
Digital Video Recorder

8CH AHD Mobile DVR

User Manual

Version 2.6

2017.07.25

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1. Overview

WARNING, CAUTION & COPYRIGHT WARNING

Reduce the risk of fire or electric shock. And do not expose this product to rain.
Do not insert any metallic object through the ventilation grills.

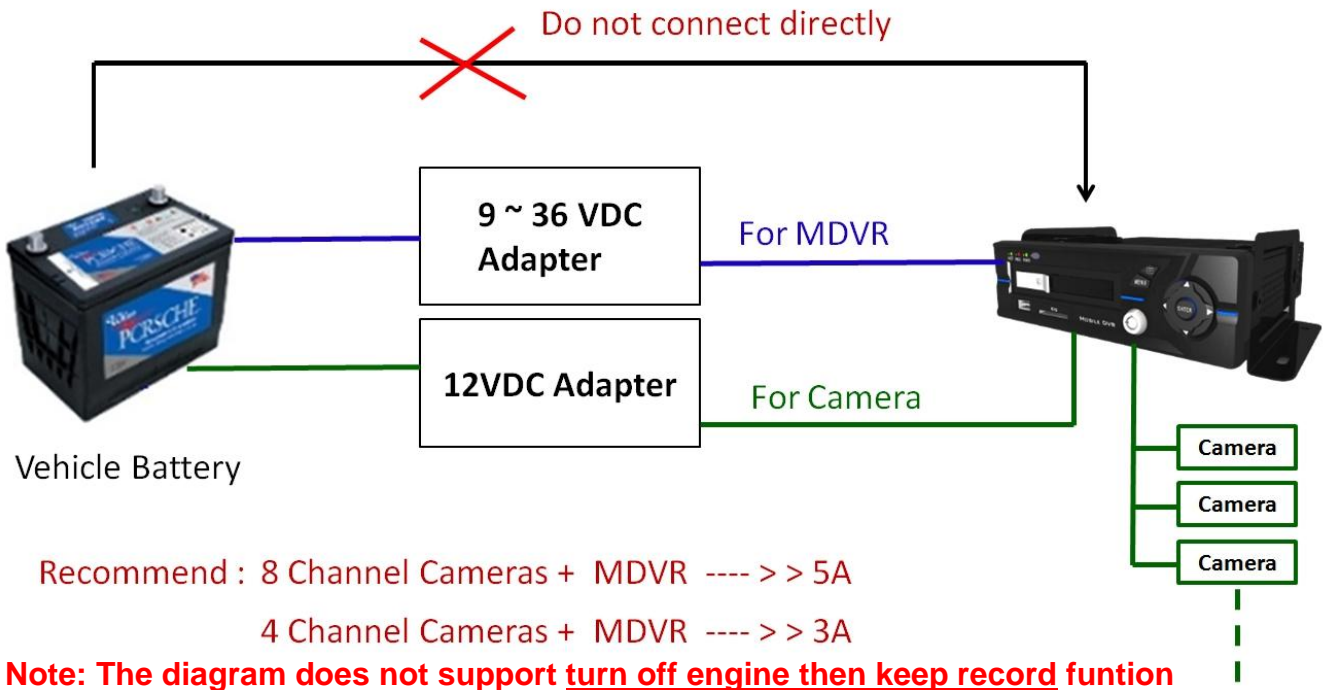
CAUTION	
	
<p>1. The symbol is intended to alert the user on the presence of insinuated “dangerous voltage” within the products enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.</p> <p>2. Areas of High Lightning Strike regions must take note to install a lightning protection device in order to prevent hardware failure or burnout of the KA- series embedded DVR.</p>	<p>The symbol is intended to alert the user on the presence of important operating and maintenance (servicing) instruction in the literature accompanying the product.</p>
RISK OF ELECTRIC SHOCK DO NOT OPEN	
TO REDUCE THE RISK OF ELECTRIC SHOCK DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE REFER SERVICING TO QUALIFIED SERVICE	

USER OF THE SYSTEM IS RESPONSIBLE FOR CHECKING AND COMPLYING WITH ALL FEDERAL, STATE, AND LOCAL LAWS AND STATUTES STATUTES COIPCERNING.

THE MONITORING AND RECORDING OF VIDEO AND AUDIO SIGNAL THAT KINGDOM LTD SHALL NOT BE HELD RESPONSIBLE FOR THE USE OF THIS SYSTEM IN VIOLATION

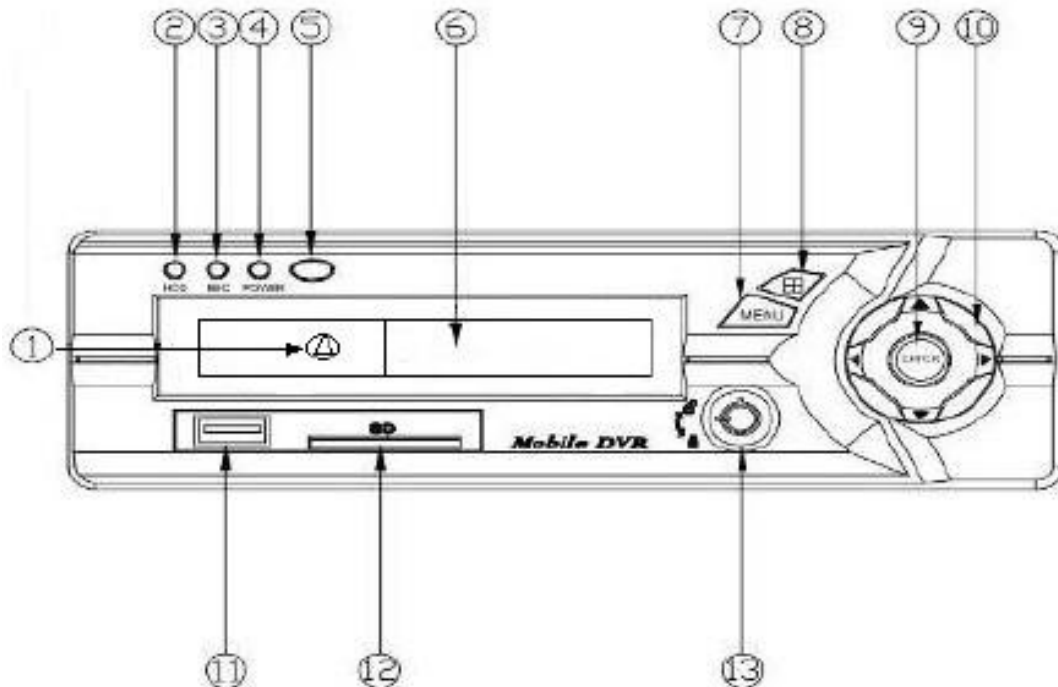
OF CURRENT LAWS AND STATUTES.

- 1) The apparatus should not be exposed to dripping or splashing water and that no objects filled with Liquids, such as vases, should be placed on the apparatus.
- 2) CAUTION - Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type.
- 3) The apparatus with CLASS I construction shall be connected to a MAINS socket outlet with a protective earth connection.
- 4) The batteries installed should not be exposed to excessive heat such as sunshine, fire or the like.
- 5) The plug or appliance coupler shall remain readily operable for the purpose of disconnection from the mains



2. Hardware Overview

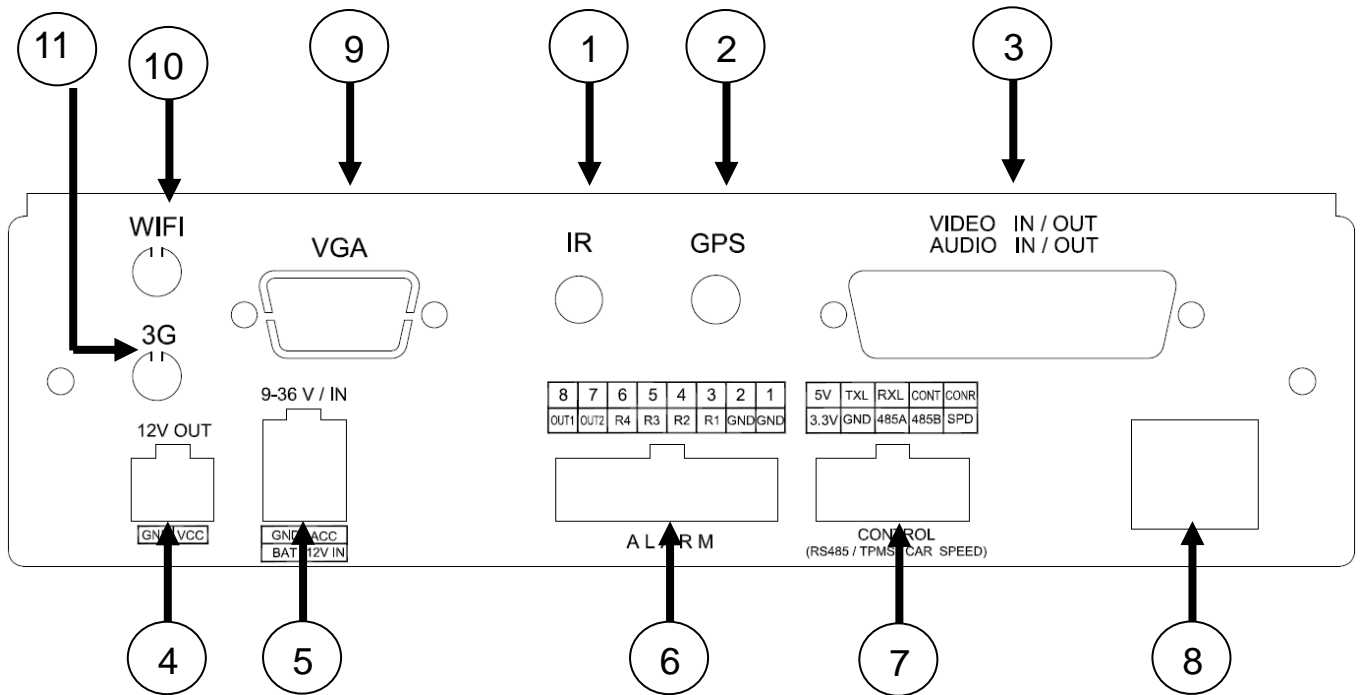
2.1 Front panel



Front panel Interface

Item	Name	Explanations
1	HDD Cover Lock	Lock the hard disk cover.
2	HDD LED	LED flashes when data is being stored.
3	REC LED	REC= Light on permanently, Stop= Light off, SD card recording: Light flashes.
4	POWER LED	After MDVR boot up, Light always On.
5	IR Receiver	Receives the signal sent out by the remote control.
6	HDD Tray	Removable Tray for installing 2.5" SATA HDD.
7	MENU Button	Entry the setting mode.
8	QUAD/PIP Button	To switch monitor display mode.
9	ENTER Button	Enter / Confirmation Key.
10	Direction Control	Control cursors and cursor direction movement.
11	USB Backup	To backup recorded data file on USB drive.
12	SD Slot	When HDD has not detected, recorded data are stored in the SD memory card.
13	Removable HDD lock	Lock the hard disk cover and boot up MDVR .

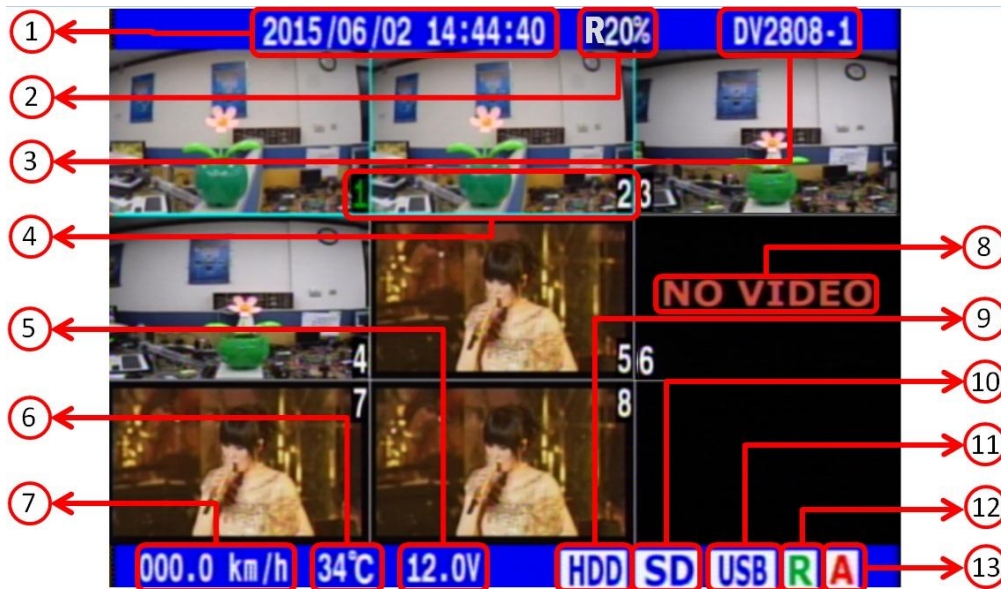
2.2 Back panel



Back panel Interface		
Item	Name	Explanations
1	IR Extension port	The DVR could receive IR signal to operate by remote controller.
2	GPS Antenna	GPS aerial port for receiving GPS data.
3	Multiple Interface	Support 8 Video/2 Audio Input and 1 Video/1 Audio output connection port.
4	12V / 2A Output	Output Power supply port (for Camera).
5	9/36V Input	Input Power supply port (for DVR).
6	Alarm In / Out	MDVR support 8 Alarm in and 2 relay out.
7	RS-485 & Sensor	Provides RS-485, TPMS, Car speed cable...etc. For external : peripheral connection control port.
8	Internet Port	RJ45 Terminal for internet connection.
9	VGA Out	Provide VGA interface to make Video out.
10	WIFI Antenna	Build-in WIFI module to recive data by antenna
11	3G Antenna	3G aerial port for receiving 3G data.

2.3 Monitor Display Illustration

2.3.1 Monitor Mode

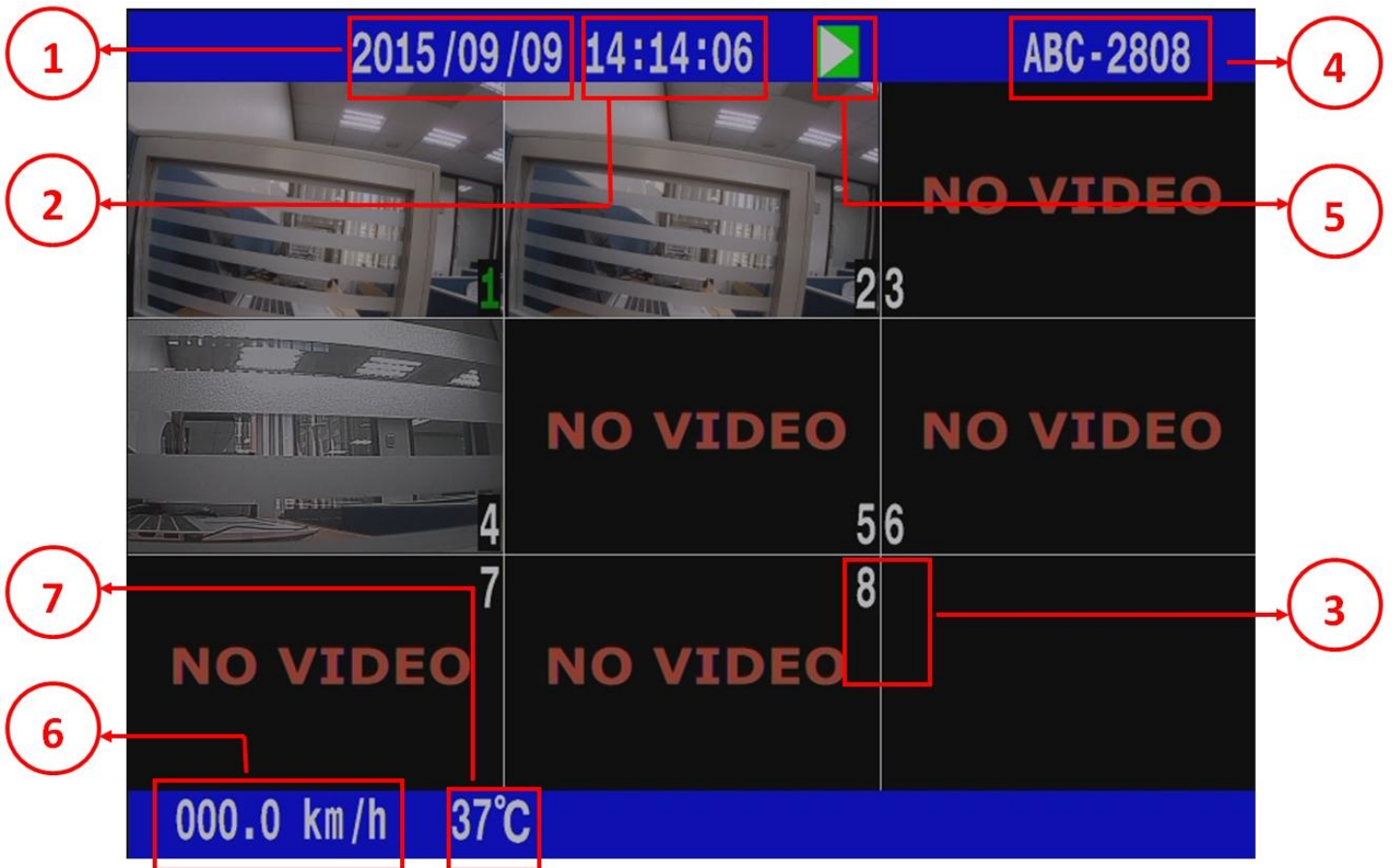


MONITOR Screen Display illustration

Item	Name	Explanation
1	Date/Time	Current system Date/Time
2	Percentage	HDD has been record rate. Recording and target display bgcolor; Recording by SD card that Backcolor will be flash. None record that Backcolor will be colorless. If storage capacities filled that will overwrite and show "R".
3	License Number	Car Identification (Less than 11 digit)
4	Camera No.	Video input number. CH1 and CH2 also display status with Audio in. If Number 1 showing "Green"that mean voice out by first channel currently. User could use remote controller(F1 、 F2 、 F3) to switch audio out channel.
5	Power detection	Power input Voltage.
6	Temperature	Vendor action Temperature currently
7	Car Speed	Real-time car speed
8	VIDEO LOSS	The display alarm with Camera signal loss.
9	HDD Status	Blue HDD - detected hard drive , Red HDD - hard drive error , Gray HDD - system has not detected hard drive.

Item	Name	Explanation
10	SD card Status	Blue SD - detected SD card , Red SD - SD card error , Gray SD mean system has not detected SD card , Orange SD - SD card in the write-protected state.(Lock”switch)
11	USB Drive Status	Blue USB - drive detected , Gray USB - drive none detected. , Green USB - drive include upgrade firmware.
12	Relay Out	Gray R - none relay out triggered , Green R - relay out triggered.
13	Alarm In	Blue A - none alarm triggered , Red A m- alarm triggered.

2.3.2 Playback Mode



PLAYBACK Screen Display illustration

Item	Name	Explanation
1	System Date	System Date by File was recording date.
2	System time	System time by File was recording time.
3	Camera No.	Camera' s video number on system.
4	Car ID	Car Identity name.
5	Playback Icon	Currently playback status. System support X1、X2、X4、X8、X16、X32、X64、X128 forward and X2、X4、X8、X16、X32、X64、X128 backward .
6	Car speed	Car speed by playback
7	Temperature	Temperature with MDVR working.

2.3.3 Settings Mode




Setting Screen Display Illustration

Item	Name	Explanation
1	PLAYBACK	Select Quick search 、 Event search 、 Time search mode for data selection 、 playback. or Backup selection function.
2	DISPLAY	Setup on/off information with system status on monitor . as like “system time” 、 car speed 、 HDD status....etc
3	CAMERA	Adjust the image display for each video channel. (ex: Brightness 、 Contrast 、 Hue 、 Shade)
4	ALARM	Setup alarm trigger condition 、 action types and duration.
5	RECORD	Setup the recording quality for each channel. (ex: GPS 、 car speed 、 sensors and sound recording functions 、 Engine off record settings)
6	SYSTEM	Setup system parameter and other about connect external device.

2.4 Basic Operation Illustration

Please refer to the following description about how to operate the mobile DVR. **MENU** Button : Shown in the monitor, press the “MENU” button located in the front panel of the DVR to find the main “SETTING” display mode. The main “SETTING” mode offers 6 kinds of sub-modes. Please select the sub-mode using the “DIRECTION” button ◦

DIRECTION Button: 

By pressing on the direction button, you can select the required item or setting which you need to access.

In the PTZ control mode , this button supports the movement function (upper, lower, right or left).



- The Menu button also functions as the ESC function. By pressing the “MENU” button in the sub-mode, the display on the monitor will return to the previous page and save all modification.



ENTER Button :

The enter button acts as the confirmation button. In the main menu page, after selecting the required settings category, press the enter button to bring the display page to the settings sub category page.



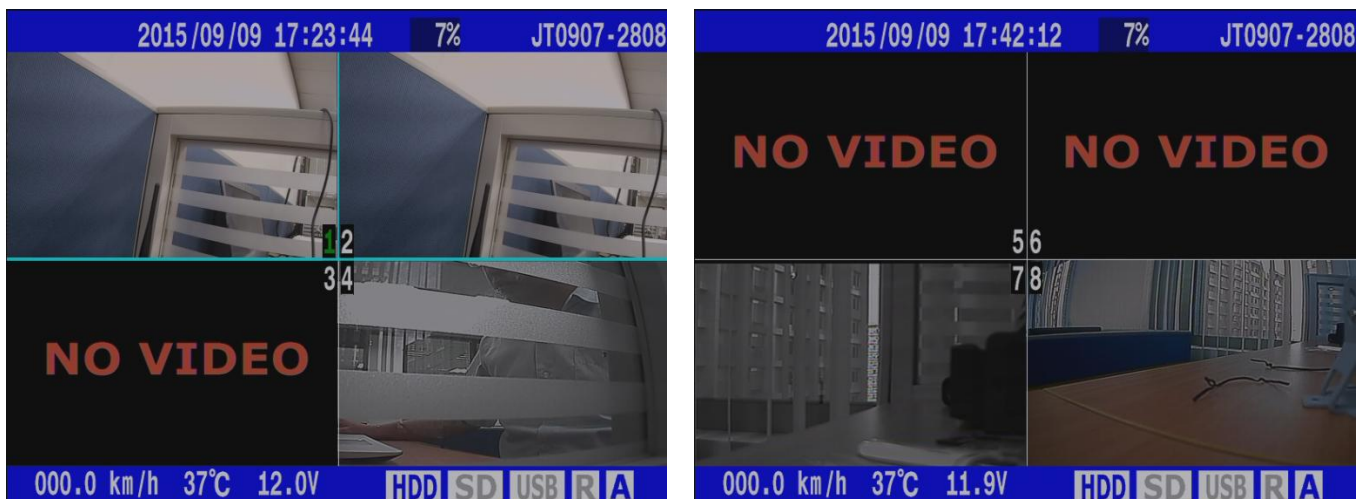
.Direction buttons :

Normally Press button to select setting options.

At PTZ mode, Press the direction button he will execute viewing angle the camera function.

QUAD Button : 

At the monitor view, press this button to change the viewing mode. Every time you press the QUAD button once, the display mode changes to the image below:



QUAD



9-Split

Channel Button : ①②③④⑤⑥⑦⑧

Press the Channel button to select the display view of each individual camera.

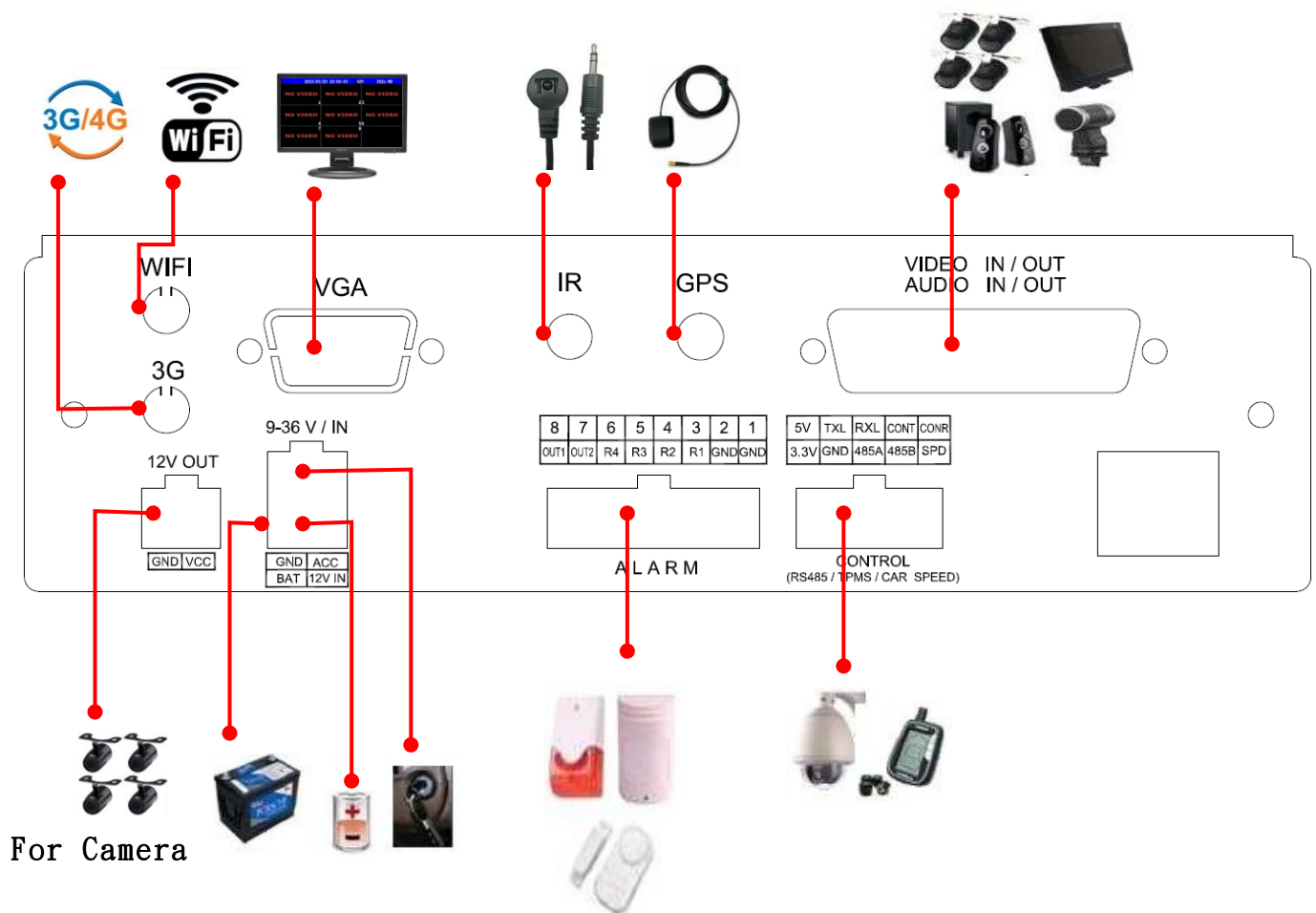


3. Installation

The installation should be done by professional engineer or systems integrators to implement this project.

3.1 Basic Installation

Please refer to the diagram below to connect the various external equipments as follows.



The Power output is voltage bypass.

There external equipments shown on the above diagram are just for reference.

3.1.1 HDD

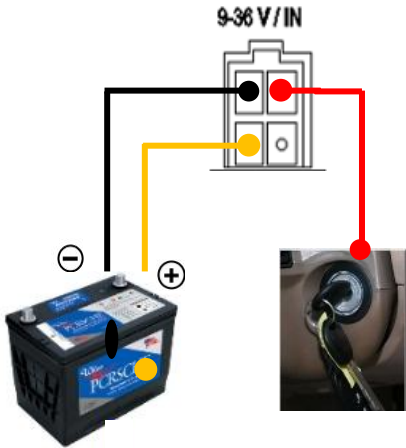
Please install a 2.5" SATA or SSD drive on the detachable hard disk tray which is provided with the DVR. The hard disk installation steps are as follows :



1. Pull the HDD cover out and put in HDD. ◦
2. Push HDD cover into bottom and positioned it.
3. Using particular key to lock HDD.

3.1.2 POWER

The MDVR had connected HDD and Network disabled then energy consumption was 7.8W.



※Note:

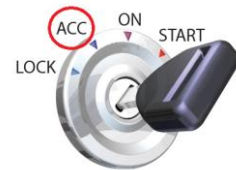
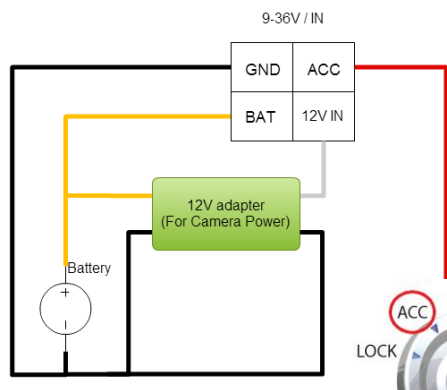
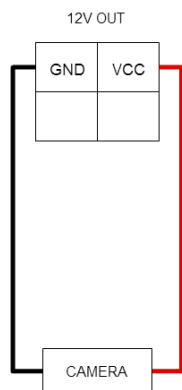
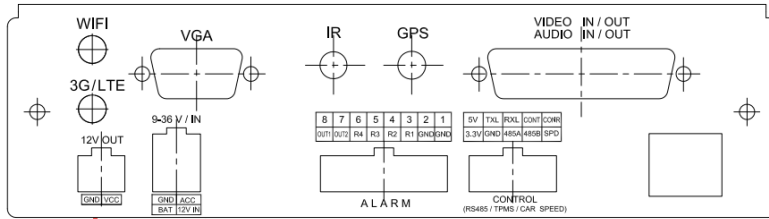
If user setup to **enable** that engine switch off then system keep record function. (Defaults)

-- >> Red line connect "ACC+", Yellow line connect "Battery".

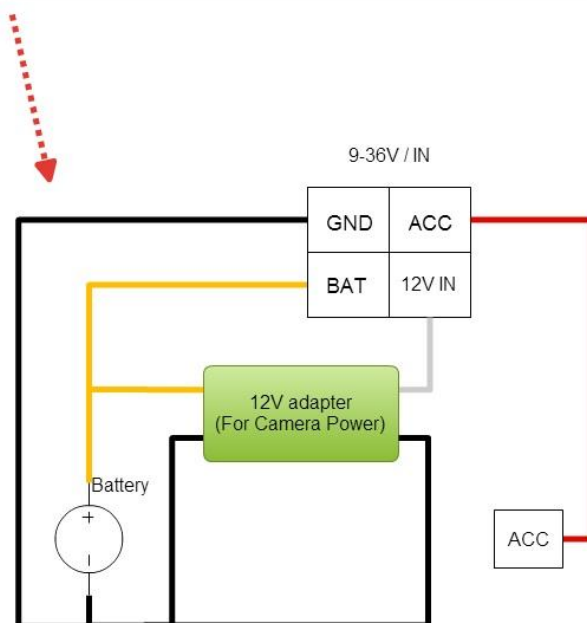
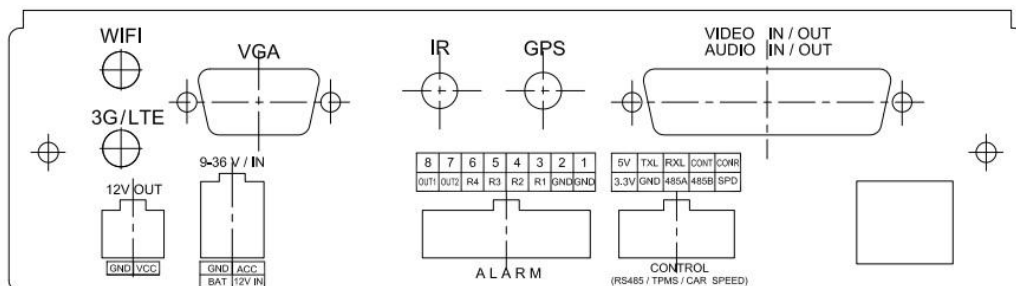
If user setup to **disable** the function:

-- >> Combine Red 、 Yellow Line to connect "ACC+" .

(1) BNC connect mode



(2) Aviation connect mode :

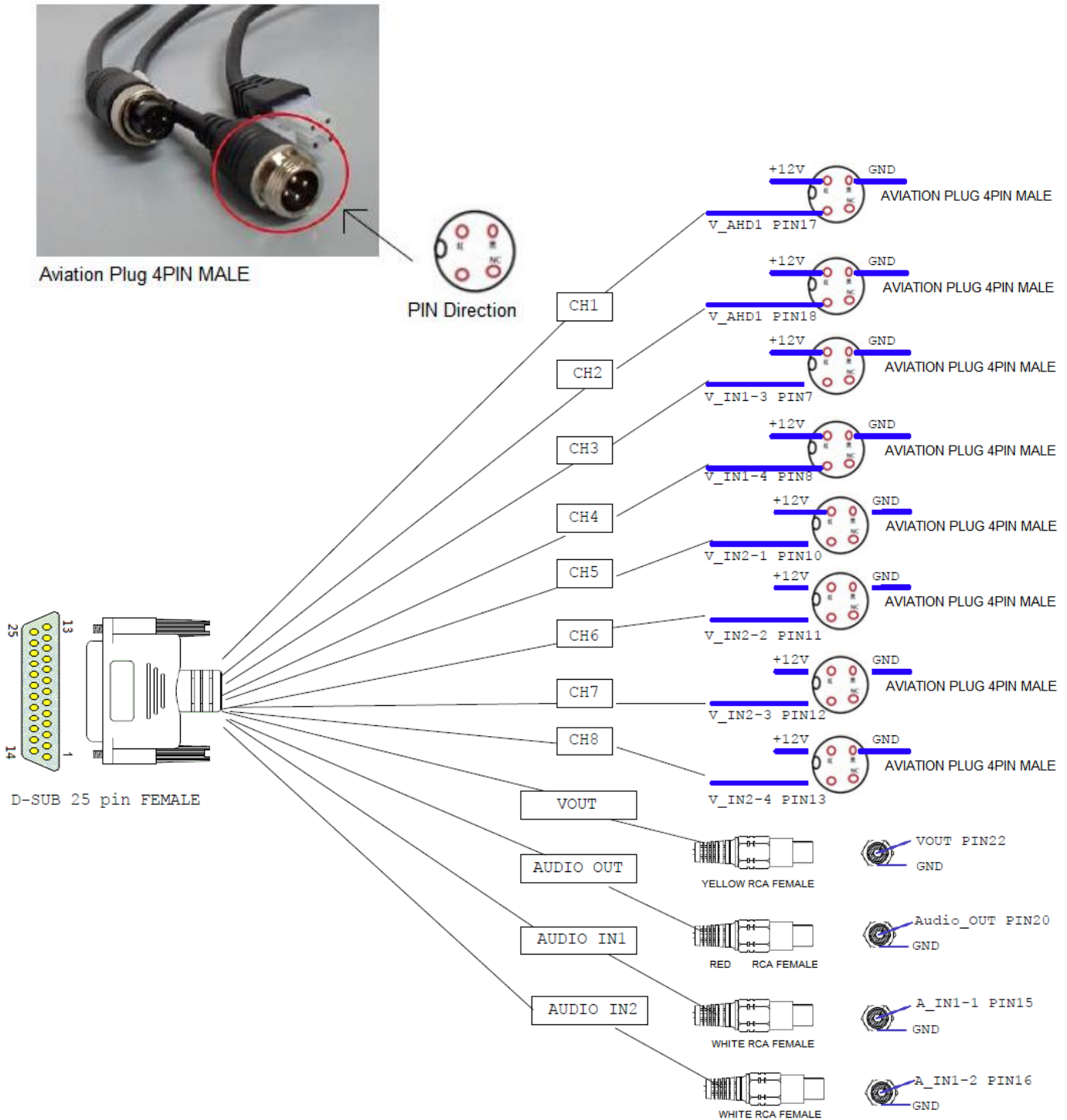


- For Grey line connection (12V IN)

We recommend that MDVR need to connect a 12V DC adapter, the camera power that need to comes from MDVR.

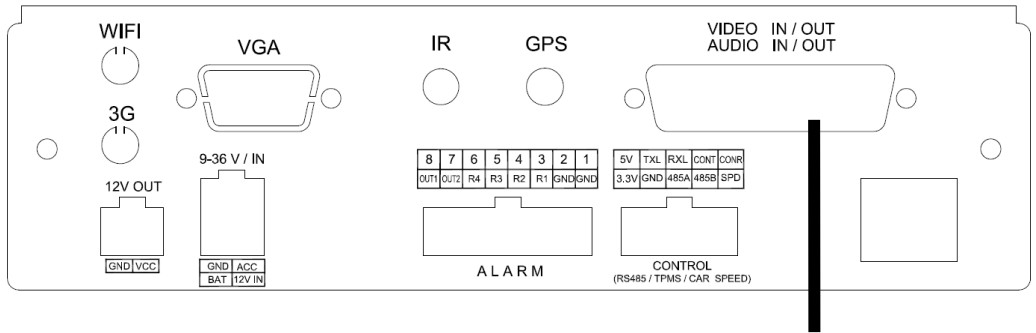
3.1.3 VIDEO IN/OUT

The video cable support aviation plug 4 PIN female camera.
 Before you connect camera please check the PIN define



D-SUB 25 PIN	NAME
1	+12V
2	+12V
3	+12V
4	+12V
5	V IN1-1
6	V IN1-2
7	V IN1-3
8	V IN1-4
9	GND
10	V IN2-1
11	V IN2-2
12	V IN2-3
13	V IN2-4
14	GND
15	A IN1-1
16	A IN1-2
17	V AHD1
18	V_AHD2
19	GND
20	Audio OUT
21	GND
22	VOUT
23	
24	GND
25	GND

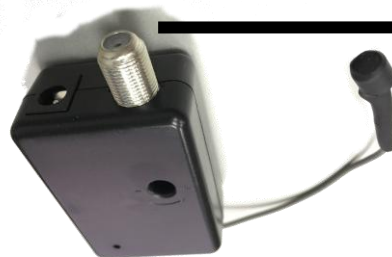
3.1.4 MICROPHONE



2.1 mm DC jack (12V DC)



F connector(male) –
RCA(male)



Microphone

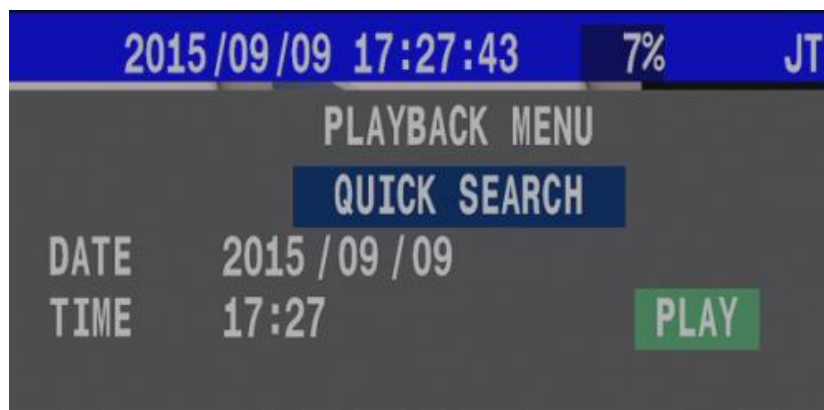
4. Function Settings

4.1 PLAYBACK

The “PLAYBACK” menu has 4 kinds of sub-modes for user's to choose (quick search · event search · time search and backup). If user wants to skip viewing the playback video just press the MENU button. That will make the system go back to previous page where the user has made the selection. The user can re-select the other recorded options to proceed with the playback.

4.1.1 QUICK SEARCH

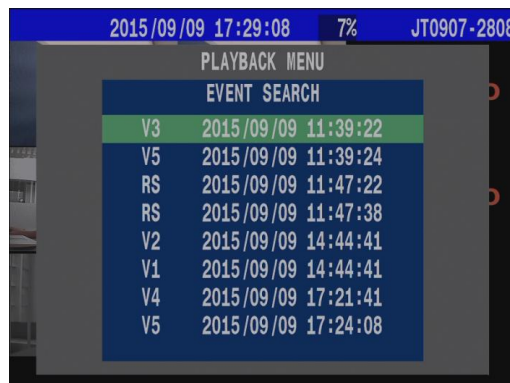
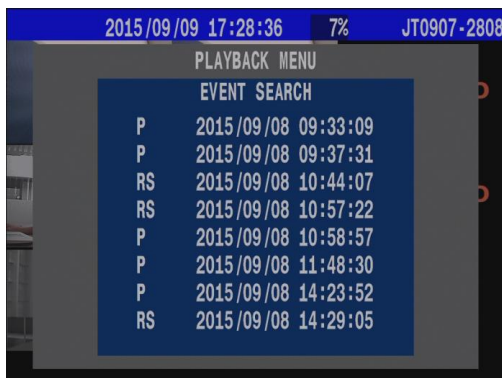
The user can directly select the date (YY/MM/DD) and time (HR: MINS) and then press PLAY for the playback. Use the “ENTER” button and “DIRECTION” button to move the cursor to select date and time for the playback of the selected recording. To start the playback selection, press the “ENTER” button. Press the “MENU” button to exit playback.



4.1.2 EVENT SEARCH

When the vehicle engine has switched on, the system would start the recording function automatically. The event's occurrence is displayed along with the date and time detail for the user's convenience in the playback menu option.

In the event search function, the user can see all the system recorded events list. The user can select the event using the up and down direction button or pressing the right and left button to change pages. After selection, press enter to view the recorded video event.

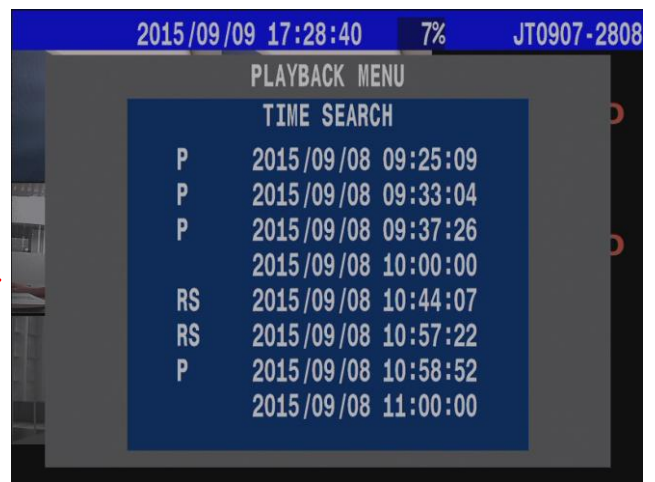
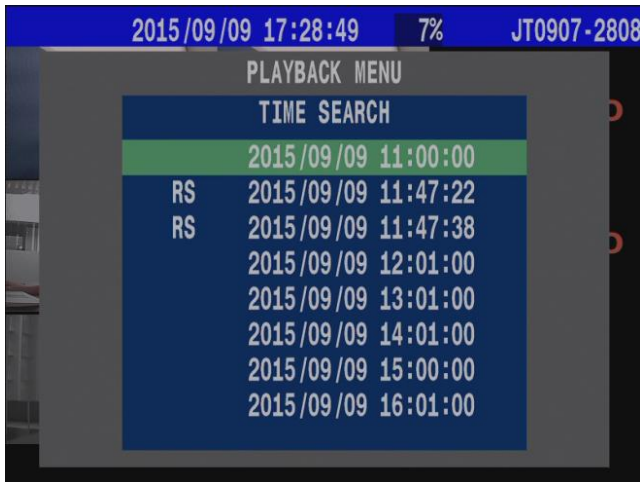


Event Search Playback Code Name Illustration		
Item	Code Name	Explanation
1	P	Power On
2	O	Power Off
3	F	HDD Format
4	T	Unusual Tire pressure detected
5	C	Driving overspeed
6	Gn	G Sensor , n=Direction(x,y,z)
7	Vn	Video Loss , n=Channel
8	An	Alarm is triggered , n=Alarm In
9	Rn	Relay Acutation , n=Channel
10	J	System's Time Adjusted
11	RS	Video resolution adjustment

4.1.3 TIME SEARCH

The Function for the Time search is different from that of the Quick search. In quick search, the user directly inputs the known Date and time for playback option. While in time search setting, whenever the car engine starts, the system automatically starts recording after 30 seconds. This is set as the starting recording time point (code name P). After reaching the integral point of each hour, the system will automatically set up an hourly time point (no code name) making it convenient for data search and video playback.

Select the Time Search option and press ENTER. The list of all the system recorded videos will be displayed. Use the Left and Right direction button to flip pages or use the up and down direction button to select the system recorded video files in the list. After selection, press enter to start the playback function.



4.1.4 BACKUP

Plug in USB drive to MDVR then make sure **USB** icon change color to blue, this mean the system already detected the USB drive.

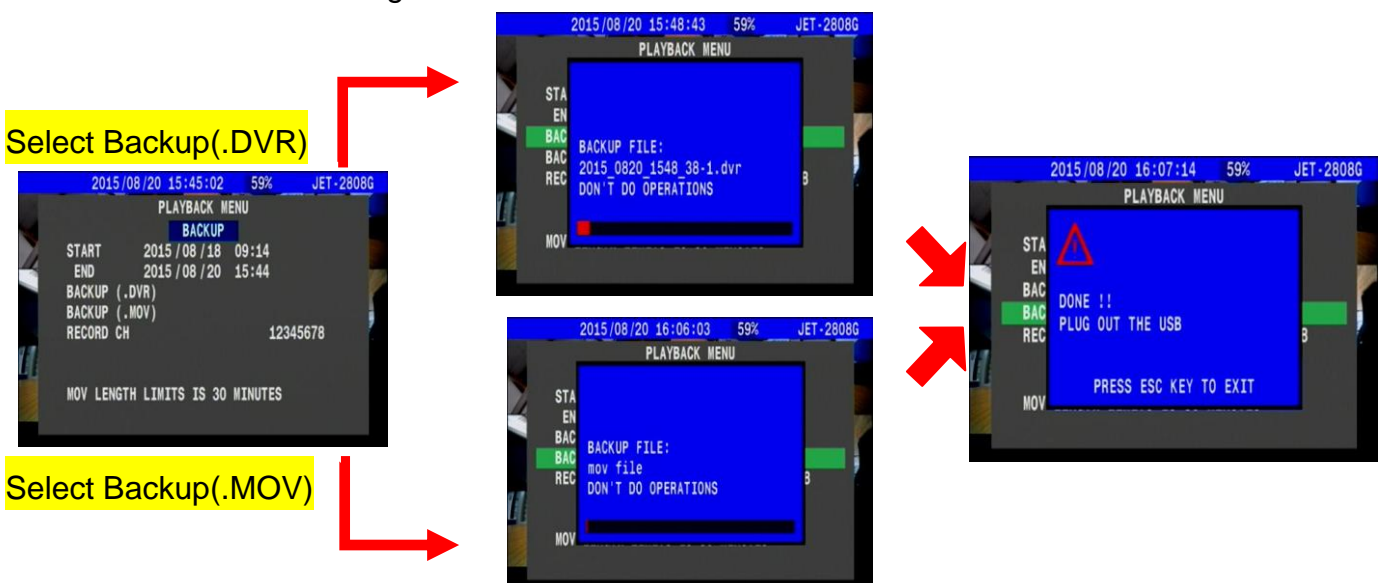
On **PLAYBACK MENU**, To implement of the followings steps :

1. Select the section with recorded time.
2. Select Video channel.
3. Select backup option (**.DVR** or **.MOV**) and press **ENTER** to execute back up.

Backup (**.DVR**) : The backup file must be played by private media player.

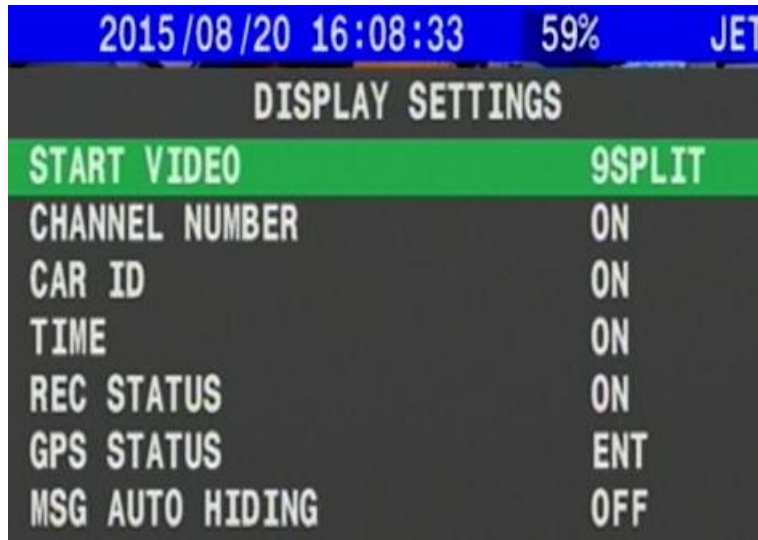
Backup (**.MOV**) : The backup file can be played by normal media player
(such as Quicktime \ KMplayer....)

Note : The **.MOV** data length must be less than 30 minutes.



When the Back up has finished, the system will show a message box that reminds users to unplugged the USB drive from MDVR.

4.2 DISPLAY



Screen Display illustration		
Item	Name	Explanation
1	Start Video	When the MDVR boot up, main screen will show a particular split frame that in accordance with the settings
2	Channel Number	Show the Camera's channel number , Select On or Off
3	CAR ID	Shows the Car's Licence plate number , Select On or Off
4	Time	Shows the System's Date and Time , Select On or Off
5	REC Status	Shows the Video current recording percentage.
6	GPS Status	GPS Antenna connection then system will show the current GPS status information.

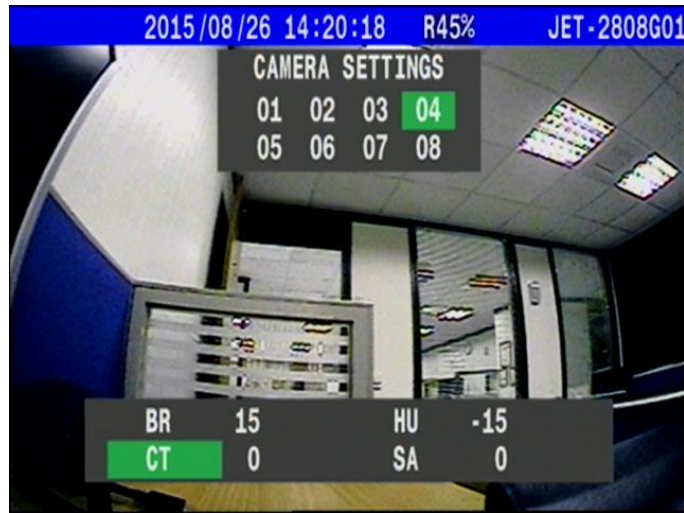
the GPS will show the current operating state. To operate this setting, use the Up and Down Direction button to select the required function and Left and Right button to adjust the function.

4.3 CAMERA

The main function for this setting is to let the user adjust the specific detail of every single camera image. The main adjustments the user can set include Brightness (**BR**), Hue (**HU**), Contrast (**CT**) or Shade (**SA**).

Press the left and right direction button to select the channel which needs to be adjusted.

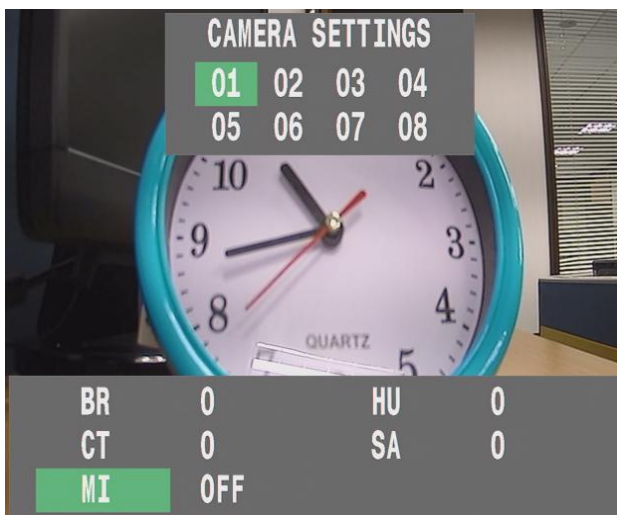
Press **Enter** to adjust video with selected channel.



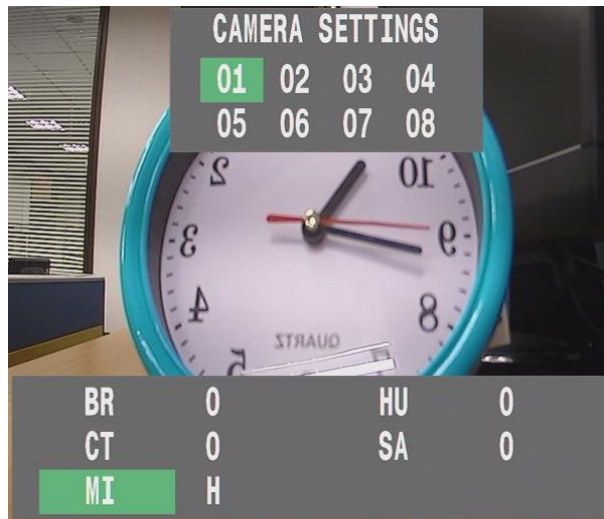
4.3.1 Flip

The Flip feature lets you turn the image upside down.

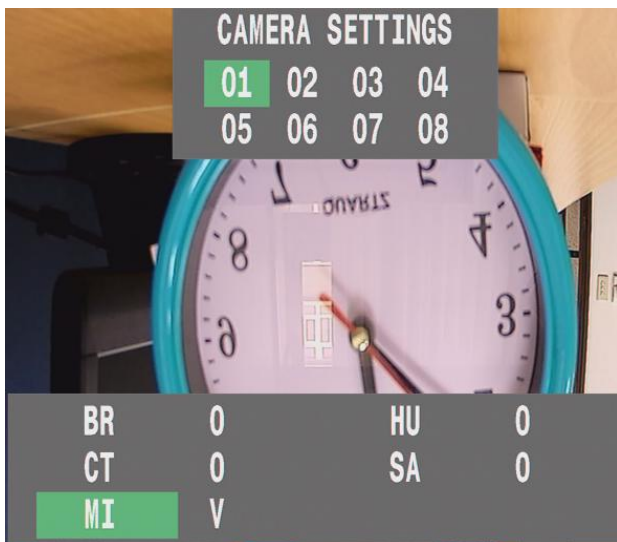
This is useful if you have your camera mounted upside down on a ceiling and do not want to rotate it physically.



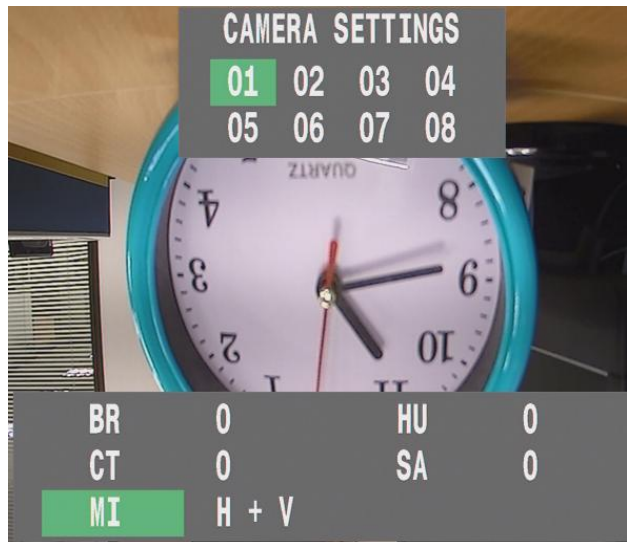
* Normal



* Mirro ---- >> H



* Mirro ---- >> V

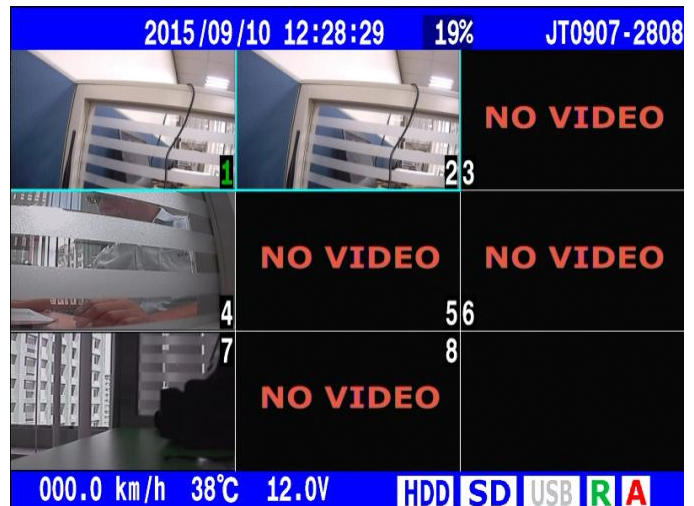
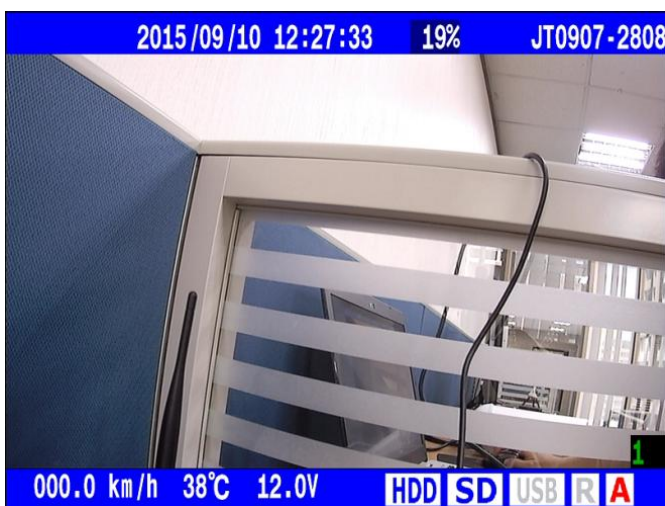


* Mirro ---- >> H + V

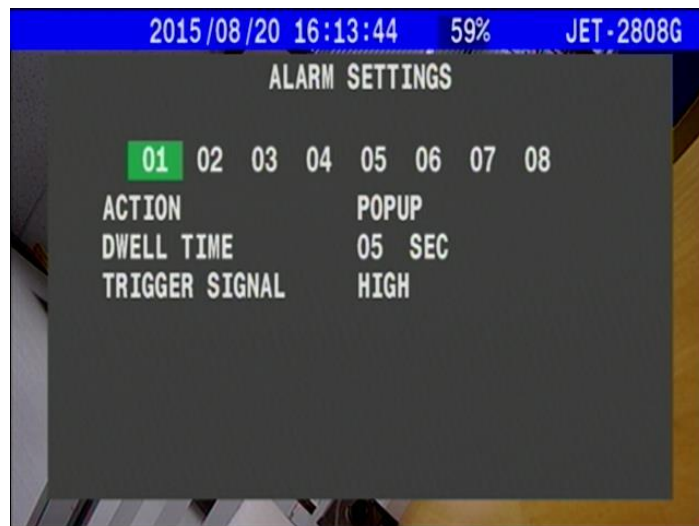
4.4 ALARM

The main function for the alarm setting is used on MDVR combining external detection equipment, the back panel " alarm in "port 1 、 2 、 3 、 4... were to be associated with ALARM SETTINGS 01 、 02 、 03 、 04.... Item.

- **ACTION / POPUP** : That were to be associated with Camera channel simultaneously.
Ex: ALARM SETTINGS " 01 " -- >> " POPUP " ; when " 01 " alarm trigger, then CH01 video will show on screen.
 - **ACTION / OUT1 (OUT2)** : That were to be associated with Alarm signal output simultaneously.
Ex: ALARM SETTINGS " 01 " -- >> " OUT1 " ; when " 01 " alarm trigger, then system will pass signal to external equipment (such as Warning Light or Door switch) via "Alarm OUT1" port.
- * When Alarm in event trigger has occur, Alarm icon will swapped color to Red on main screen.
* Then Alarm out event trigger has occur, Relay icon will swapped color to Green on main screen.



- **TRIGGER SIGNAL / HIGH** : That mean Alarm trigger by HIGH active voltage.
- **TRIGGER SIGNAL / LOW** : That mean Alarm trigger by LOW active voltage

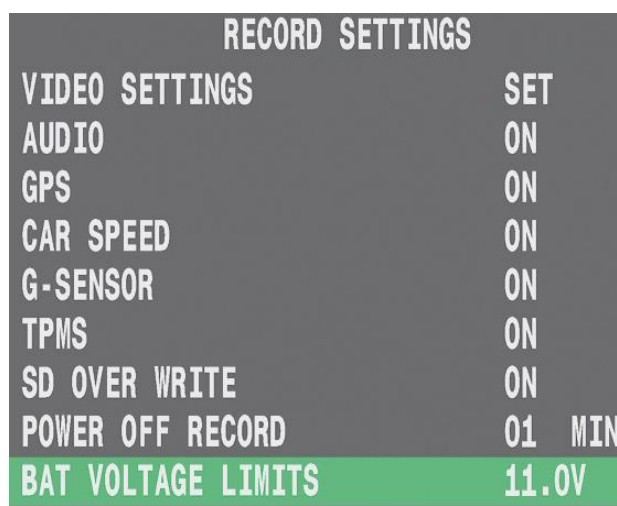


ALARM SETTINGS illustration

Item	Name	Explanation
1	ACTION	At Alarm trigger, system provide Action settings, The optioned object : POPUP 、 BEEP 、 OUT1 、 OUT2... etc.
2	DWELL TIME	The dwelling time for each alarm ring can be set as from 5 ~ 60 seconds or keep when remain active.
3	TRIGGER SIGNAL	Setup triggered of external alarm voltage (depend on <u>HIGH</u> active / <u>LOW</u> active).

4.5 RECORD

The main function for the record setting is to select either ON or OFF for the information of the various functions like Audio, GPS, Car Speed, G-Sensor, TPMS and SD overwrite during the recording stage.

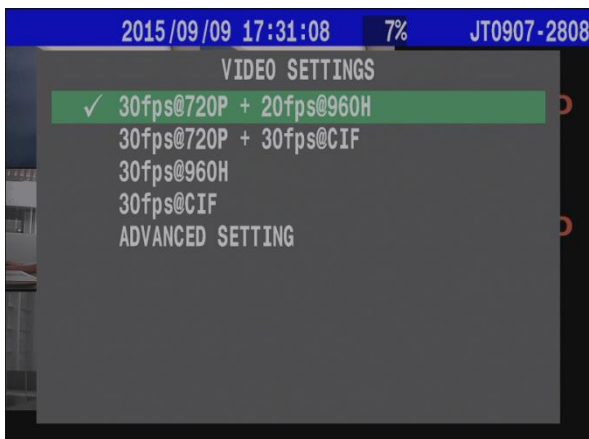


RECORD SETTINGS

ITEM	Name	Explanation
1	VIDEO SETTINGS	The system provides Multiple types of resolution to select. (CIF 、 Half -D1 、 D1 、 960H 、 720P).
2	AUDIO	Setting ON / OFF feature with record audio from external audio input device (microphone).
3	GPS	Setting ON / OFF feature with record data from GPS.
4	CAR SPEED	Setting ON / OFF feature with record data from CAR SPEED.
5	G SENSOR	Setting ON / OFF feature with record data from G SENSOR.
6	TPMS	Setting ON / OFF feature with record data from TPMS feature.
7	SD OVER WRITE	The SD card capacity overload, then system will overwrite old data.
8	POWER OFF RECORD	After vehicle executes ACC off, System would keep record.
9	BAT VOLTAGE LIMITS	If system detecte voltage is less than the settings, that would shutdown.

4.5.1 ENCODE SETTINGS

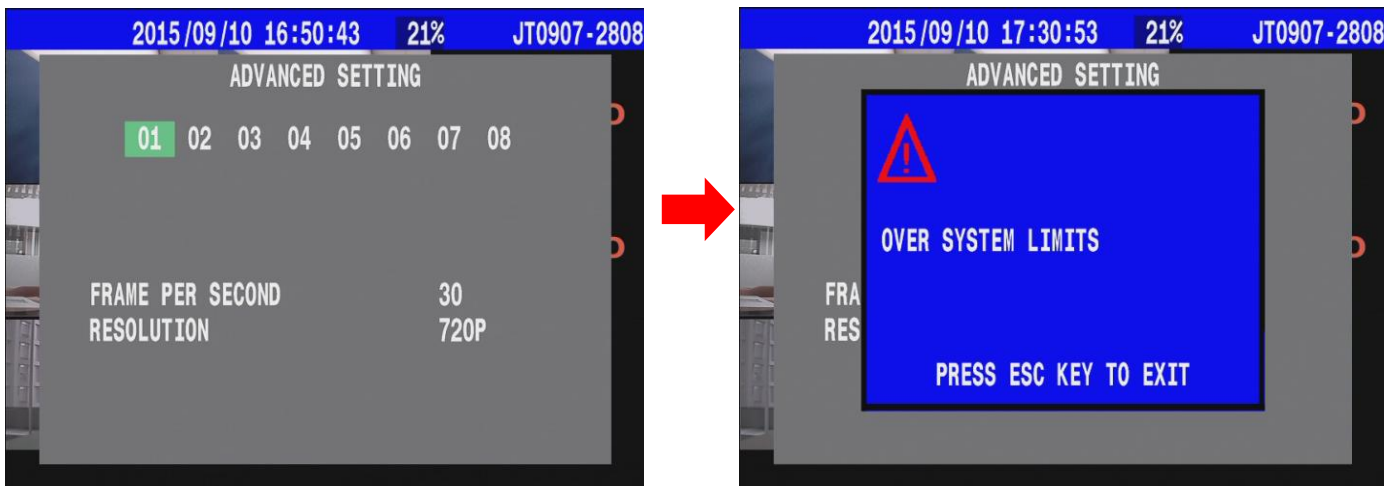
System provides 4 kind of default settings of Resolution and fps and advanced setting. A user could adjust it according to actual situations.



On **ADVANCED SETTING**, user can set each video channel by oneself.

When you apply the settings and exit resolution stage, system will show record time for new resolution.

But if your settings overload the storage capacities, system will appear a warning screen and reject it. ◦



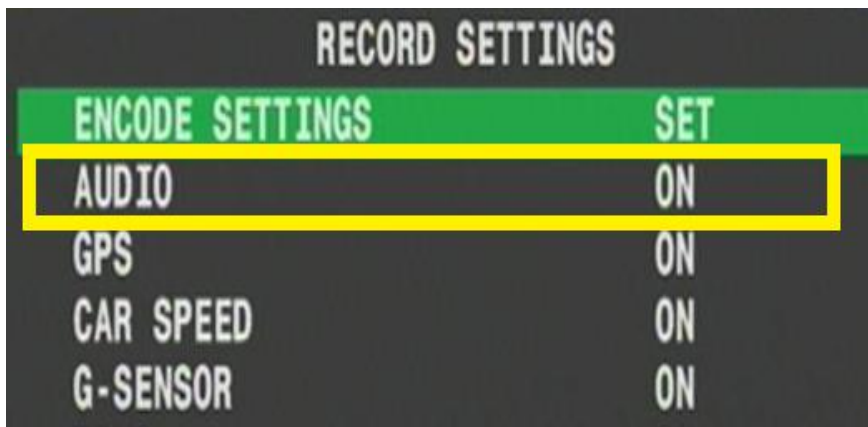
Note !

System CH1 · CH2 support Signal with AHD 720P camera and 720P resolution record, But if VIDEO SETTINGS select 960H or CIF...etc (non-720P camera) even MDVR install AHD Camera, the recorded resolution will still 960H....

4.5.2 AUDIO

System supports 2 channel audio input.

Before system executes audio record please make sure audio CH1/ CH2 cable are both already connected your microphone.



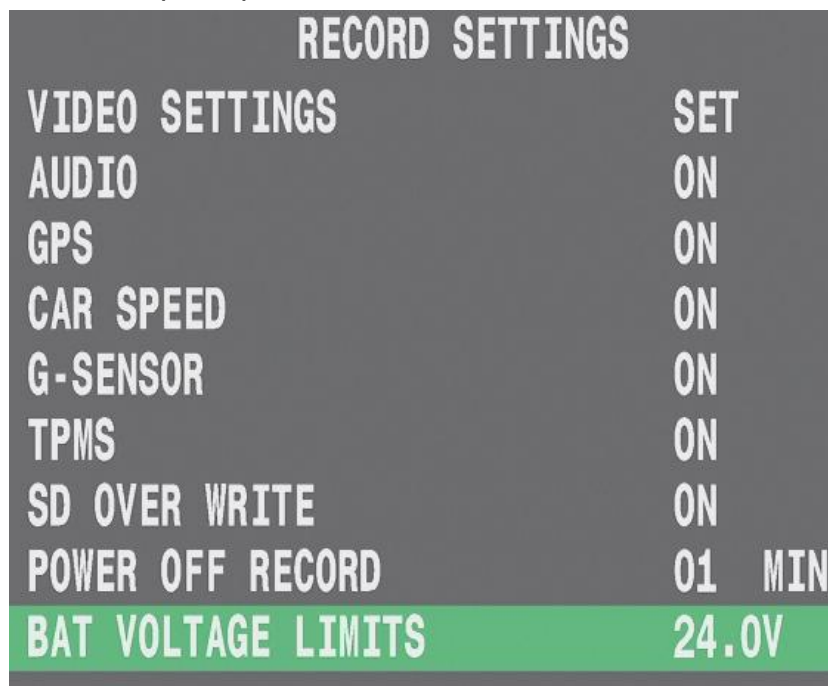
4.5.3 POWER OFF RECORD

After vehicle switch to ACC off situation, System would follow the settings to keep record.

4.5.4 BAT VOLTAGE LIMITS

The System provides low battery voltage protected on ACC off stage, user can setting limit value 11.0 ~ 24.0 V.

After POWER OFF RECORD executed, once system detect the input voltage is lower than settings, the MDVR would suspend power off record function then shutdown.

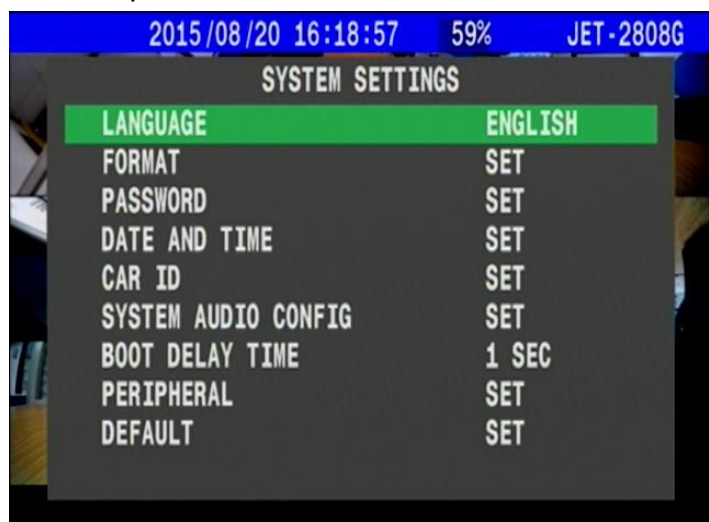


A screenshot of a menu titled "RECORD SETTINGS" with a dark grey background and white text. The menu items and their values are as follows:

Setting	Value
VIDEO SETTINGS	SET
AUDIO	ON
GPS	ON
CAR SPEED	ON
G-SENSOR	ON
TPMS	ON
SD OVER WRITE	ON
POWER OFF RECORD	01 MIN
BAT VOLTAGE LIMITS	24.0V

4.6 SYSTEM

The main function for the System Setting is to set the System's Language, Time, Password Protection, Disk management (format), External Peripherals ...etc.



A screenshot of a menu titled "SYSTEM SETTINGS" with a dark grey background and white text. At the top, there is a status bar showing "2015/08/20 16:18:57 59% JET-2808G". The menu items and their values are as follows:

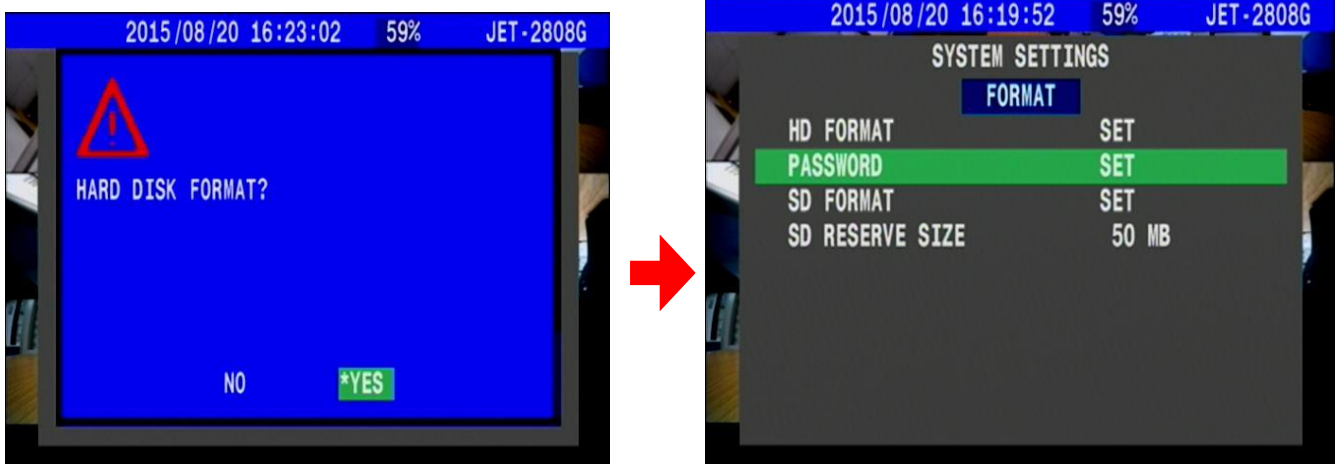
Setting	Value
LANGUAGE	ENGLISH
FORMAT	SET
PASSWORD	SET
DATE AND TIME	SET
CAR ID	SET
SYSTEM AUDIO CONFIG	SET
BOOT DELAY TIME	1 SEC
PERIPHERAL	SET
DEFAULT	SET

4.6.1 LANGUAGE

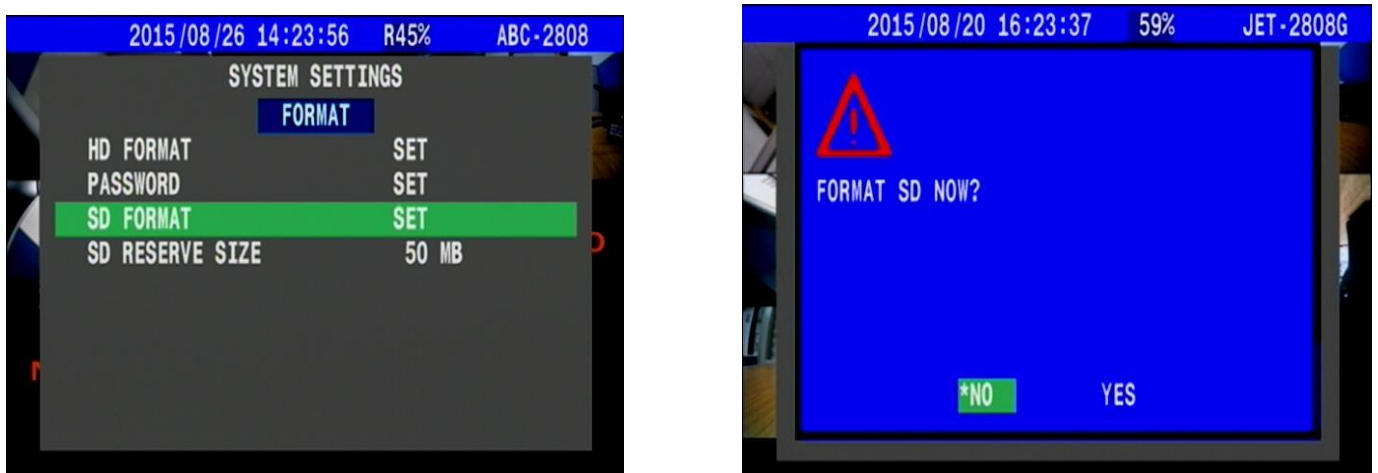
Currently, the system supports seven kinds of language option : Traditional Chinese 、 English 、 Russian 、 Simplified Chinese 、 Japanese 、 French 、 Spanish.

4.6.2 FORMAT

In the Hard Disk “FORMAT” setting mode, there are HDD format and Password setting options. When you select the Format setting, the screen will display an alarm message “Hard Disk Format?” select “Yes” and system will start the hard disk format process and clear all previously stored information. Be careful when operating this function.



In the **SD FORMAT** setting mode, when you select it, the screen will display an alarm message “Format SD NOW ? ” select “Yes” and system will start the SD card format process and clear all previously stored information. Be careful when operating this function.

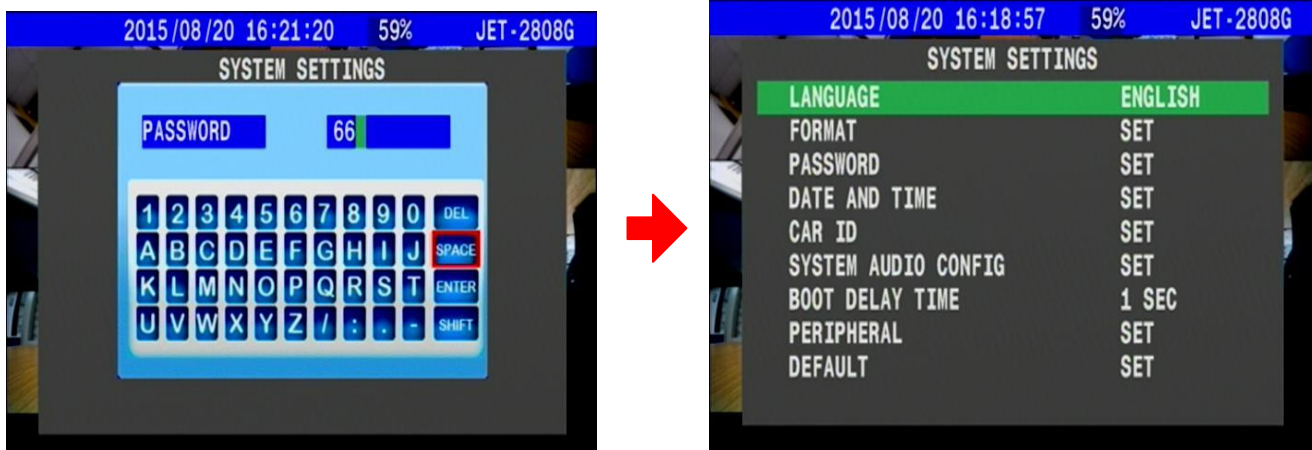


We would recommend setting the password function so as to protect HDD data.

To Enable the password function, the system will request 1~6 characters (combine operation of either uppercase letter or number).

Once the password is verified and passed, the user does not want to format the hard drive.

Please select “No” and the system will exit and move back to the previous settings page.



4.6.3 PASSWORD

The main function for the password is to increase the DVR's security. After setting the password, the user can return to the current video image.

When password function was enable then user can press the MENU button to enter the system setting page, the system will ask for the require password.

That were avoid people to malicious change the settings which resulting in data loss.

Password should be not more than 6 characters (Combination of either uppercase letters or numbers)

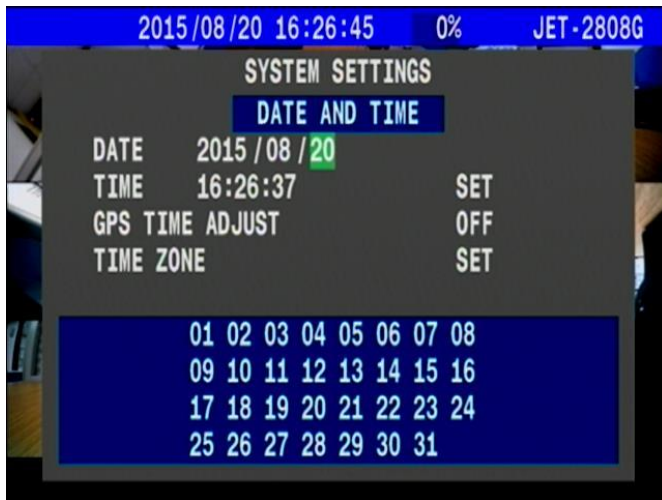


4.6.4 DATE AND TIME

The Date and Time setting function is to set up the system's date and time after the MDVR boot up.

The feature relates to the recorded data so when system switch on, please confirm it again.

System can also adjust time by manual setting 、GPS or Time zone.



4.6.5 CAR ID

System can display CAR ID on main screen that usually edit according to license plate.

This is helpful to video identify and Vehicle Management effectively

For CAR ID, the user can input a total of 11 characters (capital English letter and numerals).

Once you have input the car ID, press ENTER to apply.



4.6.6 SYSTEM AUDIO CONFIG

BUZZER

The DVR has a built-in buzzer. When the MDVR is switched on , the alarm is triggered , video loss or pressing button that the buzzer would beep sound.

The user can select to switch this function.

LIVE AUDIO

System support 2 ways audio input that connect microphone or other audio devices, this implement real time voice output via Audio out directly.

Audio out feature must connect speaker or other with voice out equipment to work.

User can select the audio source deliver voice to the audio out equipment from one of the CH1 Audio , CH2 Audio or Audio off.

- Also Users can use the remote controller to switch the sound output state.

ⓕ1 : CH01 Audio

ⓕ2 : CH02 Audio

ⓕ3 : Audio OFF.



VOICE ALARM

This is the DVR built-in voice alarm function. When an alarm event occurs, the DVR will send out a speech warning informing the user about the event. This alarm is sent out from the Audio Out port at the back panel. The user can either set the voice alert ON or OFF.

4.6.7 BOOT DELAY TIME

The main function for the boot delay time is to protect the DVR's components.

When Vehicle boot up, this would cause a voltage surge which might cause damage to the machine.

After the engine is switch on only when the vehicle is on to steady state and the MDVR can be boot , this avoid damage of voltage surge.



4.6.8 PERIPHERAL

The MDVR can select to be arranged with G sensor, TPMS - tire pressure monitoring system, car speed sensing peripheral equipments. The DVR can set to receive and record the peripheral equipments statistical data.



4.6.8.1 PTZ

The MDVR handles PTZ camera via RS-485, currently it supports PELCO-P / PELCO-D protocol setting, and also system can set per second transfer rate with transmission signal.

2015/06/24 13:33:49 R57% DV2808	
PTZ	
PROTOCOL	PELCO-P
BAUD RATE	9600
PTZ SPEED	2

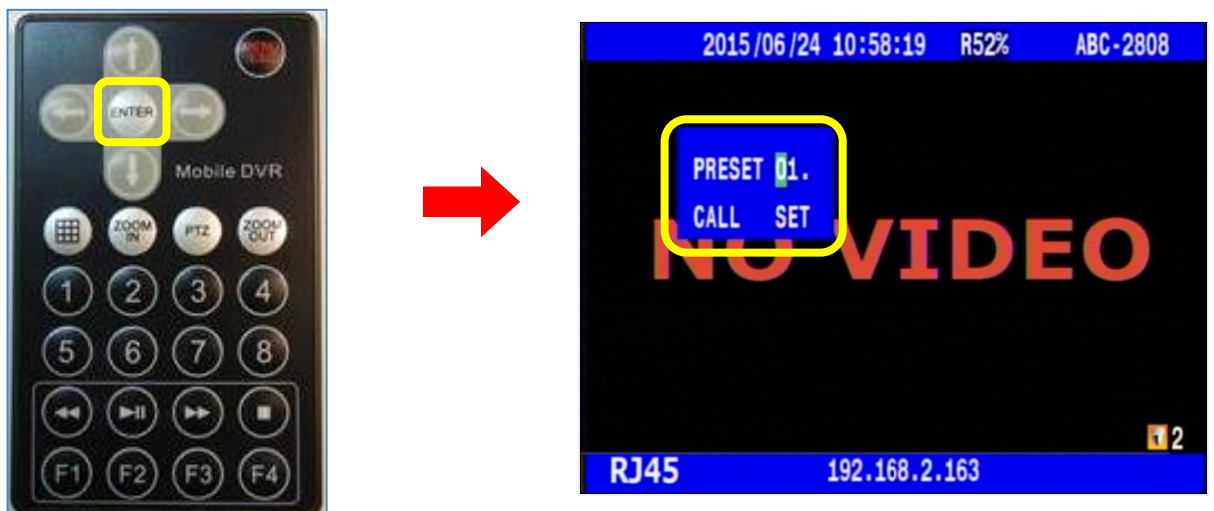
Operator Step:

After swap channel of PTZ to full screen, Press PTZ button on remote controller.

This mean system stays in PTZ mode, which can control it.

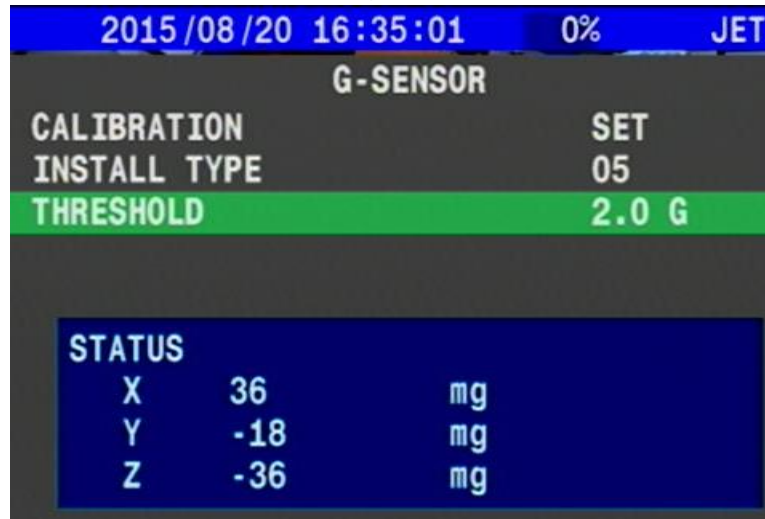


- System can control the PTZ Viewing direction via a remote controller's direction button. To press **ENTER** it can show settings UI for PTZ of origin location.



4.6.8.2 G sensor

The G-Sensor function is used to detect the vibrations generated in the moving vehicle. After the MDVR receives the sensor data along with the images, they are stored in the HDD. When the HDD is connected to a computer, the G-Sensor graphical image data is displayed in accordance to the stored information using the software included in the package.



Calibration :

To adjust the Install Type, please take a look at the 4 kinds of Installation Type photos shown for your reference in the next page.

Please find the photo which closely resembles the actual installation and press “SET” for confirmation.

Threshold :

When system receive data of overload from G sensor it will record event automatically.

G sensor status :

Gsensor would display Axial X 、 Y 、 Z status at once on screen.

G sensor type :

The system provides 12 selections for the various installed positions; please locate the photo below which best represents the actual installed position of the DVR. The correct install type should be selected, in order for the G-sensor to detect the correct statistical data.

The photos shown below are the different position types for the user’s reference.

Note: With the car head facing the front, please adjust the install type in accordance to the actual installed position.

Type 1



Type 2



Type 3



Type 12



Type 4



Type 11



Type 5



Type 10



Type 6



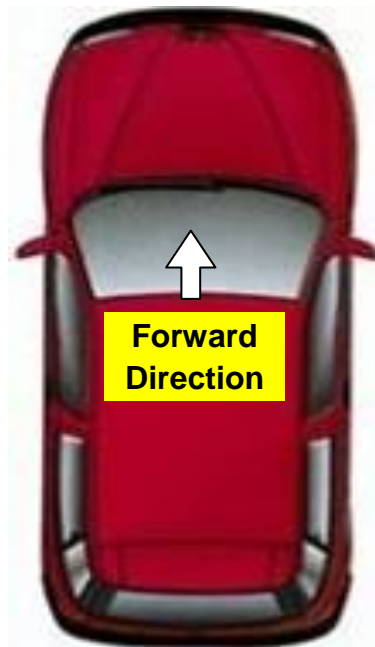
Type 9



Type 8



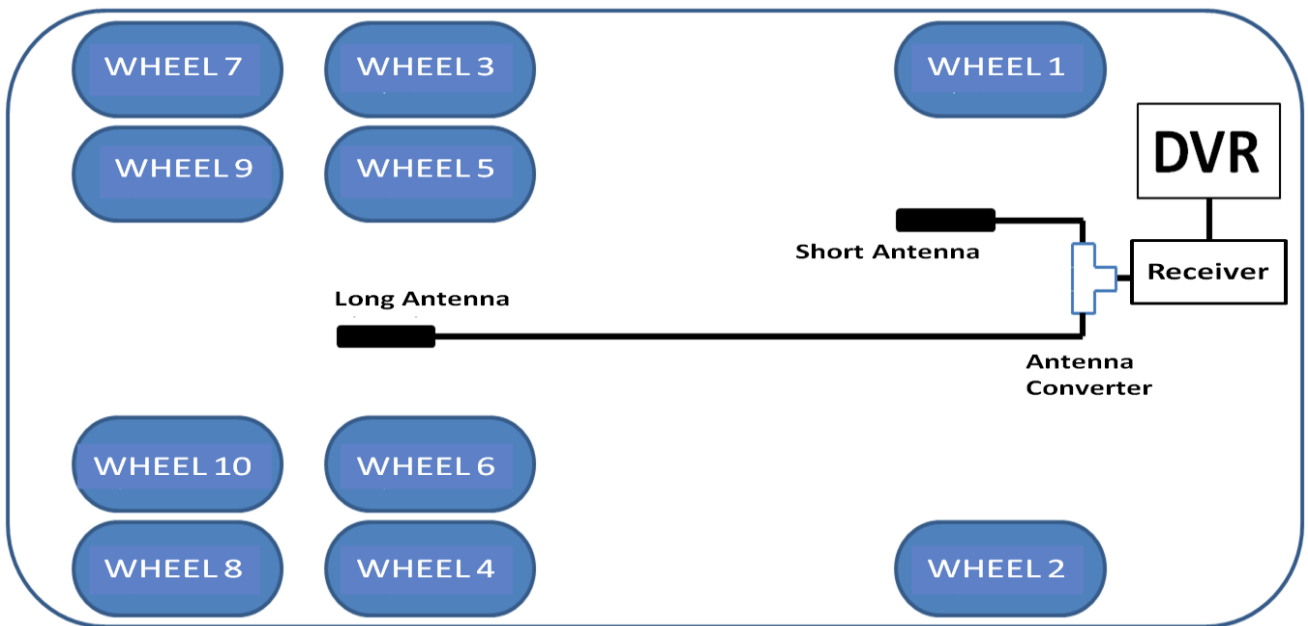
Type 7



4.6.8.3 TPMS (Optional)

Installing the TPMS is helpful to detect tire pressure and the system can set warning limits. When system receive signal with abnormal tire pressure, an audio message will be send to driver.

TPMS cable include (5V / TXL / RXL / GND) that receiver will be able to connect to 10 tire sensor then install diagram as following :



* Step of Install :

Install launcher with tire pressure.



Install receiver's Long and short antenna



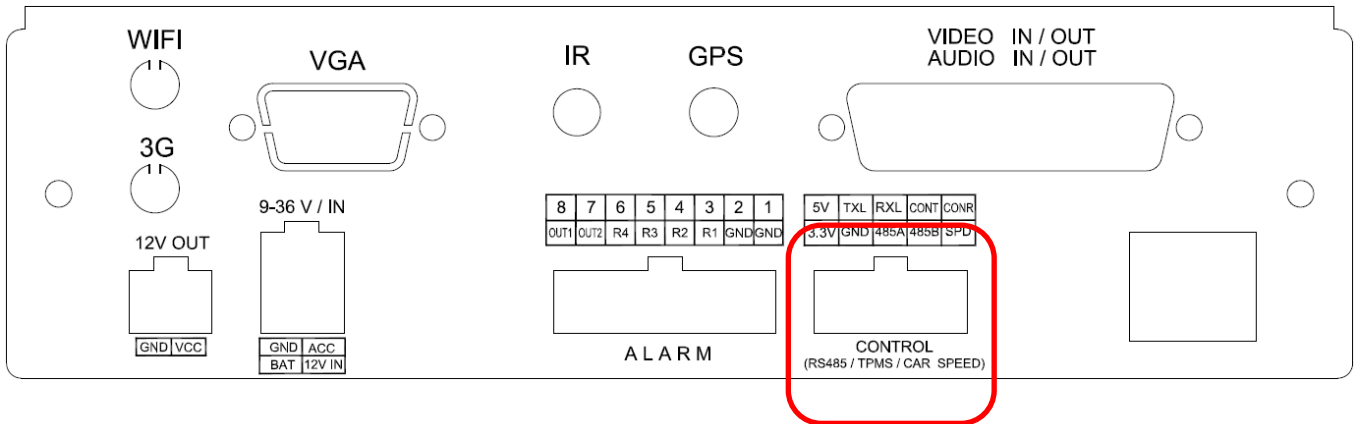
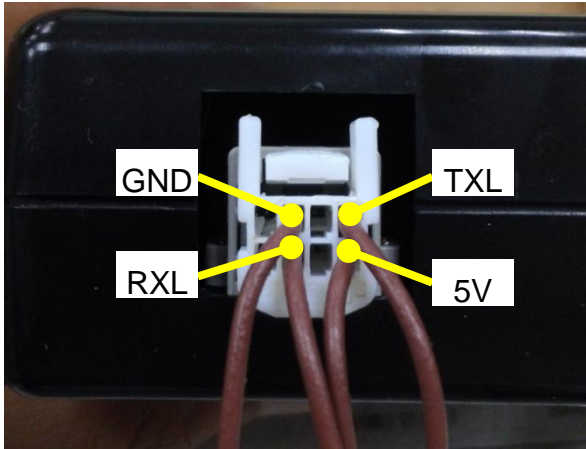
Another side of antenna that SMA connector to connect type of adaptors.



Connect antenna signal module.

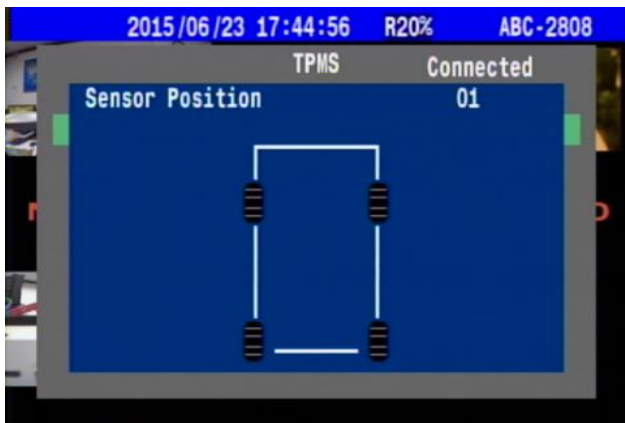
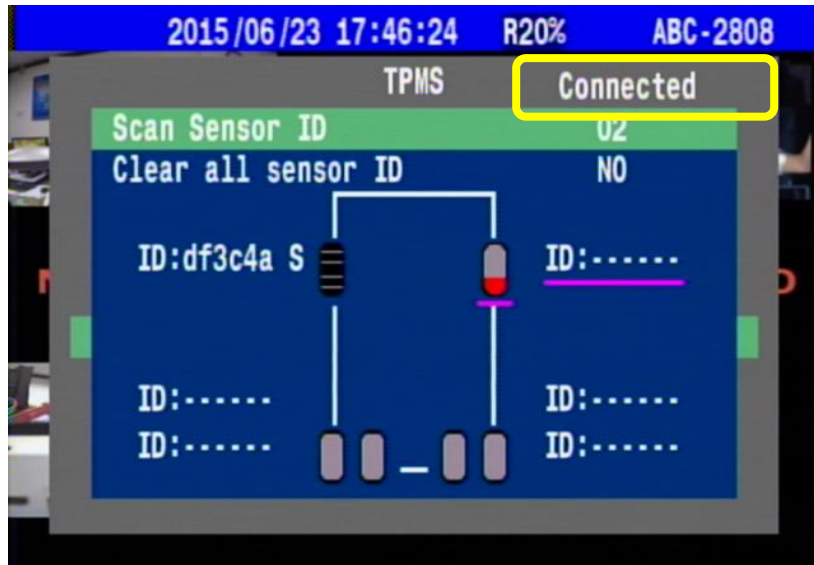


Tire pressure receive module with DVR sheet define as following :



Enter TPMS Settings page and make sure all is connected.

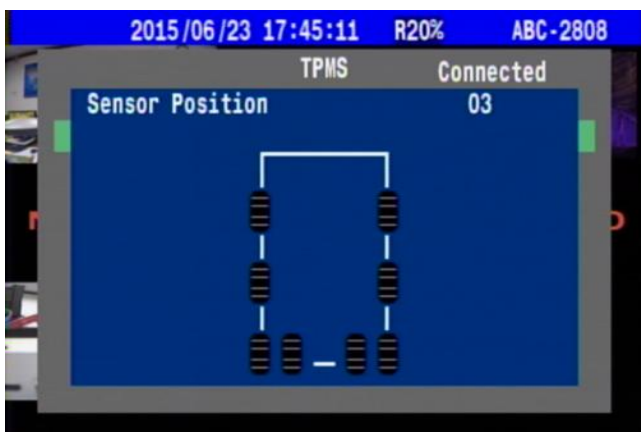
After check TPMS be connected, enter launcher setting page and select module of wheel numbers.



Mode 01 (4 Wheels)



Mode 02 (6 Wheels)



Mode 03 (8 Wheels)



Mode 04 (10 Wheels)

Single Wheel and double Wheel of event alarm :

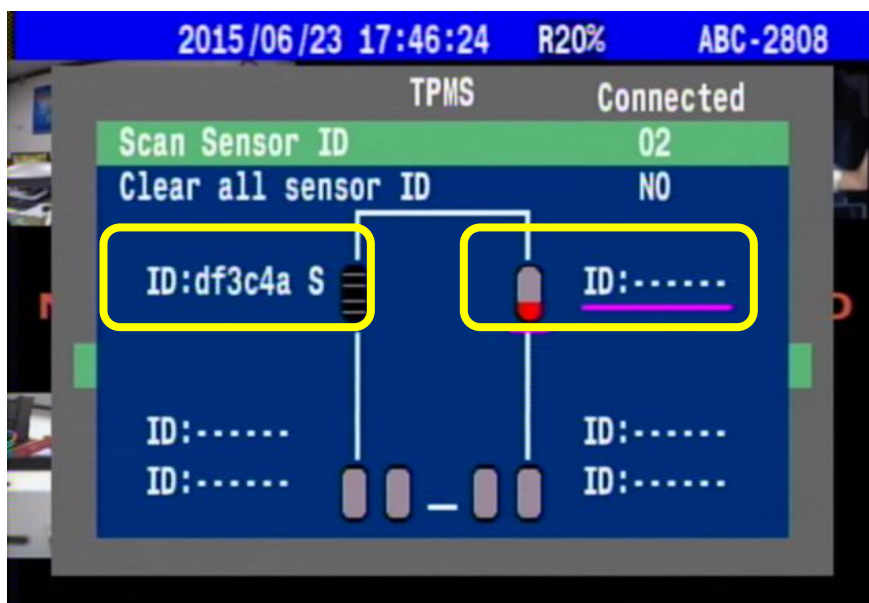


Low pressure Alarm








HIGH pressure Alarm

Over temperature Alarm

Launchers of reset to settings :



Alarm Windows Icon explain :

	Normal		No signal
	Pressure over HIGH		Did not receive data
	Pressure over Low		Low battery
	Temperature over High		

4.6.8.4 Car speed

This function is to detect the Car's speed. The accelerator speed cable can be connected to a Hertz device and it can instantly synchronise the records of the car's speed in the DVR. The car speed can also be detected from the in-built GPS receiver on the DVR. The user can set the maximum speed limit of the vehicle. Once when the vehicle overspeeds, the system will

automatically send out voice message notifying the driver of the condition and an event data record is also generated in order to facilitate the information's access by the user in future inquiries

CAR SPEED	
SPEED DEVICE	GPS
LINE TYPE	/2
DISPLAY UNIT	km
SPEED LIMIT	120 km/h

Speed Device

Select the speed device. It can either be a GPS device or speed line cable for the standard record.

Line Type

If you select the speed line, for the actual car speed reading you need to check the actual value /2 or /4 in accordance to the speed line device.

Display Unit

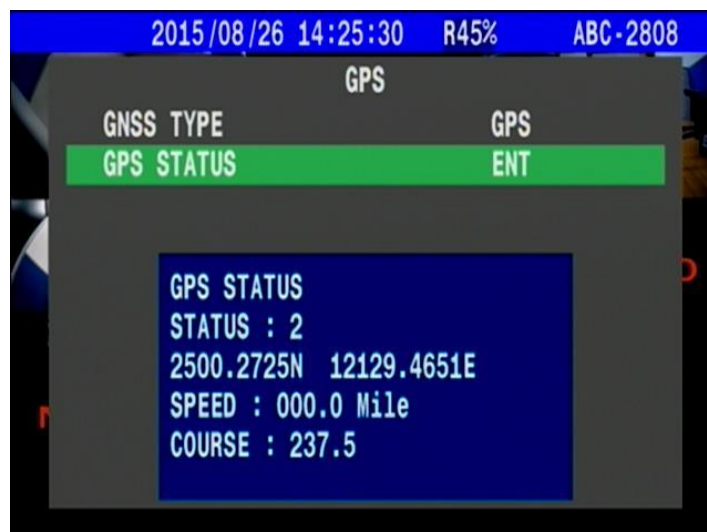
Km or mile can be chosen.

Speed Limit

Set the maximum speed limit, when overspeed the system will send voice messages notifying the driver.

4.6.8.5 GPS

The GPS function is used to log vehicle location and also support time adjustment by that. The MDVR has support "GPS" and "GLONASS" system then display real-time GPS information on monitor.



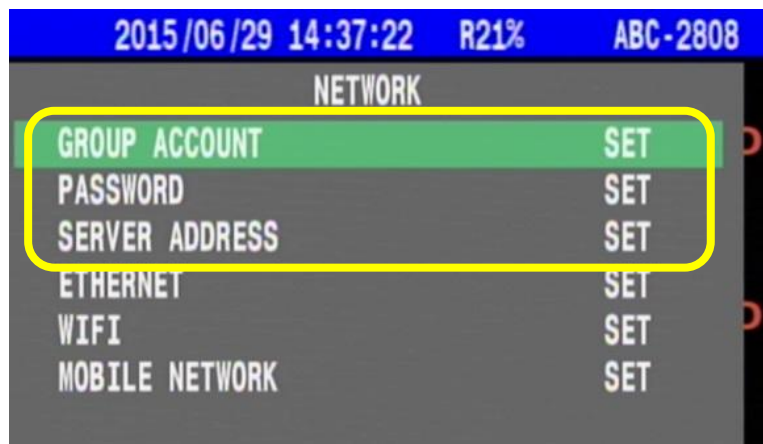
4.6.8.6 Network

MDVR supports network mode : Ethernet 、 WIFI 、 3.75G 、 4G.

- **ACCOUNT SETTINGS** :

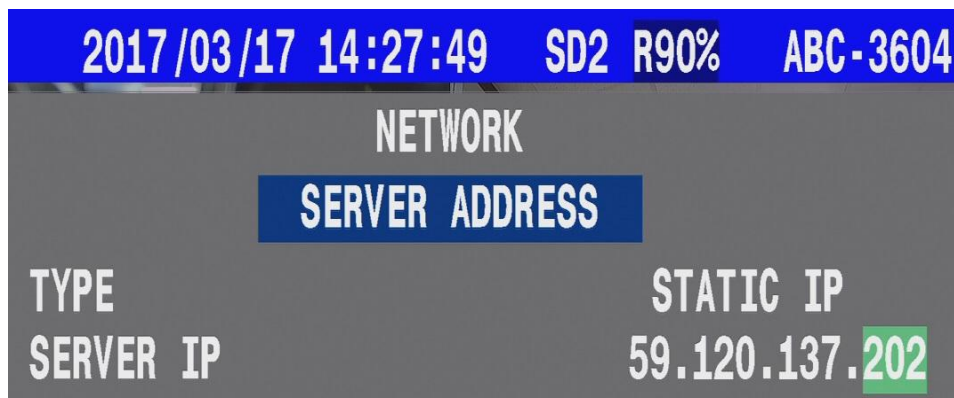
There is used to access VMS CarGisPlayer with safety certification, user need to get SERVER ADDRESS (static ip or domain name) from ISP.

The MDVR parameters of GROUP ACCOUNT / PASSWORD must same with VMS CarGisPlayer settings.



- **SERVER ADDRESS** :

* TYPE: STATIC IP

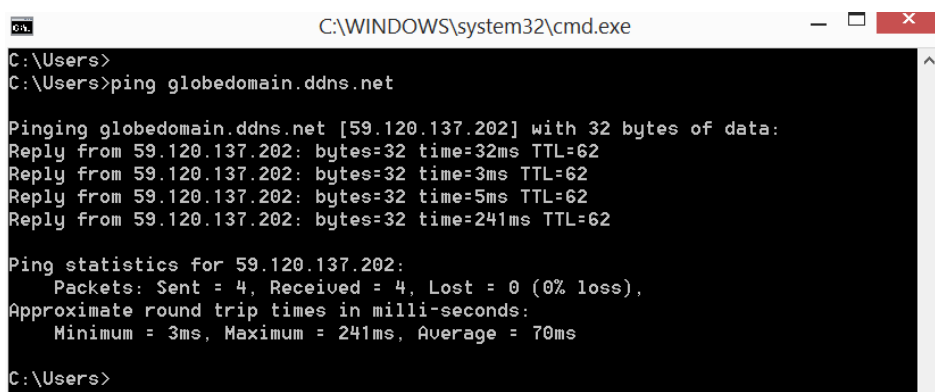


* TYPE: DOMAIN NAME

Before setup server IP-address by Domain name type, please register a domain name account on your DDNS server (ex. <https://www.noip.com/>) then to make sure the domain name is available.

P.S. User can use 2 method to make sure the availability of Domain name.

1. ping command :



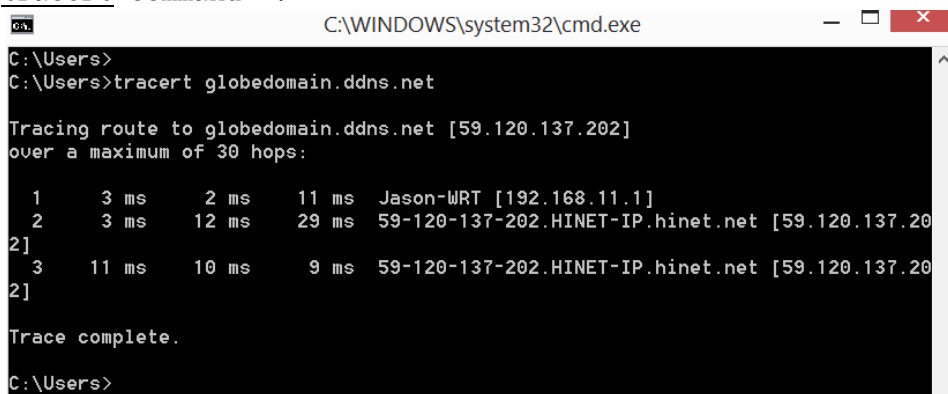
```
C:\WINDOWS\system32\cmd.exe
C:\Users>
C:\Users>ping globedomain.ddns.net

Pinging globedomain.ddns.net [59.120.137.202] with 32 bytes of data:
Reply from 59.120.137.202: bytes=32 time=32ms TTL=62
Reply from 59.120.137.202: bytes=32 time=3ms TTL=62
Reply from 59.120.137.202: bytes=32 time=5ms TTL=62
Reply from 59.120.137.202: bytes=32 time=241ms TTL=62

Ping statistics for 59.120.137.202:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 3ms, Maximum = 241ms, Average = 70ms

C:\Users>
```

2. tracert command :



```
C:\WINDOWS\system32\cmd.exe
C:\Users>
C:\Users>tracert globedomain.ddns.net

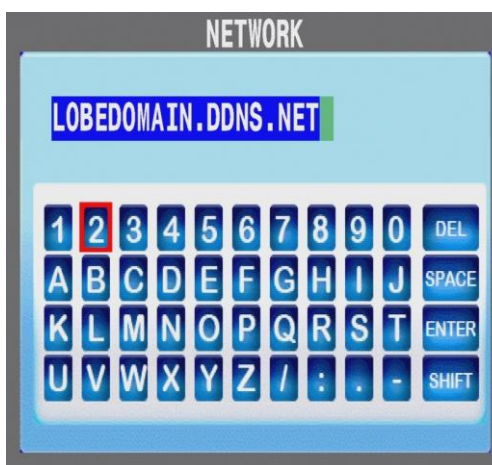
Tracing route to globedomain.ddns.net [59.120.137.202]
over a maximum of 30 hops:

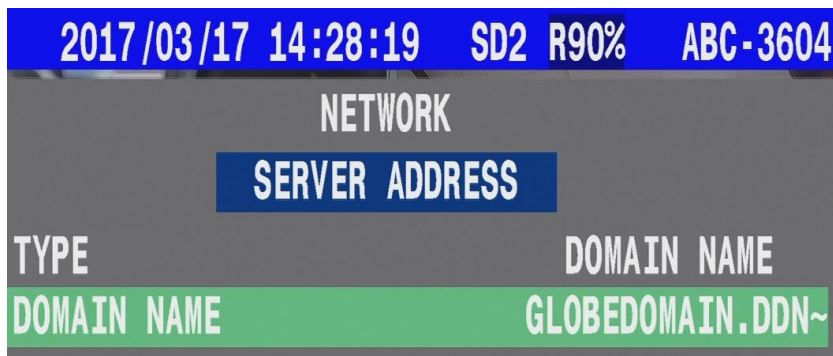
  0  3 ms   2 ms   11 ms  Jason-MRT [192.168.11.1]
  1  3 ms   12 ms  29 ms  59-120-137-202.HINET-IP.hinet.net [59.120.137.202]
  2  11 ms  10 ms   9 ms  59-120-137-202.HINET-IP.hinet.net [59.120.137.202]

Trace complete.

C:\Users>
```

- Entry your domain name
Ex. globedomain.ddns.net



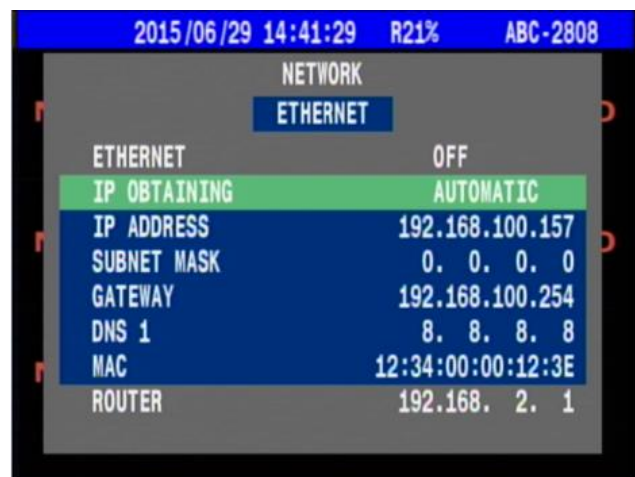
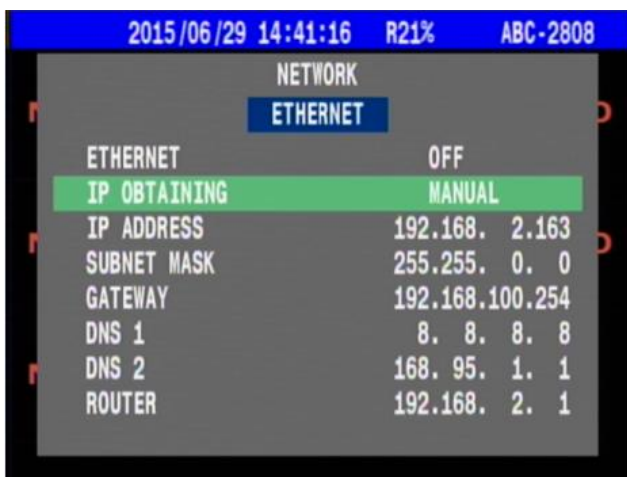


- After the setting complete, user can back to main screen then check status with VMS CarGisPlayer linking. If status bar has display server icon (as yellow frame shown) that means VMS connect successfully.



- **ETHERNET :**

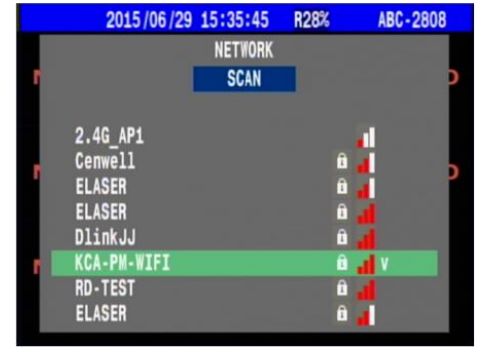
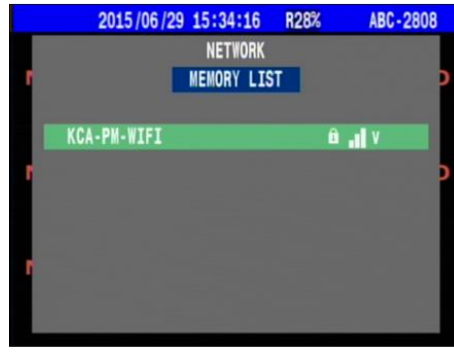
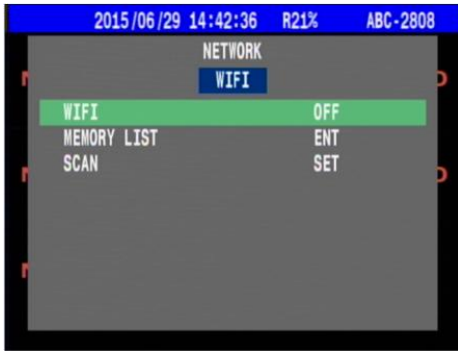
Using RJ-45 port to connect Physical link select manual or automatic setting IP address.



- **WIFI :**

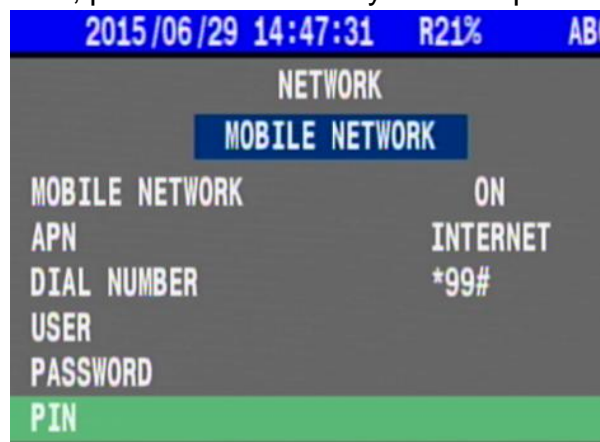
Via WIFI module of Build-in to connect wireless.

Once the connection successful, system will record AP server information to make next connection easilly.



● **MOBILE NETWORK :**

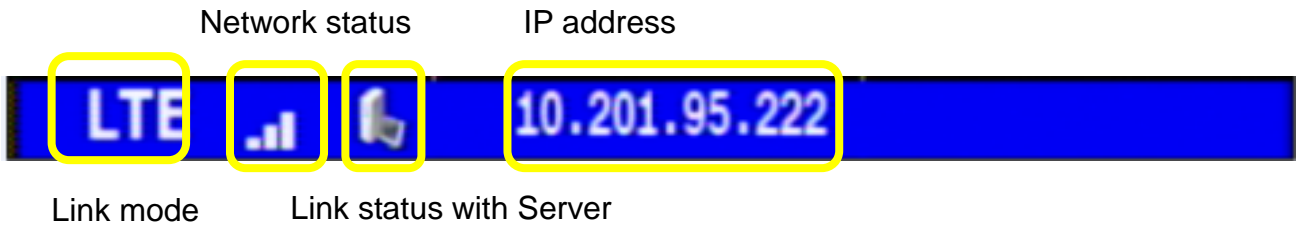
Setting parameters of ISP (such as APN 、 DIAL NUMBER 、 PIN... tc) .
 When Sim card does installed, please make sure system keep turn off.



● **4G/LTE Bandwidth Scope -**

Applicable Area	Taiwan	America / Europe	China
Bandwidth	FDD -LTE B1/B2/B3/B5/B7/B8/B28	FDD -LTE B1/B2/B3/B5/B7/B8/B20	FDD -LTE B1/B3/B5/B8
	TDD-LTE B38/B39/B40/B41	TDD-LTE B38/B40	TDD-LTE B38/B39/B40/B41
	HSPA+/WCDMA 900/850/1800/1900/2100MHz	HSPA+/WCDMA 900/850/1800/1900/2100MHz	HSPA+/WCDMA 900/850/2100MHz
	GSM/GPRS/EDGE 850/900/1800/1900MHz	GSM/GPRS/EDGE 850/900/1800/1900MHz	GSM/GPRS/EDGE 850/900/1800MHz
	Dual-and TD-SCDMA B34/B39		Dual-and TD-SCDMA B34/B39
			EVDO/CDMA:BC0
Certificate	ROHS / CTA / CCC / CE / FCC		

● When Ethernet had connected, System would display linking information or status bar that include link type 、 signal status 、 Server connect status and IP address.... etc.



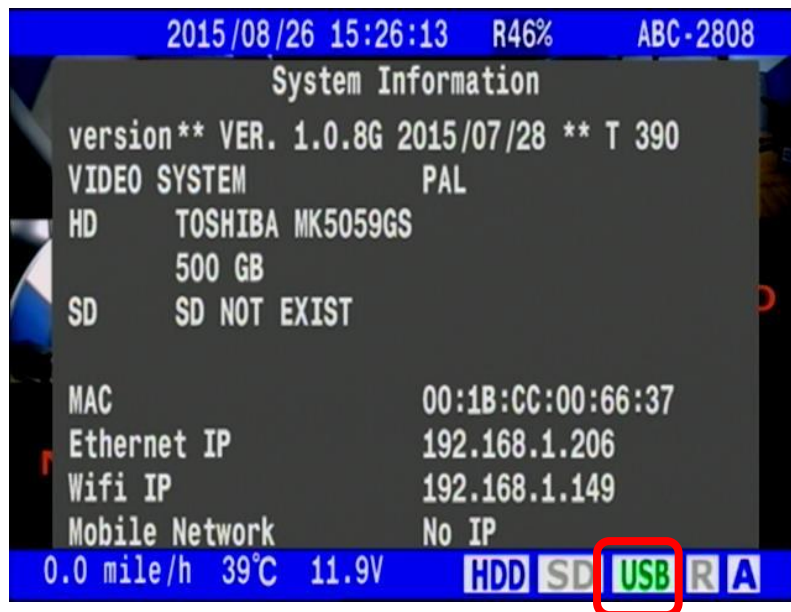
4.6.9 Reset to default

In certain situations, this is useful when you want to remove an undesirable configuration. If you have configured DVR then the configuration has become very complex; you can reset that to factory defaults and configure it as a new DVR.



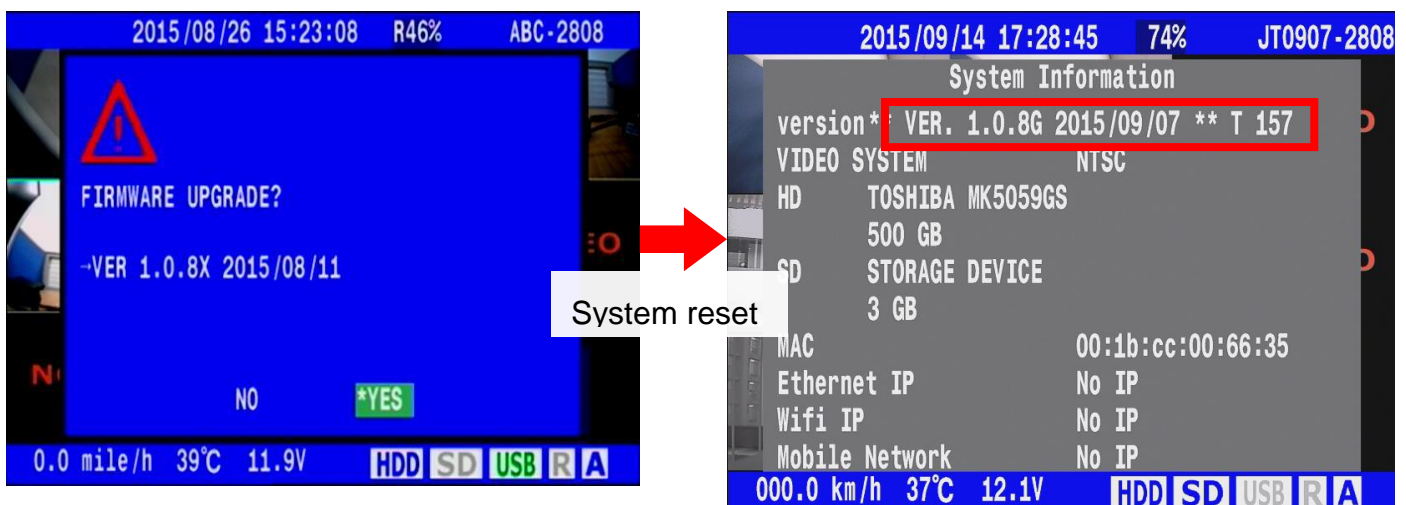
5. Firmware Upgrade

1. MDVR upgrade firmware there must need the following one:
 - (1) V1.5.8.28_2017-03-08.upg
 - (2) uxxxxx-V1.4.8.a_2016-11-21.upg
 - (3) kernel 28xx
2. After copy firmware files to the root directory of a removable USB drive, plug in the USB port of MDVR.
 - Confirm the USB drive connection which is ready for update by checking the monitor display for the USB icon that will change to green.




3. IR remote control, press the down button (⏴)

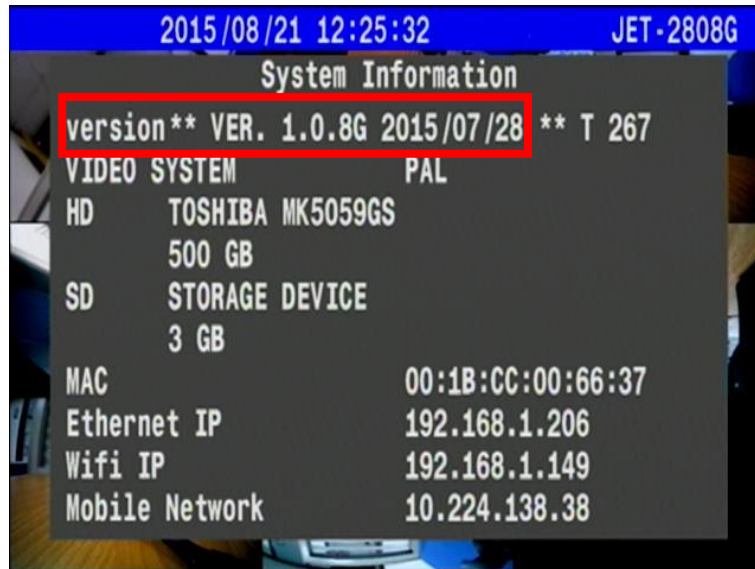
The monitor display will show an information dialog box inquiring whether you want to upgrade the Firmware.



Note: Before firmware upgrade had finish, please do not take out the removable USB drive.

5.1 Firmware version and system Query :

On Real-time monitor mode, press up button  of Remote controller to call System info page. The System information page would shows the Firmware version 、 The capacity of a hard disk drive 、 Ethernet MAC and information.



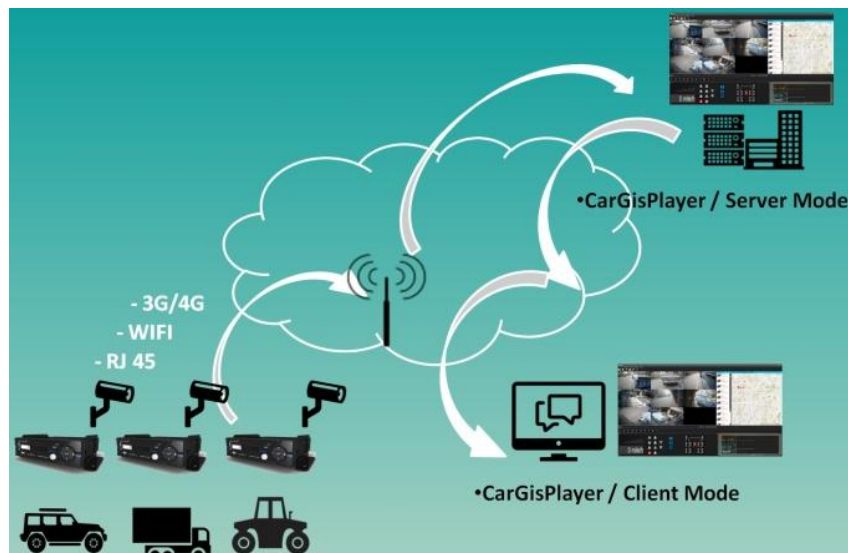
6. Cargisplayer introduction

6.1 Overview

A Vehicle manager system integrates three main components

(1. Server – **Cargisplayer** 2. Client – **Cargisplayer** 3. **MDVR**).

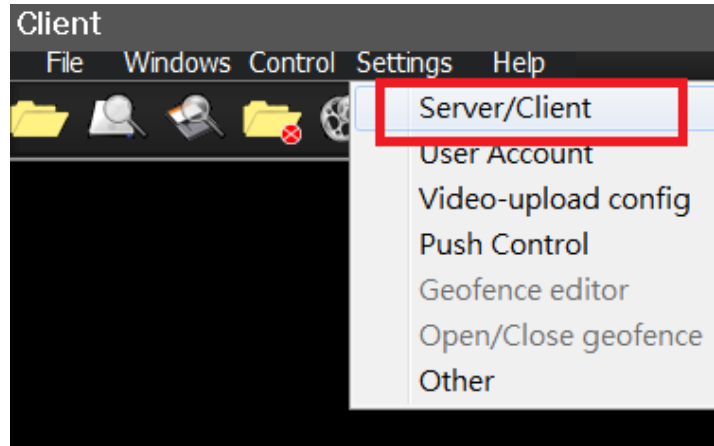
Please provide two PC device, one to make an identification of VMS Server, another to make an identification of VMS Client.



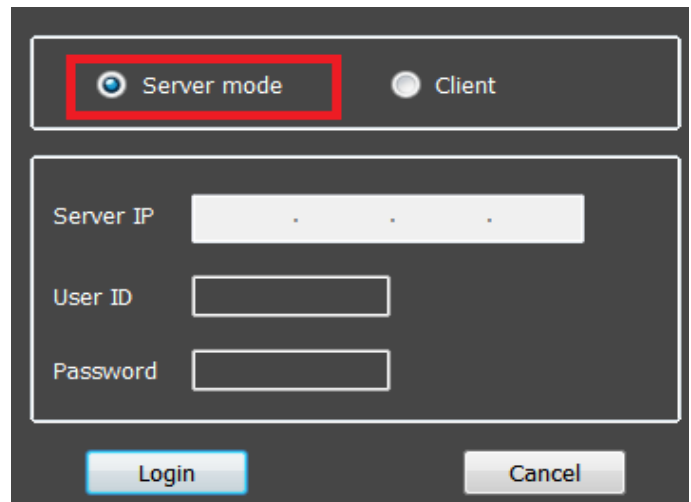
6.2 position

6.2.1 Server mode setup

(1) Select "Settings" → "Server/client".

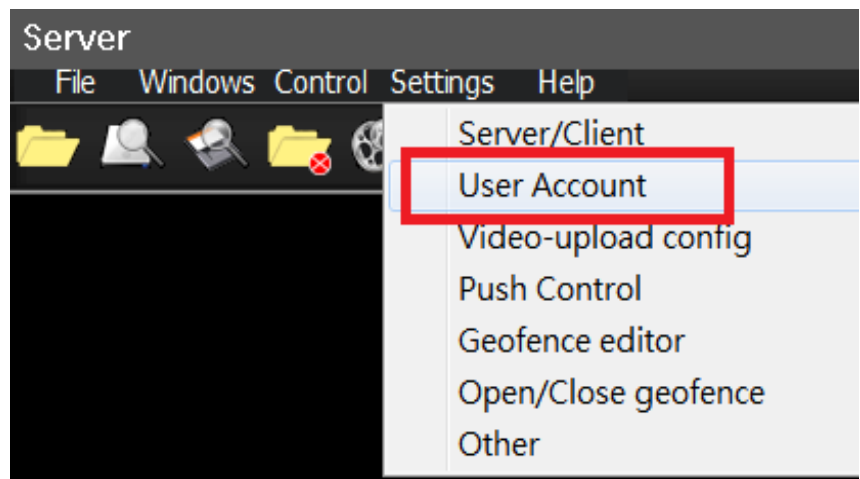


(2) Select Server mode, then click "Login".

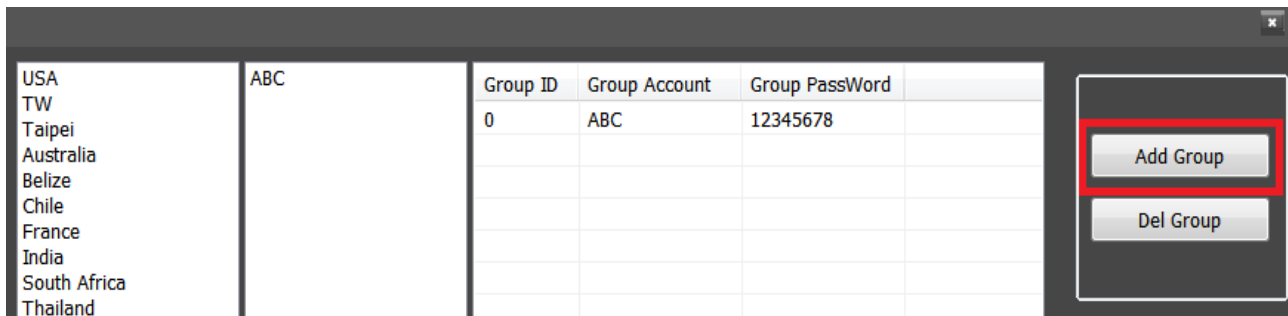


(3) Select "settings" → "User account" → "Add GROUP", create new account.
(same with MDVR settings)

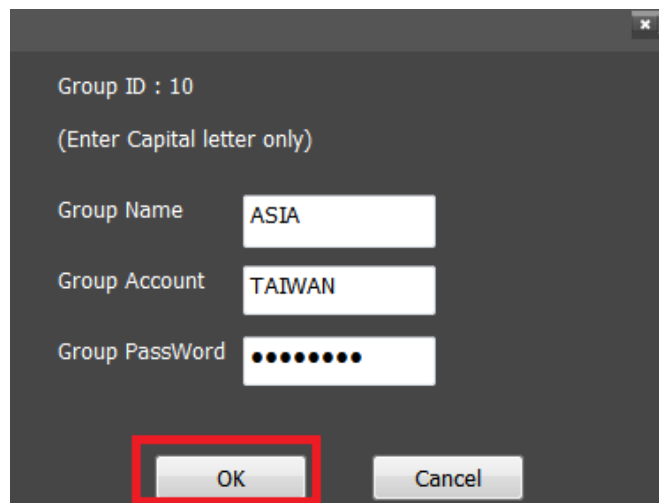
Step1. Select " **User Account** "



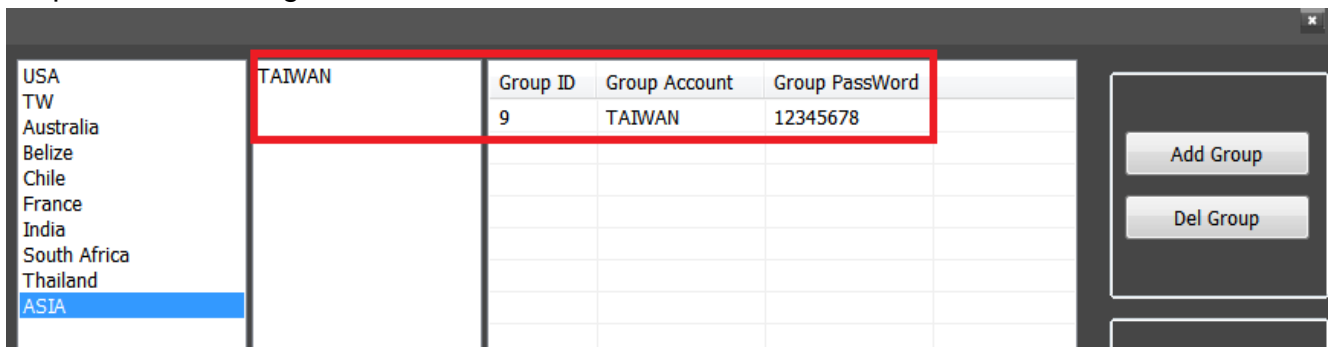
Step2. Click " Add Group "



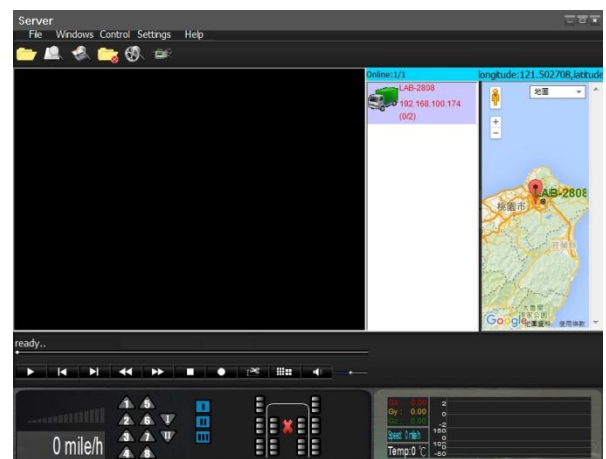
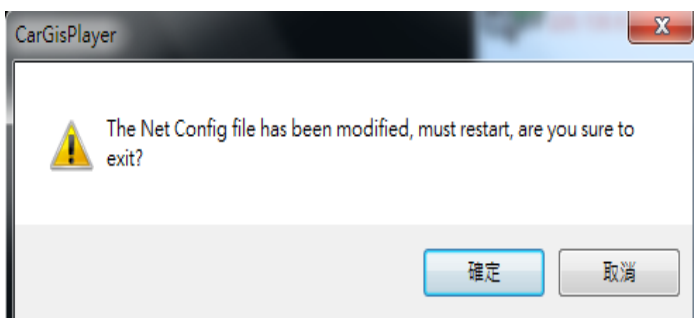
Step3. Create Account.



Step4. Check settings.



(4) Restart AP.

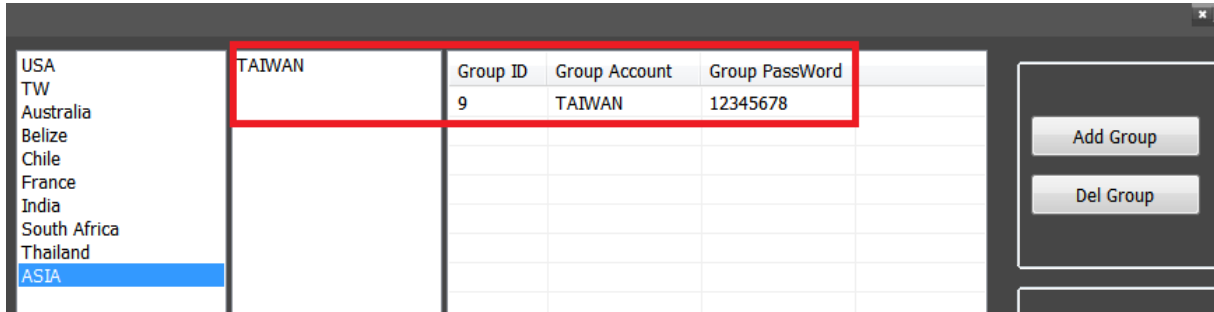


6.2.2 Client mode setup

(1) Check account parameter :

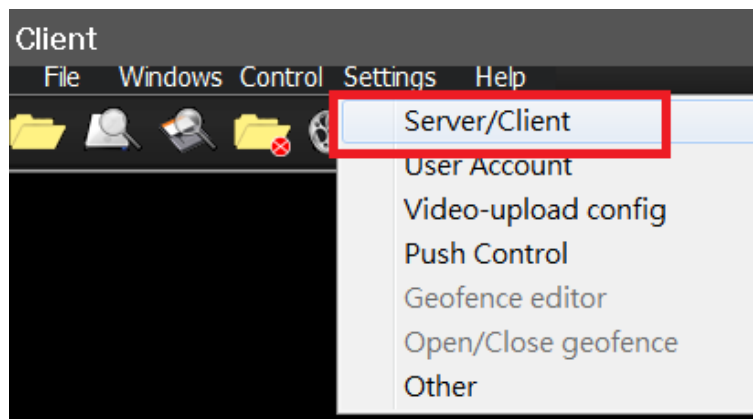
In sever mode , Select “settings” → “User account” ,select Specified group.

Remember your Group parameter.



(2) Operator on Client mode :

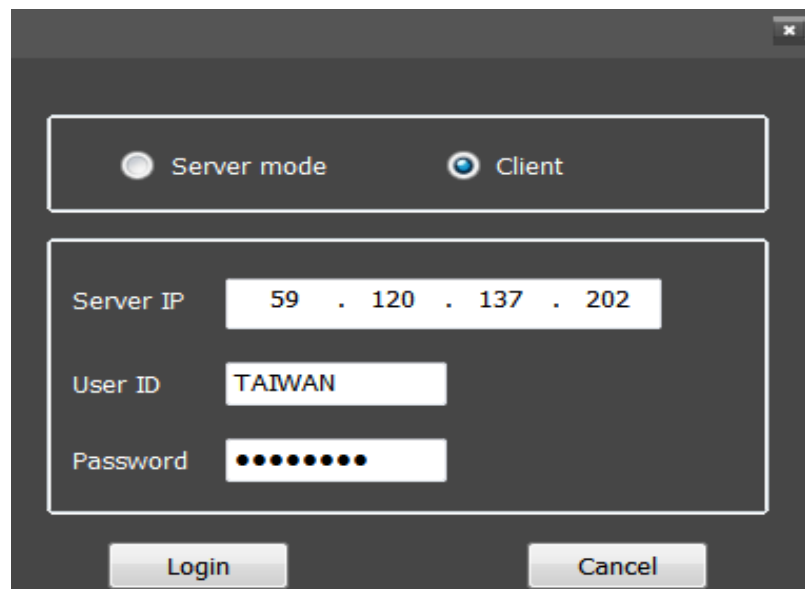
Restart the application, then select “Setting” → “Server/client”.



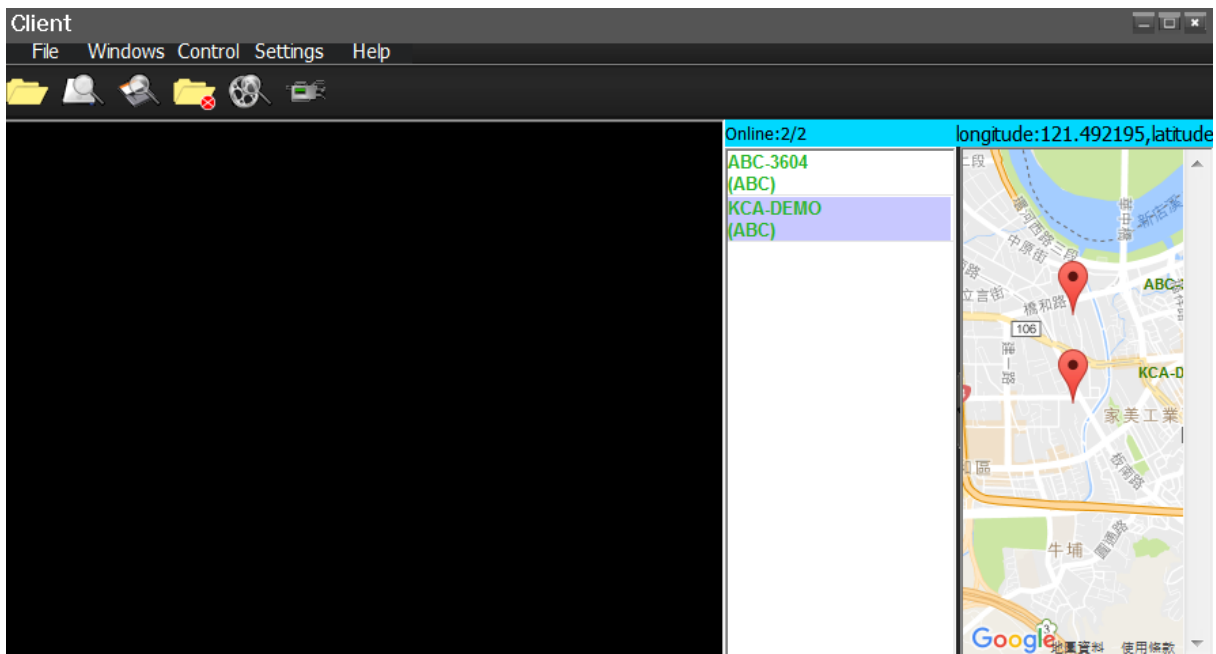
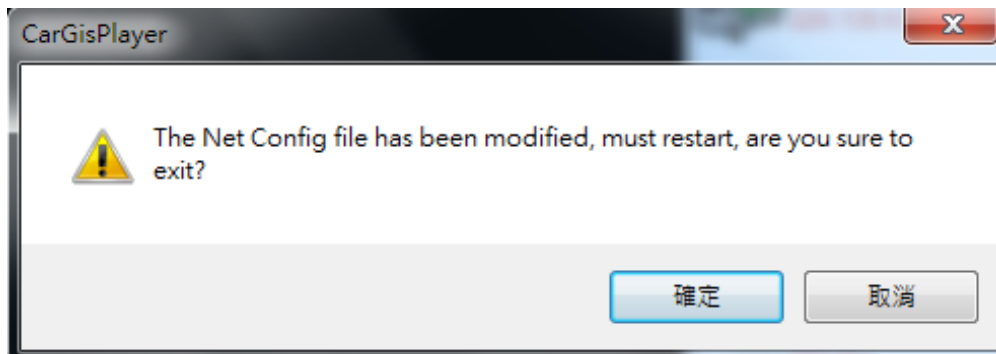
(3) Setting account parameter :

Select “Client Mode”, input “Sever IP”, “User ID” and “Password”

(same with MDVR settings and “Specified group settings by server), then click “Login”.



(4) Restart AP.



Important Notice

Package protocol use often involves difficulties in the networks with firewalls and NAT. Before the VMS start work, please check the port was opened on the firewall as below:

PORT : 1200~1210, 2200~2210, 3300~3310.

6.3 Features

6.3.1 Video converter to AVI

On playback mode, system provides video backup and converter to avi format on PC.

Step1. Select **extract**.



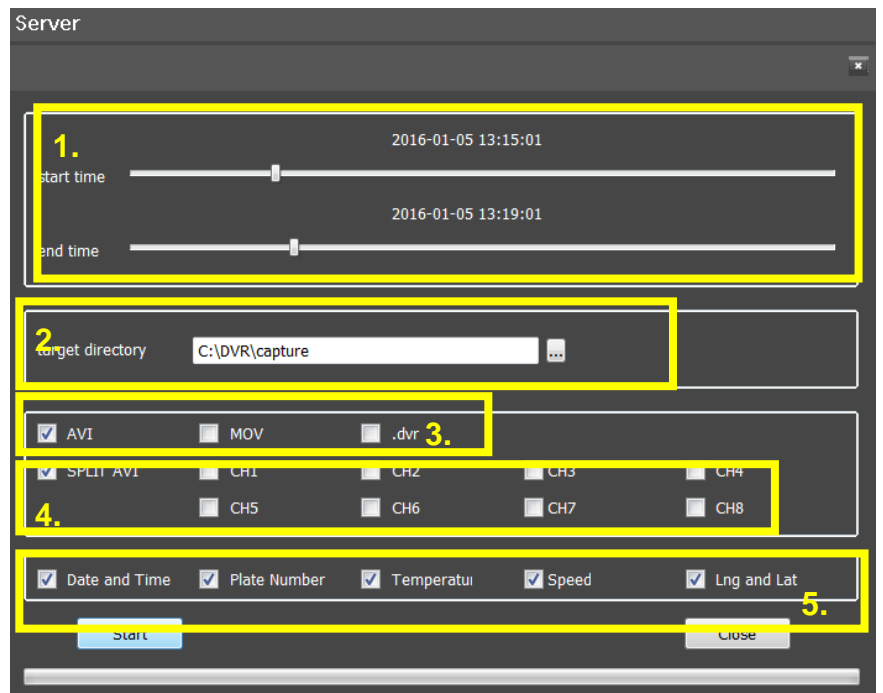
Step2. Set parameter.

(1) Start time / end time

(2) Select path with target directory.

(3) Select output format to AVI / MOV / .dvr

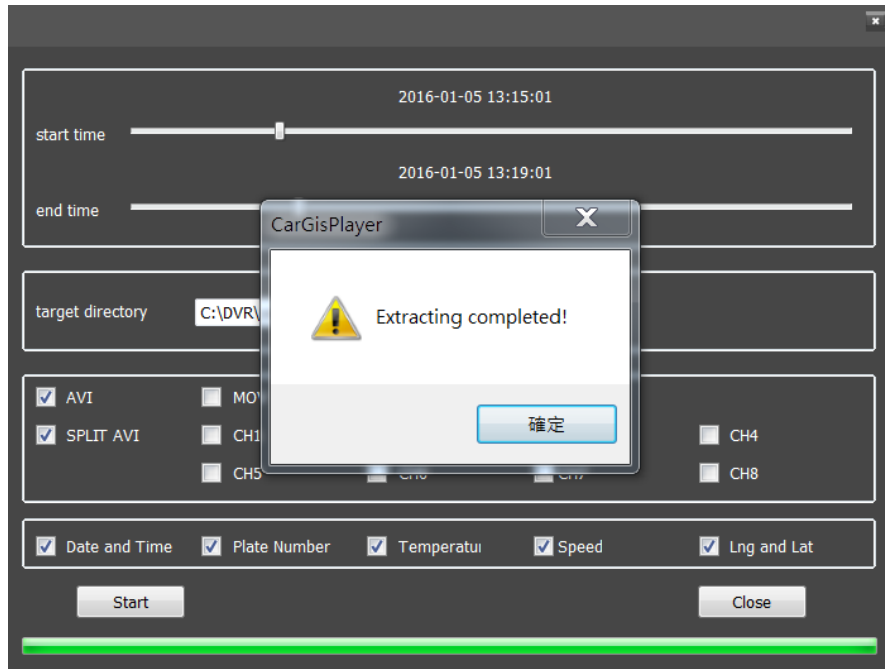
(4) Select extracted camera (Channel).



● For AVI format you can chose SPLIT mode (all in one screen).

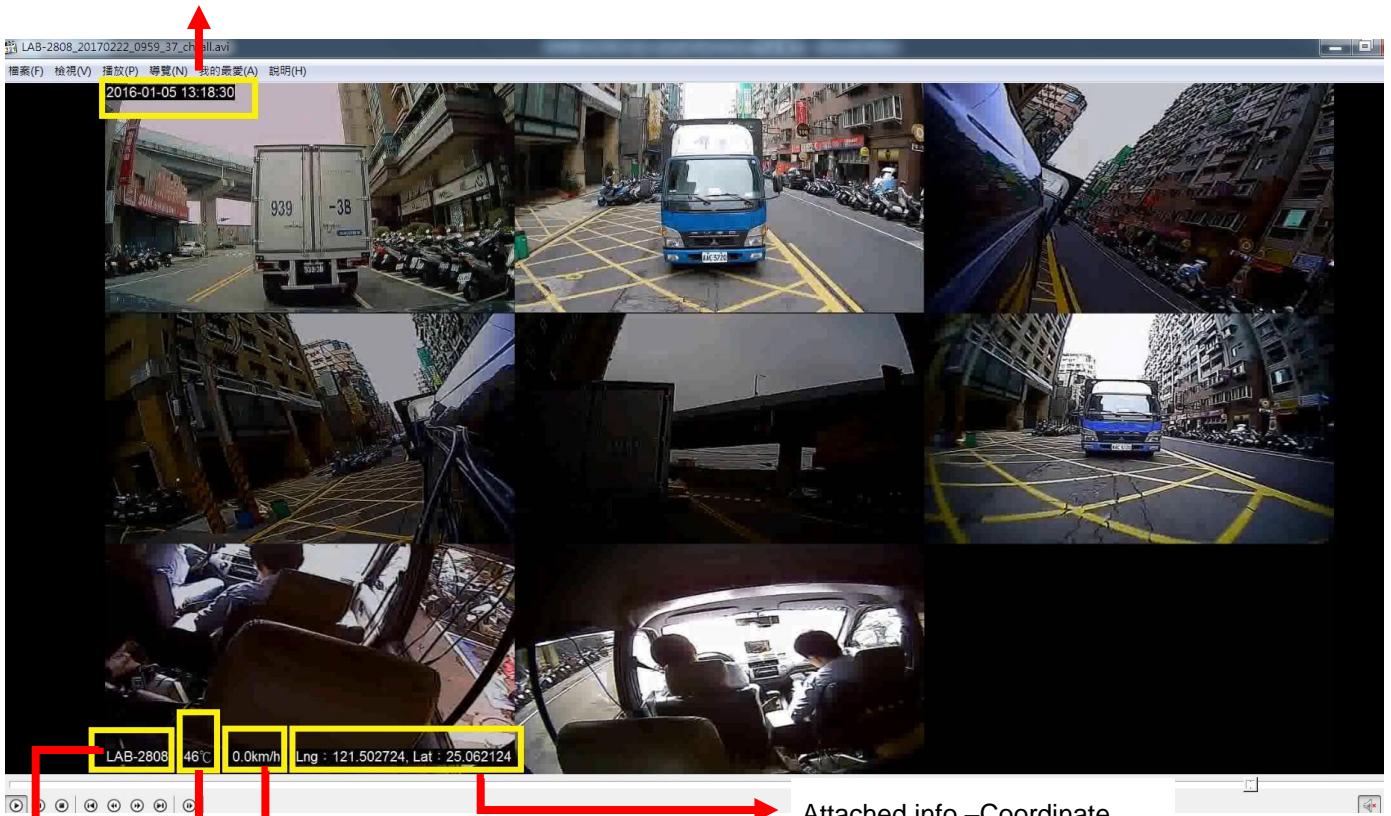
(5) Select drive parameter.

Step3. Click Start to extract.



● Play the output files –

Attached info – Date and Time



Attached info – Plate Number

Temperature

Attached info – Car Speed

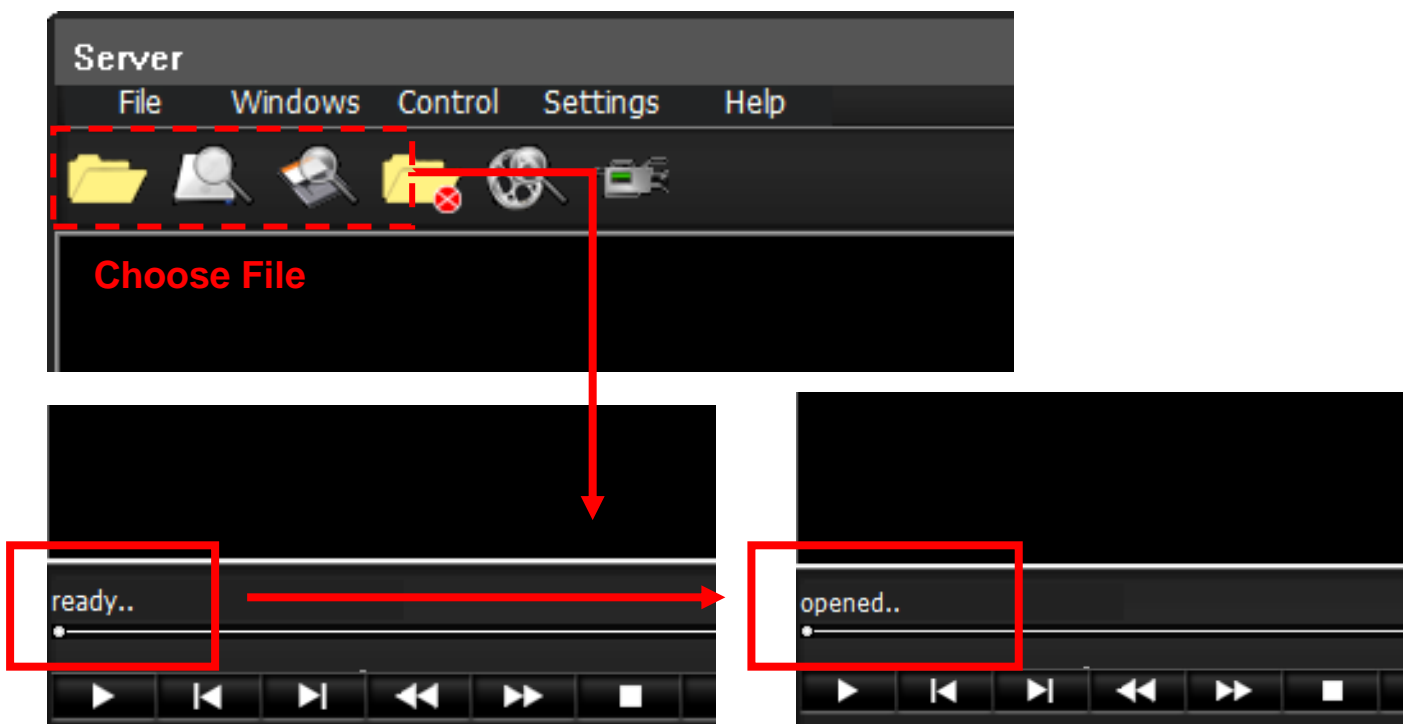
Attached info –Coordinate

6.3.2 Draw the path

This function provides users to see the route for vehicle, use the time interval for viewing, reference HDD, SD, File three sources of information, to view the historical path.

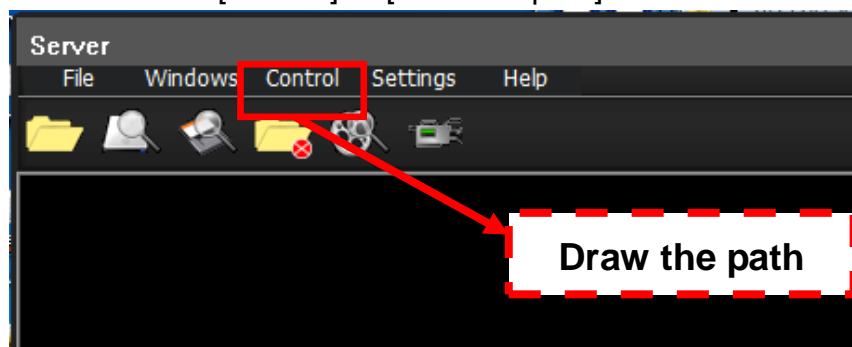
Setp1.

Select the file source (file, HDD, SD), if program read file success, then status will from [ready...] after to [opened...].



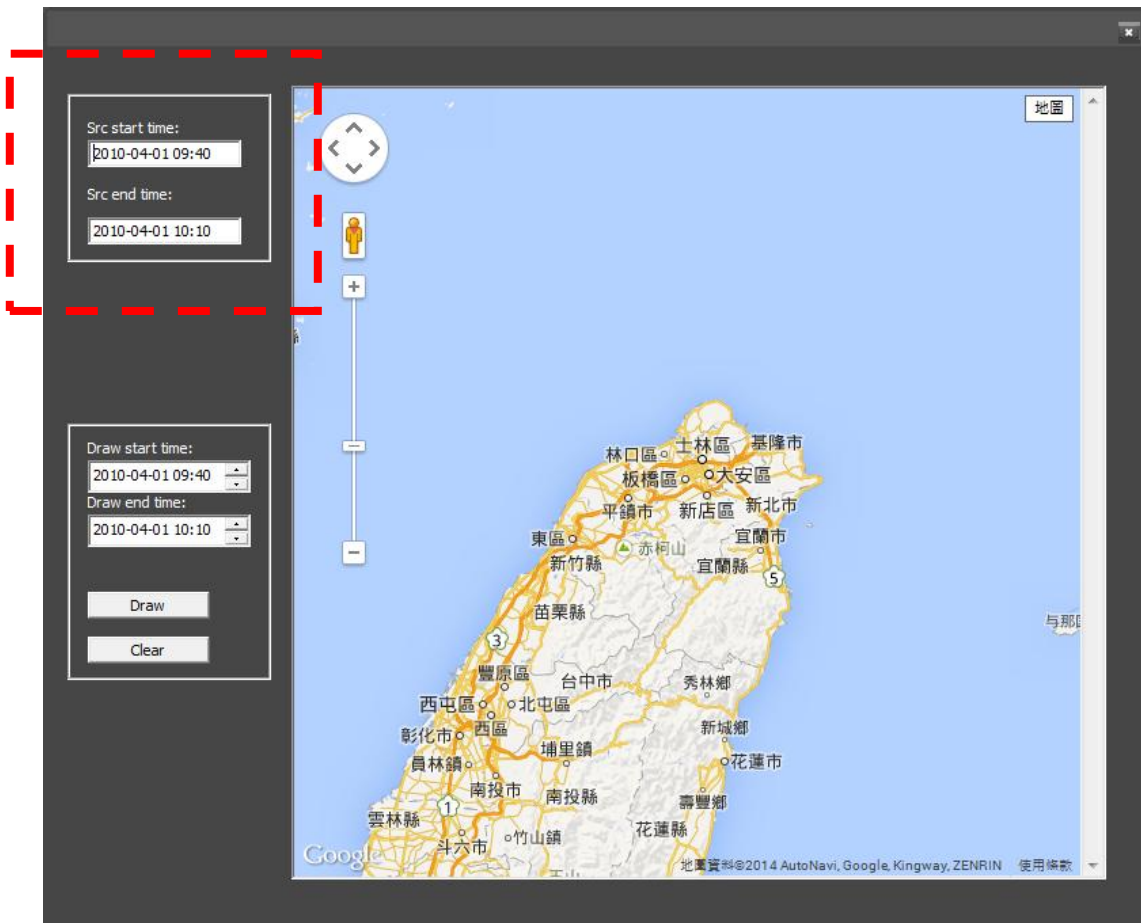
Step2.

Select tab Bar [Control] -> [Draw the path]



Step3.

Then it will pop out a window like below

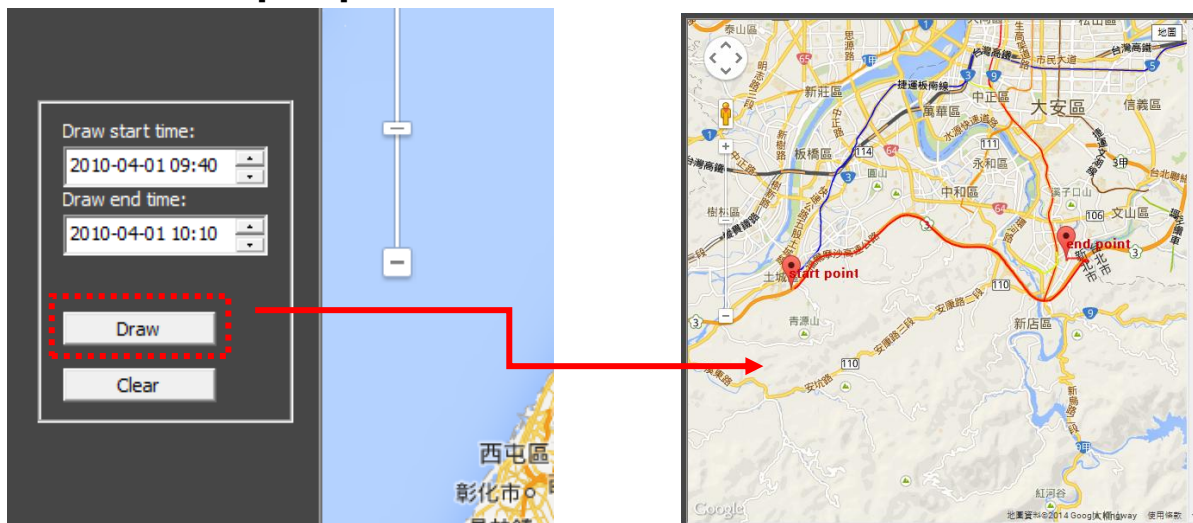


[Src start time] is mean video start time

[Src end time] is mean video end time

Step4.

User can refer src start time and end time to define the section how long you want to show on map. Then click button [Draw].



* User can see the start point and end point

※ **Note:**

The Draw by HDD or SD card:

if the selected time less than 1 hour, the GPS coordinate interval 5 seconds.

If draw times more than 1 hour, the GPS coordinate interval 10 seconds.

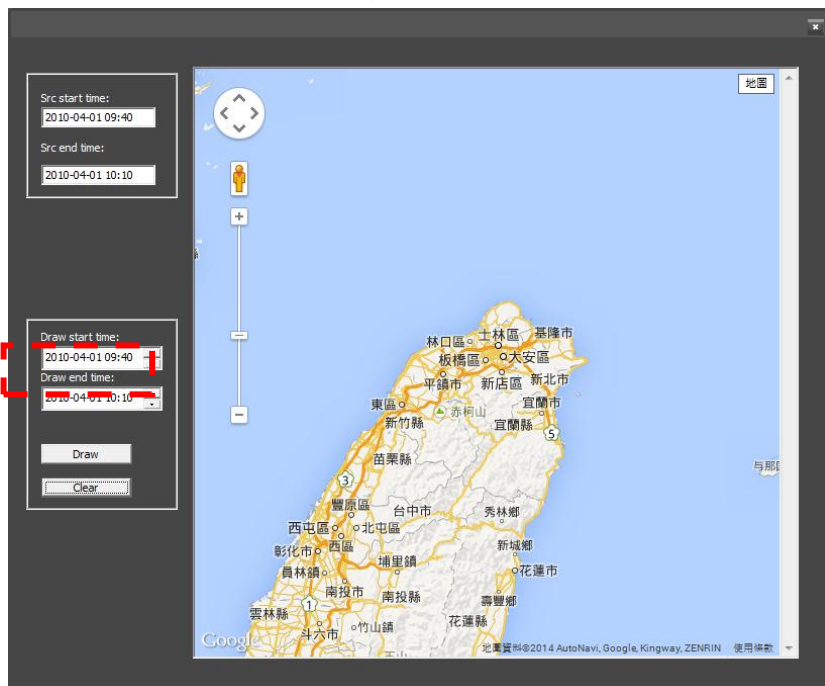
The Draw by File source:

the GPS coordinate always interval 5 seconds.

Step5.

If user want to clean the route, just click button [clear]

The map will reset to original status.



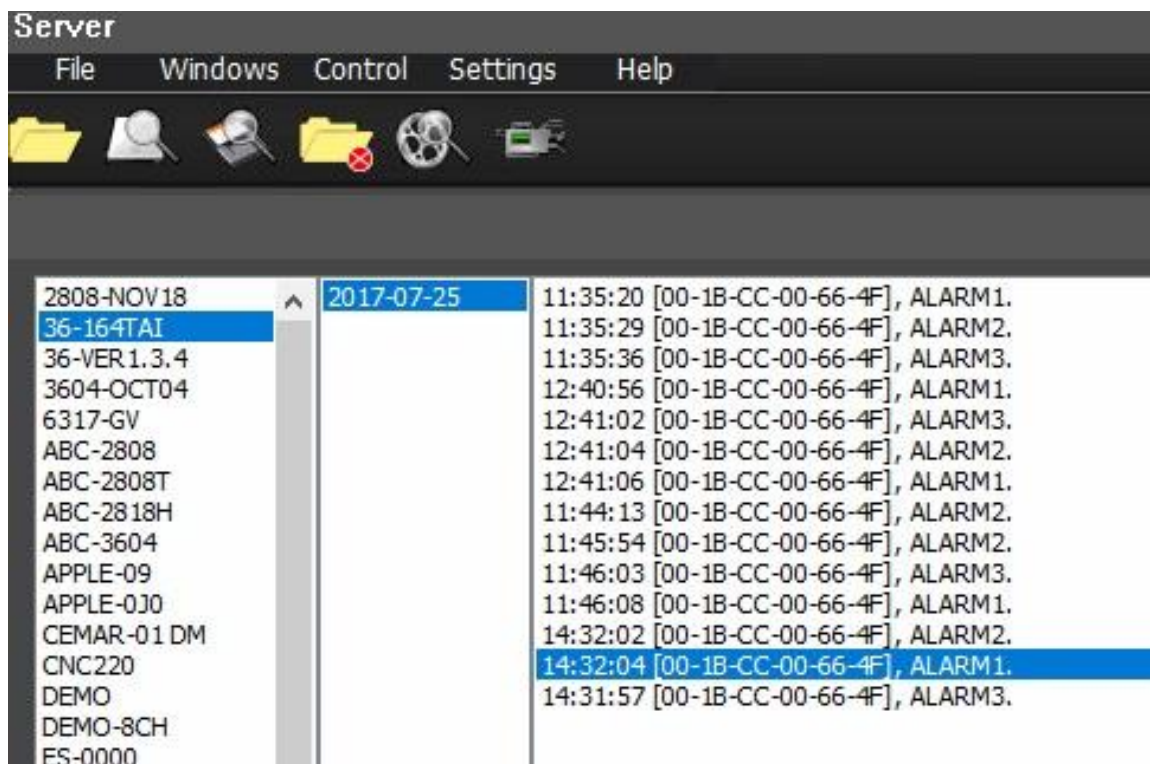
6.3.3 Event Log

On Server mode System can review event log for each vehicle.

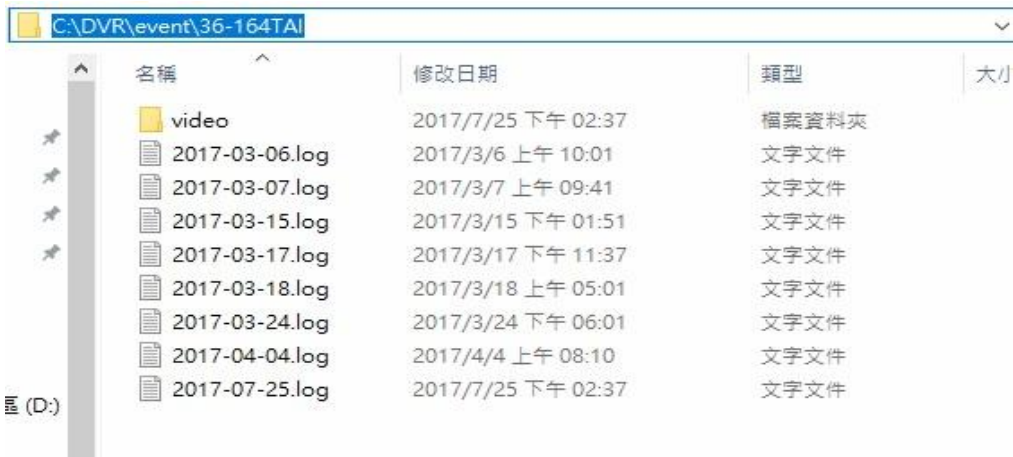
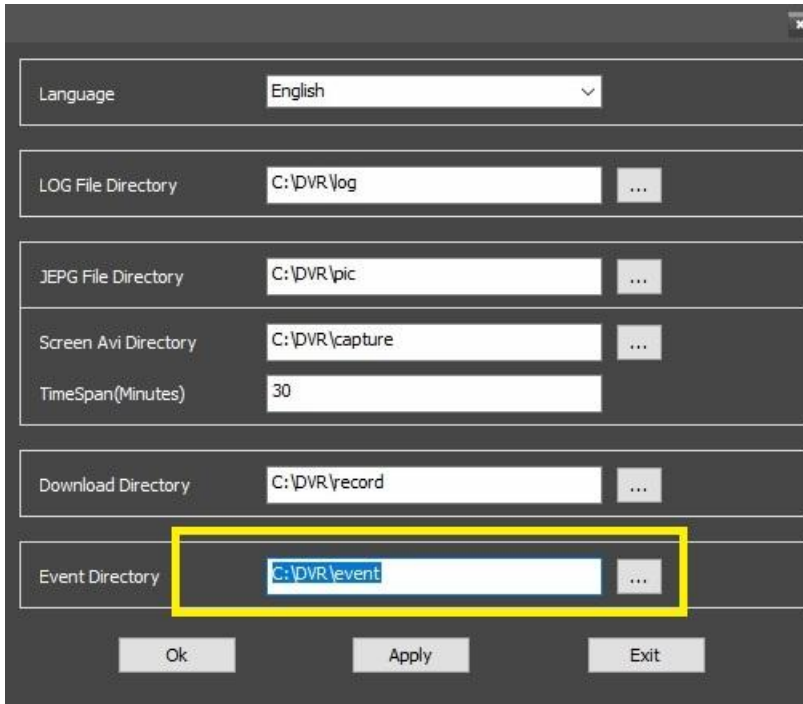
There are many kinds of triggering events as below –

Event Type Illustration		
Item	TYPE	Example
1	Alarm	<u>11:35:20 [00-1B-CC-00-66-4F], ALARM1 /ALARM2/ALARM3/..../ ALARM8</u>
2	Video	<u>12:15:07 [00-1B-CC-00-66-3E], VLOSS1 /VLOSS2/VLOSS3/..../ VLOSS8.</u>
3	Relay	<u>15:43:11 [00-1B-CC-00-66-4F], RELAY1 / RELAY2.</u>
4	TPMS	<u>20:54:06 [00-1B-CC-00-66-3E], TPMS1 /TPMS2/..../ TPMS12</u>
5	G sensor	<u>16:10:47 [00-1B-CC-00-66-58], G-sensor X / G-sensor Y / G-sensor Z.</u>
6	Car speed	<u>12:56:06 [00-1B-CC-00-66-59], Car speed.</u>
7	Time Adjust	<u>08:43:17 [00-1B-CC-00-66-5C], Time adjust forward / Time adjust backward</u>
8	Temperature	<u>12:39:29 [00-1B-CC-00-66-5C], Over heat</u>
9	Storage	<u>12:15:23 [00-1B-CC-00-66-47], HDD ERROR / SD ERROR</u>
10	Geofence	<u>11:35:29 [00-1B-CC-00-66-4F], GEO Outside</u>

- Select CAR ID / Date.



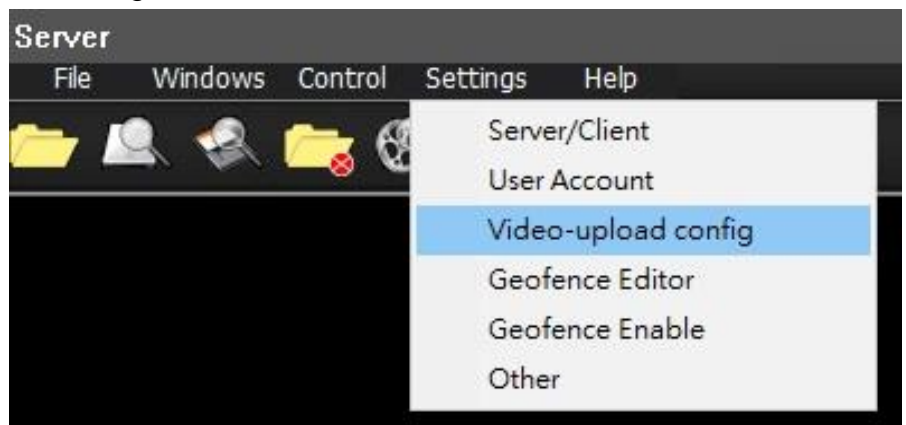
- The event history will save on Event Directory



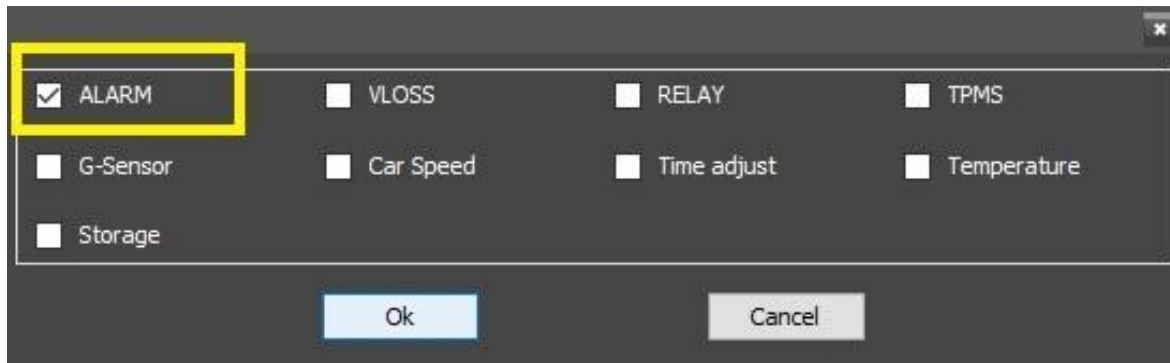
6.3.4 Video-upload config

The event video clips can be backed up to local directory (VMS server) automatically.

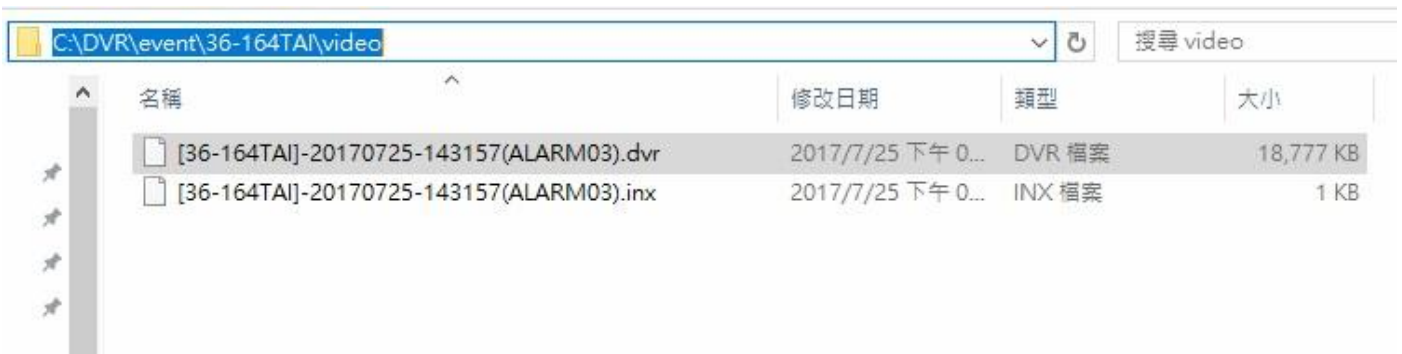
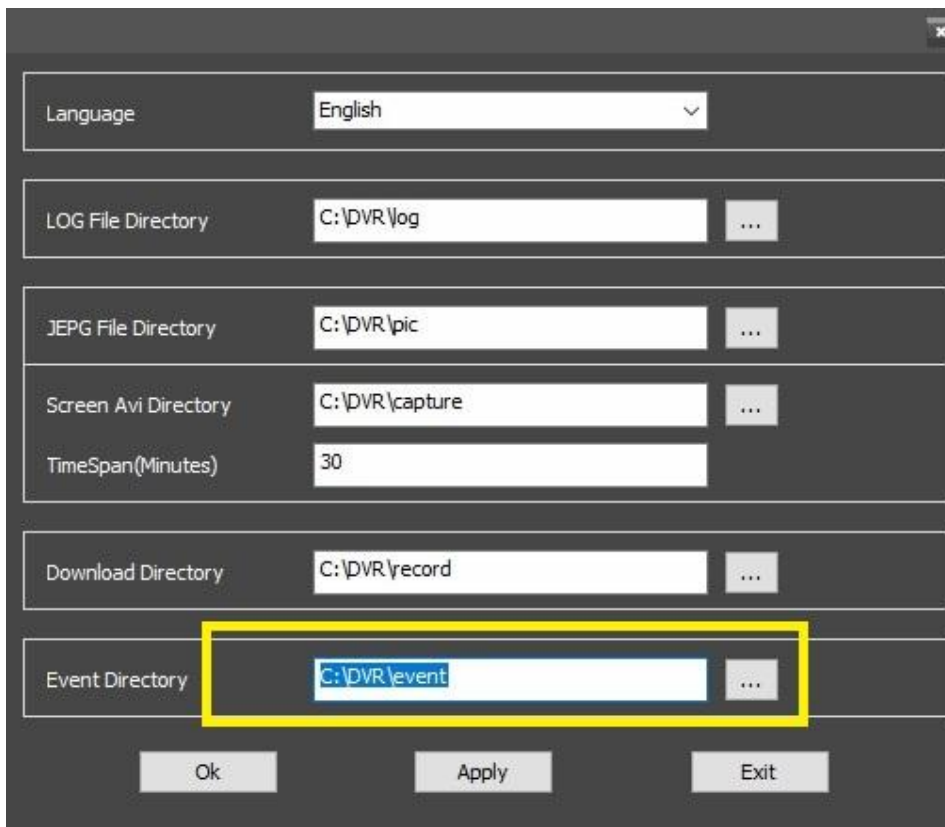
Step1. Select Settings / Video-upload config.



Step2. Select and enable the event item.



- If the alarm been triggered, the system will backup a video (20 second) on Event Directory.



6.3.5 Geofence

Before using the geofence feature, please enable ActiveX componet.

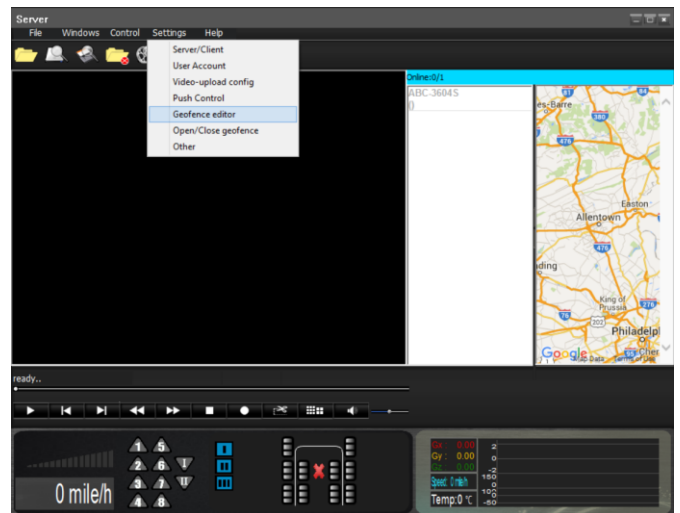
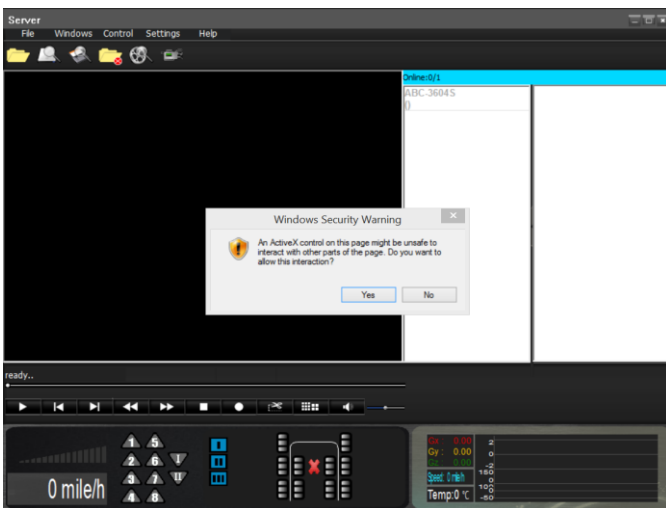
6.3.5.1 Edit Geofence

1. Select Settings /Geofence Editor on Server mode.

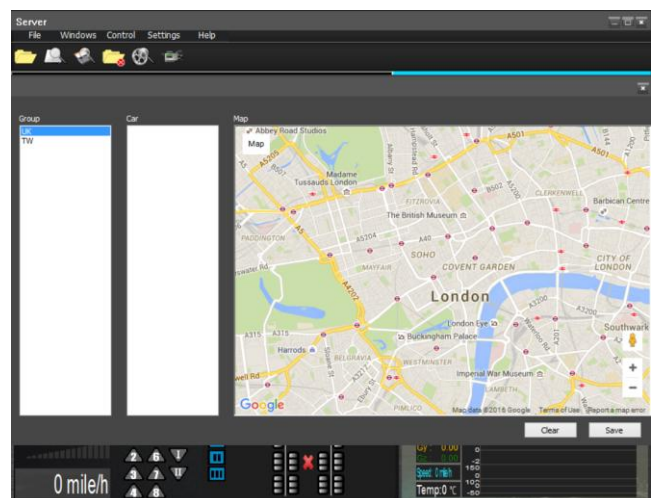
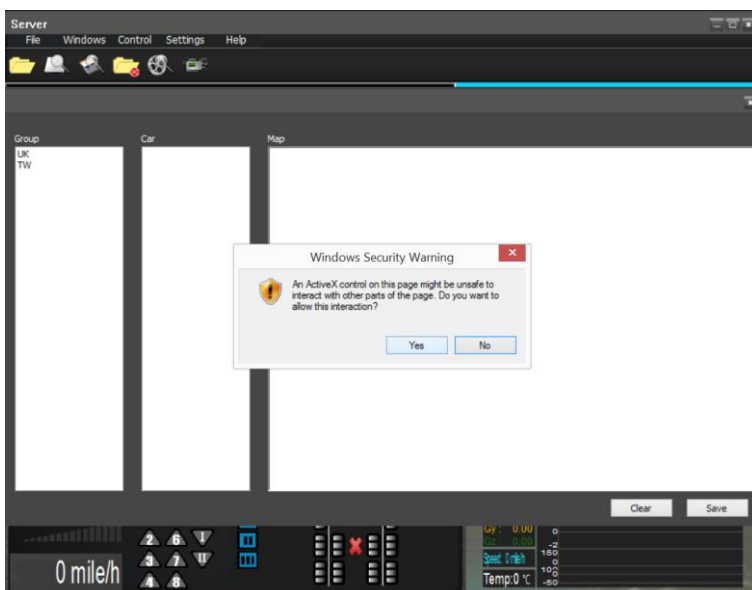
2. Setup Geofence:

* Select Yes to allow Activex control componet.

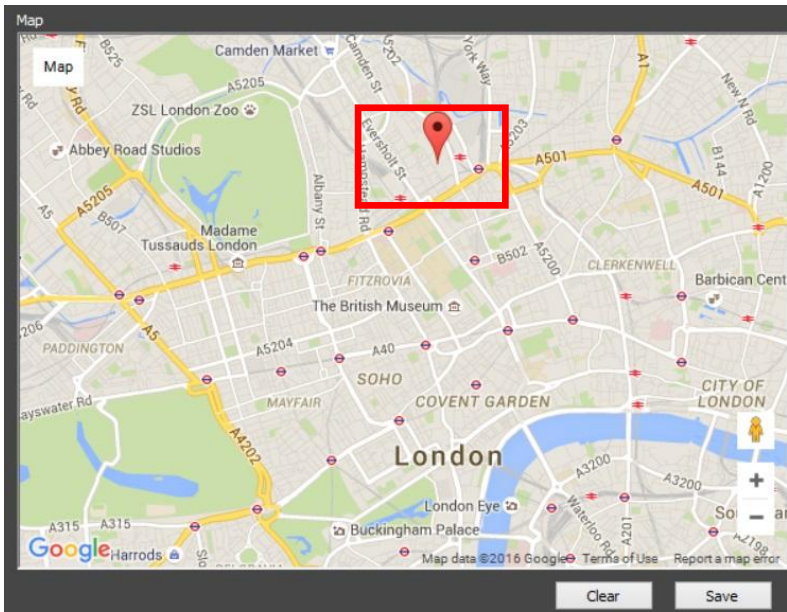
* Select Geofence editor.



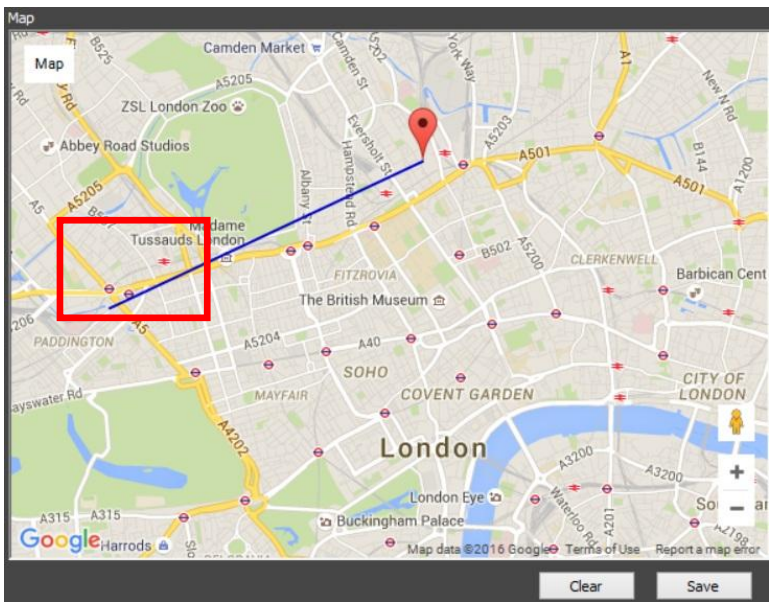
* Select Yes



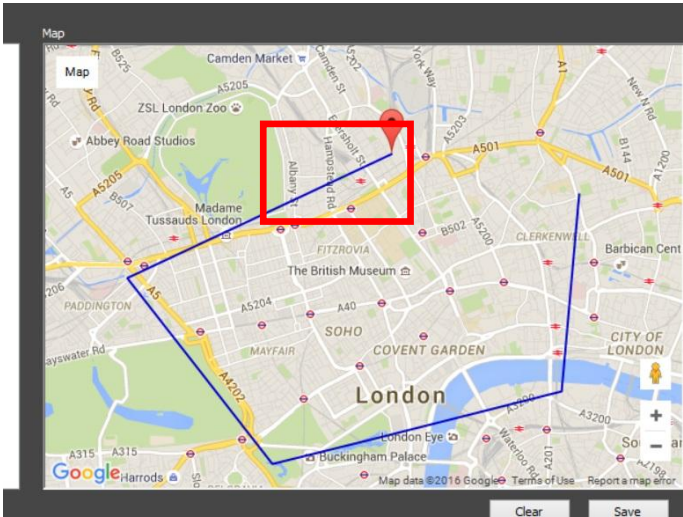
* Move your mouse to selected point then click left mouse.



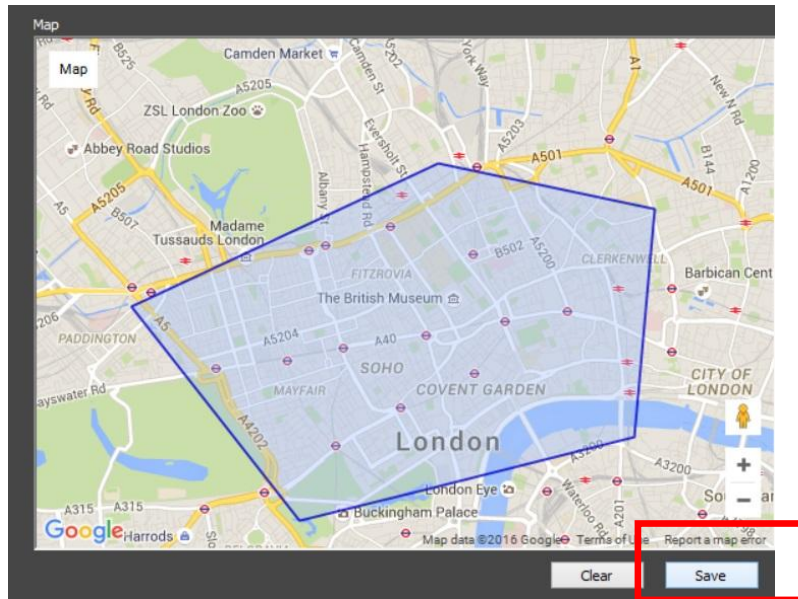
* Move your mouse to second selected point then click left mouse.



* **Double click** red point to close the fence.

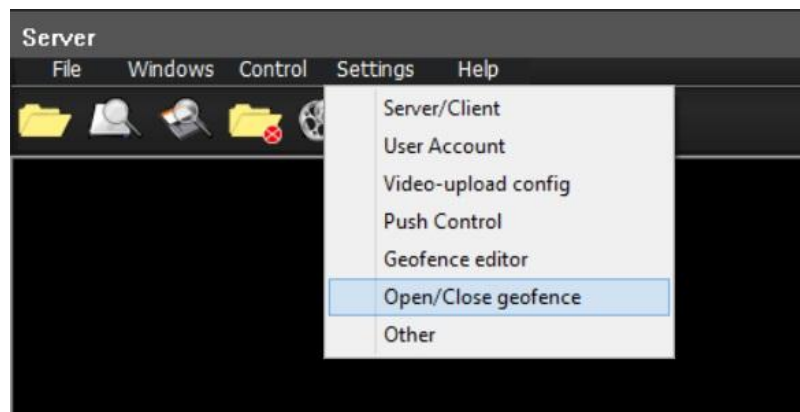


* Select Save



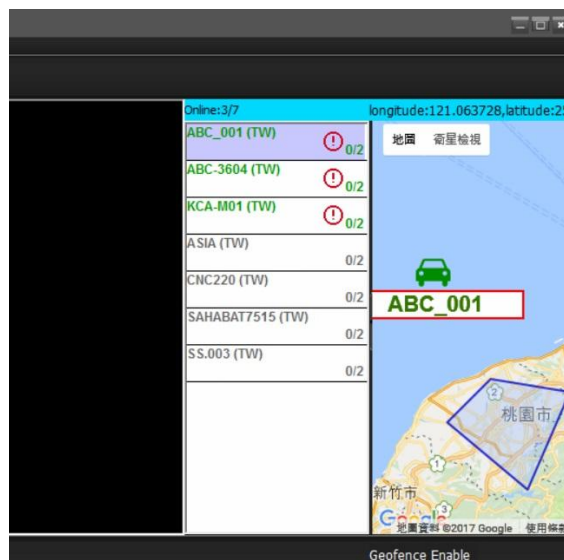
3. Enable Geofence function:

* Click Settings/ Open/Close geofence item to turn on function.

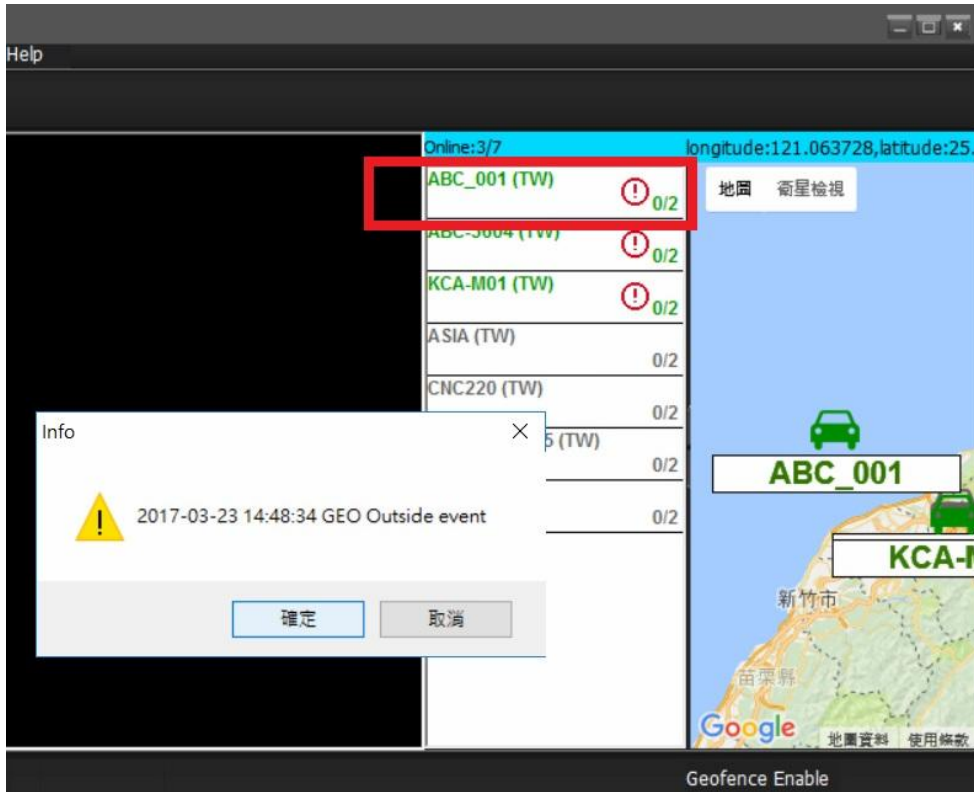


6.3.3.2 Geofence Alarm

When the Vehicle cross the geofence, system will triggered alarm and remark a “!” icon on Car ID.



- Click this “!” icon, system will popup info message.

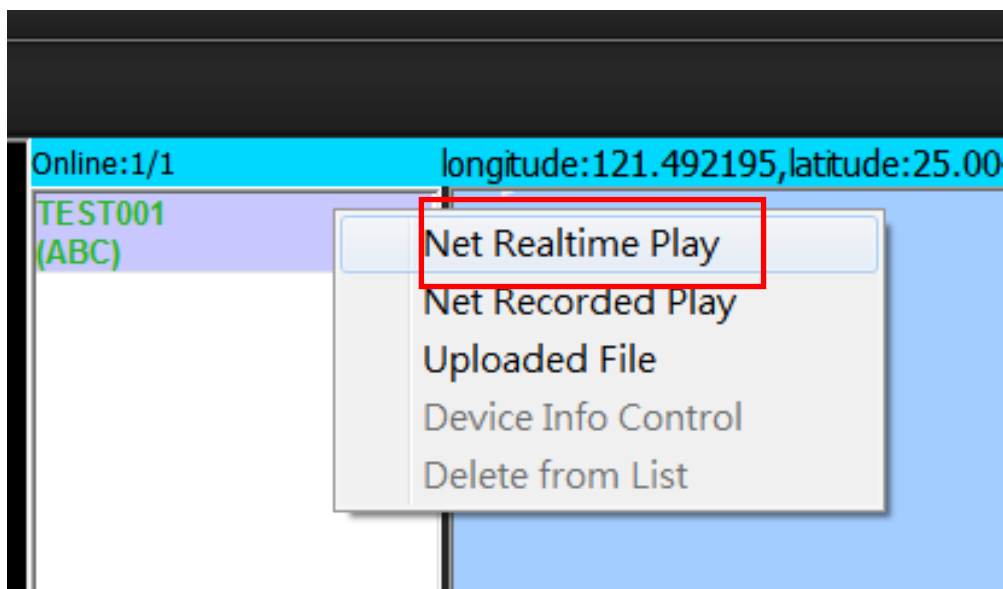


- Also after VMS Cargisplayer server alarm be triggered that would send the notice to GuardVMS app (Mobilephone) as below:

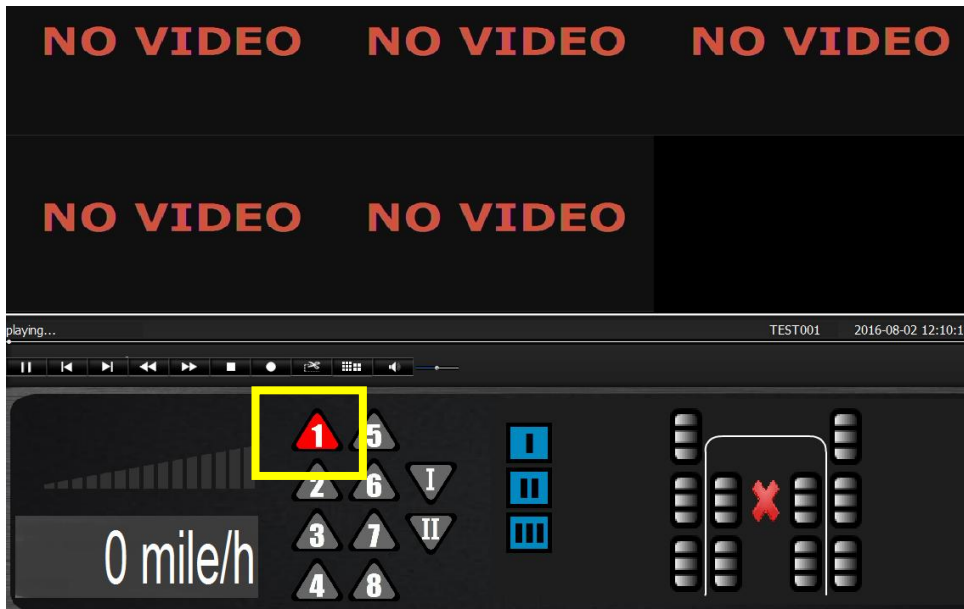


6.3.6 Push alarm settings

6.3.6.1 Alarm trigger



- Alarm had been triggered: The alarm Icon has changed to Red.



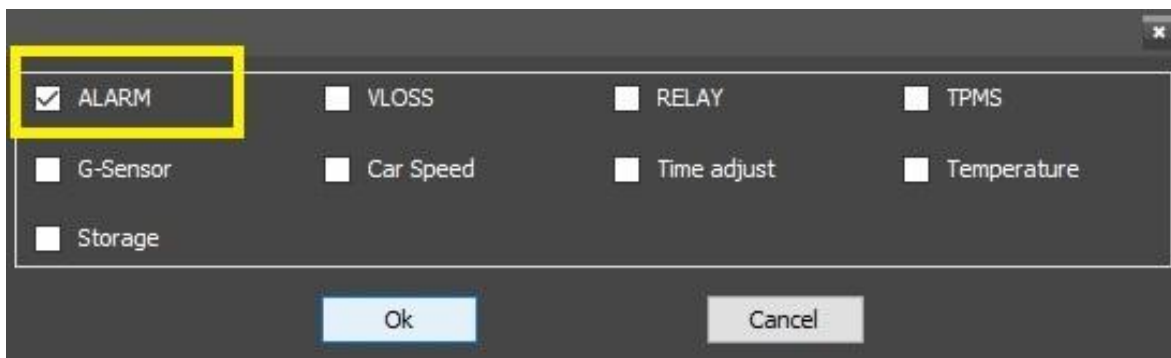
6.3.7 Video Clip Settings

Before system capture event video automatically, user need refer the settings as below:

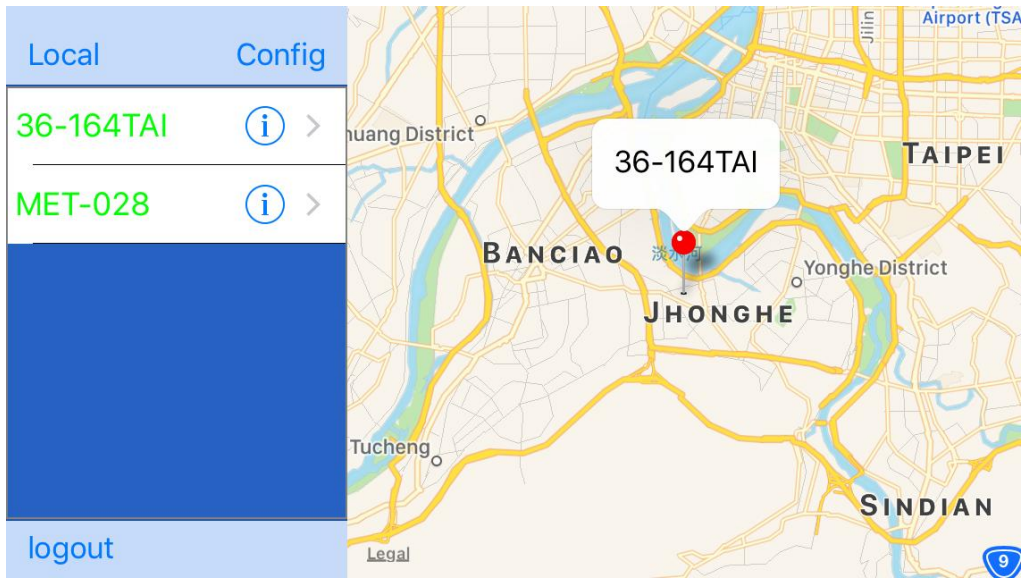
Step1. Select Settings / Video-upload config.



Step2. Select and enable the event item.

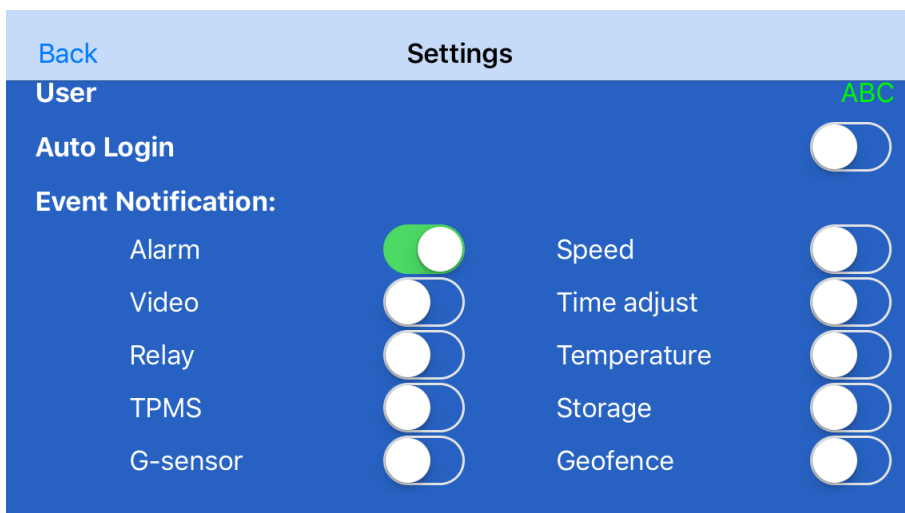
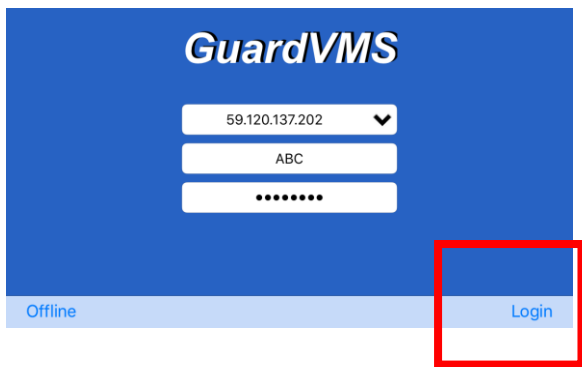


6.3.8 Push alarm on Mobile vendor

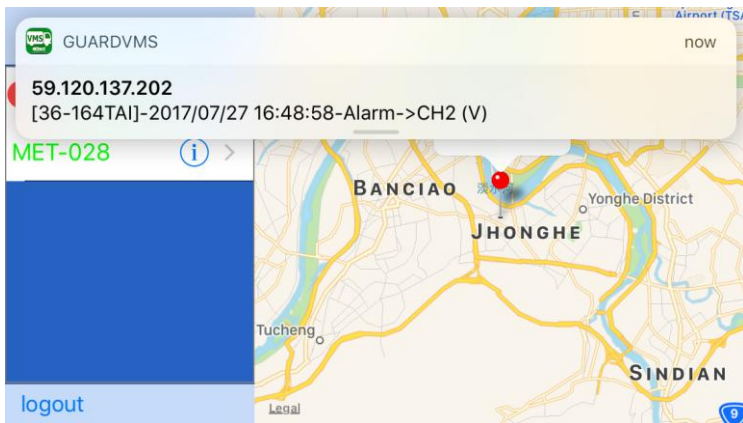


Step 1. Access VMS server.

Step 2. Select Settings/ Alarm..

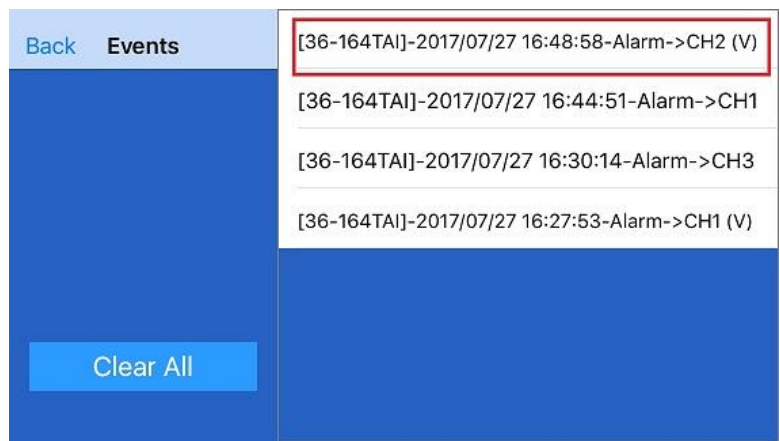
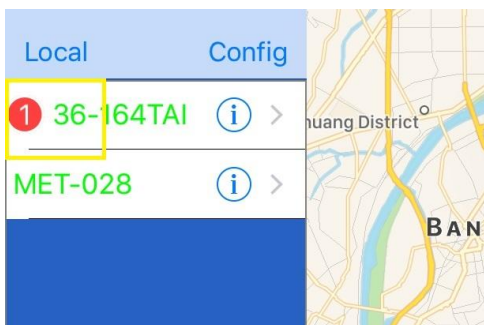


- When Alarm be triggered the VMS will send a notice to APP program.

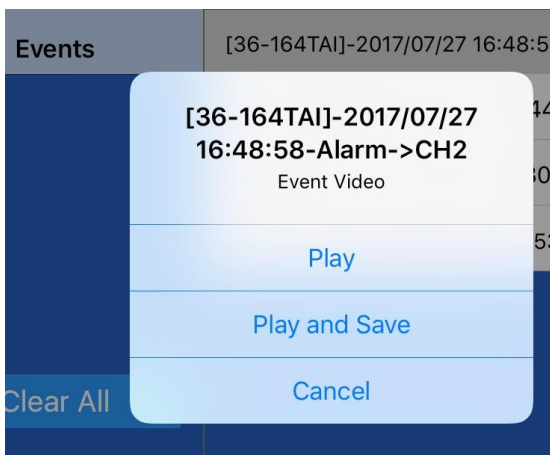


Step 1. Click Red icon

Step 2. Select event item



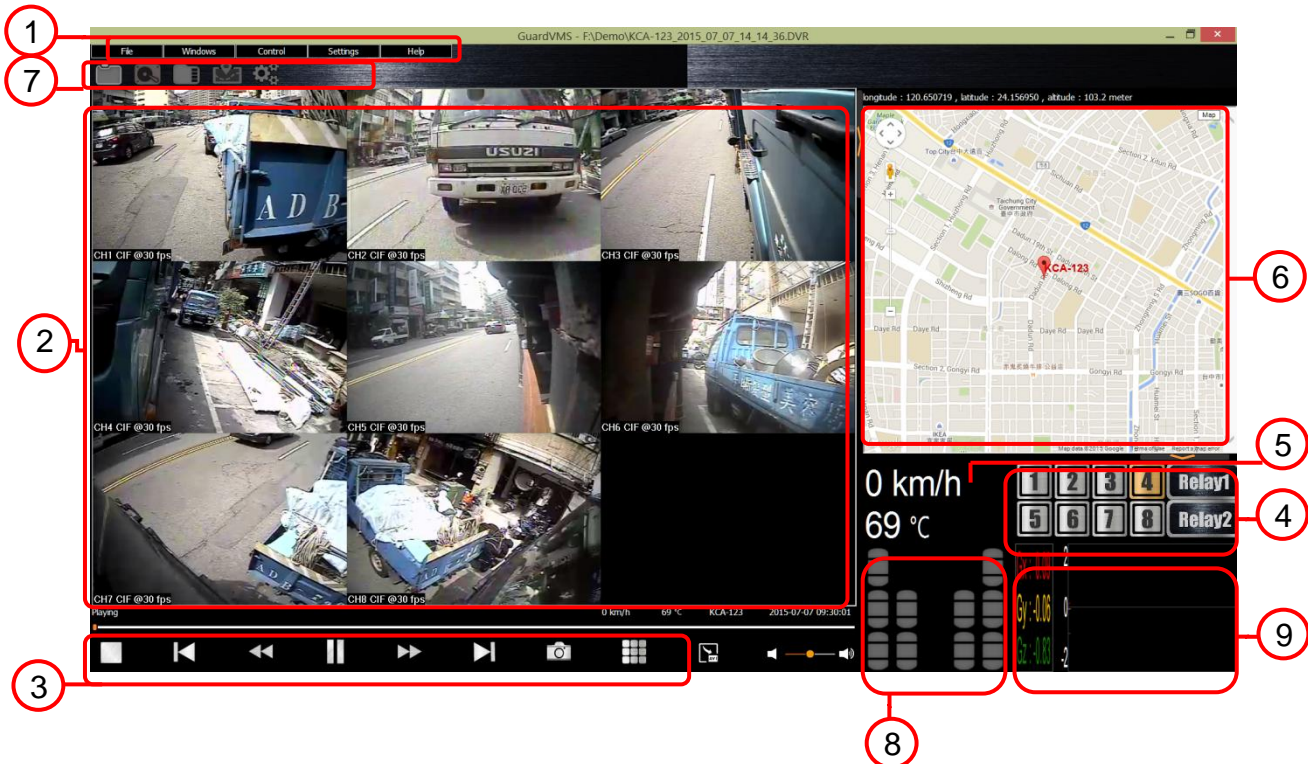
Step 3. Chose remote Play event or save video on mobile vendor.



7. PC-viewer introduction

7.1 Overview

PC-viewer is a slim Media player that could playback video data from HDD、SD card or USB drive. It can make information systems Integration on one screen and time、event video playback、backup, even to draw with Google mapping.



Mobile DVR media viewer Illustration		
Item	Code Name	Explanation
1	Function list	The list had included all function. ex : File、Windows、Control、Settings and Help items.
2	Video screen	Display video screen.
3	function Key	Control play speed with playback、Audio adjustment.
4	Alarm info	Display alarm inform from external equipment.
5	Car speed	By the time car speed information.
6	Real-time Map	Display google map information.
7	Operator list	Easy Operator icon
8	TPMS	Display tire pressure status.
9	Sensor info	Gravity of X、Y、Z axis, Curve for car speed and Vendor temperature.

7.1.1 How to get application

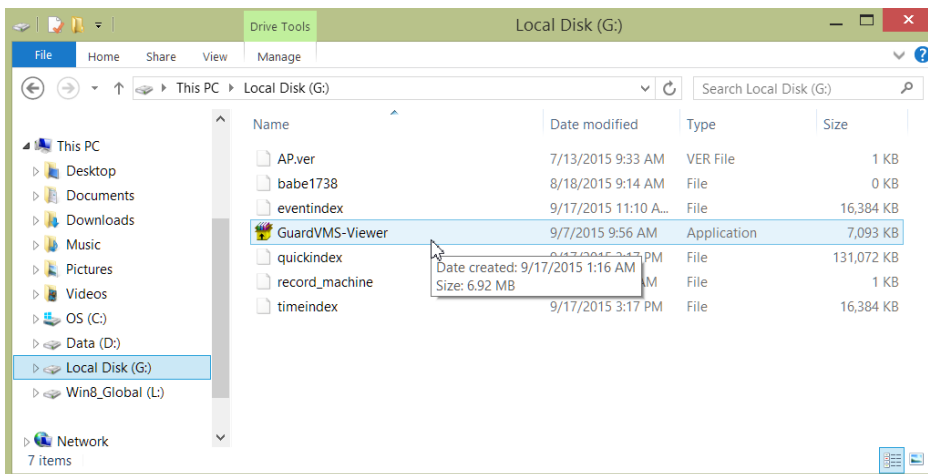
System had provided two ways to get application:

(1) The first way is to save application from HDD, as shown below.

Step1. Suspend recording of the program and shutdown MDVR.

Step2. Take off HDD from MDVR and connect PC-end via USB-SATA cable.

Step3. Select and copy “ PC-Viewer “ to your folder on PC-end.

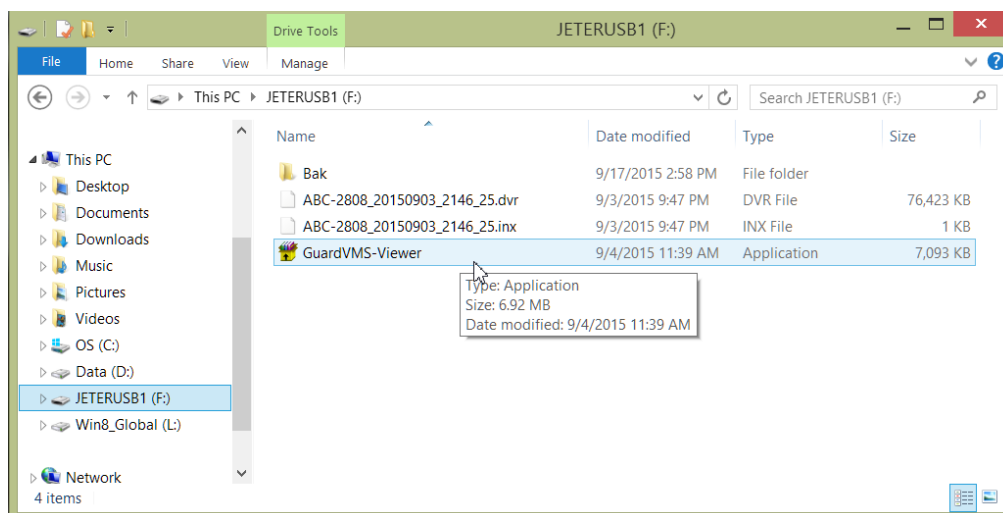


(2) The second way is to save application from USB Drive, as shown below

Step1. Execute backup procedure by USB driver.

Step2. Take off USB driver from MDVR and connect PC-end.

Step3. Select and copy “ PC-Viewer “ to your folder on PC-end.

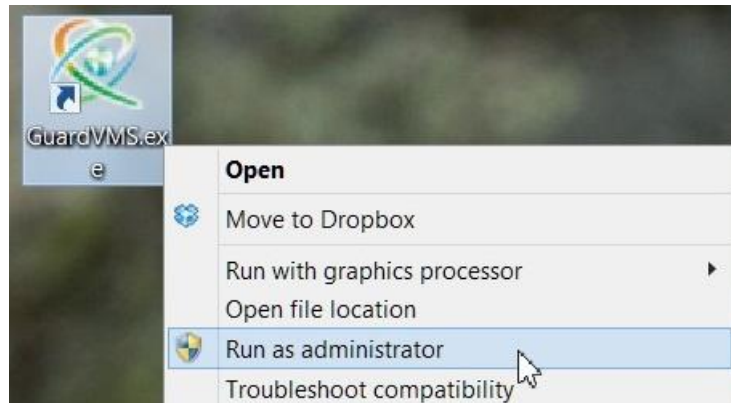


7.2 Install

For default settings, HDD and SD card had saved application of media player (PC-Viewer).



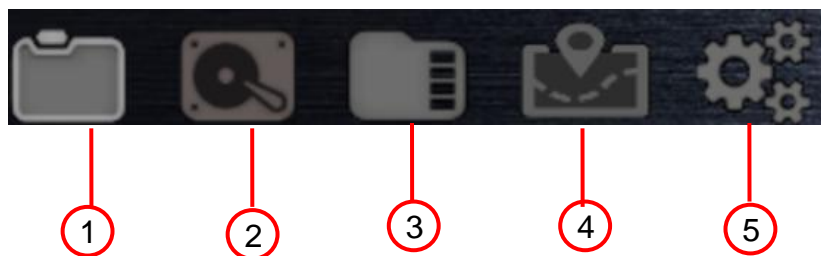
To execute unzip and select path with program saved then open application.



- **Note :** For Windows 7 above , Please click right to select “ Run as administrator ” in order to make sure video and data can be play on PC operator system.

7.3 The Quick icon operator list description

For each icon explain about means and operators following:



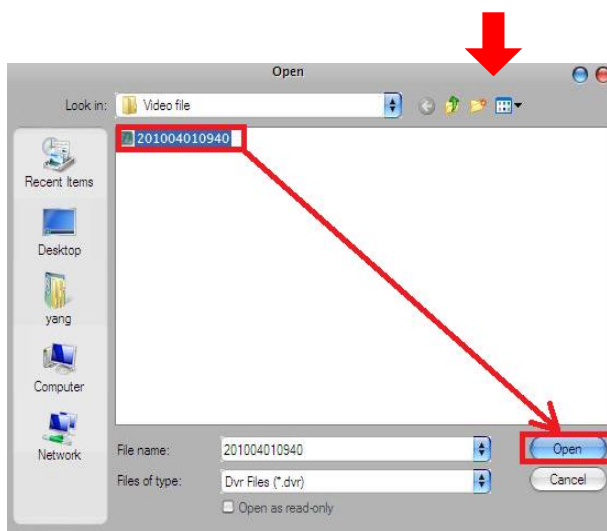
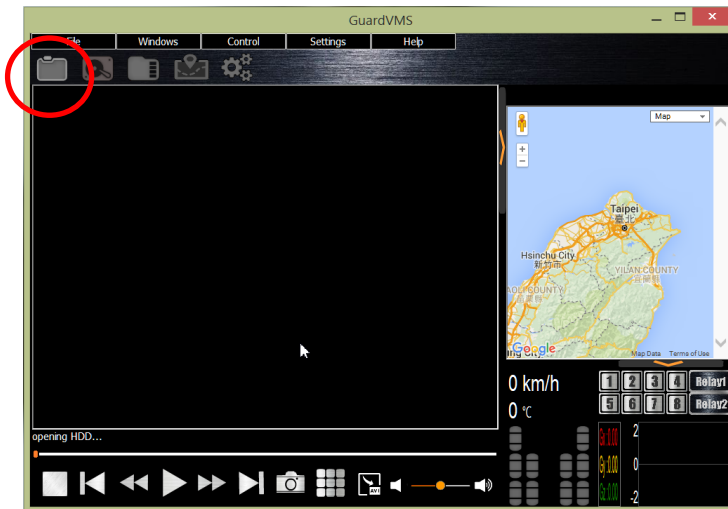
Mobile View Icon Function Illustration		
Item	Name	Explanation
1	Open File	Press the key to select read .dvr file
2	Search HDD	Let's HDD take away from MDVR that connect PC-end. In order to get record data of vehicle.
3	Search SD	Let's SD card take away from MDVR that connect PC-end in order to get record data of vehicle.
4	MAP Windows	Disable / Enable MAP frame.
5	Advance settings	Setting parameters with Language 、 Video capture 、 files converter and data saved path.

7.3.1 Open File



This function is to search and play .dvr file.

Click Open File icon then select backup data (.dvr) to play video.



7.3.2 Search HDD

HDD box on MDVR can directly connect to the PC to read backup data via USB interface.

Note :

Before user take off HDD from DVR, system must be shut down and then remove HDD.

1. Open the HDD cover, and pull the HDD out.

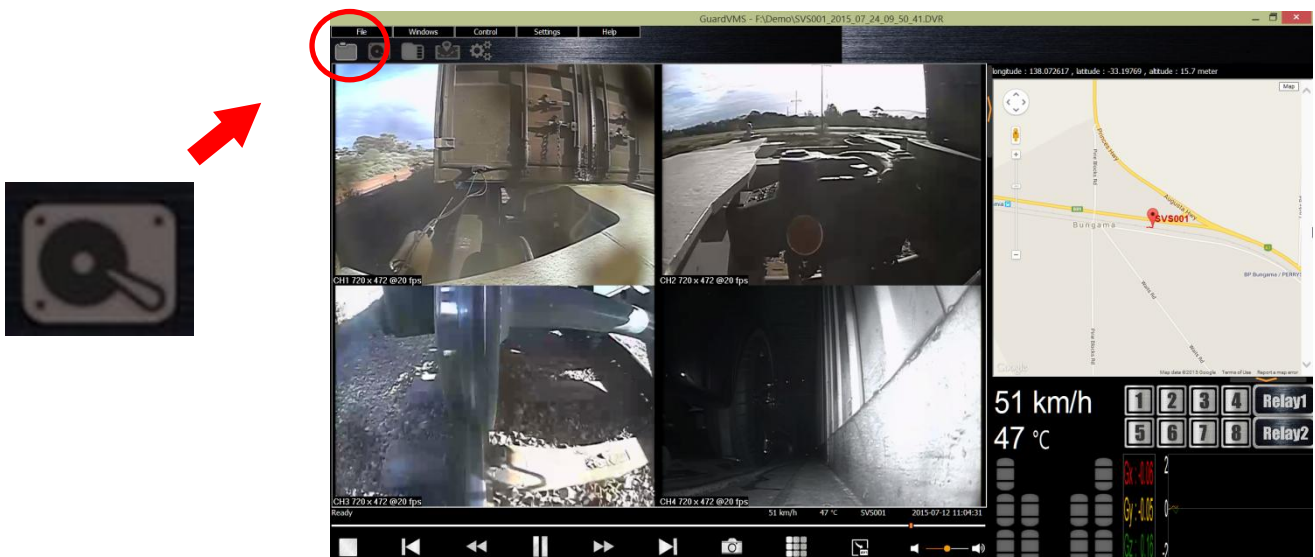


2. Use the SATA cable to let the HDD link to your PC. (The SATA cable is optional).



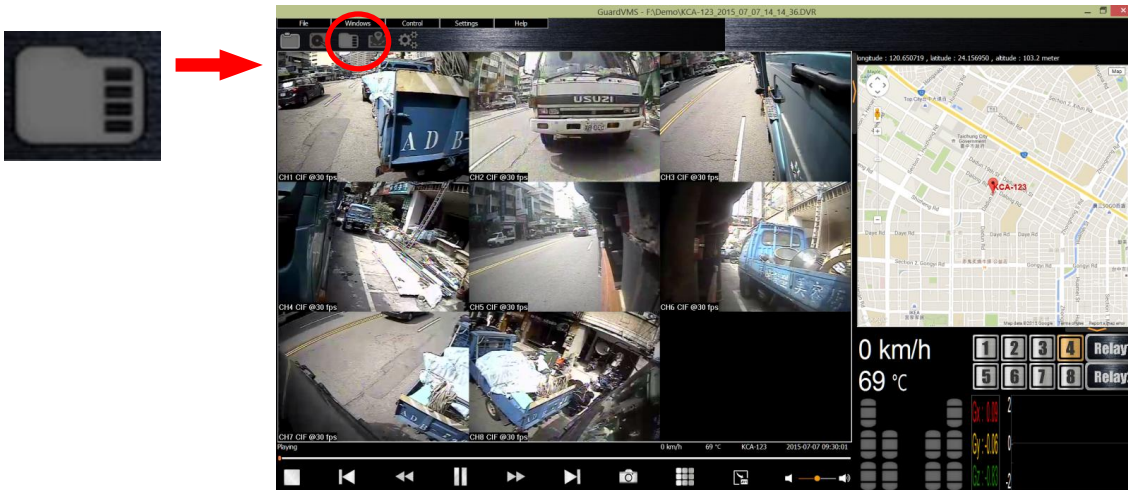
The format of MDVR recording file is .dvr,

System has support converted files to ".avi" or ".mov" format through the application.

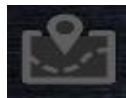


7.3.3 Search SD card

Take SD card to Plug in to the PC that click on the files icon to open and play video on SD card.



7.3.4 Windows Layout



The function has support hide window of Map and Vehicle information.



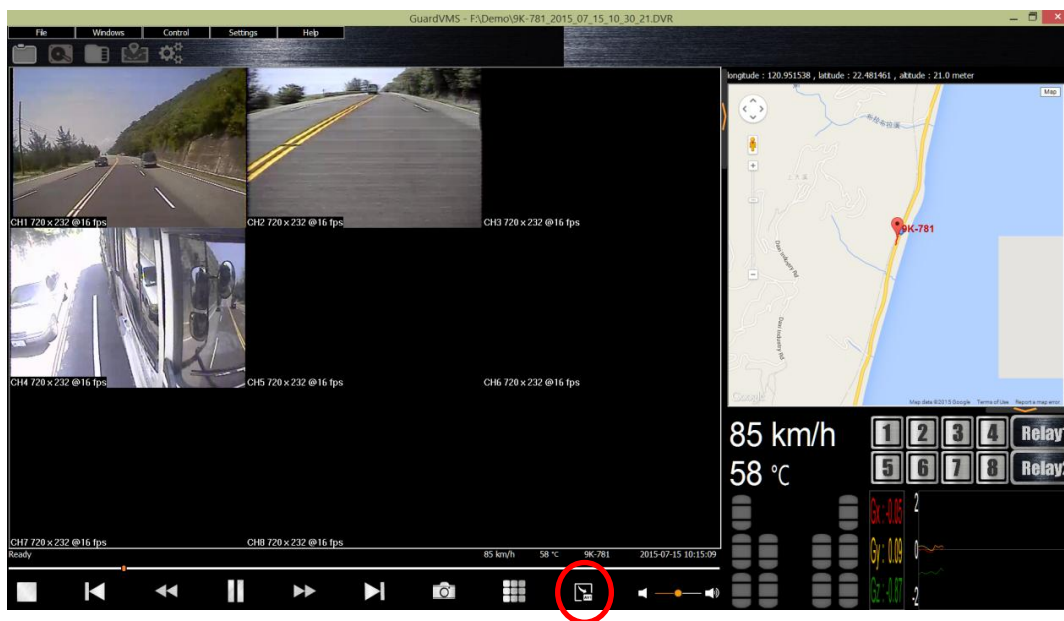
7.3.5 Settings

* The Settings function is swap language & setting each file directory path.



7.3.6 Converter files

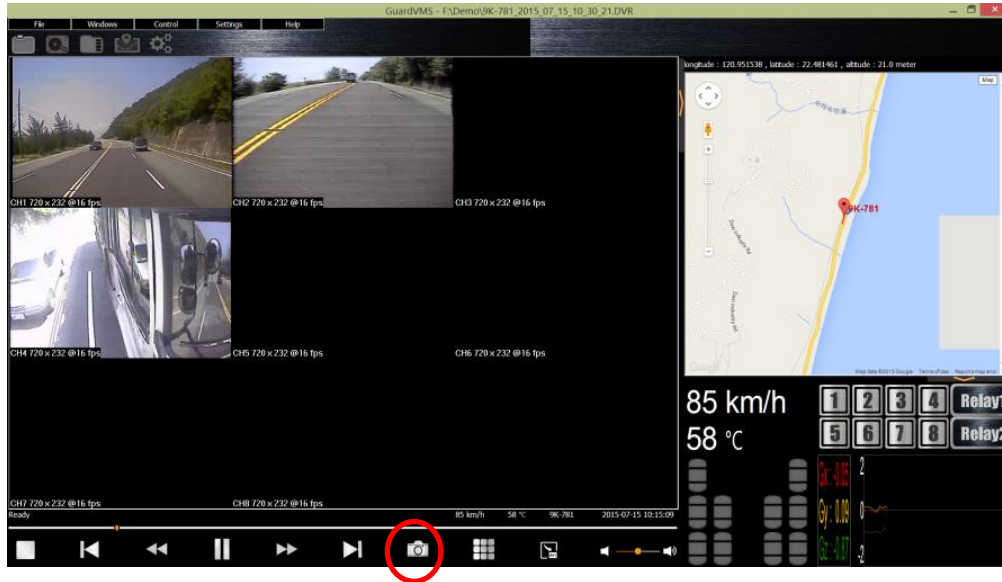
* Click ".avi" icon on below function bar in order to converter video file



7.3.7 Capture screen



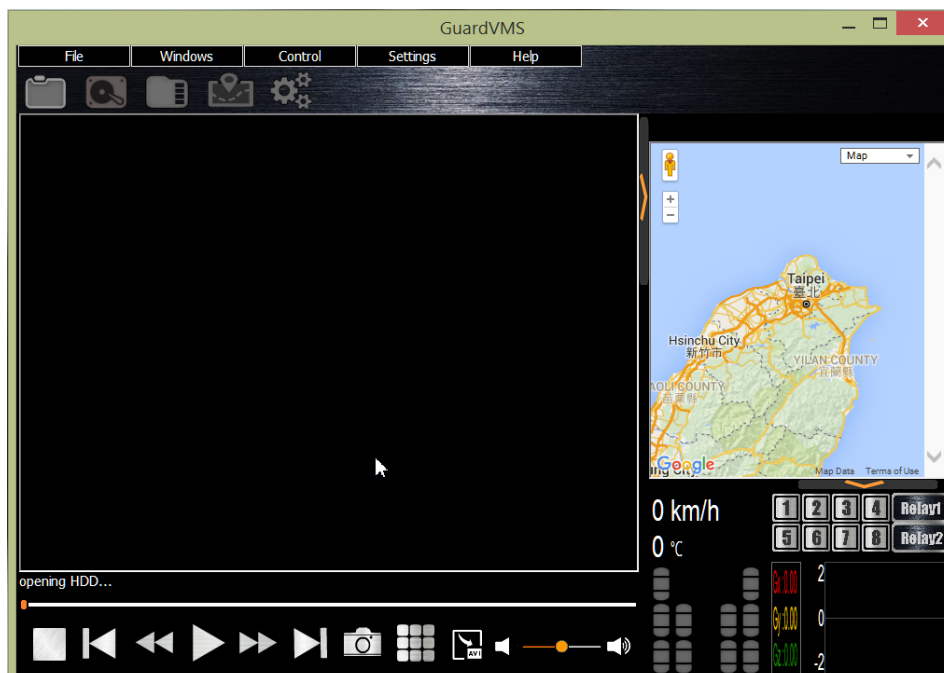
* Click camera icon on below function bar in order to capture main screen ◦



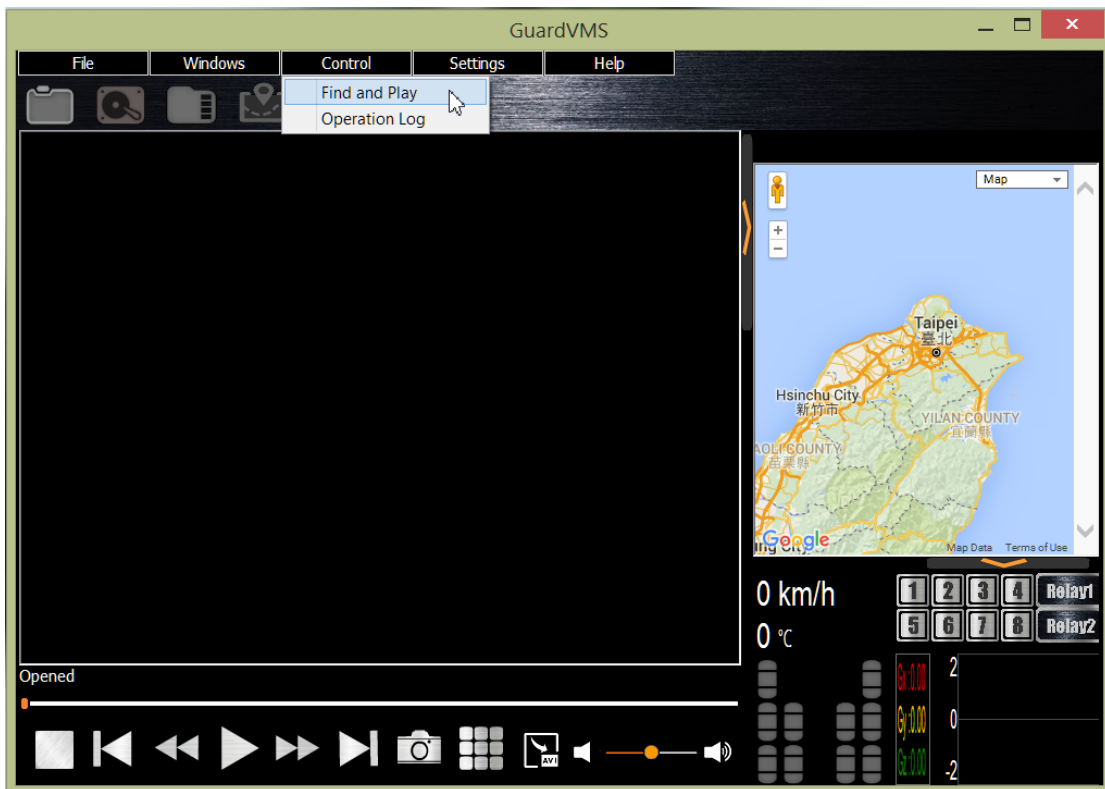
7.3.8 Find and Play

This function is helpful for user to execute playback by time search 、Event search 、Quick search.

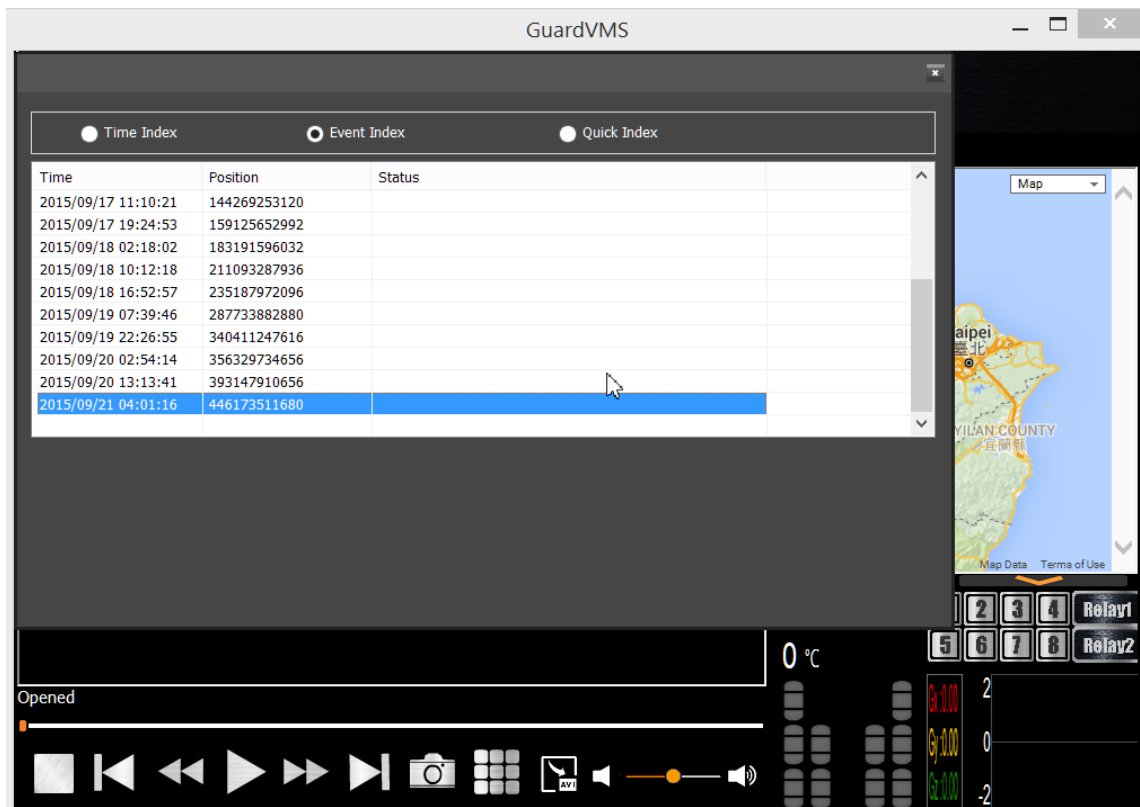
- (1) Step1: Open file or execute search HDD 、 search SD.
- (2) Step2: Select Control /Find and play.



(3) Step 3: Select Control /Find and play.



(4) Step 4: Select Event Index and Click list with selected item.

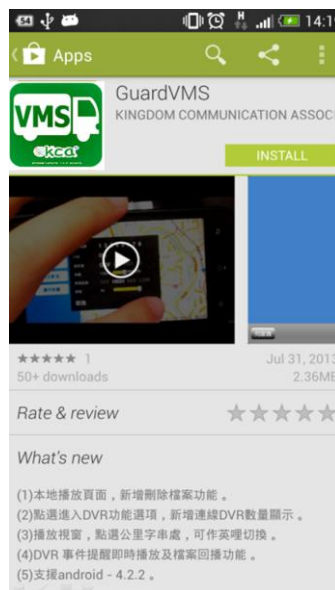


8. View On The Smart Phone By GuardVMS+

8.1 Android System

8.1.1 Search and Download in Google Play

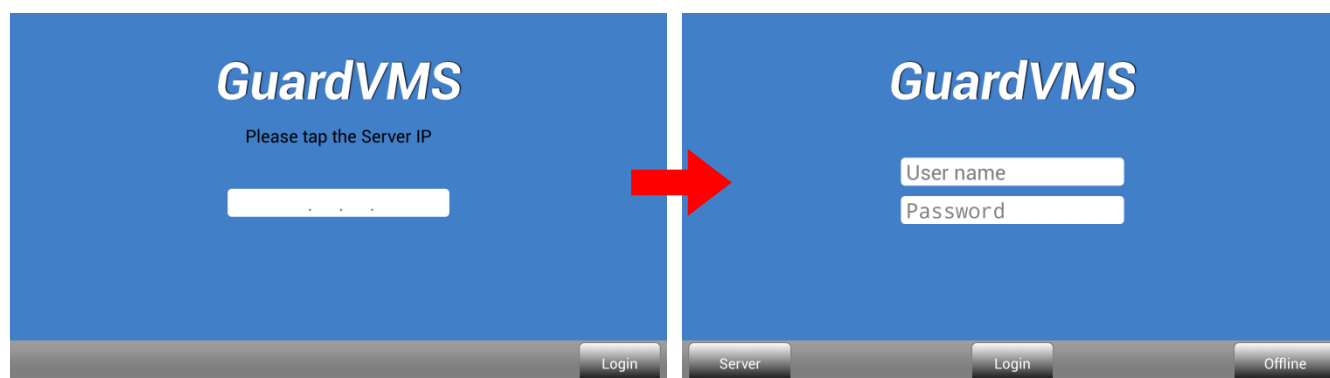
Type " GuardVMS+ " in play store to search, and install it.



8.1.2 Setup GuardVMS+

Type your sever IP address, and then input the user name and password.

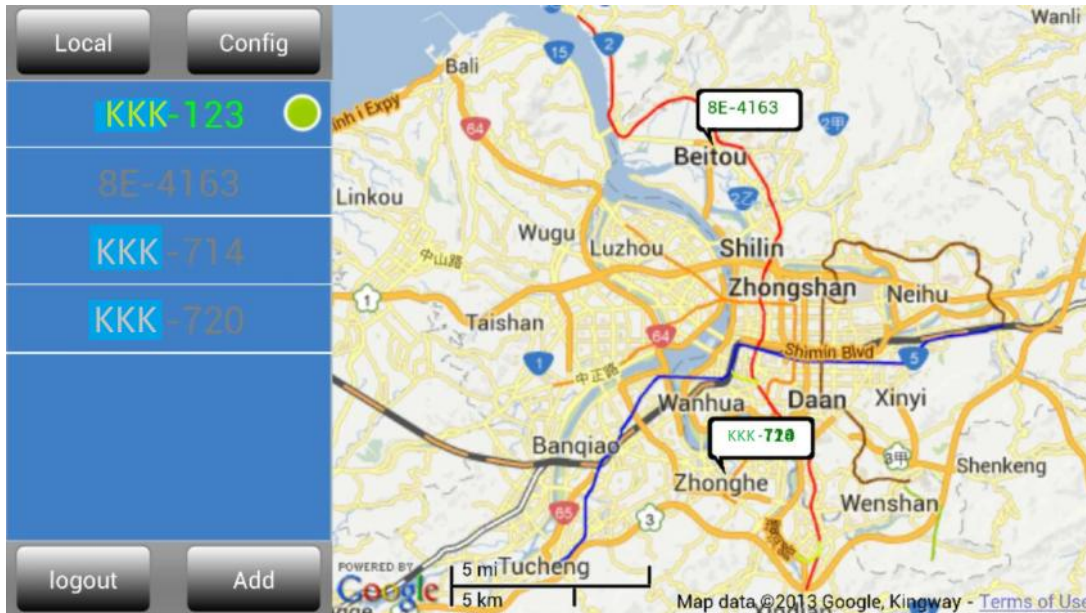
(user name and password need to be set before)



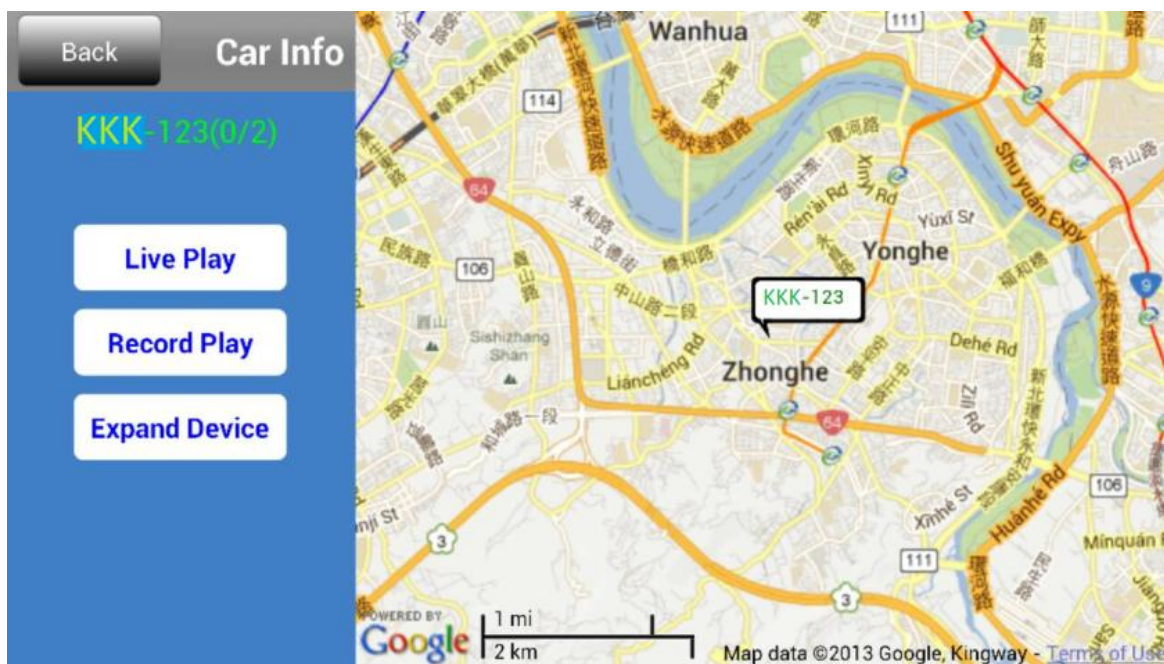
8.1.3 GuardVMS Functions

(1) Remote Live View

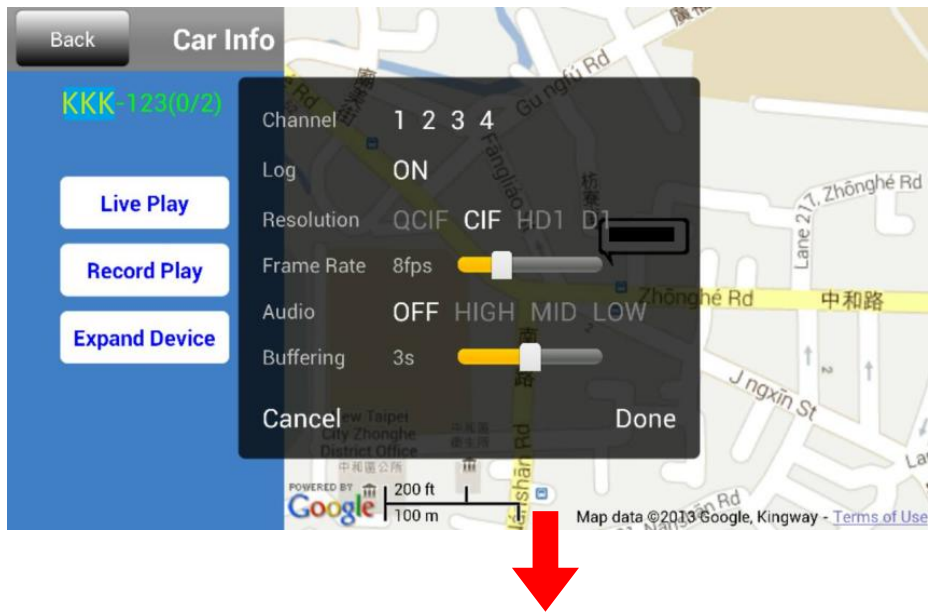
* After login successfully, You will see this page, on the left side menu, you will see online (green) / offline (gray) car, and it's location on Google map



* Click the green dot (The selected car id), the screen will display "Live play" 、"Record play" 、"Expend Device" such as above.



* Click “Live play”, and then you can set the resolution and other settings.

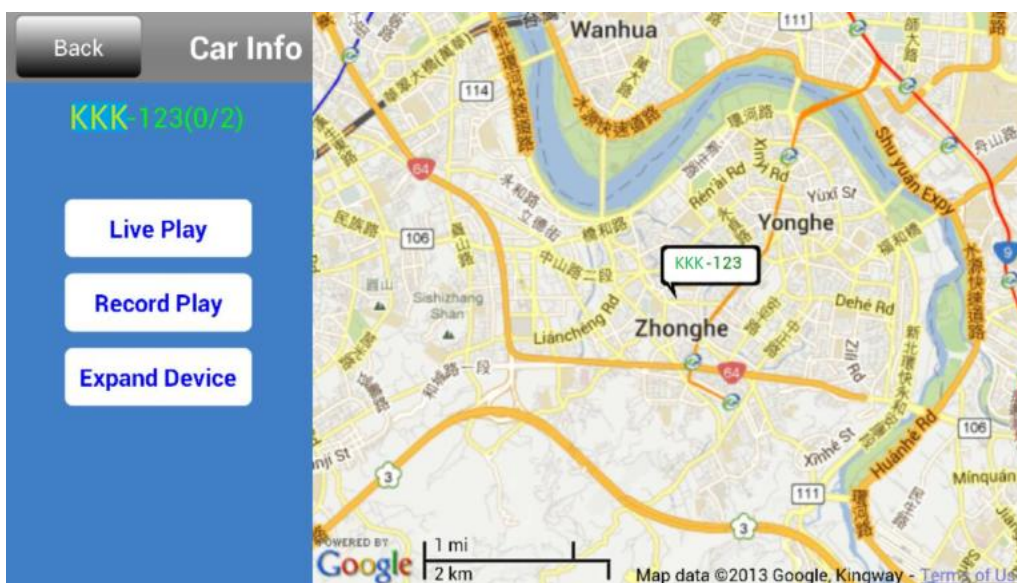


And now you can see the live play video after all the settings.



(1) Record Play

Click “Record Play”, set start time and end time, and click “Download” to see the record play.



Back	Times
KKK-123 Start Time <input type="text"/> End Time <input type="text"/> <input type="button" value="Download"/>	2013-07-11 05:14:00 NO EVENT
	2013-07-11 05:15:00 NO EVENT
	2013-07-11 05:16:00 NO EVENT
	2013-07-11 05:17:00 NO EVENT
	2013-07-11 05:18:00 NO EVENT
	2013-07-11 05:19:00 NO EVENT
	2013-07-11 05:20:00 NO EVENT
	2013-07-11 05:21:00 NO EVENT
	2013-07-11 05:22:00 NO EVENT
	2013-07-11 05:23:00 NO EVENT
	2013-07-11 05:24:00 NO EVENT
	2013-07-11 05:25:00 NO EVENT
	2013-07-11 05:26:00 NO EVENT
	2013-07-11 05:27:00 NO EVENT
2013-07-11 05:28:00 NO EVENT	
2013-07-11 05:29:00 NO EVENT	
2013-07-11 05:30:00 NO EVENT	

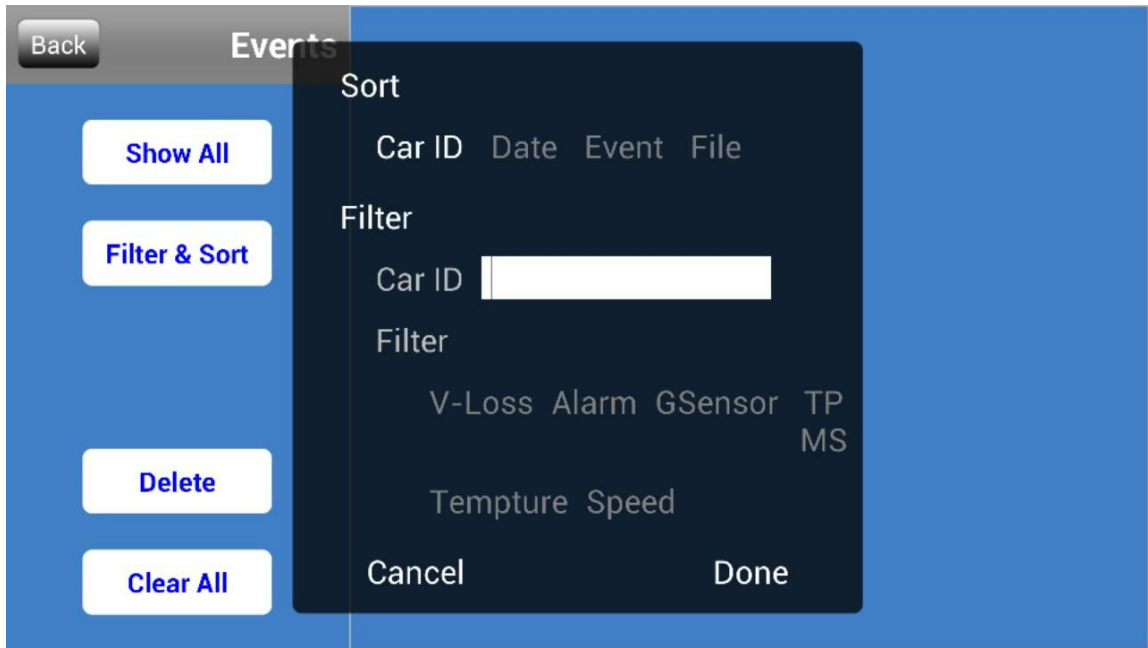
(2) Local Setting

* Here is "Local" setting page, you can sort by car ID or date, open/delete file, or into the "Event Center" setting page.

Back	Events
<input type="button" value="Clear All"/>	[36-164TAI]-2017/07/27 16:48:58-Alarm->CH2 (V)
	[36-164TAI]-2017/07/27 16:44:51-Alarm->CH1
	[36-164TAI]-2017/07/27 16:30:14-Alarm->CH3
	[36-164TAI]-2017/07/27 16:27:53-Alarm->CH1 (V)

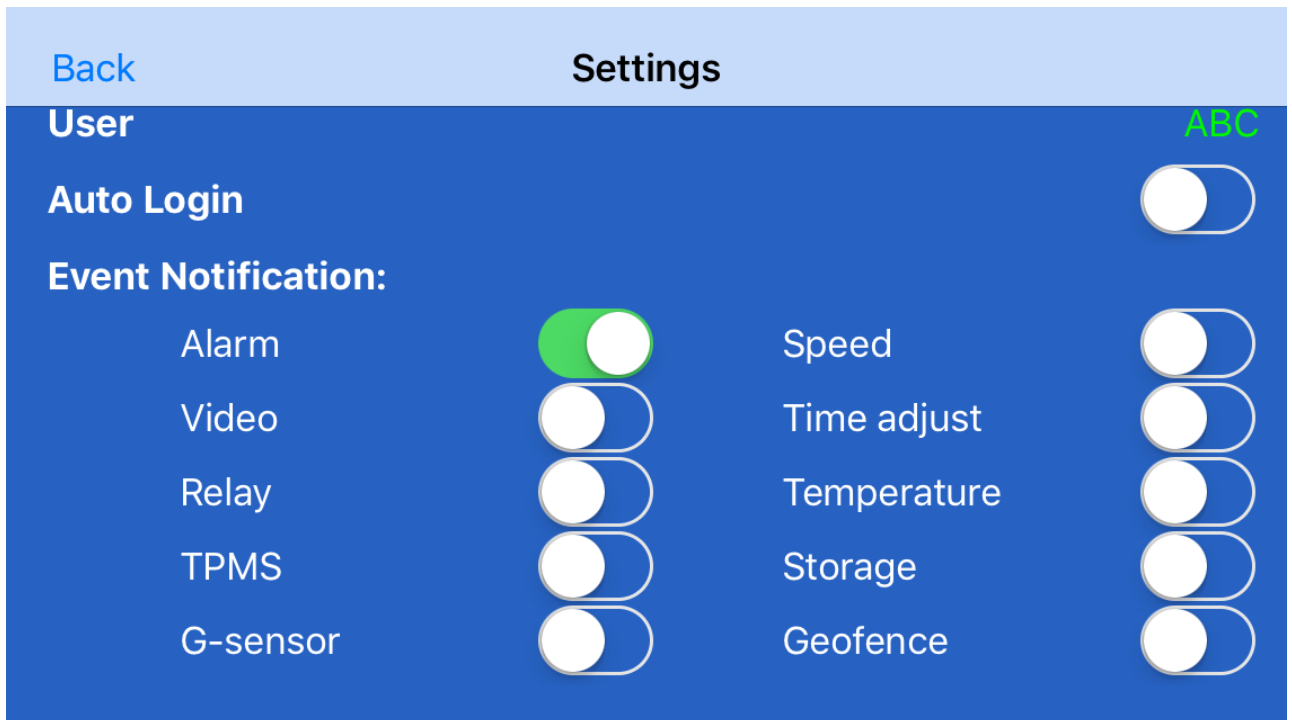
(3) Event Center Setting

Here is “Event Center” setting page, you can find the event by date or car ID or event type, and also can delete event record here.



(4) Config Setting

Here is “Config” setting page, you can set the event notification by each event.



9. APPENDIX

9.1 Remote controller introduction



No	Symbol	Illustration
1	MENU/ESC	Menu/Esc
2	↑	Up
3	↓	Down
4	←	Left
5	→	Right
6	ENTER	Enter
7		SEQ/PIP
8	ZOOM IN	PTZ Zoom in
9	PTZ	PTZ Control
10	ZOOM OUT	PTZ Zoom out
11	1	CH1 Full
12	2	CH2 Full
13	3	CH3 Full
14	4	CH4 Full
15	5	CH5 Full
16	6	CH6 Full
17	7	CH7 Full
18	8	CH8 Full
19		Rewind
20		Menu/Play/Pause
21		Forward
22		Stop
23	F1	Expansion Button
24	F2	Expansion Button
25	F3	Expansion Button
26	F4	Expansion Button

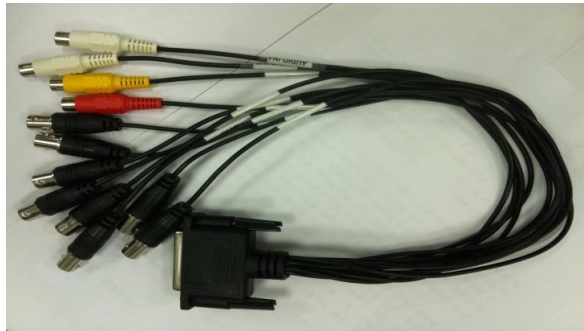
9.2 Accessory Description

Power Supply Cable



The cable used to connect power supply from the car. (Refer to 3.1 & 3.1.4)

Video/Audio Cable



The cable used to connect cameras (video monitor(video out) and audio in/out. (refer to 3.1)

Video/Audio Cable (AviationPlug - 4pin cable)



The cable used to connect cameras (video monitor(video out) and audio in/out.(refer to 3.1)

12VDC Supply Cable



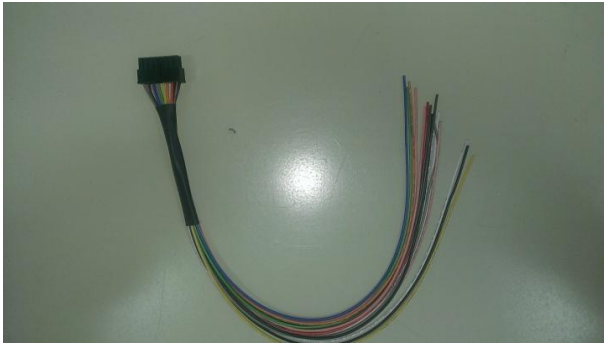
This cable used to supply 12VDC from the MDVR, and you can connect cameras or any device which for 12VDC. (Refer to 3.1)

Control Cable



This cable used to connect the TPMS, car speed line, PTZ and any device which for RS485 control. (Refer to 3.1, 4.6.8)

Alarm Cable



This cable used to connect the device which correspond the MDVR alarm setting. (Refer to 3.1 & 4.4)

GPS Antenna



Used to connect the GPS antenna port to receive the GPS signal. (Refer to 3.1)

3G Antenna



Used to connect the 3G antenna port to power strengthen the 3G signal. (Refer to 3.1)

Power Key



This key used to turn on/off the MDVR

Special Key & HDD Screws



The special key used to lock on/off the HDD (Refer to 3.1.2), and the screws used to lock the HDD on (refer to 3.1.1).

Remote Control



The remote controller used to control your MDVR by IR. (refer to 3.1).

9.3 Remove main board

Summary:

If the defective issue has already make sure that occurred on main board, please remove main board and ship back to company, Please following the step below :

9.3.1 Remove the screw on back panel



Remove the screw on bracket

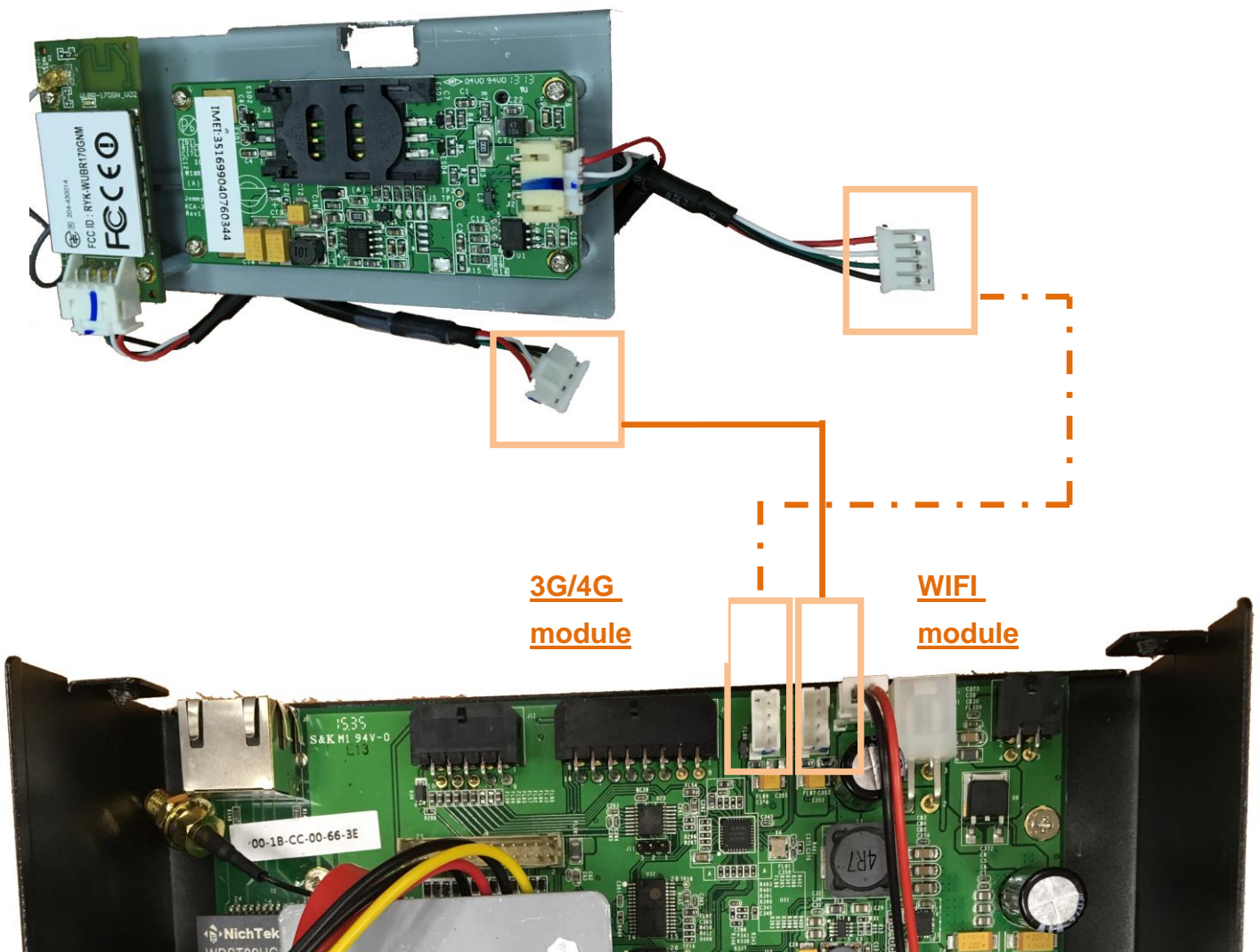


9.3.2 Open the top cover to remove the Network module board

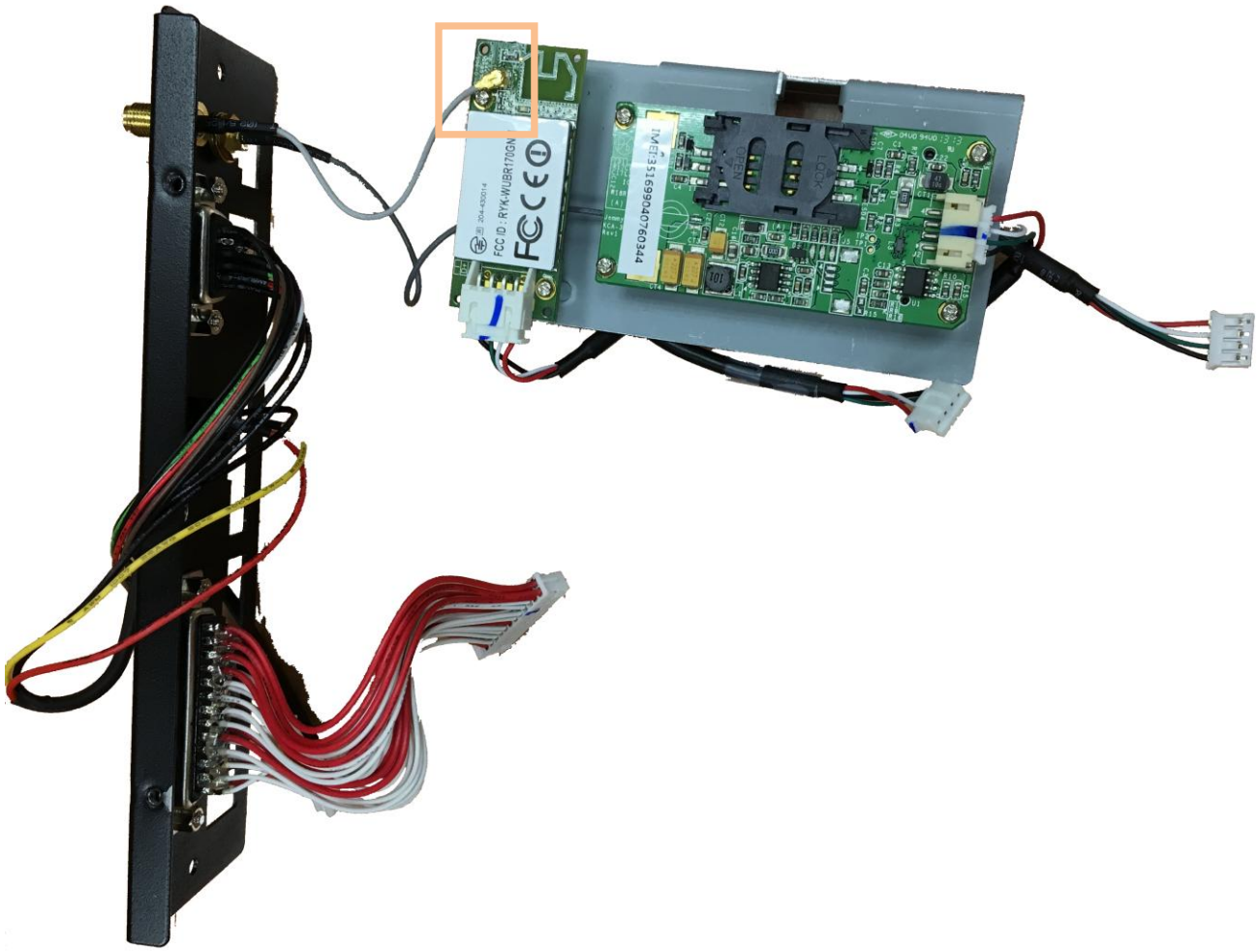
- Remove the screw on housing



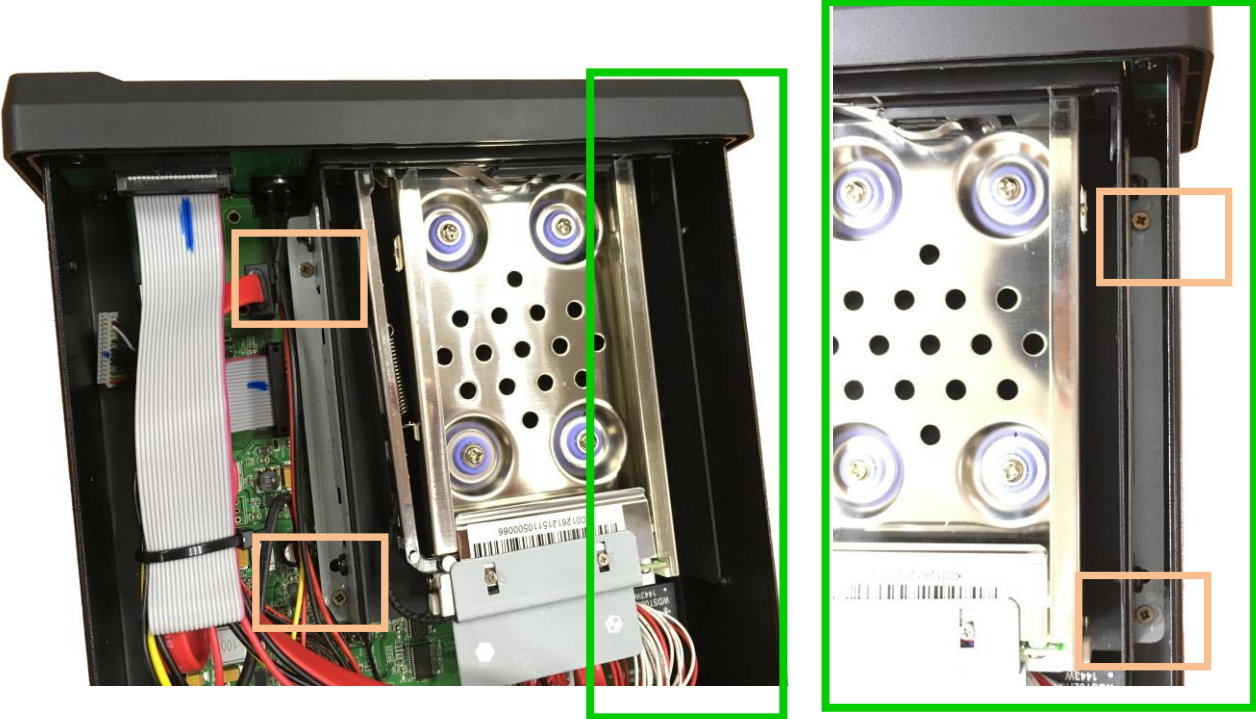
Remove the WIFI and 3G/4G module board



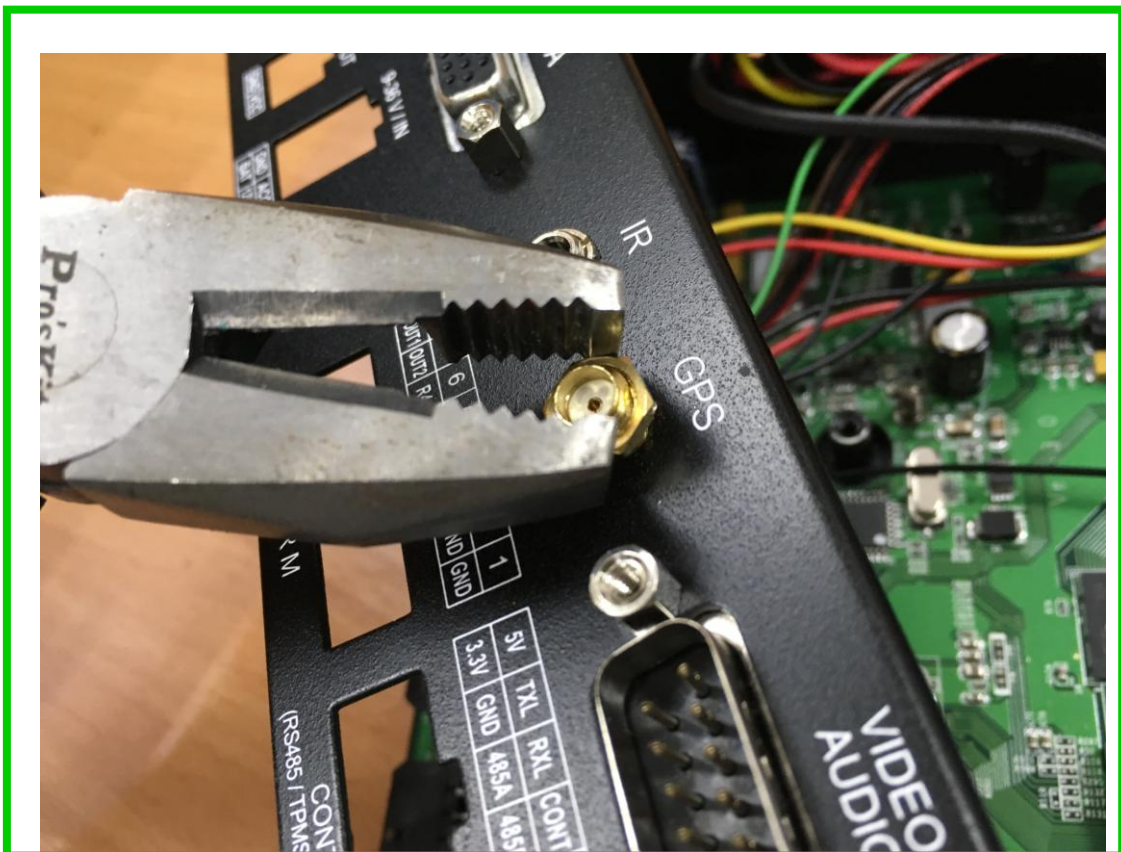
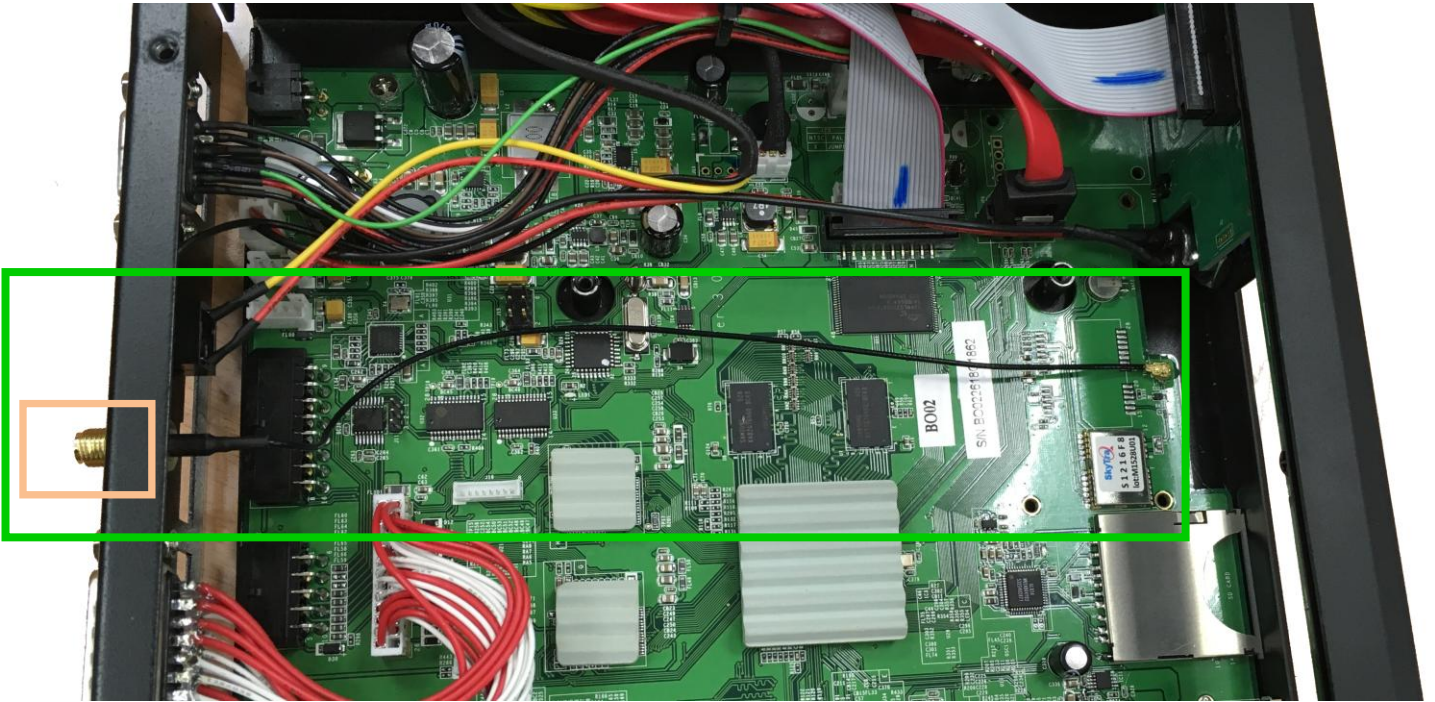
- Note :
If you do not have ability of Fluid dispensing, please do not remove the contact side.



9.3.3 Remove the HDD trays screw

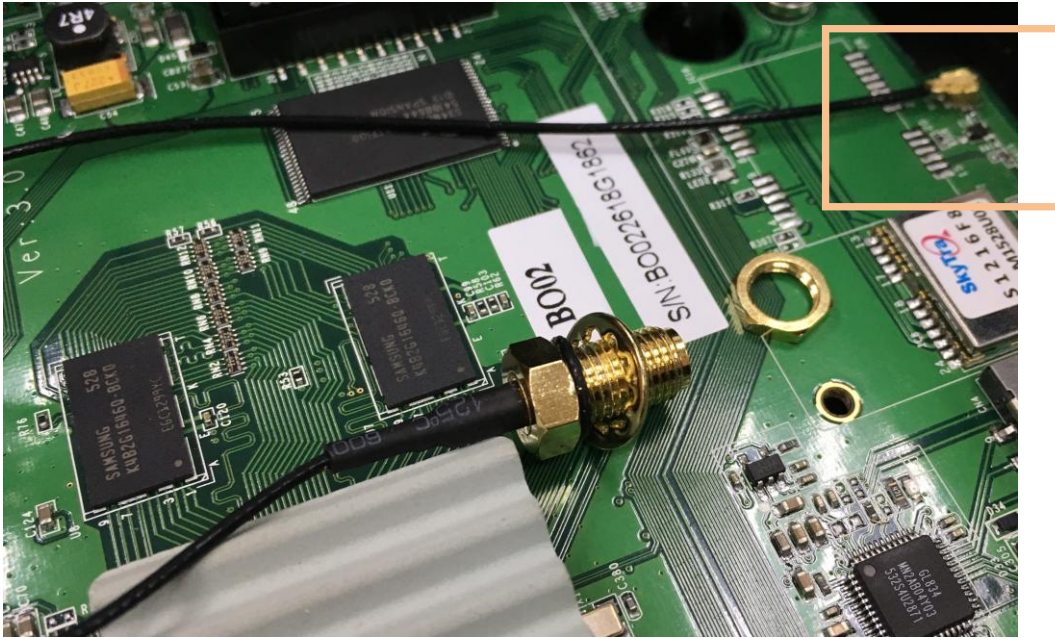


9.3.4 Remove the Antenna of GPS

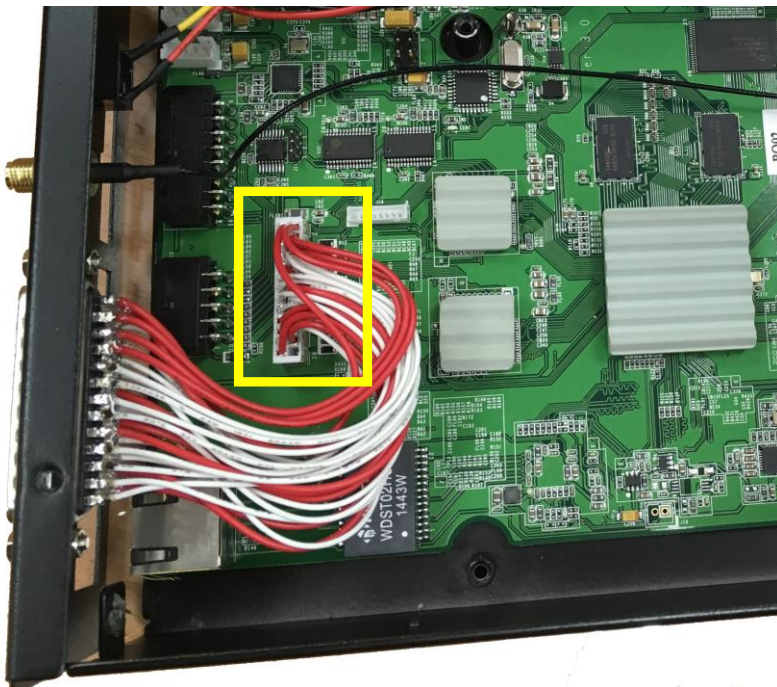


● Note :

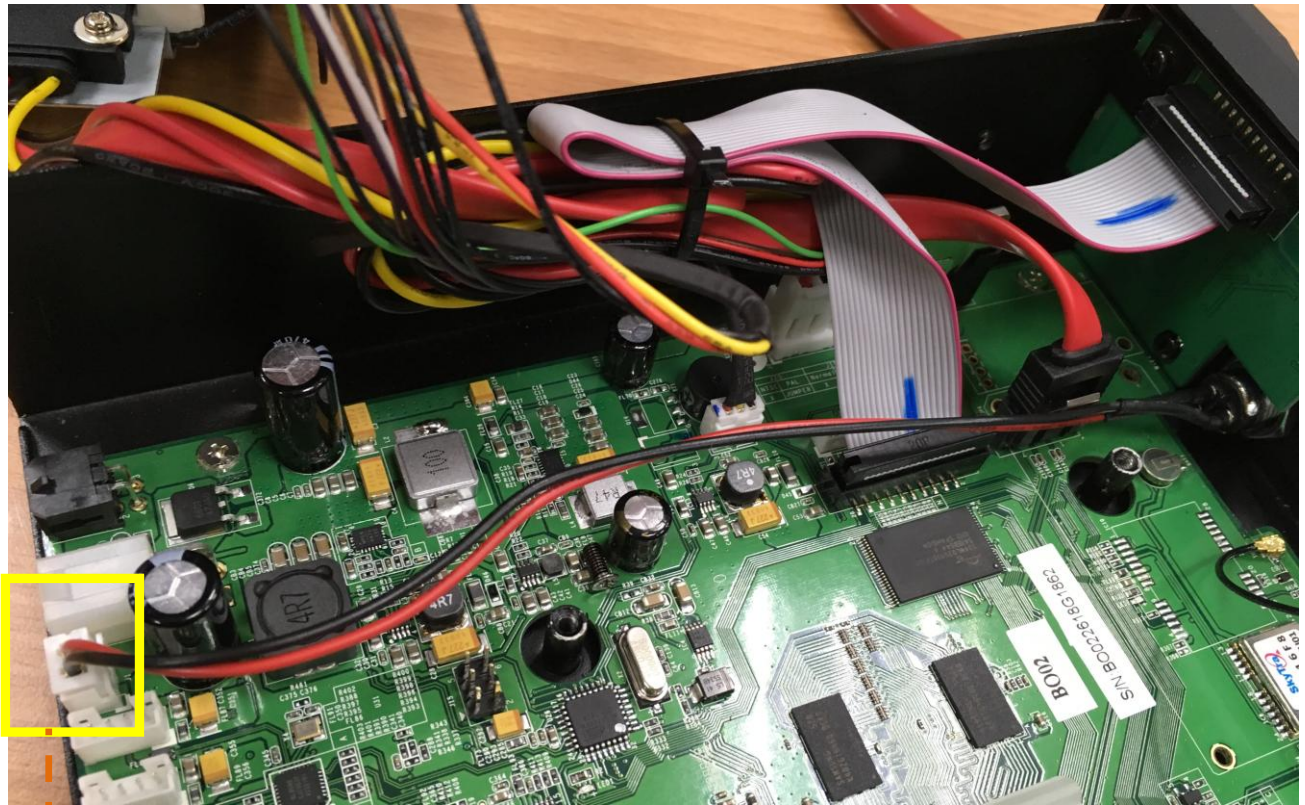
If you do not have ability of Fluid dispensing, please do not remove the contact side.



9.3.5 Remove the Cable with VIDEO IN / OUT.

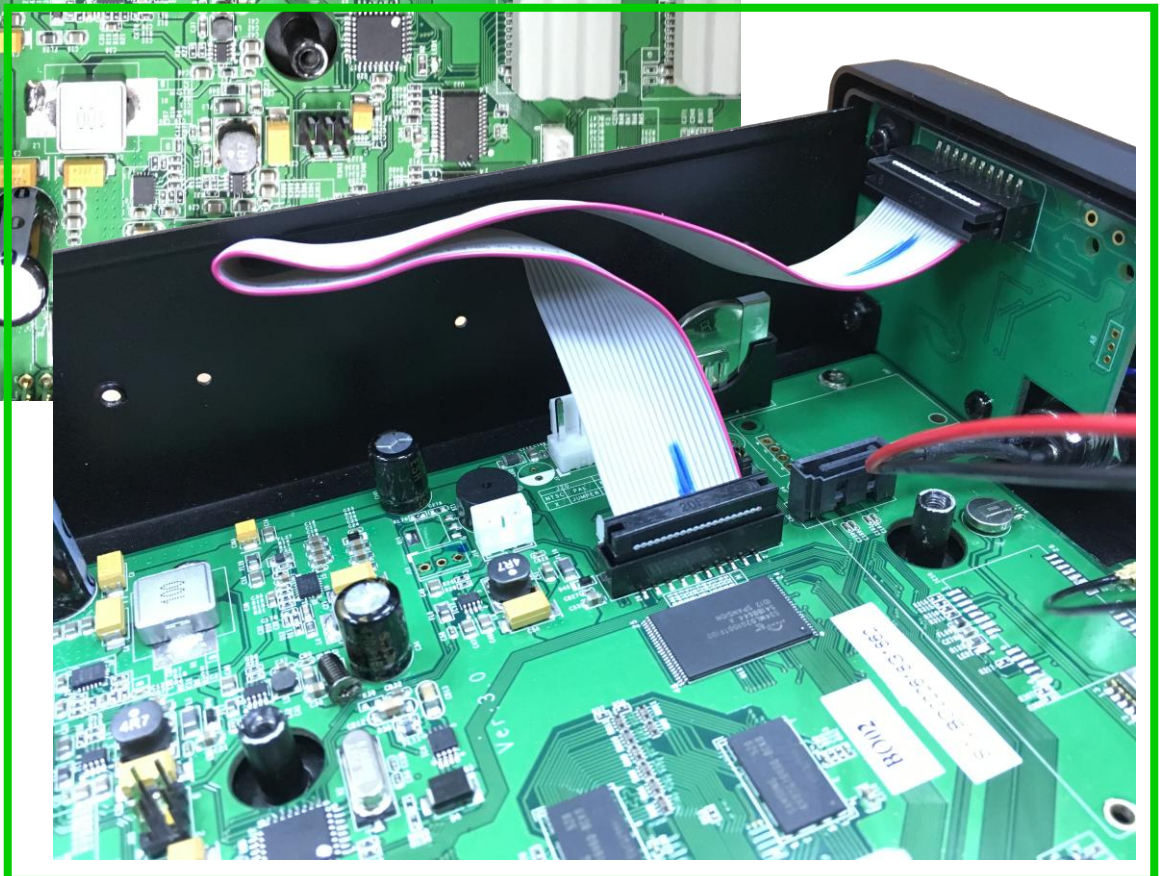
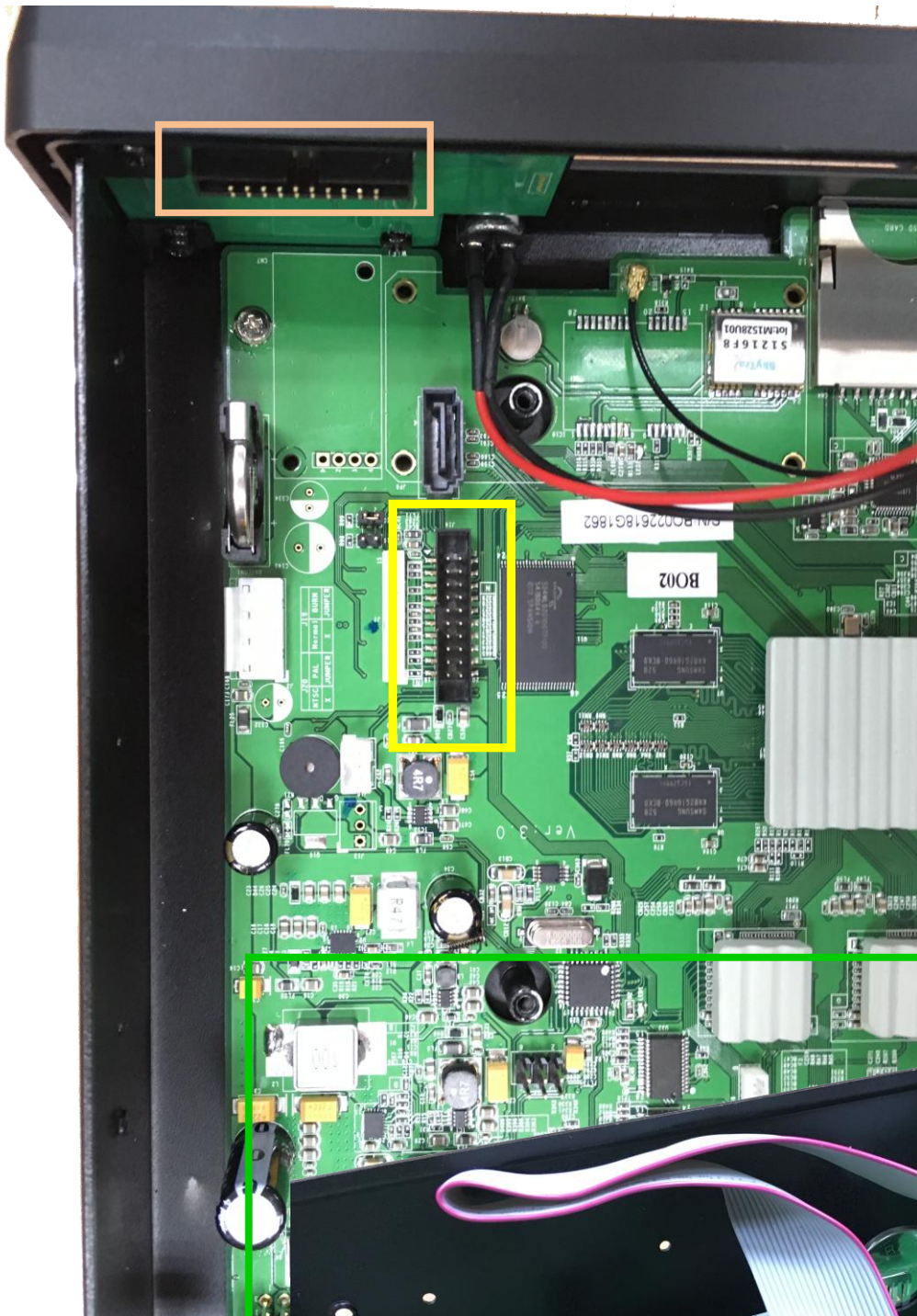


9.3.6 Remove the Locker with switch power

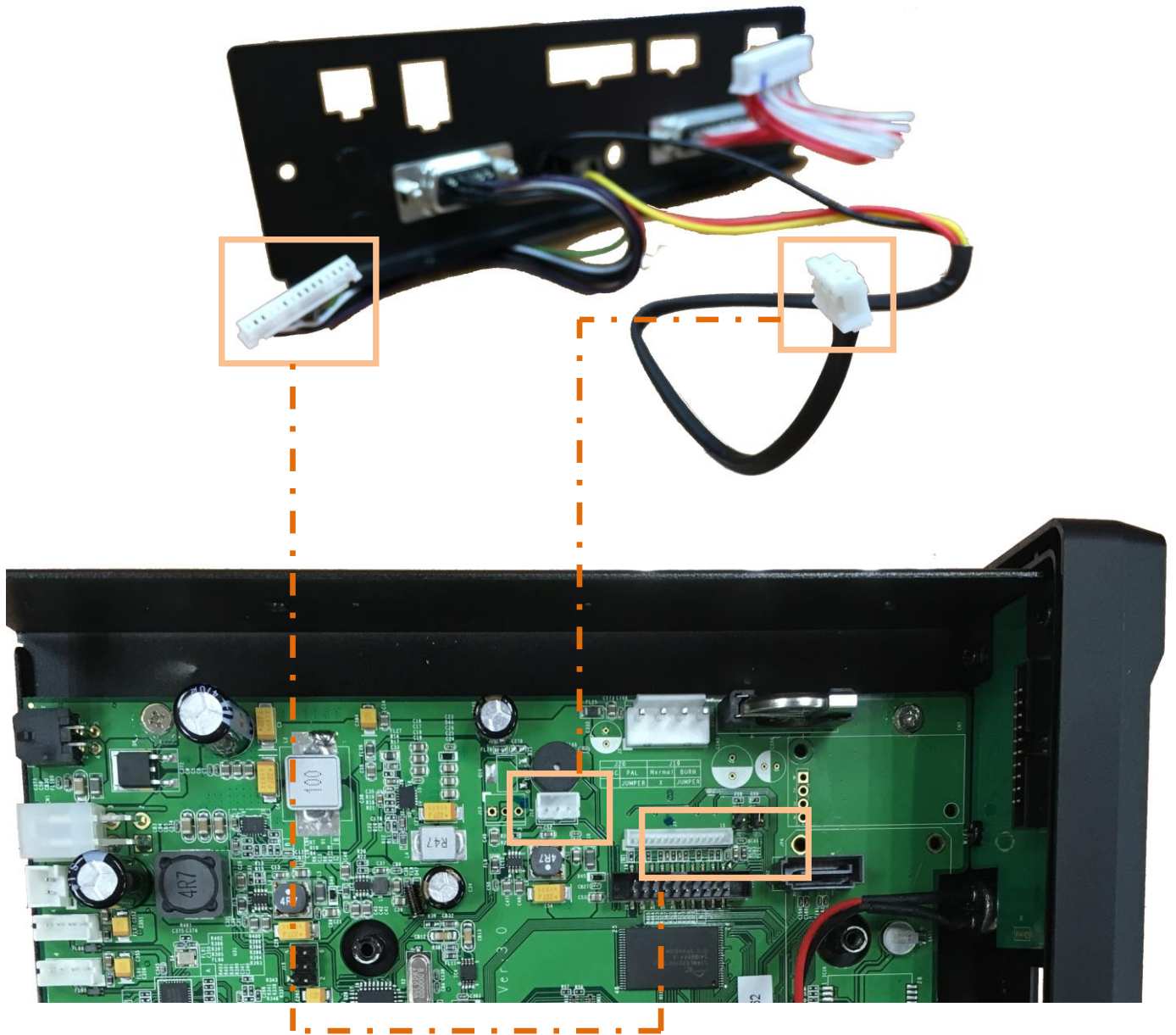


Switch Power
contact

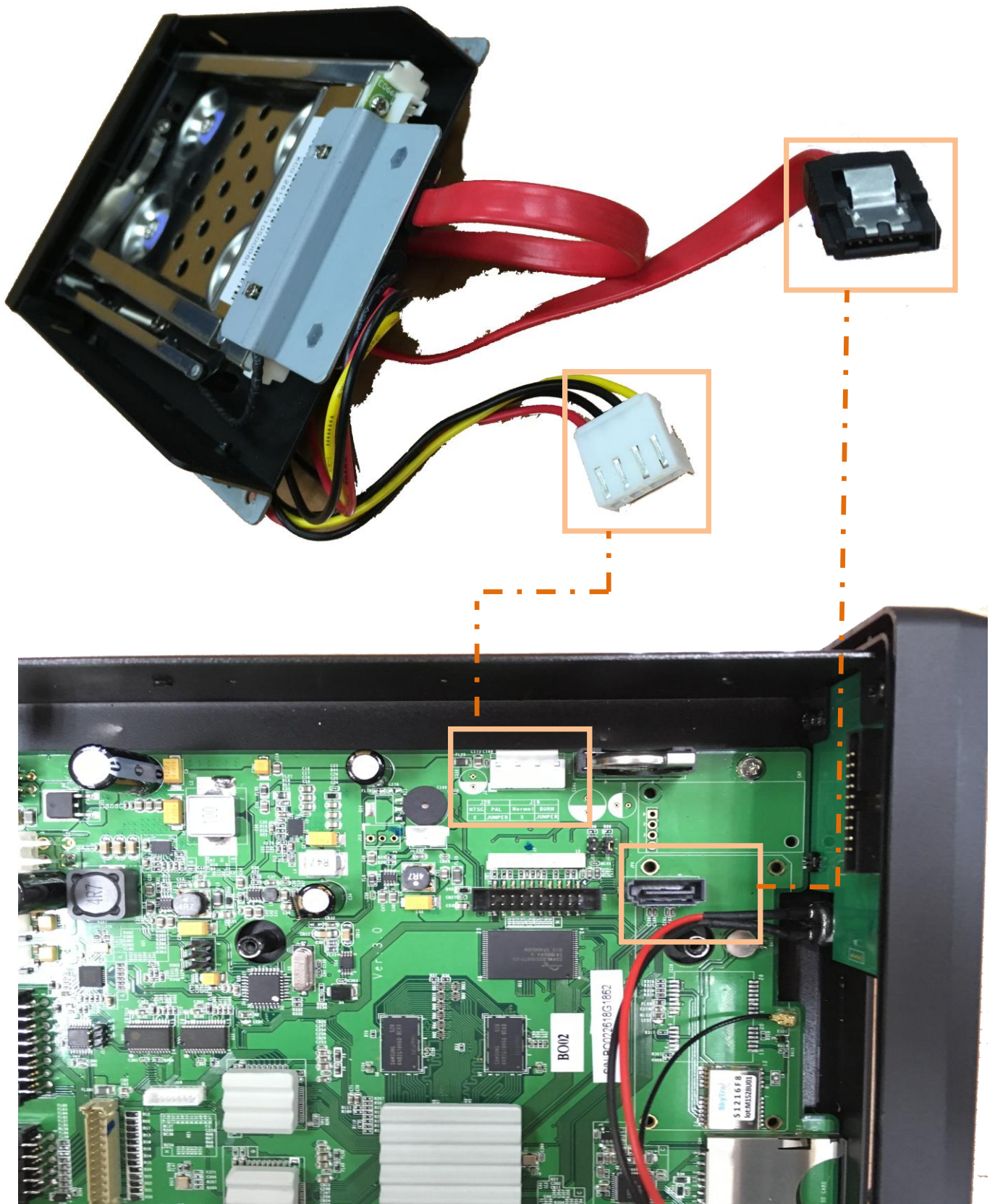
9.3.7 Remove the connection Cable with front panel



9.3.8 Remove the connection Cable with VGA and IR.



9.3.9. Remove the connection Cable with front HDD BOX



9.3.10 Remove the main PCB screw.



9.3.11 Finish

