User Manual
For
VF Series MDVR

Content

1. Overview

This manual is the instruction manual for VF series MDVR's.

Please read the manual before you use the product.

This manual may be updated from time to time without prior notice.

2. Cautions

2.1. Installation Environment

1. To extend the equipment life, please install the equipment in locations with little vibration.

2. To ensure normal heat dissipation, do not install the device in a poorly-ventilated area (such as a boot), and keep roughly 15 cm away from other objects on the same level.

3.The device shall be horizontally installed and protected against water, humidity and lightning; in addition, keep the vehicle still during installation to prevent damage to the device due to falling off.

4. To ensure safe operation, keep the device, camera, cables and other accessories out of reach of passengers and driver.

2.2. Avoid electric shocks and fires

1. The machine uses 9V-36V DC power supply, note the polarity when wiring to avoid short circuits.
2. Please power off the device when connecting accessories to the device.
3. Do not touch the power, and the device with wet hands.
4. Do not spray liquid on the device, to prevent internal short-circuit or fire.
5. Do not put any other equipment on top of the camera (s).
6. Do not disassemble the housing without authorisation to avoid damage or electric shock.

2.3. Transport and operation

1. Please use the original package in transport to avoid damage.
2. Please keep the power off when moving the device or replacing components.

3. Product introduction

The 2CH/4CH MDVR supports 2/4 channels analog audio and video recording and playback with network function.

The product adopts ARM DSP fast dual-core processor running on the Linux embedded OS, and also integrates the most advanced H.264/H.265 video encoding/decoding in IT industry, 3G/4G network, GPS and Wi-Fi, as well as power-failure protection, HDD shock absorption, HDD heating, and wide voltage features.

It is extensively used in public buses, logistics vehicles, school buses, police cars, financial convoy cars and fuel tankers.

Main Features:

- Supports 2/4ch D1/720P/ 1080P cameras
- Industry leading CPU with powerful processing ability
- Supports HDD/SSD/SD CARD for recording. Max. 2TB HDD.
- Hard disk: innovative hard disk mounting design, no need to mount screws
- Robust design: Cast aluminum enclosure.
- Selected industrial power chip-sets, supports 9-36V wide range power input, adapts to harsh

environment

- Support UPS
- Supports low/high temperature environment
- Supports external Fireproof box, to backup data in extreme scenarios
- Supports backup recording
- Dual streams for local recording and network transmission
- Supports 3G/4G, Wi-Fi, GPS modules.
- Built-in G-sensor for harsh acceleration/deceleration detection
- Data self-protection, saves data when shut down abnormally

4. Product Specification

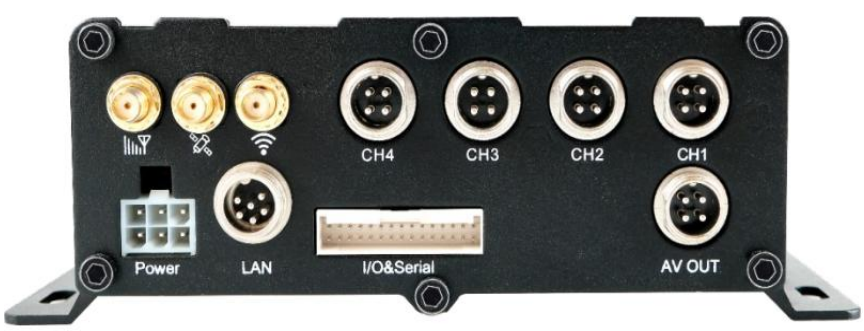
Power input	DC: +9V ~ +36V	9V～36V, Check the supply voltage of the vehicle battery before use; If it is supplied with more than 36V for a prolonged period, the device may be damaged.
Power output	+12V@1A，+5V@1.5A	
ACC detection	≤4V	Power off
	≥5V	Power on
Video input impedance	75Ω	Each video input impedance: 75Ω
Video output voltage	2Vp-p	2VP-P video output analog signal which should be adapted by 75Ω of input impedance from the display unit.
I/O interface	<4V	Low level alarm
	>4V	High level alarm
Operating temperature	-20℃～70℃	In a well-ventilated place

5. Mainframe

5.1. Interface

SD CARD type MDVR:


Lock
SIM
SD1
SD2
IR
USB
PWR
SD1
WIFI
GPS
ALARM
SD2
3/4G
NET


CH4
CH3
CH2
CH1
Power
LAN
I/O&Serial
AV OUT

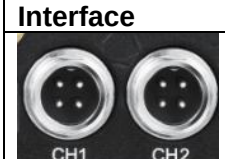
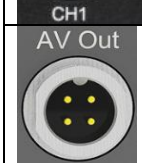

PWR
SD
GPS
IR
USB
SD / SIM

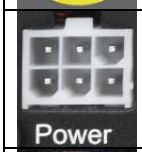
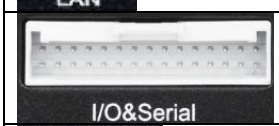
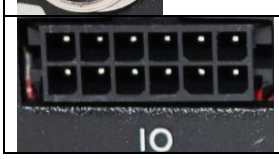
HDD type MDVR:

5.2. Front panel

Interface	Name	Description
	IR	Infrared Receiver
	HDD Slot	2.5-inch SATA HDD slot. Please unlock the lock with the key. SD card slot and SIM card slot with HDD slot together.
	SD card/SIM card slot	SIM card slot. SD Card slot.
	Lock & Open	Open and lock the door for HDD/SD card/SIM card slot. On/off switch for device power.
	USB	For USB mouse, USB flash drive, etc.
	LED	LED Indicators. Green is on status. SD/HDD LED blinking means it's recording. Alarm blinking means there is an alarm.

5.3. Rear panel

Interface	Name	Description
	CH1/CH2/CH3/CH4	Connect with cameras. The port can provide DC12V power to cameras directly.
	AV Out	4pin aviation connector; Connect to a monitor; The port will output audio and video to screen.
	3G/4G LTE	Connect with 3G/4G LTE antenna.

	GPS	Connect with GPS antenna.
	WIFI	Connect with WIFI antenna.
	Power	Connect with power adapter/battery
	LAN	Connect with network cable for network
	I/O & Serial	For IO cables; Including sensor input, sensor output, DC power output, RS232, RS485,sensor
	Power	Connect with power adapter/battery
	I/O&Serial	For IO cables; Including sensor input,sensor output,DC power output, RS232,sensor

5.4. Pin definition of Audio/Video input/output port

5.5. Pin definition of Serial port.

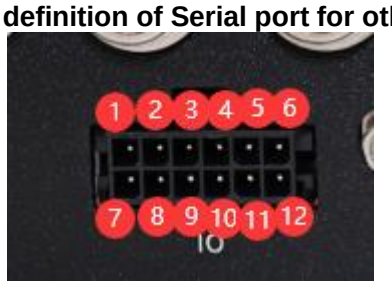
I/0 **cable**

1	2	3	4	5	6	7
RS232-RX1	RS232-TX1	GND	Sensor-IN2	Sensor-IN1	Sensor-Out1	RS232-RX0-Debug

Power cable

1	2	3	4
PWR_IN+	ACC	PWR_IN-	RS232_TX0-Debug

5.6. Pin definition of Serial port for others:



1	2	3	4	5	6
RS485A	RS232-TX	SENSOR-IN4	SENSOR-IN2	SENSOR-OUT1	12V
7	**8**	**9**	**10**	**11**	**12**
RS485B	RS232-RX	SENSOR-IN3	SENSOR-IN1	SENSOR-OUT2	GND

Attention: N2 version supports RS485.

Power cable

1	2	3
PWR_IN+	PWR_IN-	ACC

5.7. Pin definition of Serial port:

The port contains below interfaces:
DC12V OUT;
DC5V OUT;
RS232;
RS485;
Sensor Input;
Sensor Output;
Video Out;
Audio Out;
Speed pulse;
MIC;

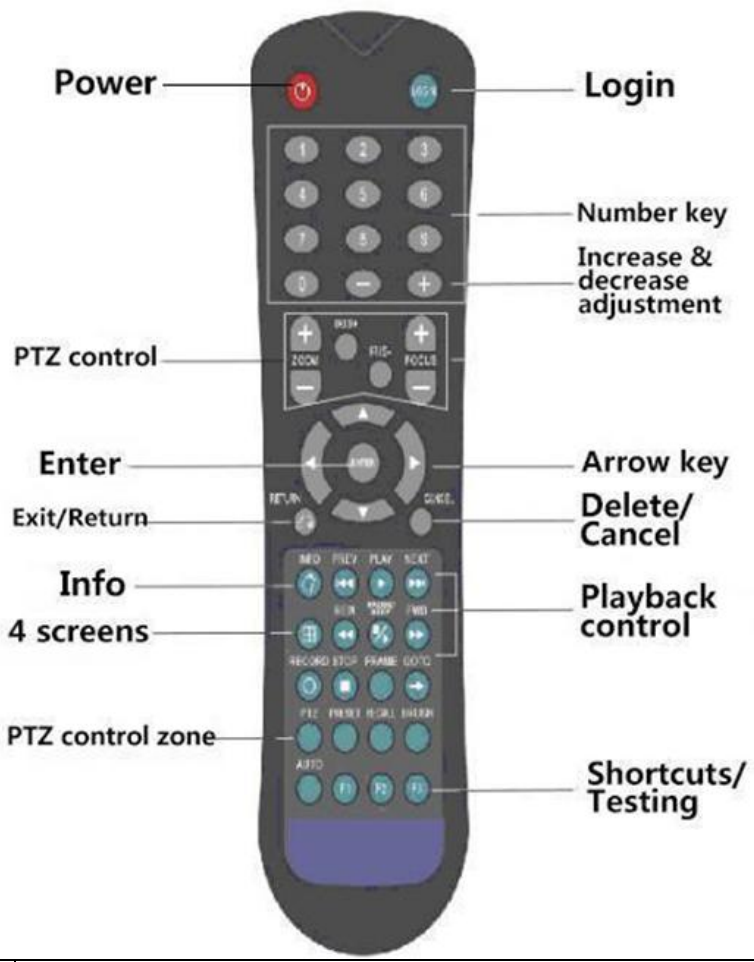
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
VCC12V-OUT	GND	RS232-RX-Debug	RS232-TX-Debug	Analog-IN1	SENSOR-IN6	RS485-B	RS232-RX2	SENSOR-IN9	SNESOR-OUT1	SENSOR-IN3	GND	GND	MIC-	RS232-TX1
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
VCC5V-OUT	GND	GND	Analog-IN2	SENSOR-IN7	SENSOR-OUT2	RS485-A	RS232-TX2	SENSOR-IN5	SNESOR-IN4	SNESOR-IN2	SENSOR-IN1	AUDIO-OUT	MIC+	RS232-RX1

5.8. LED status

PWR (Power): Indicates whether the device is on or off.
3G/4G Network:
On: The 3G/4G function is working.
Off: The 3G/4G function is disabled or the module is not detected.
Flashing: The device is attempting to dial or still searching for the network.
WIFI Status:
On: The Wi-Fi function is working.

Off: The Wi-Fi function is disabled or the module is not detected.
Flashing: The device is attempting to dial or still searching for the network.
GPS Status:
On: The GPS function is working.
Off: The GPS module is not detected.
Flashing: The device is still searching for satellites.
Alarm: Turns on when an alarm is triggered.
SD Card:
Flashing: The device is recording.
On: The SD card is detected.
HDD (Hard Disk Drive):
Flashing: The device is recording.
On: The HDD is detected.
NET (Network): **On**: The device is linked to the server.

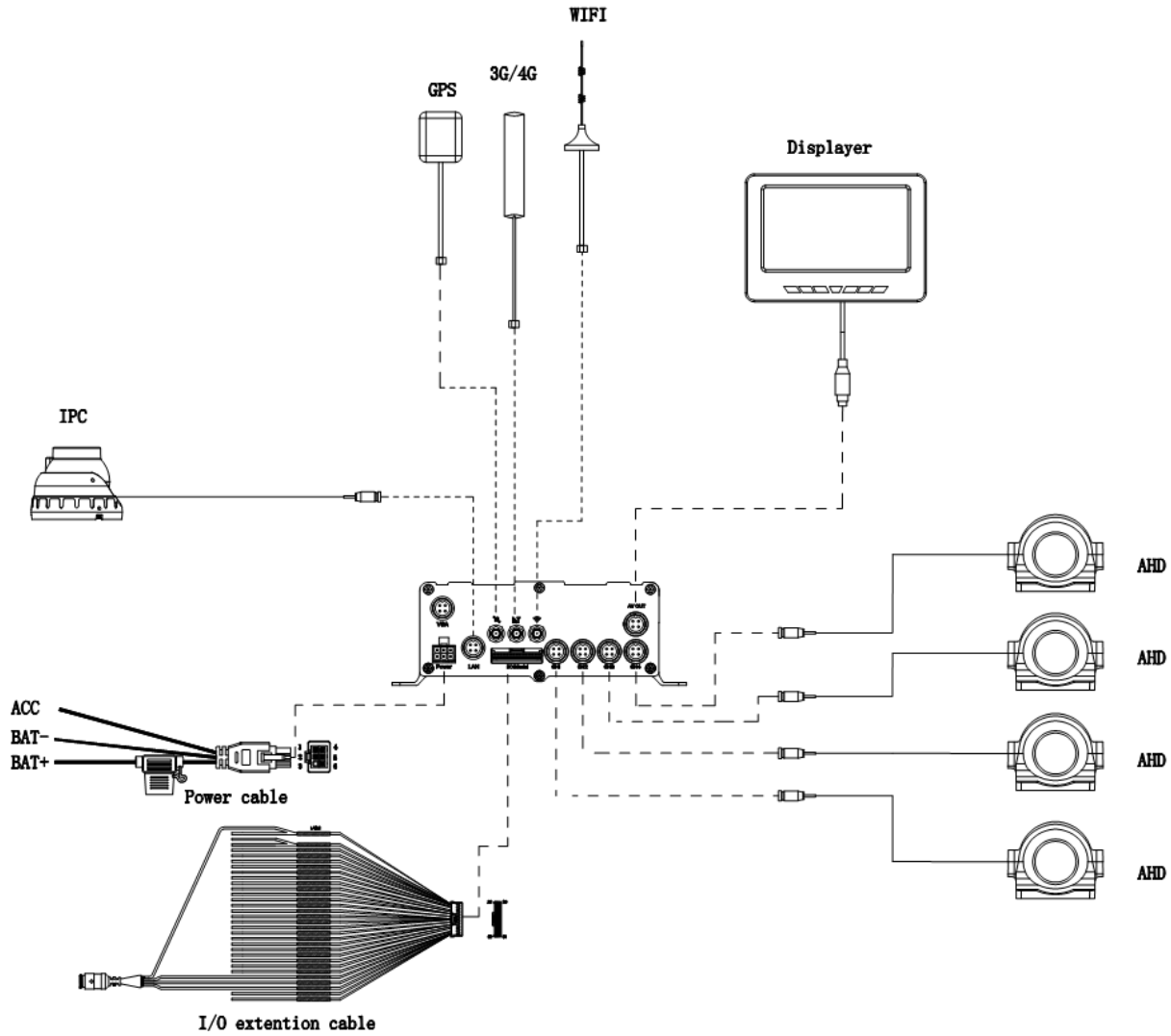
5.9. Remote control



Login	When the DVR is set with a password, press the Login key to input your password. As the system is not provided with recover and reset features, always keep your password in mind.
INFO key	Short-cut to check the device's information.

Quad View key Number key 1, 2, 3, 4	On the monitoring interface, used to switch between quad view and single view; press the Quad View key to display 4 screens. You can press number 1/2/3/4 to display channel 1, channel 2, and channel 3 and channel respectively.
Return key	Return to the previous menu and finally exit from the setup menu to the monitoring interface.
DEL key	Delete when input by remote.
PAUSE/STEP key	Used to pause playing or play images at a single step. Press the key again to recover normal play speed.
Frame key	Press this key to play a video in a frame rate.
Play key	Press this key to start playing (search the video file to be played and select, then press the key to play it).
FWD key	Forward key in four grades: 2X,4X,8X,16X
REW key	Rewind key in four grades: 2X,4X,8X,16X
NEXT key	Page down or roll to the next file.
PREV key	Page up or roll to the previous file.
PTZ key	Auto, preset, call, zoom +, zoom -, focus +, focus -, aperture +, aperture -, PTZ, PRESET, RECALL, BRUSH.
F1, F2, F3	F1 is a key to start functional test

6. Device and installation



1. Unlock the electric lock on the front panel.

2. Install disk

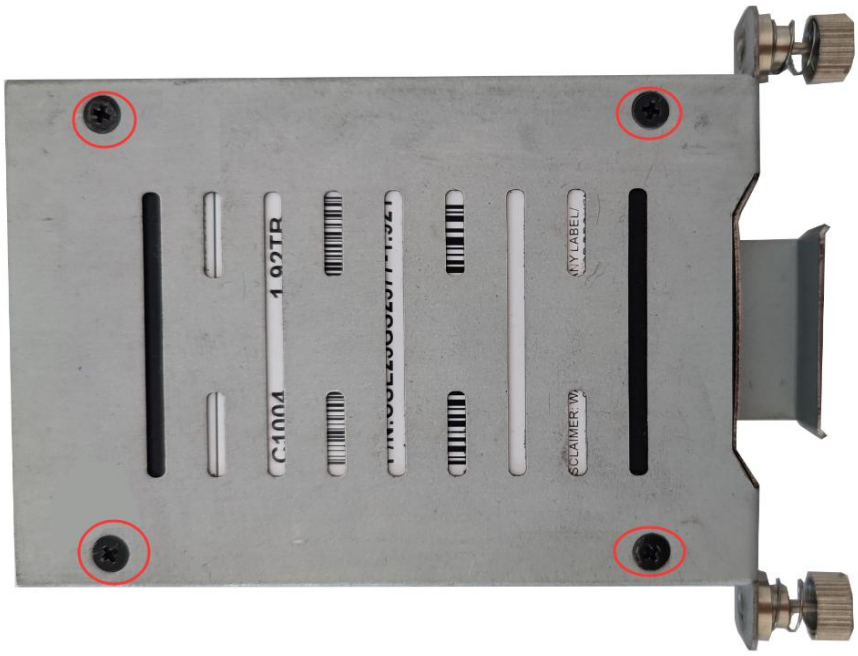
For old structure

A. Take the pad from the package, get rid of the sticker label, then stick to the HDD.

B. Unscrew the screw in the front panel by hand, take the HDD case out.

C. Unscrew the screw of HDD case. Take the sticker label off, the install the rubber holder. Then install the Hard disk, please mind the direction.

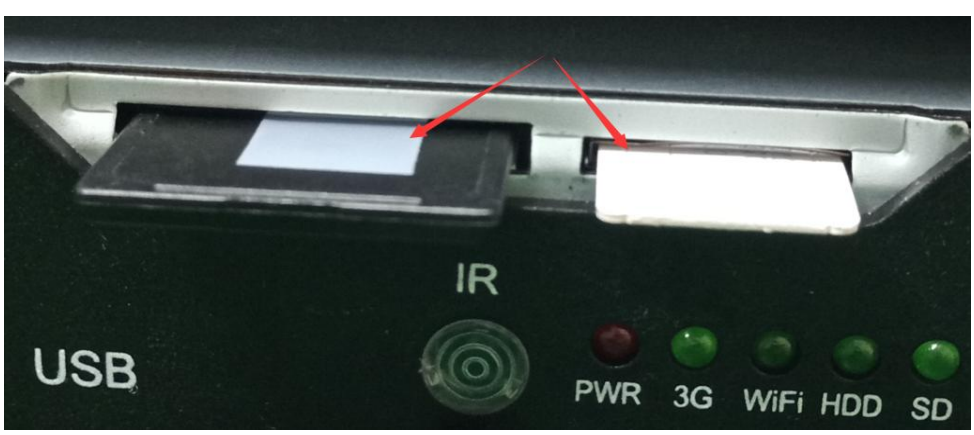
For new design



B. Install the tray back, screw it tightly.

3. Install SIM card and SD card.

Install SIM card and SD CARD.



For others, the SIM card direction as below.

1.Recommended storage capacity 32GB-256GB, MLC industrial material [Important!], Class 10 or above.
2. The industrial SIM card (MP2 material) is required, and the ordinary SIM card (MP1) is prohibited.

4. Put the HDD disk case back, fix it. Lock the electric lock. IF THIS ISNT LOCKED THE DVR WILL NOT POWER UP!

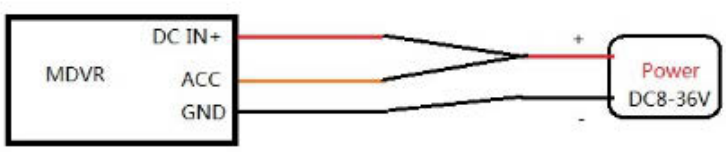
5. Connect 3G/WIFI/GPS antennas

Connect 3G/WIFI/GPS antennas according to labels on antennas and connectors.

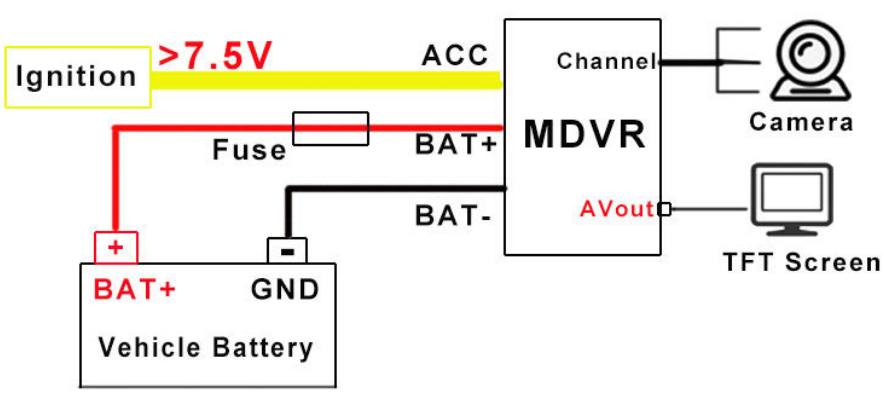
6. Connect power with MDVR

Use DC12V, 3A(at least) or higher(5A is better) power adapter in office test.

MDVR Power connection for test



For the vehicle, it must installed like this.

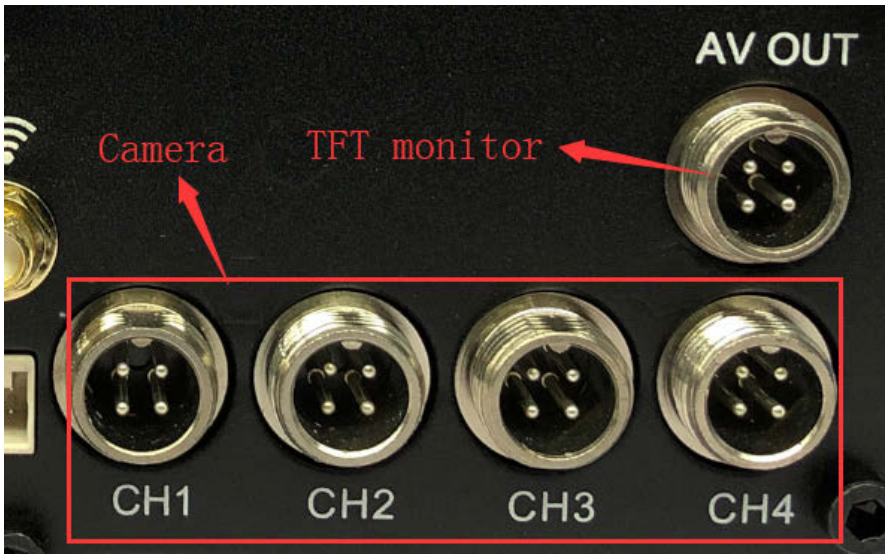


7. Connect TFT monitor

Connect a TFT monitor with AVOUT port on the rear panel of MDVR.

Attention: The MDVR will provide power and image to TFT screen by Av out port, so don't connect

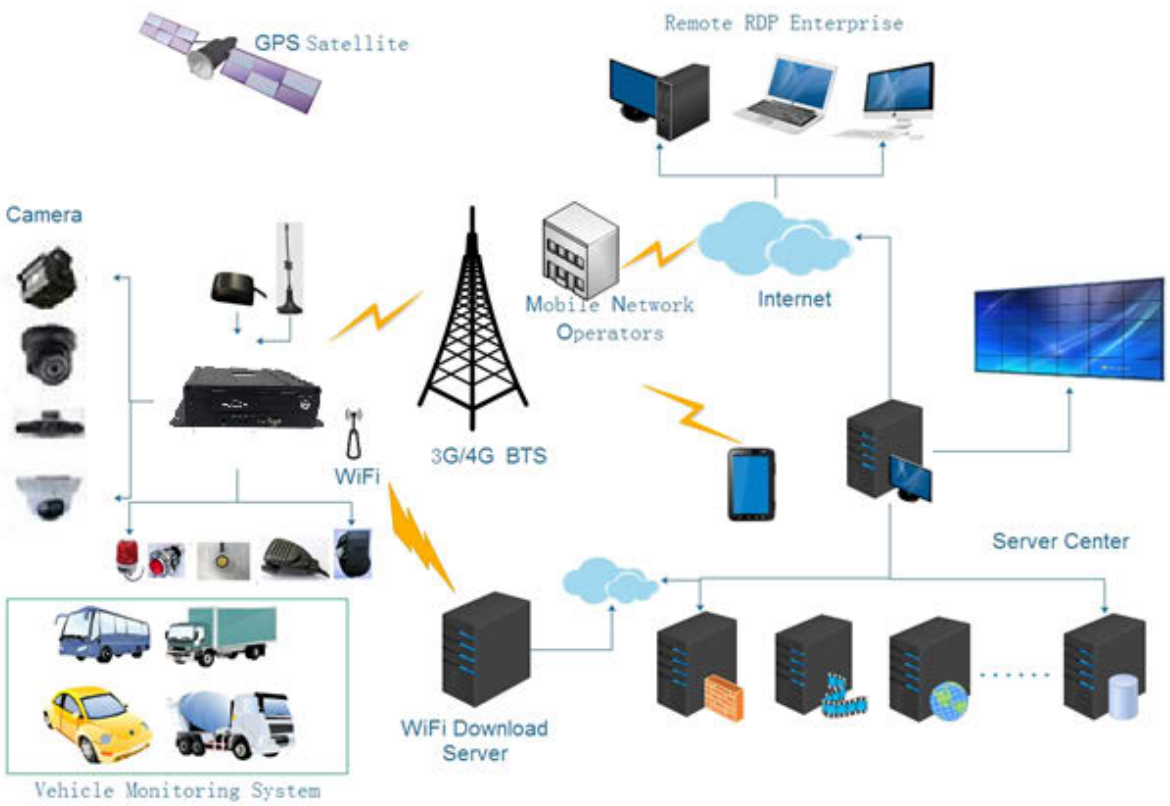
any external power for the TFT screen, or else, it will destroy the MDVR.



7. System diagram

This product is suitable for video monitoring or remote monitoring and applicable for general or special vehicles. It mainly uses the specially designed vehicle camera to acquire the front video signal, then transmits the signal via a special video cable to the MDVR mainframe for video compression and image processing and finally stored in the HDD.

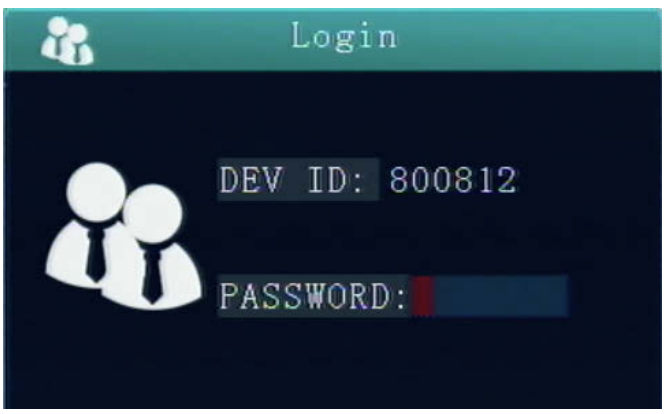
It can also locate where the vehicle is in real time via GPS a module and then upload the location information to the remote server via 3G/4G module. You can download video files from the remote client to realise real-time remote monitoring of the vehicle. The following shows the actual application model of this product that may be different depending on vehicle type and peripherals.



8. System operations

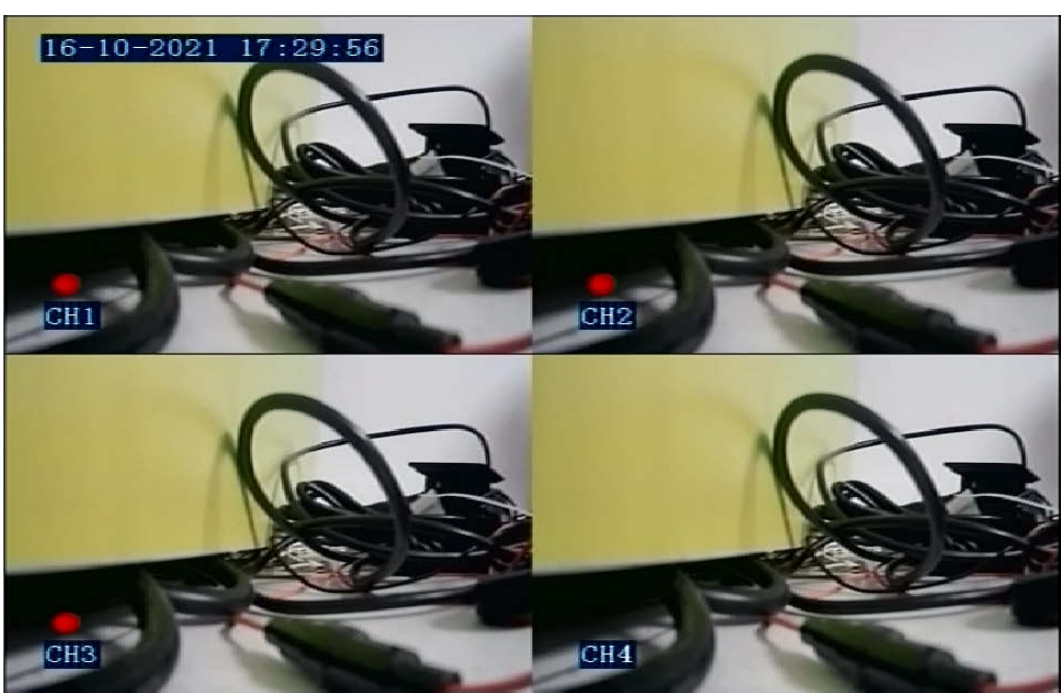
8.1. User login

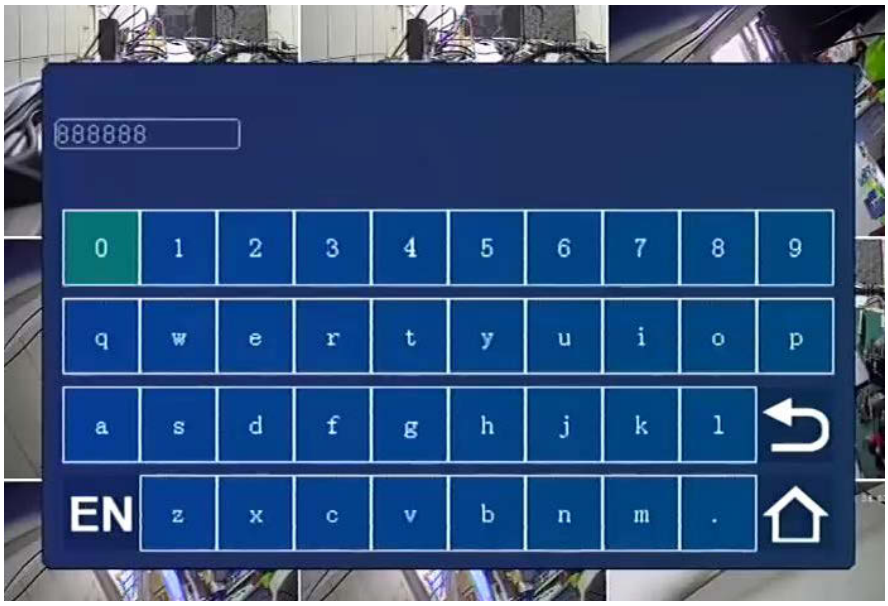
- Admin Password: Default is 111111
- User Password: Default is 666666



Login using the remote control or a USB mouse:

- Remote Control: Press the **LOGIN** button, then enter to input the password.
- USB Mouse: Connect a USB mouse, ***right-click*** on the live video interface, and input the password. Click on the password column to call the keyboard page to input password.

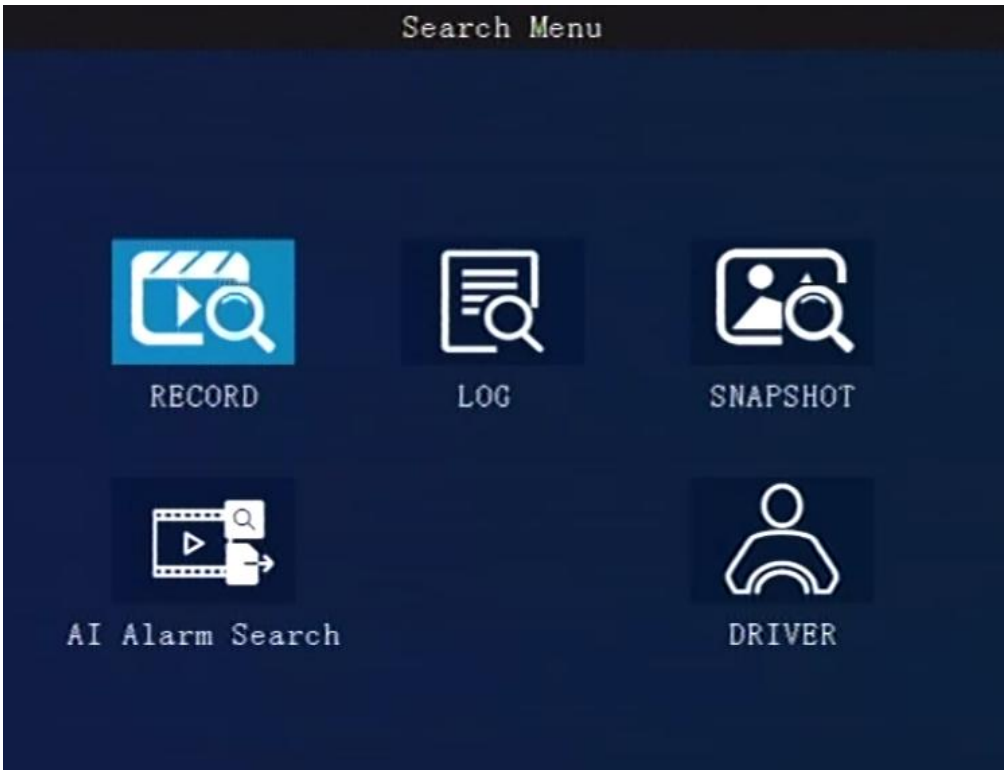




8.2. Main menu

8.2.1. Search

Searching menu includes video search, log search and image search.



8.2.1.1. Video Searching

Date：The date you need to search, default is today.

Start/End time：Time range for searching.

Video Type：

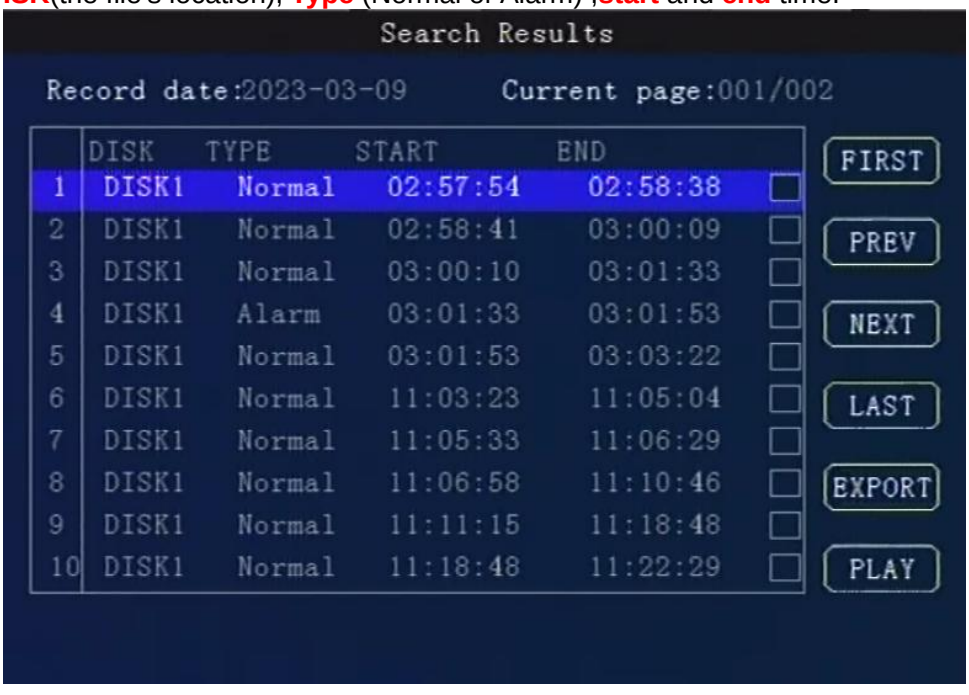
REC-ALL: All videos.

REC- ALM(alarm videos) contains **IO**(I/O recording), G sensor, Speed, Move, OCC type. Need to set in the Alarm menu first.

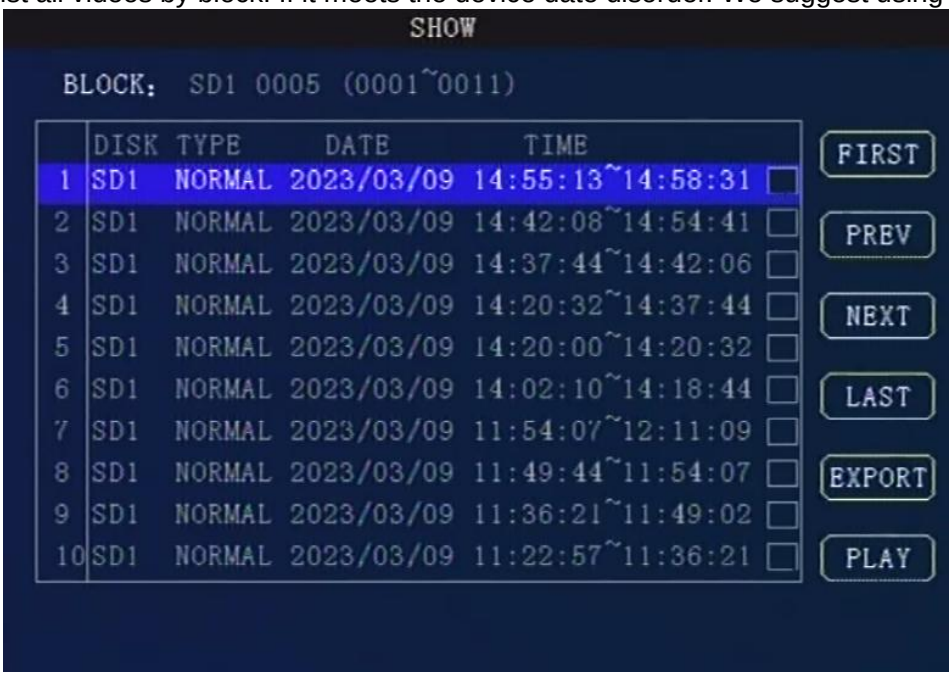
Disk Type：**Main disk** / **mirror disk** / **disk backup**. It defaults on the main disk.
Regarding the differences, please check [**9.2.3.5 Storage setting]**.

Click "**Search**" button to get the list.

It contains : **DISK**(the file's location), **Type** (Normal or Alarm) ,**start** and **end** time.



Show：It will list all videos by block. If it meets the device date disorder. We suggest using this one.



Select the file by remote control or USB mouse:

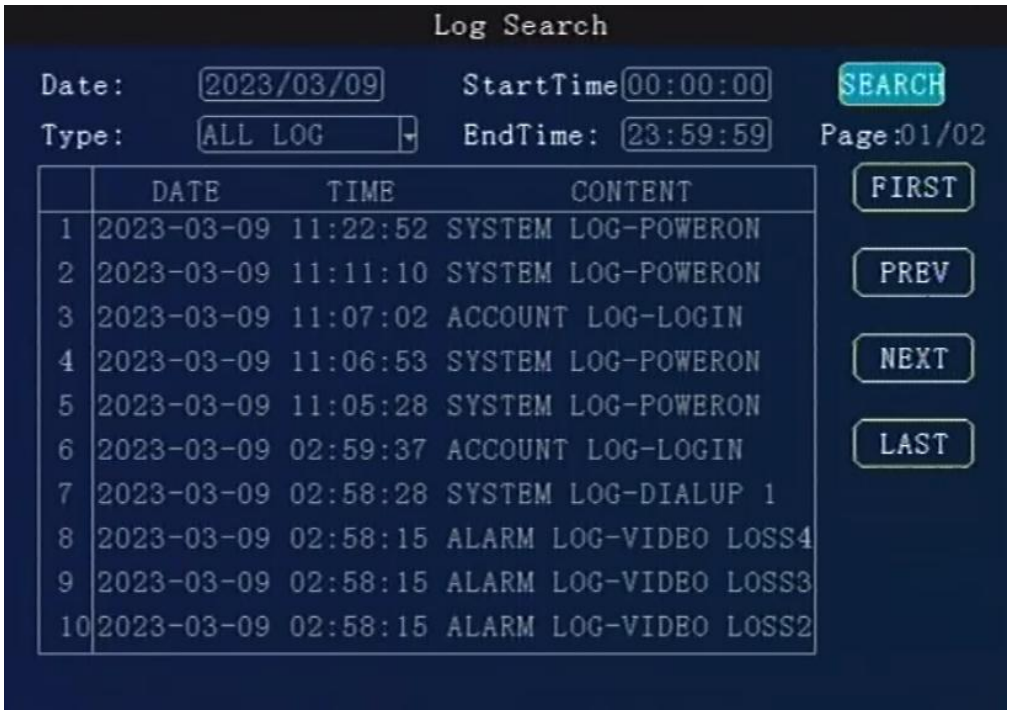
A. **Play**: Play back the videos

B. **Export:** The selected videos will be exported to an external USB disk.

8.2.1.2. Log search

By using this menu, the user could get some basic logs to analyse the device.

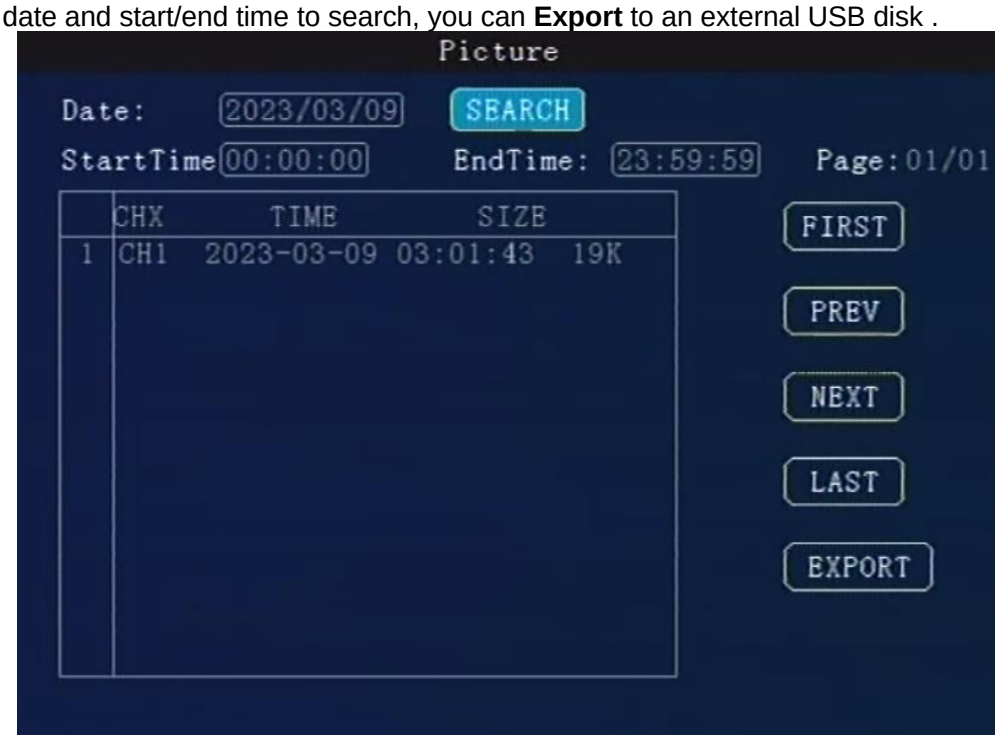
Log management record: device power on/off, operation, alarm event information, including event date, event time, and event name.



8.2.1.3. Picture search

This menu is used for saving all alarm linkage's snapshots. For more details, please refer to [**8.2.5 Alarm**].

Select the date and start/end time to search, you can **Export** to an external USB disk .

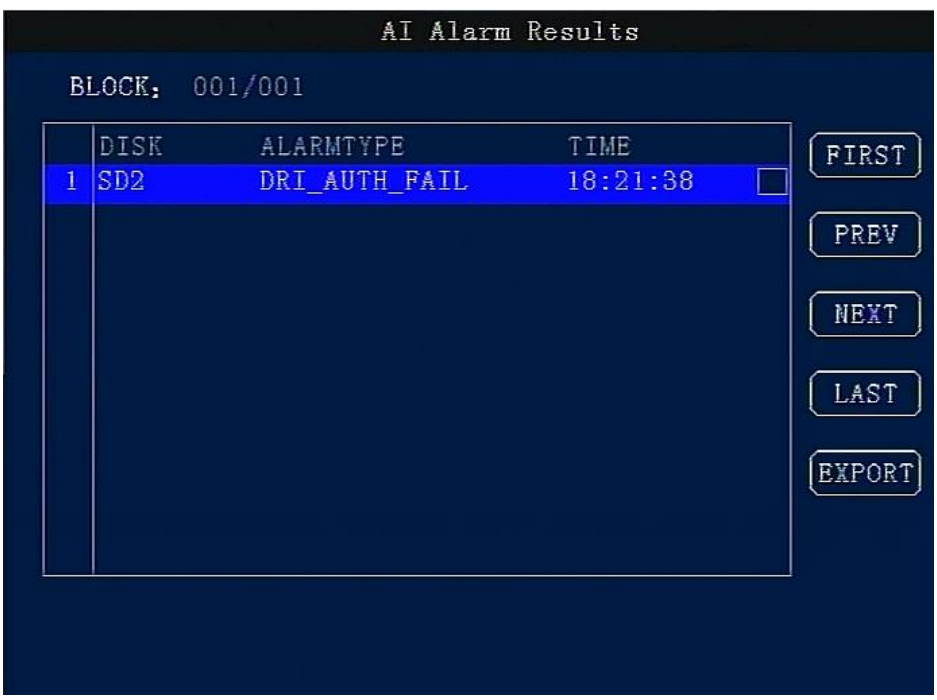


Search: Press【Enter】to select, search the log information from the start time to the end time. Press the arrow keys to select "**First**", "**Previous**", "**Next**", "**Last**", press【Enter】key to display the information page.

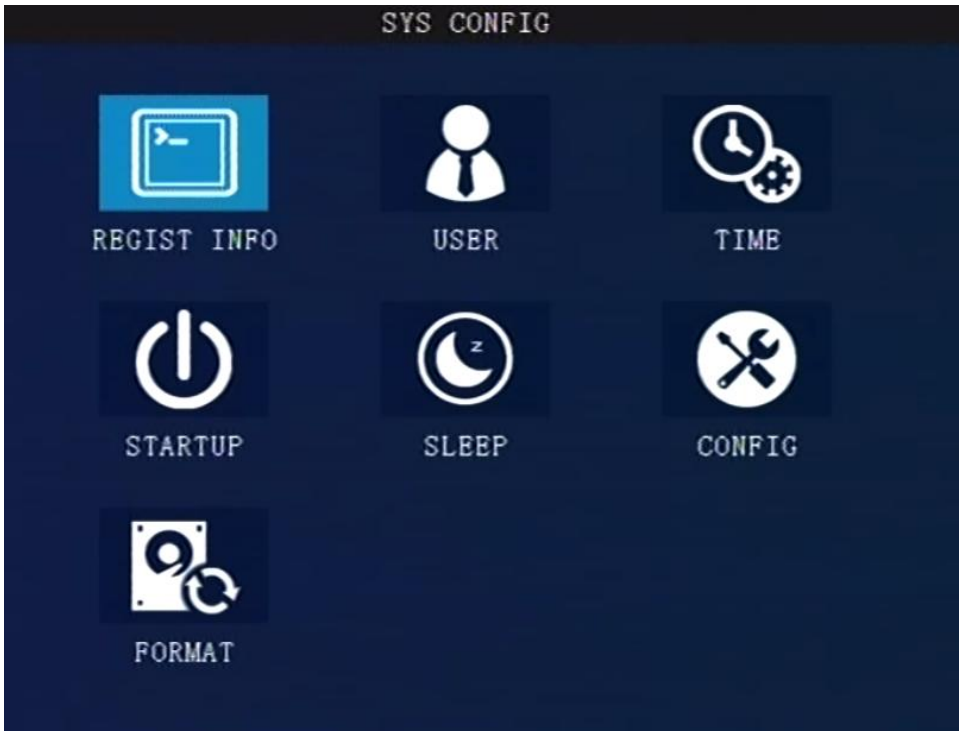
Export: Press【Enter】, the selected pictures will be exported to an external USB storage device.

8.2.1.4. AI Alarm Search

The AI alarm videos saved in the visible area of SD/HDD/SSD which you can search and export the files in folder (Video and pictures) to an external USB drive, click search, then you will get this page.



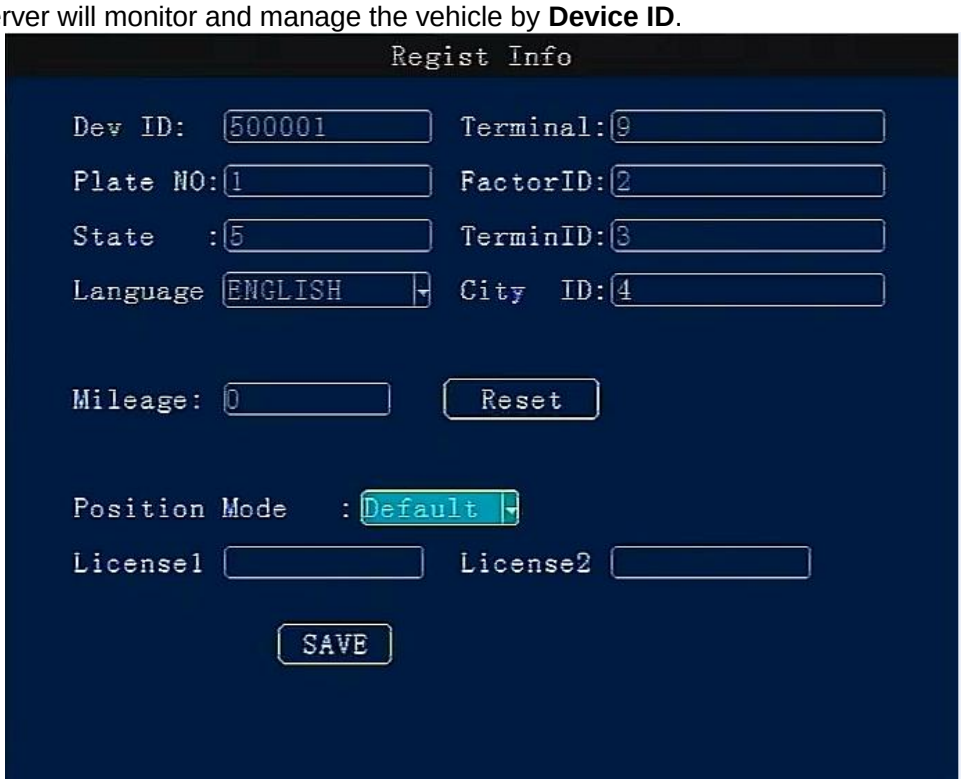
8.2.2. System setting



System setup menu includes **Register info**, **User**, **Time**, **Startup**, **sleep**, **Config** and **Format**.

8.2.2.1. Register info

The VSS server will monitor and manage the vehicle by **Device ID**.



Key items:

Dev ID

Set the characters(up to 12 digits), but it must be unique, It's very important because we will add this device to the server by it.

Plate No: set this the same as the vehicles number plate. It will display on the video's OSD, which makes it easy for vehicle identification.

Language: English/Russian/Chinese for selection.

Position Mode: GPS location mode, it needs to be set as the same GPS antenna type.

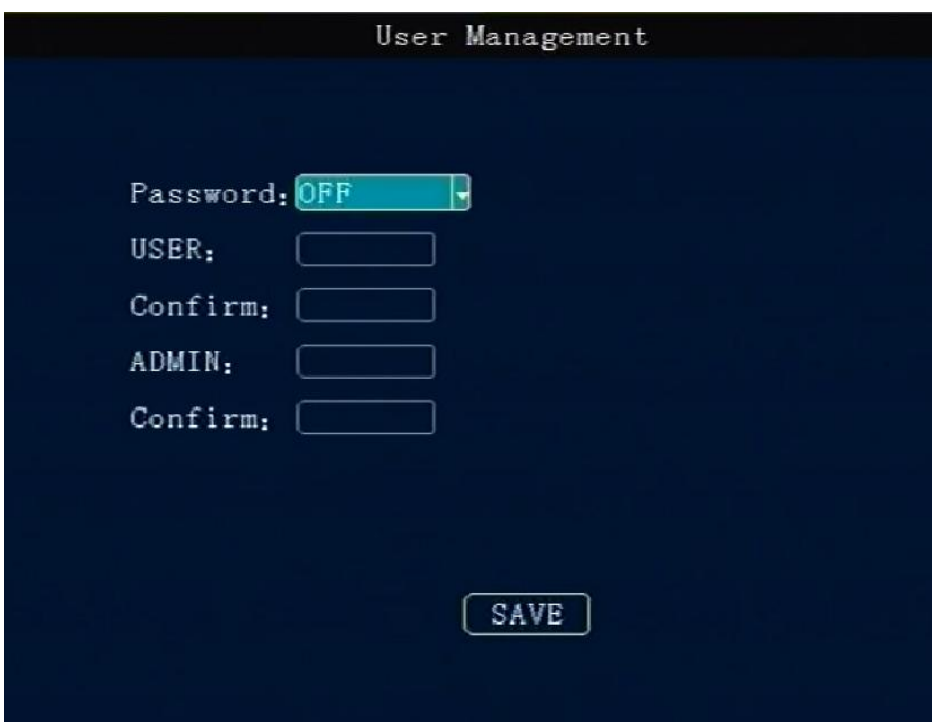
8.2.2.2. User

Password：On/Off for option.

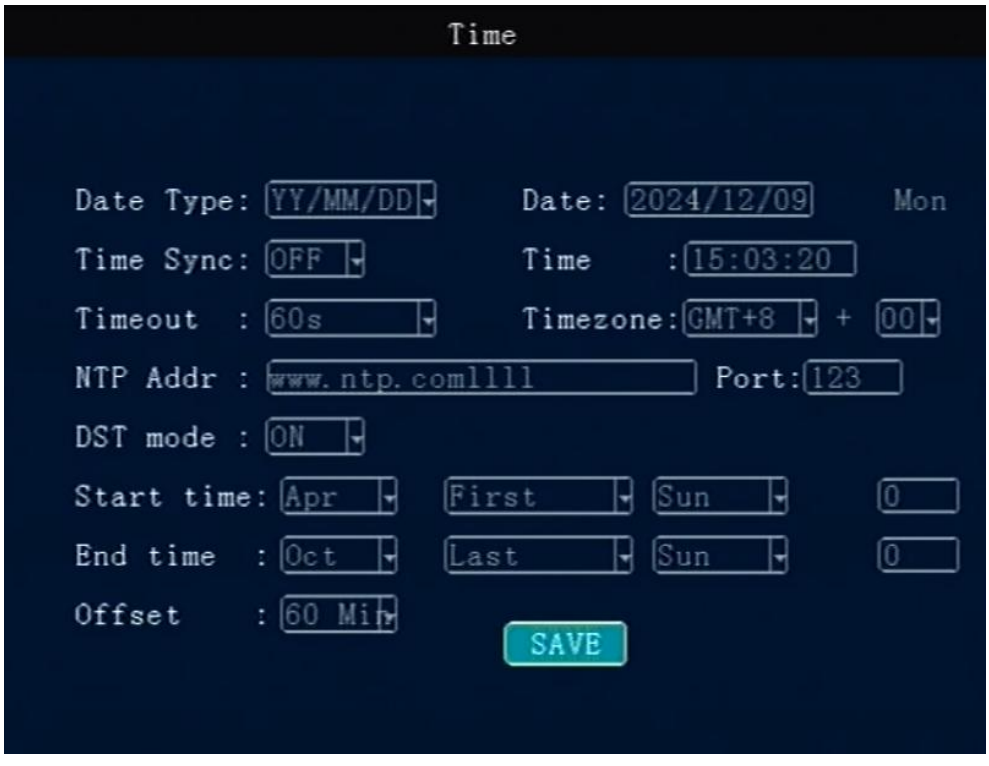
ON: Set the password for user and admin according to your requirement.

- The administrator ***can set or change the parameters***, so if you need to set some parameters, login with this account.
- The user can only search and view the files.

OFF: When there is no password, the menu will be entered directly.



8.2.2.3. Time setup



Date Type: Select your preferred type, year - month - day, day - month - year, month - day - year.

Time Sync: Date and time synchronisation method, the default is GPS type.

Time out: The time that exit the menu-operation/playback window to the preview interface when there is no operation. 1 minute / 2 minutes / 5 minutes / 10 minutes for optional, Default is 1 minute.

Date/Time: The device system time.

Timezone: Please set according to your local time zone, default is GMT + 08.

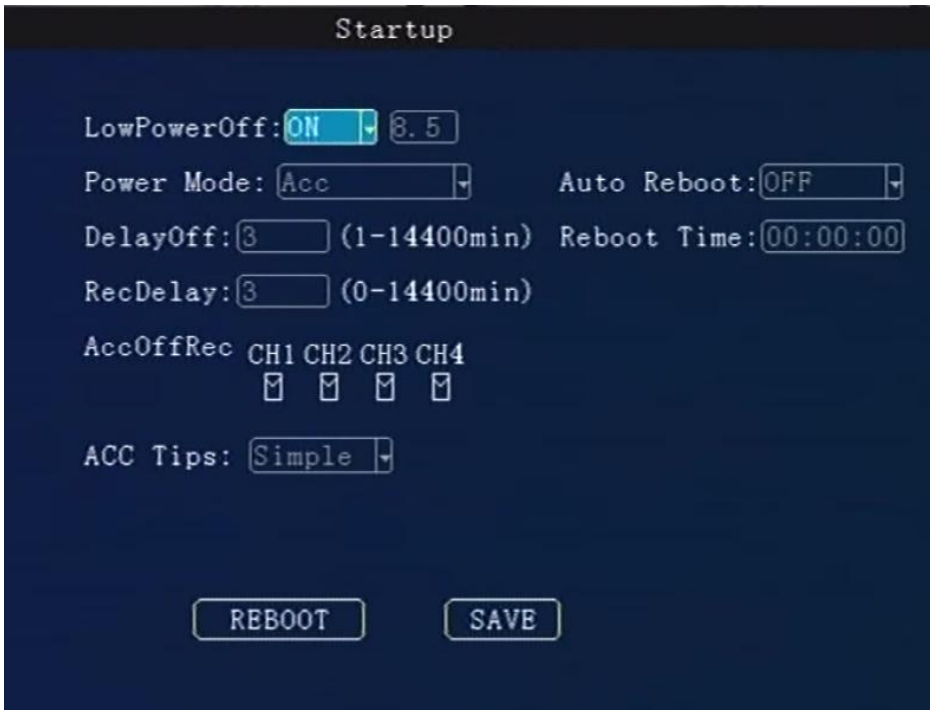
DST mode: Daylight saving time is to set clocks forward by one hour in the spring ("spring forward"), and to set clocks back by one hour in the fall ("fall back") to return to standard time. Need to set it according to your local country requirement.

Set the Month, Week, Days, specific hour, then set the offset time (according to your local regulation, normally it's 60 minutes).

For example:

The above picture means DST start from the first Sunday of April at 00:00, end at 00:00 of the last Sunday of October, 1 hour forward.

8.2.2.4. Startup



Low Power off: You can set a voltage limit to prevent draining the battery, device will power off automatically when voltage is less than this limit.

Power Mode：To set Power ON/Off mode, Acc mode / timing mode.

Timing mode: on/off according to the user's setting period.

Acc mode: On/off by the vehicle's ignition.

Auto Reboot: ON/OFF. The default is OFF. If it's **ON,** it will reboot at the **Reboot Time**.

If the device is running all for 24 hours, please set it to **ON**.

Delay off: Set the device delay off time. MDVR will still work after the vehicle is powered off , then turns off after **Delay-off** time.

14400 minutes means the device will work all the time if the battery can support that long time. So please set an available parameter for it.

RecDelay: When the vehicle is powered off, set the record delay time, it will continue recording during this time. This time can't exceed the **Delay off** time.

Record: Select the channels for delay recording after ignition off.

ACC Tips: Simple or default. Simple means it will show a very simple tips on the Monitor for countdown after ignition off.

8.2.2.5. Sleep

Device supports I/O, Timer, G-sensor methods to wake up the device.

A. I/O mode [ME4104N2, ME3204N2]
IN1-6 could be connected to an I/O device, which will trigger the device to wake-up.

B. **Time Mode:** ON/OFF
Turn on or off scheduled wake mode.
Timed internal(min):
The interval at which the device periodically wakes up.

C. G sensor Mode:
Turn on or off G-sensor wake mode.
G-sensor(g):
The impact value of the G-sensor required to wake up the device. The unit is g.

Other menus

Running Time:

The working time to run after device wakes up. The unit is minute, the minimum is 1 minute.

Upload GPS: ON/OFF

It's the switch off network(4G/Wi-Fi) and upload the GPS location to platform.

Snapshot:

After waking up the device, select the corresponding channel to capture the picture.

Record:

After waking up the device, select the corresponding channel to local recording.

8.2.2.6. Config

Parameters import: Import config.tar file to this device via a USB disk.
Parameters Export: Export the config.tar file to a USB disk.

Tips:
For batch ordered devices, you can set all parameters in one device first, then export it and import to other devices .
After the import is successful, the device will automatically reboot.

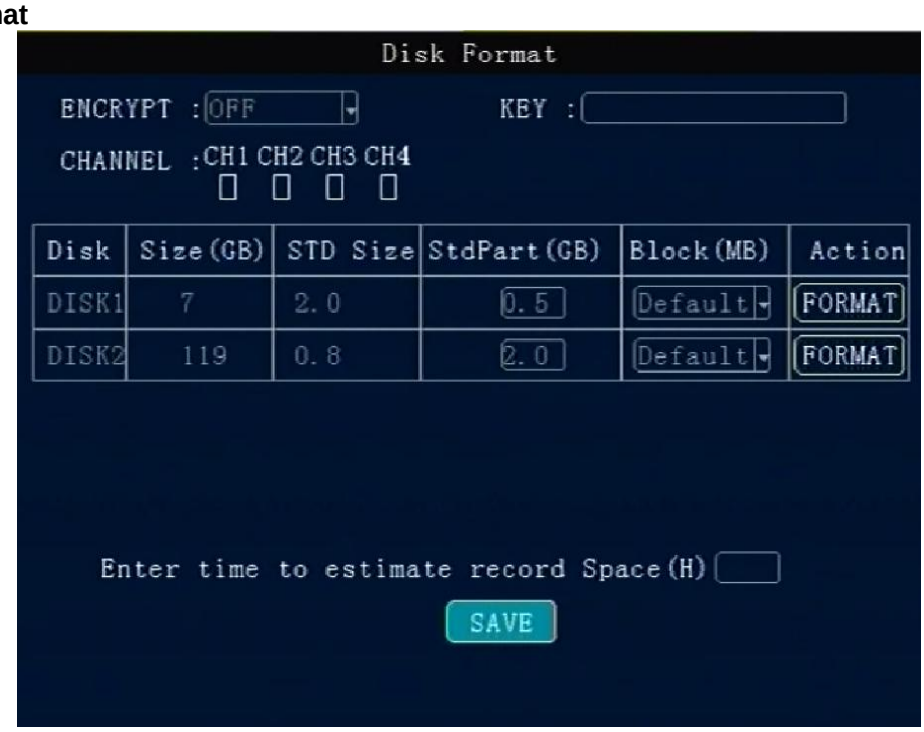
Save User Setting: Save all configurations for the current user.

Factory settings: Restore some parameters to default settings, such as Alarm, Record, etc. It will not change the Device ID and Network setting.

Back to User settings: Restore all device parameters to saved user's setting.

Back All to factory: Restore all parameters to default settings.

8.2.2.7. Format



Available Disks: The system can display DISK1, DISK2, DISK3, and USB (if a USB disk is plugged in).
Disk Information: Shows the size, standard size, and block settings for each disk.

Encryption: For safety concern of videos, we can set a password (KEY) for the dedicated channels. When we play by our player, it will ask the user to input the password.

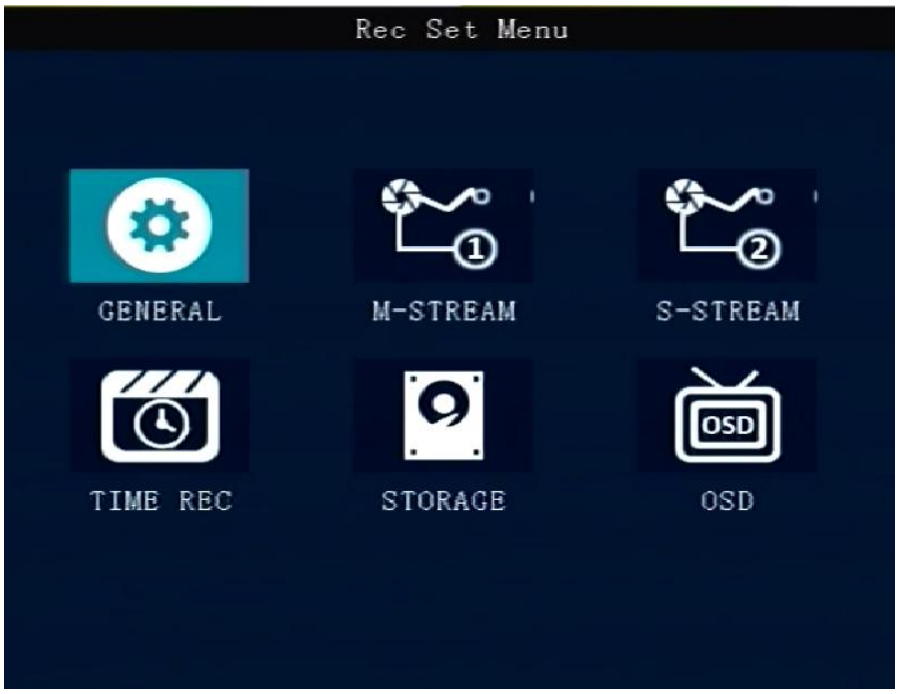
STD size: The area for saving Alarm pictures, debug Logs, system file, Alarm videos, which you can check on the PC. For example, if you need more space for saving alarm videos that you upload to FTP server, should change it. Just input a new value in **StdPart(GB)** and **Format** it.

Block(MB): Videos are divided into disk blocks and stored. It's not recorded by length of time. If each video duration is longer, could change the block size.

Format: If the disk has any errors, format it. It will take a few minutes.

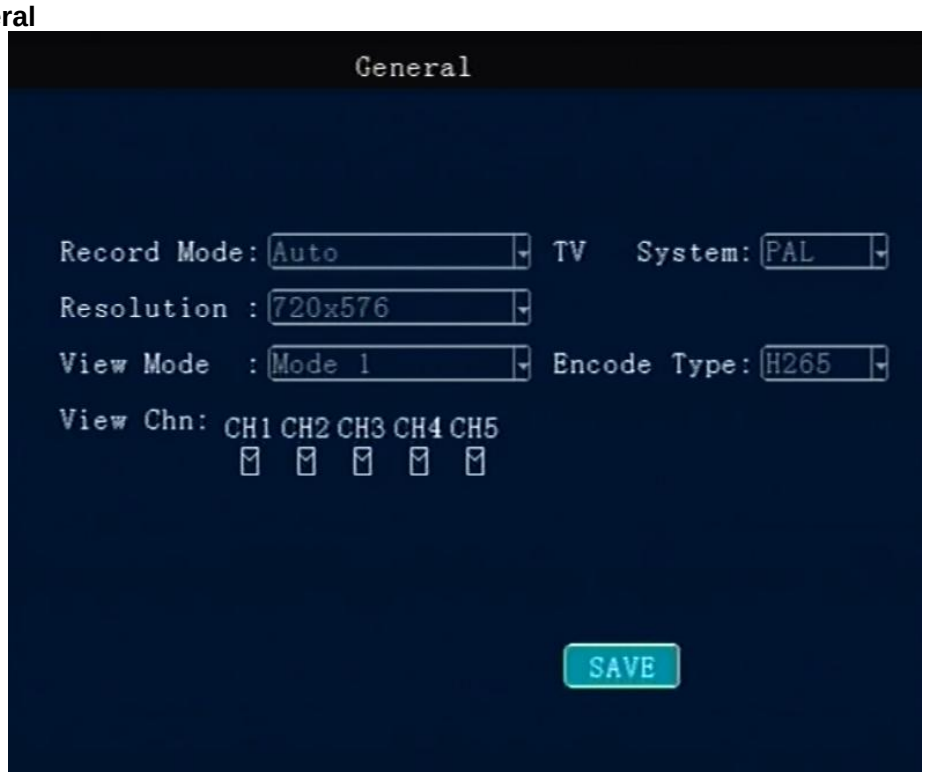
Besides, you can also evaluate the disk space for recording.

8.2.3. Media



Recording setup including：**General, M-stream, S-stream, Time recording, Storage, OSD set.**

8.2.3.1. General



The General info contains the basic settings for camera.

Record Mode: Auto / time recording / alarm recording, default is Auto. The difference is:
①**Auto**: it will record all the time.
②**Time recording**: Need set the time in **[8.2.3.4 Timed Recording]**.
③**Alarm**: Recording when an alarm is triggered, should set first in the Alarm menu.

TV System: PAL / NTSC, default is PAL. If it's wrong, there will be no image. Select PAL/NTSC according to the camera's video type. Device will automatically restart after changing it.

Resolution: It is AV out resolution for TFT monitor, suggest set as 1280*720P.
Encode Type: H264/H265 for selection.

View mode: Two / Four / Six / nine windows that are displayed on TFT monitor.
View Chn: Select the channels you need to display on the monitor, default setting is all channels.

8.2.3.2. Mainstream

Enable: Turn On / Off recording.

Res: Resolution, D1 / HD1 / CIF / 720P for option.
CIF:352*288, **HD1**:352*576, **D1**:704*576, **720P**:1280*720 .1080P: 1920*1080

FPS: Frame per second, more frames, the image will be more clear. **NTSC: 30FPS , PAL: 25FPS.**

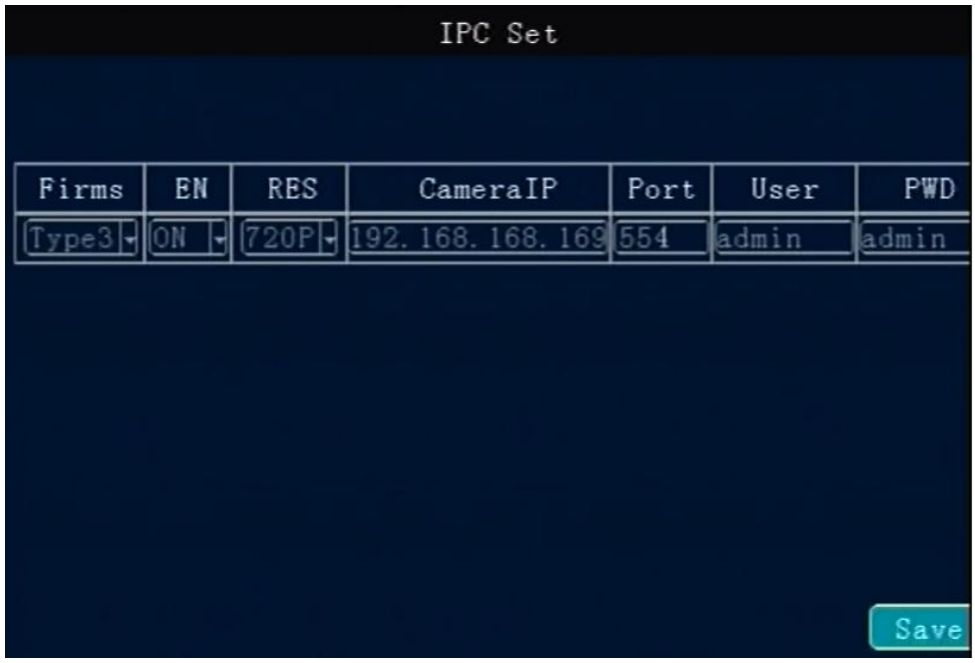
QUA: Quality of the video, 1-8 for selection. **1** is best, but it will use more storage.

AUDIO: **ON** means the audio will be saved together with video.

Mirror/Flip: Flip or mirror the image, or both.

QuickSet: Setup all channels' resolution simultaneously one time, 1080P/D1 / HD1 / CIF / 720P.

IPC test: some VF series supports 1 IPC camera. Choose Type3 and correct the IP address and port as this picture.



Attention: Please keep the **EN** menu as **OFF** if there is no IP camera.

Storage Calculation

MDVR supports dual streams.

Mainstream is mainly used for local recording.

Sub-stream is mainly used for network transmit or mirror recording.

Mainstream (It's VBR, this table is for reference)

Resolution	Image Quality Level	1	2	3	4	5	6	7	8
Bitrate [**Kbps**]	1080P	8192	7168	6144	5120	4096	3072	2048	1536
	720P	4096	3584	3072	2560	2048	1536	1024	800
	D1	2048	1536	1230	1024	900	800	720	640
	HD1	1280	960	768	640	560	500	450	400
	CIF	800	600	480	400	350	312	280	250

Resolution	Image Quality Level	1	2	3	4	5	6	7	8
Bitrate [**MB/hour**]	1080P	3600	3150	2700	2250	1800	1350	900	675
	720P	**1800**	1575	1350	1125	900	675	450	351
	D1	900	675	540	450	395	351	316	281
	HD1	562	422	337	281	246	219	198	176
	CIF	351	264	211	176	153	137	123	110

Sub stream:

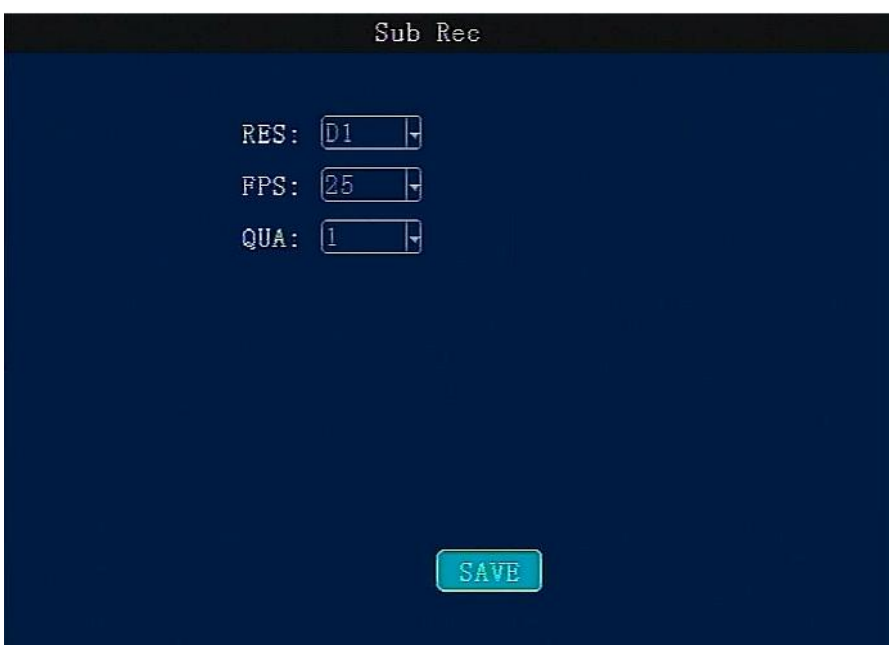
Resolution	Image Quality Level	1	2	3	4	5	6	7	8
Bitrate [**Kbps**]	D1	1500	1300	1100	900	800	700	600	500
	HD1	1300	1200	1000	800	700	600	500	400
	CIF	512	450	400	350	320	280	250	220

Resolution	Image Quality Level	1	2	3	4	5	6	7	8
Bitrate [**MB/hour**]	D1	659	571	483	395	351	307	264	219
	HD1	571	527	439	351	307	264	219	176
	CIF	225	198	176	153	140	123	109	96

Now take the Main-stream (Sub-stream is used for uploading） table for example.

It is approximate data for **one camera in one hour**, e.g. **720P**, if the **Quality is 1** (best), from the table, we know it will take up **1800MB /hour (**All testing based on the **25fps)**

8.2.3.3. Sub stream



The sub-stream is used for live streaming(default) and mirror recording. The higher the Resolution, bit rate & frame rate, the clearer the video will be, but more SIM card data will be consumed.

Notice:

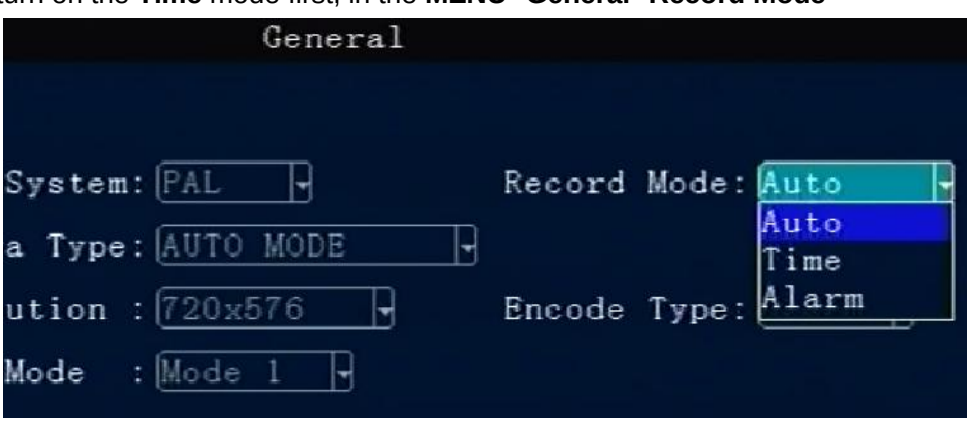
1. Currently **3G** networks support **CIF** real-time network transmission, the default setting is **CIF.**
2. **QUA**, **1 is best** for saving the SIM card data. Please choose 7 or 8.

8.2.3.4. Timed recording

Setting the **start time** and **end time** of timing record, press the number keys to enter. During the setting time, it will start recording automatically.

Attention:

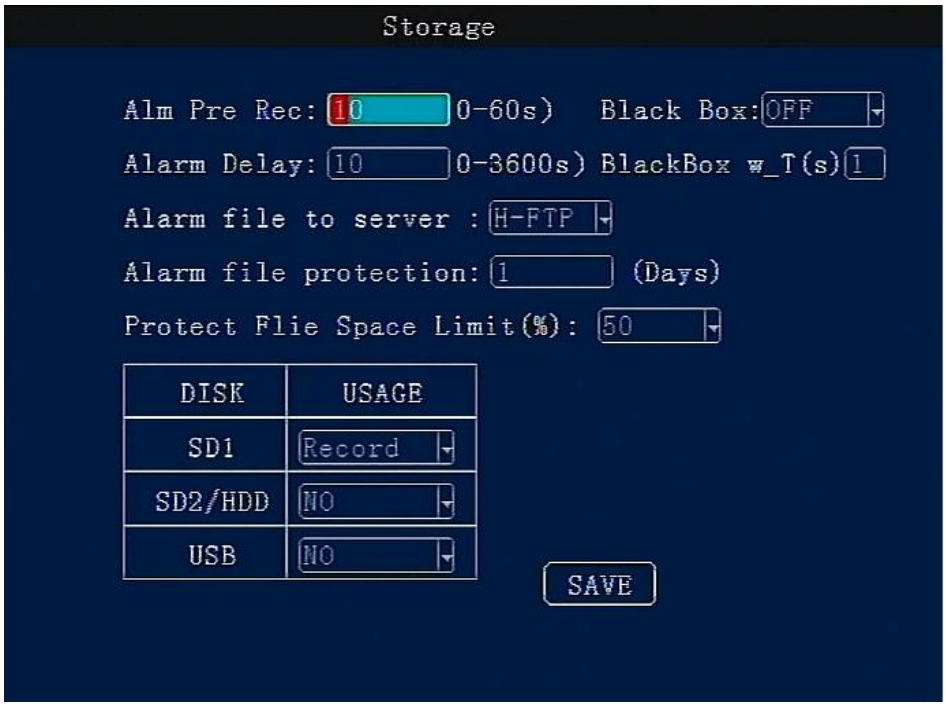
1. You musy turn on the **Time** mode first, in the **MENU**--**General**--**Record Mode**



2.Set the **ALL** as **00:00:00-00:00:00, otherwise the timed recording will not work!**

3.Set the recording plan for every day.

8.2.3.5. Storage setting



Alarm Previous Rec: Set the pre-recording time before an alarm happens.
Alarm delay: Set the post-recording time after the alarm happens.

Black Box: Black box contains the GPS, Date, G-sensor and I/O status information.

Black Box Write Time: The black-box saving interval. The minimum is 3 seconds

Attention: If not using this function, please set it Off.

Alarm file to server: Alarm file uploads to FTP/HFTP.
Alarm file protection: Set the days for alarm file protection. If the storage space is sufficient, files before this time will not be deleted. We suggest it is set no more than 7 days.

Protect File Space Limit: 50%~95% for option. The space limit for saving the alarm files in the invisible area of HDD/SD card, which you can see directly when you connect the HDD/SD card to PC.

Disk and Usage: No / Record / mirror / Backup. The difference:
No: Turn off recording.
Record: Recording the file in this disk.
Mirror: Save the sub-stream video on this disk.
Backup: When the current recording disk has failed, the system will save the video on this disk.

8.2.3.6. OSD Set

Set the stamp information on the image, and location to be displayed on the image.

Time: Time display switch.

Plate: number plate display switch.

GPS: GPS information display switch.

USR DEF: User information.

USER Define: You can define every channel a name by yourself, and input the characters, **12 characters at most**.

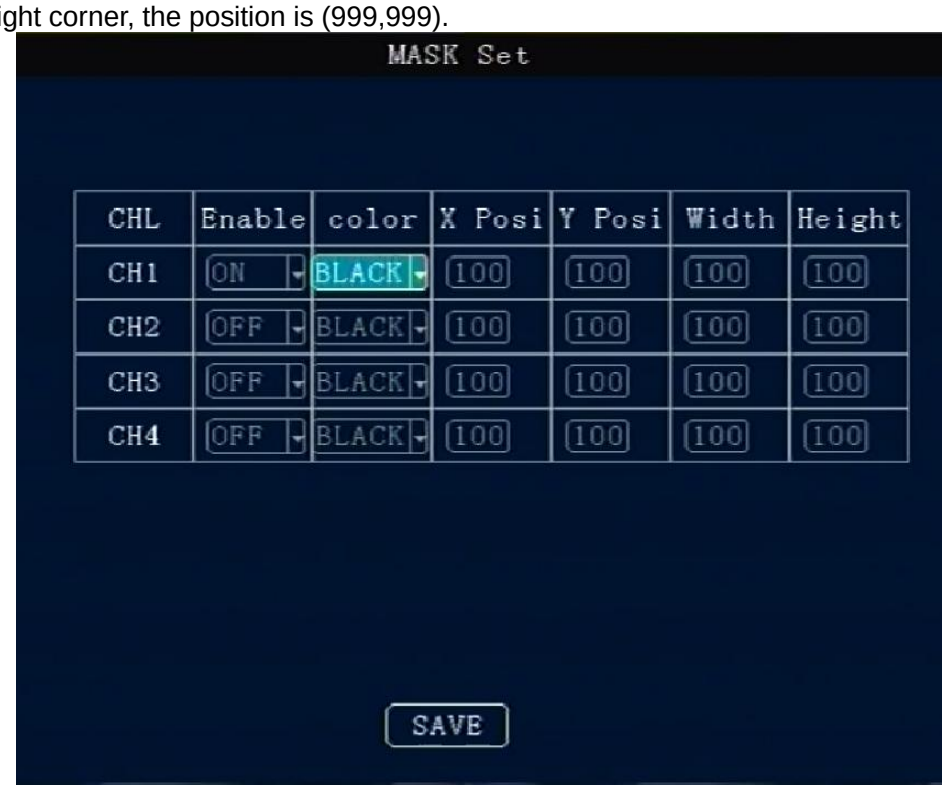
The X/Y coordinate definition as this picture, you can adjust if needed.

Mask set

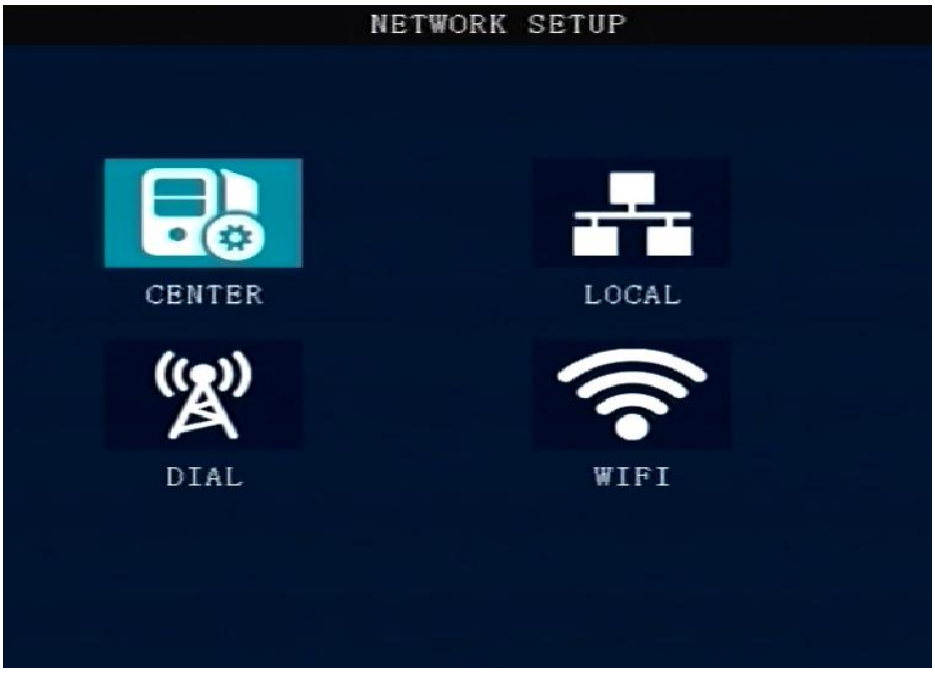
Which could draw an area for mosaic, blur this area with Black/Red/Blue/Yellow/Green/Orange/Cyan colors.

X/Y/Z location maximum is 999. The definition is:

On the upper left corner, the position is (0, 0)
On the lower right corner, the position is (999,999).



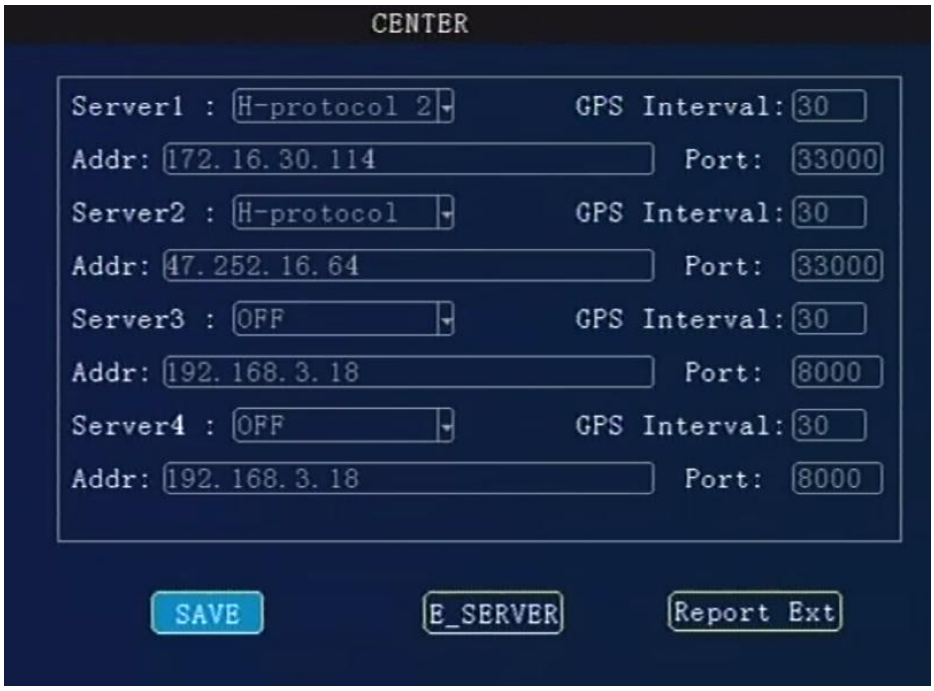
8.2.4. Network Setting



Network Setup menu includes **Center** settings, **Local** settings, **Dial** settings and **Wi-Fi** settings. The device accesses the VSS server or third-party platform by these methods.

Network priority is **WIFI>3G/4G>LAN**, it will switch automatically according to the network status.

8.2.4.1. Center settings



Our MDVR supports 2 platforms at the same time. You can choose one of them to test.

Server1/2: Your platform IP address or domain.

Port: The default port is 33000 for VSS platform.

Attention: Don't make server 1 and server 2 the same setting.

Server3/4: Transparent transmission server. For uploading the raw data of external devices via RS232 or RS485.

GPS Interval: The time interval for sending the GPS data package(contains GPS, speed, alarm, time, date and so on) to platform.

If you need to save the SIM card data, set a larger value.

E- server

①FTP server

Input the FTP server IP address, port. User and password. You can build your own FTP server. **StatePort** is for maintenance (still under development).
If you have set in **8.2.3.5 Storage setting** and choose the FTP, all alarms files will be uploaded to FTP server.
For **FTP**: You can deploy your own FTP server and input the login info.

②Timed Push Service
Snap Type: OFF, Main-stream or Sub-Stream.
Snap interval: The interval for taking pictures.
Snap Chn: The channels need to take snapshot.
Those pictures will be saved in the HDD/SD Card. It will be uploaded to VSS or your own platform by H-protocol.

③Report Ext

To make the track look more fluent especially when turn the corner, you can set the turn angle, when GPS turns direction over than this value, it will upload one GPS message.
You can also turn it off, to save the SIM card data.

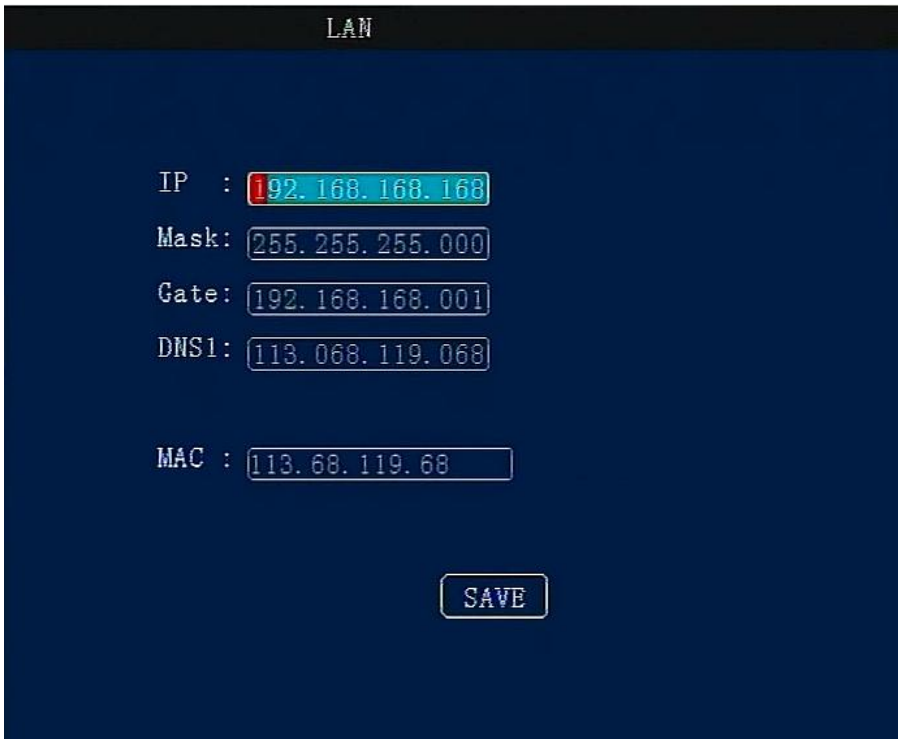
UTC+0: All Messages can be sent in the UTC+0 time zone to facilitate integration with 3rd party FMS, while all video services still use the local time zone you set in the Time menu.

8.2.4.2. Local Network Setup

LAN is used for local connection or IPC connect.
The device supports LAN connect directly like your PC. Set the same IP segment with your PC 's address (include IP, Mask, Gate, DNS address. For MAC, just use our default address, don't change), otherwise, it can't be connected.

When connect the IPC camera, make sure the IPC's address is in the same segment with LAN.

For example, if the LAN address 192.168.1.010, the IPC address could be 192.168.1.100, they are in the same **192.168.1.xxx** segment. Or else, it can't link to the IPC.



8.2.4.3. Dial settings

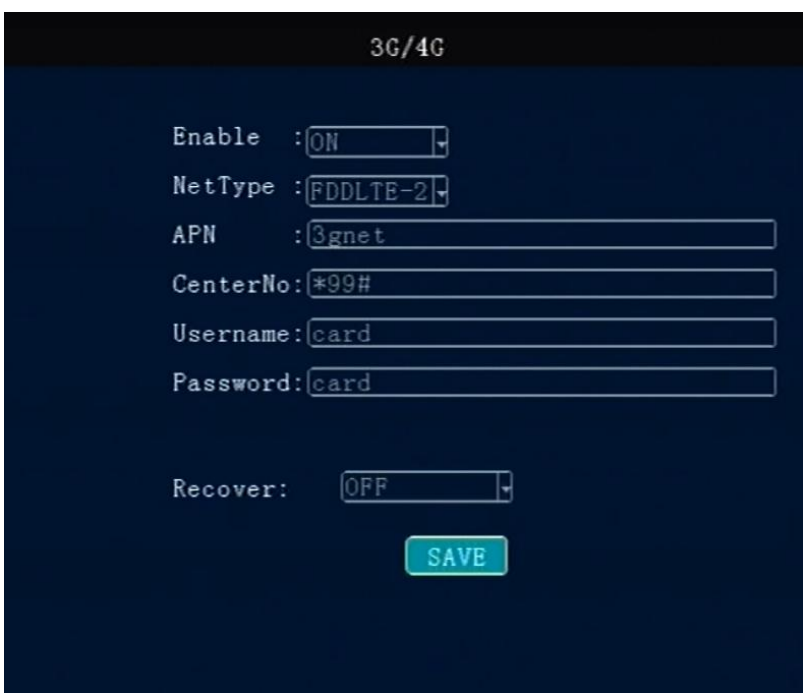
Enable: On / Off.

Net Type: Device will automatically detect the SIM card type, and generally there is no need to change.

APN: Set for access point name for SIM card.

Notice: ***Each SIM card has a different APN , please ask the SIM card supplier***.

Center No.: Default setting is ***99#**. Can not delete and generally don't change it.



Username, Password: Set up the SIM card username and password. You can also inquire about your SIM card supplier!

Recover: Auto reboot the 4G module when dial failed. Some SIM cards will not be recognized if you turn on this menu, pay attention when you set this!

8.2.4.4. Wi-Fi settings

Enabled: On / Off.

Encryption: On / Off.

Authentication Mode: Open / Shared / WPA / WPA-PSK, set according to your WIFI router spec.

Encryption Type: NONE /WEP/ TKIP / AES, set according to your WIFI router spec.

Work Mode: Station or AP. Station is default setting, which enables the device access the internet via router's wireless signal.

①**AP**: Device will share a hot-spot or WIFI for other devices. Users could connect via smartphone or laptop, set the parameters by iTool APP or WEB.

②**Station:** Default mode, Device could access the internet via WIFI router.

DHCP: Dynamic Host Configuration Protocol.

OFF: Input the IP address manually.

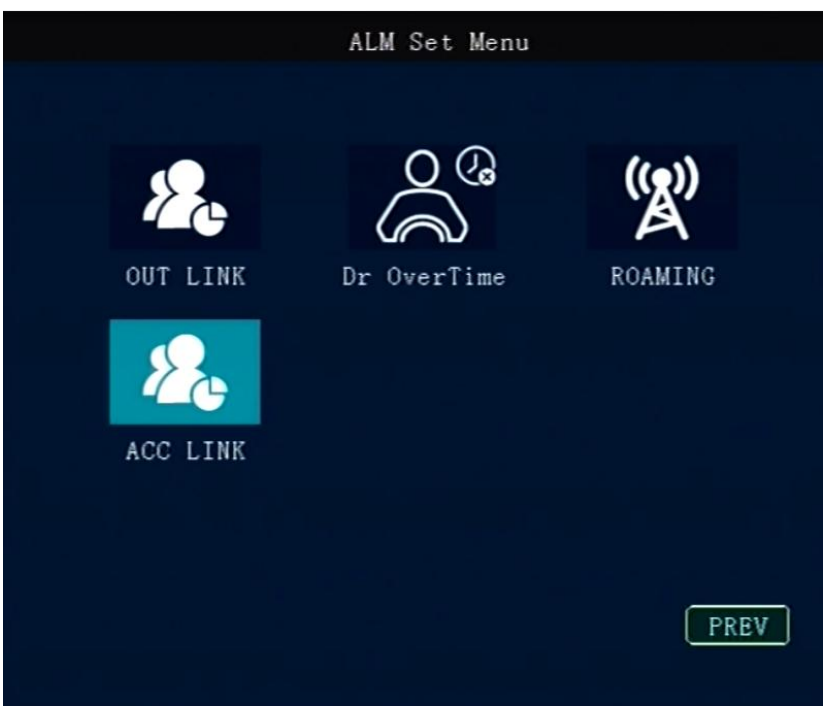
ON: Get the IP address automatically.

SSID, password: Input your own router's WIFI name and password. You can click **Search SSID**.
IP, Gate, Mask: If the DHCP is off, you need to set this manually.

WIFI IP segment should be different from LAN IP.

8.2.5. Alarm

Alarms include **I/O alarm, speed alarm, G-sensor, motion detection, alarm voltage, serial port, PTZ control management** and **AI version, and some new functions.**



8.2.5.1. IO Alarm

IN1-IN6 is for general use (same with the I/O serials cable).

Notice:

There are 6 items that need attention if you want to use it.

Talk: If connected to the panic button, when the driver presses it, it will send the Push to Talk/intercom request to VSS platform. **Attention**: Need to enable the CH4's Audio function in Main-stream setting.

L/R-Turn: Need connect the Left/Right-Turn signal of vehicle for ADAS function.

Back: It will pop-up the vehicles reversing lines on TFT monitor. **Attention**: You can disable if not needed.

Reverse1/2 or IBT2: IN8 and IN9 are for iButton, *it must be **OFF** status if you don't use them*. (***on I/O serials cable, it is IN7 and IN9***).

Enable: Select the alarm type.

Level: Set as High, no need to change.

High means it will trigger the sensor alarm when the voltage of sensor input is changed from 0 to a high voltage[DC 4V - 12V].

Attention: If you choose Low, need connect some external resistors, please contact us if you need some. Or else, it will trigger alarm always!!

Delay: The alarm duration time after trigger source is removed, it is used for setting linkage's duration time. During this period, it will not respond to the new alarm if there is a continuous triggering on the I/O port.

Wait: The waiting time for trigger in case of mistaken touch.

Single/Cycle: The alarm message will be uploaded by cycle or one time.

The working logic:

A. Alarm triggers the Input port, device will respond after the wait time, in case of any mistaken operation.

B. If you set as Cycle mode and the alarm keeps triggering, it will upload the alert by the Delay time, minimum is 10 seconds if you set less than 10 seconds. If it is set more than 10, it will upload as your setting.

If set as Single mode, it will wait for the alarm to stop, then upload the end time.

Panic button Set: N/A.

Alarm Linkage setting

RECORD: Recording switch.

REC_LOCK: The alarm files will be saved in the **STD size** area of local storage.

RECUPLOAD: The alarm files will be uploaded to platform after it has been locked. The channels in

REC_LOCK and RECUPLOAD menu need match, set them as pairs.

ALARM OUT: Choose output1, output2, for connecting buzzer or LED.

SNAPPIC: Take a snapshot. The picture will be saved in the device storage.

PRECHN: Preview channel when the alarm is triggered.

8.2.5.2. Speed Alarm

It contains **Parking** (parking time setting), **L-Warn** (low-speed warning), **L-ALM** (low-speed alarm), **H-Warn** (high-speed warning), **H-ALM** (high-speed alarm), **Spd Up** (speed up), **Spd Down** (speed down) **idle**.

Set the parameters refer to the following text. When it breaks the rule, it will trigger an alarm.

For example, **L-ALM** (low-speed alarm), set it to **ON** and the **Limit** value and other settings. If the vehicle runs a speed lower than the **Limit** value, it will trigger the alarm.

Enable: On / Off.

Limit: Parking limit unit is second; Others limit is Speed unit you set.

Delay: Linkage's duration time. Press number keys to set. **During this period, it will not response the new same alert.**

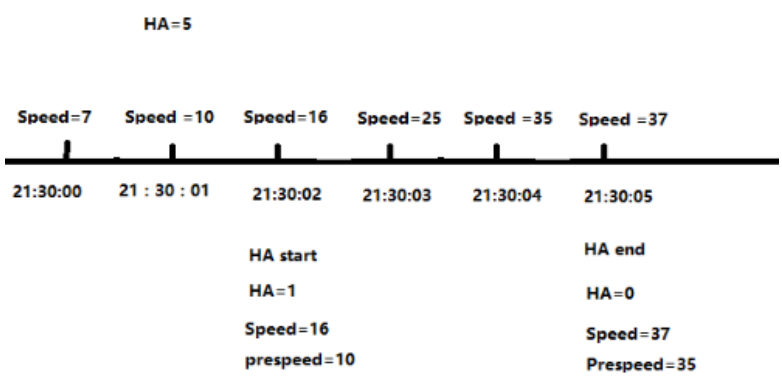
Wait: The waiting time in case of mistaken judgement or just wait.

Speed Source: GPS / Vehicle / Mix.

Speed unit: km/h, MPH, nm/h for option.

Attention:

1. **Parking:** Ignition off status, when it's over the Limit [Unit is second] you set, then it will upload the first alarm, if still parking, the rest will be upload by the Delay time [Unit is second] you set. For parking, no need to set Wait.
2. **Idle**: Ignition on status, when vehicle speed is less than the speed Limit, after the Wait time you set, it will upload the first alarm, the rest will be upload by the Delay time [Unit is second] you set.
3. **Speed up/down:** HA/HB, Hash acceleration or braking. Use the speed to compare to get alarm.



For "speed up" line, the limit you can set it to be 8, then if the driver is driving at 50km this second, and 55km next second, there will be no HA alert; if the driver driving at 50km now, and 60km the next second, then it will trigger the HA alert.
For " speed down" line, the limit you can set it to be 8, then if the driver is driving 50km this second, and 45km next, there will be no HB alert; if the driver driving 50km this second, and 40 km next, then it will trigger the HB alert.

8.2.5.3. Acceleration

The acceleration alarm first needs to get coordinate correction, the vehicle may be parked on level ground to clear calibration.

Enable: ON/OFF.

Limit: Tilt unit is angle degree; the others are g (m/s^2).

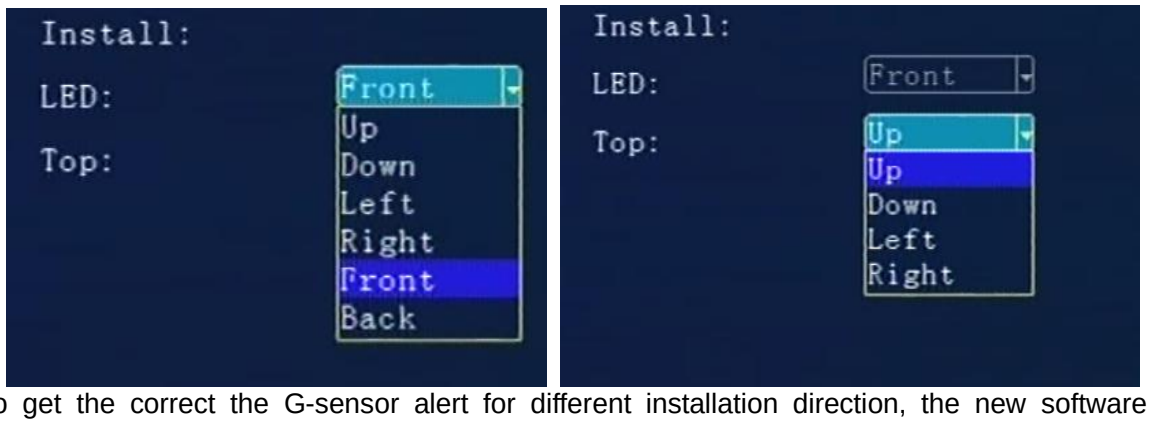
Wait: The waiting time in case of mistaken judgement. Unit is second, we suggest it is set as 0.5-1 second.

Alarm link: Click it and set it.

Delay: Linkage's duration time after not triggered, Unit is second, suggest set as 0.

Adjust: *After you install the device, press this button to refresh all parameters to zero*.

Installation:



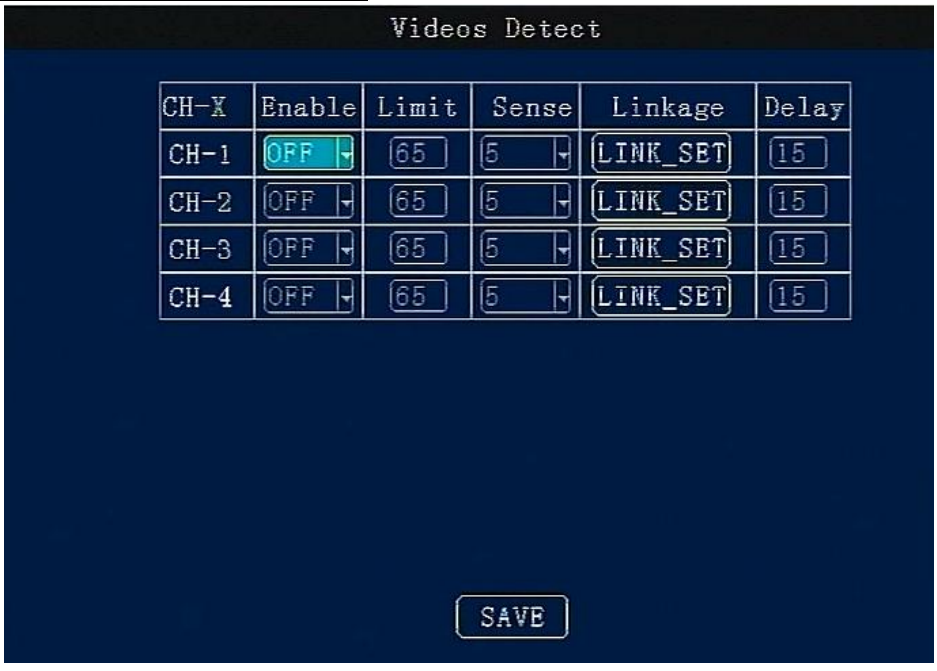
To get the correct the G-sensor alert for different installation direction, the new software supports re-define the G-sensor X/Y/Z value.
LED: LED front panel side, set according to installation and vehicle direction.
Top: The top side of device, set according to installation direction.

Spd up/Dw: Means HA/HB, which use G-sensor to detect the harsh acceleration or harsh braking. Since G-sensor is quite accurate, each type of vehicle need to be adjusted.
The unit is g, for small vehicles, set as 2~3.

8.2.5.4. Motion Detection

For saving the space of the disk, you can turn on the motion-detect function. It will record only when the camera has detected the movement objects or actions.
Besides, it also supports Occlusion alarm function. You can only choose one of them between Motion

detect and video Occlusion at the same time.



Enable：ON, MOVE (motion detection), OCC(camera covered).

Limit: Set the threshold of video area/detection area percentage. Suggest 65.

Sense: Sensitivity, it decides the detection sensitivity level. Select: 1-8.

1 is the highest level. Suggest using 3.

Record: Turn on/off recording function.

Alarm linkage: OFF/Output 1 / Output 2 / Buzzer/snap-up.

Delay: Linkage's duration time.

Attention:

1. For 4-channel device, we suggest choosing 2 channels at most.
2. After you set the parameter, please restart the device.

8.2.5.5. Voltage alarm

If the battery voltage is low or high, it will trigger this alarm. The system can work at 9-36V (The lower voltage, the more demanding current). So, you can set a **Limit** value first.

Enable: ON/OFF.

Limit: Set the threshold of voltage value.

Wait: The waiting time in case of system mistaken judgement.

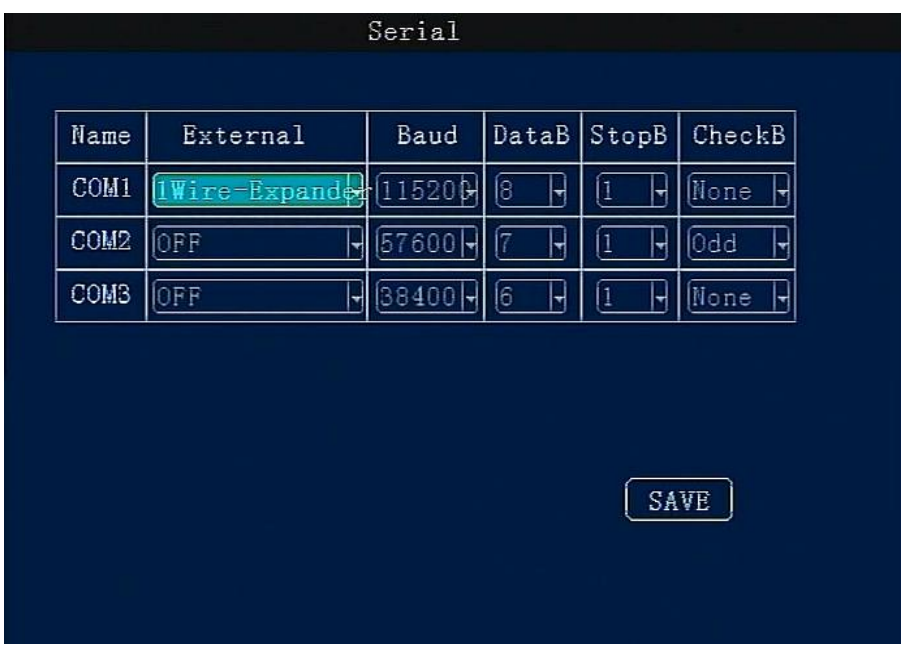
Alarm linkage: No need to set.

Delay: Linkage's duration time.

8.2.5.6. Serial

Com port means the RS232 and RS485 communication ports, it's used for connecting accessories, such as fuel level detection, IC card reader, fatigue driving camera, people counting etc.
COM1 & COM2: These ports are RS232.
COM3: This port is RS485.

Attention:COM1 is for RX1/TX1, COM2 is for RX2/TX2.



For different external devices, the setting is different. Please contact us for more details.

8.2.5.7. PTZ Control

It's used for setting the PTZ device when controlling a PTZ camera (Press the **PTZ** button on the remote, then press **+** /**-** button).

Protocol type: Pelco-D/Pelco-P for option.

Address code: Set a different address code for each channel, the MDVR will recognise this address and control it. Press number keys to enter.

Preset: Preset location when the system starts up. You can set the PTZ lots of the location first and then choose one of them as the preset location.

8.2.5.8. Ext Alarm

Alarm 1: Geo-fence switch, if you have released the Geofence from VSS, turn it On.

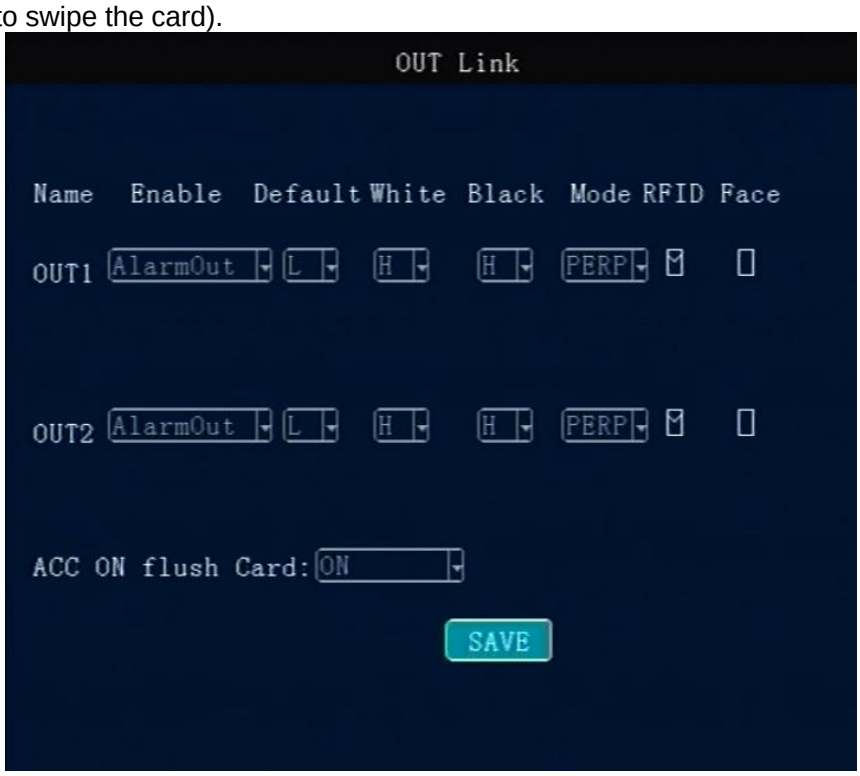
Alarm 2/3 is reserved.

People Count: N/A.

8.2.5.9. AI Built-in [AI Version support]

8.2.5.10. Out link

This function is used for controlling the I/O output High/Low level. For example, the driver needs to swipe the authorized card, then it could generate High/Low level (control the motor or connect a buzzer to remind driver to swipe the card).



Enable: Alarm Out, Ctrl Car, Oil Power, School Bus.
①Alarm Out: General output for sensor output.
②Ctrl Car: iButton, RFID to control the sensor output.
③Oil Power: Control the Sensor output via H-protocol (VSS or third party FMS)
④ School bus: School bus special solution.

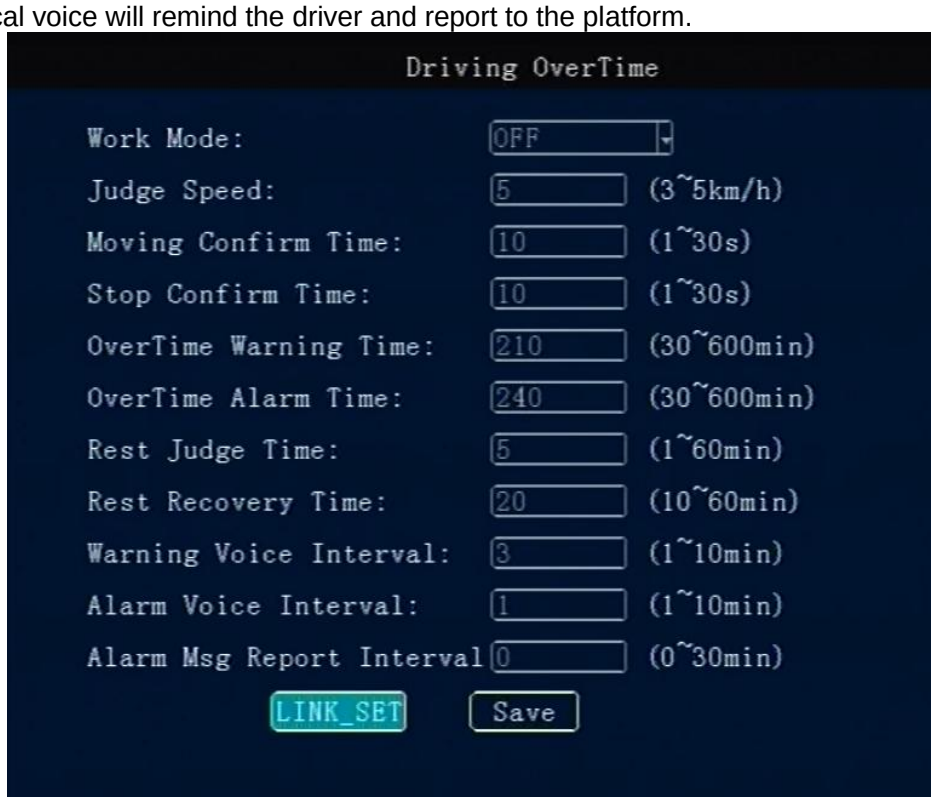
Default: High or Low level. (When the device is powered on, the Sensor-out wires level)

Whitelist /Blacklist: Authorised card or unauthorised card (The registered card information delivered by the platform is a whitelist, and the unregistered card information is a Blacklist).

Mode: Timer (you need to set the time below) or Perpetual (always)

8.2.5.11. Driving Overtime

Which is used to monitor and prevent drivers' excessive driving behavior, thereby ensuring road traffic safety and the physical and mental health of drivers.
If the driver drives for more than some hours, he needs to rest for some minutes. If the rest time is not enough, the local voice will remind the driver and report to the platform.



Work mode: Authorised or without authorised driver.
Judge speed: Consider the GPS drift issue, so need to set a reasonable threshold to judge. When the speed is bigger than this speed, it enters the driving state. The default is 5km/h.
Moving confirm time: Waiting time to judge whether the vehicle is moving, to prevent system misjudgment or error state, the default is 10 seconds.
Stop confirm time: Waiting time to judge whether the vehicle has stopped, to prevent system misjudgment or error state, the default is 10 seconds.

Overtime warning time: The warning time for accumulated overtime driving.
Overtime alarm time: The alarm time for accumulated overtime driving, the default is 4 hours.

Rest judge time: The minimum rest time, each rest time slice length can be set (default 5 minutes). But you must meet this setting if you rest, or else, the system will not take into account for this time.
Rest recovery time: The whole time need to rest; it could accumulate the Min.rest time. The default is 20 minutes.

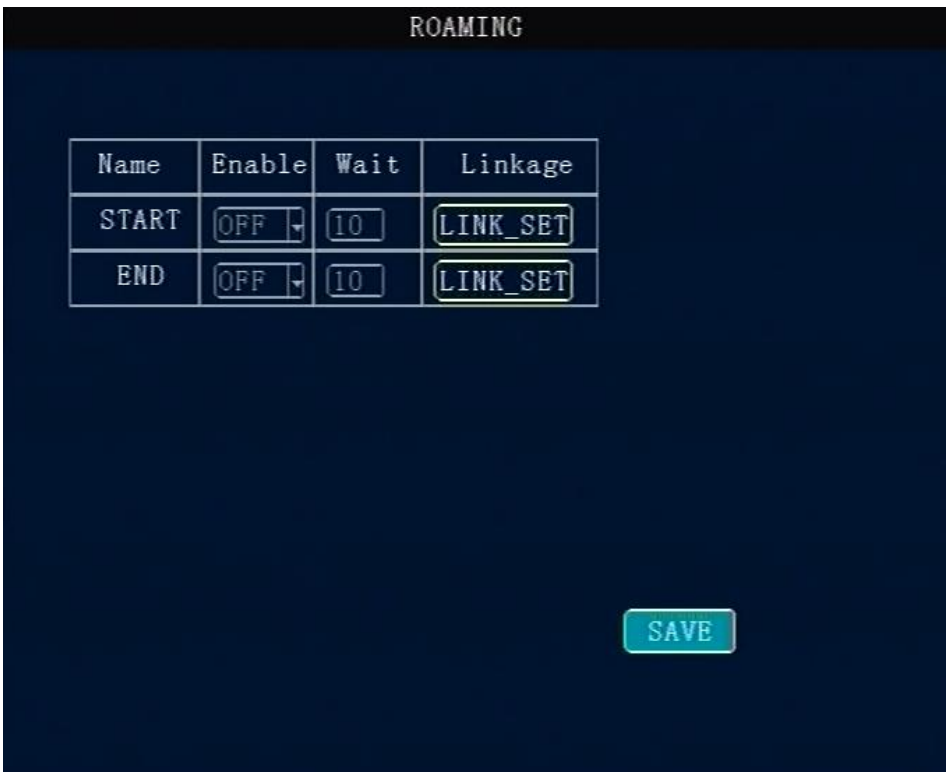
Warning Voice Interval: When the accumulated driving time is bigger than or equal to the warning time, the overtime driving warning is triggered, and the device starts to periodically remind you to take a rest (default is 3-minute interval), and the warning is not reported to the platform.
Alarm Voice Interval: When the accumulated driving time is greater than or equal to the alarm time, the device will periodically remind you that the driving time has exceeded the limit and report it to the platform. the default cycle is 1 minute.

Alarm Message Report interval: Alarm report interval if the driver is continuing to do overtime driving, the default is 0.

Linkage:
Buzzer: Voice alert switch.

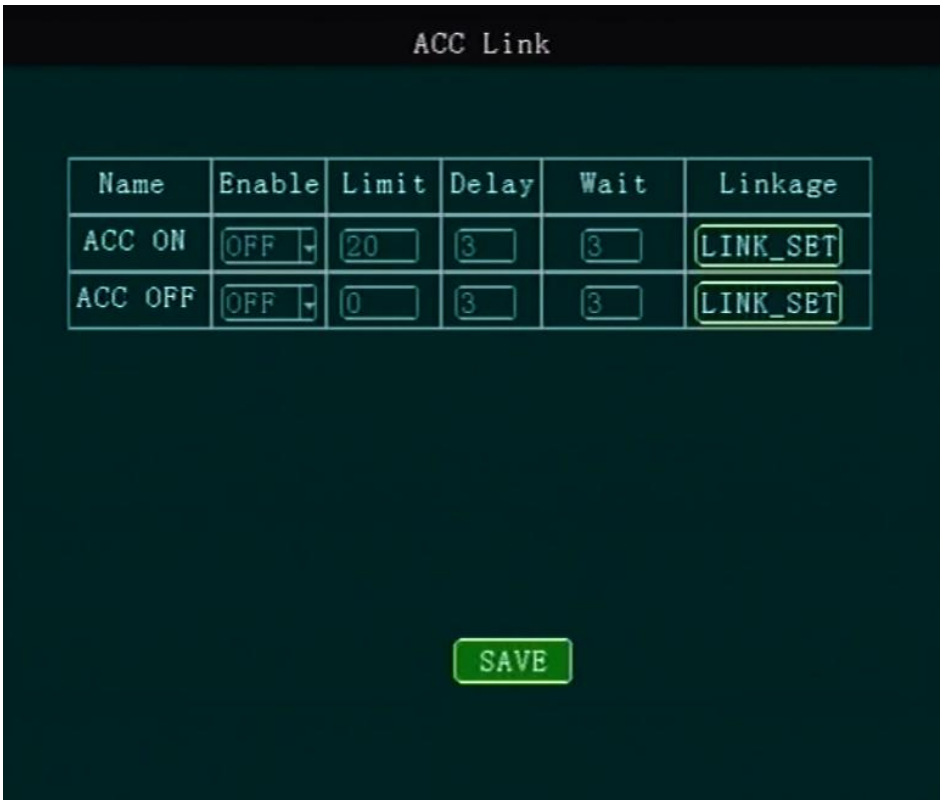
8.2.5.12. Roaming

SIM card roaming alert.



8.2.5.13. ACC Linkage

1) When the ignition is on, the device will take a picture. After the speed exceeds the limit, it will take a second picture. Those pictures will be uploaded to the platform.
2) When ignitions off, it will take a picture and upload it.



8.2.6. System Info

The shortcut key is **info** key on the remote, press **UP** or **DOWN** key to switch the information interface. It will show all the information about the device status.

The important information is as follows:

MCU version: CPU firmware version.

APP Version: The current firmware version.

System power: The device's current operation voltage.

Dev. ID.: Device ID.

I/O status: Check the I/O electrical level status.**1** is high, **0**(lower than 3V) is low. You can check after the

device has connected an I/O device, such as, a panic button.

G-sensor: It shows the G-sensor value. Move the MDVR check if this value is changing.

GPS info: It will show as **GPS[*N] + Location** data, **N** is satellite numbers, more than 3 is normal.

No work: there is no GPS signal.

None/Not exist: GPS module is not detected by device.

Plate No.: The current number plate. Mileage info: Current day: Total mileage.

SN: The encryption IC code.

Temp Info: It will show the temperature info.

3/4G Ver: Show the 3G/4G module and IMEI code.

CHIPID number: The chip-set ID which is for authorizing the DMS/ADAS.

DMS/ADAS status: Activated or not.

Click **NEXT**, it will display the Net information

In the info2 interface:

Net linked: Show the current connection method:

Inner WIFI (the device is linked with WIFI), **3G** (the device is linking with 3G).

Wired (the device is linked by net cable)

3G/4G:

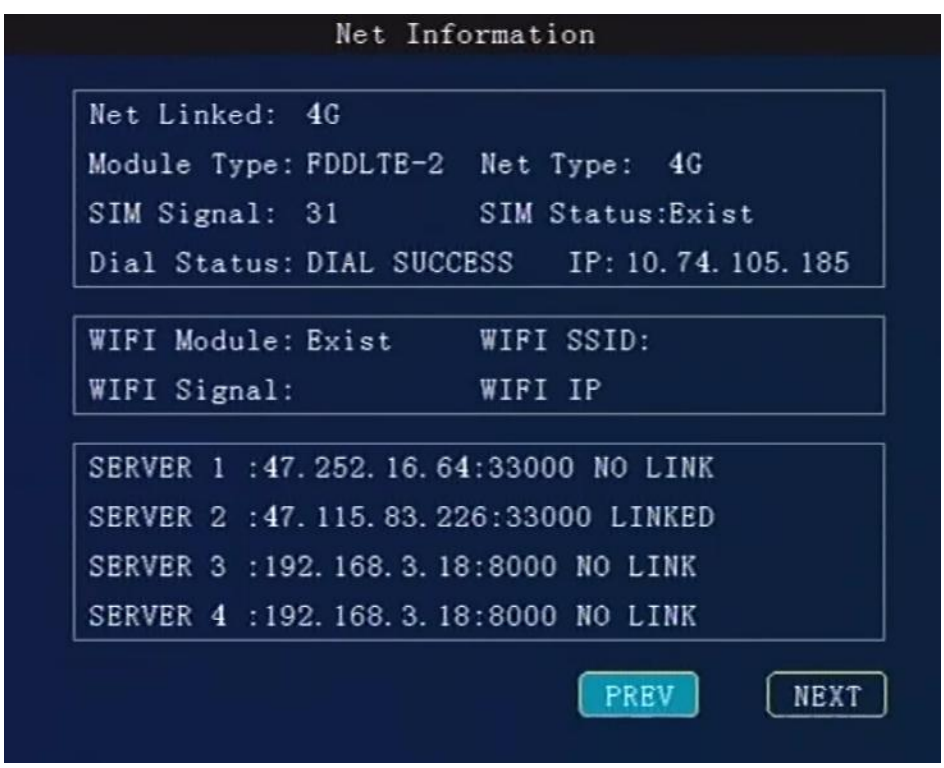
Module Type: WCDMA/FDD-LTE/TD-LTE

SIM Signal: Signal intensity.

SIM status: If there is no SIM card or the system has not detected the SIM card, it will show Not exist.

Dial status: Dial Fail or success.

IP: If dial success, it will show the dial IP address. If it has failed, you should check the **10.2.4.3 Dial setting.**



***WIFI*:**

WIFI module: Exist or not exist.

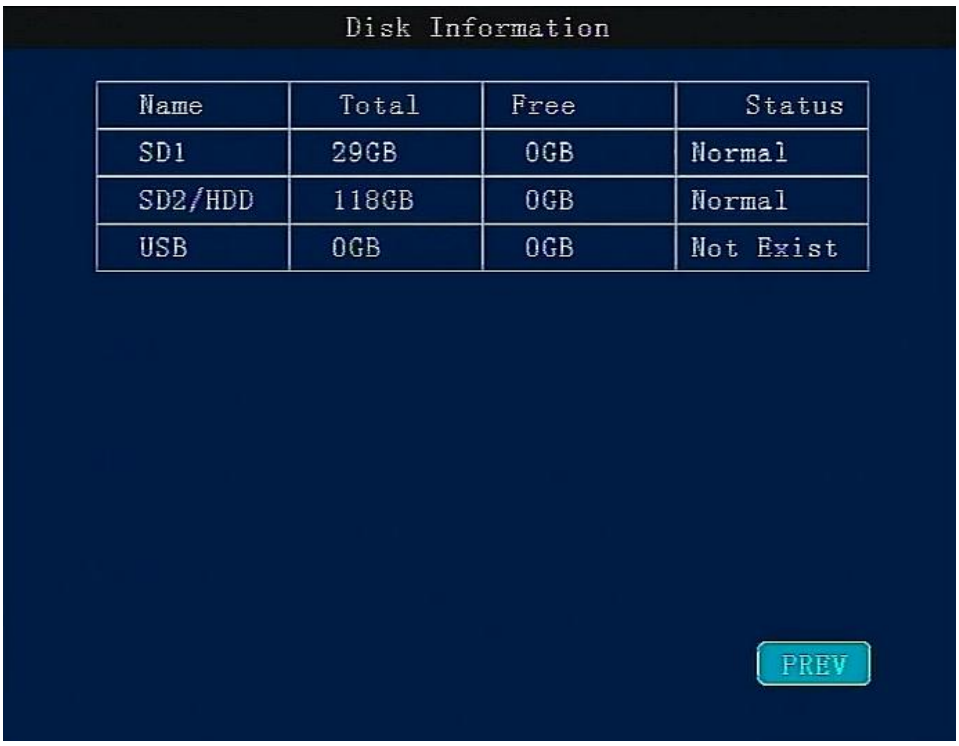
WIFI SSID： Show the current linked WIFI SSID.

WIFI signal: WIFI signal intensity, 100/100 is best.

WIFI IP: If the device had linked to the wireless network, it will get an IP address.

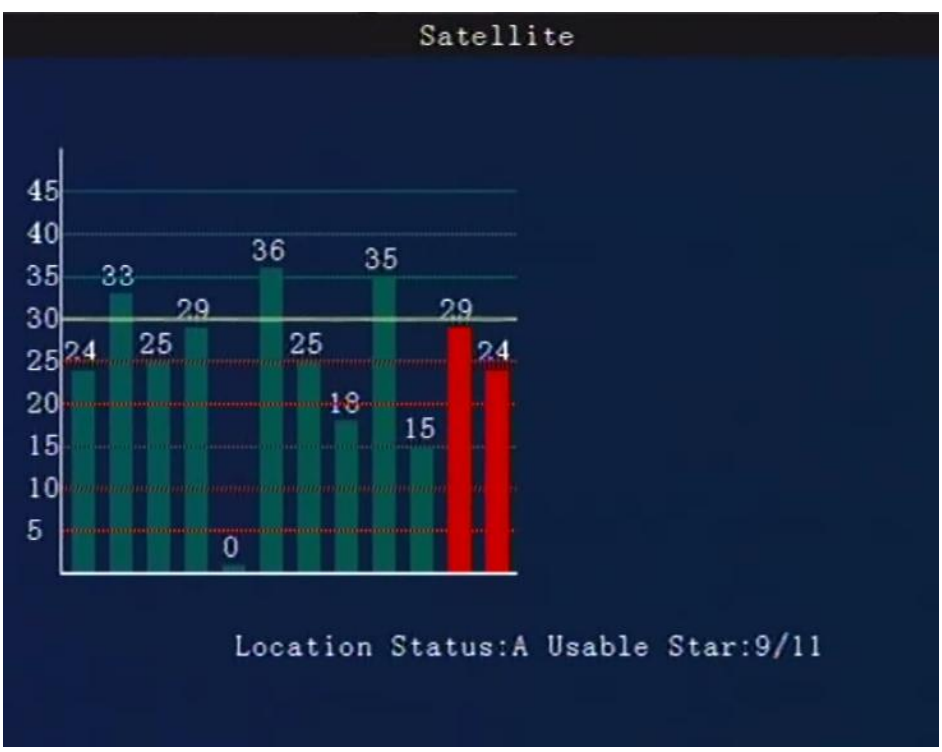
Server 1/2: Check if the VSS or third-party server IP has linked successfully. If it shows **NO LINK**, the device will not be online. Then you need to check the **9.2.4 Network Setting** menu, include the center IP and port, and WIFI/LAN/3G/4G menu.

Click **NEXT**, it will display the disk information.



Disk storage: Check the status of disk or a USB disk.

Press the **INFO** key twice on remote, it will show the satellites information, the more, the better.



If there is a problem with the device, please check this information interface first.

Appendix-1 SMS command

Function list	Command format	Explanation	Example
Set Device ID	*SETDEVID:DEVID;	Can not over 16 bit.	*SETDEVID:18578234289;
Set Center (IP address and port), Protocol type	*SETCENTER:centerNum,protocol,IP,port;	**CenterNum**: 1/2/3/4 for option; **Protocol**:OFF, H-protocol, Transpt; (Server1support H and T protocol,Server 2 only H-protocol)	*SETCENTER:1,H-protocol,192.168.52.55,8080; *SETCENTER:2,H-protocol,192.168.52.55,8080;
Dial setting	*SETDIAL:ON;		*SETDIAL:ON;
Stop Dial	*SETDIAL:OFF;		*SETDIAL:OFF;
Set Dial info	*SETDIAL:3gTYPE,3gAPN,3gCode,3gUser,3gWord;		*SETDIAL:WCDMA,3gnet,*99#,card,card;
Set Plate Number	SETLPN:licenseNum;	Can not over 32 bit.	*SETLPN:A33554
Query	*GETSTATE:DIAL;	Query the dial status.	*GETSTATE:DIAL;
	*GETSTATE:RECORD;	Query the recording status.	*GETSTATE:RECORD;
	*GETSTATE:VIDEO;	Query camera status.	*GETSTATE:VIDEO;
	*GETSTATE:DISK;	Query the Storage status.	*GETSTATE:DISK;
	*GETSTATE:VER;	Query the version.	*GETSTATE:VER;
	*GETSTATE:LOCATION;	Query the GPS location.	*GETSTATE:LOCATION;
Calibrate G-sensor	*ADJUST GSENSOR;		*ADJUST GSENSOR;
Format Disk	*FORMAT DISK:SD1/SD2/HDD;		*FORMAT DISK:SD1;

Restart	*REBOOT;	*REBOOT:20;
Reset to factory setting	*RESTOR FACTORY;	*RESTOR FACTORY;