



GPS Vehicle Tracker

USER MANUAL for DNO-V4 Pro

DNO-V4 Pro

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1 Product Overview



DNO-V4 Pro is a GPS/GSM/GPRS tracking device which is specially designed for vehicle real-time tracking and security. DNO-V4 Pro has good sensitivity and stable performance, meet strict industrial standard, with sophisticated firmware to achieve low data consumption and less GPS wandering.

DNO-V4 Pro high-lighted features:

Tracking via SMS or GPRS (TCP/UDP)

Tracking by smart interval

Blind Spot Memory (data logger): up to 50,000 points

Tick Mode: Device online by scheduled longtime interval used to greatly reduce data roaming cost.

Towing Alert: simply active this function by a SMS command

Shock alert: when detect shocking after parking, will send SMS alert to mobile number.

**Function definition: when ACC OFF 5 minutes, device enter armed status, if device keep on shocking for 5s, device will send a SMS alert to alarm number*

Main lost Alert

Fuel sensor /Temperature sensor/Led Display/Hand free Talk/

Firmware Remote Updating

I/O: One input, One negative output; one RS232 series comport;

2 For Your Safety

Proper Connection - When connecting with other device, read carefully its manual so as to carry out correct installation. Do not connect it to other incompatible devices.

Qualified Accessories - Use original parts, qualified batteries and peripheral equipments to avoid damage to device.

Safe Driving - Drivers should not operate this product while driving.

Qualified Service - Only qualified personnel can install or repair DNOV4.

Water Resistance – DNO-V4 is not water resistant. Keep it dry. Install it inside the vehicle or use waterproof bag if necessary.

Confidential Phone Number - For safety reason, do not tell other people the mobile phone number of your DNO-V4 without taking precautions of security settings.

3 DNOV4 Parameters

Item	Specification
<i>Power Supply</i>	<i>+9V - +36V / 2A</i>
<i>Backup Battery</i>	<i>600mAh</i>
<i>Dimension</i>	<i>75mm x 58mm x 25mm</i>
<i>Weight</i>	<i>150g</i>
<i>Operating temperature</i>	<i>-30° to 80° C</i>
<i>Humidity</i>	<i>5% to 95% Non-condensing</i>
<i>GSM Module</i>	<i>Simcom900</i>
<i>Frequency</i>	<i>GSM 900/1800Mhz or GSM800/ 850/1800/1900Mhz (optional)</i>
<i>GPS Chipset</i>	<i>Latest Ublox 7</i>
<i>GPS Sensitivity(tracking)</i>	<i>-163Db</i>
<i>GPS Frequency</i>	<i>L1, 1575.42 MHz</i>
<i>C/A Code</i>	<i>1.023 MHz chip rate</i>
<i>Channels</i>	<i>22 channel tracking channels, 66 searching channels</i>
<i>Position Accuracy</i>	<i>5 meters, 2D RMS</i>

Velocity Accuracy	0.1 m/s
Time Accuracy	1 us synchronized to GPS time
Internal Memory	64M
Reacquisition	1 sec., average
Hot start	1.5 sec., average
Warm start	34 sec., average
Cold start	35 sec., average
Altitude Limit	18,000 meters (60,000 feet) max.
Velocity Limit	515 meters/second (1000 knots) max.
LED	2 LED light to show working status.
Button	One SOS button
Interface	Four input and two output

4 Getting Started

This section describe how to set up your DNO-V4 Pro.

4.1 Hardware and Accessories

DNOV4 includes:

DNOV4 Main Unit
GPS Antenna
GSM Antenna
Wiring Cable
Panic Button
High Sensitive Microphone
Double Sticker
User Manual

4.2 Lights Functionality

		GSM Status	
Green Light	Reading SIM or Read SIM fail	On 3s, Blink 1 time	
	GSM registering or register fail	Off 3s, Blink 1 time	
	GSM registered in network	Blink 1 time every 1s	
	GPRS linked to Platform	Blink 3 time every 1s	
	GPRS no link	Blink 1 time every 2s	
		GPS Status	
Red light	GPS Fixed	Blink 1 time every 1s	
	Search or no signal	OFF	

4.3 Connecting and Installation

Read this manual before using your DNO V4 and check if all parts are included in the packaging box.

Before you install a SIM card to DNOV4

1. Check that the SIM has not run out of credit (test the SIM in a phone to make sure it can send SMS or log on wap).
2. Check that the SIM Lock code is turned off
3. If you require the function of sending an SMS location or SMS alarm report to the authorized phone number,

please make sure the SIM installed supports displaying incoming call number.

Install SIM Card

- 1. Cut off power for the unit.*
- 2. Unscrew and remove the back cover of your unit.*
- 3. Insert the SIM card by sliding it into the card slot with the chip module facing connectors on PCB*
- 4. Switch on battery switch on the right side of SIM slot*
- 5. Put back the SIM cover and screw it up.*
- 6. Connect GSM antenna to the unit.*
- 7. Connect GPS antenna to the unit.*

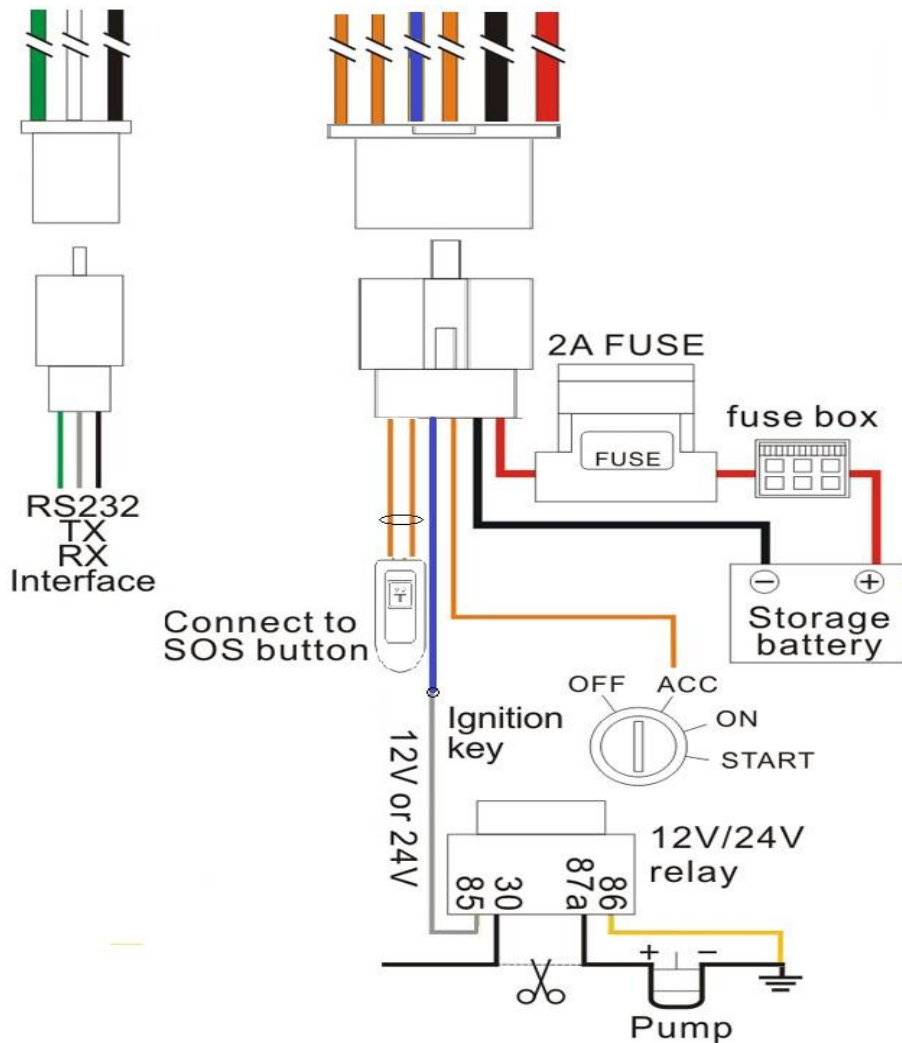
GPS antenna is used to receive satellites signals in the sky, it should be fixed install and facing open sky, GPS antenna should not be covered or shielded by any objects containing metal, even metallic

windscreen sun shield.

Find a suitable place inside the car for installing the unit. Wiring connections must be firm and reliable and the joints should be wrapped with insulating tape tightly. The unused electrical wire should be properly insulated.

Check if all wirings have been connected correctly and then connect the unit to the main power. Wait for a few minutes, when all led lights on front panel blink once per second, unit works all ok.

Installation Guide:



Cross-reference Sheet of Wiring:

Pin	Color	Function	
1	Red	DC In (power input). Input voltage: 9V~35V.	
2	Black	GND	
3-1	Orange	SOS panic button Input 1	
3-2	Orange	SOS panic button Input 2	
4	Brown	ACC detecting line. Strongly recommend the wire be connected to the ignition signal wire. Don't leave the wire vacant.	
5	Purple	Steal Alarm Trigger, High Voltage effective	
Relay	thick	Green	Motor positive
	thick	Green	Motor positive
	thin	White	Connect to blue wire of main cable
	thin	Yellow	Connect to Ground

5 SET UP BY SMS Command

***All SMS Query command should be send by authorized number, otherwise will be ignored**

5.1 Initial configuration by SMS Commands

5.1.1 Set APN, IP, Port, ID and center mobile number by SMS

Command Format:

*#SET*PASSWORD*Z<CENNUM>, ID, IP.PORT, APN#
PASSWORD: Password on tracker, default password 1111
Z: big letter Z, Tracker protocol ID
CENNUM: center mobile number
ID: system ID of sever software
IP.PORT: IP and PORT of sever
APN: Access Point Number, Please contact your mobile operator if not clear.

Example:

*#SET*1111*Z13500000000, 2151000012, 104.236.195.32.3712, CMNET#
1111: Series number of tracker
Z : Tracker protocol ID
13500000000: Center or Authorized mobile number
2081000012: system ID
104.236.195.32,3712: Sever IP and Port
CMNET: APN of simcard

After send setting command, device will reply a status SMS.

5.1.2 Set Device Domain Name

Device support domain name setting, once set a domain name for device, domain name will have priority to IP address, If IP changed in future, device will follow domain name of new server.

Command Format:

*#SET*Password*W<domain name>#

Example:

Your server domain name is avl.dnogps.com
Then this command will be:
*#SET*1111*Wavl.dnogps.com#

5.1.3 Change Device password

Command Format:

*#SET*Old Password*S<New Password>#

Example:

Change password from default 1111 to 2222
Command format:
*#SET*1111*S2222#

5.1.4 Check Device setting

Command Format:

*#SET*Password*T#

Example:

*#SET*1111*T#

Device will reply a SMS of current status

5.1.5 Set Device Tick Mode

Tick Mode: set device online interval and location sampling interval.

Command Format:

*#SET*1111*PMMMMmmmm#

MMMM: GPRS online interval , unit: minute

Mmmm: location sampling interval, unit: minute

Example:

if set device online every 60minutes, location sampling interval every 10 minutes, then MMMM=0060, mmmm=0010
command will be: *#SET*1111*P00600010#

Device Reply:
TICK MODE ENABLED, TICK TIME=60m, SAMPLE TIME=10m
After setting, device will online every 1 hour and upload 6 coordinates.

5.1.6 Cancel Device Tick Mode

if set MMMMmmmm value to 0, tick mode will be cancelled,
device will back to factory mode.

Example:

send *#SET*1111*P00000000#
device will cancel Tick mode and back to factory mode.

Device Reply:
Tick Mode Disabled

5.1.7 Check Device Tick Mode Status

Command Format:

***#SET*1111*P#**

Device Reply:

If Tick Mode enable, reply will be:
TICK MODE ENABLED, TICK TIME=x m, SAMPLE TIME=y m

If Tick Mode disabled, reply will be:
TICK MODE DISABLED

5.1.8 Set Device Time Interval Mode

In smart interval mode, send D1 command to set device to time interval mode

Command format: ***HQ,000,D1,120000,XX,1#**
XX: time interval, unit: second

Example:
Set device from smart interval mode to time interval mode, time interval 30 seconds
Send SMS: ***HQ,000,D1,120000,30,1#**
Device will reply a status SMS if command accepted

5.1.9 Set Device from Time Interval Mode to smart interval mode

Command format: ***HQ,0000000000,S25,130305#**

Send this SMS command to device in time interval mode, device will back to smart interval mode.

5.2 User SMS Commands

5.2.1 Position SMS Report

Description: To know the location of your DNO-V4, send an SMS to DNO-V4 and it will report its location by SMS.

Command : ***#WHERE*#**

Example:

SMS sent: ***#WHERE#**

SMS received:

*<http://maps.google.com/?q=22.56313N,113.93497E>
ACC OFF
Power down
Engine on*

*ver:46-19 time:11-10
GPS valid
RF: 25*

Speed=35 km/h
Power ok
Battery Voltage:4005

5.2.2 Set Interval for Position SMS Report

*#WHERE*T,N#

T: SMS reply interval, unit: second

N: Reply times

Example:

*#WHERE*180,10#

device reply one Google map url immediately the reply 10 times at 180s interval.

<http://maps.google.com/?q=22.56335N,113.93498E>
ACC ON
Engine on
ver:46-21 11-28
GPS valid
RF: 21
Speed=40 km/h
Power ok
Battery Voltage:4007

For more detailed SMS commands please go to Chapter 8 - SMS Command List

For more information regarding of bulk configuration by RS232 cable please connect support@dnogps.com.

If you are using other third party Software, please contact us for writing a third party protocol before delivery.

6 Tracking on Map

6.1 tracking by internet location software

There are a list software companies that support our protocol. Please contact us for detail.

6.2 tracking on mobile

Simply high light the link with latitude and longitude that you receive from the tracker by SMS and chose go to. Google Earth will display the location for you.

Example:

When you receive:

<http://maps.google.com/?q=22.723240N,113.902201E>

Show as the following picture on you mobile:

Now you can find the location of your tracker:

Or you can start the Internet Explorer and connect to <http://maps.google.com> for displaying the location. Or you can use local map software on PDA or car navigation device to input the coordinates.

7 Troubleshooting

Problem: Unit will not turn on	
Possible Cause:	Resolution:
<i>Wiring was not connected properly</i>	<i>Check and make sure wiring connection is in order.</i>
<i>Battery needs charging</i>	<i>Recharge battery</i>
Problem: Unit will not respond to SMS	
Possible Cause:	Resolution:
<i>GSM antenna was not installed properly</i>	<i>Make DNOV4 connected to GSM network.</i>
<i>GSM Network is slow</i>	<i>Wait for SMS. Some GSM networks slow down during peak time or when they have equipment problems.</i>
<i>Wrong format of your SMS</i>	<i>Check the characters of your SMS command</i>
<i>Wrong series number in your SMS</i>	<i>Write correct series number</i>
<i>The SIM in DNOV4 has run out of credit</i>	<i>Replace or top up the SIM card credit</i>
<i>No SIM card</i>	<i>Insert a working SIM card. Check in phone that the SIM can send SMS message.</i>
<i>SIM card has expired</i>	<i>Check in phone that the SIM can send SMS message. Replace SIM card if needed.</i>
<i>SIM has PIN code set</i>	<i>Remove PIN code by inserting SIM in you phone and deleting the code.</i>
<i>SIM is warped or damaged</i>	<i>Inspect SIM, clean the contacts. If re-inserting does not help try another to see if it will work.</i>
<i>Roaming not enabled</i>	<i>If you are in a different country your SIM account must have roaming enabled.</i>

8 SMS Command List

SMS command	function	Device Reply	Description
<code>*#SET*PASSWORD*Z<CENNU M>, ID, IP.PORT, APN#</code>	<i>Set device IP, port, APN</i>	Device reply a status message	<p>Example: <code>*#SET*1111*Z13500000000, 2151000012, 104.236.195.32.3712, CMNET#</code></p> <p><i>Reply:</i> ver:46-19 time:11-10 CEN: 123568945 IP:136.25.68.42:6542 CMNET SN2154785236 LK:F GPS valid RF: 24 http://maps.google.com/?q=N,E Speed=0 km/h Battery Voltage:4</p>

*#SET*Password*W<domain name>#	Set server domain name	Device reply a status message	Example: *#SET*1111*Wavl.dnogps.com#
*#SET*OldPassword*S<New Password>#	Change device password	Device reply a status message	Example: *#SET*1111*S2222# Change from 1111 to 2222
*#SET*Password*T#	Check device settings and status	Device reply a status message	Example: *#SET*1111*T#
*#WHERE#	Request tracker location and status	<i>http://maps.google.com/?q=-22.56313N,113.93497E</i> <i>ACC OFF</i> <i>Power down</i> <i>Engine on</i> <i>ver:46-19 time:11-10</i> <i>GPS valid</i> <i>RF: 25</i> <i>Speed=0 km/h</i> <i>Power ok</i> <i>Battery Voltage</i>	Open the Google link received, you will see the real position in Google map on mobile.
*#ENGINE:OFF#	Cut off Engine	Engine Off: OK	Valid for center number and SOS numbers
*#ENGINE:ON#	Resume Engine	Engine On: OK	Valid for center number and SOS numbers
*#SOSXXXXXXXX#	Set up SOS number 1	SOSXXXXXXXXOK	SOS Alarm send to this number, send *#SOS# cancel SOS alarm to this number For example: *#SOS190123456# SOS Alarm send to mobile 190123456
*#SOAXXXXXXXXX#	Set up SOS number 2	SOSXXXXXXXXOK	SOS Alarm send to this number, send *#SOA# cancel SOS alarm to this number
*#SOBXXXXXXXX#	Set up SOS number 3	SOSXXXXXXXXOK	SOS Alarm send to this number, send *#SOB# cancel SOS alarm to this number
*#SOS#	Clear SOS Number 1	SOS Off	Stop Tracker from sending SOS Alarm to number 1
*#SOA#	Clear SOS Number 2	SOS Off	Stop Tracker from sending SOS Alarm to number 2
*#SOB#	Clear SOS Number 3	SOS Off	Stop Tracker from sending SOS Alarm to number 3
*#ALARMXXXXXXXX#	Set up Alarm Number 1	ALARM ok	Alarm(Steal and Power lost) send to this number For example: *#ALARM190123456# Alarm send to mobile 190123456
*#ALARAXXXXXXXXX#	Set up Alarm Number 2	ALARM ok	
*#ALARBXXXXXXXX#	Set up Alarm Number 3	ALARM ok	
*#ALARM#	Clear Alarm Number 1	ALARM Off	Stop Tracker from sending Alarm report to number 1
*#ALARA#	Clear Alarm Number 2	ALARM Off	Stop Tracker from sending Alarm report to number 2
*#ALARB#	Clear Alarm Number 3	ALARM Off	Stop Tracker from sending Alarm report to number 3
*#GEO# n: from 0 to 6 1:50m 2:100m 3:200m 4:500m 5:1000m 6:2000m 0:close	Set Geofence	Geofence n	Set a circle Geofence Alarm Send to SOS Number one time when triggered, then disarm. Need to set Geofence again next time to enter armed status.
*#OSXX# xx set speed limit from 00 to 20 unit is 10km, 10 is 100km 20 is 200km 00 is off over speed alarm function	Set over speed Alarm	Overspeed xx ok	Over speed alarm Send to SOS number once when speeding over 5S; When lower than setting speed over 10S, re-enter over speed alarm status, will send another alarm when over speed again.

<i>*#SET*1111*PMMMMmmmm#</i> MMMM: GPRS online interval , unit: minute Mmmm: location sampling interval, unit: minute	Set Device Tick Mode	TICK MODE ENABLE, TICK TIME=xxm, SAMPLE TIME=xxm	Example: Send: <i>*#SET*1111*P02400010#</i> Reply: TICK MODE ENABLE, TICK TIME=240 m, SAMPLE TIME=10m
<i>*#SET*1111*P00000000#</i>	Cancel Device Tick Mode	TICK MODE DISABLED	
<i>*#SET*1111*P#</i>	Check Device Tick Mode Status	TICK MODE ENABLE, TIC K TIME=240m, SAMPLE T IME=10m	
Command format: <i>*HQ,000,D1,120000,XX,1#</i> XX: time interval, unit: second	Set Device From Smart Interval Mode to Time Interval Mode	Device will reply a status SMS if command accepted	Example: Send SMS: <i>*HQ,000,D1,120000,30,1#</i> Device will reply a status SMS if command accepted
<i>*HQ,0000000000,S25,130305#</i>	Set Device from Time Interval Mode to smart interval mode	Device will reply a status SMS if command accepted	

When setting a new tracker, the SMS Center number will be Authority number to locating and cut off/Resume engine, and only center can set SOS number.
SOS number is use to receive SOS alarm;
SOS number is the number which could be used for listen in;
SOS number can also be used cut off engine if send SMS to tracker **#ENGINE OFF#*

Appendix:

1,
RS-232 WIRINGS:

Red: +5V
Black: GND
Blue: RCV
White: SND

2,
V4 Lite Fuel Sensor support updates:

a, Open extension mode command

**HQ,0000000000,S80,123020,1#*

This command will open sk-v4 extension mode, so Fuel level reading and Temperature reading can be shown in status column.

After v46.8, after send S80 command, software will show fuel level reading directly without calibration command, the reading will assume that sensor length 50cm, default mode: F500.

a, Fuel Sensor Calibration command format:

**HQ,000,S90,HHMMSS,Nx ,oil1,R1,oil2,R2,oil3,R3.....#*

Nx: scales number, how many calibrating points at sensor.
R1,R2,.....Rn: resistance at calibrating points

Example:
**HQ,000,S90,120000,5,0,5,25,125,50,250,75,375,100,500#*

This command set up 5 calibration points,
Percentage Resistance
0% 5Ω
25% 125Ω
50% 250Ω

75%
100%

375Ω
500Ω