1. Product Overview

It is an advanced model which is suitable for fleet management, public transportation management, school bus management, taxi operation management, vehicle insurance company management, rent car management and private car antitheft, etc. It supports RS232 and 1-Wire protocol, this enables the device to have powerful functions such as taking pictures, driver identification and management, impulse detection and temperature monitoring.

Besides the advanced functions, it has full functions to cover the normal demands of vehicle tracking. Not only has fuel monitoring, harsh acceleration/braking alarm, driving behavior analysis, but also has custom digital input, jamming detection, two-way calling and OTA functions. The device uses own GPRS PROTOCOL, which is simple and practical, this enables the customers to integrate on their own platform efficiently.

2. Product Functions

2.1 Tracking Functions

- GPS+GSM Base Station Dual Tracking
- Real Time Tracking
- Time Interval Tracking
- Distance Tracking
- Direction Change Tracking
- Mobile Phone Tracking

2.1 Alarms

- SOS Alarm
- GPS Antenna Cut Alarm
- External Power Cut Alarm
- Engine/Door Status Alarm
- Maintenance remind
- GEO-Fence Alarm
- Speeding Alarm
- Idling Alarm
- Fatigue Driving Alarm
- Harsh Acceleration Alarm
- Harsh Braking Alarm
- Parking Overtime Alarm
- Vibration Alarm
- GPS Jamming Alarm
- GSM Jamming Alarm
- Internal Battery Low Alarm
- External Battery Low Alarm
- Driver Login/log out Alarm
- High/Low Temperature Alarms

2.3 Other Functions

- Stop Car Remotely
- 8 MB Flash Memory
- Custom Digital Input
- OTA
- Uploading Mode Settings for ACC ON/ACC OFF
- Roaming Time Interval Setting
- Mileage And Running Time Settings
- Tacking Picture via Camera (Optional)
- Driver Identification and Management via RFID Reader or iButton (Optional)
- Temperature Sensor (Optional)
- Voice Monitoring (Optional)
- Two-way Calling (Optional)
- Impulse detection (Default speedometer detection)

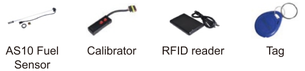
3. Product and Accessories

3.1 Standard Packing Box

Main Unit Wire GPS Antenna GSM Antenna

3.2 Optional Accessories

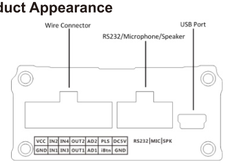
USB Cable Relay Microphone Speaker

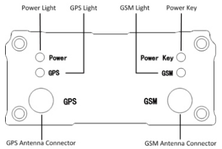


AS10 Fuel Sensor Calibrator RFID reader Tag

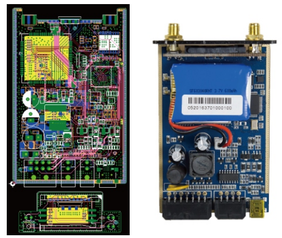
Camera i-Button Temperature Sensor

4. Product Appearance





5. PCB Overview and Hardware Design



5.1 Hardware Design Highlight

Protection for sudden-change of auto power supply: When the vehicle starts or is running, the power voltage will have a wave of change. Our product supports voltage 11V-36V. When the external power supply is below 10.5V, with low voltage detection, it will be automatically cut. When external power supply is over 36V or has high voltage peak, the product will trigger high-voltage protection through clamping, anti-pulse, and high voltage detection. This ensures the product to operate normally under high voltage.

Auto power transient pulse: When the vehicle starts or is running, it will generate high-voltage transient pulse with a range of hundreds of volts. If the product's circuit is not well designed, it is very easy to get damaged, and can't be used. Through multistage transient pulse protection and anti high-voltage surge protection, the product's power circuit is well protected, and it can operate stably.

Electromagnetic immunity: When the vehicle starts, the clock, RF, display screen and USB are very easy to be interfered by electric spark, which causes the product to operate unstably. Through PCB layout and ground wire handling, the product can work stably under interfered environment.

Anti static: The vehicle product's working condition is complex. It is very easy to be influenced by static, which causes damage to the product's peripheral interfaces. Through ESD protection on circuit and ground wire handling, the static in the range of 8KV-15KV won't cause damage to product. This ensures the product's stability under complex working condition.

6. LED Light

GPS Light (Green)	
Off	Power off or sleep
Flash 0.1s on and 3S off	GPS valid
Flash every 0.1s	GPS antenna cut
Flash 2s on and 2s off	No GPS signal
On	GPS module power problem
GSM Light (Orange)	
Off	Power off or sleep
Flash 0.1s on and 3S off	GSM available
Flash every 0.1s	Device is initialing
Flash 2s on and 2s off	No GSM
External Power Light (Red)	
Off	External power cut
Flash every 0.1s	External power low
On	External power normal

7. Specification

Item	Specification
Dimension	90*60*27mm
Weight	160g
GSM Module	SIMCOM800
GPS Module	U-blox7Q
Input Voltage	DC 11~36V/1.5A
Internal Battery	600mAh/3.7V
Power Consumption	30-35mA standby current
Internal Battery Life	15 hours in sleep mode, and 6 hours in normal working mode.
Operating Temperature	-20℃~70℃
Humidity	5%~95%
LED Light	3 LED lights indicating GPS/GSM/External power status
Button/ Switch	1 SOS Button, 1 power switch
Flash Memory	8MB (GPSR data 20400 units, SMS data 700 units)
Sensor	3D accelerometer sensor
GSM Frequency Band	GSM 850/900/1800/1900MHz
GPS Sensitivity	-161dBm
GPS Start Speed	Cold start 35s Hot start 1s
Position Accuracy	10m

I/O Port	4 Digital inputs - 1 negative input, 1 positive input, 2 custom input (Default 1 positive input, 1 negative input) 2 Analog input AD1: 0~6V AD2: 0~12V 2 Output 1 RS232 port (camera/RFID reader/ two-way calling) 1-Wire protocol (Temperature sensor/i-Button) 1 Impulse detection (Default speedometer detection) 1 USB port

8. First Use

8.1 Charging

First time use the device, please connect positive wire(+ Red) and ground wire(-black) to 12V or 24V external power supply, charging device at least 2 hours, 3 hours is suggested. Before installation, ensure all of the parameters setting and test are finished.

8.2 Installing the SIM Card

- Device can't support 3G or 4G network. Make sure the SIM card supports 2G.
- Ensure the SIM card has enough balance.
- Ensure PIN code has been closed.
- Authorization SOS numbers can't work well if SIM card doesn't have caller ID service. E.g.: device can't reply SMS to authorization SOS number because SIM card can't identify incoming call.
- SIM card should have GPRS function for platform tracking.
- Turn off device before SIM card installation.

Screw off and open the front cover

Insert SIM card into SIM card slot
Make sure the chip is facing to PCB. Pay attention to the cutaway angle direction of SIM card.

Close front cover and lock the screw

8.3 Installing GSM/GPS Antenna

Connect GSM Antenna to SMA connector with "GSM" silk. The GSM antenna's signal is omnidirectional, you can hide it anywhere that is far from the power supply.

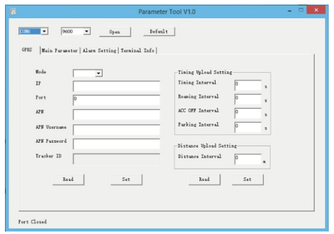
Connect GPS Antenna to SMA connector with "GPS" silk. GPS antenna should face to the sky for stronger GPS signal reception, and the silvery silk side should be downward. Fix GPS antenna with double sided tapes for stable signal reception.

⚠ Don't install the GPS antenna where shielded by metal. For example, inside a metal can.

8.4 Configuration by PC

We provide PARAMETER TOOL for configuration. Please download USB cable driver and install it before using parameter tool. Refer to <USB CABLE DRIVER INSTALLATION GUIDE> if need.

Connect the device to PC with USB cable. Run "Parameter Tool" software which will identify port automatically and read all of the current parameters.



Please read PARAMETER TOOL USER GUIDE for more details.

8.5 Platform Tracking

You can use SMS commands to set server ip, port, APN and GPRS uploading interval. (Details please check our command list) You can also set those parameters via parameter tool software on PC.

9. Device Installation

9.1 I/O Installation

I/O wire has 14 pins, including power, digital positive and negative inputs, output, analog input, impulse detection and 1-Wire protocol cables.

VCC	IN2	IN3	OUT2	AD2	PLS	DC5V
GND	IN1	IN4	OUT1	AD1	iBtn	GND

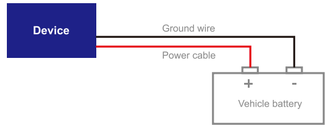
I/O	Color	Function
VCC	Red	Positive power, connect to positive of vehicle battery, input voltage range 11-36V
GND	Black	Ground, connect to negative of vehicle battery or the vehicle's iron part.
IN1	White	Digital input1, negative input (default SOS button)
IN2	White	Digital input2, positive input, default connect to ACC for status detection.
IN3	White	Digital input3, custom input, default positive.
IN4	White	Digital input4, custom input, default negative.
OUT1	Yellow	Output1 Output active: low level (0V) Output inactive: open drain (OD) Max open-drain (inactive) voltage: 45V Max current for output low voltage (valid): 500mA
OUT2	Yellow	Output2 Output active: low level (0V) Output inactive: open drain (OD) Max open-drain (inactive) voltage: 45V Max current for output low voltage (valid): 500mA
AD1	Blue	12 bits analog input, supports voltage range 0-6V. Connect to external sensor, eg, fuel sensor.
AD2	Blue	12 bits analog input, supports voltage range 0-12V. Connect to external sensor, eg, fuel sensor.
PLS	Purple	Impulse detection, 0~100kHz
GND	Black	1-Wire protocol port for i-Button or temperature sensor
DC5V	Orange	
iBtn	Brown	

RS232 Port

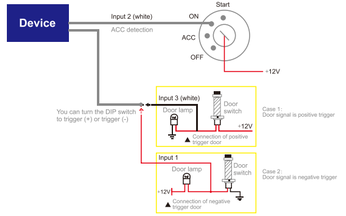
DC5V	MCU_RS232_TX	MIC+	SPK+
GND	MCU_RS232_RX	MIC-	SPK-

I/O	Function
DC5V	RS232 port for camera/RFID Reader or other RS232 protocol devices.
GND	
MCU_RS232_TX	
MCU_RS232_RX	
MIC+	Microphone port
MIC-	
SPK+	Speaker port
SPK-	

9.2 Power/Ground Cable



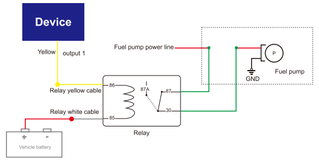
9.3 Positive/Negative Digital Input (IN1/IN2/IN3)



9.4 Analog Input (AD)

It supports 2 Analog inputs, whose voltage range:
AD1: 0~6V
AD2: 0~12V

9.5 Output control (OUT1/OUT2)



Multifunctional Vehicle GPS Tracker

Version: V1.2

Please read this user guide carefully before installation to avoid any possible personal injury or property loss.