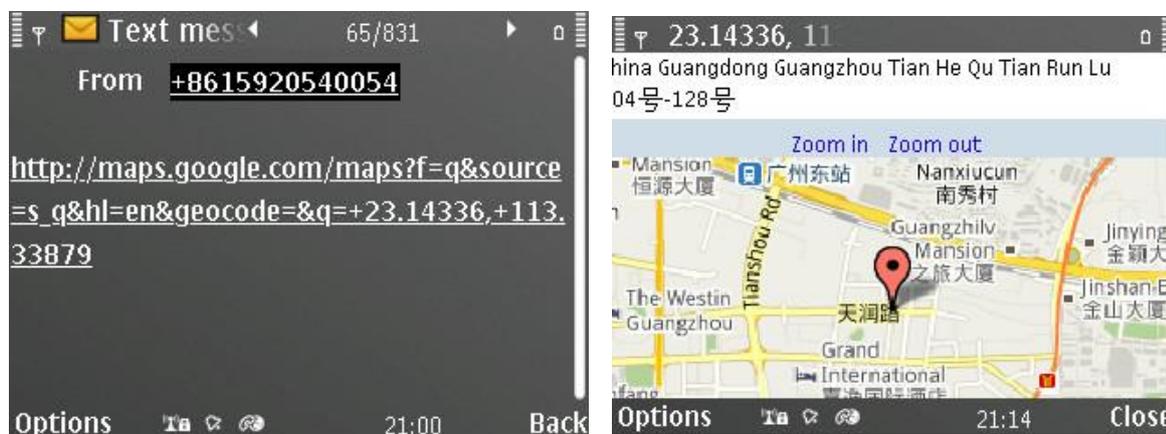
SMS command: **111111DSM** (or **111111dsm**)

This command is used to disarm the system & stop sending alert SMS.

Check the location by Google Map's URL

SMS command: **111111MAP** (or **111111map**)

Upon receiving the SMS command, the tracker will automatically send back the SMS including the Google map's URL, user can use smart phone (GPRS data service is enabled) to open the URL link, the car's location will be showed on the Google map.



Check the Real Physical Address

SMS command: **111111ADD** (or **111111add**)

When user sends this SMS command to the tracker, the tracker will automatically send back the car's real physical address (such as city name, street name) to your mobile by SMS.(it need server's support for address translation)

Check the Real Physical Address Directly without Server

SMS command: **111111DDD** (or **111111ddd**)

When user sends this SMS command to the tracker, the tracker will automatically send back the car's real physical address (such as city name, street name) to your mobile by SMS.

(Note: this function might not work with some operator's SIM card. it is just for test).

Check the Location by GSM Base Station Code

SMS command: **111111LOC** (or **111111loc**)

This instruction is used to check the location by GSM base station code. The tracker will send back the relative GPS coordinates which is translated by the GSM base station code.

Change User Password

SMS command: **111111PSW** (or **111111psw**)

This instruction is used to change the user password. The length of the user's password is 3~6 digits. Users are suggested to change to the new password in use.

Example: User sends the SMS "111111PSW12345" to the system SIM card number, and gets the confirmed SMS "111111PSW12345" in 3 seconds. It means that the user password has been changed to 12345.

Remark: Please keep the password deep in mind if it is changed.

Stop the Car by SMS

SMS command: **111111STP** (or **111111stp**)

This instruction is used to stop the car in safe condition. If the car's speed is higher than 30KM/h, the car is stopped gradually by impulse control, if the car's speed is lower than 30Km/h, the car is stopped immediately.

Attention: It is very dangerous to stop the car when the vehicle is running at high speed. We do not take any responsibility to the consequence caused by this action.

Restore Car from Being Stopped

SMS command: **111111RES** (or **111111res**)

It is used to restore the car to normal status after being stopped.

Monitor the Voice around the Car

SMS command: **111111MON**

This instruction is used to monitor the voice around the car. The SIM card inside the system pays for the communication fee.

SMS command: **111111MON!**

This instruction is used to monitor the voice around the car. The user's telephone pays for the communication fee.

Example: User uses the mobile 13780012345 to send 111111MON! to the system, then use the mobile 13780012345 to call the tracker, it will be connected automatically, and user can monitor the voice around.

Two-way Talking

SMS command: **111111MON:P1***

This instruction is used to program the phone number which is used for carrying out direct monitoring or talking always.

P1 is suggested as center phone number for easy communication with drivers.

Example: 111111MON:13922713571*

Over-speed Alert

111111SPD:X x is the speed in KM/H , maximum value is 255M/H

(For example: 11111SPD:120, if the car speed is over 120KM/H, it will send out warning alert by SMS/platform).

11111SPD:0 to disable the over-speed alert. It is the default setting.

11111SPD: to check the setting of over-speed alert.

Remark: this function is just for reference, because there might be some time delay or error in detecting the running car's real speed by GPS. Default speed limitation is 120KM/H.

Speed Limiter

After user sets the speed limitation by command 11111SPD:X, if car is over speed, the siren will sound & the car will slow down gradually.

11111BUZ:3:X,

(X=1, activate siren; X=0: deactivate siren; default=1)

11111RLY:3:X,

(X=1, activate relay; X=0: deactivate relay; default=1)

Power Save Mode

SMS command: **11111PWR:X**

Value of X	Actions	Power consumption
0 (default)	Disable power save mode	60mA
1	Close GPRS connection	48mA
2	Close GPRS connection, GPS module	13mA

After setting 11111PWR:1(or 2), if there is no vibration & SOS alarm, integration line is not triggered, and ACC is OFF, the tracker will go into power save mode after 5 minutes.

Once there is vibration or SOS alarm, or integration line is triggered, or ACC is ON, the tracker will wake up from the power save mode immediately.

Fatigue Driving Alarm

When this function is activated, if the engine is turned on for a certain time, the siren will sound to warn the driver. The SMS command:

11111TIR:1:X, (with, at the end)

X: is time in minutes (default: X=180 minutes, maximum:65535 minutes)

Example: 111111TIR:1:120,

Show the SMS Content in Languages.

SMS command: **111111LNG:X**

it is used to define the SMS content in different languages.

X=0, English; X=1, Chinese; X=2, Arabic;

X=3, Portuguese; X=4, Spanish; (Default setting: X=0, English)

Define the SMS Content in other languages

Step 1: choose the language mode such as: 111111LNG:4 to change to Spanish language firstly.

Step 2: Define your own text by the following command:

111111TXT:nn:str!nn:str!nn:str!nn:str!nn:str!

Remarks:

- (1) 6 pieces of strings can be defined in one command.
- (2) nn: 2bits, range:01~18
- (3) the number of letters in each str. can't be more than 8
- (4) the character (.) ,(.),(!) can't be showed in str.

Example: 111111TXT:09:vibración! is to define the alarm text in Spanish when the shock sensor is triggered

nn	Meaning of Str.
01	Arm
02	Disarm
03	Power failure alert
04	SOS alert(in1)
05	Engine ON alert (in4)
06	Vibration alert
07	Stop the car(out1)
08	Restore the car(out1)
09	Over-speed alert
10	Original alarm's triggering(in5)
11	Geo-fence alert
12	Movement alert
13	The vehicle can't be stopped

14	Crash alert
15	Car door open alert(in3)
16	Broken line alert (in2)
17	Fuel loss alert
18	Un-define

Other SMS Command List

Note: ***** is user's password and the default password is 111111. The tracker will only accept commands with the correct password.

Functions	SMS Command	Example
Trace Optimization	*****TIR:2:X,	111111TIR:2:30,
When the vehicle turns around a certain angle: X degree, it will report one location.(default:30 degree)		
Auto Report by SMS	*****TIR:3:X, *****SMS:1:Y,2:Z,	111111TIR:3:5, 111111SMS:1:1,2:0,
X: the time interval for continuous automatic report via SMS.(X=0:no report) Y=1: report to user 1, Y=0: No report to user1; Z=1: report to user 2, Z=0: No report to user 2; (Example, the tracker will send location data back to user1 every 5 minutes.)		
Set Movement Alarm's Radius	*****NUM:6:X,	111111NUM:6:150,
Example: it is set the radius of movement alarm as 150meters.(Default setting:100meters)		
Set the Shock Sensor	*****NUM:3:X,	111111NUM:3:1,
It is to set the sensitivity of the shock sensor. X=1~10, sensor will be more sensitive if X value is smaller.		
Set the Crash Sensor	*****BMP:1=X,2=Y,	111111BMP:1=200,2=10,
It is to set the sensitivity of the crash sensor. X=0~255 (Acceleration value of the offset), Y=0~9(last time), sensor will be more sensitive if X value is smaller & Y value is smaller.(default x,y=224)		
Odometer Setting	*****ODO:X	111111ODO:5000

<p>It is to set the initial odometer reading. (X: meters) <u>111111ODO:</u> is to read the present odometer reading (with : at the end)</p>		
Set multiple parameters	*****SET:1:x,2:y,3:z,4:u ,5:v,6:w,	111111SET:1:888888,2:120,3:8,4:1000,5:50,6:2,
<p>Example: in above example: x=888888 is operation password, y=2 is over-speed, z=8 is time zone, u=1000 is the initial odometer, v=50 is radius of movement alert, w is power save mode(=pwr:1,2,3) Check the settings: 111111SET: (with : at the end)</p>		
Lock/unlock the door	*****LCKx	111111LCK0
<p>Example: x=0 or x=1 111111LCK0: lock the car door (the output4 has pulse output) 111111LCK1: unlock the car door (the output5 has the pulse output)</p>		
Track by distance	*****LOG:5:X,	111111LOG:5:1,
<p>111111LOG:5:X, X=0: Track by time interval (default settings) ; X=1: Track by distance 111111EQU:Y Y is the distance interval for automatic tracking</p>		
Clear the Parameters	*****CLR	111111CLR
<p>Remarks: it will reset the GPRS settings & shock sensor to default settings, it will clear the alarm-received phone number and direct monitoring phone no.</p>		
Clear the Data logger	*****NUL	111111NUL
<p>Remarks: it will format the cache of the memory and delete all the stored offline GPS data</p>		
Set Fuel-loss alarm	*****OIL:X	111111OIL:10
<p>Remarks: it will set the reduction offset X of fuel level in 10 seconds. it is used to adjust the sensitivity of triggering fuel-loss alarm.</p>		
Reboot the tracker	*****DOG:!	111111DOG:!
<p>The device will reboot 1 minutes later.</p>		
Set Hear-beat time	*****HBX:X	111111HBX:3

It is to set the hear-beat time interval. (in minutes)		
Pair the wireless immobilizer	*****STD	111111STD
It is to pair the wireless immobilizer (optional functions)		
Geo-fence Alarm	W*****;017,X W*****;117,X	W111111;017, 11404.0000,E,2232.0010,N, 11505.1234,E,2333.5678,N
<p>Remarks: 017 is for alarm when tracker moves out the preset scope; 117 is for alarm when tracker moves in.</p> <p>When the tracker moves in/out, it will send a SMS alarm to the authorized phone number.</p> <p>X is the coordinates which include: Lower-left X,Lower-left Y,Upper-right X,Upper-right Y For example, 11404.0000,E,2232.0010,N,11505.1234,E,2333.5678,N</p> <p>Note:</p> <ol style="list-style-type: none"> 1. Lower-left X should be less than Upper-right X; 2. All longitudes and latitudes should be in ASCII format as follows:- Longitude: DDDMM.MMMM,E/W. 4 places of decimal. '0' is needed to be stuffed if no value available. Latitude: DDMM.MMMM,N/S. 4 places of decimal. '0' is needed to be stuffed if no value available; 3. Only one alarm can be set in either Movement Alarm or Geo-fence Alarm; 4. Send W*****;006,00 to turn off Geo-fence function. 		
Get IMEI number	*****CMD:AT+GSN	111111CMD:AT+GSN
Remarks: to get the IMEI number of tracker's GSM module		

III. The Setting for GPRS Connection

The GPRS setting is necessary for using the following 2 functions:

- (1) Check the car's real physical address by send 111111ADD
- (2) Online tracking service by web-based tracking platform

SMS format:

111111WWW:IPN:X;COM:X;APN:apn,user,password;RPT:X;SLP:X;RUN:X;

- IDN: The tracker's ID, it is the last 14 digits of IMEI which can't be changed.
- IPN: The IP address or domain name of the GPRS server
- COM: The communication port for the GPRS server
- APN: The Access Point Name for the GSM SIM card.
- RPT: The interval for the uploading GPRS packet (Unit: sec.)
- SLP: The interval for uploading GPRS packet when car is parked (Engine is OFF and no vibration). (unit: sec.);
- RUN: GPRS connection setting. 0=close, 1=TCP, 2=UDP.
- IDN: The tracker's ID, it is the last 14 digits of IMEI which can't be changed.

Example, if server is: www.topten-track.com, TCP port is 8500, APN is web.gprs.mtnnigeria.net, apn user:web, apn password: web, time interval is 60 seconds, Then the command is:

111111WWW:IPN:www.topten-track.com;COM:8500;APN:web.gprs.mtnnigeria.net,web,web;RPT:60;SLP:180RUN:1;

User can send one or more options at the same SMS commands, such as:

✧ **111111WWW:IPN:X;COM:X;**

This is to set the server's address and port separately.

Example: 111111WWW:IPN:www.topten-track.com;COM:8500;

✧ **111111WWW:APN:X;**

This is to set the APN (access point name). Please use “,” to separate the APN, APN username & APN password.

Example: 111111WWW :APN : web.gprs.mtnnigeria.net,web,web;

✧ **11111WWW:RPT:X;**

This is to set the upload time interval. The unit is second, the minimum value is 10 seconds. The default setting is 60

Example: 11111WWW: RPT: 60; (Upload time interval is every 60s)

✧ **11111WWW:RUN:X;**

X=0; is to close down the GPRS;

X=1; is to open the GPRS via TCP

X=2; is to open the GPRS via UDP

Eg: 11111WWW:RUN:1; (Open the TCP connection)

✧ **11111WWW:**

You can send 11111WWW: to check the GPRS settings.

Default GPRS Setting

The default GPRS setting is:

- | | |
|---|-----------------|
| ✧ IPN: www.topten-track.com , | COM:8500 |
| ✧ APN: cmnet | RPT: 30 seconds |
| ✧ SLP:0 | RUN:1 |

IV. Snap Photo & Monitor via MMS/Email/Platform

It is the optional function, the extra serial camera is needed.

✧ **Snap the Photo via MMS**

11111MMS to get the Photo via MMS

To realize this function, user must do the correct MMS settings firstly.

✧ **MMS Setting for Snapping**

The MMS setting is different from GPRS setting, the SMS command is as following:

111111MMS:SVR:X;PRX:Y;APN:Z;COM:N

- ✧ X: MMSC server URL;
- ✧ Y: The IP of MMS proxy
- ✧ Z: MMS_APN, user, Password.
- ✧ N: The Port of MMS proxy

For more information about the MMS setting parameters of worldwide GSM operators, please search by Google or refer to this link:

<http://www.nowsms.com/mobile-operator.mm-sc-settings>

Example: (for Nigeria MTN SIM card)

The correct setting SMS command is:



111111MMS:SVR:http://10.199.212.8/servlets/mms;PRX:10.199.212.2;APN:web.gprs.mtnnigeria.net,web,web;COM:8080;

APN	MMS Proxy	MMSC Server URL	Username	Password
web.gprs.mtnnigeria.net	10.199.212.2:8080	http://10.199.212.8/servlets/mms	web	web

✧ Set the Way of Sending Photo

SMS command: **111111PIC:1:X,2:X,3:X,4:X,5:X,6:X,7:X,8:X,9:X**, (with, at the end)

X=0, means Disable; X=1, means Enable

1:X, engine on (input4); 2:X, car door open (input3); 3:X, over-speed; 4:X, vibration; 5:X, movement alarm; 6:X, fatigue driving alarm; 7:X, broken line alarm (Input2); 8:X; original alarm's triggering (input5); 9:X; SOS

(Example: 111111pic:1:1,2:1,9:1,) default setting as 1.

SMS command: **111111SEE:6:X,7:Y,8:Z**, (with, at the end)

6:X, X=1, send photo via MMS to 1st alarm-received no.; X=0,disable.

7:Y, Y=1, send photo via MMS to 2nd alarm-received no; Y=0, disable.

8:Z, Z=1, send photo to email box; Z=0, disable.

(Example: 111111SEE:6:1,7:1:8:1,)

✧ Set the Email to Receive the Photo

SMS command: **111111BOX:Email**

(Example: 111111BOX:topten800@gmail.com)

V. RFID Car Alarm Functions and How to use

It is the optional function, the extra RFID reader module & tag are needed.

It supports 2 types of RFID reader: (1)2.4G long distance reader/reader module(3-8meters); (2) Mifare1 IC card reader (reading distance 3-6cm)

Our active RFID reader module & RFID tag are designed with 2.4G wireless technology. The working distance is from 3-8 meters, our active RFID tag has very low power consumption & its battery can work for more than 1 year.

It is not only used for driver ID identification, but also as a key to arm/disarm the vehicle automatically.



2.4G Reader



2.4G tag



Mifare1 IC card reader

◇ **RFID Reader**

Please insert the RFID reader to the USB port of the main unit, and fix the reader box tightly on the place where it is not hot.

◇ **RFID Tag**

Please press the power switch on the tag & hold it for 3 seconds, if the LED light changes from ON to flash, it means the tag is power ON; if the LED light change from ON to OFF, it means the tag is power OFF.

Each tag has a unique 6-digits ID on the sticker.

It is the long-distance active RFID tag, the battery of the tag can work for more than 1 year. User can change the tag's battery easily once finished.

✧ Activate/Deactivate RFID Function

The following SMS commands are used to turn ON/ OFF the RFID function:

111111RFD:6:1 : Activate the RFID function (Default setting)

111111RFD:6:0 : Deactivate the RFID function

✧ Arm/Disarm by RFID Tag

The following SMS command is used to turn ON/ OFF the RFID's arm/disarm function:

111111RFD:8:1 : Activate the RFID's arm/disarm function (Default setting)

111111RFD:8:0 : Deactivate the RFID's arm/disarm function

Once this function is activated, only the authorized tags can be used to arm/disarm the system.

✧ Define the 2 types of RFID readers & tags

The tracker supports 2.4G long distance RFID tag & regular Mifare1 IC card. It needs different RFID reader or reader's module.

111111RFD:1X,5:Y,7:Z,

X=0: reader in USB port; X=1: reader's module inside;

Y=0: reading data send once; Y=1: reading data send twice;

Z=0: Mifare1 IC card; Z=1: 2.4G long-distance tag;

✧ Authorize the RFID Tags to Arm/Disarm

The SMS command is used to authorize maximum 20 RFID tags:

111111TAG:XX:YYYYYY, (with , at the end)

XX: 01 ~20 , it is the sequence of the authorized RFID tag

YYYYYY: it is the ID no. of the RFID tag (6 digits, pasted on sticker of tag)

Example: The following command is to authorize the tag #234601 & tag#234602 to arm/disarm.

111111TAG:01:234601,02:234602,

To remove the 2nd stored tag: 111111tag:02:000000, (with , at the end)

To check the 00-10 stored tag: 111111tag: (with : at the end)

To check the 11-20 stored tag: 111111tag:11

VI. Alarm Types

Vibration Alarm

In arming status, if the car is vibrated, it will send out alarm SMS.

Power Failure Alarm

In arming status, if the battery is cut off, it will send out alarm SMS.

Engine ON Alarm

In arming status, if the car's engine is ON, it will send out alarm SMS and call the preset phone.

Movement Alarm

In arming status, the movement alert is enabled automatically. Once the car moves away from the parking point for 100 meters, it will it will send out alarm SMS and call the preset phone.

Geo-Fence Alarm

Once the Geo-fence is activated, if the car oversteps the boundary, it will send out alarm SMS.

Over-speed Alarm

If the car runs over the speed limitation continuously for 3 minutes, it will send out alarm SMS.

SOS Alarm

In any condition, if the SOS button is pressed, it will trigger the SOS alarm. *(NOTE: the SOS alarm will only be sent to the 2nd phone, the 3rd phone number & the GPRS tracking center, the other alarms will send to all the preset phones & GPRS tracking center.)*

Anti-tamper Alarm

If the wiring harness is disconnected at any time, it will send out this alarm.

Crash Alarm

If there is crash, the crash sensor will detect it and send out alarm.

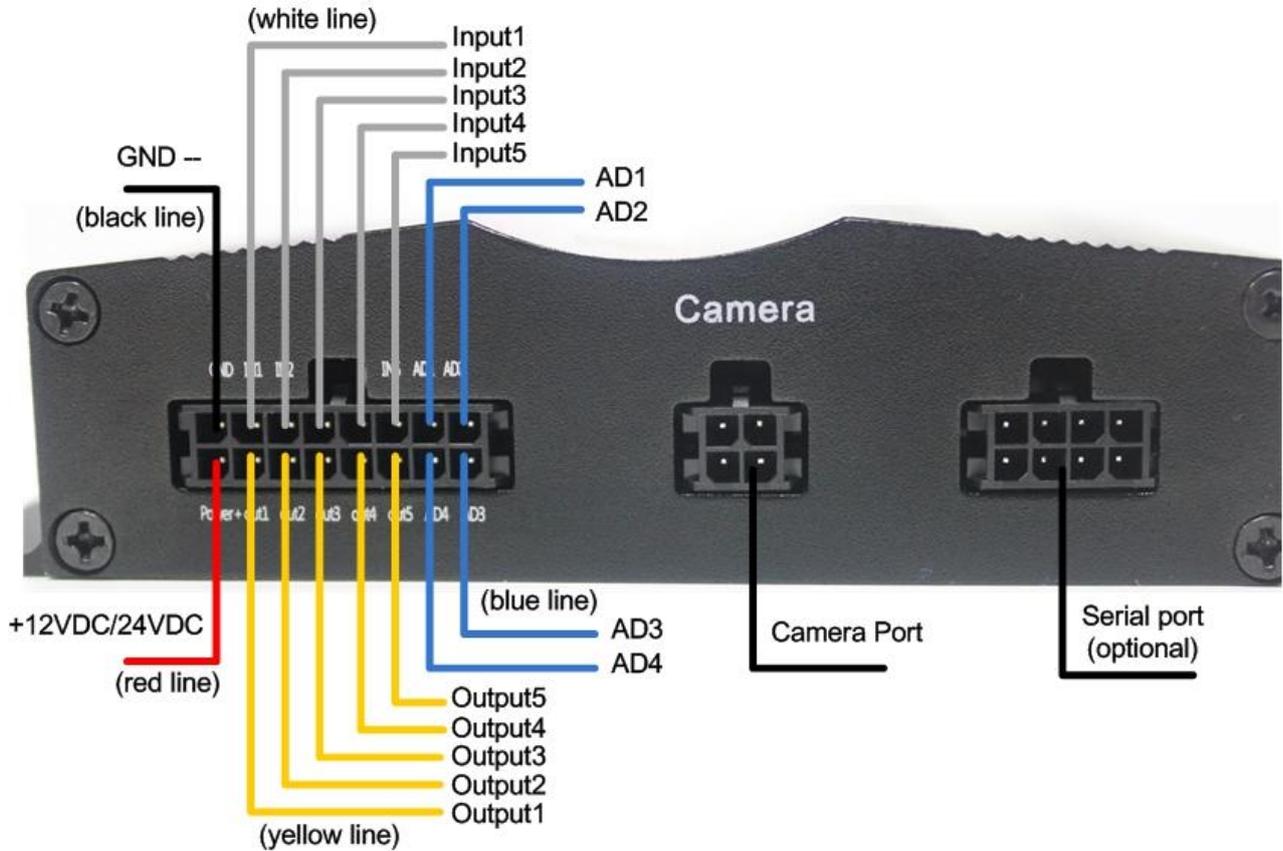
Fatigue Alarm

If the accumulated time of engine on is over the setting, the sire will sound to warn the driver.

Fuel loss Alarm

When the engine is OFF, if the fuel level is down, it will trigger the alarm.

VII. Installation



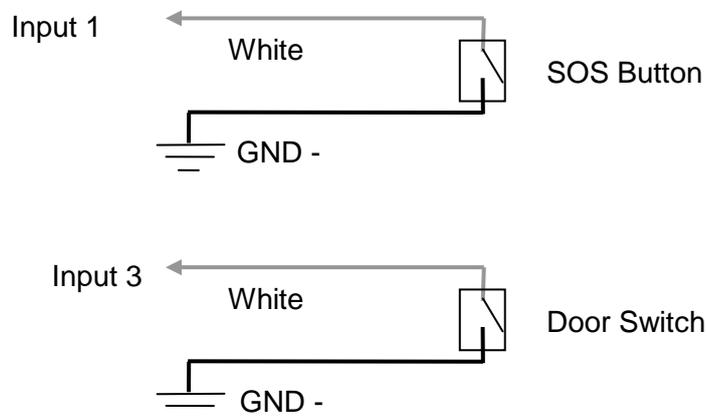
PIN No.	Color	Usage Description
Power	Red	+12VDC/24VDC. +
GND	Black	Ground. -
Input1	White	Digital input, (negative triggering), SOS button
Input2	White	Digital Input, (negative triggering), e.g. detecting tamper of the wiring harness.
Input3	White	Digital Input, (negative triggering), door switch.
Input4	White	Digital Input (positive triggering), ACC On
Input5	White	Digital Input, (positive triggering)
OUT1	Yellow	Digital output, connect with relay to stop the car
OUT2	Yellow	Digital output, connect with siren to sound
OUT3	Yellow	Digital output, NC
OUT4	Yellow	Impulse output,(Negative) Lock/unlocked car door
OUT5	Yellow	Impulse output,(Negative) Lock/unlocked car door

AD1	Blue	10 bits Resolution Analog Inputs. 0-5V DC detection , connect with temperature/fuel sensor etc.
AD2	Blue	10 bits Resolution Analog Inputs. 0-5V DC detection , connect with temperature/fuel sensor etc.
AD3	Blue	For optional use
AD4	Blue	For optional use

✧ **Power/GND**

Connect Power (+Red) & GND (-Black) wires to the battery of vehicle.

✧ **Input1, Input2 & Input3 (Negative Triggering)**



Input2 is connected to negative (ground), once it is disconnected from negative signal(Ground), it will trigger the power cut alarm. it is useful to protect the cargo by binding the wire around it.

✧ **Input4 & Input5 (Positive Triggering)**



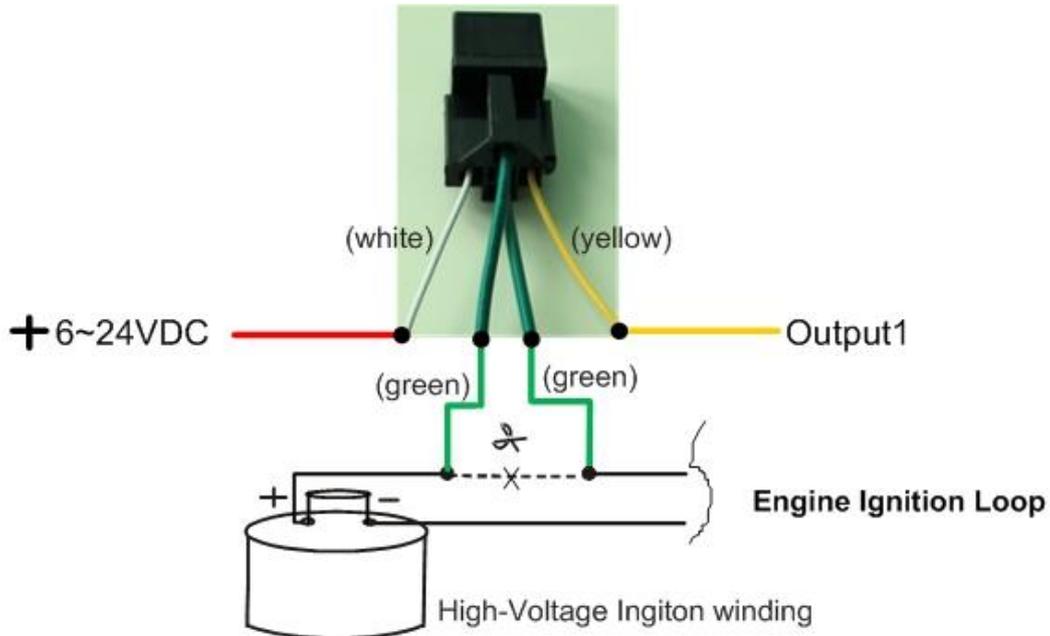
Input 4 is connected to ACC ON position to detect the engine ON/OFF status;

Input 5 can also be used to detect any positive (+12V) triggering signal. when it has continuous 5 seconds of +12VDC signal, it will trigger the alarm. The input 5 can also be used for arm/disarm automatically if it is connect to Engine ON/OFF status & switch the function by sending SMS command:

111111EXT:1:0,

✧ **Output1**

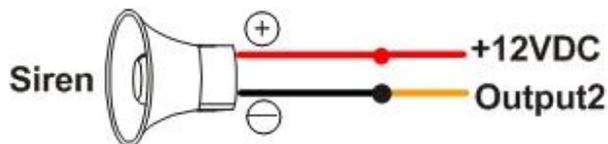
Output 1 is connected with relay to stop the car, the wiring is as following:



The relay's control output (2 green lines) has 2 kinds of connections, it can be used to cut off the engine ignition loop or the fuel pump's power supply loop.

✧ **Output2**

Output 2 is connected with siren for alarm, the wiring is as following:



✧ **Output3**

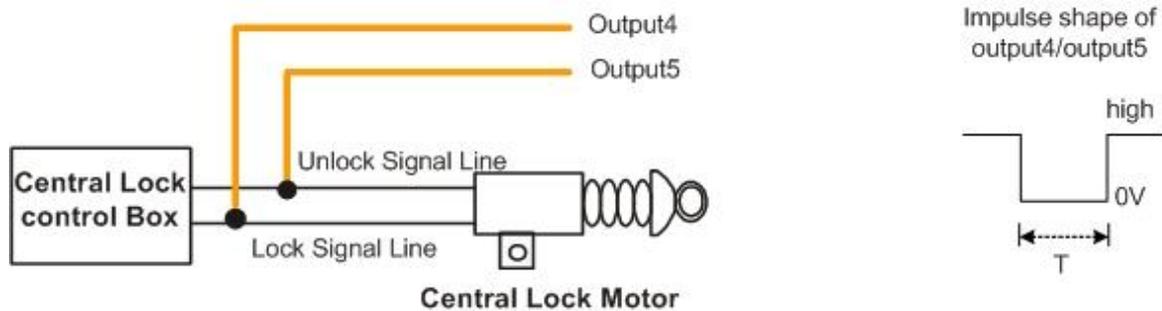
Output 3 is for optional use, the connection is same as output1/output2.

✧ **Output4 & Output5 (Impulse Output)**

Output 4 & output5 are negative impulse output to lock/unlock the car door. the impulse shape of signal & connection is as following:

Activate the impulse output4, SMS command: 111111LCK0,

Activate the impulse output5, SMS command: 111111LCK1,
 Adjust the time T of impulse output4/output5, SMS command:
 111111NUM:9:T, (T is the time, in seconds, default: 3 seconds)



Installation Notes:

- ✧ We strongly recommend you to ask the professional car electrician to do the installation.
- ✧ Please prepare a valid GSM SIM card in advance.
- ✧ **IMPORTANT:** Please do not insert or pull out the SIM card when the main unit has power. Before doing this operation, please disconnect the outside power supply lines, and turn off the internal backup battery's switch firstly. The wrong operation might damage the main unit.
- ✧ Please fix the main unit at secret place to avoid being destroyed by theft. Please keep it away from the high-temperature, humidity or strong magnetic object. Please fasten it tightly.
- ✧ While mounting the GPS antenna, the flat magnetic side must be placed downside. There could not be any metal or shielded obstacles around the upside of the GPS antenna, so that it can receive the satellite signal from upside the sky very well, the GPS antenna should be placed at broad & secret place too. It should be drew straight and kept away from the sound box or speaker.
- ✧ While mounting the GSM antenna, it should be placed at broad & secret place where there is no shielded obstacle.
- ✧ The GSM antenna can't be placed along with the GPS antenna in parallel. It should be drew straight and kept away from the sound box or speaker.

- ✧ After installation, please test the system & make sure that it can GSM signal & GPS signal very well. Otherwise, fix the GSM antenna or GPS antenna at other places until the signals are OK.
- ✧ For security, please fix the GSM & GPS antenna in secret places.

Recommended places: (1).Downside the fore windshield class (2).Downside the dashboard (3).Downside water brusher (no metal coat) (4). Inside the upper door edge which is nearby the driving room.

VIII . Specifications

Items	Specifications
Working voltage:	+6.0 ~+60VDC/2.0A
Backup battery:	Rechargeable 3.7V 500mAh Li-ion battery
Dimension (main unit):	110*70*30 (mm)
Weight (main unit):	175g
GSM frequency:	2G: 850MHz/900MHz/1800MHz/1900MHz (Quad-band) 3G: 900Mhz/2100Mhz@UMTS or 850Mhz/1900Mhz@UMTS or 850Mhz/210Mhz@UMTS
GPS chipset:	U-blox7 chipset
GPS sensibility	-162dBm
GPS receiving channel	56 channels
Working frequencies	1575.42Mhz C/A (GPS)
Positioning accuracy	≤10m (wide-open area)
Speed accuracy	≤0.1M/S (wide-open area)
Positioning mode	Auto 2D/3D
Hot start	1 sec., average
Warm start	2 sec., average
Cold start	40 sec., average
Working temperature:	-20 ~ 85°C
Humidity:	0 ~ 95%
Interface	5 inputs,5 outputs, 4 A/D ports, MIC & Speaker port, camera port, RS232 port.

IX. FAQs & Troubleshooting

FAQ	Troubleshooting
I call the tracker, it does not ring	(1) The GSM SIM card has no credit; (2) The SIM card is protected by PIN code; (3) Check the power supply, if 2 LEDs flash; (4) The SIM card is placed correctly in the slot;
I call the tracker, it rings, but it doesn't response with SMS	(1)The user password is wrong, please use the correct password or reset the password to test; (2) Low power, please use outside power supply to power on the unit to test
I can not get the alarm message	(1) The SIM card inside the device has no credit; (2) The Alert-received mobile number is not programmed correctly, or the SMS command is not in correct format; (3) The mailbox of the user's mobile is full;
I can not get the correct GPS coordinates or the location is wrong	(1) Please make sure there is no metal obstacles above the tracker. Please place the side with GPS antenna upside to the sky; (2) Please check it at broad place; (3) Please check if the GPS LED flash once every 3 seconds; place the tracker to other place, so as to make sure that it can receive the GPS signal well (4) In cloudy condition, it is a little hard to get the GPS signal, and the GPS coordinate might have some errors.
Tracker fails to connect to server by GPRS	(1) The SIM card must be activated with GPRS function; (2) Do the correct setting for GPRS connection

X. Maintenance

- ✧ The installation must be done by the professionals. Illegal disassembly without permission might cause invalidity of warranty.
- ✧ Please keep the device in dry place
- ✧ When the car is inside buildings, cave, tunnel, or very close to tall buildings, the GPS/ GSM signal may not work well and the system may fail to work at that moment.
- ✧ Please check the balance of the tracker's SIM card periodically.
- ✧ The backup battery can only work for a certain time once power-off.