

GPS Integrated Speed Limiter Technician Manual

(Default Fetching Speed for GPS)

UniGuard GPS Speed Governor

Road Speed Limiter for Transportation Safety

Technician Manual version 5.4 Model No: UT04S

A Product of **UniGuard Technology Limited**

1 Brief Production

GPS integrated speed limiter UT04S is a combination of speed governor and GPS tracking technology. With GPS and GSM, user can track and monitor their vehicle real time by both Web and Phone application. With connection of pulse wire, it can accurately control vehicle driving speed so as to ensure safe driving. The device can limit vehicle speed without interfering with vehicle engine.



Packing:

GPS speed limiter 1pc

GPS antenna 1pc

GSM antenna 1pc

Wire 1pc

2 GPS speed limiter Features

1 [Speed](#) Limiter

Enforce to limit the speed of your vehicle if preset maximum speed

2 Tamper proof

Maximum speed is 40km/h if maximum speed is tampered or sensor is cut.

3 [Download](#) data

Data can be stored for 72 hours at interval of 5 seconds.

Data can be retrieved by connecting device to computer via USB data port

4 [Bluetooth](#) Printer

Violations can be printed out for the last one-hour driving. Portable printer prevents drivers from printing

Speed violations can be printed

5 Violations alarm

All violations will be transmitted to platform.

6 Over speed alarm

When vehicle reaches 95% of preset speed limit, built-in buzzer shall make sound alarm to warn driver.

7 [Fuel monitoring](#) (optional)

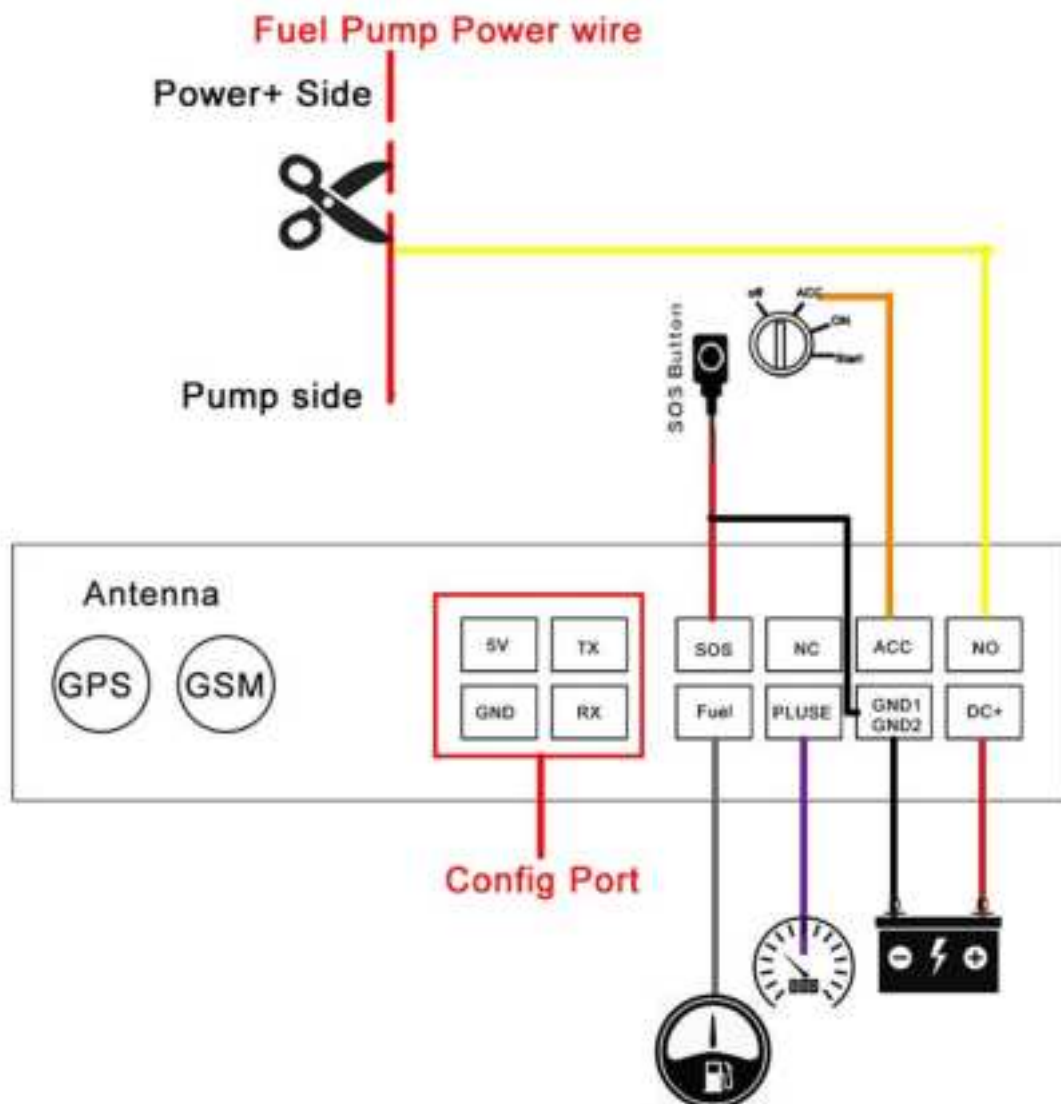
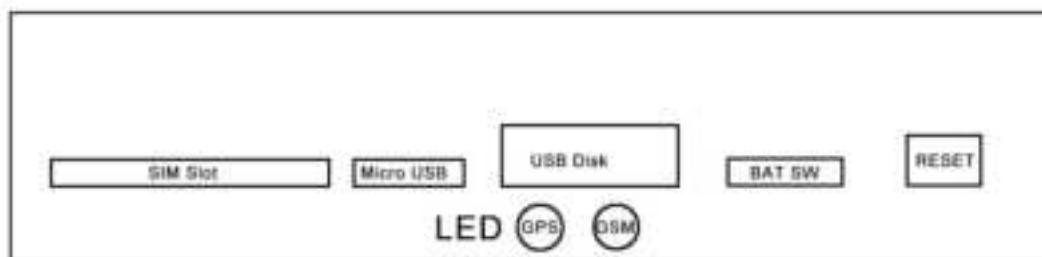
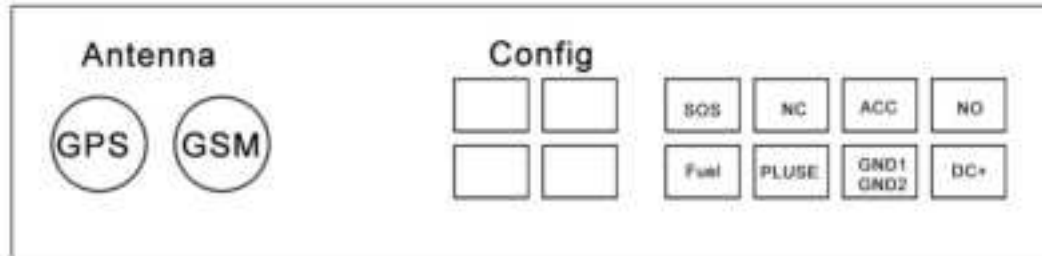
Monitor vehicle fuel consumption. Need connect with fuel sensor that gives out analog voltage.

Real time fleet tracking Working power: 2W

3 GPS speed limiter Specifications

Name	UT04S GPS Speed Limiter (CE and RoHS Certified)
Weight and Size	191g / 110*75*30 mm
Speed Limit Deviation	≤±5KM/H
Electromagnetics	Voltage of anti-pulse above 3000V
Communication	SMS, GPRS,TCP/IP
Network Bands	GSM/GPRS/SMS 850/900Mhz: -109dBm 1800/1900Mhz: -108dBm
GPS chip	U-blox 7
GPS sensitivity	-159dBm
GPS accuracy	5m at 2D RMS
GPS frequency	L1, 1575.42 MHz, 50 Channels
GSM/GPRS module	SIM800C (Bluetooth Module Built-in)
Max RF output	33.0dBm±2dBm
Dynamic input range	-15 ~ -102dBm
CPU	STM32F105RBT6
Anti-jamming	Strengthened Anti-jamming
Anti-vibration	30Hz,1G
Time to Frist Fix	Reacquisition 0.1s / Cold start 40s / Warm start 30s /Hot start 1s
Working Voltage & Power	DC 9V-36V, 2W
Backup battery	Rechargeable Li-ion 1000mAh 3.7V (Customizable)
Battery time	Operation: 48hrs; Standby: 15 Days.
Current	Working: 42mAh / 12V (Standby current 16mA) Charging: Max<500mA
Working Environment	Working Temperature: -45~85°C Working Humidity: 5%-95% non-condensing
Interface	1 A/D Port for fuel monitoring with external fuel sensor
	1 Interface for data config by PC
	1 USB port for USB disk data download
	2 Port for speed limit
	1 Input for speed signal
	1 Input for Bluetooth Printing control
Built in Flash	Store data of last 72hrs, above 5000 points
Built in Buzzer	Sound alarm when speed reaches 95% of set value. At 10CM, sound is 60dB.
Button	Power ON/OFF
LED	Green for GSM, Blue for GPS, Red for Power.
Antenna	External GPS and GSM antenna
Sensor	Shock sensor, external temperature sensor, external fuel sensor
Waterproof Level	IPX4
Alarm	Power cut, Lower battery, Over speed, Geo-fence, Fatigue driving, Harsh brake.
Tracking method	Real time user friendly Web Software and Phone APP (IOS/Android)
Account level	Unlimited sub account management
Report	Trip , Speed and Over-speed, Geo-fence , Parking , Driving, Mileage, Engine Idle, History Playback, Fuel monitor,

4 GPS speed limiter interface



ACC (Orange): connected to vehicle ACC wire to detect engine ON/OFF

PULSE(Purple): connected to vehicle speed signal wire to detect speed

GND / DC+ (Red and Black): connected to battery positive and ground.

GND / SOS: connected together with SOS button to control wireless printing. *(With wireless Bluetooth printer turned on, press SOS button for 3 seconds, device shall beep, in 15 seconds device shall print last 1 hr data including over speed data. Long beep once all data is printed.)*

NO (Yellow): 24V/12V to 0V output wire. Normal speed, 24V/12V; Over speed, 0V.

Connection: Cut off fuel pump power wire, connect NO Yellow wire to the pump side cut point. *(Relay and buzzer are built-in, when speed reaches 95% preset value, beep; 100% speed reached, built-in relay is activated with continuous beep.*

NC (Green): 0V to 24V/12V output wire. Normal speed, 0V; Over speed, 24V/12V.

Connection: Connected to the pedal controller Red wire, make pedal controller Brown and Grey give fixed 0.75V and 0.35V voltage to pedal when over speed. *(0.75 and 0.35V voltage is adjustable.)*

Fuel (Grey): connect with fuel sensor signal wire to monitor [fuel consumption](#) (Optional)

SIM slot: insert SIM card

Micro USB: connect device to PC for config

USB disk: insert USB disk for data download (beep sound after inserting, long beep once all data is downloaded.)

SW: built-in backup battery switch. (Default OFF)

RESET: one click to restart device

LED: Blue for GPS (ON if signal okay), Green for GSM (slow flash if signal okay)

Note: Insulate all the rest wires.

5 SMS Command List

Usage	Command	Comment or Reply
Password	PASS=Un2WwBqhTM888	
Change Password	<PASS=Un2WwBqhTM888,NEWPASS=123456,>	
To send command, Password command must be sent first, otherwise device shall not accept the command.		
Check Location	<CXWZ,>	Replay Google map link
Restart device	<RES=0,>	
Check setup and firmware version	<CXIP,>	<P,APN=etc.com,MTN=20208103731,SLM=T,MIP=www.gpspos.net:8800,BIP=www.gpspos.net:8800,0X,VER=TM-STACL/EA2AS-TMKJG04P2 Sep 28 2020/21:07:58,>
Check status	<CXEI,>	Power:ON Bat:10% GPRS:ONLINE% GPS:OFF% ACC:OFF% GSM:31 GPS:10 TIME:5/180 VER:PLUSE% OIL:2.3 TCX:10.20 VSET:80
Check IMEI	<CXPI,>	<IMEI=867717047303731,GPIO=00006000/334/327/124/407,SDVT=00000002,,A,8,0,113.895483,22.765550,1,31,RTIME=32,45307,0,>
Set GPRS interval	<RPT=30,>	ACC ON GPRS interval. Unit is second
	<NPT=5,>	ACC OFF GPRS interval. Unit is minute.
APN setup	<APN=CMNET,>	
Set IP and Port	<MIP=www.gpspos.net:8800,>	
Speed limit	<MSP=80,>	XX=0 to 220 unit is KM/H (Default 80)
Pulse Calibration	PCS,1;	Used to calibrate limiter pulse speed.
Alarm Phone No.	ARN:TEL;	ARN:15012401234;
PPK setup (Pulse coefficient)	PPK,XXX;	PPK,2000; No reply.
Power ON/OFF interval setup	TC:25,50;	No reply. 25 is ON time, 50 is OFF time. Unit is 0.1s. Default is TC:0.0;
Enable GPS version	Limp=X;	No reply. X=0, pulse mode. X=1, GPS mode.

6 Pulse speed calibration:

Before pulse speed calibration, please make sure:

- 1 Speed limiter is working normally.
- 2 Pulse wire is connected right to vehicle speed signal wire.

Calibration steps:

- 1 Park vehicle on a flat road. Send command: PCS,1; . There is no reply to this command but device shall make a beep sound.
- 2 Drive vehicle at stable 40KM/H for 15 seconds, then press SOS button for 3 seconds. Speed limiter shall make a fast sound.

How to check if calibration succeed or not?

After calibration is done, disconnect vehicle GPS antenna, drive vehicle and check on platform if there is speed data. If there is speed data, it means calibration is okay.

For same type vehicle, the pulse coefficient (PPK) is same. Use PC config tool to read it or check online at the Extend State, after the first vehicle is calibrated. Then use PC tool or SMS command to config the device pulse coefficient for other devices.

7 External **Optional** accessory connection

1 Mechanical actuator: Limiter NO (**Yellow**) connect with actuator Green signal wire.



Actuator has 3 wires. Red for battery Positive+, Yellow for Ground. Green is signal wire.

Connect limiter **Yellow** wire to actuator **Green** wire, the steel rope shall reach out around 5CM, disconnect device Yellow wire, the steel rope shall pull back around 5CM.

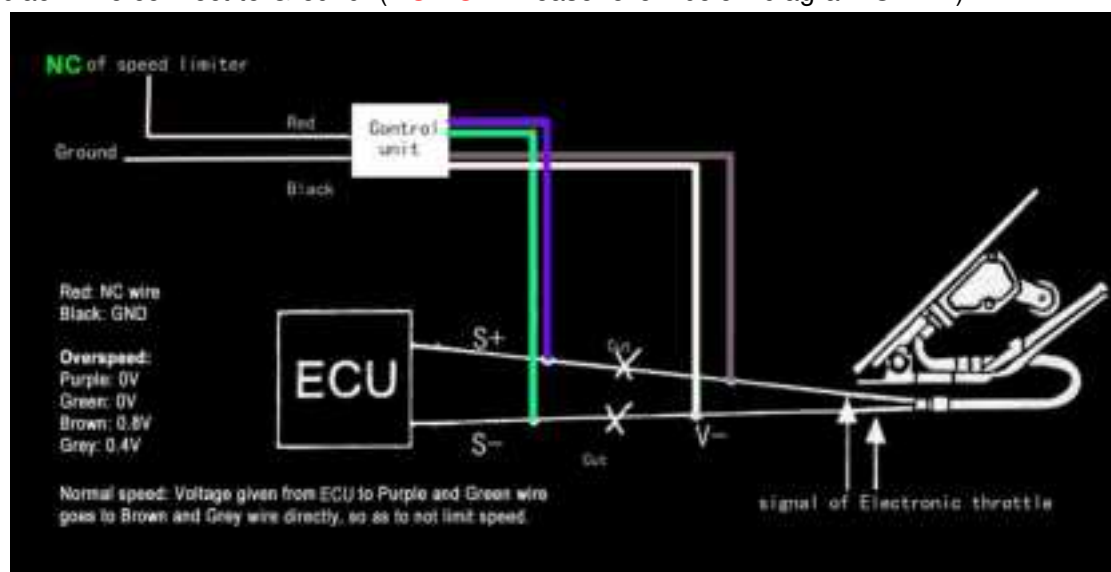
When speed reaches, device Yellow wire has no power, then actuator pull back the steel rope.

2 Solenoid valve (12V or 24V): Limiter NO (**Yellow**) connect with solenoid valve PIN1.



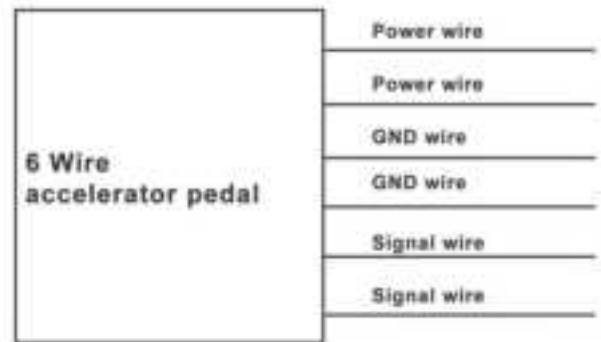
Take 24V solenoid valve as an example: Please connect limiter **Yellow** wire to PIN1, connect PIN2 to battery Ground. PIN3 No need connection. At safe driving speed, fuel flows through the valve. If driving speed reaches speed limit, valve shall stop fuel flow so as to reduce speed. When speed is below speed limit, valve shall enable fuel flow again.

3 Pedal controller: Connect limiter NC (**Green**) wire with controller **Red** wire. Controller black wire connect to Ground. (**NOTICE**: Please follow below diagram ONLY.)

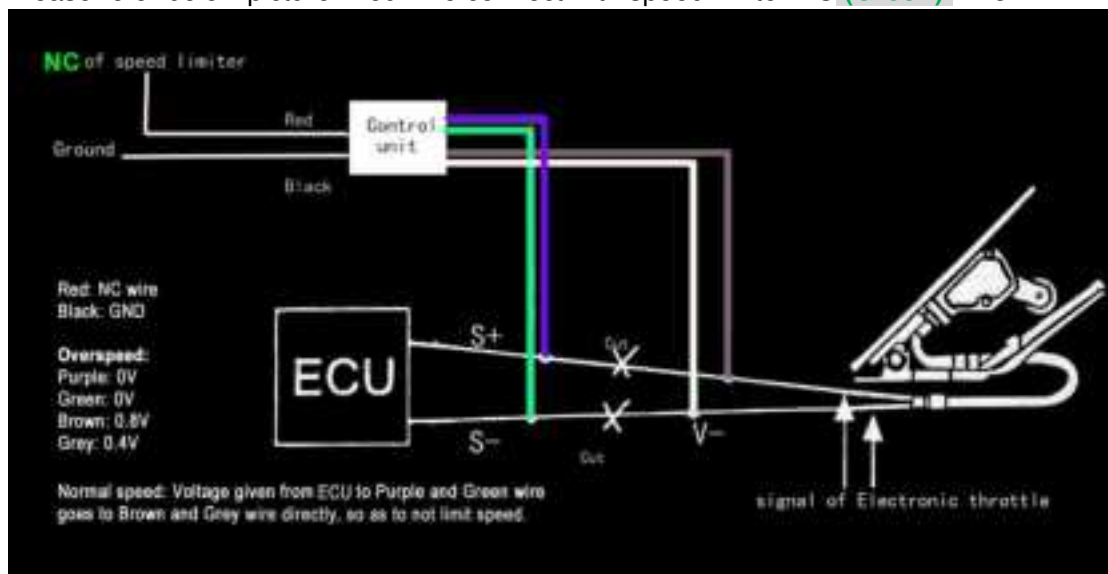


Pedal controller installation:

1 Find the vehicle pedal harness, it is composed of 6 wires, 2 wire is the signal wires, 2 wire is power wire, 2 wire is ground wire. Start the vehicle, step on the pedal, make vehicle at idle state, voltage at signal wire shall change.



2 Cut off the 2 signal wires, and then connect respectively the pedal controller wire. Please refer below picture. Red wire connect with speed limiter NC (Green) wire



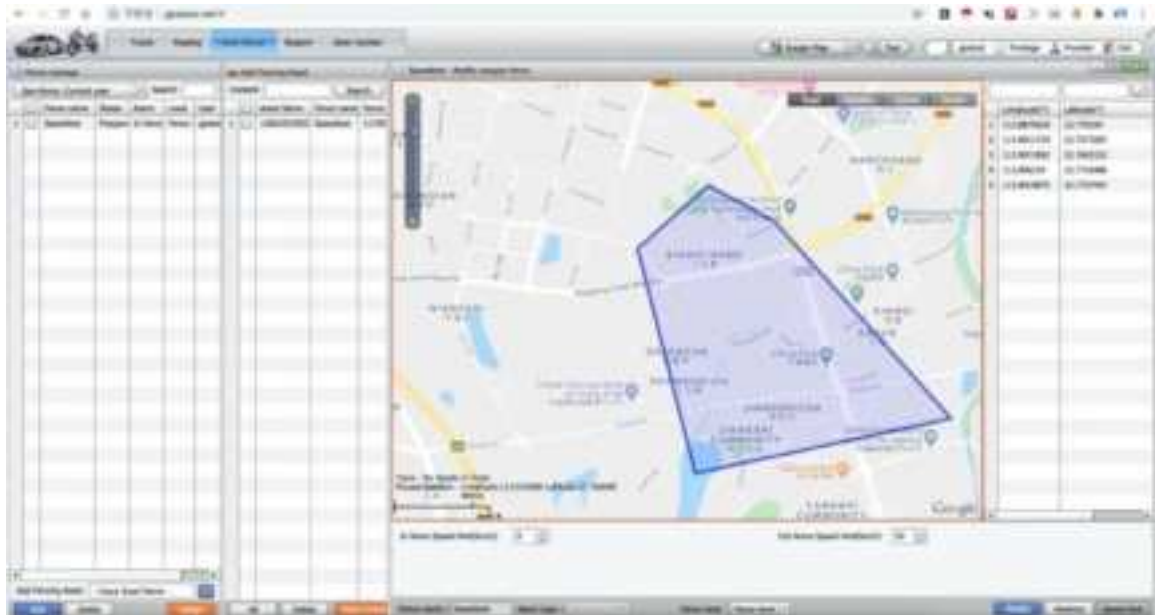
8 Geo-fence based Speed Limit

In order to limit vehicle speed per different areas, user can draw fence (Round, Rectangle, or Polygon) at the web monitoring software so as to limit vehicle speed at different value per real environment.

For example, at urban area, set speed limit at 60KM/H; at suburb area, set speed limit at 80KM/H.

The fence must be large enough to enable trigger time, otherwise fence cannot work.

New software is upgraded on 10th December 16, 2020



Geo-fence types:

- 1 Round
- 2 Rectangle
- 3 Polygon

Geo-Fence alarm types:

- 1 Moving-in fence
- 2 Moving-out fence
- 3 In/out Fence

Speed Limit setup:

- 1 Moving-in fence, Fill ONLY In-fence speed limit
- 2 Moving-out fence, Fill ONLY Out-fence speed limit
- 3 In/out Fence, Fill both In-fence and Out-fence speed limit.

Steps:

1. Login web monitoring center with provided account
2. Go to Geo-Fence
3. Create required fences and setup In-Fence or Out-Fence speed limit value
4. Assign device to the created Geo-fences

9 PC config tool

By connection device to computer, user can setup and read device details as below.

Limiter serial is device ID, please do not change it.

Usage:

- 1 Connect device with to computer, choose the right COM (here is COM3)
- 2 Fill in data except Limiter serial
- 3 Click Setup to config
- 4 Click Read to read config data

SetupTool V1.2

Vehicle Owners Name	uniguard
Vehicle Owner ID	123456
Owner Phone NO	123456
Vehicle Reg.Number	U123
Chasis NO	U123U
Vehicle	Benz
Certificate Number	12345A
Limiter Type	Pulse
Limiter Serial	20208103731
Date of Fitting	202200814
Fitting Agents Name	Robin
Fiting Agent ID	R123456
NameLocation Of	Ethiopia
Email Address	info@uniguardgps.com
Agent Phone Number	123456
Business Reg.NO	R123456

IP
IP Address ip:port
API

MSP Km/h PPK RPT NPT

COM3

IMEI=8677 17047303731

10 USB Downloading

Insert USB disk for data download. Device makes beep sound after inserting, long beep once all data is downloaded. USB downloading shall download the last 72 hrs driving data with Over speed data included at the end.



11 Bluetooth Printing (**Optional**)

- 1 Turn on Bluetooth printer. Printer will make 2 beep sound.
- 2 Connect the SOS button to device
- 3 Press the button for 3 seconds, device shall make a beep sound
- 4 Wait for few seconds, the printer shall start print data. Please wait till all data is printed.
Device shall make a long sound once all data is printed.



12 Web and APP usage

Web tracking software login: www.gpsops.net

APP: Android phones please search POSGPS at Google Play, IOS phones search GPSPOS at Appstore

Main Features:

1. Create / Edit / Delete / Distribute subaccount
2. Create / Edit / Delete / Distribute device
3. Real time tracking
4. History playback
5. Geo-fence manage
6. Report: history report, alarm report, trip report, fuel monitoring report, etc.

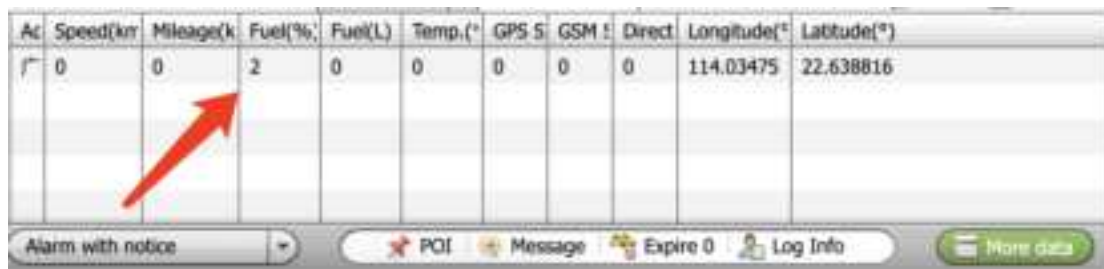
Please refer to web tracking software user manual and video to manage the web account.

13 Fuel monitoring calibration

Connection:

1. Find sensor voltage output signal wire
2. Find limiter **Grey** wire.
3. Connect them together.
4. Power up respectively GPS speed limiter and Fuel sensor.

GPS Speed Limiter uses analog input to read data from fuel sensors, no matter it is capacitance fuel sensor or ultrasonic fuel sensor. The sensor voltage output ranges from 0V to 5V, corresponding to tank fuel amount from 0L to Full.



Ac	Speed(km/h)	Mileage(km)	Fuel(%)	Fuel(L)	Temp.(°C)	GPS S	GSM S	Direct	Longitude(°)	Latitude(°)
✓	0	0	2	0	0	0	0	0	114.03475	22.638816

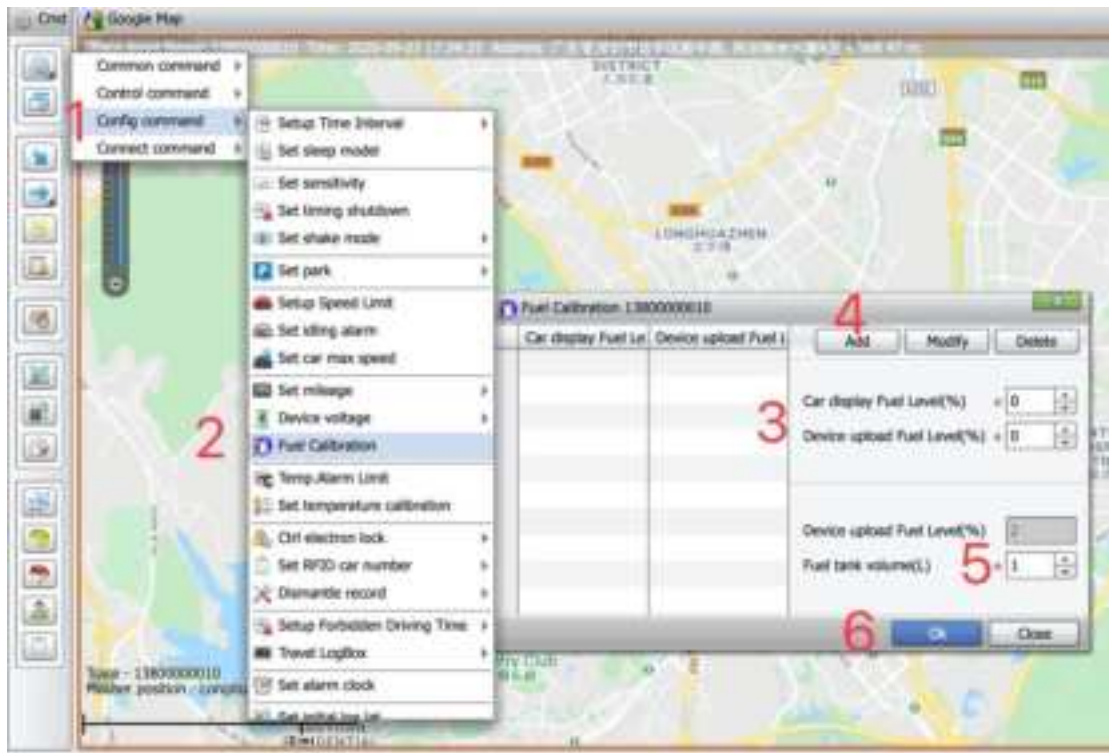
Each time, the fuel amount (This data is called **Car display Fuel Level**) changes, the device upload data on the web tracking software shall change as well. This data is called **Device upload Fuel Level**.

Calibration:

In theory, the more calibration is done, the more accurate the fuel monitoring will be. Here we advise at least 5 calibration. Below device upload data is example only.

Tank Fuel Percent (Car display Fuel Level)	Device upload data (Device upload Fuel Level)
0	0
25%	13
50%	25
75%	38
100%	50

In the above diagram, we empty the tank, then add fuel gradually every 25% of total tank volume. And we have 5 pair of data, which are to be filled in below picture.



Login your web tracking account, select the device:

1. Config command
2. Fuel calibration
3. Fill in the 5 pairs Car display Fuel Level and Device upload Fuel Level
4. After filling each pair of data, you need click Add
5. Fuel tank volume, fill in the tank total volume
6. Click OK to store the calibration.

14 Speed Limit and Pulse Speed Value Display on Web

Per FTA requirements, speed limiter monitoring web should display Pulse Speed Value and Speed Limit at Extend state as below

Extend state
PPK=1000; Pulse speed(km/h)=0.0; Speed limit(km/h)=60
PPK=2000; Pulse speed(km/h)=0.0; Speed limit(km/h)=45