M51 AHD MDVR

User's Manual

4-Channel Industry-Grade AHD 720P Mobile DVR Integrating 3/4G, Wi-Fi, GPS and Voice Conversation

Special Attention: Images of this model is for reference only, and no further notice will be given in case of any changes.

V7.0

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1. Product Introduction

1.1. Overview

M51 MDVR is a AHD 720P high-end mobile hard drive DVR dedicated for mobile surveillance market. Applying high-speed processor and embedded operating system and integrating various state-of-the-art technologies of IT industry, such as audio/video codec technologies, large-capacity hard drive storage technologies, stream media network technologies, video/audio noise reduction technologies, mature damping technologies and wide voltage design, it features concise appearance, flexible installation, powerful functions and safe and reliable system.

Product picture:

1.2. Specifications

1.2.1. Specifications

Item		Description
OS		Linux
Graphics Operation Interface		System parameters can be set through external display and remote controller
Security Management		2-level management for user password, administrator password, supporting encrypted transmission
Video and Preview	Video Input, Output	4-channel video input, 1channel video output; 1.0Vp-p, 75Ω
	OSD	Character superposition function, information superposition of time and date, device ID and GPS, etc.
	Video Compression Format	Compression coding. Applying H264 hi-performance processor.
	Dual-Stream	Supported
	Preview Function	Preview of 1-channle, 4-image stitching, supporting full screen triggered by event and switching of stitched images
	Frame Rate	PAL: 100 frames/s, up to 25 frames/s per channel; NTSC: 120 frames/s, up to 30 frames/s per channel
	Resolution	CIF, D1,and 720P for selection, supporting 4 channels of 720P at the most
	Bit Rate	CIF: 384Kbps ~ 1.5 Mbps, frame rates for selection D1: 512Kbps ~ 2Mbps, frame rates for selection 720P: 2048Kbps ~ 6Mbps, frame rates for selection
Audio	Audio Input, Output	4-channel input, 1-channel output
	Compression Format	G.726 coding
Recording	Storage Medium	Supporting one 2.5” hard drive and one SD card, which supports up to 64G, supporting data redundancy storage technology;
	File Format/ System	ASF/FAT32
	Video Strategies	Recording at startup by default, supporting timed recording, recording triggered by alarm and event, as well as manual recording
	Video Search	Searching by time, type, storage device and other conditions
	Video Playback	Supporting playback on local device, supporting synchronous playback of up to 4 channels and analysis on vehicle information in the files
		Supporting fast forward, fast backward, play and pause,

		supporting fast forward and fast backward at 2x, 4x, 8x and 16x speed, supporting file play from selected time
Alarm	Alarm Input/ Output	4-channel on/off signal alarm input, 1-channel on/off signal alarm output
	Alarm Recording	Prerecording function 5 seconds before alarm, duration of recording after alarm can be adjusted from 30s ~ 30min
	Storage Space Alarm	Supporting settings for alarm of storage space
	Function Alarm	GPS over speed, low speed alarm, video lost alarm, acceleration alarm
	Alarm Linkage	Link channel 4 zoom out, link IO output.
Communication Ports		RS232, RJ45 10M/100M self-adaptable network interface
Wireless Transmission (Optional)		Embedded 3/4G wireless transmission module, FDD/TDD，WCDMA, CDMA2000, TD-SCDMA system for selection; Compatible with GPRS, EDGE; Option Embedded Wi-Fi module, support wifi Ap function, Maximum 300Mbps speed;
GPS (Optional)		Supporting external GPS
Remote Data Transmission Channel Selection		Supporting 3/4G, Wi-Fi data channel transmission, supporting Wi-Fi priority transmission strategy; supporting remote downloads of back-end recording strategies;
PTZ Control		Supporting PTZ control realized by local ad client software;
Parameter Configuration		Supporting parameter configuration functions for mobile DVR coding channel;
G-Sensor		Embedded
System Upgrading		Supporting SD/HDD upgrading and net remote upgrading
Power Supply and Power Consumption	Power Supply	1. ACC on/off 2. Hard drive lock on/off 3. Delayed shutdown 4. Timed on/off
	Input Voltage	DC:+8V ~ +36V
	Output Voltage	+12V@4*0.5A; +5V@0.5A
	Power-off Protection	With patented UPS power supply continuous working technology, it can work for 3~5 seconds after external power supply is cut so that the intactness of video data can be kept upon sudden power failure
	Power Consumption	<10W in normal operation; <0.5W in standby mode
Operating Environment	Temperature	Normal: 0℃ ~ +60℃; upon hard drive preheating: -25℃ ~ +60℃
	Humidity	10% to 95%
Dimensions		198 (W) x 64 (H) x 186(L) mm.
Weight		Net: 2KG

1.2.2. Basic Working Parameters

Item	Working Parameters	Description
Power Supply Input	8 ~ 36V	Input voltage at +8V~+36V, the device will be automatically turned off and enter the protection mode if the voltage is lower than 8V for a long time; if the voltage is higher than 36V for a long time, the voltage protection device will block the power supply.
Output Voltage	12V	Output voltage12V (+/-0.2V), Max. current: 2A.
	5V	Output voltage5V (+/-0.2V), Max. current: 0.5A. Al outputs are provided with overcurrent protection, when the output current is greater than 1.2 times of the preset max. current for a long time: the output will be cut automatically and the output will be resumed upon normal loading.
Vehicle Key Signal	≤6V	Vehicle key off.
	≥7.5V	Vehicle key on.
Video Input Impedance	75Ω	Impedance of 75Ω for each channel of video.
Video Output	1Vp-p	Outputting a 1Vp-p CVBS analog signal.
I/O Interface	0 ~ 2V	Low-level alarm.
	Above 5V	Hi-level alarm.
RS232 Serial Ports	Standard Interface	Supporting 1 RS232 ports
GPS Antenna Pedestal	External Antenna	Antenna interface with embedded GPS
Ethernet Interface	Standard Interface	Standard RJ45 interface, with indicator.
SD Card Interface	Standard Interface	Compatible with commerciall avaiblable brands.
Working Temperature	-20℃~ +55℃	Hard drive heating -20℃ ~ +55℃

1.3. Application

1.3.1. Environmental Adaptability

It is applicable to various applications, and the indexes are detailed as follows:

Item	Index
Upper limit of temperature for storage	65℃

Upper limit of temperature for operation	55℃
Lower limit of temperature for storage	-40℃
Lower limit of temperature for operation	0℃, or -25℃ with hard drive heating module
Working altitude	–300 ~ 3048m (10, 000 ft)
Transmission altitude	–300 ~ 12, 192m (40, 000 ft)
RH	20%~95%
Max. temperature gradient	20℃/h
Vibration threshold (Unpowered)	No greater than 5mm p-p (5 – 22Hz) 49m/s2 (5.0G) (22 – 500Hz)
Vibration threshold (Normal operation)	No greater than 1.0mm p-p (5 - 22Hz) 9.8 m/s2(1.0G) (22 – 500Hz)
Impact threshold (Unpowered)	No greater than 1200G, (11, 760m/s2) (duration 1 ms, 1m height, semi sine wave)
Impact threshold (Normal operation)	No greater than 500G, (4, 900m/s2) (duration 2 ms, semi sine wave)
IP of enclosure	IP54

1.3.2. Precautions

To ensure safe use, satisfactory performance and extended service life of the product, please pay attention to the following when installing and operating the device:

1) During the installation and operation of the device, make sure to observe all criteria for electronic products as well as requirements for vehicles and other connection devices;
2) Power supply and grounding:
   a) The direct input range of the power supply of the device should be DC 8V to 36V, avoid reverse connection or short circuit of output. Please pay attention to the power supply capacity of the power cable.
   b) Even if the device is turned off, there's still electricity left inside it, please prevent short circuit. Before connecting to other external devices, please cut the connection between the device and the power supply;
   c) The output voltage of the device is 12V, only used for power supply of the camera, please do not enclose any device that are not allowed to be used on the device;
   d) The sensor input mode of the device is leveling, if the external voltage is less than 2V, it is regarded to be low level, and the voltage between 5V~30V is regarded to be high level, and the voltage over 30V will cause abnormal data collected by the device or damage of the device. The voltage higher than 2V and lower than 5V is illegal.
   e) Correctly connect the earth wire of the device to the earth wire of the vehicle to constitute the circuit;
   f) If the device is to be laid aside for a long time, it is better to completely cut the power supply to extend the service life;
3) Humidity requirements:
   a) The device should be installed in dry environment, avoiding humid, dripping and spraying of water. Do not install the device at sunken locations with the possibility

of water accumulation or wet locations subject to liquid dripping;

b) Do not touch the device by wet hand or touch the device while standing in water or other water sources, which may cause electric shock;

4) Installation locations:

a) To extend the service life of the device, try to install the device at locations on the vehicle subject to slight vibration.

b) The device shall be installed in ventilating parts of the vehicle: when installed on a level plane, the device shall be kept 6 inches (15cm) away from other objects to facilitate ventilation and cooling; do not install the device in an enclosed space (the trunk, for instance).

c) External cables of the device should be provide with sufficient spacing and flame-retardant housing to prevent the cable from bending or abrasion due to vibration and thus cause leakage of electricity;

d) Keep the device from heat source of the vehicle or sundries, it is strictly prohibited to place anything on the device.

e) The device can only be installed horizontally or vertically sideways (please consult the manufacturer if you need to install it along another direction), installation at any other angle may damage the device and is strictly prohibited.

5) Device safety:

a) Prevent the driver or passenger from intervening or damaging parts, cameras, cables and other accessories of the device, keep the device away from other restricted vehicle parts;

b) Starting the vehicle while installing components, cameras, cables and other accessories of the device may cause damage of the device, keep the vehicle still during the installation and prevent it from dropping.

1.3.3. Typical Applications

Applications: bus, school bus/staff bus, logistic trucks, coach bus, taxies, train/metro/light rail, vessels

Topological graph of main applications;

1.4. Features

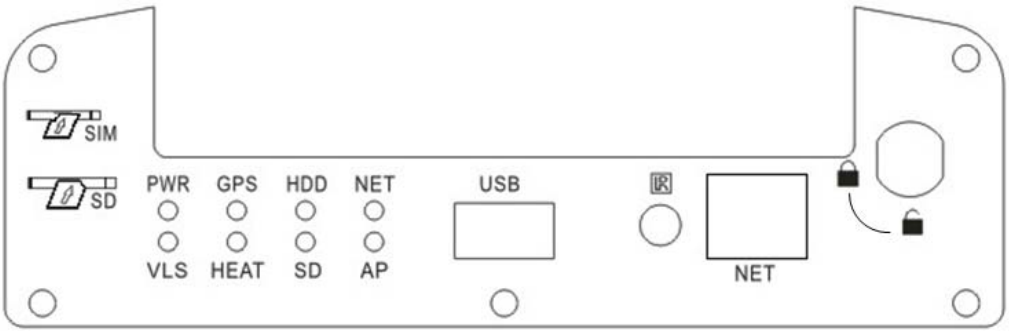
- 720P H.264 video code compression, dual stream output;
- G.726 audio compression format, 4-channel audio input, 1-channel audio output.
- Real-time local recording, multiple formats for selection, supporting full screen of single channel or multi-window switching upon accidents;
- Switch signal interface,4-channel alarm input, 1-channel alarm output;
- PTZ control;
- Multiple recording modes: record upon startup, timed recording and triggered recording;
- Universal video file formats: applying ASF format, which can be played with the universal software VLC or the supplied playback software, supporting 1-channel or 4-channel synchronous playback;
- Data storage, supporting a 2.5” hard drive and 1 SD card with the capacity up to 128G; supporting dual-stream mirror image video recording, SD card recording upon loss of hard drive, supporting hard drive heating, applying drawer-type hard drive box;
- Wide voltage design, 8-36V DC wide voltage input, suitable for various vehicles; DC 5V/0.5A, 12V/2A output;
- Rapid startup, capable of entering normal working mode within 25 seconds after startup; supporting on/off with key switch, timed on/off and delayed on/off, etc.;
- Optional functions:
  - 3/4G wireless transmission;
  - Wi-Fi wireless transmission;
  - GPS, G-sensor acceleration sensor, with precise time correction;

2. Appearance and Accessories

Front View:

Back View:

2.1. Front Panel Definitions



2.1.1. LED Indicator

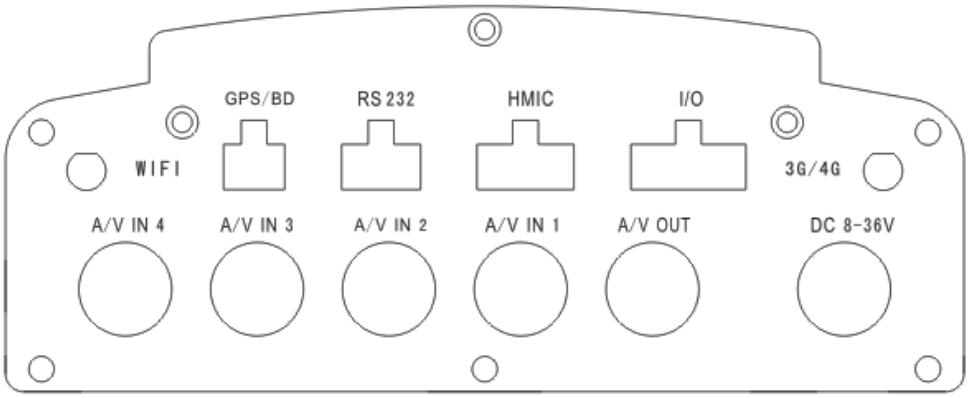
- [PWR]Power supply state indicator: LED on ─ system powered.
- [VLS] Video Lost indicator: LED On –Any one of the 4 channels has a video loss
- [GPS]GPS signal indicator.
- [HEAT] HDD Disk Heat indicator, LED ON—When the disk is heating
- [HDD] HDD indicator, LED ON – HDD Disk exist.
- [SD] SD indicator, LED ON – SD Card exist.

- [NET] Network indicator.
- [AP] Wifi Ap indicator.

2.1.2. Other Definitions

- [IR]IR receiver for receiving signals from the remote controller.
- [LOCK]Hard drive lock, the device can be started only after being locked and be automatically in the standby status after being unlocked.
- [USB] USB interface for record file export.

2.2. Rear Panel Definitions



- [DC 8-36 V]Power supply interface.
- [*][GPS]GPS module interface.
- [AV IN]Audio/video input interface.
- [AV OUT]Audio/video output interface.
- [*][WI-FI]Wireless LAN antenna interface.
- [*][3/4G]3/4G antenna interface.

  Note: [*] indicates that Wi-Fi, 3/4G antenna and GPS module interface are used for network models.
- [RS232] rs232 serial interface.
- [HMIC] Hand mic interface.
- [I/O] Alarm input and output interface.

2.3. Definitions of External Cables

2.3.1. Power Cable

The figure below shows the power cable, and the red wire and the black wire are directly connected to the battery jar of the vehicle. The red wire is connected to the positive pole, and the black to the negative pole. The yellow wire is connected to the ignition wire when the on/off mode is set to ignition mode. The device will be automatically turned on once the vehicle key switch is turned on and automatically turned off when the vehicle key switch is turned off. The yellow wire is connected to the position for the vehicle key to turn on all dashboard lights (the one before the position to start the motor).

Note: 1) Before connection, confirm the voltage of the battery jar between 12V—24V, or the device may be burnt;

2) After the connection, pay attention to the insulation between power cables to prevent short circuit of the power supply that may burn the battery jar.

3) The yellow wire must be connected to the ignition wire, otherwise, the device will not support ignition mode.

4) Note: the mobile device must be directly connected to the positive and negative poles of the battery jar without any earth, which may generate negative pulse and disturb normal operation of the device. Power cables for the positive and negative poles must have the diameter of above Φ1.5.

Power cable

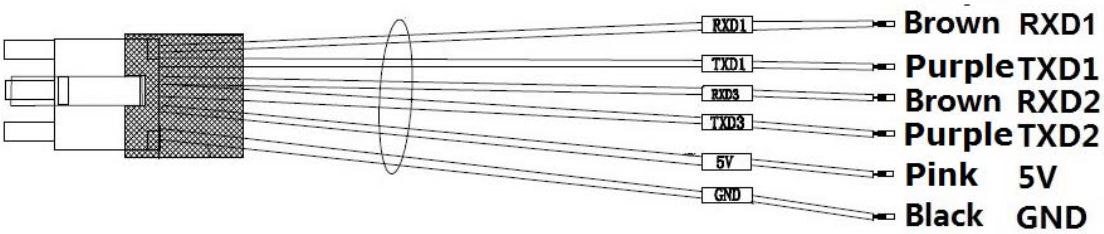
The figure above shows the actual power cable

Circuit Color	Name	Description
Black	BAT-	Black wire for grounding
Red	BAT+	Red wire for power supply
Yellow	ACC	Yellow wire for ACC

2.3.2. GPS Module

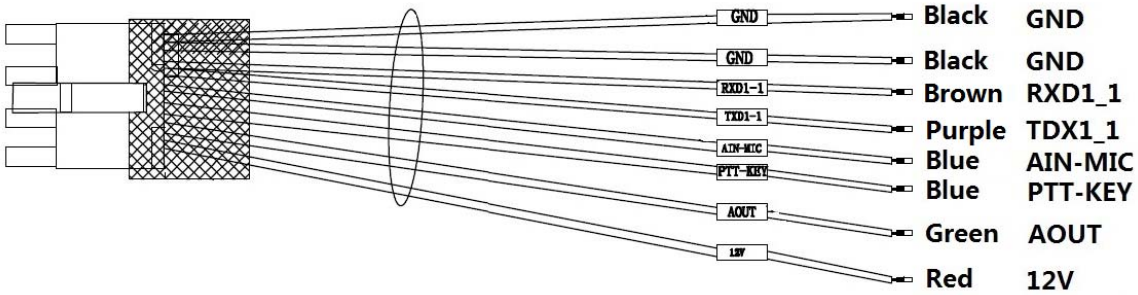
The Ant Gain of GPS is 3dBi,The frequency range of the GPS Ant is 1575±5MHZ, and the bias voltage is 3V to 5V. The connectors of the GPS Module adopt the bayonet structure.

2.3.3. RS232 Cables



Cable color	label	Description
Brown	RXD1	the first RS232+
Purple	TXD1	The first RS232-
brown	RXD2	the second RS232+
Purple	TXD2	The second RS232-
Pink	5V	5V output positive
black	GND	GND

2.3.4. HMIC Cables [Option]



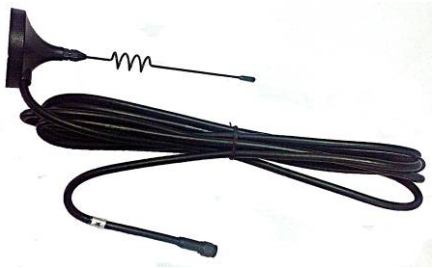
Cable color	label	Description
Black	GND	the input GND
Black	GND	the output GND
Brown	RXD1_1	the RS232_RX
Purple	TXD1_1	The RS232_TX

Blue	AIN-MIC	audio input
Blue	PTT-Key	PTT press key
green	AOUT	audio output
red	12V	12V output positive

2.3.5. 3/4G, Wi-Fi Antenna

Left

Left: 3/4G antenna

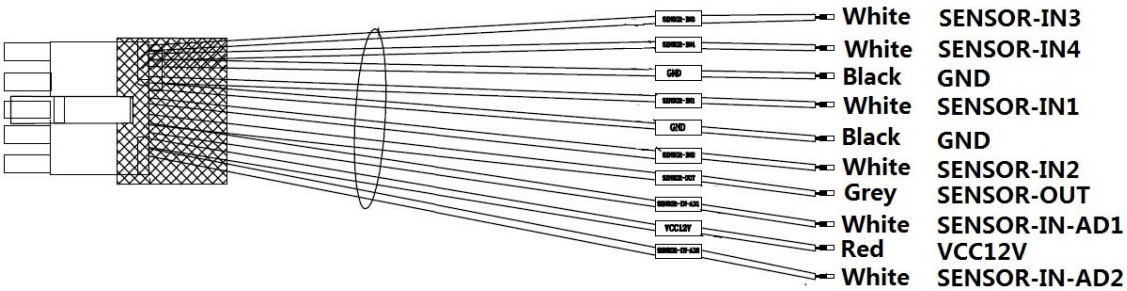


Right

Right: Wi-Fi antenna

The Ant Gain of 3G/4G is 2.15dBi. The Ant Gain of WIFI is 3.0dBi. The frequency range of the 3G/4G is: GSM(850/900/1800/1900MHz),WCDMA(850/900/1900/1700MHz),LTE(B2/B4/B5/B17). And the cable length is 3 meter. The frequency of the WIFI Ant is 2.4GHz. The antenna of 3G/4G and WIFI were used the unique antenna connector (RP-SMA)

2.3.6. IO Cables



Extension cables

Cable color	label	Description
White	SENSOR-IN3	Alarm input 3
White	SENSOR-IN4	Alarm input 4
Black	GND	GND
White	SENSOR-IN1	Alarm input 1

Black	GND	GND
White	SENSOR-IN2	Alarm input 2
Grey	SENSOR-OUT	Alarm output
White	SENSOR-AD1	Analog alarm input1
Red	VCC12V	12V output positive
White	SENSOR-AD2	Analog alarm input2

2.4. Infrared Remote Controller

Key	Function	Image
⏻	No use	
[LOGIN]	No use	
[0-9]	[0-9] keys: In the setting status, the numeric keys are used for number selection. During playback, keys 1, 2, 3 and 4 are used for switching between single window of channels 1-4, key 5 is used for switching to synchronous playback of 4 channels.	
[-][+]	For ptz zoom control.	
[DEL]	Backspace when inputting numbers.	
[RETURN]	Exits to the preview menu or returns to the parent menu.	
[ENTER]	Confirms parameter selection and settings as well as operations like play.	
▲, ▼, ◀, ▶	Arrow keys that move the cursor upward, downward, leftward and rightward. The left and right keys are used for increasing and decreasing the volume during surveillance playback. ▶ Fastback, 2x/4x/8x/16x for selection, press once to switch to the next speed in order, press [Play] to resume normal speed; ◀ Fast-forward, 2x/4x/8x/16x for selection, press once to switch to the next speed in order, press [Play] to resume normal speed;	
[GOTO]	Snap picture.	
[TAB]	Input dot character, such as ip “192.168.1.1”	
⏮	No use	
▶	Plays the video during playback.	
⏭	No use	

	Starts recording in manual recording mode.	
	Stops recording in manual recording mode.	
	Stops playing the video in playback mode.	
	Pauses during playback.	

3. Host Installation Instructions

3.1. Unpacking and Inspection of Accessories

After unpacking, please check the device for distortion or any other damage, in which case please stop using the device and contact your supplier. There is a packing list in the carton, please check all accessories of the main device for completeness according to this list.

3.2. Hard Drive Installation

Hard drive installation steps:

Step 1. **Unlock the hard drive and remove the hard drive enclosure**

Step 2. **Remove the bolts and remove the bolts on the bottom of the hard drive enclosure and the bolt on the back side of the enclosure**

Step 3. **Install the shock pads.**

Install the shock pads on both sides according to the installation diagram of the hard drive. The hard drive is not fixed by bolts and will depend on the rubber shock absorbing covers and shock pads on both sides.

Step 4. **Install the rubber shock absorbing covers**

Mount the rubber shock absorbing covers on both sides of the SATA hard drive, with the side of the cover with the lug close to the PCB. Connect power cable smoothly. Ensure reliable installation of cable interfaces of different components.

Step 5. **Close the enclosure and fasten the screws**

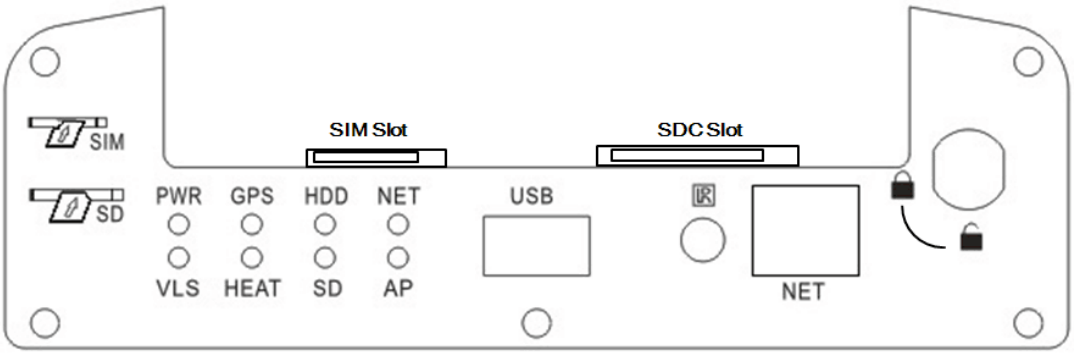
Note: Please note that the bolts on the sides cannot be mixed with that on the bottom and ensure tightness of all bolts; always remember to lock the hard drive after installation, otherwise, the device may not be started.

3.3. SIM / SD Card Installation

Open the hard drive lock with the key, pull out the hard drive box, then appears the card Slot, then insert the SD/SIM card into the corresponding card slot.

(Note: Pay attention to the front and back sides of the card when inserting it, after inserted, the SD card should have a notch at the upper right corner, the SIM card should have a notch

at the upper left corner,).



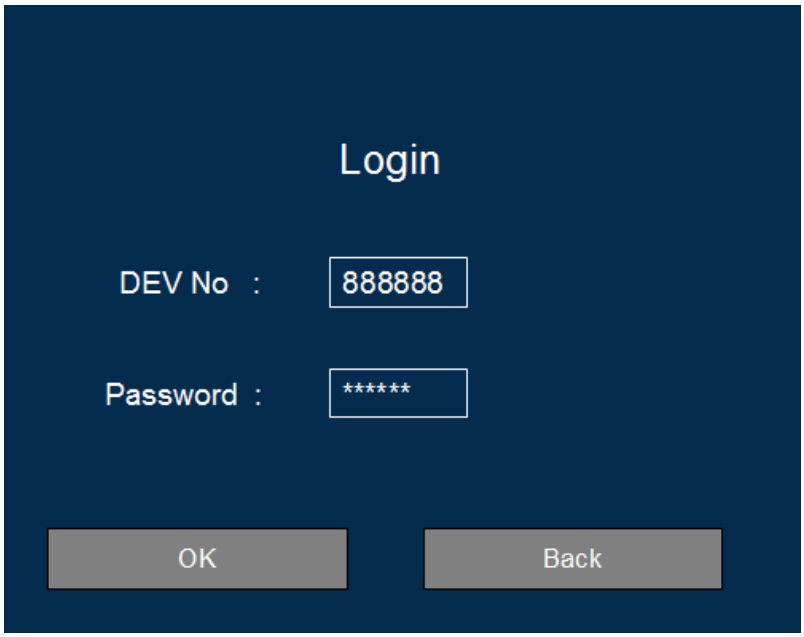
3.4. Antenna Installation

Interfaces for Wi-Fi and 3/4G antennas are equipped on the panel of the device for connection of corresponding antennas.

4. MDVR Setup

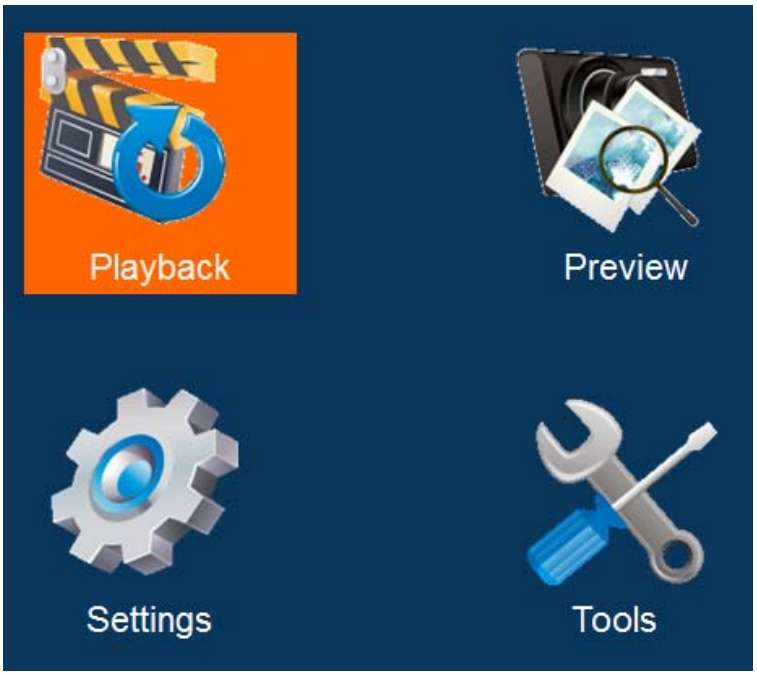
4.1. Login

- When password is set DISABLE, Press【ENTER】key on the remote controller into the main menu directly.
- When password is set ENABLE, Press 【ENTER】key on the remote controller into the login menu as below, enter the correct user name and password, then press【ENTER】key into the main menu.
- Default user name: admin. Administrator default password is “999999”, Normal User default password is “888888”.



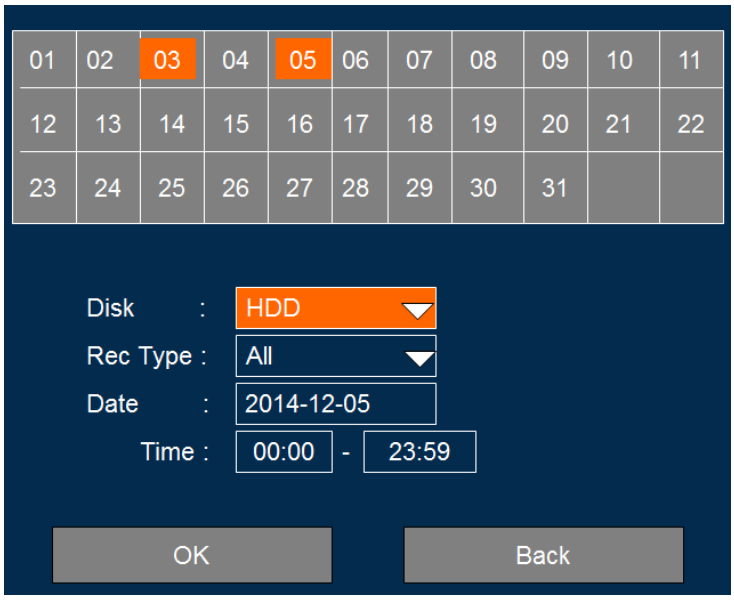
4.2. Main Menu

After login successfully, enter the main menu as below. It includes 4 items: Playback, Preview, Settings, Tools.

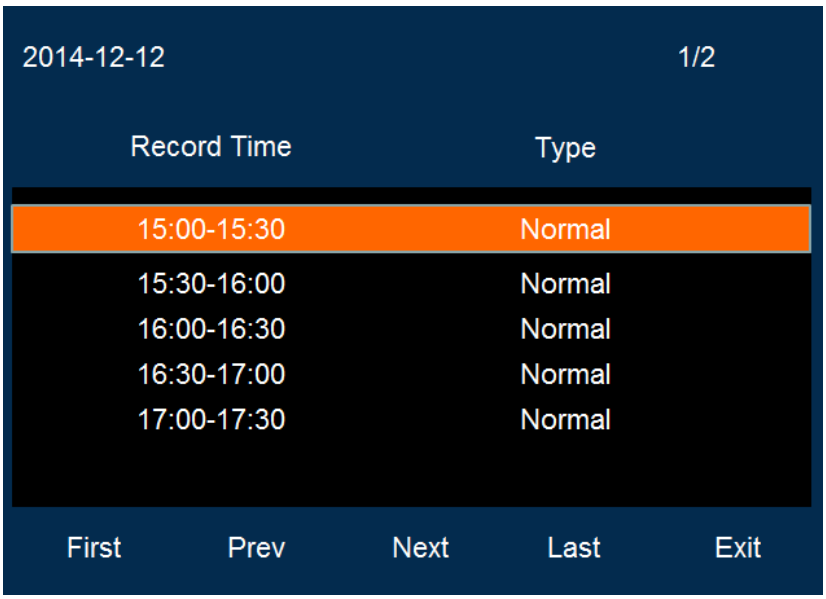


4.3. Playback

You can search all video files including normal files, alarm files by record time, file type when you enter Playback menu. Here's the detailed description:



- Rec Type：The type of video file includes alarm file and all file. Press【ENTER】key to select the type of video file which need to search. System default selection is all file.
- Date: Press the digit keys to setup the date，System default selection is current day.
- Start： Press the digit keys to setup the time, default time is 00:00.
- End： Press the digit keys to setup the end time, default time is 23:59.
- OK: Select the "OK" button And press 【OK】 key to enter the following search results menu.

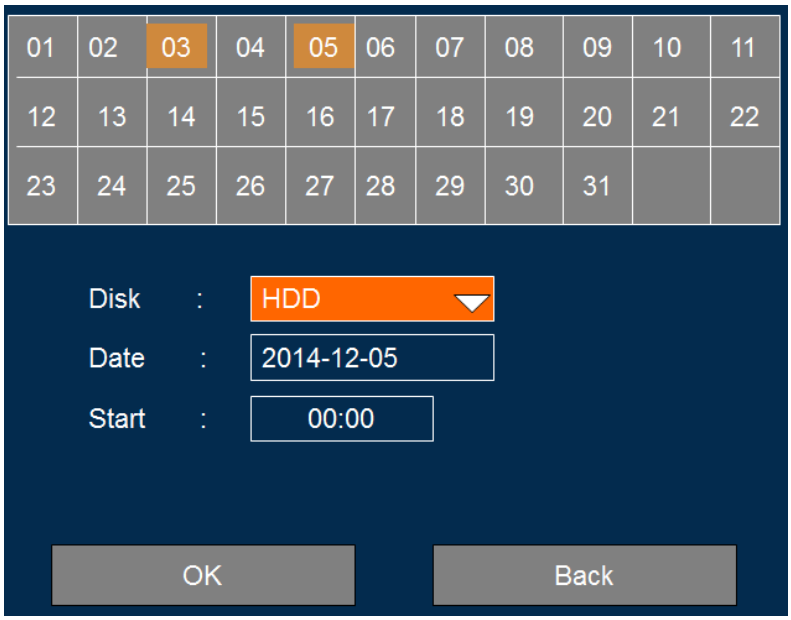


- Press the direction keys to view recording information, press 【ENTER】 to play selected file, press【RETURN】 to return back the upper menu;

- Press the direction keys to select "First", "Prev", "Next", "Last", and press 【ENTER】 to go to corresponding page.

4.4. Preview

You can search all snap picture files by time when you enter preview menu. Here's the detailed description:



- Date: Press the digit keys to setup the date，System default selection is current day.
- Start： Press the digit keys to setup the time, default time is 00:00.

OK: Select the "OK" button And press 【OK】 key to enter the following search results menu.

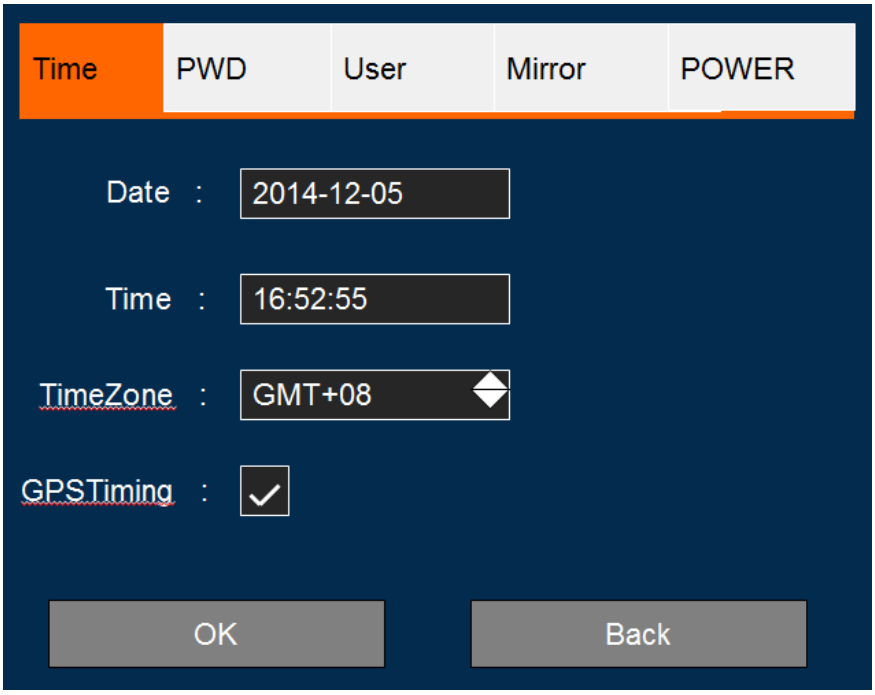
4.4.1. Settings

Settings menu is used to set items about mdvr system config, such as encode、net etc. it is composed of 6 parts: Basic,Alarm,Net, Encode,Record,Serial.

4.4.2. Basic

This menu is used to set mdvr time and user password and mdvr owner info.

- **Time**



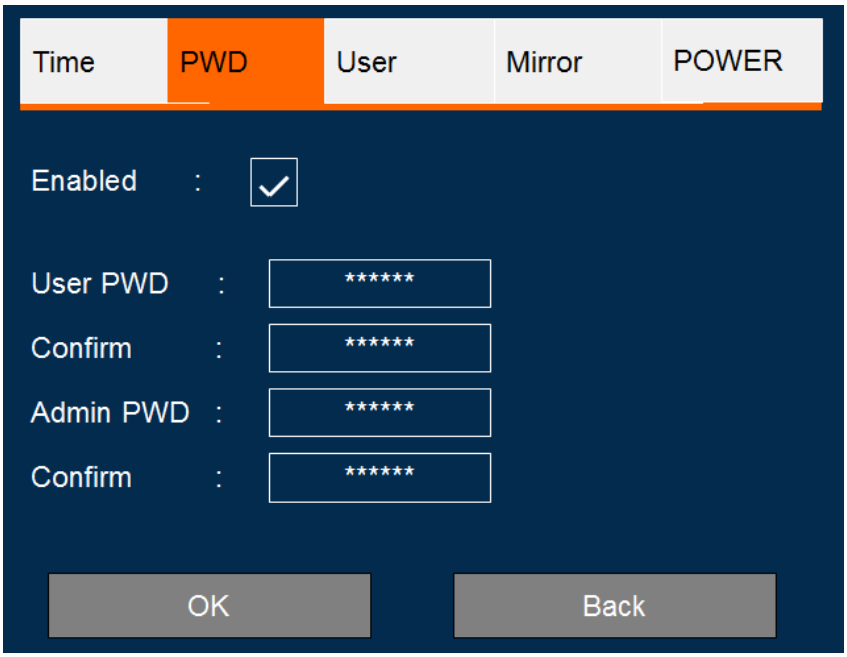
This menu is used to set the date and time of system.

- Date：Press the digit keys to setup the date
- Time： Press the digit keys to setup the clock

- TimeZone： Press the enter keys to select timezone
- GPSTiming：Check Box, It will auto adjust time by gps if select it

Select “OK” and press 【ENTER】to save the settings.

- **Passwd**

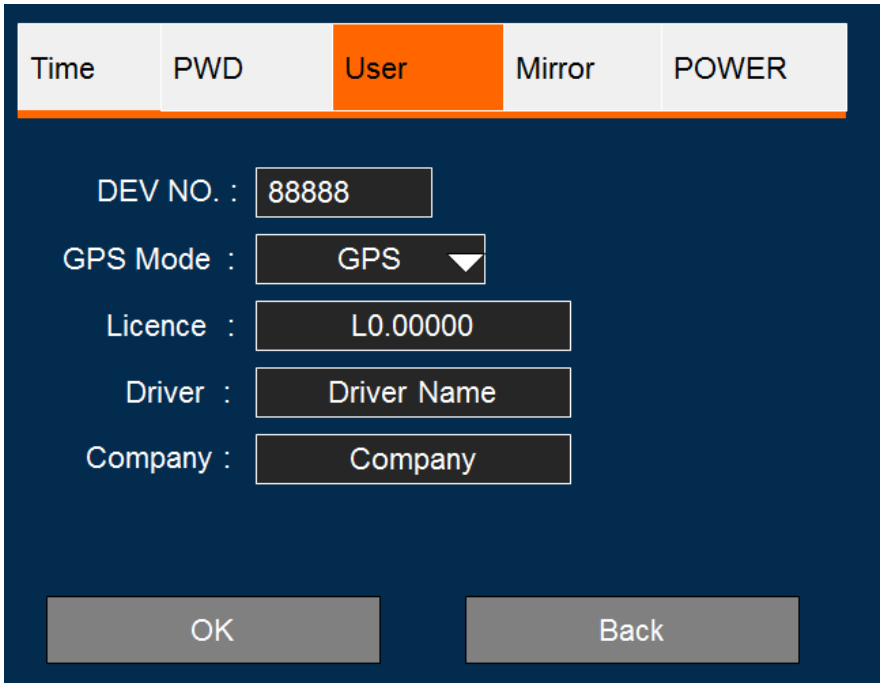


This menu is used to set user password.

- Enabled：Press Enter keys to select or cancel, in order to access the setup menu with a password, it need input password when user access menu if select it, otherwise select no selct to disable password.
- User PWD: Users can search and play video records but cannot modify parameters with this password. Press digit keys to modify the password.
- Admin PWD: Users are endowed full rights with this password, such as search, play or modify parameters. Press digit keys to modify the password.
- Confirm：It is used to confirm password, Press digit keys to modify the password.

Select “OK” and press 【ENTER】to save the settings.

- **User**

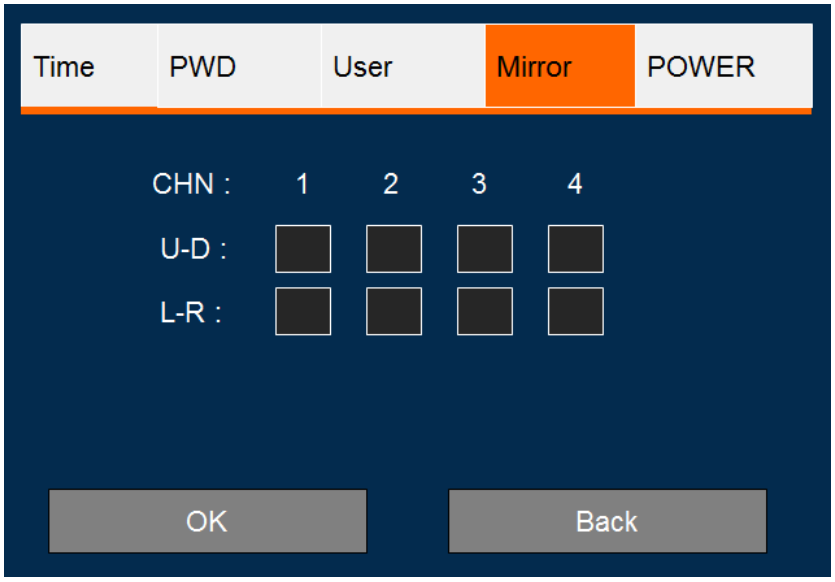


This menu is used to set owner information about this mdvr machine.

- Dev No：It is used to set mdvr device number;
- GPS Mode: Press 【ENTER】key to select GPS work mode, it have three modes: GPS, BD, BDGPS.
- License: It is used to set car license number.
- Driver: It is used to set drvier name.
- Company: It is used to set the company name of mdvr.

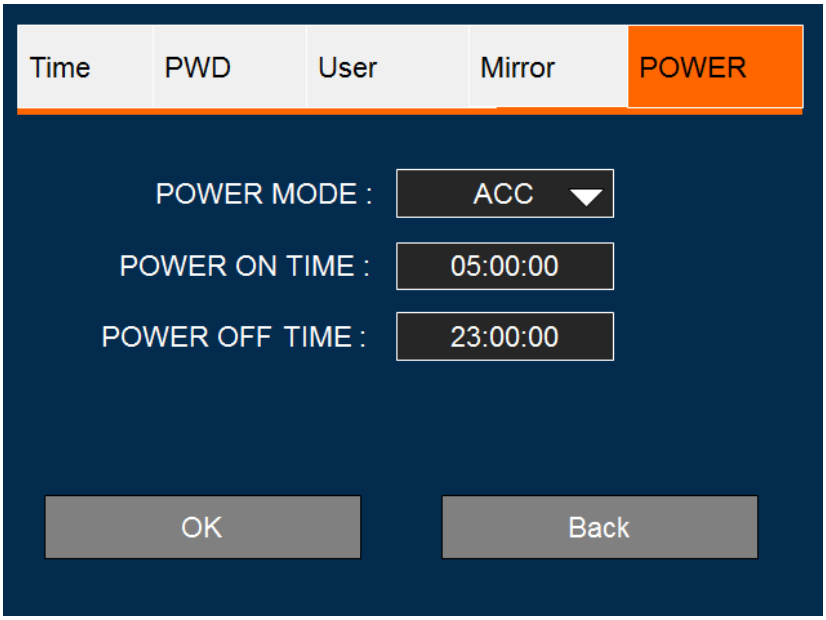
Press 【ENTER】key to select and enter the keyboard menu, move the cursor to select letters.

- **Mirror**



This menu is used to set the images of the CHN mirroring about this mdvr machine.

- **POWER**

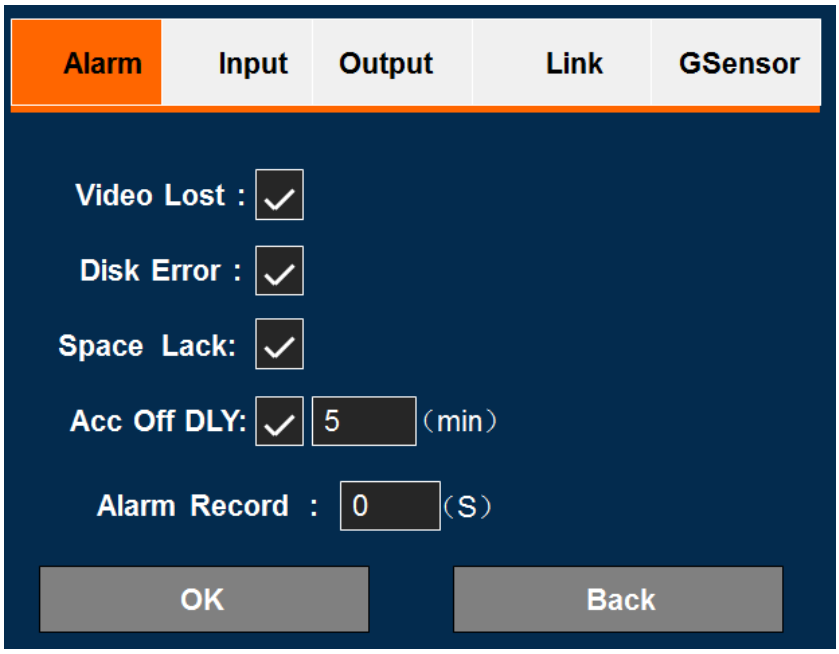


This menu is used to set the power mode about this mdvr machine.You can also to set the power on and power off time if the DVR is in timer mode.

4.4.3. Alarm

This menu will show you how to setup the alarm parameters, include alarm,Input,output, alarm link,GSensor etc.

- **Alarm**

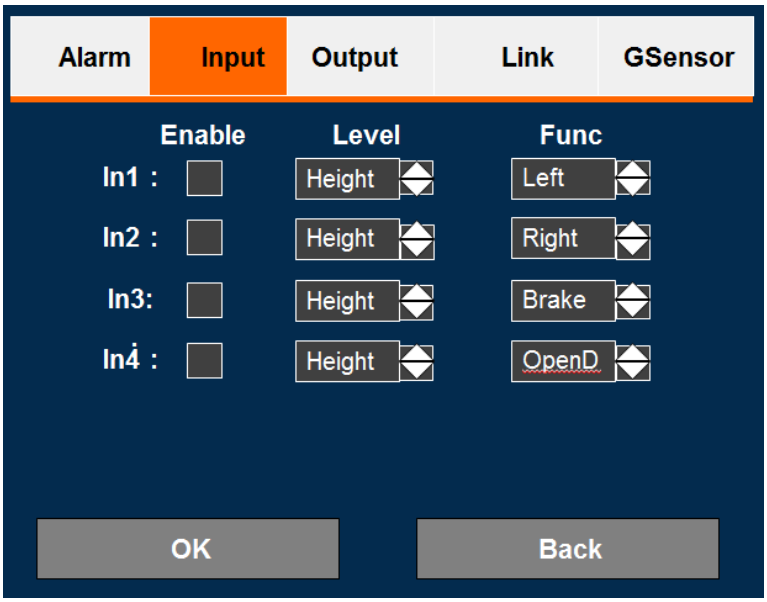


- ☑: Check Box, if you select it, so this alarm source will be enable, otherwise disable;
- AccOff Dly: if you select it, The machine will delay the shutdown.

- Alarm Record: When the alarm occurs, it will be a video recording; Video time depending on the time you enter, the unit is seconds.

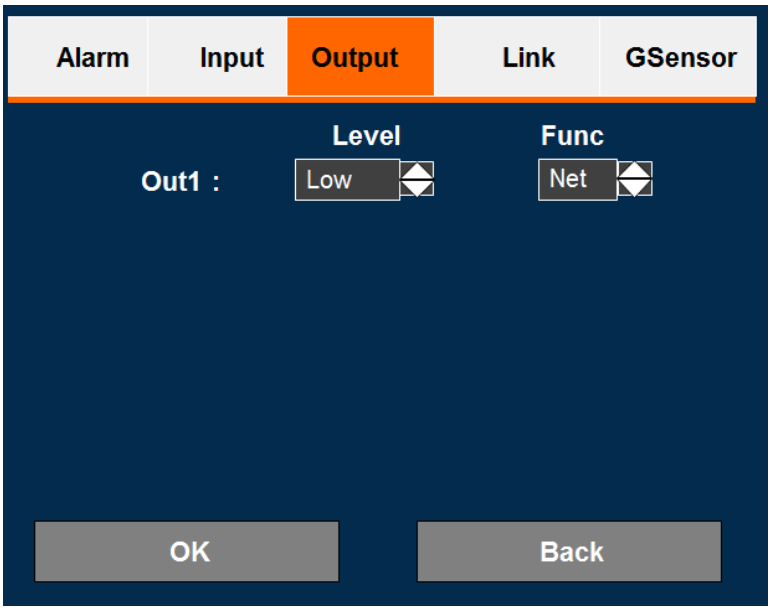
Select “OK” and press 【ENTER】to save the settings.

- **Input**



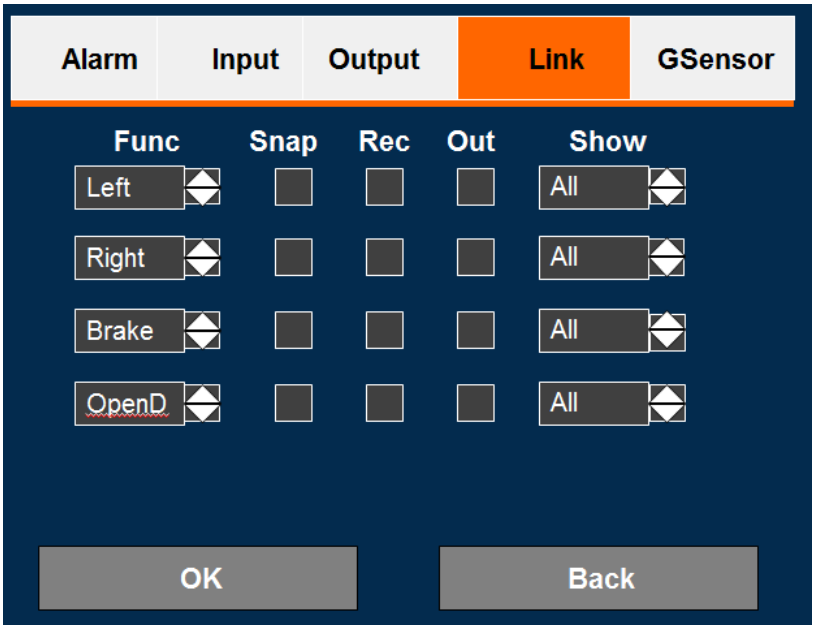
This window is mainly configured alarm input, set the level of input and function.

- **Output**



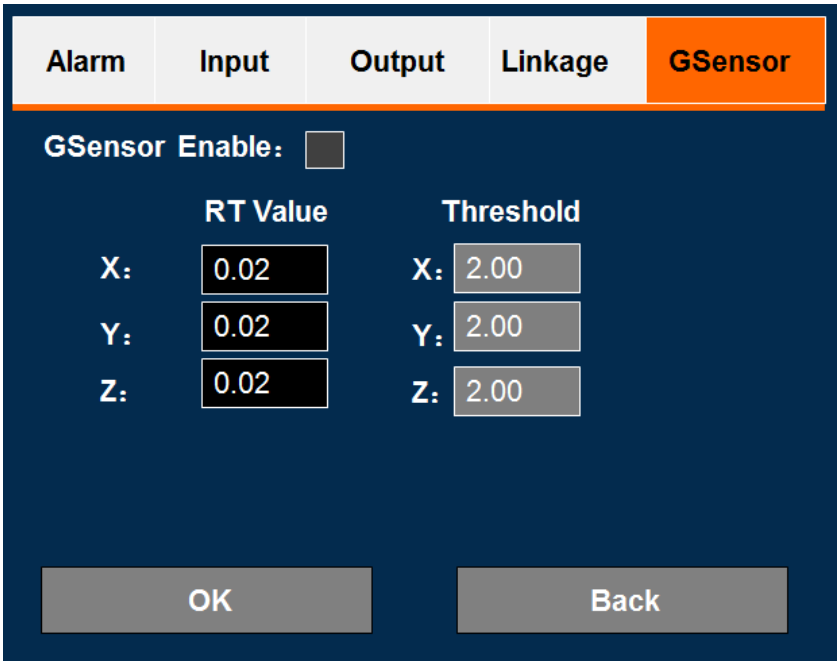
This window is mainly configured alarm output, set the level of input and function.

- **Link**



This window is mainly configured alarm linkage policy, how to linkage to do some things when the alarm occurs.

- **GSensor**

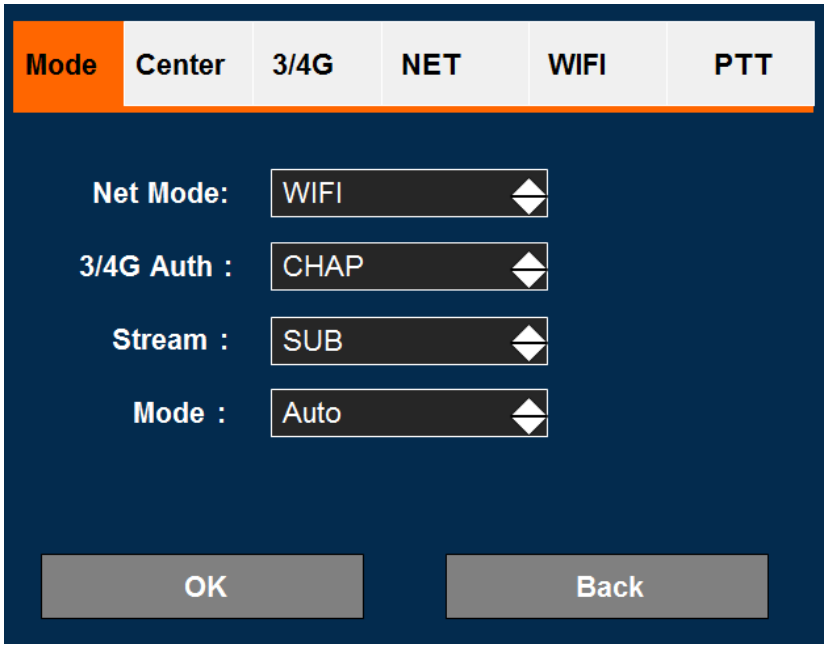


This window is mainly configured GSensor, how to open and close the enable,the Threshold of X,Y,Z.

4.4.4. Net

This menu will show you how to setup the system network parameters, it includes: Mode, Center, 3/4G, NET,WIFI,PTT.

- **Mode**



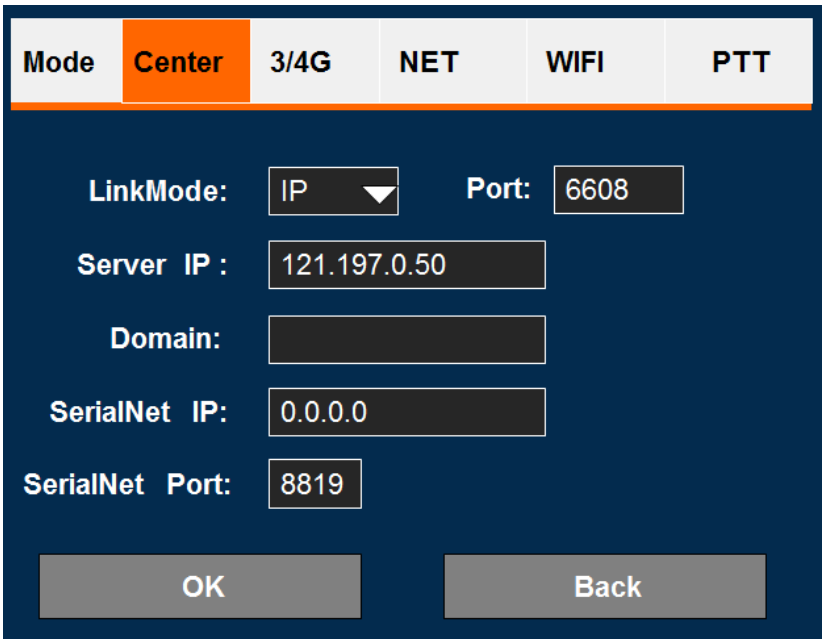
This menu is used to set basic net work mode.

- Net Mode：This item is used to set the network connection types, including 3/4G or WiFi.
- 3/4G Auth：This item is to set the 3/4G network authentication type.

- Stream：This item is used to set the back-end platform access video stream types, such as the main stream or sub stream.
- Mode：This item is used to set the connection automatically whether a network connection or manual connection.

Select “OK” and press 【ENTER】to save the settings.

- **Center**

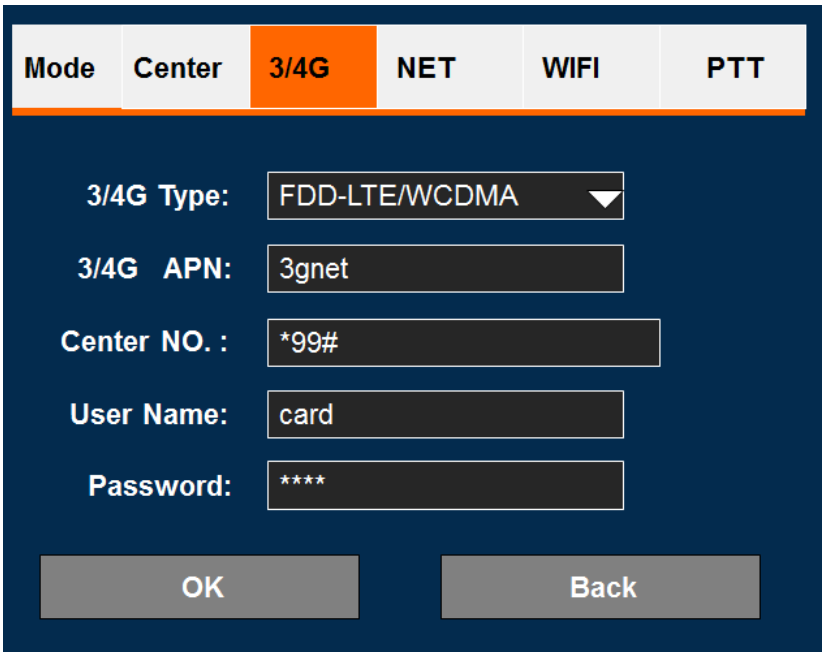


This menu is used to set CMS config.

- Link Mode：This item is used to set the access back-end platform through IP or domain mode.
- Port：This item is used to set the back-end CMS server port.
- Server IP： This item is used to set the back-end CMS server IP address.
- Domain：This item is used to set the back-end CMS server domain name.
- Port：This item is used to set the back-end CMS server port.
- SerialNet IP： This item is used to set the SerialNet IP address.
- SerialNet Port：This item is used to set the SerialNet port.

Select “OK” and press 【ENTER】to save the settings.

- **3/4G**



This menu is used to set 3/4G or 4G config parameter.

- 3/4G Type：This item is used to set the 3/4G Type of the device.
- 3/4G APN： This item is used to set the 3/4G APN of the device.
- Center NO.：This item is used to set the Center NO. of the device.
- User Name：This item is used to set the User Name of the device.
- Password：This item is used to set the Password of the device.

The Licenced Bands is:

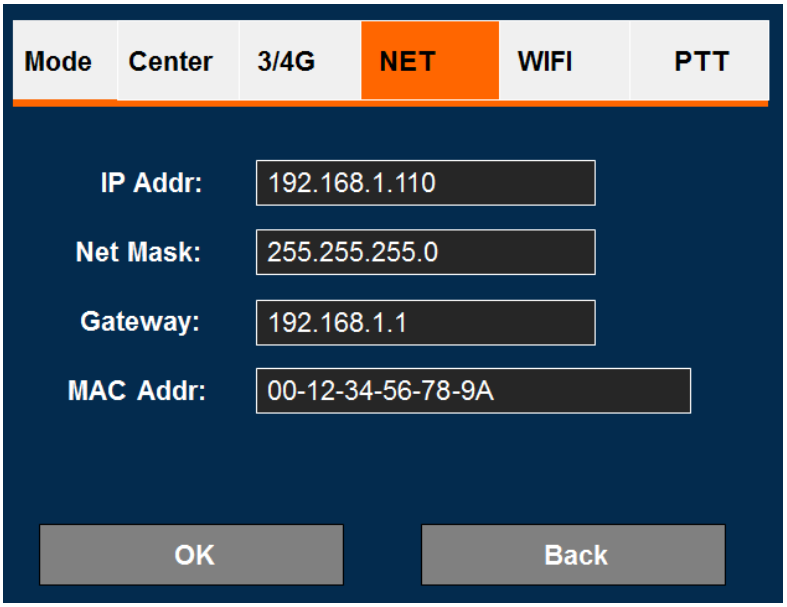
GSM(850/900/1800/1900MHz),

WCDMA(850/900/1900/1700MHz),

LTE(B2/B4/B5/B17).

Select “OK” and press 【ENTER】to save the settings.

- **Net**



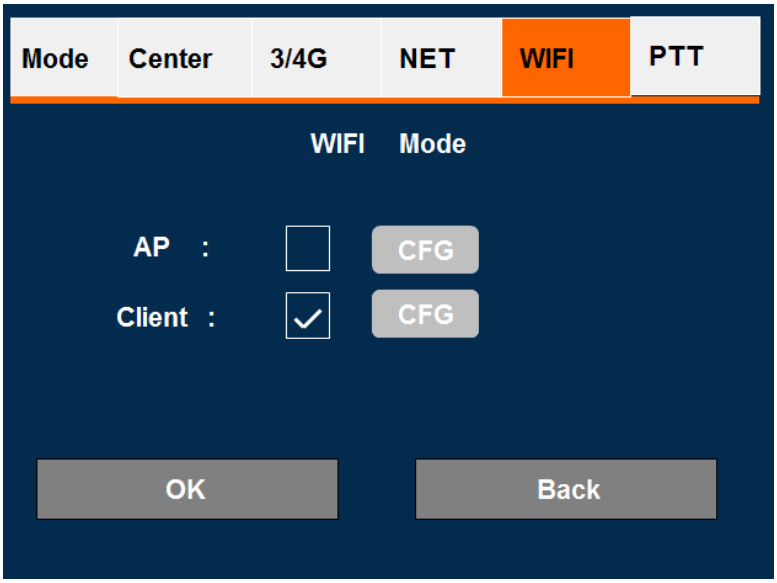
This menu is used to set Wired NET config parameter.

- IP Addr：This item is used to set the IP Addr of the device.
- Net Mask： This item is used to set the Net Mask of the device.
- Gateway：This item is used to set the Gateway of the device.
- MAC Addr：This item is used to set the MAC Addr of the device.

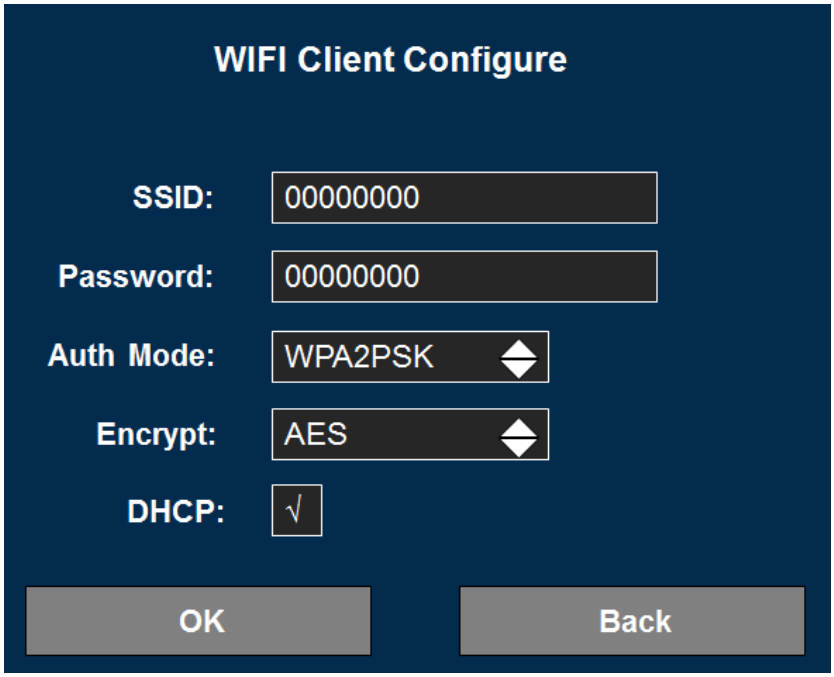
Select “OK” and press 【ENTER】to save the settings.

- **WIFI**

The WIFI has two mode:AP and Client.We can chose anyone and set it.



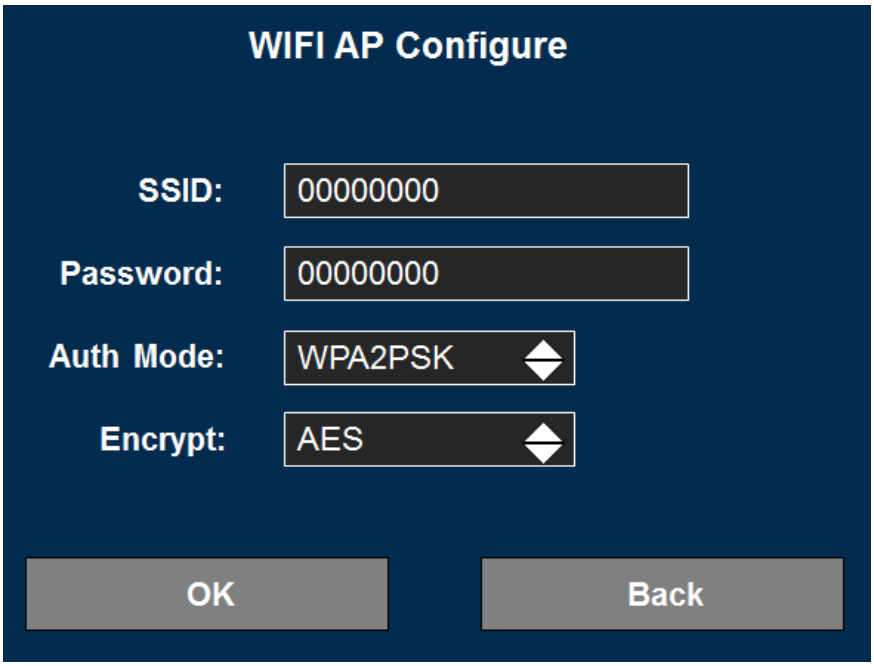
This menu is used to set Client mode connection parameter.



- SSID ： This item is used to set the WiFi hot SSID.
- Password ： This item is used to set the WiFi password.
- Auth Mode ： This item is used to set the WiFi authentication mode.
- Encypt ： This item is used to set the WiFi encryption type.
- DHCP ： This item is used to set whether the fetch address through DHCP.

Select “OK” and press 【ENTER】to save the settings.

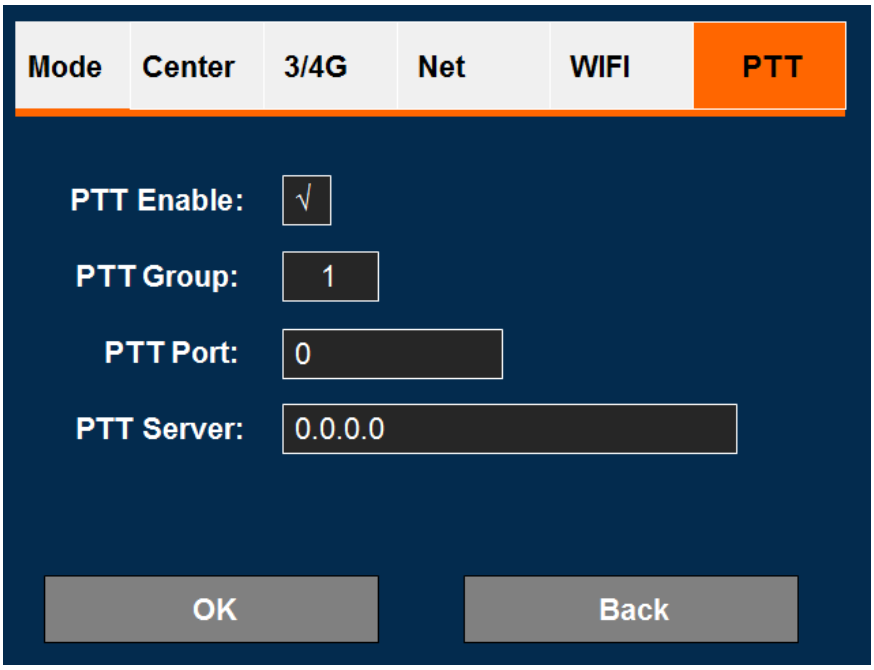
This menu is used to set AP mode connection parameter.



- SSID ： This item is used to set the WiFi hot SSID of the DVR.
- Password ： This item is used to set the WiFi password of the DVR.
- Auth Mode ： This item is used to set the WiFi authentication mode of the DVR.
- Encypt ： This item is used to set the WiFi encryption type of the DVR.

Select “OK” and press 【ENTER】to save the settings.

- **PTT**



This menu is used to set PTT config parameter.

- PTT Enable：This item is used to set the PTT Enable of the device.
- PTT Group： This item is used to set the PTT Group of the device.
- PTT Port：This item is used to set the PTT Port of the device.
- PTT Server：This item is used to set the PTT Server of the device.

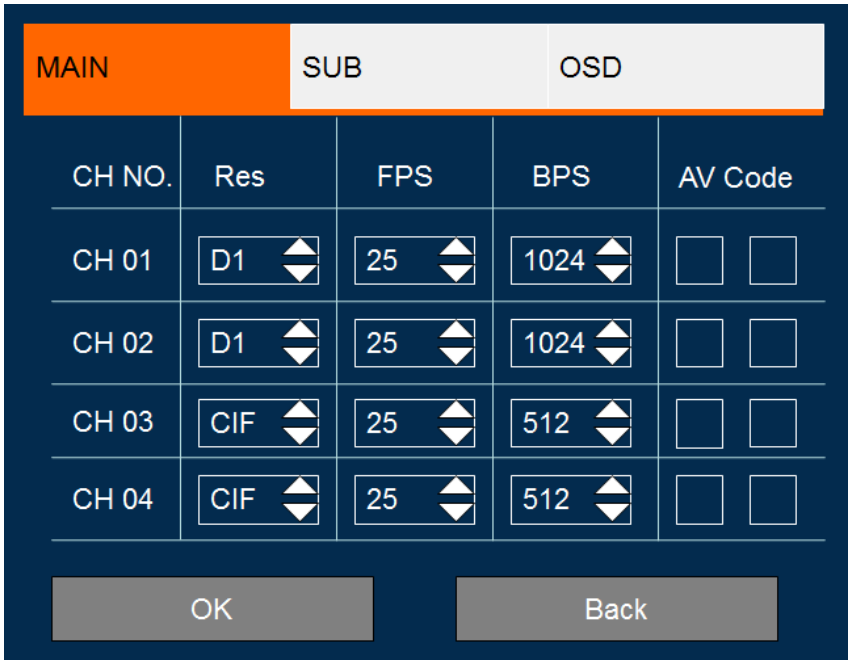
Select “OK” and press 【ENTER】to save the settings.

4.4.5. Encode

This menu will show you how to setup the video encode parameters.

- **MAIN**

This menu is used to set main video stream parameters.

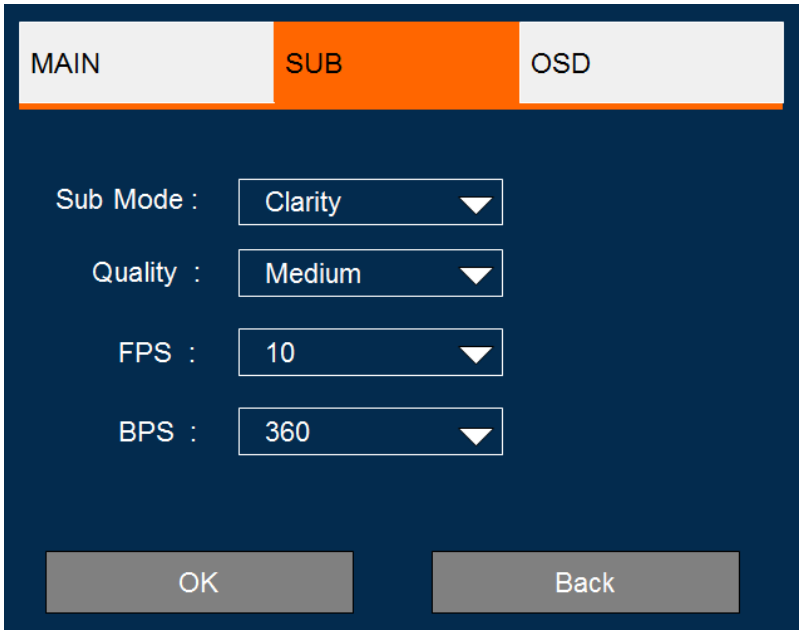


- CH NO.: This item is video channel number, M10 mdvr have 4 channels: ch01, ch02, ch03, ch04
- Res: This item is to set the channel video resolution, it have 3 types: 720P, D1, CIF.
- FPS: This item is to set the channel video frame rate.
- BPS: This item is to set the chnnel video stream bit rate.
- AV Code: This item is to set the chnnel video AV enable.

Select “OK” and press 【ENTER】to save the settings.

- **SUB**

This menu is used to set sub video stream parameters.

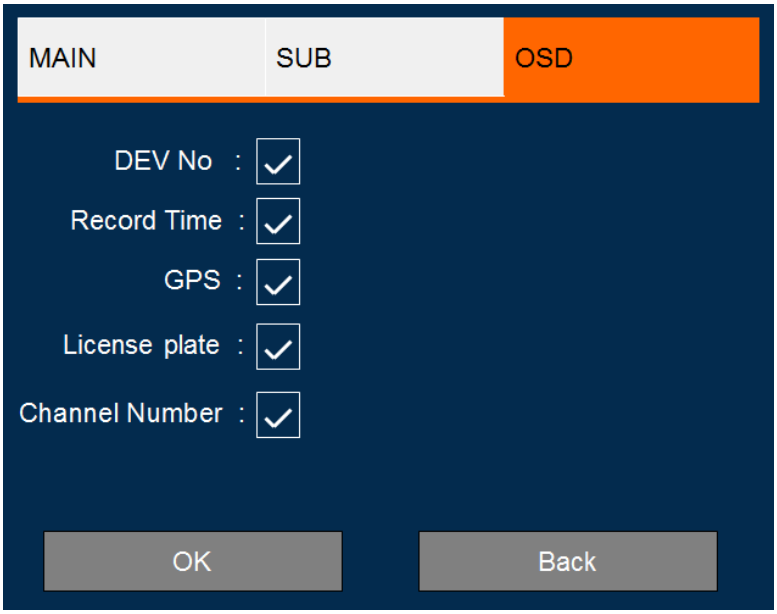


- Stream Mode: This item is to set the all channel video sub stream encode mode, it have 3 types:
  - Clarity:
  - Balance:
  - Flow:
  - Define:
- Quality: This item is to set the all channel video sub stream quality, this setting can only in stream mode is define mode.
- FPS: This item is to set the the all channel video sub stream frame rate, this setting can only in stream mode is define mode.
- BPS: This item is to set the all channel video sub stream bit rate, this setting can only in stream mode is define mode.

Select “OK” and press 【ENTER】to save the settings.

- **OSD**

This menu is used to set video osd parameters.



- Dev No.: This item is to set whether add equipment numbers on video osd, on/off switch. Press 【ENTER】 key to select.
- Record Time: This item is to set whether add sys time on video osd, on/off switch. Press 【ENTER】 key to select.
- GPS: This item is to set whether add gps info on video osd, on/off switch. Press 【ENTER】 key to select.
- License plate: This item is to set License plate info on video osd, on/off switch. Press 【ENTER】 key to select.
- Channel Number: This item is to set Channel Number info on video osd, on/off switch. Press 【ENTER】 key to select.

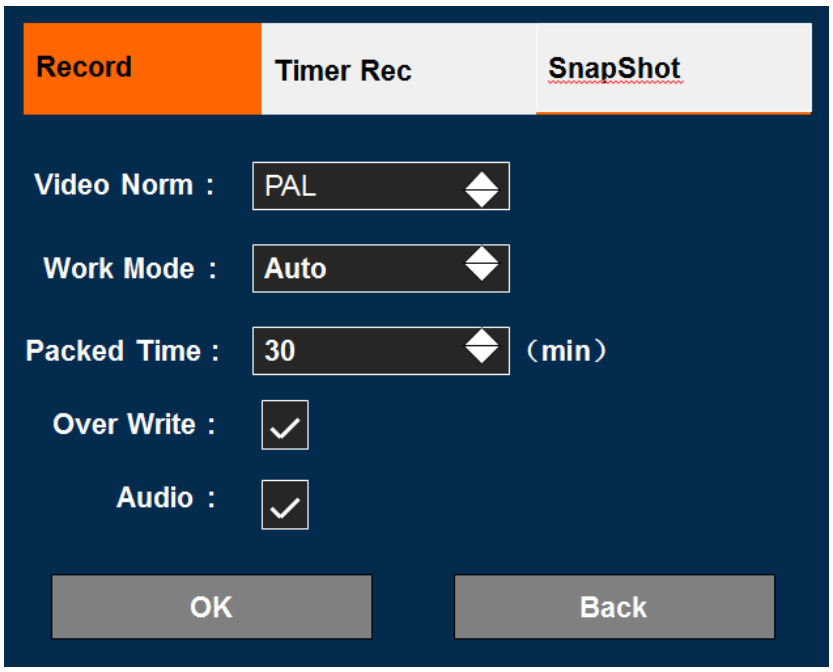
Select “OK” and press 【ENTER】to save the settings.

4.4.6. Record

This menu will show you how to setup the record strategy parameters.

- **Record**

This menu is used to set stream data record parameters.

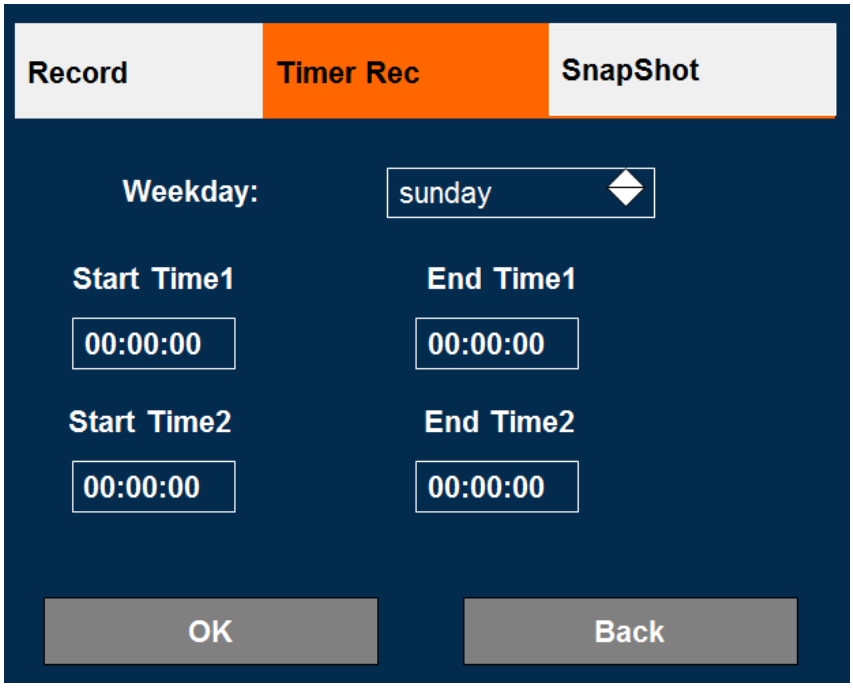


- Video Norm: PAL / NTSC, press 【ENTER】 key to select.
- Work Mode: AUTO / Timed / Alarm recording, press 【ENTER】 to select.
- Packed Time: Packed recoding time setup. Select 1/10/15/20/30 minutes. Press【ENTER】key to modify.
- Over Write：Overlap on/off switch. Press 【ENTER】 key to select.

- Audio : If record audio data, on/off switch. Press 【ENTER】 key to select.

- **Timer Rec**

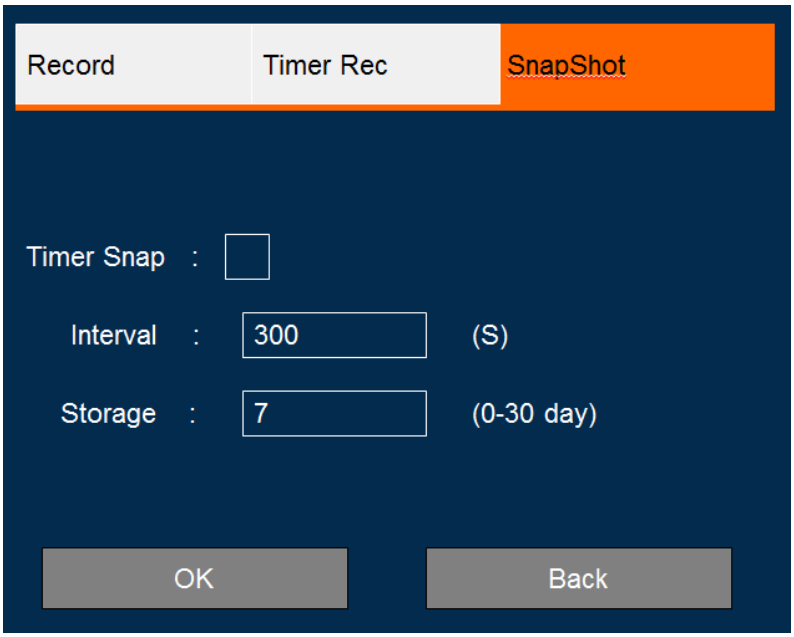
This menu is used to set record time parameters.



- Weekday: Select weekday, press 【ENTER】 key to select.
- Start Time: This item is to set the starting time of the record.
- End Time: This item is to set the ending time of the record.

- **Snap Shot**

This menu is used to set snap picture parameters.



- Timer Snap: This item is to set whether to continue a plurality of snap 【ENTER】 to select.
- Interval: This item is to set the time interval two pictures captured.
- Storage: Press the digit keys to setup the pictures storage days.

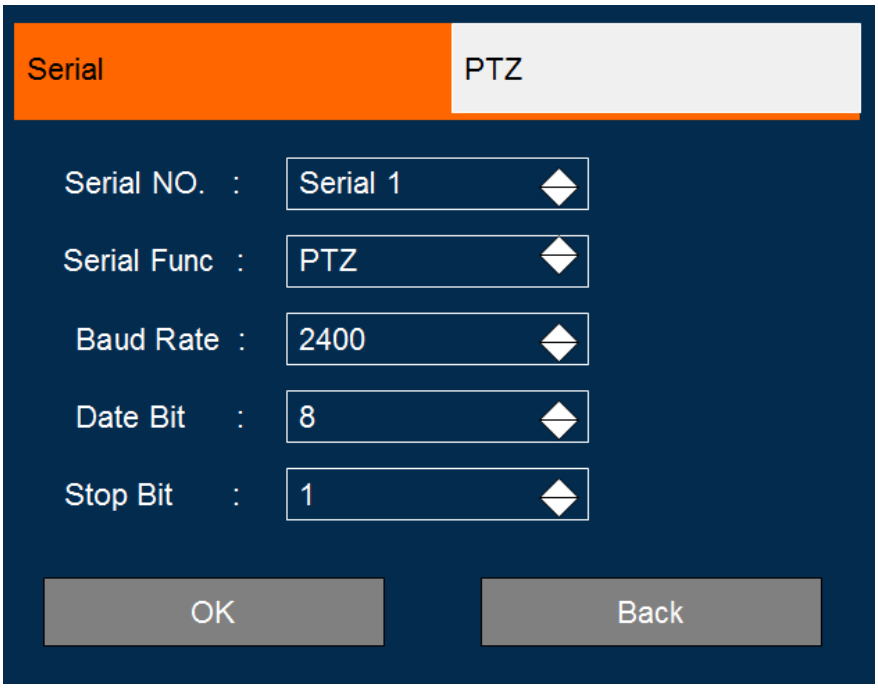
Select “OK” and press 【ENTER】to save the settings.

4.4.7. Serial

This menu will show you how to setup the serial work type and config parameters, it includes 2 sub configuration item: Serial, PTZ:

- **Serial**

This menu is used to set serial parameters.



- Serial NO.：This item is to set the NO. of serial.
- Serial Func: This item is to set the serial work mode, there are 2 can choose: PTZ, Transparent .
- Baud Rate: This item is to set the transmission baud rate of serial.
- Data Bit: This item is to set the data bit of serial..
- Stop Bit：This item is to set the stop bit of serial.

Select “OK” and press 【ENTER】to save the settings.

- **PTZ**

This menu is used to set the channel ptz parameters.

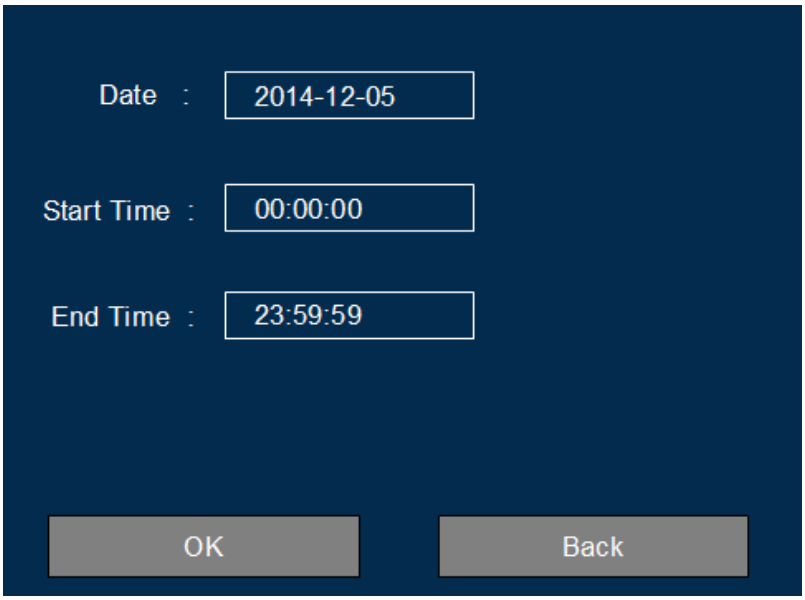
- CHN NO.: This item is channel number.
- PTZ Addr：This item is to set the ptz serial address.
- Protocol：This item is to set ptz protocol type.

Select “OK” and press 【ENTER】to save the settings.

4.5. Tools

4.5.1. Log

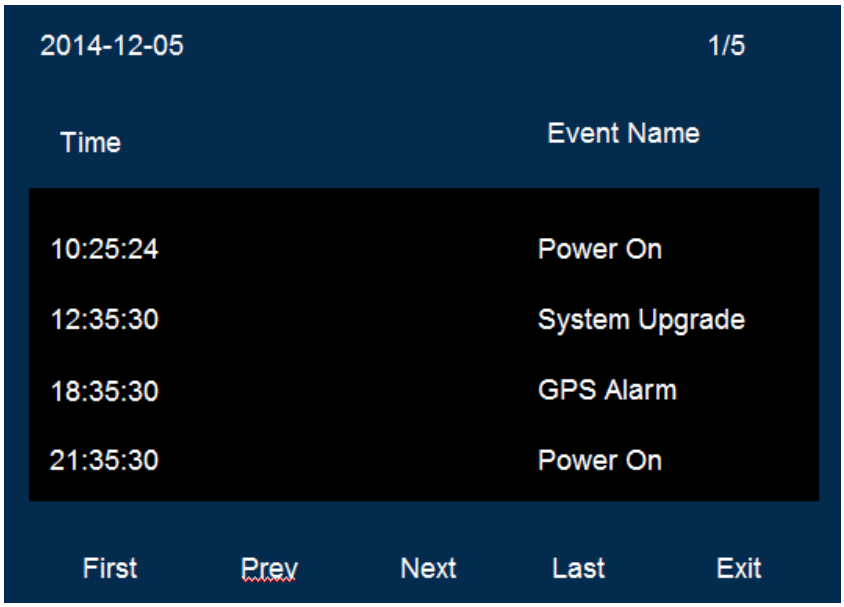
Log search unit lists information of all event files LOG, including event date, event time, event type, channel number etc.



- Date: To set the date of the searching, the default is the date of the day.
- Start time：To set the start time of the searching, the default value is 00:00:00.
- End time：To set the end time of the searching, the default value is 23:59:59.

- Search：Search all log information occurred between “Start Time” and “End Time”. Select “OK” button, and press【ENTER】 to search all log which occurred during this period.

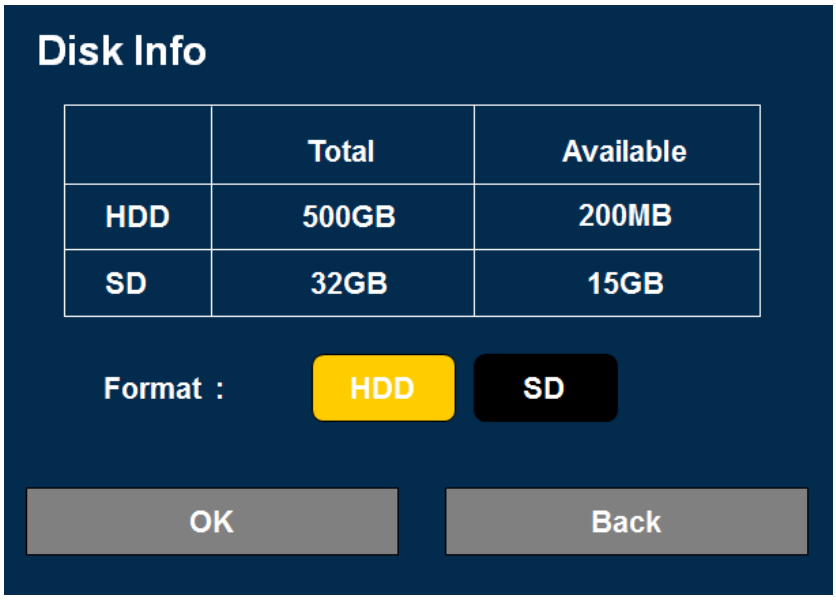
The results of a query as shown below:



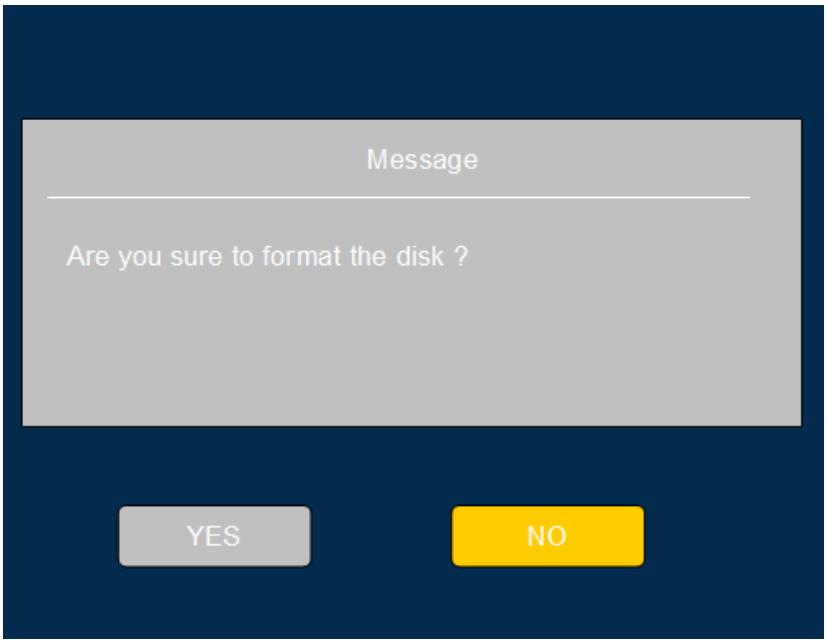
Press the direction keys to select "First", "Prev", "Next", "Last ", and press 【ENTER】 key to go to corresponding page。

4.5.2. Disk

Disk management is used to display disk storage info and format the SD Card(s) and external storage equipment.



Press direction keys to select “Format” button. Press【ENTER】key to select, system will pop up the following menu as below.



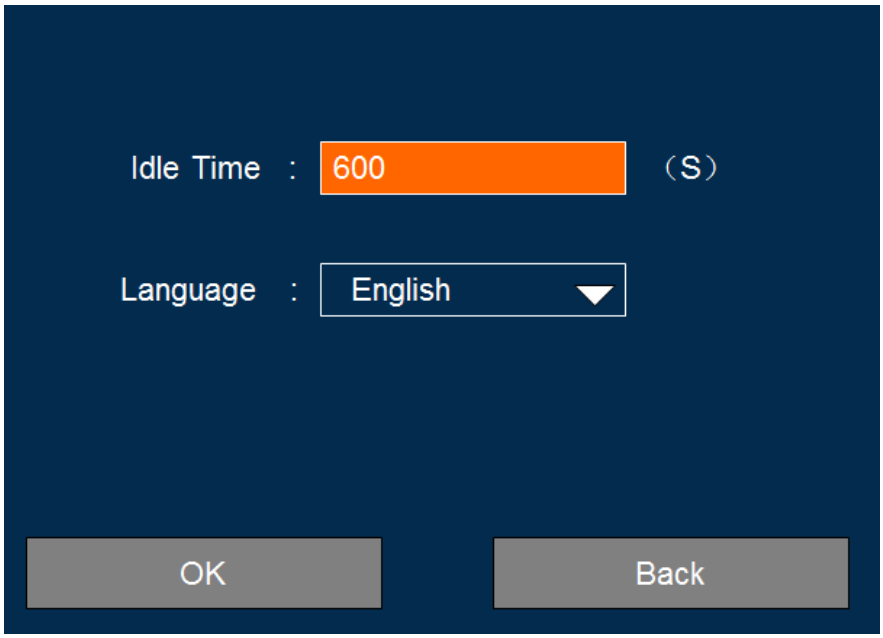
Press direction keys to select YES or NO, Press【ENTER】key to select

NOTE:

ALL DATA IN THE STORAGE EQUIPMENTS WILL BE LOST AFTER BEING FORMATTED.

4.5.3. Operation

Operation management is used to set the equipment language and operation behavior.



- Idel Time: This menu is used to set the menu idle time that it will be automatic return display screen.
- Language: This menu is used to set menu language .

Press 【UP】and 【DOWN】 key to select and press【ENTER】 to switch “中文\ENGLISH”. Select “OK” and press 【ENTER】to save the settings.

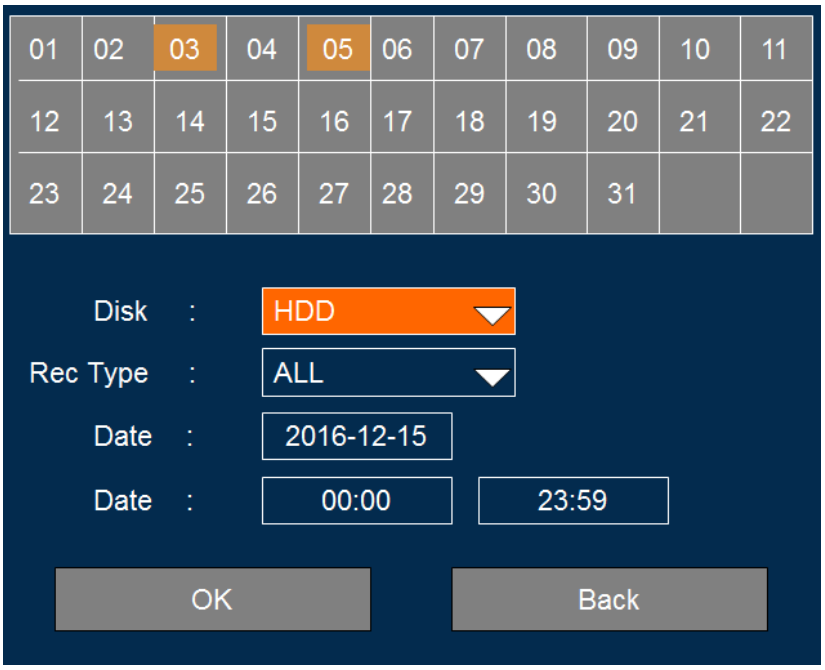
NOTE: System will highlight the valid item info.

4.5.4. Configure

Restore the default settings, import and export the machine configurations.

- Export CFG：Export the all configuration for the machine to another machine to make sure that two machines have the same setting. Please insert the external storage device to the USB port and then press 【Export CFG】, Then the configuration file will be copied on that external storage medium
- Import CFG：To import the configuration file from a mobile storage medium and make it work, insert that mobile storage medium which got configuration file stored and press【Import CFG】. The configuration data will be automatically copied into this new machine. Please insert the external storage device to the USB port (Must have configuration file in the storage device) and then press 【Import CFG】. The configuration will import to another machine automatically
- Restore CFG：Restore default settings.

4.5.5. Export

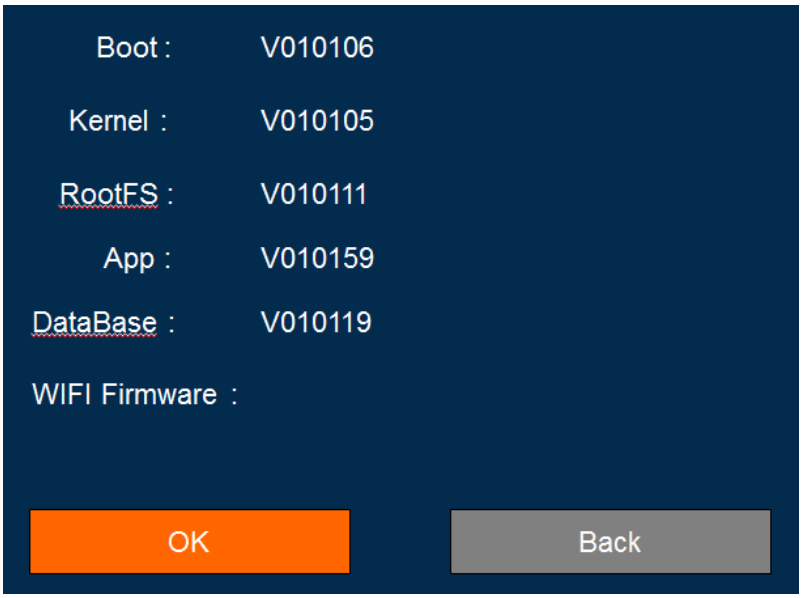


Attention:

Derived data operation must put the USB storage device to access the front panelUSB access port。

1) Press【ENTER】Key serach file list
2) Select data section;
3) Press 【ENTER】Key to export data file。

4.5.6. Info



- Hardware：Display current local firmware hardware version.

- Boot：Display current local boot version.
- Kernel：Display current local kernel version.
- RootFS：Display current local root file system version.
- App：Display current local application version.
- Database：Display inner resource configure file version.

5. Equipment Upgrading Guide

Attention:

During the upgrade time, you can not power off or swappable SD card or HDD Disk.

5.1. Upgrade method

Native support SD card or HDD storage media as local upgrade mode.

5.2. Upgrade step

- **Application program**

  Upgrade file format is: M3xxx-APP*******. crc

  Step1 .Copied the file you want to upgrade to the SD card / HDD, be sure to make the file complete copied;

  Step2. Insert the SD card/HDD in equipment without power

  Step3. After device is activated; the system will automatically check the SD/HDD upgrade package file .and then it will automatically be upgraded;

  Step4. Upgrade finished, restart the equipment

- **Configure DB / File system / bootstrap program / kernel program**

  M51xx-DBT-*******.crc

  M51xx-RFS-*******.crc

  M51xx-LDR-*******.crc

  M51xx-KNL-*******.crc

Upgrade as above, upgrade file configure db file/ file system / bootstrap program / kernel program

Remarks:

a) Make sure there have upgrade file in SD card/HDD , and before upgrading equipment must be in the power off state ;

b) During update, the device screen display update hint automatically

6. FAQs

6.1. Questions on 3/4G

1) Q: Failure to transfer 3/4G data?
   A: This may be caused by the following causes:
   a) 3/4G antenna not connected;
   b) SIM card not connected;
   c) Incorrect wireless settings in the settings menu. Such as failure to enable wireless dialing, incorrect 3/4G protocol setting or incorrect access point setting;
   d) Incorrect settings of center server in the settings menu. Such as incorrect center IP;
   e) Incorrect settings of PC. Such as no port mapping of the gateway router of the PC;
   f) PC playback tool is disabled;
2) Q: Can 3/4G remote preview and local recording be carried out synchronously?
   A: Real-time preview at the control center and local video storage can be achieved.
3) Q: How about the 3/4G transmission rate?
   A: It depends on the 3/4G bandwidths of different countries, according to current tests, 4 channels of images, 15 frames per channel, can be realized with EVDO in China.
4) Q: What is the time delay for 3/4G remote preview?
   A: It is about 2-20 seconds, depending mainly on the bandwidth.
5) Q: How to download video files with 3/4G?
   A: Manual file downloads are possible.
6) Q: Can recording settings be realized with 3/4G remote operation?
   A: Recording settings cannot be realized with 3/4G.

6.2. Questions on Wireless Module

1) Q: What settings should be taken into consideration if wireless module dialing is selected?
   A: First select the embedded wireless module, and then select corresponding wireless module type: WCDMA, EVDO, TD, as for data access point, CMNET should be selected for accessing general public network and settings of the center shall be considered for accessing VPN, depending on the formation of the data access point.
2) Q: What should be done first in case of wireless module problems?
   A: Enter the information display page or system information page of the direct access menu to check the dialing status, existence of SIM card, existence of wireless module and contact status of the antenna.

6.3. Questions on Wi-Fi

6.4. Questions on Recording

1) Q: The device fails to record video?
   A: This may be caused by the following causes:
   a) Incorrect setting of recording mode, for instance, the alarm recording mode is selected while there's no alarm; the timed recording mode is selected while the current time does not fall into the preset period;
   b) Check the disk space. If the disk space is lower than 500M and the auto writing function is disabled, the recording will be stopped;
   c) The ERR indicator on the front panel is on. You may check the system information whether the disk space is shown to be 0; check whether the disk is inserted and whether it is formatted;
   d) The recording functions of the 4 channels are disabled in the menu settings;
2) Q: No sound in the video?
   A: This may be caused by the following causes:
   e) Incorrect audio input connection. If the user connects line AIN1 and AIN2, the user needs to turn on the audio switch and select LINE IN input in the Recording Settings menu; if MICIN is connected, the user needs to turn on the audio switch and select MIC input in the Recording Settings menu;
   f) Audio output cable is not connected or incorrectly connected;

6.5. Questions on Connection

6.6. Questions on Alarm

1) Q: Invalid alarm triggering?
   A: This may be caused by the following causes:
   a) Incorrect settings on the Alarm Settings menu; such as failure to enable alarm for designated alarm input and incorrect output level configuration;
   b) Incorrect connection of alarm input or failure to connection alarm input;
   c) Incorrect signal level of the triggering source of alarm;
2) Q: Invalid alarm output?
   A: This may be caused by the following causes:
   a) Incorrect connection by the user;
   b) Incorrect menu settings, such as failure to enable alarm output or incorrect output level configuration;

6.7. Others

1) Q: The power indicator is not on when the device is powered on?
   A: This may be caused by the following causes:
   a) The voltage falls beyond the range between 8V and 36V;
   b) The fuse on the power input wire is burnt out;
   c) The ignition signal is not connected;

2) Q: The ERR indicator is on?

A: This may be caused by the following causes:

a) Neither the SD card nor the hard drive is inserted, or the SD card and hard drive are inserted while the system partitioning is abnormal, causing failure of the device in recognizing; 2) Disk reading/writing error;

b) Abnormal operation of the SCM;

3) Q: The SD card indicator is not on or flashing?

A: There are three states of the SD card indicator: on, out and flashing, respectively indicating the following:

Out: The SD card not inserted or failure of the device to recognize the SD card;

On: The SD card exists but not the storage for the current recording

Flashing: The SD card exists and is the storage for the current recording;

4) Q: The hard drive indicator is not on or flashing?

A: There are three states of the hard drive indicator: on, out and flashing, respectively indicating the following:

Out: The hard drive not inserted or failure of the device to recognize the hard drive;

On: The hard drive exists but not the hard drive for the current recording;

Flashing: The hard drive exists and is the disk of the current recording;

5) Q: Both the SD card indicator and the hard drive indicator are on while not flashing?

A: This may be caused by the following causes:

a) The device considers no current recording tasks according to the menu settings by the user;

b) Both the SD card and the hard drive are full while the auto overwriting function is disabled in the menu;

6) Q: Blank screen of some channels?

A: This may be caused by the following causes:

a) This channel is not connected to the video;

b) The camera connected to this channel is damaged or abnormal;

c) If the camera is powered through the device, it may be possibly that the voltage of the device cannot ensure normal operation of the camera;

d) Poor contact or damage of the cable connecting this channel;

7) Q: No GPS signal?

A: This may be caused by the following causes:

a) GPS antenna is not connected;

b) GPS antenna is placed indoors;

c) GPS module is damaged;

d) The software is for 7001 and does not support this function;

8) Q: Abnormal G-Sensor data?

A: This may be caused by the following causes:

a) G-Sensor not calibrated. G-Sensor should be calibrated in the settings menu;

b) The software is for 7001 and does not support this function;

c) G-Sensor is damaged;

9) Q: Video files cannot be played back on the PC?

A: This may be caused by the following causes:

a) Video file directory or video files are not selected. Please select the video file directory before playback;
b) Local video files are damaged, causing failure in reading;

10) Q: The remote controller does not work?
A: This may be caused by the following causes:
c) No battery in the remote controller;
d) Remote controller damaged;
e) Device failure;

11) Q: The map is not displayed during the playback?
A: This may be caused by the following causes:
a) The network cable for the PC for playback is not connected;
b) The PC is unavailable for accessing the network although the network cable is connected;

12) Q: How does the overwriting function of video files work when recording video on the SD card and the hard drive?
A: The SD card and the hard drive will respectively record video circularly, and when the SD card and the hard drive are full, the oldest video files in the card or disk will be deleted.

13) Q: Are remote on/off operations supported?
A: Not supported at present, but possibly.

14)
Q: Are there suggestions on the priority of SD card? Is SDHC card supported?
A: Kingston SD card is mainly support at present, and SDHC card is also supported.

6.8. FCC Note

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
-Consult the dealer or an experienced radio/TV technician for help

Additional label with the words Contains FCC ID: QISME909U-523 shall be applied and visible and from the outside of the end product.

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

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

FCC RF Radiation Exposure Statement:
This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This device and its antenna must fixed installed and not be co-located or operating in conjunction with any other antenna or transmitter except in accordance with the FCC multi-transmitter policy.
To comply with FCC RF exposure compliance requirements, the antennas used for this transmitter must be installed to provide a sufficient separation distance (typically min 20 cm) from all persons.