IDD-213LUser Manual

(Rev. 1.0)

Sinocastel™

Make your car talk···

Sinocastel Co., Ltd.

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Contents

1. Introduction

IDD-213L is an intelligent on-board diagnostic device with OBD II and SAE J1939/J1708 (Heavy duty) compliant, it features plug-and-play technology, could read diagnostic info from vehicle ECU and capture location data with built-in GPS, then send them to backend server for real-time remote diagnostic and tracking purpose.

IDD-213L can also act as an in-Vehicle WiFi hotspot, up to 8 WiFi enabled devices can be connected to share high speed 4G LTE network.

Packing List

Parts name		Quantity	Note
IDD-213LOBD Dongle		1	●
OBD II extension cable		1	○
9-Pin deutsch wiring harness		1	○
6-Pin deutsch Wiring harness		1	○
Power cable (including 3A Fuse)		1	○

Note: ● Standard configuration ○ Optional configuration

(Optional accessories will not be included if there is no indication in the order)

2. Specifications

2.1 External Interface

Product appearance as follows:

1. Standard OBD Connector
   Connect to the 16 pin on-board Diagnostic Link Connector (DLC).
2. Micro USB interface
   Connect the OBD to the pc with USB to set parameters
3. SIM Card slot
   Insert the SIM card to the slot

2.2 Status Indicator

Indicator	Color	Status
OBD/GPS Light	Green	Solid on – Searching for GPS signal / Failed OBD communication Fast Blinking (on 1s, off 1s) – GPS fixed / Failed OBD communication Slow Blinking (on 2.5s, off 0.5s) - Searching for GPS signal / Successful OBD communication Double Blinking – GPS fixed / Successful OBD communication Solid off – GPS/OBD off
Cellular Light	Blue	Fast blinking (on 0.5s, off 0.5s)-No SIM card or network searching Slow blinking (on 0.5s, off 2.5s) - Registered network Solid on-Logged into the server Solid off - Cellular off

2.3 Technical Parameters

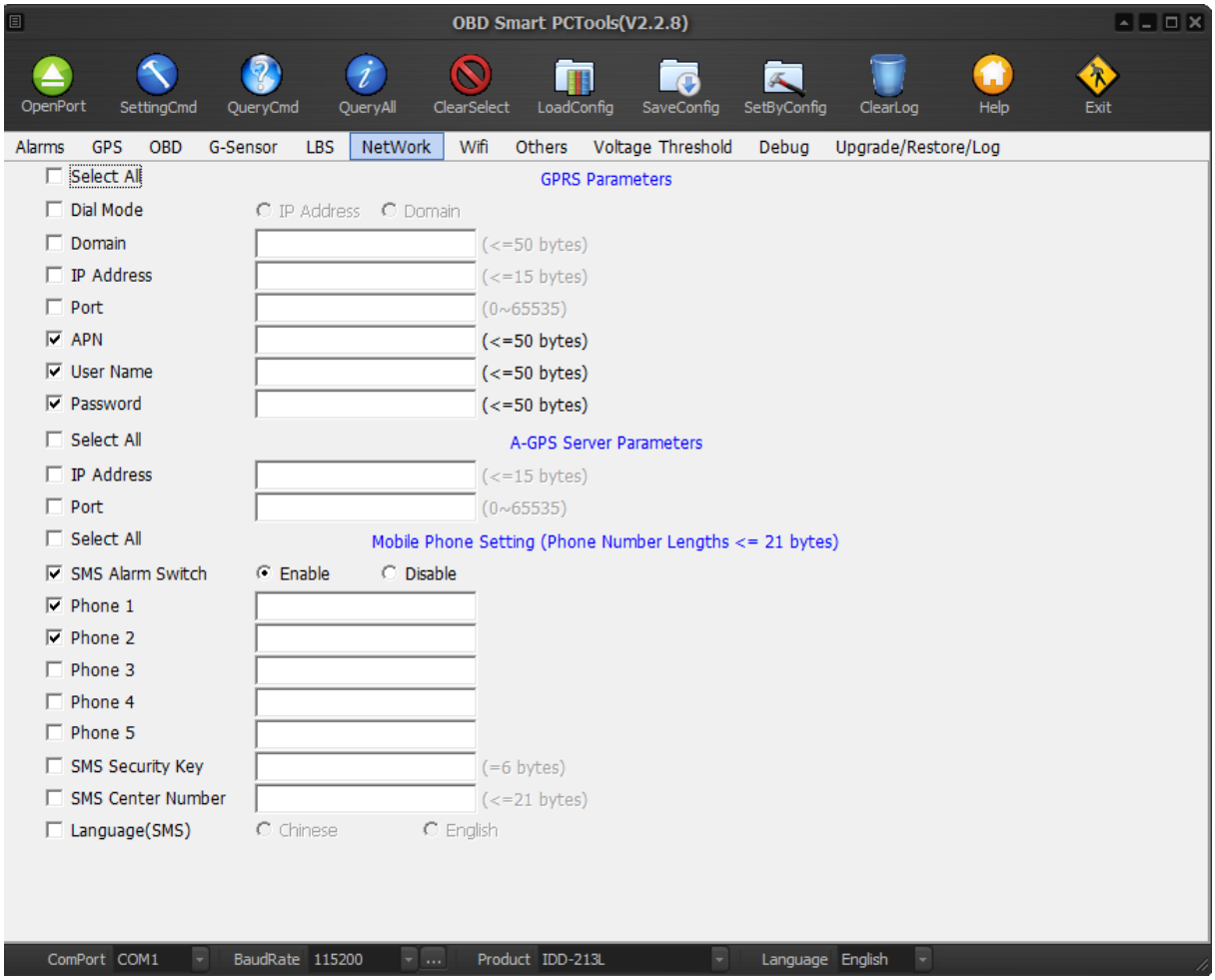
Mechanical	Dimension	63mm (L) x 50mm (W) x 26mm (H)
	Weight	50g
Interface		OBD II connector: SAE J1962 SIM card slot: Micro SIM, Push-Push Type
Storage		8MB FLASH
Data Transmission		Packet data (TDD/FDD/HSPA)
Positioning Mode		GPS
OBD Protocol		ISO 9141-2 ISO 14230-4 ISO 15765-4 SAE J1939 (Heavy duty) SAE J1587/J1708 (Heavy duty)
Power	Working Voltage	9-36VDC
	Working Currency	Average Currency: <150mA@13.8/27.6VDC Max. Currency: <200mA@13.8/27.6VDC Sleep Currency: <10mA@12/24VDC
6-axisIMU		Driving behavior detection
GPS		Channels: 48 Sensitivity: -163dBm Accuracy: 5m CEP Time to first fix: Cold start: <35s (typ.) Hot start: <1s (typ.)
WiFi		Frequency: 2.4-2.4835GHz WLAN Standard: 802.11b/g/n Transmission Data: 65Mbps@802.11n 54Mbps@802.11g 11Mbps@802.11b

Cellular		Frequency (IDD-213LA, US): FDD LTE B2/B4/B12 WCDMA/HSPA B2/ B5
LED Indicator		GPS/OBD/Cellular
Antenna	Cellular Antenna	Built-in
	GPS Antenna	Built-in
	WiFi	Built-in
Environment	Working Temperature	-30℃ ~ +70℃
	Storage Temperature	-40℃ ~ +85℃
	Humidity	5%～95%（no fog）

3. Device Configuration

3.1 PC TOOL Manager

Connect to device via USB cable to the computer, use the PC TOOL to configuration all the parameters.



3.2 SMS Instructions

SMS command is mainly for remote maintenance. The message content is text format. Default secret key is the last 6 digits of the device ID. The key can only be changed through PC Tool. SMS format is defined as follows:

3.2.1 Set IP parameters

Send SMS *SecretKey#set gprs#APN,User,Password,IP,Port*, device will reply *set gprs#ok* or *set gprs#fail*.

e.g.: *123456#set gprs#cmnet,,,113.98.241.66,11088*

3.2.2 Get IP parameters

Send SMS *SecretKey#get gprs#*, device will reply *get gprs#APN,User,Password,IP,Port*.

e.g.: *123456#get gprs#*

3.2.3 Set domain parameters

Send SMS *SecretKey#set domain #APN,User,Password,IP,Port*, device will reply *set domain#ok* or *set domain#fail*.

e.g.: *123456#set domain# cmnet,,,obd.livetelematics.com,11088*

3.2.4 Get domain parameters

Send SMS *SecretKey#get domain#*, device will reply *get domain#APN,User,Password,domain,Port*.

e.g.: *123456#get domain#*

3.2.5 Get current location

Send SMS *SecretKey#position#*, device will reply *position#http://maps.google.com /?q=latitude,longitude*.

e.g.: *123456#position#*http://maps.google.com/?q=22.536934,114.021425*

3.2.6 Set working mode

Send SMS *SecretKey #setworkmode#mode*, device will reply *setworkmode#ok/fail*.

mode = passenger、heavyduty 或 tracker

e.g.: *123456#setworkmode#tracker*

3.2.7 Get working mode

Send SMS*SecretKey #getworkmode#*, device will reply*getworkmode#mode*.

mode = passenger、heavyduty or tracker

e.g.: *123456#getworkmode#*

3.2.8 Enable/Disable WiFi

Send SMS：*SecretKey#enable wifi#*
Send SMS：*SecretKey#disable wifi#*
device will reply：*enable wifi#ok/fail*
device will reply：*disable wifi#ok/fail*
eg：*123456#enable wifi#*

3.2.9 Query the working state of WiFi

Send SMS：*SecretKey#get wifi#*
device will reply：*ge
wifi#enable/disable*
eg：*get wifi#enable*

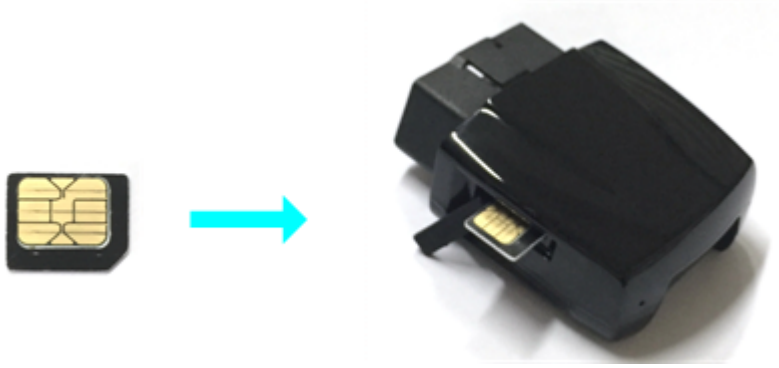
3.2.10 FTP update

Send SMS:*SecretKey#upgrade#username,password,url*
device will reply：*upgrade#ready/fail*
when finish,the device will reply：*upgrade#succesful/fail*
eg：*123456#upgrade#admin,123456,ftp://58.58.58.58/IDD-213L/IDD-213L_V1.0.0.tb*

4. Installation Instruction

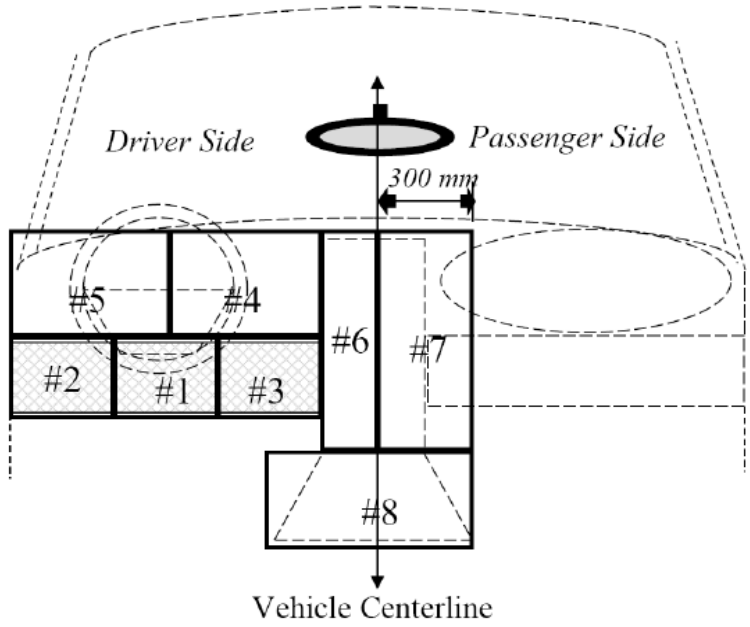
4.1 SIM Card Installation

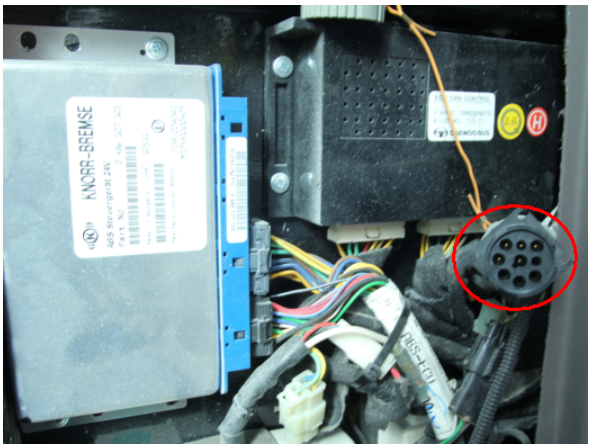
1. Remove the SIM card cover.
2. Insert the SIM card and press gently, a click will be heard upon successfully placing the SIM card in its place, please follow the insertion direction marked on the SIM card cover.
3. Put the SIM card cover back.



4.2 OBD Port

In general, the OBD port is located in the driver or passenger cabin, from the edge of dashboard on driver side to the border of 300mm. It is easy to touch by sitting in the driver's seat; the preferred location is within the area from steering post to the vehicle centerline.





4.3 Device Installation

Before installing the device, please make sure device has been configured with necessary parameters including network parameters and working mode.

Park the car and make sure engine is off, align the OBD connector of the device with the engine diagnostic port and simply push in place, ensuring the device is secure. There comes one beep indicating device is power on.


If the OBD port cover can not be closed back after device plugged in, please use OBD extension cable and mount the device in proper place.

Some heavy duties may need 9-Pin or 6-Pin deutsch wiring harness.

For vehicles do not have an OBD port, please use power cable to connect vehicle battery and configure the device with tracker mode.

Start engine, then device starts OBD communication, acquiring GPS info and Cellular network connection. Various status can be indicated by lights.

Note:

When device is the first time power on (plugged in), it will scan OBD protocol according to pre-configured working mode (ie, passenger car or heavy duty mode), the maximum scanning time can be up to 10 minutes, if no OBD protocol is detected during this period, device will auto change working mode to tracker mode, if OBD protocol is detected, device will keep its working mode. After auto scanning period device will not change working mode anymore even it is re-plugged, unless working mode is re-configured. If tracker mode is pre-configured device will not scan OBD protocol and keep working with tracker mode unless working mode is re-configured.

***If GPS does not work**, please use OBD extension cable and mount the device in a proper place to make sure GPS signal can be well received.

***If dashboard lights are abnormal after installation, please remove the device and contact Sinocastel technical team**.

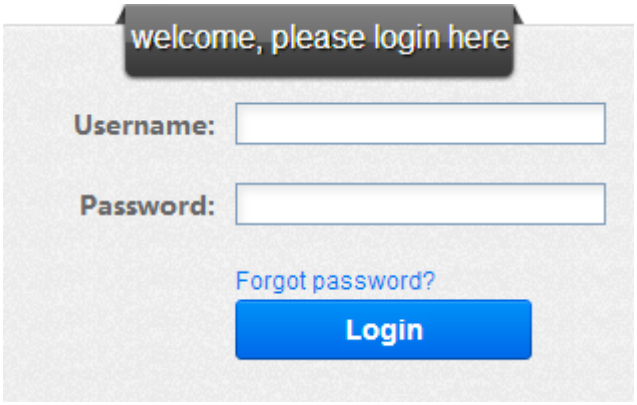
***Do not plug device when engine is on.**

***Do not unplug device until engine is off and all device lights are off.**

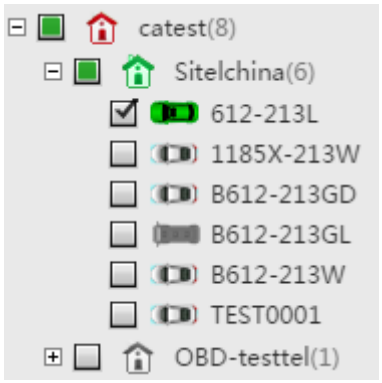
***After engine off device goes into sleep mode, while it still keeps working in order to detect engine on, the current consumption in sleep is 10mA. Normally we suggest unplug device if vehicle will be not used for more than 5 days in case of drying out vehicle battery.**

***WiFi will not be enabled until device registers mobile network.**

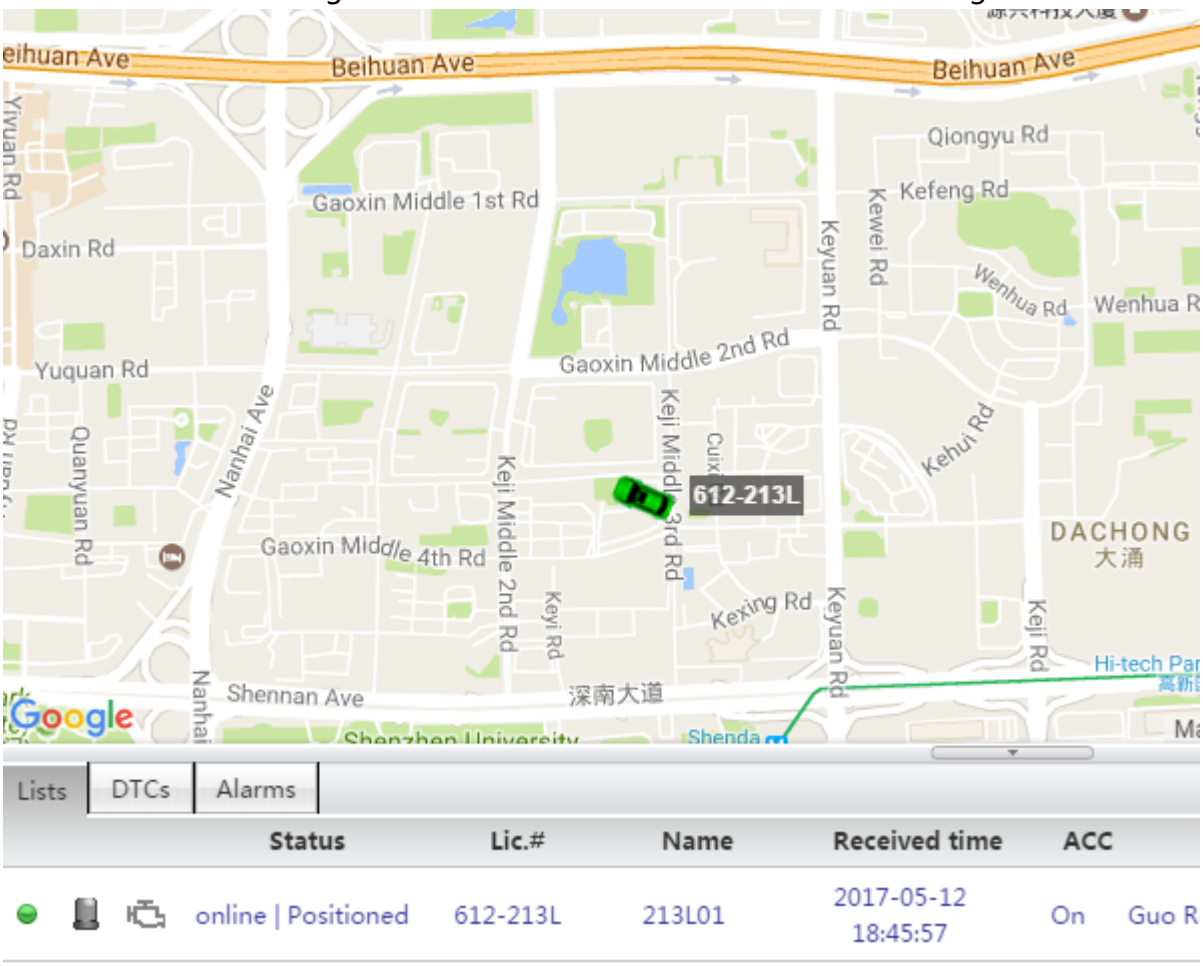
Log into www.livetelematics.com to check real-time monitor and trip reports.



Login



Vehicle monitoring list



Vehicle real time monitor

5. Functions

5.1 OBD Protocols

Device supports all legislated OBD II protocols, it is also SAE J1939 and SAE J1708 compliant.

- ISO 9141-2
- ISO 14230-4 (KWP2000)
- ISO15765-4(CAN)
- SAE J1939 (Heavy duty)
- SAE J1587/J1708 (Heavy duty)

5.2 Data Encryption

Data transmission between device and the server can be encrypted with AES 128bit, the AES key is generated by device randomly and sent to the server with encryption of RAS 2048bit. Each time device logs into the server it synchronizes the AES key with the server. Encryption is disabled by default.

5.3 WiFi Hotspot

Up to 8 WiFi enabled devices can be connected to share high speed 4G LTE network.

5.4 Auto APN Identification

Device builds in an APN list of major telecom operators, in most cases APN can be indentified automatically.

5.5 Location Inquiry

Upon receiving location inquiry message from server or via SMS, device reports GPS data immediately.

5.6 Regular GPS data reporting

GPS data can be sampled by 3 means: by time interval, by distance or by heading change. They can be enabled or disabled separately, only sampled by time interval is enabled by default.

The sample rate for time interval can be 2-600s and default setting is 30s, for distance interval can be 50-5000m and default setting is 500m, for heading change can be 5-90° and default setting is 15°.

There can be single or several groups of GPS data in one GPS message, determined by groups of GPS data per message, device will not report GPS message until it has collected specified groups of GPS data. Groups of GPS data per message can be 1-30 and default setting is 1.

For example, sampled by time interval and sampled by distance are enabled, and the respective settings are 10s and 500m, groups of GPS data per message is 5. Assume that vehicle is running at speed of 72km/h (20m/s), then it takes 25s to run out of 500m, so GPS data are sampled at 10th, 20th, 25th, 30th, 40th second and reported at 40th second as 5 groups of GPS data have been collected at that time.

The suggested minimal interval for GPS report is 10s. For example, if only sampled by time interval is enabled, then the settings might be 10s of sample rate and 1 group of GPS data per message, or 5s of sample rate and 2 groups of GPS data per message.

5.7 Regular G-Sensor Data Reporting

Device reports G-Sensor data (g-value of X/Y/Z axis) according to configured time interval, this function is disabled by default.

The sample rate can be 200-6000ms and default setting is 1000ms.

There can be single or several groups of G-Sensor data in one G-Sensor message, determined by groups of G-Sensor data per message, device will not report G-Sensor message until it has collected specified groups of G-Sensor data. Groups of G-Sensor data per message can be 50-100 and default setting is 100.

5.8 Regular Diagnostic Data Reporting

Device is able to read variety of vehicle diagnostic data, also called PID (parameter ID), including vehicle speed, engine RPM, engine coolant temperature, mass flow air, etc, and report up to 10 types of PID data according to configured time interval.

The sample rate can be 2-600s and default setting is 60s.

There can be single or several groups of PID data in one PID message, determined by groups of PID data per message, device will not report PID message until it has collected specified groups of PID data. Groups of PID data per message can be 1-30 and default setting is 1.

The suggested minimal interval for PID report is 10s, for example, 10s of sample rate and 1 group of PID data per message, or 5s of sample rate and 2 groups of PID data per message.

5.9 DTCs Reporting

Device is able to read vehicle pending and stored DTCs (diagnostic trouble code), and freeze frame data. The backend server analyzes and displays the DTCs for users on time to avoid high repairing cost.

5.10 Cell ID Reporting

Device reports Cell ID every 30 seconds when it loses GPS signal, this function is disabled by default.

5.11 GPS Data Reporting in Sleep Mode

Device reports GPS data according to configured time interval during sleep. The time interval can be 10-1440min and default setting is 60min.

5.12 Data storage/Supplementary Report in Dead zones

When there is no Cellular signal or Cellular signal is poor, GPS information are stored, and reported after signal recovery. Supplementary report can be last for 15 minutes at most after ignition is off.

5.13 Trip Mileage

Device reports driving mileage in each reported message.

5.14 Trip Fuel Consumption

Device reports fuel consumption in each reported message.

5.15 Driving behavior monitoring

Real-time detects bad driving behavior, including Speeding, high RPM, hard acceleration, hard brake, quick lane change, sharp turn and excessive engine idle time.

5.16 Alarms and Events Reporting

Alarms and Events are reported when they are triggered or eliminated and there comes short beeps, beeps are disabled by default.

- Engine on/off
- High RPM (triggered and eliminated)
- Speeding (triggered and eliminated)
- Low battery voltage (triggered and eliminated)
- High engine coolant temperature (triggered and eliminated)
- Hard acceleration
- Hard brake
- Quick lane change
- Sharp turn
- Crash
- Vibration
- Excessive engine idle time (triggered and eliminated)
- Fatigue driving (triggered and eliminated)
- Towed
- MIL on/off
- Plug indication

Default thresholds for alarms:

- High RPM: 4500r/min
- Speeding: 120km/h
- Low battery voltage: 10.5V
- High engine coolant temperature: 98℃
- Hard acceleration: 0.4g
- Hard brake: 0.6g
- Quick lane change: 0.4g

- Sharp turn: 0.5g
- Crash: 1.5g
- Vibration: 0.08g
- Excessive engine idle time: 15min
- Fatigue driving: 240min

5.17 Working Mode

Device supports 3 types of working mode: Passenger car, Heavy duty and Tracker mode.

With tracker mode, device does not report diagnostic data, DTCs, trip fuel consumption and some alarms including high RPM, high engine coolant temperature,hard acceleration, hard brake, excessive engine idle time and MIL.

With Tracker mode, device wakes up from sleep on detecting motion state last for 20 seconds, and goes into sleep on detecting static state last for 3 minutes.

5.18 Google Map Link

Latitude and longitude in location SMS can be directly linked to Google map.

5.19 FOTA

Users can configure device or update firmware through website:
http://www.freelivetrack.com/

5.20 SMS Configuration

Users can configure device via SMS commands.

5.21 FCC Statement

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: 1) this device may not cause harmful interference, and 2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by

turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

--Reorient or relocate the receiving antenna.

--Increase the separation between the equipment and receiver.

--Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

--Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved by the party responsible for compliance could void the user’ s authority to operate the equipment.

Radiation Exposure Statement

This device complies with RF radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

This device must operate with a minimum distance of 20 cm between the radiator and user body.

6. Disclaimer

This user manual only applies to IDD-213L device.

The deviceis compatible with OBD II standard, it is also SAE J1939 and J1708 compliant. While some vehicles are not following those standards, therefore Sinocastel can not guarantee the OBD performance of the device with every vehicle.

The GPS function may be affected in electromagnetic shielding area or bunker place.

The device has a built-in cellular module. It should be used as far as possible away from fuel depots, chemical plants and other areas could cause an explosion. Most sensitive to external RF sites (such as gas stations, hospitals and school, etc.) may be equipped with radio frequency jamming equipment; some functions may be affected in the interference area.

As the device transmits data via cellular, please use the SIM card which supports data service and make sure that the account balances is sufficient. Do not use any SIM card which is restricted by region.

To make sure the products works well, please use the original accessories.

This manual is based on the "as-is" situation. Sinocastel will not guarantee the accuracy, reliability and content of the handbook. Also Sinocastel reserves the right to amend or withdrawn this manual without any prior notification.

7. Warranty

If product got quality problem within the warranty period, please bring the product together with a valid warranty card and purchase invoice to the dealer for checking. Please do not disassemble this product, this may result in damage, Sinocastel will not be responsible for those problem.

1 year of warranty since purchase time and life-long maintenance. For Failure or damage due to incorrect operation or not following the instruction, Sinocastel will provide paid maintenance within warranty period.

User name: _____

Contact number: _____

Address: _____

Post code: _____

Purchasing date: _____

Serial number: _____

Remark: _____

Please keep this card carefully in order to better serve you.

Distributor (Company Chop):

Maintenance Records

Product Model:

Date	Faults and maintenance of records		Maintenance (Signature)	User (Signature)
	Fault Description	Maintenance		

Note: This form must be carefully completed.

8. Statement

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