

# User Manual

## 4 & 8 Channel MDVR

Live video streaming mobile DVR



[www.fleetminder.com.au](http://www.fleetminder.com.au)

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# 1 Specifications

## 1.1 Product overview

Hard Disk Mobile DVR (Automotive) is a cost-effective, multi-functional device designed for video surveillance and remote monitoring of your mobile assets. It uses a high-speed processor, an embedded **Linux** platform, and the most advanced technologies, such as **H.264** Video Compression/Decompression, **3G** network transmission technology and **GPS** positioning technologies. MDVR can utilise four/eight channel video recording. Each channel supports CIF, HD1 and D1 image solution. Drivers' driving information, GPS data and alarm data is recorded on **hard disk** which is used as the storage device. The MDVR provides powerful auto black box features, installation flexibility and high reliability.

## 1.2 Key features:

- 4/8 channel video & audio synchronous real-time recording and playback
- 4ch D1@25fps , 8ch CIF@25fps , 8ch HD1@25fps , 8ch D1@12fps options.
- Internal 2.5 inch HDD. Supports max 1TB with professional hard disk damping technology.
- 3G network , such as HSUPA/HSDPA/WCDMA/EVDO is selectable.
- Built-in GPS module.
- Built-in G-sensor
- WIFI 802.11g b/g/n interface.
- Built-in 1 SD card for backup recording when HDD errors.
- 2 high speed USB2.0 interfaces, the front is used to export the record file. The back is used for mirror recording.
- 8 digital alarm inputs, 2 digital level output.
- Three RS485 interfaces, one RS232 interface.
- Built-in hard disk heat protection allowing operating environments from -40°C - +85°C
- Power supply: 8V-36V

## 1.3 Detailed specifications

Table 1 : MDVR Specifications

| Items                      | Parameters        | Specifications  |
|----------------------------|-------------------|---|
| System                     | Language          | English   |
|                            | Operation Menu    | Graphical User interface (OSD menu)   |
|                            | Password          | Users Password/ Administrator Password  |
| Video                      | Video input       | 4-CH video input 1.0Vp-p, 75Ω   |
|                            | Video output      | 1-CH composite video output 1.0Vp-p, 75Ω<br>1 VGA output  |
|                            | Video Display     | 1 channel or synchronous 4 channels   |
|                            | Video Signal      | PAL, NTSC   |
|                            | Video Compression | H.264 Main profile<br>PAL:100fps at D1, NTSC: 120fps at D1  |
| Audio                      | Audio input       | 4-ch Audio input  |
|                            | Audio output      | 1-ch Audio output   |
|                            | Recording mode    | Audio & Video sync Recording  |
| Image Processing & Storage | Image Resolution  | 4 D1 , 4 HD1, 4 CIF options   |
|                            | Video Compression | H.264 Main profile  |
|                            | Video bit rate    | CIF: 1536Kbps ~ 128Kbps, 4 levels optional.<br>Highest: 0 level Lowest: 3 level<br>HD1: 2048Kbps ~ 512Kbps, 4 levels optional.<br>Highest: 0 level Lowest: 3 level<br>D1: 4Mbps ~ 1Mbps, 4 levels optional.<br>Highest: 0 level Lowest: 3 level |
|                            | Audio Compression | ADPCM, G.726, G.711 Options   |
|                            | Audio Bit rate    | 8KB/s   |
|                            | Storage           | Support One HDD Max 1TB<br>Support One SD Card Backup when HDD is error.<br>Support Mirror Recording with a expand HDD  |
| Alarm                      | Alarm input       | 8 digital level inputs, below 4V is low level alarm, above 4V are high level alarm  |
|                            | Alarm output      | 2 digital level outputs, output voltage level:12V   |

|                           |  |   |
|---------------------------|--|---|
| Communication Interface   | RS485 Interface  | Support 2-RS485 interface   |
|                           | RS232 Interface  | Support 1-RS232 interface   |
|                           | WIFI Interface   | Support 802.11b/g/n   |
| Extended interface        | Support connecting LCD control panel via extended interface  |   |
| Audio amplifier interface | Support Stereo Audio output, it can drive a 20W speaker directly   |   |
| 3G                        | HSUPA/HSDPA/WCDMA/EVDO Optional  |   |
| GPS                       | Built-in GPS module. The geographic coordinates and the vehicle speed can be recorded to the hard disk and also can be transmitted to the CMS. |   |
| Acceleration Sensor       | Embedded acceleration sensor   |   |
| Software                  | Playback   | Playback Software is used to playback video file, GPS track, G-sensor, and alarm information.   |
|                           | CMS  | Center vehicle management software platform, it can manage 20,000 devices at same time. Additional server(s) are required for more devices. |
| Software Upgrade          | Supports Flash disk firmware updates   |   |

## 1.4 Electrical specifications

Table 2: MDVR Electrical Specifications

| Items                 | Parameters | Specifications  |
|-----------------------|------------|---|
| Power input           | +8~+36V    | +8V~+36V, When long-term under 8V, or long-term over 36V, will enter auto power off (protected mode). |
| Power output          | 12V        | 12V (+/-0.2V), Max:3A.  |
| ACC Detection         | ≤4V        | Power OFF   |
|                       | ≥5V        | Power ON  |
| Video input Impedance | 75Ω        | 75Ω for each video input impedance  |
| Video output Volt     | 2Vp-p      | Output 2Vp-p CVBS analog signal, displayer device input need 75Ω impedance to fit it.                 |
| I/O interface         | 0—4V       | Low level alarm   |
|                       | 4V         | High level alarm  |
| Operating Temp        | -40℃-75℃   | In a well-ventilated environment.   |

## 2 Device Applications

This product can be used for video surveillance and remote monitoring for regular or special vehicles such as buses, logistic vehicles, trucks, long-distance coaches, taxis, tankers, cars, school buses, police cars, patrol cars etc.

The MDVR products application connection diagram:

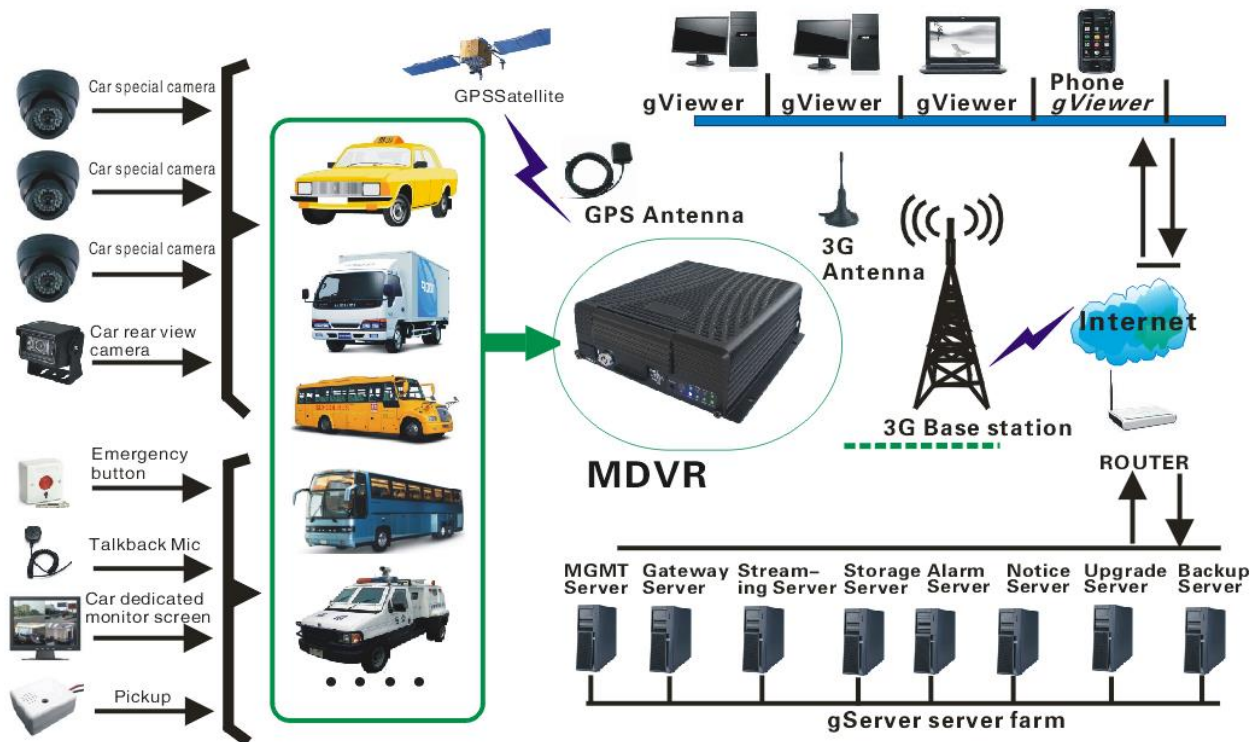


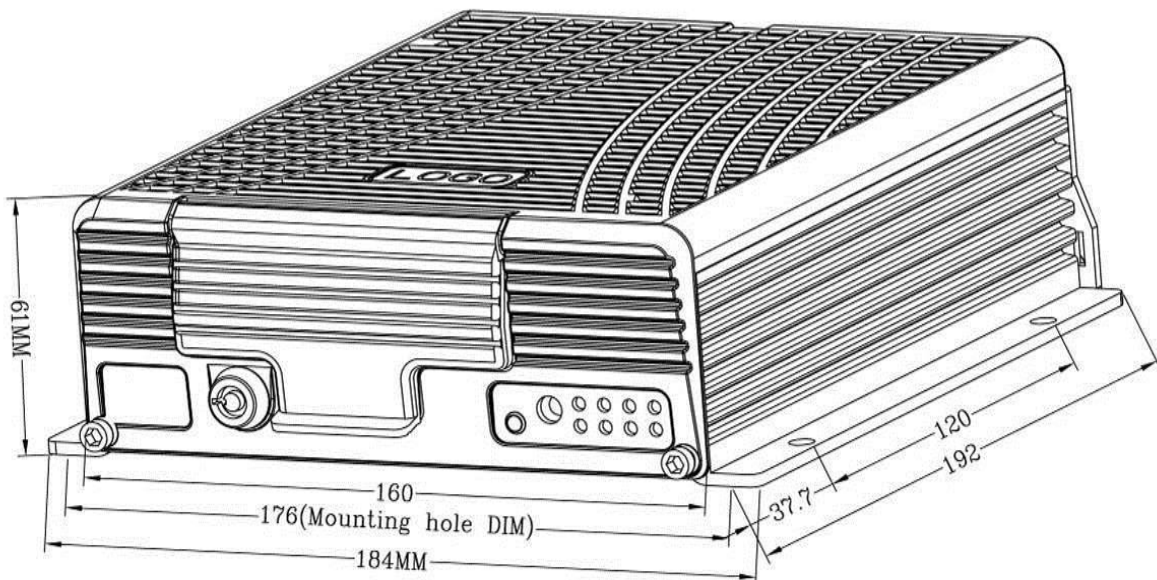
Figure 1-1  
MDVR Schematic diagram

## 3 Installation

### 3.1 Front view image



### 3.2 Device dimensions and mounting holes





### 3.3 Front panel

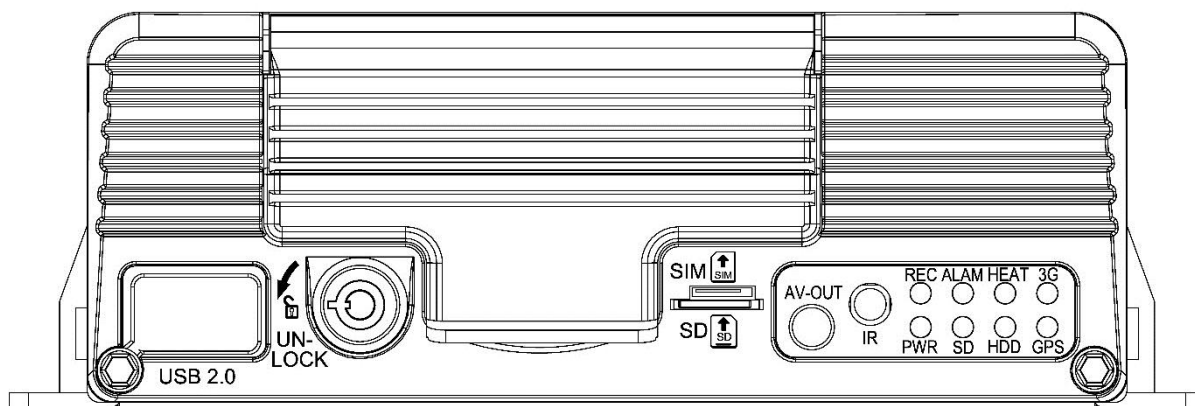
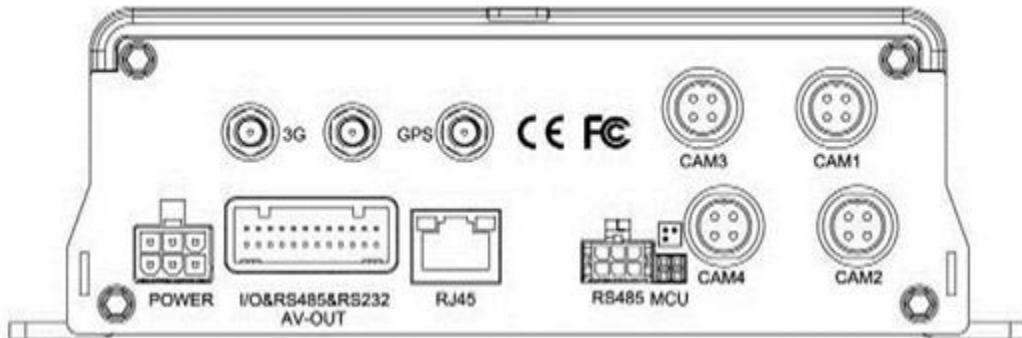


Table 3 : Front Panel definition

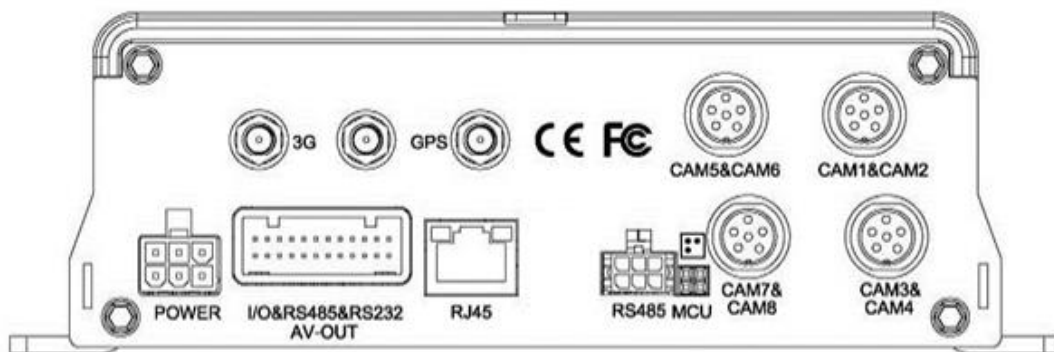
| Interface      | Items   | Description   |
|----------------|---------|---|
| Video out      | AV-OUT  | Video Audio and 12V out analog output   |
| LED            | REC     | Recording LED. Light on when recording  |
|                | ALAM    | Alarm LED. Light on when the alarm function has been enabled  |
|                | HEAT    | Light on when in hard drive heating mode  |
|                | 3G      | Light on when 3G module installed and working   |
|                | PWR     | Power LED   |
|                | SD      | Light on if SD card is installed  |
|                | HDD     | Light on if HDD is installed, flashing when recording   |
|                | GPS     | GPS signal LED. Light on when GPS module installed and working.   |
| IR receiver    | IR      | Receive remote control signal   |
| Electronic key | LOCK    | When locked the MDVR device will power on. When unlocked the device will shut down and allow the removal of the hard drive, SD card and SIM card. |
| USB Port       | USB 2.0 | For firmware upgrades and configuration, as well as allowing copying of video data.   |



### 3.4 Back panel



**4 channel MDVR back**



**8 channel MDVR back**

| Interface                               | Connector                  | Description   |
|---|----------------------------|---|
| 3G Antenna Interface                    | 3G                         | 3G Antenna Interface  |
| Wifi Antenna Interface                  | Wifi                       | Wifi Antenna Interface  |
| GPS Antenna Interface                   | GPS                        | GPS Antenna Interface   |
| Power Input Interface                   | POWER                      | Power input interface   |
| I/O Serial AV-out interface and speaker | I/O & RS485 & RS232 AV-OUT | Switch input interface, high level (>4V) input vehicle speed pulse signal , differential input voice docking function |
| Network Interface                       | RJ45                       | Insert network cable. The LED will light on when network is connected successfully                                    |
| Serial Interface                        | RS485                      | 2 RS485 interface   |
| Printer Interface                       | MCU/ICP                    | System debugging information interface  |
| AV-IN (4 channel)                       | CAM 1.2.3.4                | Video & audio input and 12V out   |
| AV-IN (8 channel)                       | CAM 1.2.3.4.5.6.7.8        | Video & audio input and 12V out   |

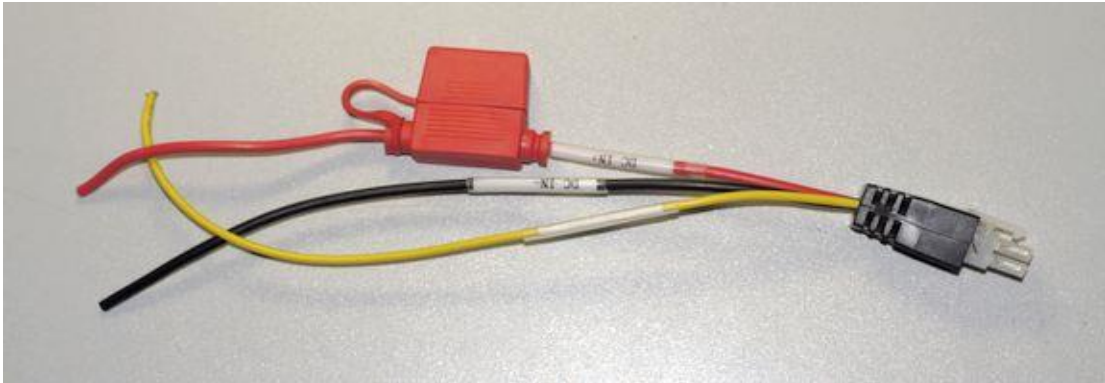
### 3.5 Box contents

After unpacking, please check the device for damage. If there is contact the fleetminder office. Cross check this list with the device and its accompanying accessories.

Table 5: Box contents

| Mobile DVR Packing List |   |      |                         |
|-------------------------|---|------|-------------------------|
| Item                    | Specifications                                    | Unit | QTY                     |
| MDVR device             |   | pcs  | 1                       |
| Accessories Box         |   | pcs  | 1                       |
| Power Line-6PIN         | 6PIN Big557 L=200mm                               | pcs  | 1                       |
| Alarm Line-24PIN        | AMP24PIN , L=200mm                                | pcs  | 1                       |
| Remote Control          |   | pcs  | 1                       |
| HDD Case                |   | pcs  | 1                       |
| Connecting Line         | 4PIN Air connector, RCA/BNC converter, DC L=200mm | pcs  | 4 (According to demand) |
| Electronic Key          |   | pcs  | 2                       |
| Desiccant               |   | pcs  | 1                       |
| Pearl Cotton            |   | pcs  | 2                       |
| GPS Antenna             | G503 L=5m   | pcs  | 1                       |
| 3G Antenna              | 3G Antenna  | pcs  | 1                       |
| Wifi Antenna            | Wifi Antenna                                      | pcs  | 1                       |
| Protective cover        |   | pcs  | 1                       |
| Screw M3                | KM3*5mm   | pcs  | 4                       |
| US-made screws # 8      | AC #8*9MM   | pcs  | 1                       |
| Allen wrench            | 3#  | pcs  | 1                       |

## 3.6 Power cable



One end is a 6pin white plug, it connects with the 6pin white socket on the MDVR device back panel. The red and black cables are directly connected to the vehicle's battery. Red cable to positive, black cable to negative. Yellow cable is connected to the ignition. The device will automatically start when the vehicle's ignition is switched on, and turned off\* when the ignition is off (\*delayed shutdown feature - depending upon the configuration settings the MDVR can be programmed to remain on for up to 180 minutes).

### Notes:

- 1) Before connecting, confirm the power voltage is between 8V—36V otherwise the MDVR device will not function.
- 2) Ensure that the power cables are insulated to prevent short circuiting.
- 3) Power connection must be made directly to the battery. Do not use the bond strap for grounding as it will produce negative pulses that can interfere with the device's normal operation.
- 4) The yellow cable must be connected to the vehicle ignition, otherwise the device will not be able to execute the delayed shutdown and the final moment of the video will be lost;

## 3.7 Antennas



**GPS antenna**



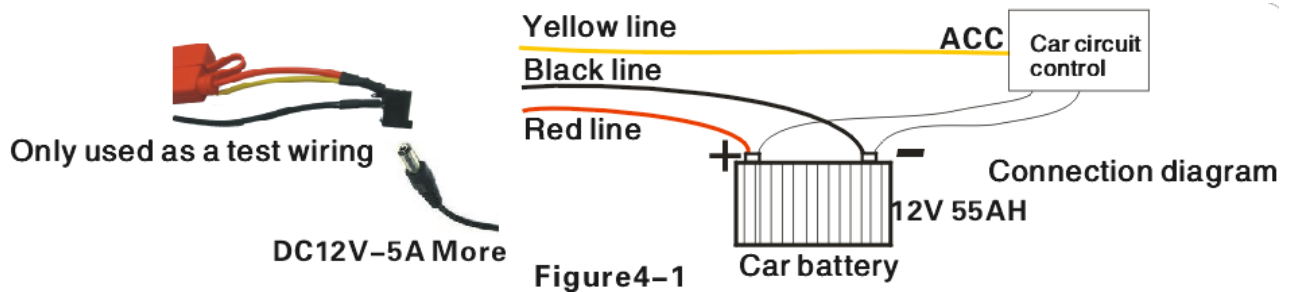
**Wifi antenna**



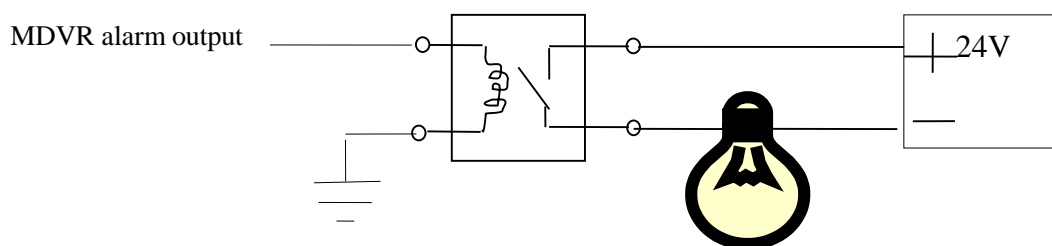
**3G antenna**

## 3.8 Alarm input and output

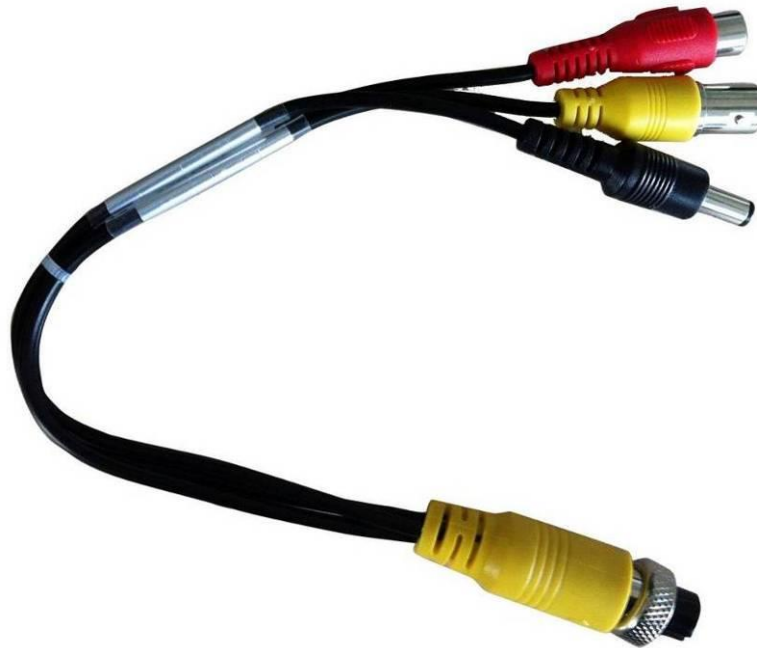
The device has 8 alarm input and 2 alarm output interfaces. Alarm input detection is level detection. Various states of alarm level can be detected while the vehicle is in motion, such as braking, steering horn etc. Below is a diagram that shows when the braking pedal is depressed, the MDVR would be able to detect the high level, otherwise, just detect the low level.



Alarm outputs are level output drive capability for the 200mA. If you want to drive a power device that requires more than 200mA, then you must connect an external relay. Shown below is the Alarm output photoelectric alarm wiring diagram.



### 3.9 Camera adapter cables



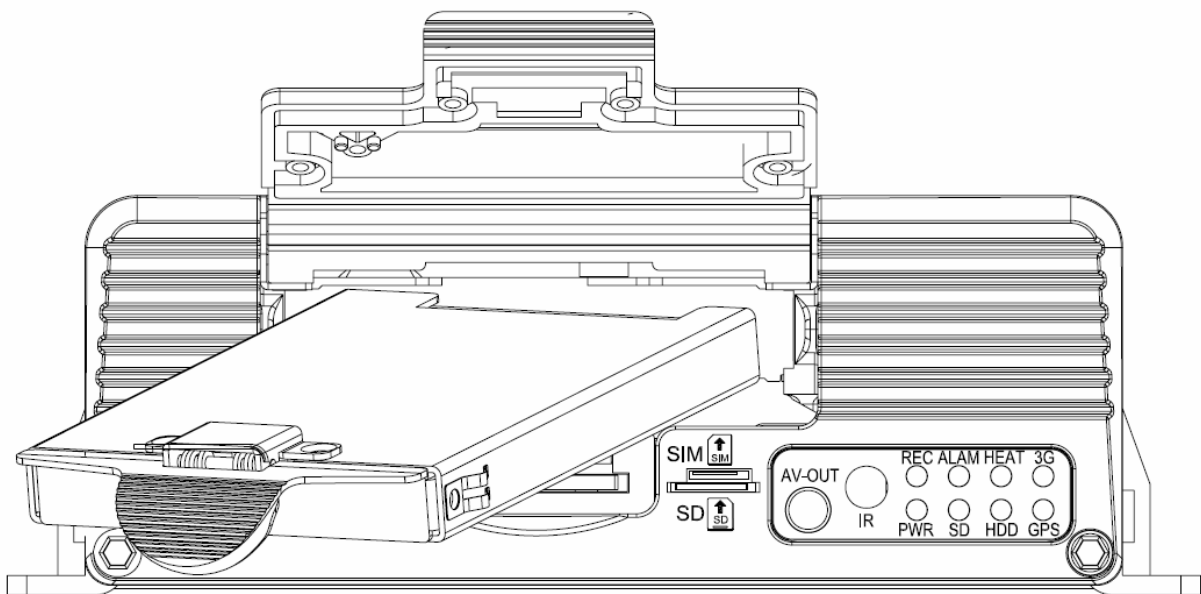
**4 Pin converter BNC composite video cable**



**8 channel wiring cable, A is the first camera, B is the second**

### 3.10 HDD, SIM card, SD card installation

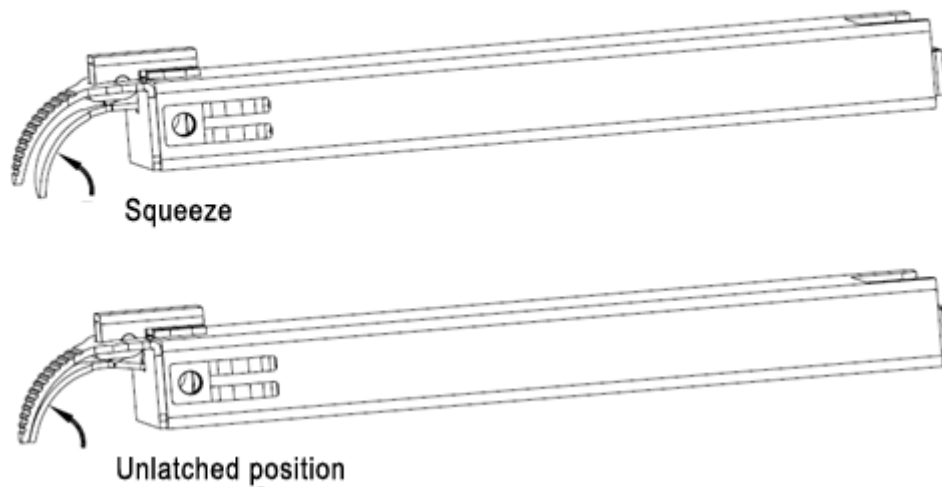
Unlock the MDVR with the key, insert the HDD box (with the installed hard drive) into the hard drive slot.



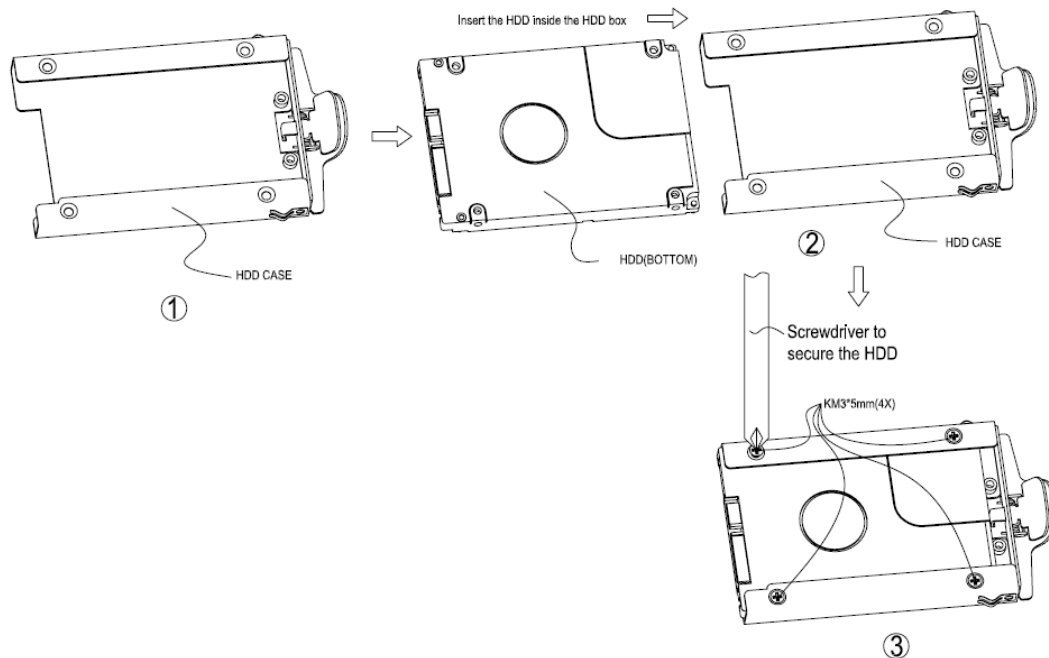
**INSERT / REMOVE THE HDD BOX**



To remove the hard drive box, squeeze the lever to unlatch



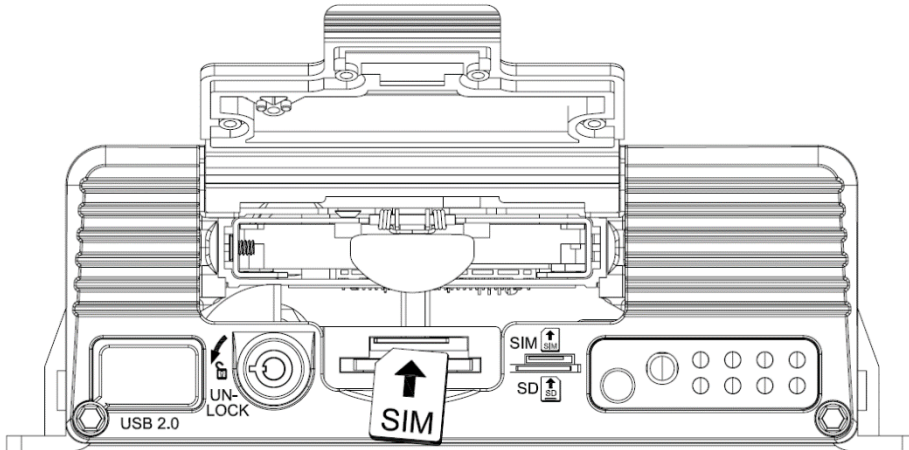
**Squeeze the latch lever and pull to remove the hard drive box from the MDVR device**



**Mount the hard drive into the hard drive box**  
(if replacing the drive. Pre-installed by fleetminder)

### SIM card removal / installation




The SIM card slot is located on the communication board accessed from the front of the MDVR device. Push to insert the SIM card. Also push to remove.



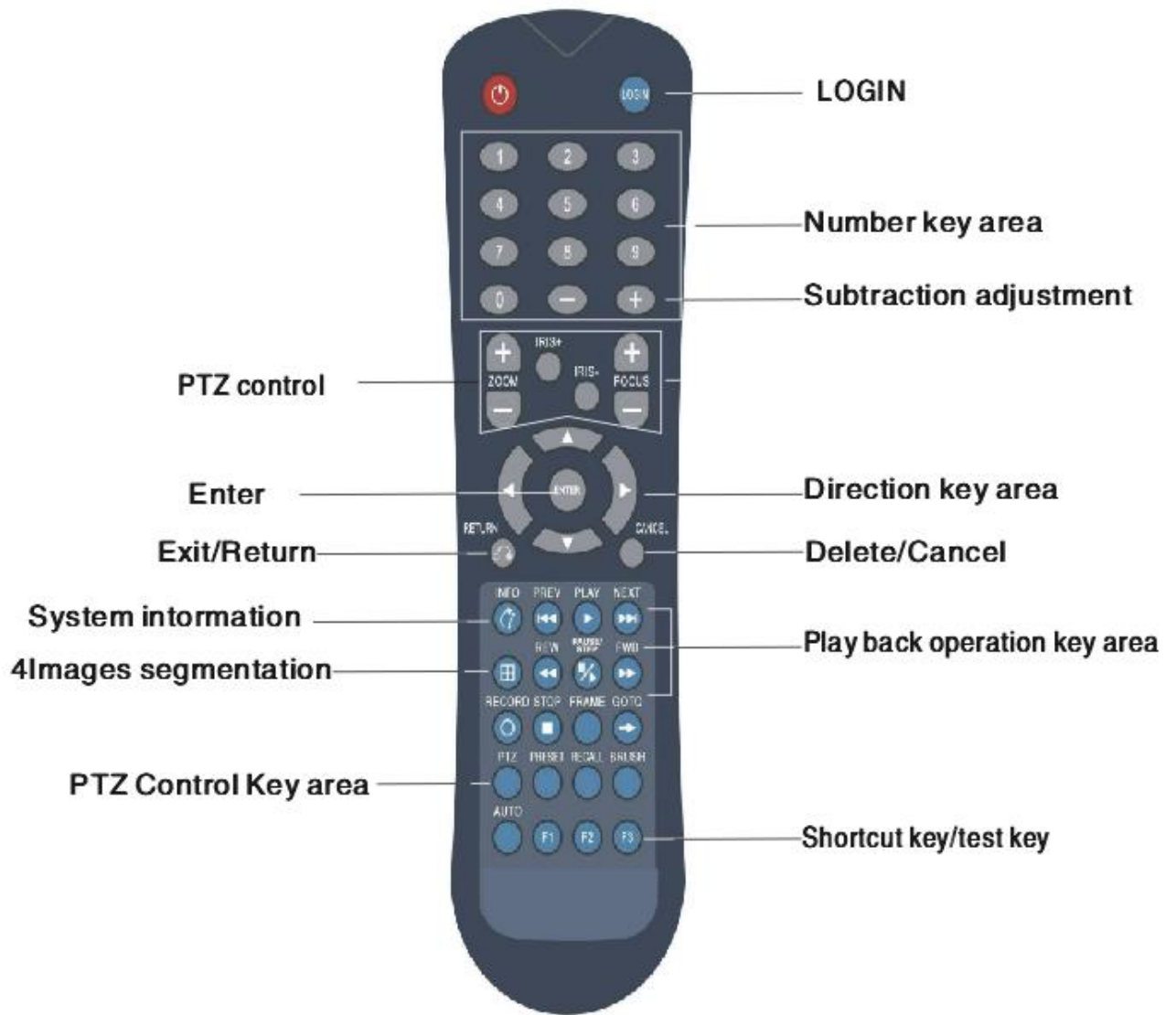
### SD card removal/installation

The SD card slot is located on the communication board accessed from the front of the MDVR device. Push to insert the SD card. Also push to remove.

## 3.11 Recommended installation hardware

| ITEM                                |   | NAME                            |   |
|-------------------------------------|---|---------------------------------|---|
| Power wire and ignition yellow wire |  | Accessory wires                 |                |
| Self-tapping screws or bolts        |  | Insulating electrical tape      |                |
| Cable ties                          |  | Flame retardant corrugated pipe | <br>(optional) |

## 4 Remote Control Function Instructions



There is no control button on MDVR panel, requires use of the remote control to operate the device.

\*PTZ = Pan Tilt Zoom (camera)

Key-press & function as below:

Digit keys zone:



【0—9】 key: Under settings, use for select digit. During playback and preview. 1, 2, 3, 4 is for switching of the channels

【+】 【-】 key: For increment or decrement value

【ENTER】 key: Under settings, means select and save

On playback condition, pressing ENTER will reveal parameters in OSD OVERLAY menu when connected to an external LCD screen.

Table 6 : Function keys on remote control

|   |   |
|---|---|
| Startup/power off   | Press this button twice for reboot (soft start key)   |
| LOGIN   | When setting password, press LOGIN input password.<br>Additional logins can be created. We recommend setting a supervisor or administrator password to reset forgotten user logins. |
| INFO  | Display information   |
| <br>Digit keys 1,2,3,4 | Switch between 1-channel and 4-channel version. Press once, show 4-channel. Press digit key 1,2,3,4, can separately switch to CH1,CH2,CH3,CH4                                       |
| RETURN  | Return to exit current menu (back button)   |
| PAUSE / STEP  | When playing back the recording, press STEP which will step through the video. To pause, press PAUSE. Press play key to resume playback.  |
| GOTO  | When playing back the recording, pressing GOTO will jump to the entered elapsed time.   |
| FRAME   | Pressing the FRAME key, will play a video FRAME.  |
|  (PLAY)              | PLAY key, (when PAUSE, it will show still image)  |
| FWD   | FWD for playback recording, 4 levels: 2X, 4X, 8X, 16X   |
| REW   | REW for playback recording, 4 levels: 2X, 4X, 8X, 16X   |
| ■   | Stop manual recording key   |
| ●   | Start manual recording key  |
| NEXT  | Turn to next page / next file when playing.   |
| PREV  | Turn to previous page / previous file when playing  |
| AUTO, PRESET,<br>ZOOM+/-, FOCUS+/-,<br>IRIS+/-,<br>PTZ, PRESET, RECALL,<br>BRUSH                        | Pan-Tilt-Zoom (PTZ) video camera function keys  |
| F1, F2, F3  | F1 is shortcut key, F2, F3 are spare keys. (Reserved for future)  |

### 3.2: Text Input

Need to use input method when input text, such as the company name, license plate number, driver's name, line number, and other text input needs when requires input method under other menu. Take inputting "Yue B95886" for example after entered the input interface to illustrate the input steps

Step One: in the state of Chinese input, as shown in Figure 4-2, Character YUE(GuangDong)'s Pinyin is YUE, move the cursor to press ENTER key to input the first Chinese letter y, it will display the corresponding PinYin combination 1-5, if there is no PinYin as YUE, please press the FWD key on the remote control to the next pages; when it shows 1.you 2.yu 3.yuan 4.yue 5.yun on the next page, please press the number 4 on the remote control which will show 1-5pcs of Chinese characters, if there is no YUE character, please use FWD button to turn the pages; when it shows 1 read 2 key 3 Yue 4 Guangdong Yue, please press 4 to input the first Chinese character YUE(GuangDong).

Step Two: Now you will need to input the letter B, move the cursor to press ENTER key to switch the input method to the state of capital letters, as Figure 4-3, then move the cursor onto the letter B to press ENTER key to input it.

Step Three: Next you will need to enter numbers, press it again to switch to Chinese input state, you can not input numbers under Chinese input state, then you need to move the cursor to the "in (middle)" word, press ENTER key to turn to EN, and then enter numbers 95886.

After the completion of above steps, press the RETURN key to go back and save, other text input under other menus will be more or less the same. Please press CANCEL to delete it when there is a typo during the input process.



Figure 4-2

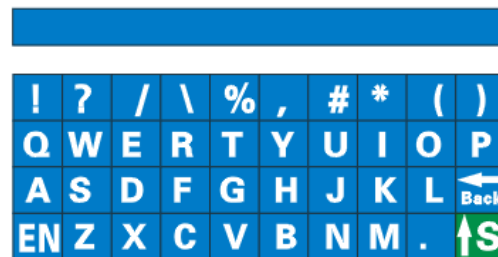


Figure 4-3

### 3.3: Video settings

#### 1: Video Start Up

After the installation of a new SD card in the device, the formatting is recommended after normal boot into the system, in order for system to have better compatible relationship with its format. After the formatting, host will automatically start up the video when restart.

#### 2: Timer recording

Firstly modify to be timing video under the System menu – Video Settings – General Settings – Video mode, save and return to the previous menu level to be video plan, and then set the time period of the video; save it after setting finished.

#### 3: Alarm recording

Firstly modify to be alarm recording under the System menu – Video Settings – General Settings – Video mode, then set the alarm pre-record time (range 0-60s) and alarm video delay (30-900s); alarm output delay (5S-255S), which can be set according to the actual external alarm device.

Secondly it is needed to install the corresponding external alarm input device, such as the emergency button set by sensor, power switch for open/close door, brakes lights and other sensors; the following are the several main alarm settings of this device:

A: The sensor input alarm system, system menu – alarm settings – sensor settings

Set the menu (in Figure 4-21) with high or low trigger level, and then turn on the alarm; this menu is corresponding with four external alarm input SENSOR IN (which can be for eight external alarm output), it must be connected to the corresponding external sensing switch device, such as door-magnet power supply, emergency button, turning signal switch, brake lights (Figure 2-12), etc; rough connections are shown in Figure 3-4.

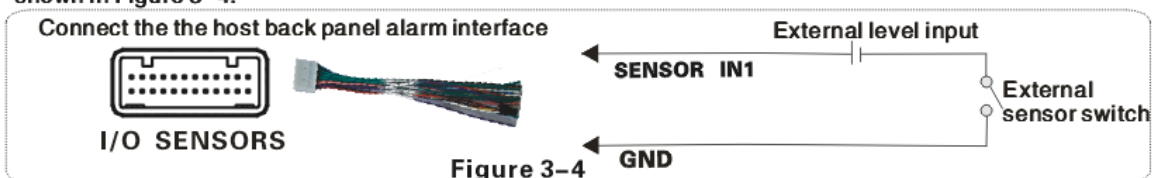


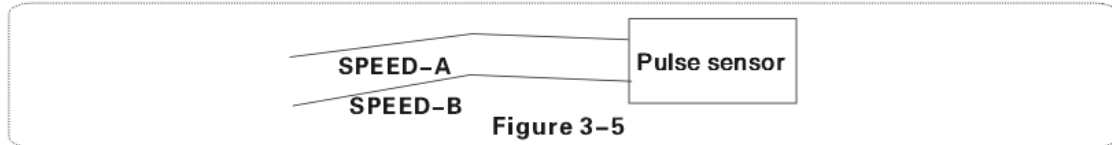
Figure 3-4



**B: speed alarm setting** system menu – alarm settings – speed setting

If the vehicle selects the GPS to get speed information which requires normal status of the GPS signal, then we need to set a high threshold speed limits, such as 100km / h that is the maximum speed limit, alarm is opened when vehicle is started; vehicle will output alarm when the vehicle speed exceeds 100KM / H

If you choose to obtain speed information from the vehicle, it must be connected to the speed pulse sensor, which is used to calculate the speed ratio (coefficient = pulse/speed), the pulse sensor is connected to the two wires SPEED-A and SPEED-B of our device, the speed ratio will be measured according to the set speed and pulse during vehicle's moving, which is a little complicated to operate; simple wiring in Figure 3-5.



**C: The acceleration alarm recording** system menu – alarm settings – acceleration

Impact acceleration can be understood to be for a three-dimensional XYZ coordinate axis which can denote three groups of status—up and down, left and right, front and rear; the bouncing up and down, accelerate, Emergent brake, rollover, sharp turns, etc. during the moving process of the vehicle can all be expressed in XYZ. Threshold needs to be set by an associated value, it is firstly needed a calibration after the installation onto the vehicle, the calibration means to clear parameters X / Y / Z, secondly measure the allowed range of emergent brake & acceleration & bouncing up and down as well as the change value of a sharp turn of the vehicle during the operation, thereby to determine which axis's value changes a lot. These run status will be in real-time display and change. After setting the threshold, when the vehicle runs exceed above threshold, the alarm will be uploaded if the "alarm" opens.

**D: Motion detection alarm recording** System Menu – Alarm Settings – Motion Detection

Turn on the motion detection enabled switch, set the sensitivity level of high, medium and low based on the need, general settings is medium, and the next step is mostly to set the sensing area of the motion detection, motion detection area will use diagonal set, please refer to Figure 4-30. As long as you set the motion detection area and set the video mode as alarm recording, the image move will trigger the video to generate alarm recording files (Note: it can only take effect after setting and saving)

**3.4: PTZ connection way and setting** System Menu – Peripherals – PTZ settings

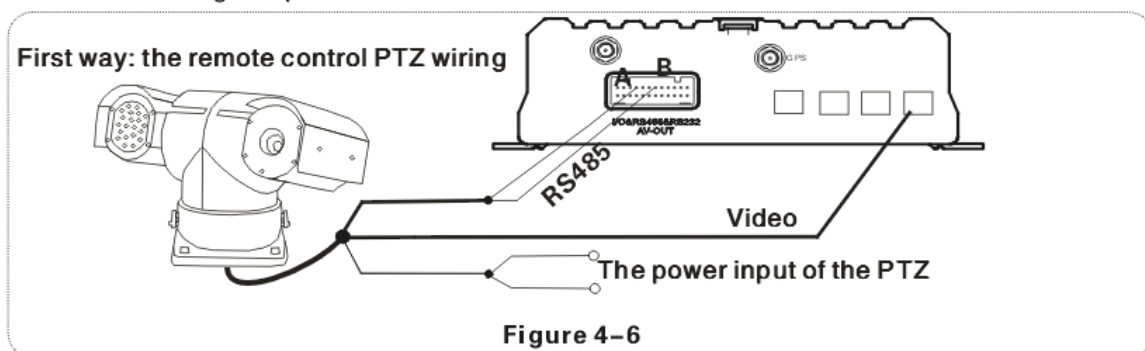
Setup steps:

Firstly, select the PTZ protocol: divided into PELCO-D and PELCO-P protocol, most of people will choose PELCO-D

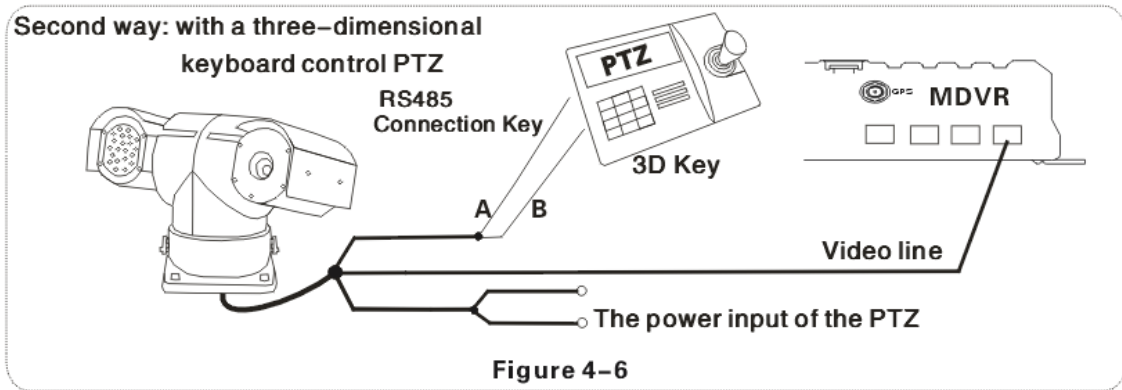
Secondly, set the baud rate: there are four options 1200/2400/4800/9600 which must be corresponded with the baud rate on PTZ

Thirdly, set the address code: directly input the address value corresponding with PTZ setting, corresponding is required. Generally the defaulted PTZ address code is 1, PTZ address code has adjustable DIP, it is needed to set different address codes to identify when there is many PTZs.

Fourthly, wiring: Connect control wire 485 on the PTZ to the RS485-A positive pole, connect the other one to the RS485-B negative pole.



**Note** After wiring and parameters setting of PTZ, users can only use remote to control PTZ after selecting the channel access to PTZ, for example, if PTZ connects through channel 2, then you need to switch to channel 2 maximize on the monitor interface to control it.



Fifthly, there are three ways of wiring, the first way is connecting the 485 control wire to the wire 485A and 485B on host, connecting the video cable to the host video input and then provide power to PTZ; this kind of wiring needs to set the MDVR host data be corresponding to PTZ data, and then use the remote controller or platform to remotely control PTZ.

The second way, the head of the 485 control wire directly connect to the three-dimensional control keyboard, do not need to connect the MDVR host, the video cable connects to the host video input, separately power supply to the PTZ and three-dimensional keyboard, and then set the keyboard parameters to be corresponding with PTZ. This wiring way is the most practical one, because it uses three-dimensional keyboard to control PTZ, which is faster, easier and more practical. It is recommended to use this way to install PTZ

The third way is to connect to both car host and three-dimensional control keyboard, so that both can be controlled and platform remote can also be controlled.

### 3.5: PC playback of the video file

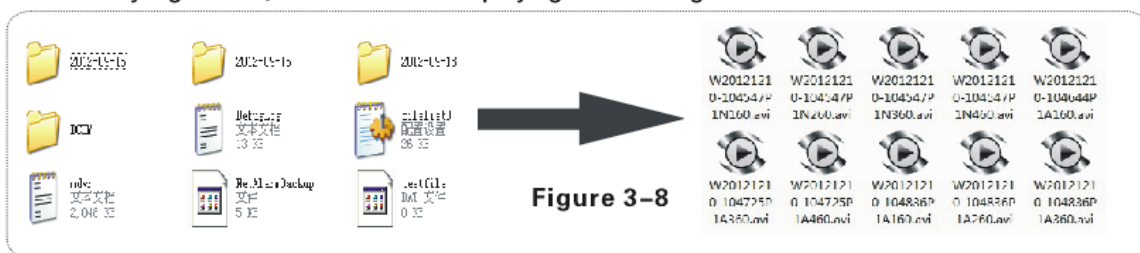
Besides playback by the host side, video files can also be copied to your computer to be played by the player. Install the player

Double-click the installation file named MDVRPlayer V1.0.1.exe in the CD-ROM, and then select the installation language (supporting Chinese and English), click OK and then keep clicking 'Next', a player shortcut icon will show on the desktop after installation completion; installation steps shown in Figure 3-7



Remove the SD card from host and insert it into the card reader, then connect it to the computer's USB port, the computer automatically recognizes the newly installed hardware; video files are stored in the form of date folder, open the folder to display video file, video files are named with suffix ".264"

As shown by Figure 3-8, the screen show of playing the file in Figure 3-9





### 3.6: Fast report by vehicle server gServer

**Note:** The following described is invalid to the host which is without 3G module, it is not needed to report to gServer platform  
**Step 1:** Install the SIM card, 3G card which supports WCDMA / EVDO / TD-CDMA, detailed installation please refer to Chapter II, 2.2, and 2.7

**Step 2:** Enter into the system menu after starting up, firstly modify the host's device number, System Menu – General Settings – Vehicle Information – Device Number, device number range is from 00000 to 99999. Server identifies the host according to the device number, so it is very important to modify the device number.

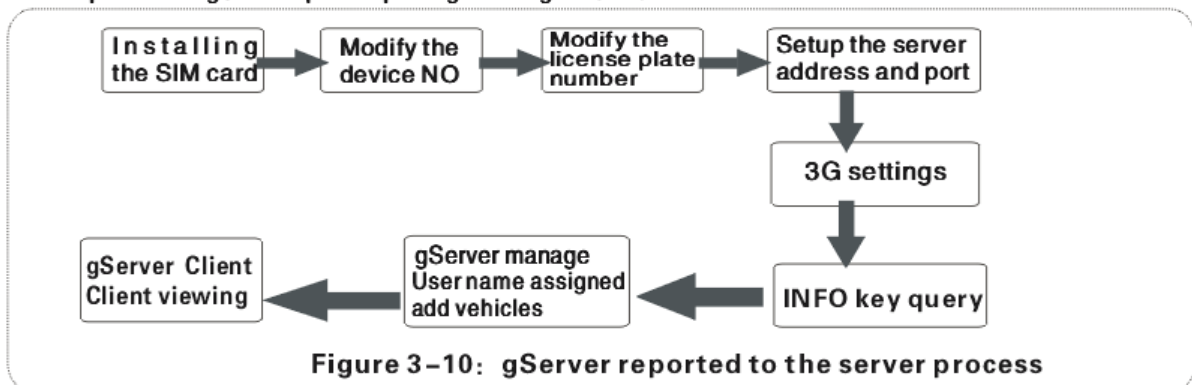
If the modified device number cannot be reported sometimes, please check the server device number has been used or not.

**Step 3:** Modify the vehicle identification number; the vehicle information displayed on gServer platform is based on vehicle identification number. If it is not modified, it will display 00000 in default. If all are in default, it would cause inconvenience to find vehicles. So it is proposed to modify the vehicle identification number.

**Step 4:** Enter another menu settings, System Menu – General Settings – Network Settings, set the server IP and control port, the server

can be self-built, and can be affiliated to the manufacturer's server as well, enter the server IP and control port, which is typically 6608, the save by end.

The main process of gServer quick reporting is as Figure 3–10 below.



**Step 5:** Enter the system menu – peripheral – wireless broadband, which is with wireless settings inside.

**A: wireless 3G settings**

Please pay attention to the supporting type of network during wireless 3G setting: WCDMA, EVDO and TD-SCDMA. Also note the access point and the center number, The user name is in default in domestic which is basically not needed to modify, however there is also in some domestic places the 3G card needs to be entered by user name and password, and some foreign operators will need to enter user name and password as well, the access point and the center number will need to be modified too, which is required to input relevant information according to the local network data. You can press INFO key to query whether dialing is successful or not after setting.

|            |       |
|------------|-------|
| ENABLE     | ON    |
| TYPE       | WCDMA |
| APN        | 3gnet |
| CENTER NUM | *99#  |
| USER NAME  | card  |
| PASSWORD   | ****  |

**CHINA WCDMA**

|            |       |
|------------|-------|
| ENABLE     | ON    |
| TYPE       | EVDO  |
| APN        | Ctnet |
| CENTER NUM | #777  |
| USER NAME  | card  |
| PASSWORD   | ****  |

**CHINA EVDO**

|            |          |
|------------|----------|
| ENABLE     | ON       |
| TYPE       | TD-SCDMA |
| APN        | cmnet    |
| CENTER NUM | *99#     |
| USER NAME  | card     |
| PASSWORD   | ****     |

**CHINA TD-SCDMA**

**C: local IP settings**

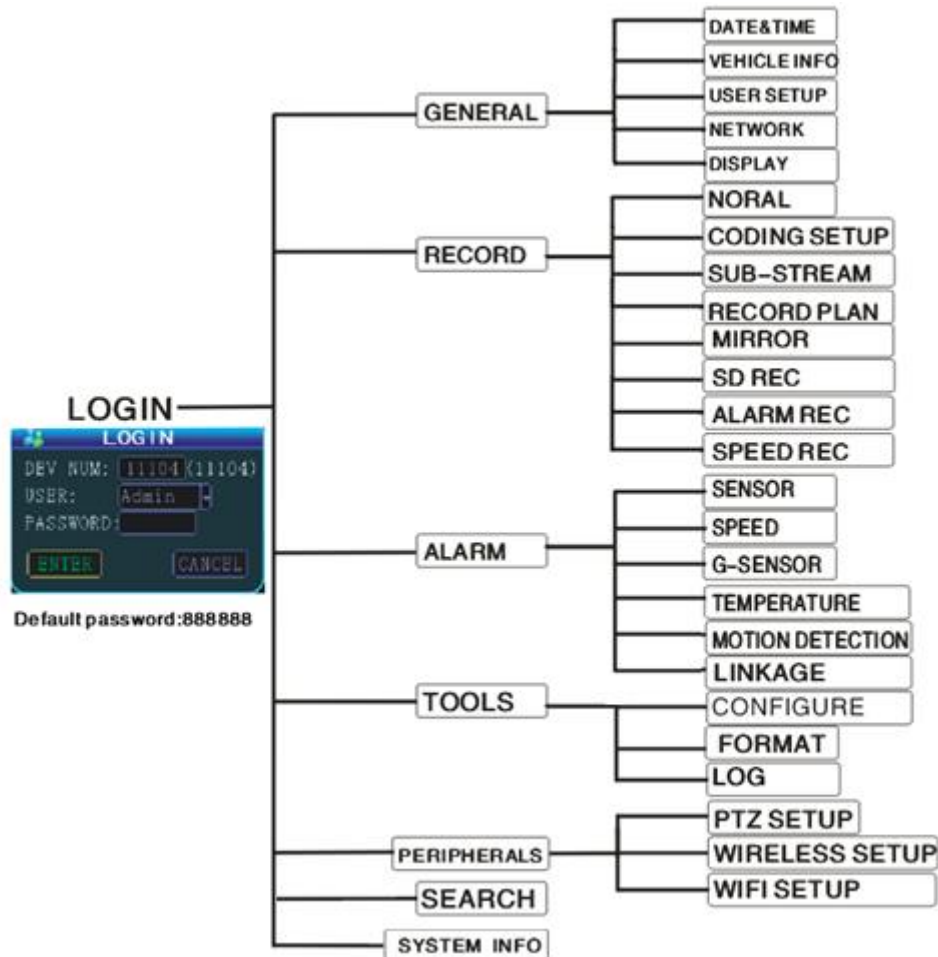
Local IP setting is the setting after the RJ45 port access the network cable, set the local IP and central server number to make it be linked from local area network to WAN through the network cable, which can also report to gServer server platform.

|              |                   |
|--------------|-------------------|
| IP ADDA      | 192.168.000.018   |
| NERMASK      | 255.255.255.000   |
| GATEWAY      | 192.168.000.001   |
| MAC ADDA     | 00:FD:00:00:00:SE |
| SERVER IP    | 192.168.000.208   |
| CONTROL PORT | 6608              |

**Step 6:** Previous steps are the network connecting ways. When the network is connected, the next step is the operation of software management on the PC gServer, which is divided into two steps. One step is the gServer Manage username allocation and vehicle adding, if it is a self-built server, this work can be done internally; if affiliated to manufacturer's server, this will need assist from the technical staff to add. The other step is to log in gServer Client by user name to review, which ultimately achieves gServer reporting, please refer to the CD-ROM gServer technical documentation for client's detailed operation

## 5 Device Functions & Operating Guide

### 5.1 Login



### 5.2 General Settings



Figure 4-6



Figure 4-7

## General Setup - Date & Time

1. Date Format: Press "ENTER" drop-down menu to use the arrow keys to select the output format of date (year-month-day, day-month-year, and month-day-year). To modify the time and date: move the cursor to the number which needs modification and directly press the corresponding number keys on the remote control, press the save button after set.

2. Timing Mode: There are two time management options - GPS time or manual set time. When selecting GPS time, the time will update from the GPS satellites.

3. Operating menu timeout (OPR): three options--1 minute, 5 minutes, 15 minutes for choosing to set how many minutes later will automatically exit the menu after entering the menu. General settings menu interface

5. Power Mode: the ignition mode / timer mode, the ignition mode is that MDVR began to start up after vehicle starts its key, this operation is recommended as the preferred default starting-up. timer mode is

the operating mode of startup and shutdown at the point of time set by the user.

6. Shut Down Delay: Either the ignition mode or timer (Shut Down Delay) mode, as long as the wiring is correct, you can set the shutdown delay, delay off times range from 5 minutes to 180 minutes, MDVR will continue to record video by the delay off set time before shutting down.

## General Setup -Vehicle Info

1. Device No.: user sets a unique device number to each device, which will automatically display on the right of the number input box. The device number is 5 digits & characters, digits are effective. If it is 3G device, it is strongly suggested to set a unique device number, because a server requires only one device number.

2. Vehicle identification number: this number is recommended to be set during installation, because the vehicle identification number will be superimposed onto the video during video encoding to be strong video evidence. If you do not enter the vehicle identification number, then it will show 00000 in default. For detailed input method, please refer to Chapter 3.2

3. Line number, company name, the name of the driver can fill out as demand

## General Setup - User Setup

**SECURITY SETUP**

Password Enable **ON**

|   | Name  | Group  |
|---|-------|--------|
| 1 | admin | System |

ADD MODIFY DELETE SAVE

- 1.Password effective settings to select on or off
- 2.Only administrators have permission to modify the passwords of users and administrators. Ordinary user's password is initially set as 000000, and the initial password for administrator is 111111. When password change finishes and exit menu, it will need to use new password to log in again, the login screen shown in Figure 4-3.

## General Setup - Network Settings

**NETWORK SETUP**

IP Addr 192.168.000.250

Netmask 255.255.255.000

Gateway 192.168.000.001

MAC Addr 00:00:00:00:00:00

Server Addr 192.168.000.010

Control Port 6608

SAVE

Network setup interface is shown in Figure 4-11

- 1.IP address Mask Gateway etc are LAN network setting after plugging in the network cable, there is no need to input if you do not use them.
- 2.Server's IP address is the one MDVR host using 3G to report to gServer platform central server, which generally is the public fixed IP, the IP address must be set up, or else 3G host cannot report to platform; this requires our host can support 3G; this menu will no need of setting if the host is without 3G module.
- 3.Control port: set to be the port number of the gateway server, generally the default is set to "6608"port

## General Setup - Display Settings

| LineView   | Encode | Front |
|------------|--------|-------|
| DateTime   | ON     | ON    |
| Speed      | ON     | OFF   |
| Tempreture | OFF    | OFF   |
| Car-Num    | OFF    | OFF   |
| IO-state   | ON     | ON    |
| GPS        | ON     | ON    |

SAVE

1 RCA: Select video input system according to the camera format, PAL or NTSC system.

2 Video output format is selectable between PAL and NTSC.

3 Four-channel video preview can be separately on or off under the straight-through screen.

4 Date, time, speed, hard disk temperature, car-number, IO-state, GPS location information can be set whether encoded into the video file or not, and can be set whether displayed under the straight-through screen.

## 5.3 Record Setup

NORMAL MAIN CODE SUB-STREAM RECORD PLAN

MIRROR SD REC ALARM REC SPEED REC

Record Type Genel

Record Mode Auto

Packet Time 45Mins

OverWritten ON

PreRecord > 00 (0-30min)

ALM Delay > 000 (0-30min)

ALM Out Sec 005 (5-255s)

ALM File Lock 1Day

SAVE

1. Selectable record type: common record or record I frame;

2. Selectable record mode: boot record / alarm record / timer record;
3. Selectable packet time: 15/30/45/60 minutes, which stands for the time period how long the video file will become a packaged file.
4. Automatically overwritten can be selected to on / off, when on, the previous video files will be automatically overwritten if the hard disk space is less than 2G as well as the mirror video disk & SD card space is less than 300M,;
- 5 Alarm pre-record time: when alarm occurs, the recording before the alarm occurs will be packed to be included into alarm record (range 0-30min);
- 6 Alarm recording delay: when alarm stops, the recording after the alarm stops will be packed to be included into alarm record (range 0-30min) to form an alarm recording file;
7. Alarm out sec: when alarm occurs, the continuous output time of an alarm after connected to an external alarm device, the output time (5S - 255S);
- 8 Alarm file lock time is the storage time for alarm video to be saved on the hard disk, the mirror disk, SD card; in protected storage time, the alarm recording will not be overwritten even if the SD card is full; there are optional 1/3/5/7/10/15/30/45 days under the drop-down menu, please set the appropriate number of days according to the hard disk capacity.

## Record – Main Code

| CH-X | Enable | Res | Fps | QUAL | Audio |
|------|--------|-----|-----|------|-------|
| CH-1 | ON     | HD1 | 25  | 4    | OFF   |
| CH-2 | ON     | HD1 | 25  | 4    | OFF   |
| CH-3 | ON     | HD1 | 25  | 4    | OFF   |
| CH-4 | ON     | HD1 | 25  | 4    | OFF   |

SAVE

1. Enable: On means open the recording function of this channel, off means not recording. When some channels do not need record or video recording, you can switch off the channel in order to save the storage capacity of the storage device;

2. Resolution: optional D1/HD1/CIF;

3. Frame rate: PAL is with adjustable 1-25 frame, full frame rate is 25; NTSC is with adjustable 1-30 frame, full frame rate is 30;

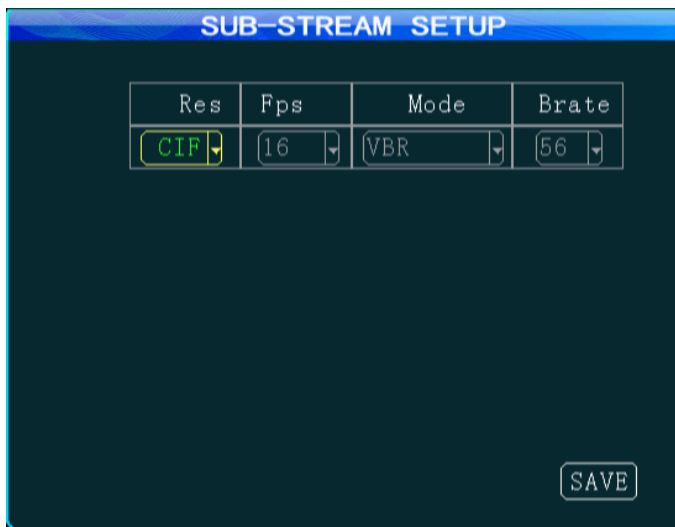
4. Quality: optional level 1-8, level 1 is with the highest quality 1, while level 8 with the lowest quality; the quality setting (good or bad) has a direct impact on the effect of record playback. Under the

same resolution, the higher the quality, the clearer the record. The record file will obviously take up a relatively large space;

5. Audio: audio channel can be set on or off, if on, there is sound from the corresponding channel during record playback, maximum two-channel audio can be opened.

Note: The main code plus mirroring video can support 6 full frame D1 record.





## Record – Sub Stream

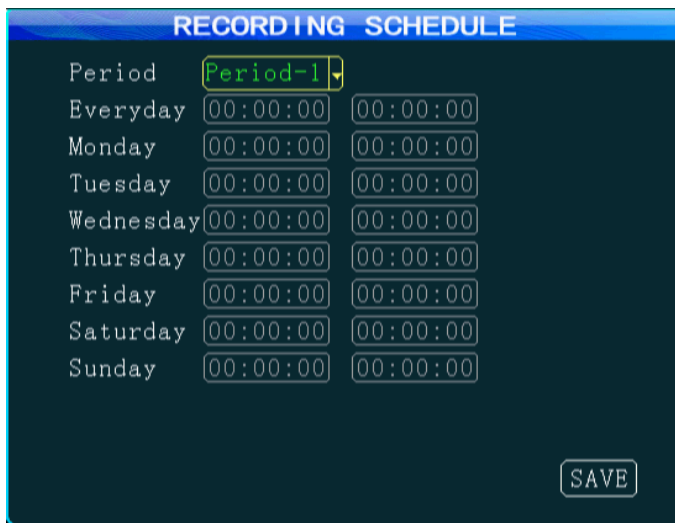
Sub-stream is important parameters when video and data are uploaded to the network through 3G, and its settings are related to the clear and smooth watching effect of video on CMS platform, of course, network transmission mostly depends on the uplink and downlink rate of local network.

1. Video resolution can be set to be CIF or QCIF;
2. Selectable frame rate :1-25;
3. The bit rate can be set to dynamic bit rate (VBR) or constant bit rate (CBR), optional 16-384bit / s
4. Default setting is bit rate 96, frame rate 10. But this can be set according to your own network. If

the network bandwidth is good enough, then the frame rate and bit rate can be set higher.

## Record – Record Plan

Recording schedule (24 hour)



1. If the timer recording mode is selected in basic setting, it is needed to set a regular time period. Two time periods can be chosen. Move the cursor to the desired time period, then input by pressing the number keys on the remote control. Timer recording mode is not commonly used; customers can use it according to actual situation. Most customers chose to boot recording and alarm recording.



## Record – Mirror

| CH-X | Enable | Res | Fps | QUAL | Audio |
|------|--------|-----|-----|------|-------|
| CH1  | ON     | CIF | 15  | 6    | OFF   |
| CH2  | ON     | CIF | 15  | 6    | OFF   |
| CH3  | ON     | CIF | 15  | 6    | OFF   |
| CH4  | ON     | CIF | 15  | 6    | OFF   |

SAVE

Mirror record is used as a record backup to prevent possible record failure caused by a hard disk error.

The mirror parameter settings are the same as the main video parameter settings.

## Record – SD Record

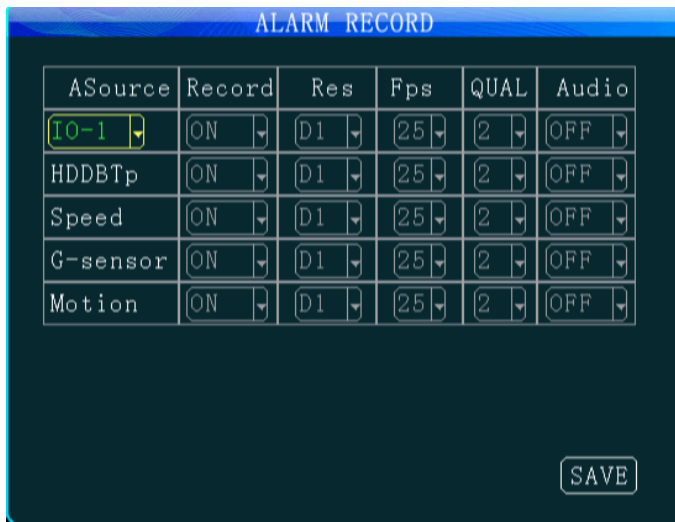
SD RECORD

Rec-backup: ON

SAVE

Setting the SD Record 'Rec-backup' feature to ON will allow recording to the SD card when the hard disk is not functional due to vibration or other reason.

## Record – Alarm Rec

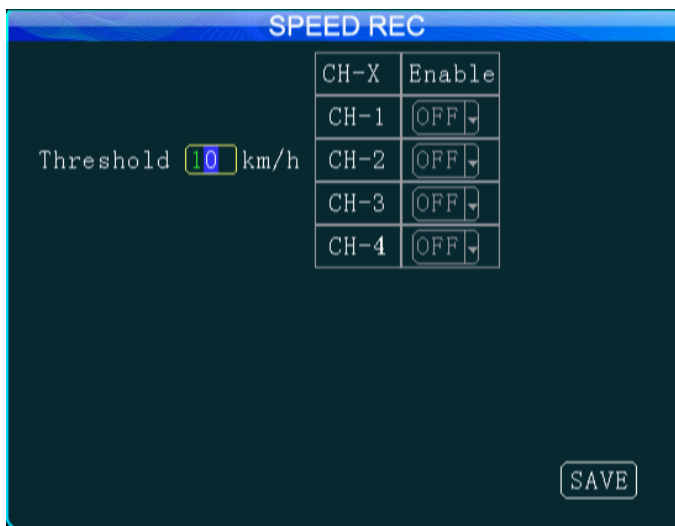


Under normal circumstances, for example: you can set the resolution of the main code to be HD1 or CIF, frame rate set to be 10, the quality set to be 4, when alarm triggers recording, alarm recording can start in accordance with the set high-quality video parameters.

1. Corresponding record “On” means the corresponding alarm recording function is on;
2. Optional resolution D1/HD1/CIF;
3. Frame rate: PAL with frame 1-25, NTSC with frame 1-30;
4. Adjustable video quality:1-8;
5. Audio: this can be set whether to open the audio

of the record, if on, then the audio will be recorded into the record file.

## Record – Speed Record



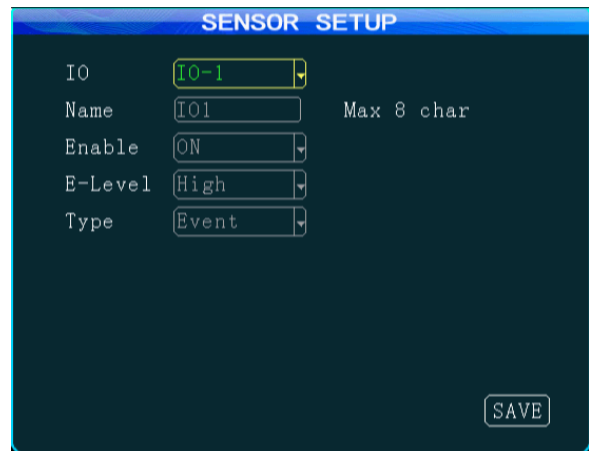
1. Set the speed threshold of recording;
2. Set the four-channel record enabled, on means open the record while off means close the record;
3. When the speed exceeds the speed threshold, the channel will not record with enable off, only channel with enable on will record.

## 5.4 Alarm Setup

### Alarm settings

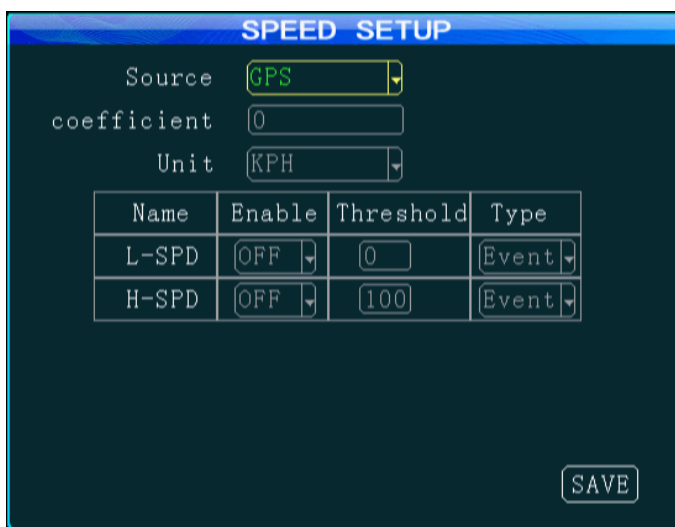


### Sensor Settings



1. Users name the custom sensor according to the IO interface when install MDVR; for example, to change the name "IO1" to be Chinese 'front door, brake' etc, you can press the 'ENTER' key and then input under the soft keyboard state;
2. Enable on means this sensor turns on, the device supports up to 8 sensor inputs, these alarm input is generally connected to the circuit of car, such as door open/close button, brake lights, turn signals, etc., they are in effective when sensor input is high level , users generally use higher than 4V high level to trigger alarm. Note: less than 4V is low level, but IO-5 and IO-6 require negative level to trigger alarm;
3. When selecting type to be event, the record file is a normal record; when selecting the type of alarm, the record file type is alarm;
4. When an alarm is generated, it also can be sent to center CMS Server platform to record alarm information.

## Alarm - Speed



1. There are two options of Speed Source: "GPS" and "vehicle", if selecting the "GPS", the speed of the vehicle can only be sent to the device when the device has the GPS module and GPS signal, the vehicle can get the vehicle speed information by GPS.

2 If selecting the "vehicle" to get the speed, you need to connect to the pulse sensor to calculate the speed ratio (coefficient = pulse / speed), the pulse sensor connects to the device port SPEED-A and SPEED-B two lines, and the speed ratio is measured according to the set speed and pulse getting during vehicle traveling.

3 Speed unit KM / MPH can be switched, high-speed limit threshold means the maximum speed of the speed limit, if you turn on the alarm, the alarm will be generated when the speed exceeds the threshold, alarm information can

also be transmitted to center CMS Server platform for recording ;

4. When selecting type to be event, the record file is a normal record; when selecting the type of alarm, the record file type is alarm.

## Alarm – G Sensor

| Name | Enable | Thershold | Type  |
|------|--------|-----------|-------|
| X    | OFF    | 0.00      | Event |
| Y    | OFF    | 0.00      | Event |
| Z    | OFF    | 0.00      | Event |

X:0.00, Y:-4.00, Z:0.00

JUDGE SAVE

1. Enable on means this sensor turns on;

2. Calibration is required before G-Sensor setting; calibration is to clear X / Y / Z parameters. G-Sensor can be understood as a three-dimensional X / Y / Z axis, which respectively stands for three groups of states: upper and lower, left and right, front and rear, uniform has no effect, and the G-Sensor setting is mainly to set a threshold value, which needs to be determined. Generally speaking vehicle's instant acceleration is relatively large in case of slam the brakes on, crash, acceleration and sharp turns, whose intuitive reflection is threshold beating, and PC displays X \ Y \ Z three states by

waveform when playing back. When an alarm is generated, it also can be sent to center CMS Server platform to record alarm information.

3 When selecting type to be event, the record file is a normal record; when selecting the type of alarm, the record file type is alarm.

## Alarm – Temperature

| Name   | Enable | Thershold | Type  |
|--------|--------|-----------|-------|
| L-Temp | OFF    | 0         | Alarm |
| H-Temp | OFF    | 0         | Alarm |

SAVE

1.Two temperature degree units: Celsius °C and Fahrenheit °F

2. Enable on means this sensor turns on;

3.Temperature is sent back to the device by a temperature sensor. As long as you set high or low temperature alarm threshold and turn on enable, when the temperature is above or below the threshold, the device generates an alarm, which can also be transmitted to the central CMS Server platform to record alarm information.

4. When selecting type to be event, the record file is a normal record; when selecting the type of alarm, the record file type is alarm.

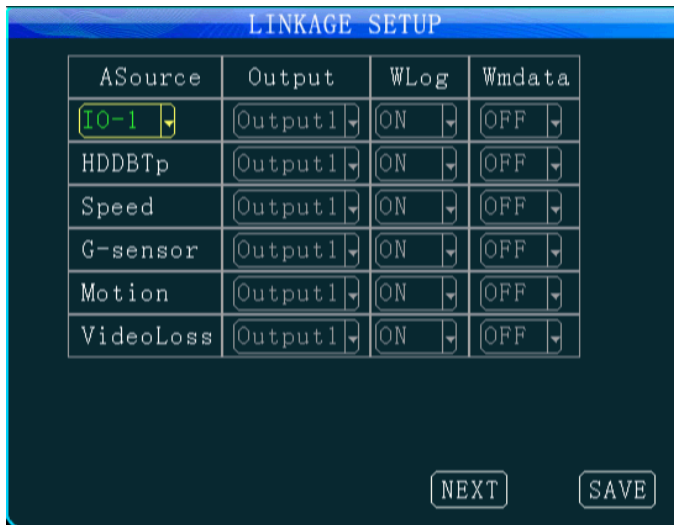
## Alarm – Motion Detection

| CH-X | Enable | Sensitivity | Area  |
|------|--------|-------------|-------|
| CH-1 | OFF    | L           | SETUP |
| CH-2 | OFF    | L           | SETUP |
| CH-3 | OFF    | L           | SETUP |
| CH-4 | OFF    | L           | SETUP |

SAVE

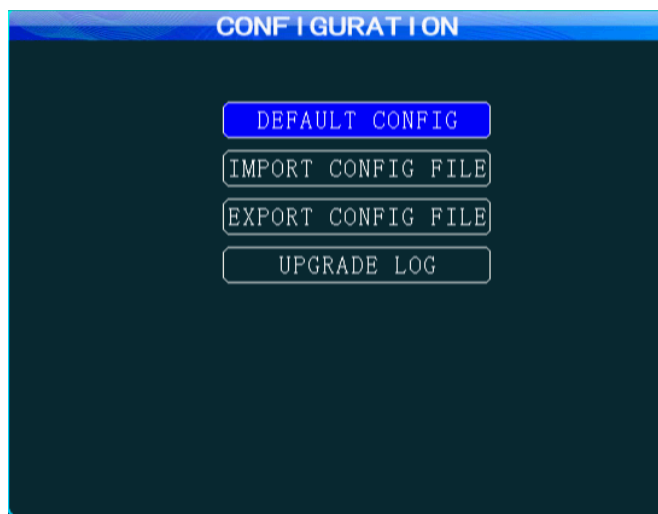
1. Enable on means this sensor turns on;
  2. The sensitivity can be set L (low), M (medium), H (high), the higher the easier to detect environmental change;
  3. Detection area: using two points of the diagonal to determine the detection area, select the first point, press ENTER on remote, and then use the up, down, left and right arrow keys on remote to select another point of the diagonal, press enter key again within selected area can cancel this area selecting.
- Note: Motion detection can generate an alarm based on any change of the environment (including brightness, colour, etc.). It is not recommended to use this alarm function in ordinary circumstances.

## Alarm – Linkage



1. Select the output (output selectable output, output 1, output 2) in the corresponding column; after selecting the output, when an alarm is generated, the corresponding alarm output line will generate 12V high level to drive the work of other equipment.
2. It can also be chosen whether to record the Wlog, Wdata; on means recording, off means not recording.

## 5.5 Tools



- 1 When necessary, the device parameters can be reset to the default configuration.
- 2 Import configuration file from the USB storage device.
- 3 Inserting the USB storage device to the front USB port, the current configuration parameters of this device can be exported to the USB storage device;
4. Upgrade Log (logo). The user can modify the boot logo file (loading.jpg) and the upgrading logo (upgrading.jpg). Both logo images need to be 720 x 576 pixels in size, in jpg format and matching filename(s). Copy the logo image(s) as per the specifications above to a USB storage device, then

insert it into the front USB port and choose the upgrading logo function.

## Tools - Format

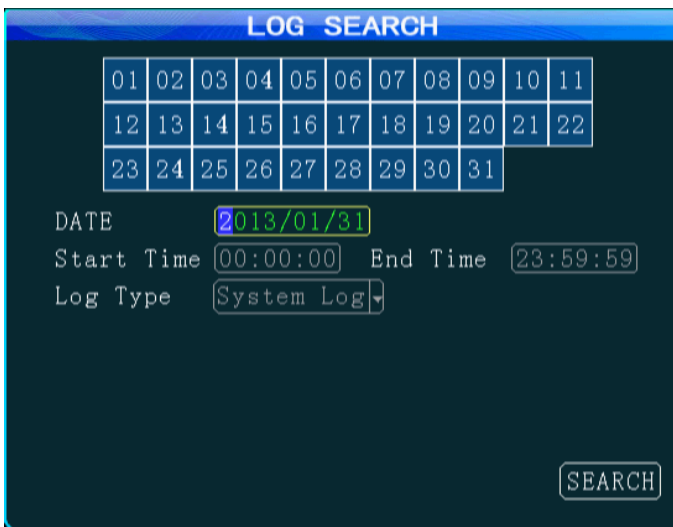


Format the HDD or SD Card

Select to format the hard disk, the mirror disk, SD card or the USB stick.

Note: the hard disk and the SD card must be formatted when installed the first time.

## Tools – Log Search

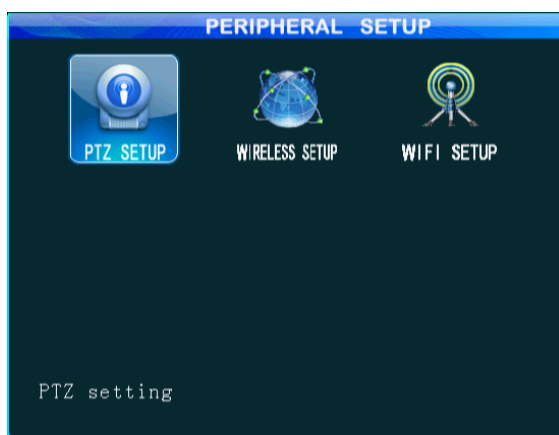


Calendar dates with a green background means it has log, log query starts by selecting the date, start time, end time, log type: system log, alarm log. Such as on & off, video loss, parameter setting.

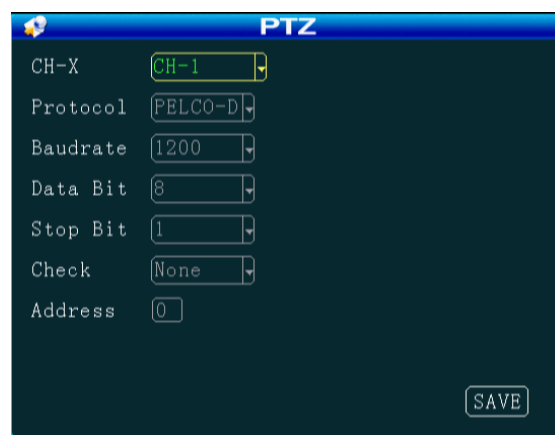


## 5.6 Peripherals

### Peripheral Settings

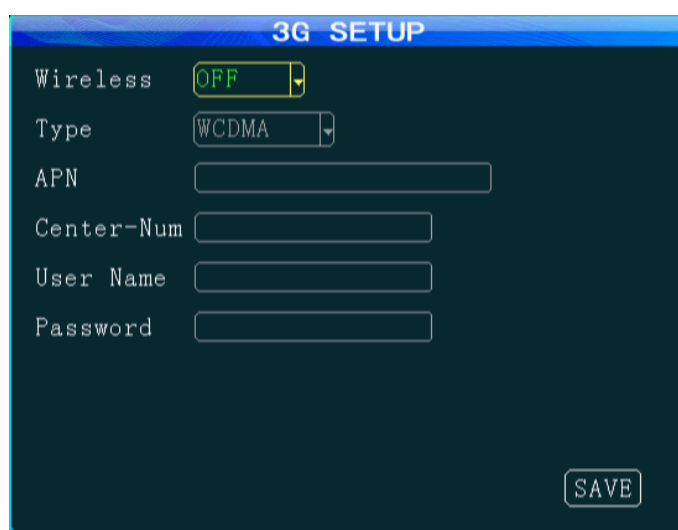


### PTZ Settings (pan tilt zoom)



1. Channel selection 1-4 or 1-8
  2. Protocol: divided into PELCO-D and PELCO-P protocol
  3. Baud rate: 1200/2400/4800/9600 four options, the user can modify baud rates according to different PTZ setting.
  4. Data bit: Generally it is 8, where you can select from 1 to 8, but it is 8 by default.
  5. Stop bit: Stop bit is generally “1”, you do not need to modify default.
  - 6 Check: check bit is to select the check way. Generally it is set to “None”.
  - 7 Address: the address code is input directly by the address corresponding to PTZ setting, they must be setting corresponding to, the default address code of most PTZ is 1; PTZ has adjustable address code DIP, and it is needed to set different address codes to identify when there are numbers of PTZ.
  8. Wiring method: PTZ cathode connected to RS485-A, negative connected to RS485-B.
- When PTZ relevant parameters are set ready, the remote control can only be used to control PTZ after the channel connected to PTZ is selected, for example, PTZ is connected to Channel 2, then you can only control it by switching to 2-channel to maximize it on the monitor interface.

## Peripherals – Wireless Setup



When the MDVR wants to use 3G network reporting platform, it needs network-related settings in this menu.

1 According to the communication configuration of the machine, insert the SIM card, supporting three: WCDMA (China Unicom) and EVDO (China Telecom) TD-SCDMA (China Mobile). SIM card slot is on the front panel, open the lock to open the protective cover, you can see the SIM interface, follow the instructions to insert the SIM card correctly.

2 Plug in the 3G antenna after SIM card inserting, ensuring that the system is able to receive good 3G signal.

3 Edit the following information under the 3G Settings menu interface:

A: Wireless set to open.

B: Select the type of communication, press "ENTER" button to select the corresponding module (WCDMA / EVDO / TD-SCDMA is determined by the type of model, one model only support one mode.)

C: The access point and the centre number is generally by default, which do not need to change; user name and password in some provinces are not by default, some can be empty which do not need to input anything, while most of them can just keep the default settings. If it is a foreign 3G, it would need the operators to provide access points and centre number to set, in some abroad places it is a must to enter username and password for a normal dial-up; when your host can not be reported, please make sure your 3G settings are correct (most of the foreign districts are with WCDMA equipment)

D: Save it after completing all the settings.

4 After exiting all menus, press the INFO button on the remote control, it is able to see 3G communication, if signal is good, it will show dial-up is successful, the device can be reported to CMS Server platform with three points of the server IP address settings, port settings and device number settings.

## Peripherals – Wifi Setup

| WIFI SETUP |                 |
|------------|-----------------|
| WIFI-Mode  | External        |
| Enable     | OFF             |
| IP Addr    | 192.168.000.251 |
| Netmask    | 255.255.255.000 |
| Gateway    | 192.168.000.001 |
| AP         | 192.168.000.255 |
| SSID       | 123456          |
| SAVE       |                 |

The MDVR has external WiFi capabilities.

1. Select WIFI module to be external;
2. Select enable to be on;
3. Input the IP address of AP-WiFi, note: the device to determine whether the RJ45 interface and external module is connected by IP;
4. Input AP-WiFi's SSID, note: the server to determine whether to use the WIFI connection by this SSID.

## 5.7 Search – Record Search

**RECORD SEARCH**

|    |    |    |    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|----|----|----|
| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 |
| 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |
| 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |    |    |

DATE **2013/01/31**

Start Time **00:00:00** End Time **23:59:59**

Rec Path **HDD**

Rec Type **Auto**

Channel **All**

**SEARCH**

Calendar dates with a green background means it has a video file. Video search starts by selecting the date, start time, end time, record path: hard drive, mirror, SD card, record type: conventional recording, alarm recording, all recording, channels: all channels, 1-4, 1-8; After searching, select it and click remote play button for record playback,; pressing the number keys 1-8 on the remote control can switch to the single-channel full-screen playback, supporting 2X/4X/8X /16X speed fast forward and rewind.

## 5.8 System Information

**SYSTEM INFO**

SW Ver:T13041301      MCU Ver:V303081

HW Ver:VH5-M-V001      GPS-M: NONE

GPS-sign:

Speed: 0km/h      Speed-Plus: 0

HDD Temp: 32°C

SIM-Card: NONE      SIM-sign:

3G-M: EXIST      3G-State: NO DIAL

WIFI-M: NONE      WIFI-sign:

Center-L: NO LINK

IO-State: 1:L 2:L 3:L 4:L 5:L 6:L 7:L 8:L

**NEXT**      **RETURN**

At the scene to monitor the status of the four screens, pressing the "INFO" button on the remote control can directly display system information, device status information includes the hardware and software version number, and the MCU version information, meanwhile display GPS module, WIFI module, 3G wireless module and SIM card information, the device status information is often used when checking the system status and fault judgment. When it needs 3G to report CMS Server platform, the 3G card signal and dial-up state are visually displayed here, and the success/failure status of connecting to the server center can be also displayed.

System Info (page 2)

**SYSTEM INFO**

| Storage | Total   | Used    | Free    | State  |
|---------|---------|---------|---------|--------|
| HDD     | 465. 7G | 462. 9G | 2. 7G   | NORMAL |
| MIRROR  | 305. 0G | 22. 5G  | 282. 6G | NORMAL |
| SD      | 0. 0G   | 0. 0M   | 0. 0M   | NONE   |

**PREV**

The next page of System Information can view the hard disk, the mirror disk, SD card: total capacity, used space, free space, state.

## Appendix 1: Server platform interface



## Appendix 2: Common problems and solutions

Q: No video output?

A: Follow this checklist:

1. Check for an illuminated power on light on the MDVR device. If off, then check power to the unit.
2. Check the power supply status of display screen, as well as check whether the display video has been switched to AV status.
- 3 Check the connecting status between the MDVR video output cable and display screen.
- 4 Check whether the lock status of the MDVR device LOCK, it must be locked before normal starting up.

Q: The vehicle video input interface is different from the camera output interface?

A: The car uses 4PIN type while camera uses BNC or aviation head type, if not matching, use a conversion adapter.

Q: After installing a SD card the MDVR device no longer video records?

A: Follow this checklist:

1. Check whether the SD card has been formatted or not after installation, because an unformatted SD card cannot be used. Enter System Menu - System Tools - Device Format to format the newly installed SD card;
2. Check to see whether video channel is closed or not, whether set a timer recording or not, it will not record video when it is not within the video recording time period.
3. Check the SD card placement and look to see whether the SD light on front panel is on or not.

Q: The video file is missing or there is no video file within a certain period of time?

A: Follow this checklist:

1. Determine the time period by analysing the final video file before missing and the first video file after recovery.
2. Confirm whether the host is not on during that period of time, such as when the driver halfway parking, loading and unloading goods while the host is not set by video delay.

Q: When camera's PTZ (pan tilt zoom) cannot be controlled?

A: Check whether PTZ protocols and baud rate are set correct, address codes are corresponding or not, whether have selected to maximize the video of the channel when control the PTZ, for example, when control the second channel, it must maximize the screen of the second channel image to control it.

### **GPS-related issues**

Q: GPS module is installed, but no coordinate information?

A: Follow this checklist:

1. Check for a good electric connection of the GPS module.
2. Make sure that the GPS antenna connection is good. Check whether the antenna is broken. It is recommended that the antenna be located in places with a strong signal. Note that some car glass shielding film can block GPS signals;
- 3 The GPS antenna will not pick up a satellite connection indoors.

Q: Deviation of GPS location on map?

A: There may many reasons for the deviation, such as government restrictions, permissible error, GPS signal interruption, etc; the actual satellite map may have deviation for security reasons, general map can solve the problem by using GPS correction.

### **3G wireless module**

Q: If I use the 3G wireless module for dial-up, what do I need to pay attention to?

A: Follow this checklist:

1. Choose the built-in wireless module WCDMA or EVDO, corresponding module settings are not the same, the modules supported by different machines models are not the same, so please make sure whether your module and SIM is in correspondence. Do not use telecom SIM card on WCDMA machine;
2. Check whether the settings of Server IP and port are correct, whether 3G signal is strong enough for dialing, and then check whether the 3G dial-up is successful or not.
3. When dialing is unsuccessful, please check 3G antenna is in good contact or not, the dial up may fail because of weak signal, moreover, please check whether the SIM card has enough traffic, if no traffic, dial-up will be unsuccessful.

Q: When 3G has neither report nor video, what should be done first?

A: Press INFO key to enter the system information page, check whether the SIM card exists and view the signal strength as well as dial-up status, whether the antenna is in good contact, and then check the SIM to see whether it is out of traffic, the most basic judgment is to replace the SIM card. If the dial up failed with signal, then check whether the settings of center number and the port are correct. Moreover check whether the device number of the product is already occupied.

Q: 3G signal is intermittent, video is jammed?

A: At present the signal coverage of WCDMA and EVDO is rather wide, however, there are some mountainous districts without signal coverage, and some suburban areas have weak signal due to the local network constraints, then it will be jammed during watching of video, or video cannot be watched at all, the greatest impact of this situation is from the local network; Moreover check whether the frame rate setting of sub-stream is too high, because the video may also occur such situation when the network is poor and frame rate setting is high.

Q: Why the vehicle and video cannot be seen on the Server client when the device has been started?

A: At first make sure the central registration server is switched on and on the net, then check whether the host device number has been occupied to cause conflict, secondly check whether the settings of server-centric IP and port are correct; devices report to the center via the built-in 3G module or via WIFI. If via built-in 3G, please check whether selected the correct type of built-in 3G module, for example, WCDMA and EVDO module needs the support from corresponding SIM card, check whether the antenna is in good contact; If it still cannot report when above all are checked, enter into the system information page to view dial-up. If dial-up is not successful, look up whether the setting of data access point and center number is correct. If all ultimately fail, please collect as much information as possible to submit to the technical supporting staff for analysis, the more data provided, the easier and quicker it will be for technicians to solve the problem.

Q: The device is online, but why can I not see the video image?

A: Please set lower sub-stream to transmit image, the blocked or slow transmission speed situation may occur when the sub-stream frame rate is set very high and be affected by network uploading limit; poor network signal or intermittent will seriously affect the video transmission.

Q: The device is properly reported on Server, but the videos cannot be seen after using for some time?

A: Firstly check whether the MDVR displays dialing, if it keeps the dialing status, it may be because the credit (or the account) of the SIM card has run out, replace the SIM card to test; Secondly query whether the MDVR's device number has been modified by the driver, the MDVR with the modified device number needs to be resubmitted to add vehicle information; thirdly, if it still does not work by changing the card, it will need to check whether the MDVR 3G module has failed.

## Appendix 3: storage space corresponding table

Appendix 3: storage space corresponding table

|                        | Quality<br>Resolution | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   |
|------------------------|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| RECORDING<br>SPACE M/H | D1                    | 900 | 670 | 540 | 450 | 390 | 350 | 315 | 280 |
|                        | HD1                   | 560 | 420 | 335 | 280 | 245 | 220 | 195 | 175 |
|                        | CIF                   | 350 | 260 | 210 | 175 | 150 | 135 | 120 | 110 |

The space occupying for each image video recording per hour is shown as above table which is for reference only, the actual video file size has something to do with light changes of the current channel, movement of object and many other factors, if the image is stationary, then video file size will be much smaller; in order to save space, it can be set to turn off the audio or turn off the channel without video.