

4 & 8CH Mobile DVR Systems



2019 JULY V1.0

(optional WIFI / 4G / G-MOUSE optional)



*** The company reserves the right to modify this product manual without prior notice. The product screen display and operation content should be based on the actual machine.**

Safety Precautions

Take and review some testing video initially to make sure the images were recorded correctly. Please note that manufacturer, its subsidiaries and affiliates, and its distributors are not liable for consequential damages arising from any malfunction of main device accessory, including memory device that results in the failure of an image to be recorded or to be recorded in a way that is machine readable.

Before using the product, please ensure that you read the safety precautions described below. Always ensure that the product is used correctly.

- Please keep device away from children.
- Use only recommended power sources.
- Do not attempt to disassemble, alter or apply heat to the product.
- Avoid dropping or subjecting the product to severe impacts.
- To avoid the risk of injury, do not touch the interior of the product if it has been dropped or otherwise damaged.
- Stop using the product immediately if it emits smoke, a strange smell, or otherwise behaves abnormally.
- Do not use organic solvents such as alcohol, benzene, or thinner to clean the product.
- Do not let the product come into contact with water (e.g. sea water) or other liquids.
- Do not allow liquids or foreign objects to enter the VVR.
- Do not place the VVR near or in direct flame.
- Do not handle the power cord with wet hands.
- Do not use the equipment in a manner that exceeds the rated capacity of the electrical outlet or wiring accessories. Do not use if the power cord or plug are damaged, or not fully plugged into the outlet.
- Do not allow direct or metal objects (such as pins or keys) to contact the

terminals or plug.

- Avoid using, placing or storing the product in the humid or dusty areas.

Before using 3G/4G products, please ensure that you read the safety notifications described below.

- Company and user shall not modify certified low power radio frequency device the frequency, increase the power and change the characteristics and functions without permit.
- Use low power radio frequency device shall not affect flight safety and interfere with legal communications; when there is interference happened should be immediately suspended, and improve without interfering may continue to use.
- Legal communication means operation of radio communication in accordance with the provisions of the Telecommunications Act Low-power radio frequency device must endure the interference of legal communications, industrial, scientific and medical radiation wave equipment.

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A. Product Features

1. Wide voltage input DC +8V ~ +60V, suitable for all kinds of vehicles, such as sedans, buses, construction trucks, and electric cars.
2. Built-in lithium battery 2200mA/Hr and low power consumption mode about 5mA/Hr to achieve a long-term monitoring in power saving mode, such as GPIOs, internal and external battery low voltage detection, six axis sensor (G+Gyro) detection, RTC timing wake up detects peripheral status.
3. Built-in ARM MCU for customized functions integration
4. Built-in MCU can use the GPS coordinates to switch between two different SIM cards when crossing state borders.
5. Two RS232 interfaces for equipment connection such as RFID reader.
6. One wire interface to support power and max. 128 sensor signals of the external equipment such as temperature sensor, i-Button, RFID readers, etc.
7. Support two GPS, which can power up by the built-in battery.
 - 7.1 Use the built-in GPS+GLONASS and AGPS functions of the 4G module for faster and more accurate positioning information.
 - 7.2 Support one GPS Mouse to get a stronger GPS signal.
8. Built-in CAN Bus 2.0A/B interface for integrating CAN Bus devices such as Mobile-Eye.
9. Support more than 10 external I/O and their input voltage withstand up to DC+60V for different integration need.
10. Built-in G-Sensor and Gyro Sensor for driving behavior analysis applications.
11. Built-in A/D conversion detection for speed, RPM, and fuel consumption.
12. Support dual SD cards to store GPS, video and audio data.
13. Support Wi-Fi USB dongle / RJ45 (optional) and the 4G network; and integrating ADAS and DSM systems.
14. Support Chrome, Firefox, Edge, etc.
13. Support two-way audio.

B. Specifications

Item	Description
Operating System	Embedded Linux
Video Compression	H.264
Resolution	1080P/720P/960H
Video Input / Output	Input: 4 / 8CH 1080P@30FPS Output: CVBS x 1 , VGA x 1
Network	4G
GPS	GPS+GNSS or G-Mouse
Alarm I/O	1. Analog Input x 2: A. Voltage Range: 0-60V
	2. Digital Signal Input (max. 60V) x 13: A. ACC x1 B. Tachometer x 1 C. Speedometer x 1 D. + / - trigger x 10
	3. Output x 2 (max. withstand 50V) A. Out 1 Sink current 1A (max) B. Out 2 Sink current 0.5A (max)
Audio Input / Output	Support condenser MIC and speakers (4Ω/ 2W) (Amplifier circuits are not required for MIC and speakers)
Communication Interface	1. CAN bus (2 wires) x 1 2. RS232 (2 wires) x 2 3. Dual SIM cards (MCU switch) 4. RJ45 (optional)
Storage	Dual SD cards, 8GB ~ 256GB Class 10 or above
LED Light	Power / Record Light (red), Network (green), GPS (blue)
Alarm Buzzer Output	Supported

USB Interface	USB Wi-Fi (optional) Support Wi-Fi (AP Mode) 802.11b / g / n Application: Wi-Fi Connection	
Battery Type	Lithium Battery 3.7V / 2200mA	
Display	1 / 4 / 9CH	
Simplex Mode	Record / Playback	
Control Interface	GUI	
Language	English, Traditional Chinese, Simplified Chinese	
Display Mode	1 / 4 / 9CH	
Disconnect Detection	Yes	
Power Specifications	Operating Mode	8-60 VDC, 6W (12V, 0.6A) Cameras and LED monitor Not connected
	Sleep Mode	<10mA@ >12.6V
	Output	Max. 12V @ 1.35A
Weight	920g (Cameras and accessories Excluded)	

Note 1: SD cards are sold separately. Recommend to use 8GB ~ 256GB Class 10 or higher.

Note 2: The product specifications are subject to change without prior notice.

C. System Support



Daul SD Card



I/Os



AHD/TVI Cam x 4



Communication function



Fuel detection



Daul SIM Card



Vehicle network system



One Wire Device



TV Out put



G-Sensor



Network transmission



RS232 x 2



Speed display



GPS+Path tracking

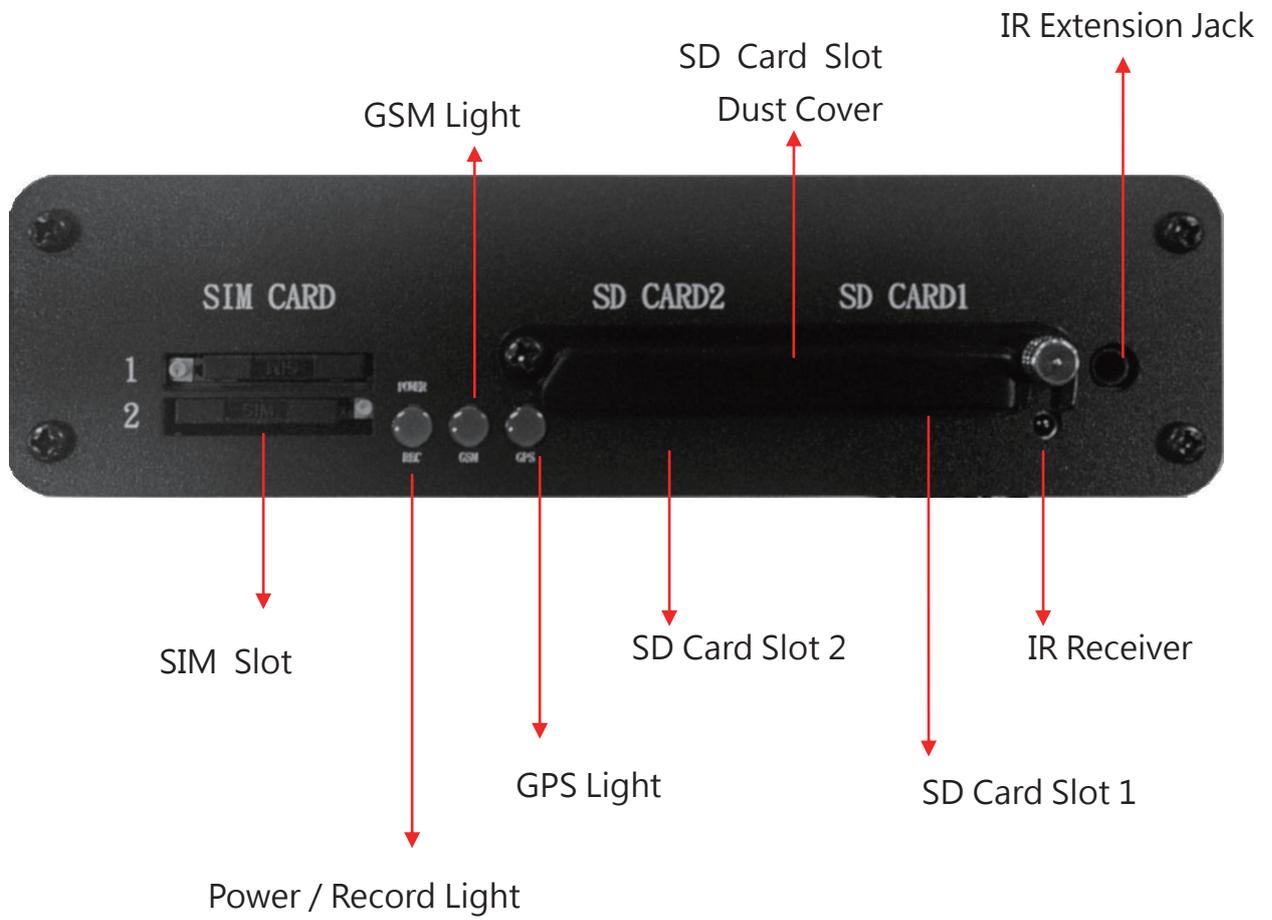


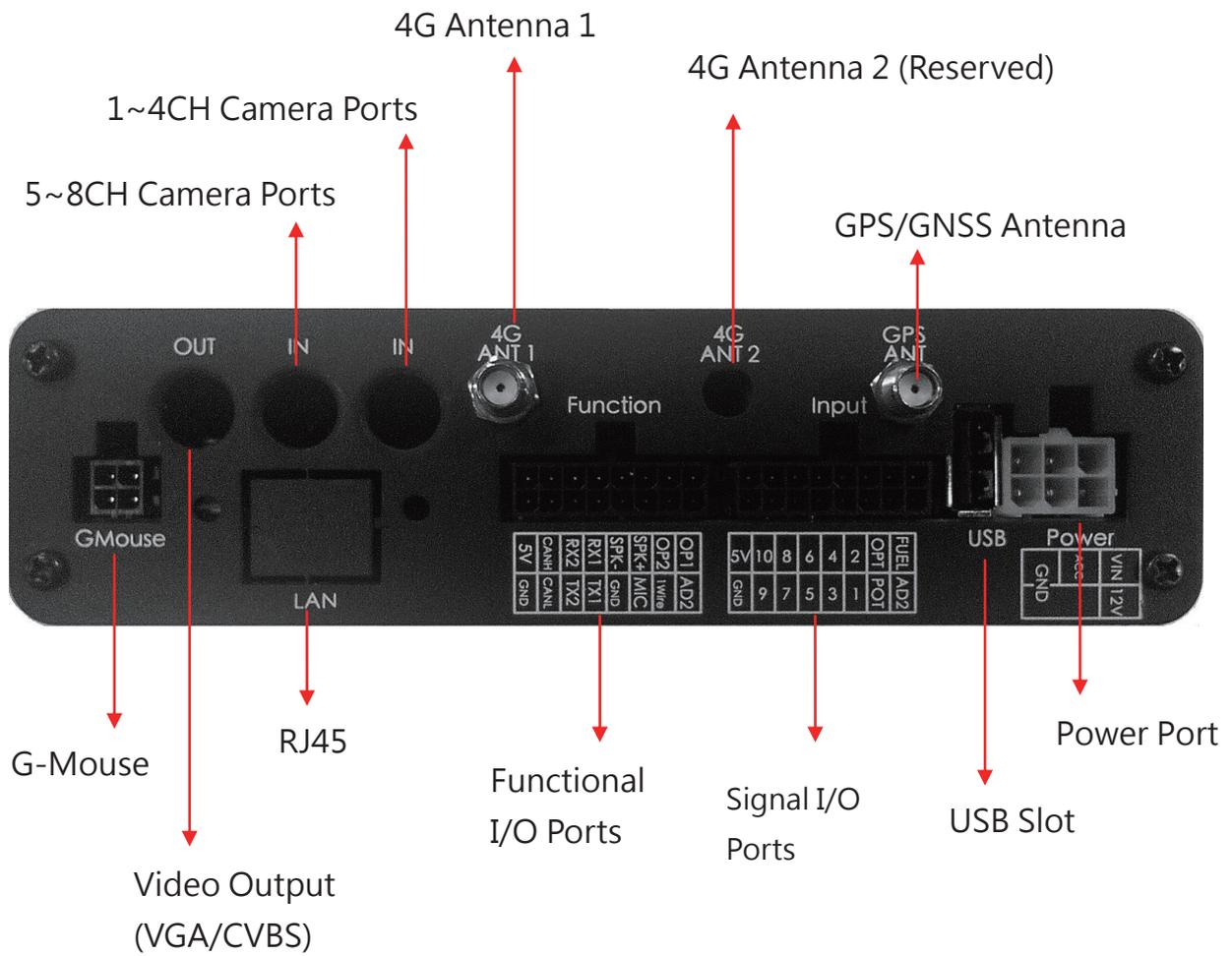
Rotating speed display

D. Accessories

- The following accessories include in the standard package.
 1. 5A fuse power cable x 1
 2. I/O cable x 2
 3. Remote Control x 1
 4. GPS/GNSS active antenna x1
- Optional accessories
 1. 7"LCD Monitor
 2. G-MOUSE
 3. Temperature
 4. RFID Reader
 5. IR Extension Cable

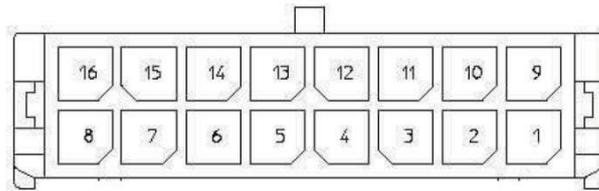
E. Physical Appearance





★ G-Mouse / 4G / Wi-Fi (Optional)

- Signal I/O Ports

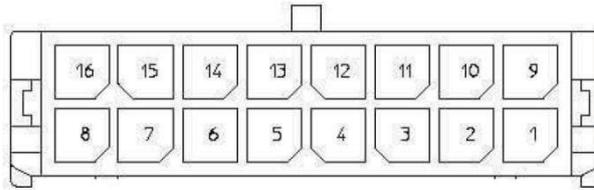


Contact	Item	Description	Note2
1	AD	Analog 2	A
2	PTO	PTO	D
3	IN1	IN1	D
4	IN3	IN3	D
5	IN5	IN5	D
6	IN7	IN7	D
7	IN9	IN9	D
8		GND	P
9	FUEL	Fuel analog1	A
10	OPT	R.P.M.	D
11	IN2	IN2	D
12	IN4	IN4	D
13	IN6	IN6	D
14	IN8	IN8	D
15	IN10	IN10	D
16	5V	5V Output(always)	P

Note 1: (IN1-10 Alarm Function Definition)

Note 2: (Signal source definition: A is an analog signal; D is a digital signal; P is power signal.)

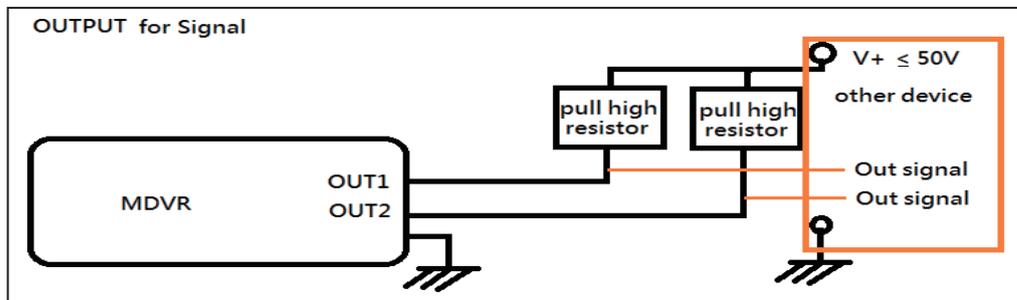
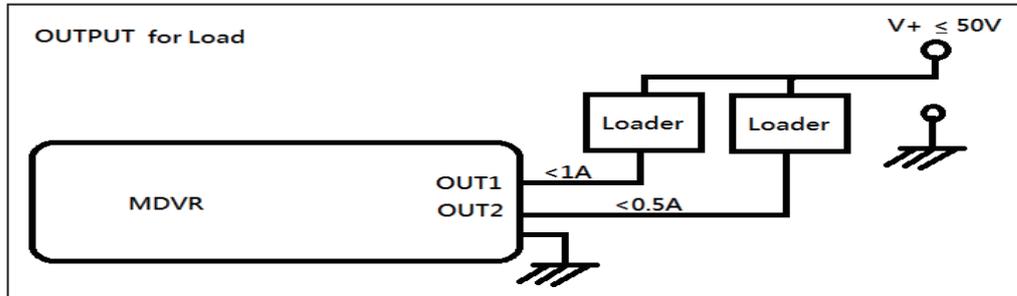
- Function I/O Ports



Contact	Item	Description	Note
1		GND	P
2	ONEWIRE	One Wire Device	D
3	MIC+	Microphone IN	Ai
4	MIC-	GND	D
5	RS232 TX1	RS232 TX1	Do
6	RS232 TX2	RS232 TX2	Do
7	CAN-L	CAN Bus_L	D
8		GND	P
9	OUT1	OUTPUT1 sink 1A/50v	
10	OUT2	OUTPUT2 sink 0.5A/50v	
11	SPK+	Audio out	Ao
12	SPK-	Audio out	Ao
13	RS232 RX1	RS232 RX1	Di
14	RS232 RX2	RS232 RX2	Di
15	CAN-H	CAN Bus_H	D
16	5V	5V Output (controlled)	P

Note: (Signal source definition: A is an analog signal; D is a digital signal; P is power signal; i & o are in and out respectively.)

Output example: load & signal



F. Power On / Power Off

(1) Power On

Put the SD card into the SD card slot and close the SD card slot lock, then turn on the power and it will take approximately 30 seconds. When lights start flashing as the recording is in progress.

(2) Power Off

Turn off the power; please wait for 3 seconds until super capacitor without electricity. Then take the SD card out and playback the recording files in computer.

(3) LED Lights

- Record Light (red)

Not flashing: Not recording

Light flashing: Recording

Rapid flashing: Event recording

- GPS Light (blue):

Light flashing: Not connected

Light On: Connected.

- Network Light (green):

Light Off: Not connected

Light flashing: Connected

Light On: Connected to the server

(4) SD Card Mode

When both cards are empty cards, the recording priority is SD1. If there is video data in the SD card, the latest video file data is preferred.

Note : If the playback function is used on the local player, simultaneous recording cannot be performed.)

G. Remote Control

Remote control playback and computer playback are available.

◆ Remote control operation



Remote control button Introduction			
Item	Description	Item	Description
1	Split screen display	7	Enter
2	Force recording	8	Reverse
3	Quad full-screen display	9	Fast forward
4	Speaker mute button	10	Playback mode, play button
5	Menu	11	Pause
6	Navigation	12	Stop and Exit

*Remote control inspection

- (1) **Check the battery's positive and negative polarity.**
- (2) **Check the battery if run out.**
- (3) **Check the sensor of remote control if be obscured.**
- (4) **Check if there are fluorescent lamps are used nearby.**

H. System Interface and Operation

◆ Live View Display



Live View Display – 8-split View

(1) Screen operation guide line

- To make channel 1~4 single-channel display, switch between display by menu selection or remote control
- To display quad screen, press the button quad
- To open the menu press the menu button
- To play mode press the play button

(2) Illustration

- : Indicates video recording
- : Indicates video recording
- : Indicates audio recording
- : Indicates event recorded
- : Indicates Internet connected
- : Alarm triggered

◆ OSD menu operation and setting instructions:

Camera type	Two channels a group free to choose the camera signal source of 1080P 、 720P 、 D1 (Selecting error will have no image)
Image settings	FPS: 15-30 FPS Picture quality: Normal, better, best
Image adjustment	brightness, contrast, color adjustment
Subtitle	Select whether to store OSD display subtitles in the videos
Channel settings	Image output mode to set the normal mode, mirror mode, flip mode, flip mirror mode, and determine whether to write to the storage device
Time setting	When there is a GPS signal, the system will correct it according to the set time zone. If there is no GPS signal, you can set the date and time by yourself.
GPS setting	current speed and speed unit settings in the live screen
Plate settings.	Enterable text range : A~Z & 0~9
Operating mode	Set the channel mode of the system at startup Audio Recording ON/OFF Recording duration after ACC off
Alarm Settings	Alarm trigger mode
System protection	Low voltage protection triggered in ACC mode Disk protection tips
4G Network	4G ON/OFF and display the current setting information (this function is optional)
G Sensor Settings	When this function is enabled, when the vehicle is subjected to a certain degree of collision, automatic forced recording will be triggered to completely record the accident scene.
SD card operating mode	Backup: SD2 is a spare option. When an SD1 disk is abnormal, the system will change to SD2 to store video data. expansion : SD1 and SD2 will loop recording when expansion mode is selected ◦
NTSC/PAL	Select the corresponding system according to the local environment

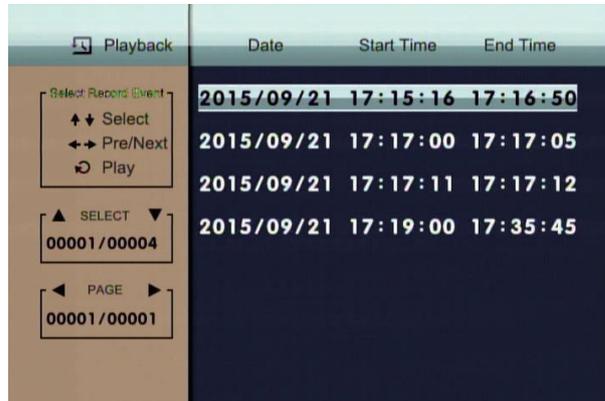
Language switching	Switching Traditional Chinese, Simplified Chinese, and English.
Restore default	After restoring the factory settings, the machine will reboot and clear the original settings
Format hard disk	After formatting the hard disk, the footage will be deleted.
Firmware update	The firmware update program is stored in the SD card and the firmware is updated by the device. Keep power on during firmware update. After the update is completed, it will automatically reboot. (If both SD cards are inserted, SD1 is mainly used to update the storage location)

◆ Playback mode

Local playback and computer playback

● Local playback

(1) Press the Play button in live view mode to enter the playback page



(2) Select search and press enter to enter the file list

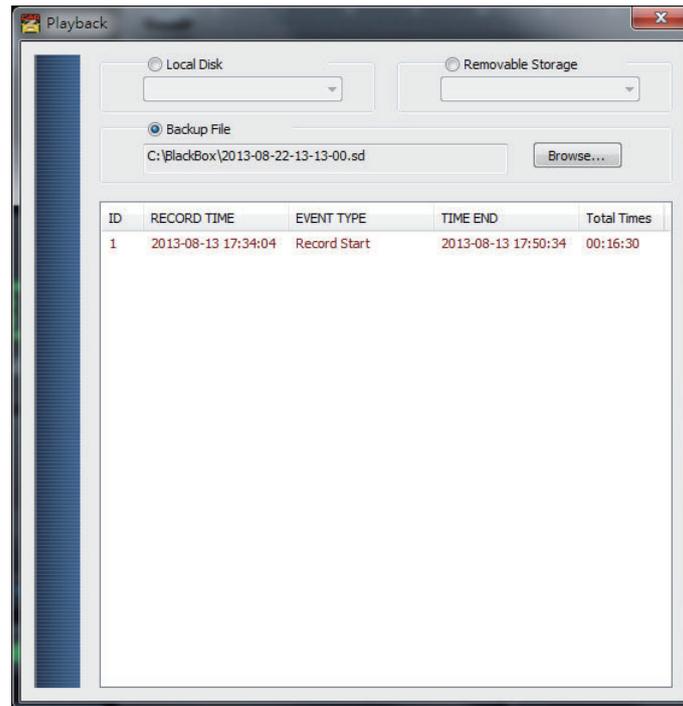
(3) Select the file to played back, press the enter key to enter playback

● Computer playback: Read the hard disk for playback

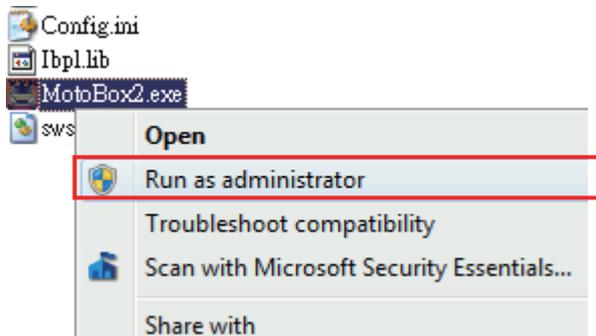
(1) The hard disk that contains the video file is read by the computer and then the playback software CarBox2.exe is executed.

(2) Click the icon  to enter playback mode

(3) After selecting the hard disk, the file list will appear, and the playback will start according to the video file to be played.



(Note: In use of WIN7 OS, if it is not possible to read the video list. Solution: Right click on the CARBOX icon and execute the player as the system administrator)

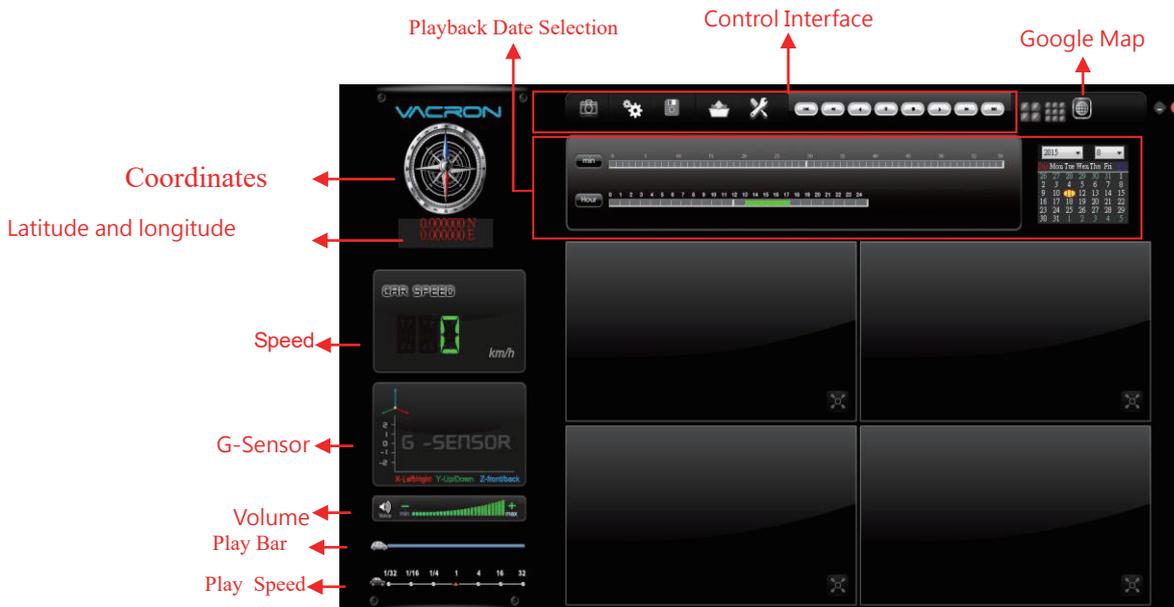


I. Computer Player

Run the player software CarBox2.exe , interface as the figure below

★Note: DirectX 9.0 or above is required.

- Operation Interface



(1). Tools

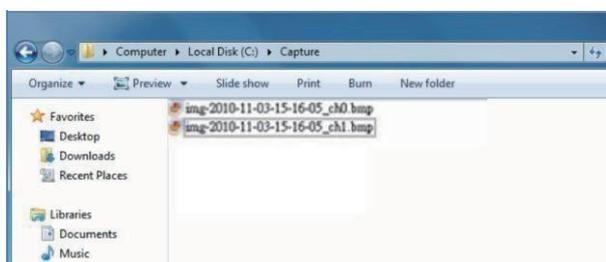


	snapshot: Capture and save the picture as a picture file
	Configuration: Set machine related settings
	Start backup: Select the path to be backed up for file storage
	Playback : Select a video file stored on a hard disk or computer to play it
	Format: Hard disk formatting, language setting

	Previous : Play the previous video
	Previous frame: Move the movie to the previous frame while paused
	Sd file format storage. The video is played backward
	Pause: pause the video in play
	Stop: Stop the playing video
	Play: Play paused videos
	Next frame: In the paused state, move the video to the next frame
	Next video: Play the next video

◆ **Snapshot**

Snapshot: click the icon  , The system will capture the video on screen . And store in bmp file. After the storage is complete, the backup folder will be automatically displayed. The default link is Snapshot data under the player folder.



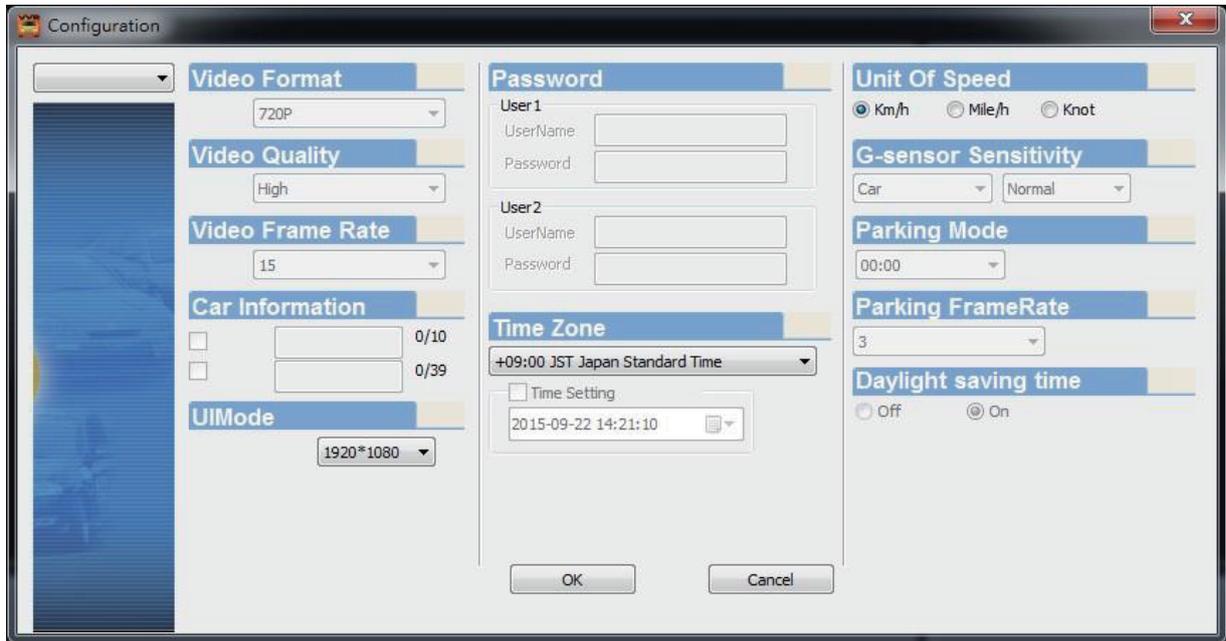
◆ **Configuration**

 : Hard disk format setting

Please use a computer to read the hard disk before recording. After executing the computer program, you can set video format and other related settings. ◦

After the setting is complete, save it, insert the hard disk into the host, and record according to the format set by the user.

Note: To use a computer to read the hard disk, use the SATA to USB cable device to read directly from the USB.



Video Quality	Recording resolution of high, normal, and low selection
Video Frame Rate	Resolution setting range: 5~30 fps
Car Information	Enter the license plate number or driver's name. (applicable to company cars, taxis and fleet)
UIMode	Set the size of the player
Password	<p>This feature encrypts the hard disk to prevent others from accessing any data. Set the password to 15 characters. Use the file, setting, and format the disk after entering the password to enter the password.</p> <p>★ Note: Set the password to pay attention to the font and capital, and keep the password properly to avoid forgetting the password.</p>

Time Zone	Adjust time zone to display according to Greenwich Measure
Unit of Speed	Set the speed unit to display Km/h Mile/h Knot
G-sensor Sensitivity	G-sensor mode and Sensitivity Settings
Daylight saving time	Applicable to countries implementing daylight saving time zones

◆ **Backup**



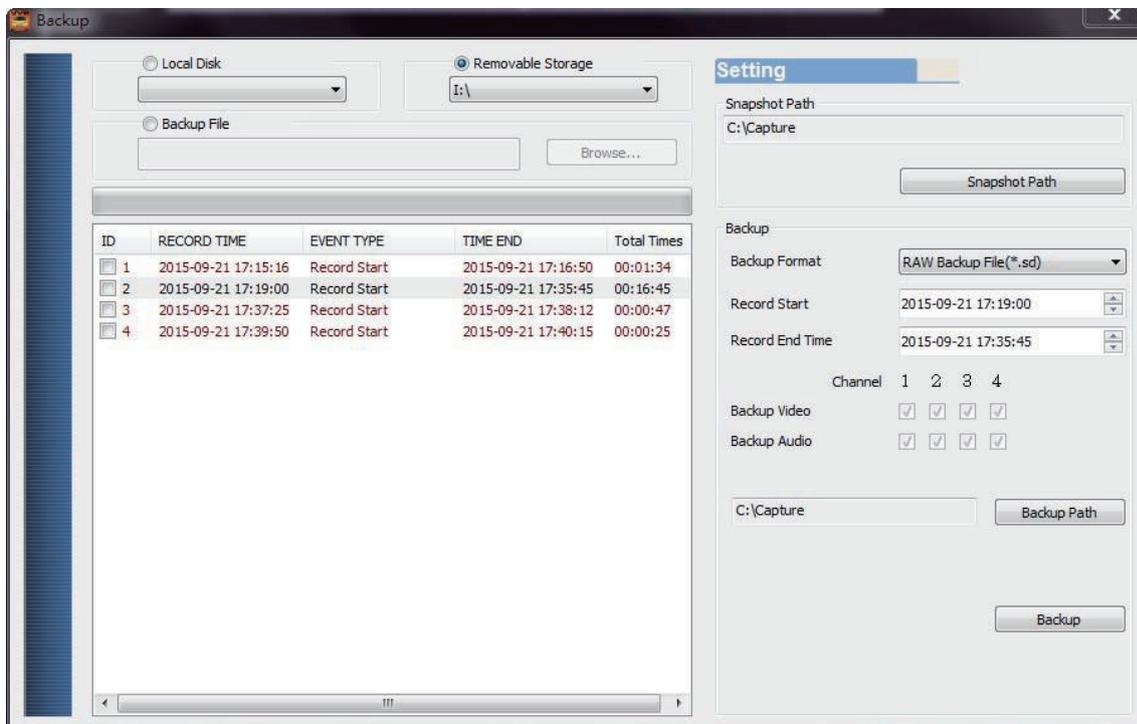
: Start Backup

Store video data on your hard drive on your computer for easy playback

Click



The disk backup will appear as below, start backup menu screen



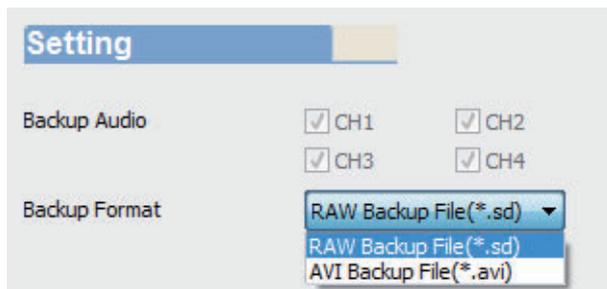
Step 1. Select the hard disk that contains the video file



Step 2. Select the hard disk video file to backup.

ID	RECORD TIME	EVENT TYPE	TIME END	Total Times
<input type="checkbox"/> 1	2015-09-21 17:15:16	Record Start	2015-09-21 17:16:50	00:01:34
<input type="checkbox"/> 2	2015-09-21 17:19:00	Record Start	2015-09-21 17:35:45	00:16:45
<input type="checkbox"/> 3	2015-09-21 17:37:25	Record Start	2015-09-21 17:38:12	00:00:47
<input type="checkbox"/> 4	2015-09-21 17:39:50	Record Start	2015-09-21 17:40:15	00:00:25

Step 3. Select backup data access format



Backup format

• **SD Format**

 2013-06-06-09-49-33.sd SD File 104 MB	Save as .sd file.
---	-------------------

• **AVI Format**

 2013-06-06-09-50-56-C 00:00:30 55.2 MB	Save as .avi file.
--	--------------------

Note: Backing up in SD file format, the file format will include the speedometer, position table, latitude and longitude, and G-SENSOR record data. If you back up in *.avi format, only the video and audio data is available, so it is recommended to use SD format.

Step 4. Backup the video file according to the requirements and set the required time range

Record Start	2013-08-13 17:34:04
Record End Time	2013-08-13 17:50:27

Step 5. Select the path to the backup folder

<input type="text" value="C:\BlackBox"/>	Backup Path
--	-------------

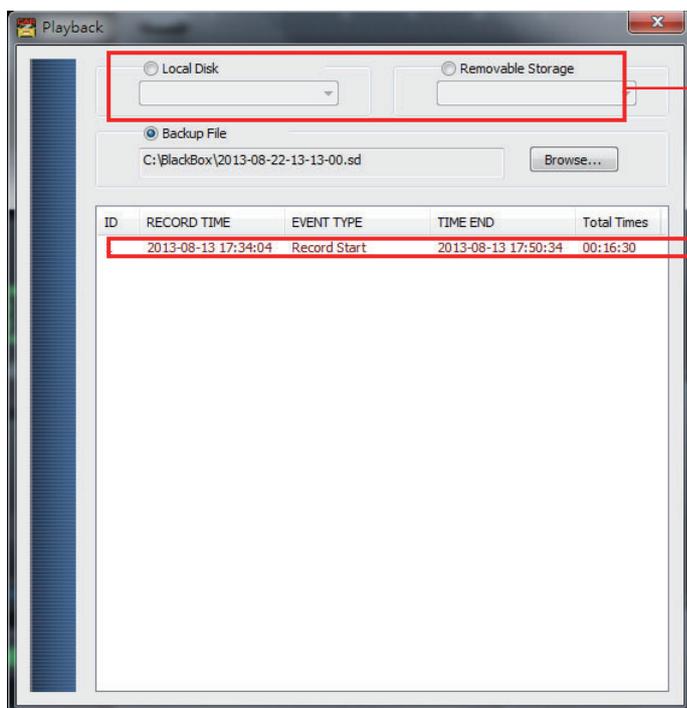
Step 6. Start the backup

<input type="button" value="Backup"/>

◆ Playback



Playback video: Select a video file stored on a hard disk or computer to play it

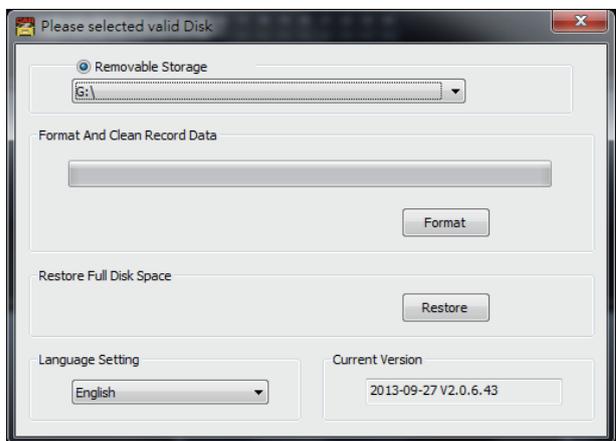


1. SD Card

2. Select the file to play

◆ **Format**

: Format the hard disk. For detailed operation instructions, please refer to the "Format/Restore Hard Disk" instructions.



(2) GPS Coordinates/latitude and longitude



Coordinate, latitude and longitude: Display driving direction and latitude and longitude, need to display with G-Mouse function

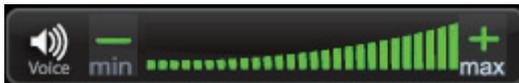
(3) G-SENSOR



G-SENSOR : Gravity Sensing Analysis, When Triggering G-Sensor Forced Video Recording, Data of X, Y, and Z Axis Changes of the Vehicle will display.

- X : Changes in the left and right levels of the sensor body.**
- Y : Changes in front and rear levels of the sensing body.**
- Z : Inducing changes in the body.**

(4) Volume



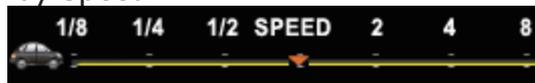
Volume Control Tool: Use the left mouse button to click + or - to adjust the volume.

(5) Play Bar



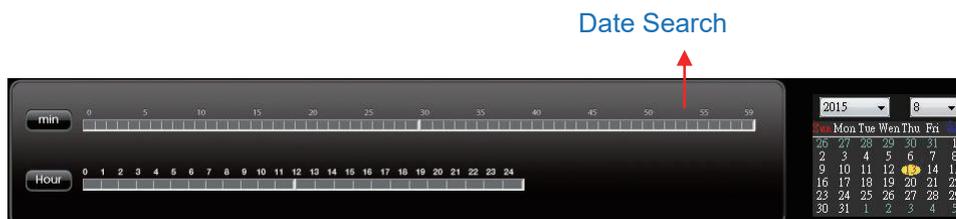
Play Bar: Left and right can be used to move the player car, quickly select the playback time.

(6) Play Speed



Play Speed: Adjustable 2x~16x fast playback, and 1/2x~1/16x slow playback

(7) Playback Date Selection



Playback Date Selection: Divide by date and time to show the video file time on the hard disk.

J. Format/Restore Hard Disk

- **Format the hard disk**

Why format the hard disk??

When the storage format of the hard disk is different from the storage format required by the computer, the hard disk must be formatted first. After the hard disk sold or used in the market, the formatting operation must be performed first.

※ Before formatting, please note if there is important data in the **hard disk** not backup yet.

The format of the hard disk can be divided into local format and computer format

① local format

The local computer performs the formatting of the hard disk as follows:

Step 1. Use remote control to enter menu and press "Format Disk"



Step 2. Select and press "OK" for hard disk formatting

Step 3. When the screen returns to menu , the hard disk formatting is completed

② computer format

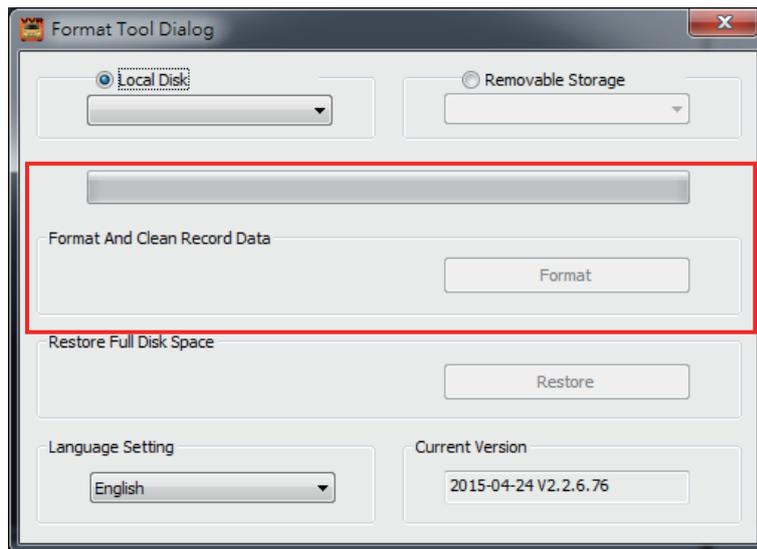
The computer performs the formatting of the hard disk as follows:

Step 1. After removing the hard disk from the computer, use the computer to read the hard disk, and then execute the computer-side playback software CarBox2.exe.

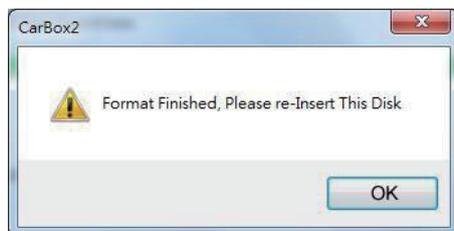
Step 2. Click  Enter format tool menu

Select the corresponding storage device

Step 3. Click "Format"



Step 4. Select "Yes"



- (After formatting, please insert the hard disk into your computer and you can make related settings for the hard disk. After the setting is completed, insert the hard disk into this unit to start recording.)

- **Restore Hard Drive**

Why restore hard drive?

When the hard disk after the host computer is used is moved to other storage applications, the hard disk must be restored before it can be used for general storage purposes.

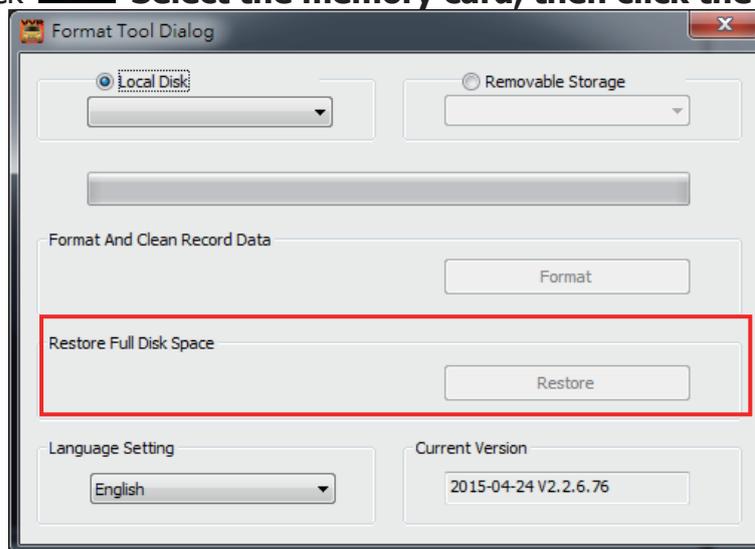
➤ **Before performing the restore action, please note that if there is any important data on the hard disk not backup yet**

(1) **Hard Drive Restore**

Hard disk restore steps are as follows:

Sept 1. After removing the hard disk from this unit, use a computer to read the hard disk and execute the software CarBox2.exe.

Step 2. Click  **Select the memory card, then click the "restore" icon**



Step 3. At this point, "Restore this disk" will display. Press "Yes" to restore the hard disk.



Step 4. System pops up the format window, check "Quick Format" and press start.



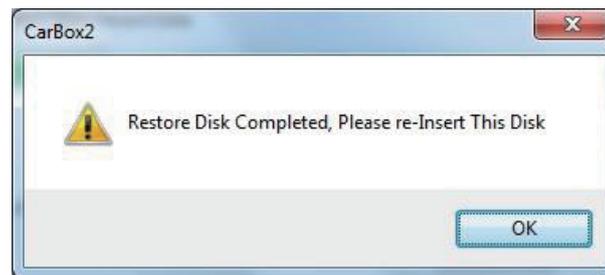
Step 5. "Restore this disk" will display. Press "OK" to format it.



Step 6. After format completed, "Format completed" will display. Press "OK" and close format disk window.



Step 7. After the completion, "Disk Restore Successful" will display. Press "OK".



K. 4G Network Settings

(1) SIM card Setting

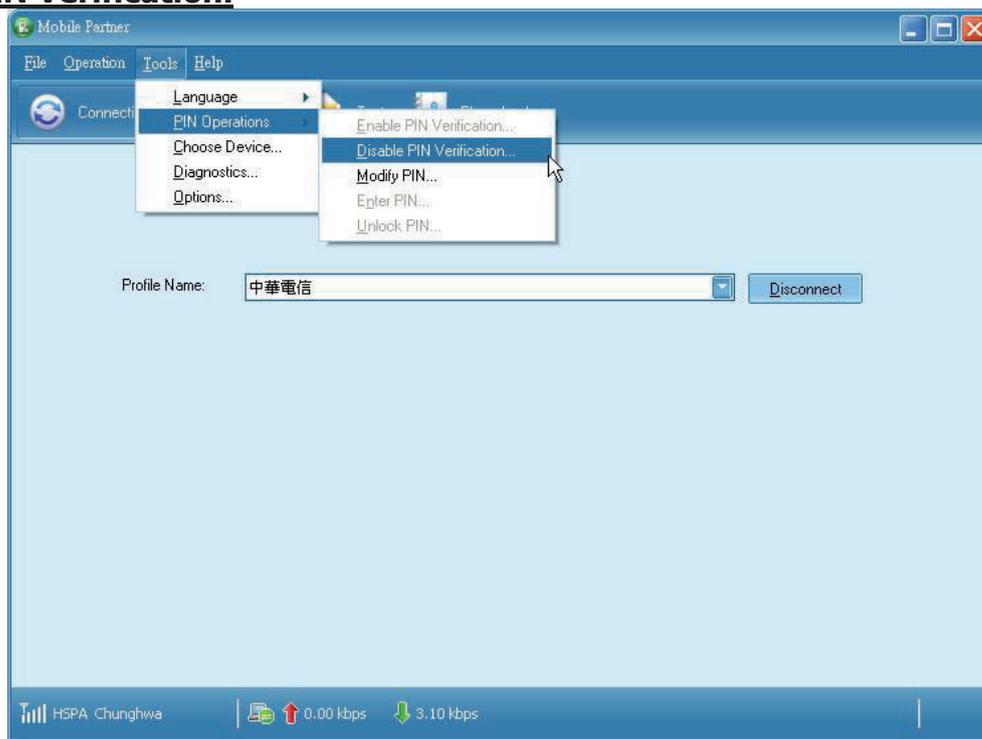
PIN protection must be turned off. The steps are as follows:

(The following uses HUAWEI's CHT-E180 model 3.5G USB wireless network adapter as an example.)

Step 1. After installing the 4G network card on the SIM card, connect the 4G network card to the computer and the system will automatically execute the Mobile Partner.



Step 2. When the program opens, go to Tools →PIN Operation → Disable PIN Verification.



Step 3. Enter the correct PIN, Chunghwa Telecom default is 0000.



Step 4. Confirm PIN, cancellation PIN code completed.



Step 5. After completing the above actions, insert the SIM card into the SIM card slot on this unit and turn on the power before connecting.

3G Network Settings

Set the relevant parameters of this machine 3G-Network .

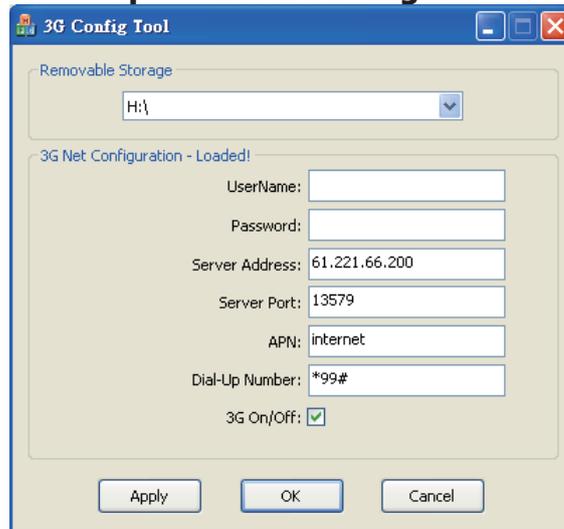
Step 1. First open



following page will open.



Step 2. Then insert the SD card into the computer, select the SD card disk, and enter the relevant parameter settings.



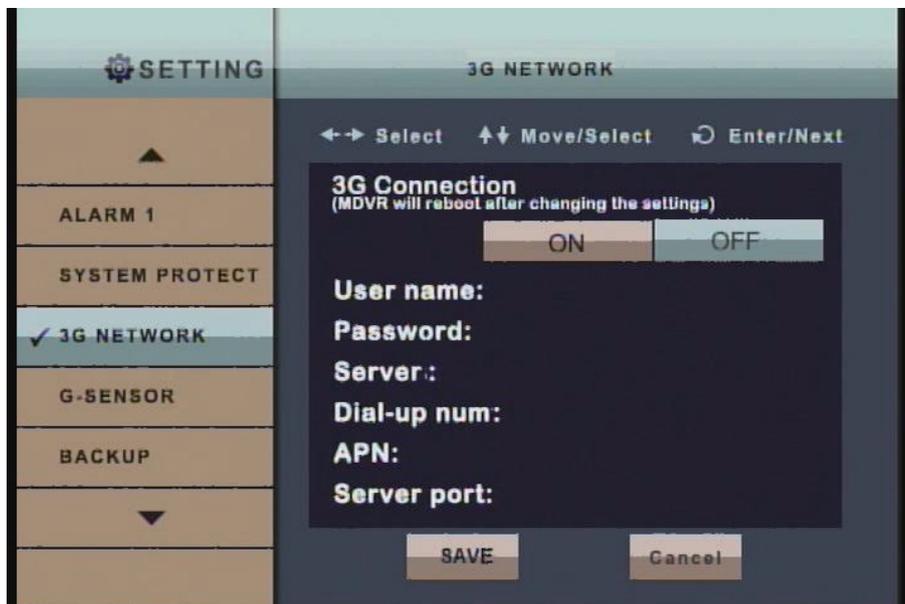
Setting parameters	
Removable Storage	SD Source of device
UserName	User name (generally no setting)
Password	User name (generally no setting)
Server Address	Server IP address
Server Port	Server Port default 13579
APN	4G Network access point name (Default is APN used by Taiwanese telecom operators. If other areas need to use, please consult with APN used by local telecom operators.)
Dial-Up Number	4G dial-up connection setting (The default is the dial-up connection code used by Taiwanese telecom operators. If you need to use in other areas, please consult the dial-up connection settings used by local telecommunications operators.)
3G On/Off	4GConnection function switch (Check on behalf of open, not checked on behalf of closed)

Step 3. Input complete, click OK to save. Then click on the location of the drive to see if the file already exists. (The file name is net3g.ncf).



Step 4. Then install the SD card into the DVR's SD1 port and restart the unit. After booting; If you successfully update the parameters, after about 10 seconds after entering the system, it will automatically restart.

Step 5. After the automatic reboot, enter the 3G/4G network page in the main menu to confirm that the parameters have been modified successfully.



(When the update is completed, the information will show the current Internet information about the 3G/4G module.)



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