

# ES-M525 MDVR

## User Operation Manual V1.0

### Notation Convention

For the symbols that appear in the document, the description is as follows.

Symbol	Description
	Descriptive texts indicate supplements and explanations to the main text.
	Attention texts indicate to remind users of some important operations or prevent potential injuries and property damage.
	Warning texts indicate potential risks. If not avoided, they may cause injury, equipment damage, or business interruption.
	Dangerous text indicates that there is a high potential risk. If not avoided, it may cause serious personal injury or death.

### Precautions for Safe Use

#### Note

- ◆ Please read the equipment operation manual carefully before using the equipment, and strictly follow the operation instructions during operation.
- ◆ Wireless network antennas and satellite positioning antennas must be installed near the roof or windshield of the car window and be protected from lightning, and ensure that no objects are covered or blocked.
- ◆ This device is a precision electronic device. There are no user-serviceable parts inside. Please do not disassemble or assemble it privately.

If you have any questions or need any help, please contact the technical staff of our company or authorized distributors.

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## FCC Statement

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.

Caution: Any changes or modifications to this device not explicitly approved by manufacturer could void your authority to operate this 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.

## RF Exposure Information

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.

## Chapter 1 Safety Warning

**In order to enable users to use this series of products in a long-term, safe and satisfactory manner, please read the following warnings before installing and using the products:**

- ① All installation and maintenance must be performed by professional technicians
- ② The normal working voltage range of the equipment is DC 9V~36V. Please pay attention to the power input and the stability of the power input circuit. The output cannot be short-circuited.
- ③ The device outputs 12V voltage externally, which is only used for camera power supply, and no non-recommended equipment should be connected
- ④ Correctly connect the ground wire of the device to the ground wire of the vehicle to form a loop
- ⑤ The equipment should be installed in a dry and ventilated environment, avoid moisture, rain, and the vehicle's clean flushing position, and keep the equipment away from heat, dust and strong magnetic fields
- ⑥ Please install the equipment on the vehicle where the vibration is weak as much as possible to improve the stability of the equipment and extend the service life
- ⑦ No sundries can be stacked within 20cm of the installation equipment, and no heavy objects can be placed under pressure to ensure a heat dissipation environment
- ⑧ The storage devices and modules on the device do not support Hot Swap. Please do not plug and unplug the storage devices or modules when the device is powered.
- ⑨ Please regularly maintain the storage device hard disk or SD card: copy the video data to the computer and format it to protect and extend the performance and service life of the storage device
- ⑩ Do not open or disassemble the device without the guidance of professional and technical personnel

## Chapter 2 Product Overview



### 2.1. Product Description

ES-M525 series product is a cost-effective and extensible device specially developed for vehicle video surveillance and remote monitoring. It adopts high-speed processor and embedded operating system, combined with the most advanced H.265 compatible H.264 video compression/decompression technology, network technology, GPS Beidou positioning technology in the IT field. ITH-M525 series products can realize 5-channel AHD720P/1080P full-frame recording, CIF/HD1/D1/AHD720P/ADH1080P multiple recording formats can be selected, local recording and wireless data uploading, car driving information recording, and central software can realize alarm linkage. The central monitoring, remote management and playback analysis of the company are committed to the expansion of the Internet of Vehicles.

ITH-M525 series products have simple appearance, beautiful appearance, super anti-vibration, flexible and convenient installation, powerful functions and high reliability.

## 2.2. Product Main Functions

Functional Category	Function Description
Wireless communication	4G realizes remote real-time monitoring, video download, parameter configuration, remote upgrade, remote control and other data communication
Video Cassette	4AHD720P/1080P, backward compatible with ADH720P/D1/HD1/CIF Support PAL system, NTSC system; Video OSD overlay, such as time, channel name, license plate number, GPS, vehicle speed... Support storage device full automatic coverage and alarm recording file protection
Storage device	Support pre-allocated file system storage to ensure that video files are not lost Dual TF card storage, support single card 256GB capacity
Replay	Support local 4-channel audio and video synchronous playback Support PC playback analysis tool Support remote search and playback Support traditional playback functions such as play, pause, frame play, slow play, fast forward, and rewind
Driving Record	It can record driving information such as vehicle speed, GPS data, temperature and fuel level; The switch value can be collected through the reserved 4 switch value input ports; Support local recording and viewing of driving information Support remote real-time upload and historical record search and view

## 2.3. Product Specifications

### Product functional specification list

### ITH-M525 series parameter list

Model	ITH-M525	ITH-M525-P
Operating System		Linux 3.10
Hardware Platform		HiSilicon (Hi3520D)
Number of Cores		Dual-core ARM Cortex A7
CPU Frequency		1.3GHz
Running memory		512M RAM
Storage Memory		2*TF, single card max support 256GB
Driver Face Recognition	Not support	Support
Driving Behavior Analysis	Not support	Support
ADAS	Not support	Support
Video Input	4CH AHD1080P/720P	4CH AHD1080P/720P (Including 1CH face recognition + 1CH ADAS)
Video Encoding		H.265/H.264 compatible
Encoding Capabilities		1080P 60F or 720P/120F
VOIP Intercom		support (optional, requires DMS camera)
Gravity Sensor		3-axis gyroscope
Switch		4CH input/1CH output
Interface		1 piece
RS485 Interface		1 piece
Network		4G Full Netcom

Standard	
WIFI	Built-in wifi module, with APP installation and commission
Upgrading Method	Supports upgrading via TF card and remote platform
Power Consumption	<6W (no peripherals)
Input Power	Wide power supply design, support DC9~36V
Operating Temperature/Humidity	-25°C~75°C/10~95%RH
Static Protection	Withstand 6KV contact discharge, 10KV air discharge
Thermal Protection.	Cooling holes are reserved on both sides, and the metal base for heat dissipation
Dimensions	90mm*90mm*30mm(L×W×H)

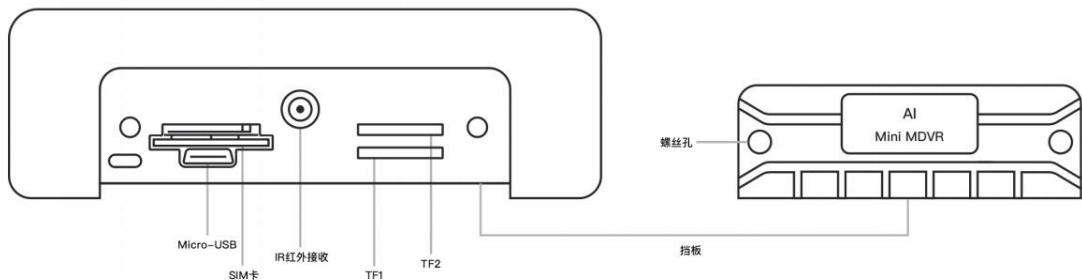
## 2.4. Out-of-Product Features

### 2.4.1. Overall Appearance



## I. Infrared and Card Slot

The front panel functions of the device are shown in Figure 1-1.



**Figure 1-1 Front Panel Interface Diagram**

The external buttons and interface diagram on the front panel are shown in Figure 1-2.

**Table 1-1 Front Panel Interface Description**

Number	Denomination	Definition
/	Card Board	Fix with screws
1	Communication	4G communication card data transmission
2	Micro-USB	Upgrade debugging interface
3	IR Infrared	Receive remote control
4	Storage	TF card storage video

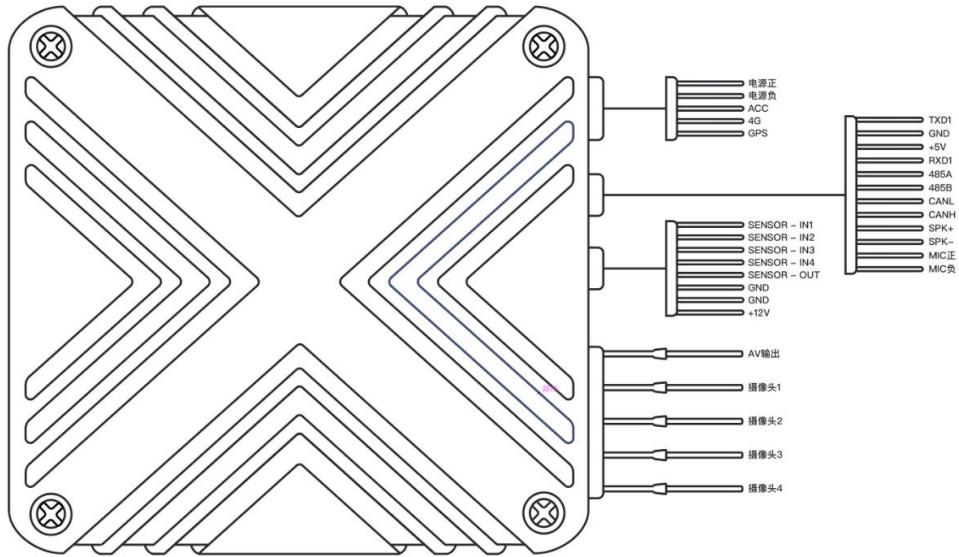
### ?

### Description

"/" in the above table means no mark

## 2.4.2 Rear Panel Interface

The interface on the rear panel of the device is shown in Figure 1-2



**Figure 1-2 Rear Panel Interface**

The description of each interface on the rear panel of the device is shown in Table 1-2

Table 1-2 Rear Panel Interface Description

Number	Panel Interface	Definition
1	Power	Support DC9-36V wide voltage
2	4G	4G antenna interface
3	GPS	GNSS positioning interface
4	AV/IN1-IN2	(720P\1080P) Audio and video channel support (720P\1080P)
5	AV/IN3-IN4	Audio and video channel support (720P\1080P)
6	AV—OUT	CVBS audio and video output interface
7	EXT、	Extended RS485, RS232, CAN signal, MIC signal, impulse, SPK+ power amplifier, including +12V voltage output
8	EXT.2	Expansion interface, input and IO_IN*4

## Chapter 3 Installation Instructions

### 3.1 Installation Considerations

#### Basic Requirements for Installation

All electrical work must comply with the latest electrical regulations, fire regulations and related regulations in the place of use.

Be sure to turn off the power of all related equipment during installation.

#### Description

#### Cable Requirements

It is recommended that the installation cable is in the same direction as the original vehicle cable, and the wiring shall be installed along the original trunking of the vehicle and bound to the original vehicle cable.

Make the wiring neat and concealed to prevent the driver and passengers from breaking.

### 3.2 Installation Environment

#### Preparation Before Installation

Take the device out of the package, check that the device and accessories are not damaged or missing, and then start installing the device.

#### Attention

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Be sure to disconnect the power supply when disassembling, wiring, etc.

#### Environmental Requirements

Before the recorder is installed, it is necessary to carry out the deployment reconnaissance and planning of the installation location and wiring to ensure the safety and stability of the power supply and wiring.

At the same time, the convenience and rationality of wiring need to be considered.

**Anti-vibration:** Choose a place with weak vehicle vibration (such as behind the driver's seat or behind the passenger's seat), away from the engine.

**Heat dissipation:** Ensure that the equipment is far away from the heat source on the vehicle and

installed in a well-ventilated location to facilitate heat dissipation.

**Space:** Reserve the space needed for air circulation, heat dissipation, flip cover, etc.

Placement angle: Place the forensic host horizontally. Any other angle installation method may damage the equipment.

**Fixing:** It is recommended to use the national standard M4 combination screw to fix it. All fixing screws must be tightened in place to avoid loosening after long-term driving and bumping, causing the recorder to fall

### **Description**

The specific installation position is adjusted according to the on-site model, and it is necessary to watch the surveillance video and view the vehicle status easily

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## **3.3 Installation Tools**

Please prepare anti-static gloves and a Phillips screwdriver before installation.

## **3.4 Install Equipment**

Please bring your own SIM card and SD card for installation.

### **3.4.1 Install TF Card**

The TF card is located on the front panel of the recorder and is used to store data. The installation steps of the TF card are as follows:

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### **Attention**

Please power off before unplugging and inserting the TF card

---

Insert the TF card and press the TF card to the bottom. After hearing a click, the installation is successful.

### **Description**

If you need to insert a TF card into the card slot 1, please insert it with the notch to the left and the

metal piece facing up. The TF card slot 2 is inserted in the opposite way to the TF card 1.

### **3.4.2 Install 4G Card**

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#### **Attention**

**Please power off before unplugging and inserting the SIM card**

---

If you choose to use the 3G/4G function, please install the 3G/4G card and 3G/4G antenna. The 3G/4G card slot is located on the front panel of the recorder and the antenna interface is located on the rear panel. The installation steps are as follows:

- ✓ Insert the 4G card into the card slot with the metal downward notch facing to the left, and gently press the 3G/4G card to the bottom. After hearing a click, it means the installation is successful.
- ✓ Fix the front panel with screws

### **3.4.3 Install the Antenna**

Tighten the 3G/4G antenna nut at the antenna interface to complete the installation.

#### **Description**

For positioning or navigation, please install the satellite positioning antenna in the same way.

Please install the 3G/4G antenna and positioning antenna in the proper position according to the actual situation on site, and complete the installation by connecting the cable through the corresponding interface of the device. The antenna installation instructions are as follows:

- ① The antenna must be placed vertically with the signal receiving end facing upward.
- ② When the remaining cable is long, it can be rolled into a loop and bundled to avoid affecting the received signal.
- ③ The 4G antenna is installed on non-metallic objects such as the windshield or seat back in the car, and a distance of more than 50 cm from metal objects.
- ④ The positioning antenna is recommended for roof installation

- 1) In case of special circumstances, when the positioning antenna needs to be installed in the car, the following specifications must be followed.

- 2) Installed on the lower edge platform of the front windshield of the vehicle and fixed with neutral silica gel.
- 3) When adjusting the antenna position, ensure that at least 4 satellites have a signal strength of more than 35 dB.

## Chapter 4 Wiring Instructions

### 4.1 Power Wiring

#### ! Attention

- In order to ensure the correct wiring, please ask the vehicle manufacturer for the connection method of the start switch before connecting, so as to prevent the wrong connection and damage the equipment.
- When taking electricity from the car, please install the car fuse on the positive pole of the power supply. Please consult the car manufacturer for the specific installation method.

The power connection mode of the recorder can be selected according to the shutdown operation.

- If you need to delay the shutdown after the vehicle is turned off, please select the delayed shutdown connection.
- If you need to shut down in a fixed period of time, please select the timing switch connection

#### ? Description

Please refer to the "Operation Manual" for the function configuration of timer switch and delayed shutdown.

#### 4.1.1 Delayed Shutdown

The power supply of the host has three red, black and yellow wires. The red and black wires are directly connected to the car battery, the red wire is connected to the positive electrode, the black wire is connected to the negative electrode, and the yellow wire is connected to the ignition wire (ACC). If the red wire and the yellow wire are tested indoors, they can be connected together. Positive pole, then directly use DC12V power supply,

- Detect the power cord connection is normal, normal start then the power lamp is blue.
- Connect the output line AV-OUT to the display and connect the corresponding equipment to the

terminal to confirm whether the connection is correct

The following figure shows the test wiring and the actual loading power supply wiring:

**Note: ITH-M525 has no physical switch button, it can be turned on when the power is turned on, and turned off when the power is disconnected**

#### 4.1.2 Timer Shutdown

For timing shutdown configuration, please refer to "Operation Manual"

### 4.2 Alarm Input

When the recorder is required to perform alarm linkage for vehicle information (such as opening and closing doors, etc.), alarm input wiring and configuration can be performed.

Alarm Input (ALARM IN): Connect to the vehicle's corresponding high and low level signals as the recorder alarm input signal, which can be linked to the alarm output for alarm.



#### Description

For the function configuration of the alarm input, please refer to the "Operation Manual".

### 4.3 Alarm Output

The device has 4 alarm inputs and 1 alarm output interface. The alarm input detection is all level detection, which can be connected to various vehicle driving states, such as brake, steering, vehicle switch, alarm button flat output, and the drive capacity is 200mA. To connect a device with a higher power, an external relay must be connected. The alarm output wiring diagram is shown in Figure 2-8. When the brake plate is stepped on, the MDVR can detect the high level, otherwise it will be low, and the alarm output is Electricity

### 4.4 IO-COM

When the recorder is required to link the braking, steering and reversing actions of the vehicle, IO-COM wiring and configuration can be performed. ITH-M525 supports IO alarm 4CH inputs and 1CH output, and CAN bus 1CH input.

Step 1: The alarm I/O interface is connected to the extension cable.

Step 2: Connect the IN interface to the vehicle braking, reversing and steering information collection interface.



### ?

#### Description

For IO related function configuration, please refer to "Operation Manual".

## Chapter 5 Active Safety Function Details

### 5.1 DMS Driving Analysis System

- Distracted driving, identifying bad driving behaviors such as watching the driver from left to right.
- Make phone calls, identify the calling behavior of the driver.
- Smoking, identify the smoking behavior of the driver.
- Closing eyes, Identify the driver's eye-closing behavior while driving.
- Yawning, identify the yawn behavior of the driver while driving.
- Voice alarm prompts for illegal behaviors without seat belts.

### 5.2 Face Recognition

- Driver identification.
- Driver changes, detect and record driver change events.
- Driving time statistics, realizing overtime driving alarm.
- Voice alarm for drivers suspected of dangerous driving behavior.

## 5.3 ADAS Lane Safety Warning

- FCW (Forward Collision Warning), which judges the potential collision risk by sensing and calculating the distance between the vehicle and the preceding vehicle during driving, and immediately issues a warning.
- Safe distance warning, the distance of the vehicle ahead is detected by the ADAS algorithm, when the vehicle is too close to the vehicle in front, the driver will be warned immediately
- LDW (Lane Departure Warning) detects the position of the vehicle in the lane through the ADAS algorithm, and warns the driver when the vehicle presses or is about to press, to prevent traffic accidents caused by lane departure.

## Chapter 6 Terminal Operation Guide

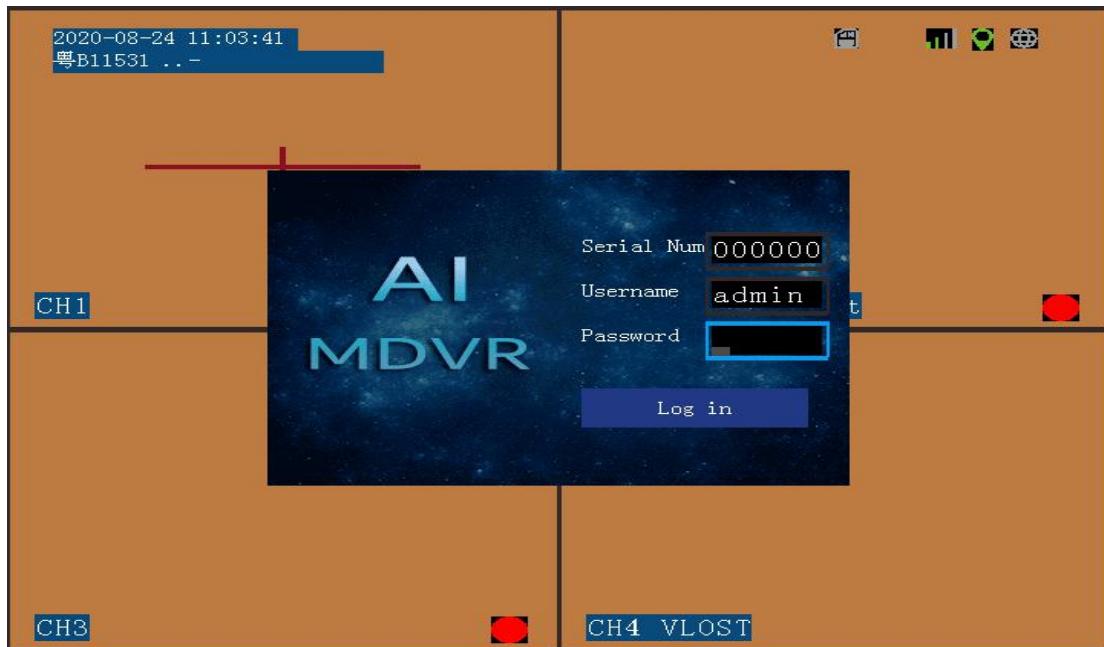
### 6.1 Remote Rontrol Function Keys Guide

LOGIN	When the recorder has a password, press the LOGIN button to enter the password. Since the system does not have recovery and reset functions, please remember the password.
	Power button
0-9 Number Keys	Switch to single-screen display, press number keys on the setting interface to input directly 0 and 9 keys take into account the volume, brightness and other functions to quickly set the entrance
INFO	Through the shortcut key operation under the screen, you can check the module status, alarm status, version number and recording disk status

田 key	There are 4 screens by default when starting up. Under the monitoring screen, it is used to switch between four screens, eight screens and single screen; press the field key to display 8 screens; press the number keys 1, 2, 3, 4, 5, 6, 7, 8 Switch to single screen CH1, CH2, CH3, CH4, CH5, CH6, CH7, CH8 respectively	
	Up, down, left and right arrow keys  The left and right arrow keys have both playback video fast forward and fast reverse functions. There are four levels: 2X, 4X, 8X, 16X;The default 4 screens will be displayed at boot, press the up and down keys to switch between 1-4 and 5-8 channels.	
【OK】	Enter Keys	
	Pause playback and single-step playback keys when playing back image data, each press can play one step, press the playback button to return to normal playback speed; Press the test mode selection page once in the standby interface;	
PLAY	Start playback button (the still picture is displayed when the picture is paused);	
RETURN	Return to the previous submenu. Finally exit the setting menu and exit to the monitoring screen;	
CANCEL	Delete key/backspace	
	Enter the backspace and forward keys in the edit box; volume control keys	
F1、F2、F3、F4	Spare key	

## Chapter 7 System Operation and Settings

### 7.1 User Login



- The set password switch is turned on, press the login button to pop up the login menu, the device number is displayed by default, and the entered password is used to distinguish the user identity, enter the correct password and press the login button to enter the setting interface
- User identities are distinguished by passwords, which are divided into administrators and ordinary users. Administrators have all permissions. Ordinary users can only view permissions but cannot modify them.
- The set password switch is turned off, press the login button to directly enter the setting menu, the login interface will not pop up

### 7.2 System Operation and Settings

#### ?

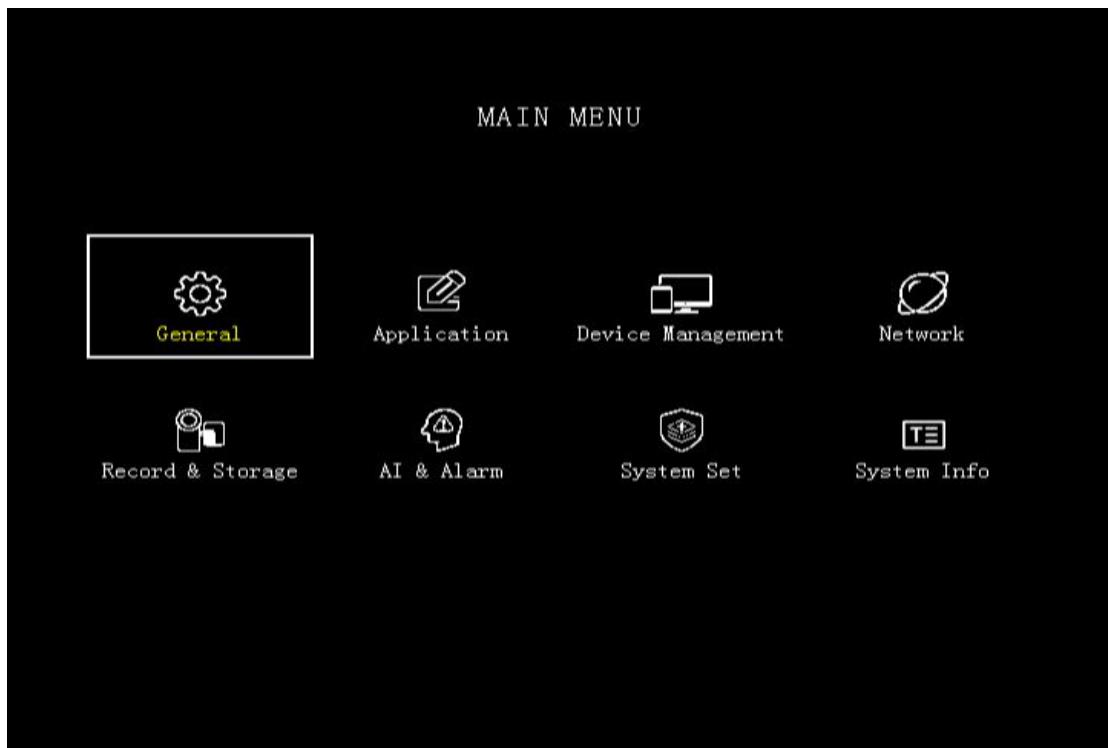
#### Description

- All the settings of the following submenus must take effect after confirming [Save], otherwise the settings will be invalid.
- Enter the menu interface (including video query), the device stops recording.

- Digital input can be entered directly by pressing the digital key on the remote control or by using a soft keyboard. Alphabetic and non-numeric input must be achieved with a soft keyboard

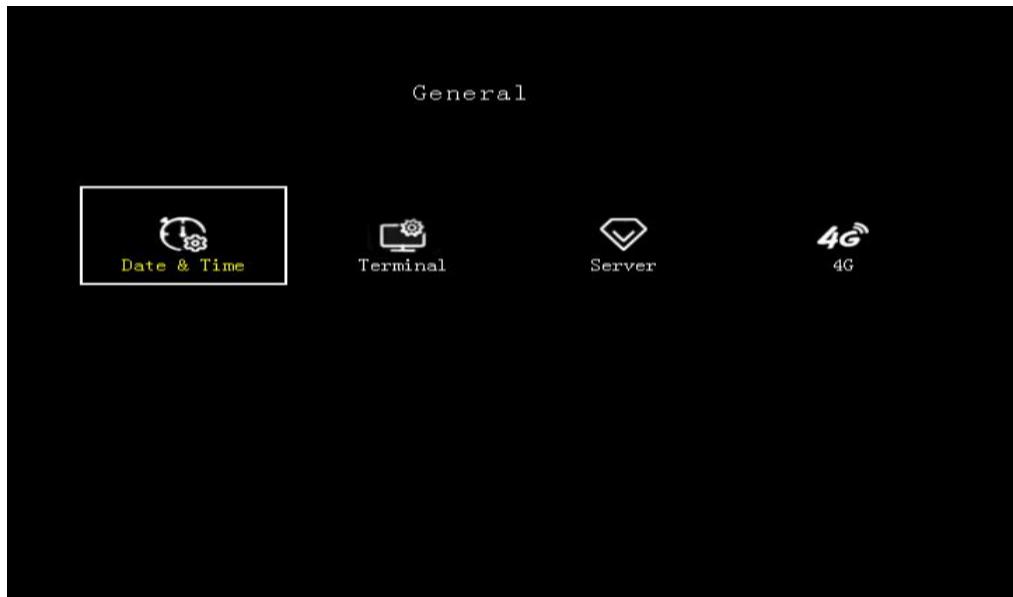
### 7.2.1 Main Menu

Display all main setting items: general settings, development and application, device management, network management, record and storage, AI and alarm, system and security, system information



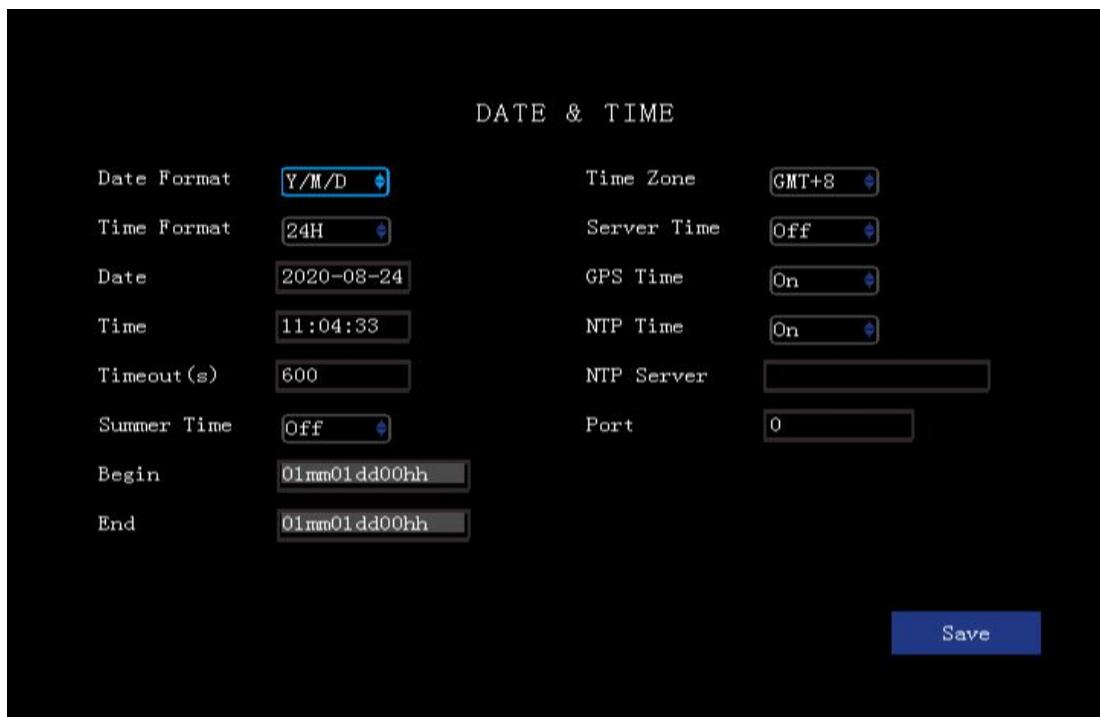
### 7.2.2 General Settings

Including sub-menus: Date and Time, terminal management, Server, 4G setting



### 7.2.3 Date and Time

You can manually set the time, and set different time calibration methods



- Date format: three formats, namely year/month/day, month/day/year, day/month/year, press [OK] to switch.
- Date: Displayed in the format of the selected date, manually proofread with the numeric key.
- Time: divided into minutes and seconds, with the number key can be manually proofread.

- GPS time calibration: On/off, when the GPS signal is valid, the GPS time calibration is changed to when the GPS status is normal, the system will use the UTC time in GPS for time calibration, and time calibration will be performed every 2 minutes
- Server time calibration: On/off, the server needs to have time calibration server module; the current default supporting server does not have time calibration service
- NTP time calibration: On/off, the NTP time calibration is changed to when the network is normal, the system will perform time calibration to the built-in NTP server.

Note: The server time calibration is temporarily not enabled

- Daylight Saving time: On/off, start and exit daylight Saving time by region.
- Operation timeout (30~3600s): After successful landing, if the remote control key is not received within the set time, exit to the preview screen.

#### 7.2.4 Terminal Management

Mainly used to modify the mobile phone number and some vehicle information, used for reporting platform

TERMINAL

Phone Mode	Default	Driver Name	
Phone Num	101100200815	Driver Num	
Plate Num	粤B11531	Fail Qty	
Vehicle VIN		Serial Num	
Company			
Telephone			
License			
Route Num			
R-Describe			

Save

- Phone number type: press the [OK] key to enter
- Remaining fields: Press OK keypad for input (user defined)
- **Description**

The installation terminals report to different platforms with different ID Numbers. The terminals report to beidou positioning video platform, and the mobile phone number is the unique ID of the platform when the platform adds vehicles

### 7.2.5 Server settings

Connection Center Server Settings

SERVER			
Enable	Protocol Type	Host Name/IP	Port
On	BB Proto Main	60.247.145.250	8100
Off	BB Proto Backup	by.fjxbpt.cn	7788
On	Server 3		0
On	Server 4		0
Off	Server 5	60.247.145.250	8100
On	FTP Upgrade	120.24.89.199	21
On	Self-defined1		0
On	Self-defined2		0

Username: SBH    Password: 123

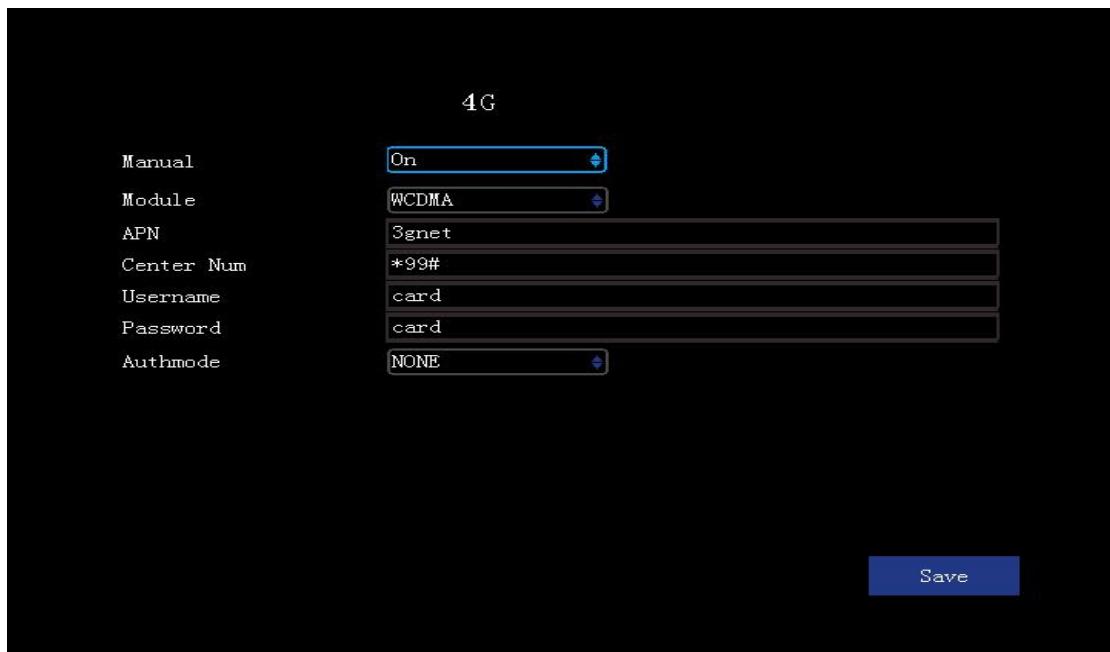
Next    Save

- BB proto main: Report the IP address and port of the BB proto main.
- BB proto backup: Report the IP address and port of the BB proto backup.

Note: The IP and port reported by the primary and secondary servers cannot be set to be the same

- BB passthrough: Reporting server that only forwards data and does not process data.
- ITH: Private protocol report server.
- ITH Video: Private protocol report server.
- FTP upgrade: By setting up FTP on the corresponding server, and then inputting the corresponding address and user name in its terminal, you can remotely download the upgrade file and the corresponding upgrade software to the server.

### 7.2.6 4G Settings

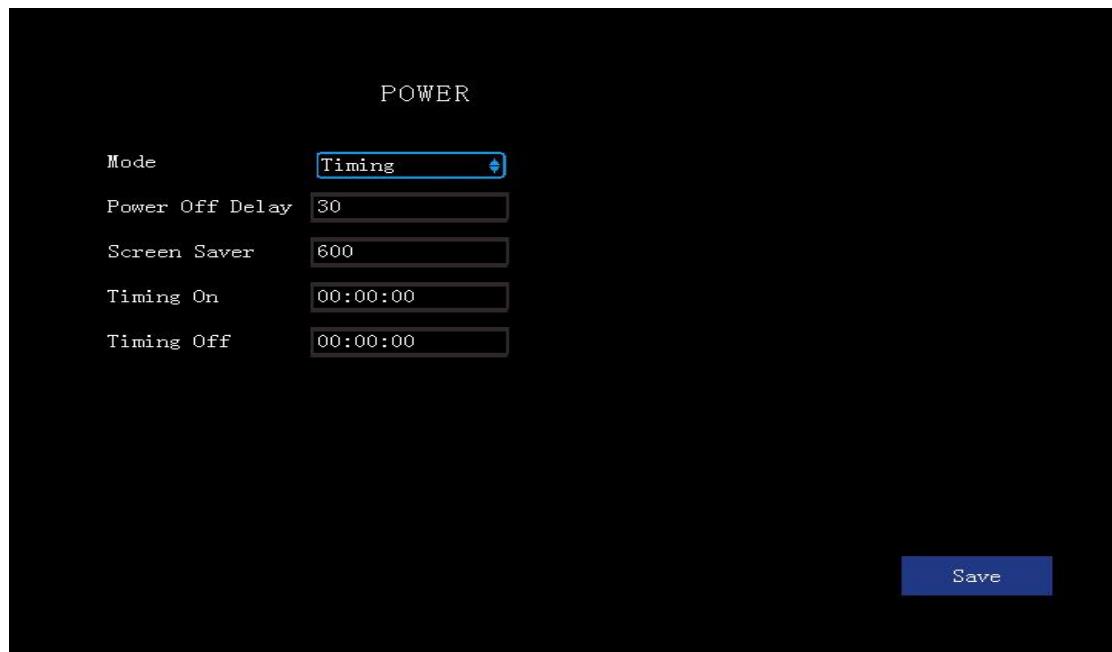


- Select the module system, and the dial-up parameters default to the Chinese domestic public network dial-up parameters.
- Access point information can be entered on the private network.

### 7.3 Development and Application

Including submenu: switch machine, cloth standard parameters, national standard parameters, log query, configuration management.

### 7.3.1 Power On /Off Settings



- Mode: Ignition mode/timing mode/standby mode/sleep mode, press [OK] to switch and select.

Ignition mode: The car key control device turns on and off, turns on the device starts and turns off the device enters the standby state.

Timing mode: The device starts to work normally at the set timing power-on time, and the device stops working and enters the standby state at the timing power-off time.

Standby mode: When ACC is closed, the terminal 4G and GPS are online, but no video is recorded.

Sleep mode: device.

- Delayed shutdown: The delay time will only be activated in the ignition mode. After the car key is turned off, the device will enter the standby state after a long time delay in normal operation.
- Timing boot: The set timing boot time.
- Timing shutdown: Set the timing shutdown time.

### 7.3.2 Bubiao Protocol

Bubiao Protocol Parameter

Protocol Type	Beidou	Upload Main-stream	Off
Record Version	2012	Heart Interval	5
Authcode			
Province ID	13	Report Interval	5
City ID	0	GPS Angle	45
Plate Color	1	Snapshot Interval	0
Device Type	MB-CARMHI1	Transmission	Close
Terminal ID	0000001	Connect Type	Dual Server
Manufacturer ID	00000	Bubiao Version	2011
Save			

- Protocol type: Press [OK] to select Beidou and 808.
- Recorder version: Press [OK] to select 2003 and 2012.
- Upload the main stream: start/close the stream uploaded to the platform server.
- Heartbeat interval: upload to the platform to refresh information according to the set time.
- Reporting interval: Upload to the platform to report the device status according to the set time.
- Connection type: Set up report server or dual server as required.
- The remaining fields can be set according to personal needs.

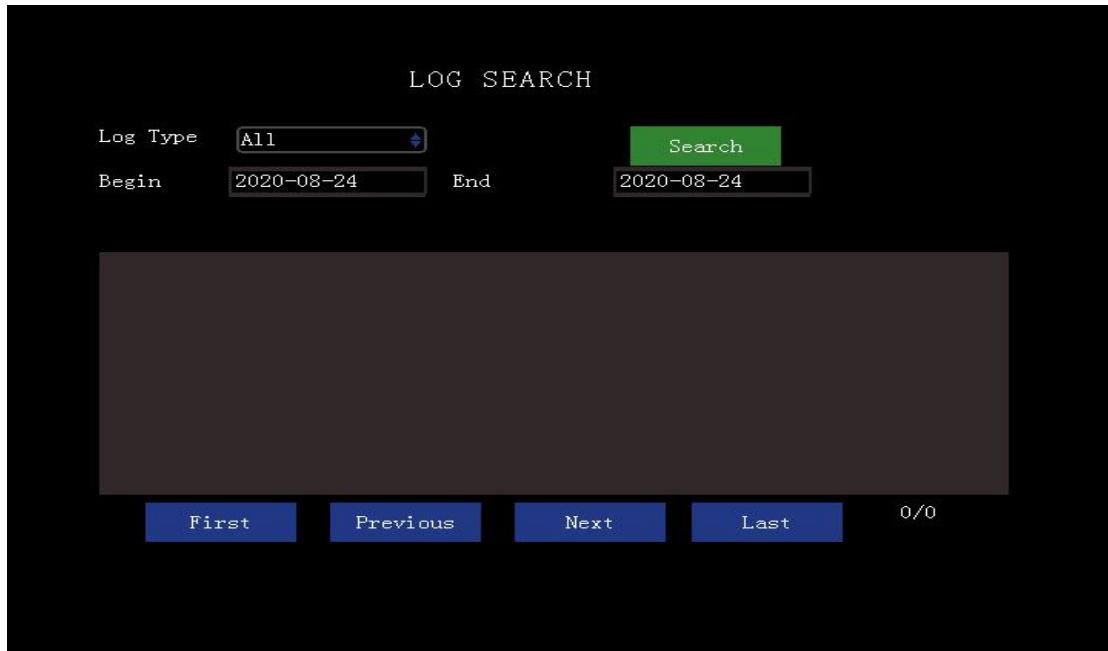
### 7.3.3 National Protocol Parameter

National Protocol Parameter

Upload Main-stream	Off	Product Model	ITH-Q7
Heart Interval	60	Produce Date	2019-08-01
Report Interval	60	Product S/N	1
Plate Sort	White Wd/Blue Plate	Install Time	2019-08-08
Plate Describe	大型汽车	Mileage	1500
Vehicle Type	Public Bus	CCC Code	C001079
Vehicle Describe	公交车	TCP Off Time	30
Record Alarm Value	0	Save	

- Upload Main Stream: turn on/off the stream uploaded to the platform server.
- Heart Interval: upload to the platform to refresh the information according to the set time
- Report Interval: Upload to the platform to report the device status according to the set time.
- Plate Sort: Press [OK] to select unknown plate, blue card and white character, yellow card and black character, black card and white character, white card, police car, military vehicle.
- Plate Describe: Press [OK] to select unknown vehicle, large passenger car, medium passenger car, small passenger car, tractor, bus, mini car.

### 7.3.4 Log Search



- Begin and End: Select and search to view the log by entering the time.
- View the host running log in the time display list.

### 7.3.5 Parameter Management



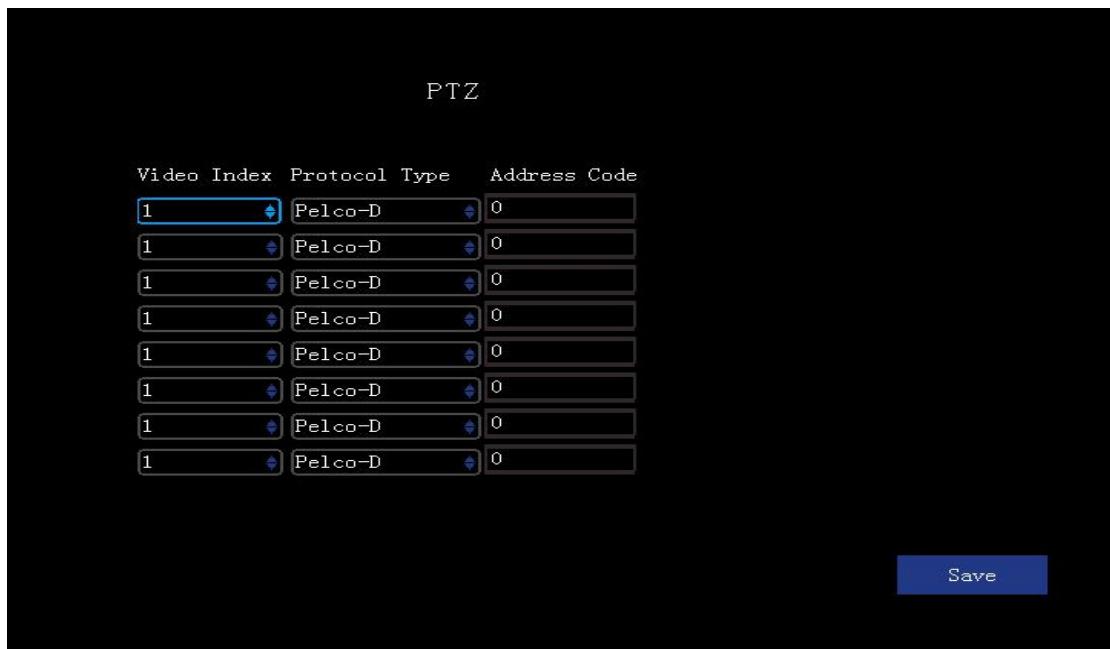
- Export parameter: Export device configuration files to SD card, and import parameter configuration files that can be exported to other devices of the same version.

- Import parameter: Import the configuration file from the SD card to the device, which can simplify the manual configuration of parameters for multiple devices that need the same settings.
- Reset: restore configuration parameters to factory settings.
- Export log: Export device log to SD card

## 7.4 Equipment Management

For the settings of external devices connected through the serial port, the sub-menu includes: PTZ, serial port management, and other peripherals.

### 7.4.1 PTZ



- Protocol type: Currently only two protocols are supported: PELCO-D/PELCO-P. Set the baud rate, data bit, stop bit, parity, and address of the PTZ according to the specific PTZ.
- After setting the PTZ parameters, return to the direct screen, switch to the channel of the PTZ screen, and press the [F2] on the remote control to enter the PTZ control.

### 7.4.2 Serial Port Management

1\*RS232 and 1\*RS485 serial port connect peripheral parameter configuration.

SERIAL PORT

Port	Type	Baud rate	Data	Stop	Verify	Flow	limit
485-arm	Printer(E26)	9600	8	1	None	None	None
232-mcu	Close	9600	8	1	None	None	None
485-mcu	DVR Serial Port	115200	8	1	None	None	None
485-mcuex	Close	9600	8	1	None	None	None

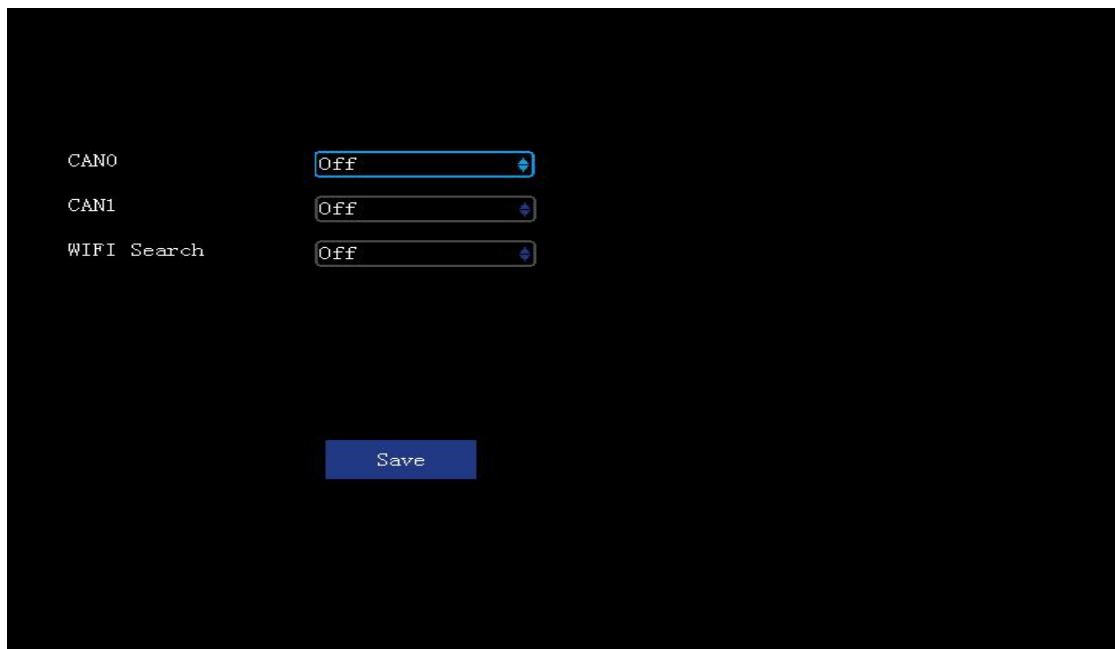
**Save**

- 232 Serial port: The terminal belongs to the serial port of short-distance transmission channel (generally connected with card reader and printer).
- 485 serial port: The terminal belongs to the long distance transmission channel serial port (generally connected to the PTZ).

Select the peripheral connected in the corresponding serial port, and baud rate and other automatic display as the default parameters. If the parameters used are different from the default parameters, the user can manually modify and save the peripheral to use.

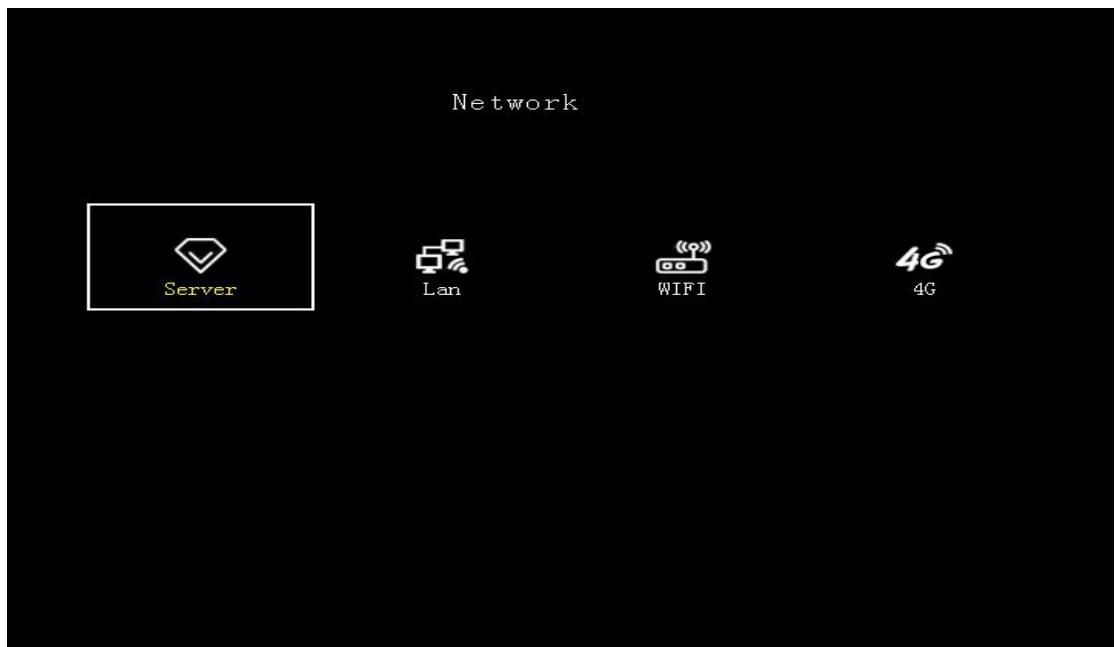
#### 7.4.3 Other Peripherals

M525 do not currently support access CAN interfaces and WIFI sniffer



## 7.5 Network Management

Submenu includes central settings, wire management, WIFI management, and 4 G settings

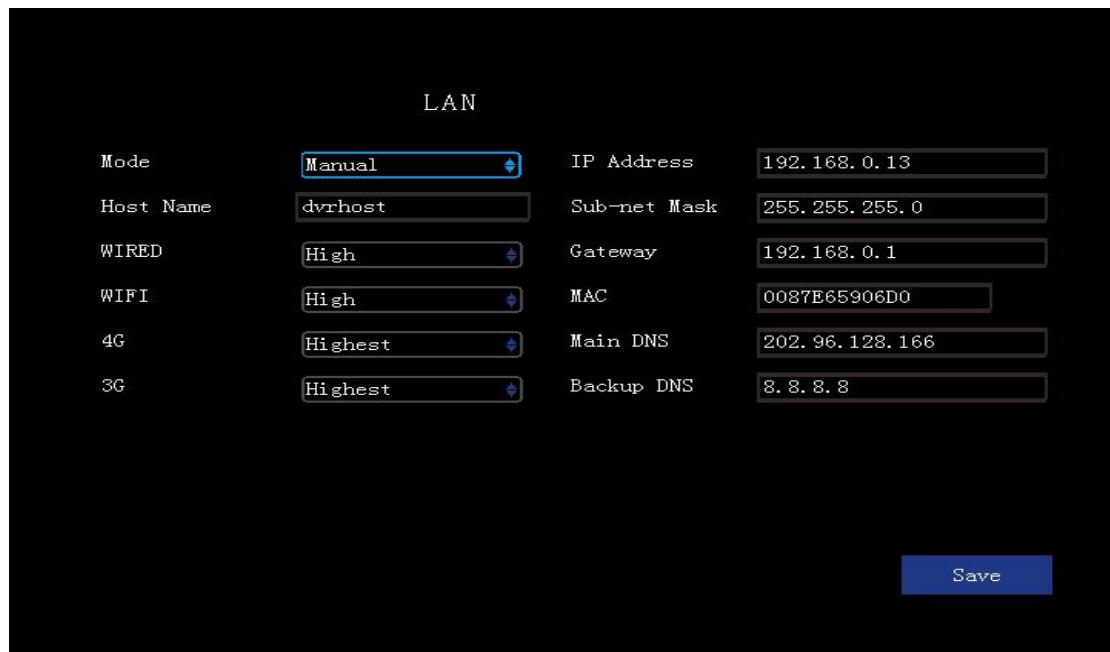


### 7.5.1 Central Settings

See 7.2.5 for details.

### 7.5.2 Lan Management

Network priority setting and local IP setting



The screenshot shows a configuration interface for the LAN settings. The title 'LAN' is at the top. The configuration table has two columns: 'Mode' and 'Setting'. The 'Mode' column includes 'Host Name', 'WIRED', 'WIFI', '4G', and '3G'. The 'Setting' column includes 'IP Address', 'Sub-net Mask', 'Gateway', 'MAC', 'Main DNS', and 'Backup DNS'. The 'IP Address' is set to 192.168.0.13, 'Sub-net Mask' to 255.255.255.0, 'Gateway' to 192.168.0.1, 'MAC' to 0087E65906D0, 'Main DNS' to 202.96.128.166, and 'Backup DNS' to 8.8.8.8. The 'Mode' dropdown for 'Host Name' is set to 'Manual'. The 'Mode' dropdown for 'WIRED' is set to 'High'. The 'Mode' dropdown for 'WIFI' is set to 'High'. The 'Mode' dropdown for '4G' is set to 'Highest'. The 'Mode' dropdown for '3G' is set to 'Highest'. A 'Save' button is located at the bottom right.

Mode	Setting
Host Name	dvrhost
WIRED	High
WIFI	High
4G	Highest
3G	Highest
IP Address	192.168.0.13
Sub-net Mask	255.255.255.0
Gateway	192.168.0.1
MAC	0087E65906D0
Main DNS	202.96.128.166
Backup DNS	8.8.8.8

- The M525 series supports access to wired networks.
- WIRED: Wired network reports server priority settings.
- WIFI: WIFI reports the priority setting of the server.
- 4G: 4G signal report server priority setting.
- 3G: 3G signal reports server priority settings.

#### Description

Note: the network priority setting, the system decides which network to use when multiple networks coexist according to this setting

### 7.5.3 WIFI Management

WIFI module connected to wireless router and device parameter setting

WIFI

Mode	Default	IP Address	192.168.0.10
Enable	On	Sub-net Mask	255.255.255.0
Authmode	WPA-PSK	Gateway	192.168.0.1
Encrypt Mode	AES	MAC	002266aacc00
		Main DNS	202.96.128.1
		Backup DNS	8.8.8.8
SSID	SIBOHU		
Password	Sibohui666		

Save

- Mode selection: DHCP/hotspot/prohibited/manual, DHCP mode can be connected to WIFI, hotspot mode is used for mobile phone connection for engineering treasure debugging.
- Authentication mode: select the encryption method corresponding to the wireless router to be connected.
- SSID: The name of the WIFI.
- Password: WIFI password.
- IP address, under the premise of using WIFI connection, ensure that the local IP here and the locally set IP are not in the same network segment. When WIFI exists, the terminal will automatically select the WIFI connection server.

#### 7.5.4 4G settings

4G settings are described in 7.2.6

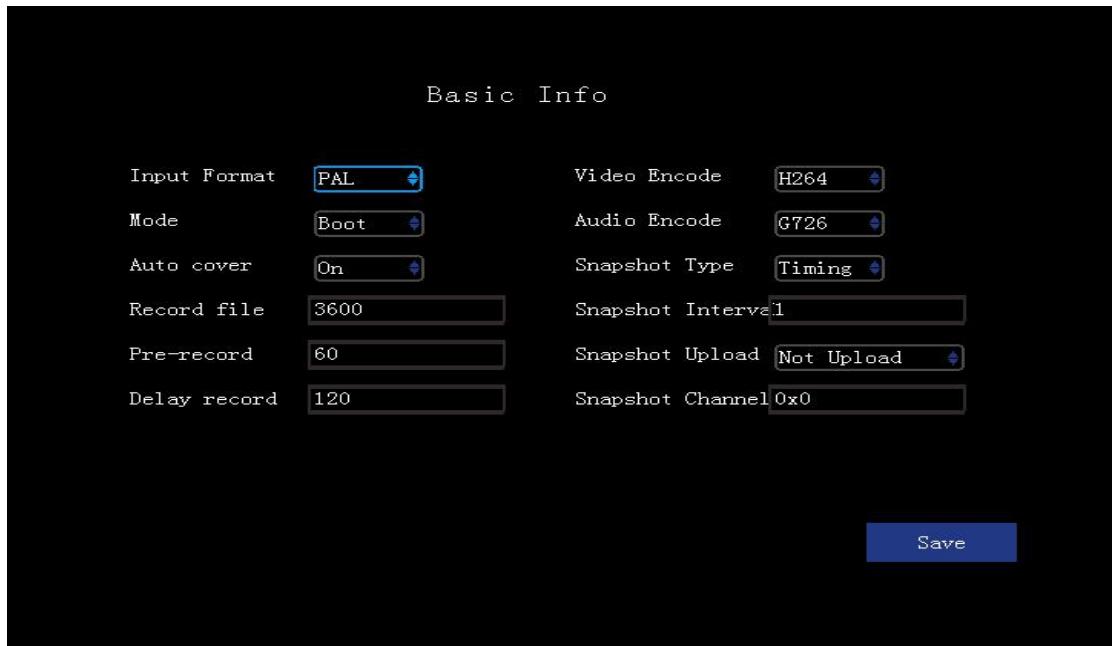
### 7.6 Record and Storage

The sub-menu contains, general settings, main stream, sub stream, IPC configuration, timing recording, storage management, channel management, and video playback



### 7.6.1 Basic Information

Basic recording parameter settings



- Recording mode: power-on recording, timing recording, alarm recording, the three recording modes are switched by pressing the [OK] key.

Start-up recording: The device starts recording automatically when it is turned on.

Timed recording: start recording within the set timed recording time period, and no recording at other times.

Alarm recording: when an alarm is generated, the device starts recording, and no alarm is generated without recording.

- Automatic coverage: turn on/off, press 【OK】 key to switch optional.

ON: When the storage disk is full, it will overwrite the oldest video file and continue to record.

OFF: After the storage disk is full, stop recording, and will not overwrite the earliest recording

- Packing time: Adjust the packing time of terminal equipment recording according to the time you need.
- Pre-recording time: Record a period of time before the alarm occurs.
- Delayed recording time: The recording will continue after the alarm is removed, and the recording time is the set time.
- Audio coding: switchable G726/G711A/ADPCM three audio formats.
- Capture mode: boot mode, timing mode, alarm mode, manual mode, four capture modes press [OK] key switch optional.

Boot mode: the device starts to capture automatically.

Timing mode: in the set timing capture time period to open the capture, other time do not capture.

Alarm mode: when the alarm is generated, the equipment opens the capture, does not produce the alarm not to capture.

Manual mode: after setting manual mode, you need to capture it by remote control.

- Capture interval: change how long it takes to capture photos according to customer needs.
- Capture upload: part standard protocol, WKP protocol, two modes.

Bubiao Protocol: Take a snapshot from the terminal and upload it to the Ministry of Standards platform server.

Wkp protocol: capture through the terminal, upload to the WKP platform server.

- Capture channel: change the channel you want to capture as needed, or multiple channels.

## 7.6.2 Main Stream

The main stream and sub stream parameters correspond to the parameters of the video stream, and are also used for the platform real-time video request parameters

ENCODE STREAM PARAMETER

Num	Enable	Rsoluton	FPS	Quality	Audio	Video Encode
1	On	1080P	14	Normal	On	H264
2	On	1080P	14	Normal	On	H264
3	On	1080P	14	Normal	On	H264
4	Off	1080P	14	Normal	On	H264
5	Off	1080P	14	Normal	On	H264
6	Off	1080P	14	Normal	On	H264
7	Off	1080P	14	Normal	On	H264
8	Off	1080P	14	Normal	On	H264

calc bps=751.83K/s, 2.58G/h

**Save**

- Enable: Open : Indicates that the channel is turned on.
- Close: It means that the channel does not record, and no video will be recorded if there is video loss.
- Resolution: select the local video resolution.
- Frame rate: Indicates the number of video frames per second, PAL system is 1~25 frames/sec, NTSC system is 1~30 frames/sec.
- Coding level: the clarity of the picture.
- Audio: Turn on/off, indicating whether to turn on the recording function while recording.
- Video encoding: You can choose the video encoding format of the current channel, such as H.265/H.264.



### Description

1. For H.265-encoded devices, the stream can generally be calculated as halved compared to H.264-encoded devices.

2. Calculation formula: File size (GB) = stream (Kbps)  $\div$  8  $\times$  3600  $\times$  daily recording time (hour)  $\div$  1024  $\div$  1024

### 7.6.3 Sub stream

Set 4G network transmission video stream parameters

ENCODE STREAM PARAMETER

Num	Enable	Rsoluton	FPS	Quality	Audio	Video Encode
1	On	CIF	14	Normal	Off	H264
2	On	CIF	14	Normal	Off	H264
3	On	CIF	14	Normal	Off	H264
4	Off	CIF	14	Normal	Off	H264
5	Off	CIF	14	Normal	Off	H264
6	Off	CIF	14	Normal	Off	H264
7	Off	CIF	14	Normal	Off	H264
8	Off	CIF	14	Normal	Off	H264

calc bps=71.29K/s, 250.63M/h

Save

- Enable: Open: Indicates that the channel is turned on.
- Close: It means that the channel does not record, and there is no video loss and no log will be recorded.
- Resolution: Select the resolution of uploading server video.
- Frame rate: Indicates the number of video frames per second, PAL system is 1~25 frames/sec, NTSC system is 1~30 frames/sec.
- Coding level: adjust the clarity of the picture.
- Audio: Turn on/off, indicating whether to turn on the recording function while recording.
- Video encoding: You can choose the video encoding format of the current channel, and you can choose H.265/H.264.



### Description

1. For H.265-encoded devices, the stream can generally be calculated as halved compared to H.264-encoded devices. For H.265-encoded devices, the stream can generally be calculated as halved compared to H.264-encoded devices.

2. Calculation formula: File size (GB) = stream (Kbps)  $\div$  8  $\times$  3600  $\times$  daily recording time (hour)  $\div$  1024  $\div$  1024

#### 7.6.4 Timing record

Set timing recording time period



The image shows a software interface titled "TIMING RECORD". It contains a table with four rows, each representing a timing period. The columns are labeled "Type", "Repeat", "Begin", and "End". The "Type" column for all rows contains the value "Close". The "Repeat" column for all rows contains the value "0x0". The "Begin" and "End" columns for all rows contain the value "00:00:00". At the bottom right of the interface is a blue "Save" button.

Type	Repeat	Begin	End
Close	0x0	00:00:00	00:00:00
Close	0x0	00:00:00	00:00:00
Close	0x0	00:00:00	00:00:00
Close	0x0	00:00:00	00:00:00

- You can set up to 4 recording time periods per day.
- Repeat: Set to select Monday to Sunday, or multiple selections, the time period is valid for 7 days from Monday to Sunday.
- Time period setting: The start time of the time period cannot be greater than the end time.

### 7.6.5 Storage Management

Storage			
Disk name	Record Code Stream	Priority	
NAND	No	Low	
SD1	No	High	
SD2	Main Stream	High	
HDD1	No	Lowest	
Front USB	No	Low	
Back USB	No	Highest	

- Video: According to the settings, select the main video/sub stream video.
- Priority: According to the set level, the video type is stored to the storage device first. The priority is divided into very high, high, medium, low, and very low.

### 7.6.6 Channel Management

CHANNEL						
Num	Channel name	Preview	Volume	Resolution	Input	Format
1	CH1	On	8	720P	PAL	
2	CH2	On	8	720P	PAL	
3	CH3	On	8	720P	PAL	
4	CH4	On	8	720P	PAL	
5	CH5	On	8	720P	PAL	
6	CH6	On	8	720P	PAL	
7	CH7	On	8	720P	PAL	
8	CH8	On	8	720P	PAL	

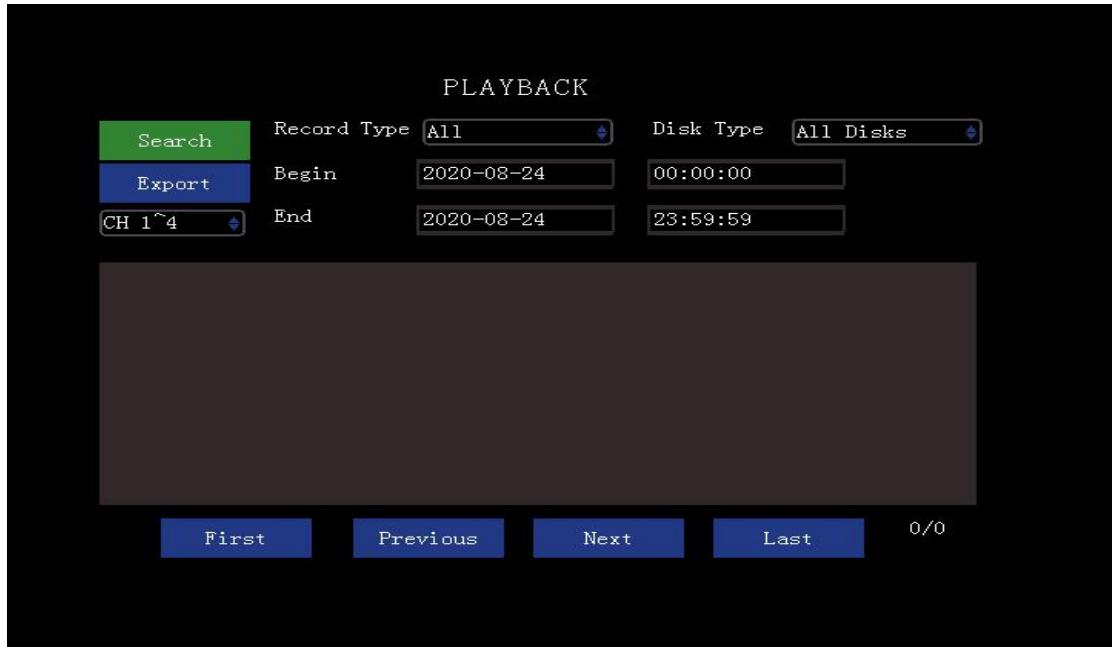
- OFF: Indicates that the channel does not record, and there is no video loss and no log will be

recorded

- Volume: Set to modify the volume of the channel.
- Resolution: According to the resolution setting of the camera, they are D1, 720P, 1080P, AUTO.
- Output format: Switch between PAL and NTSC formats.

### 7.6.7 Video playback

Play back video files stored in this unit



- Recording type: all recording/normal recording/alarm recording/classified fault recording.
- Disk selection: All/SD1/SD2/HDD.
- You can select the date and time period to search for video files.
- Export video: Export video to U disk according to time period.
- Channel selection: selecting the first four channels will play back 1 to 4 channels of video playback, and after selecting the four channels, they will play back 5 to 8 channels of video playback (only for 8-channel equipment).

## 7.7 AI and Alarm

The submenu includes: I/O alarm, speed, acceleration, voltage, temperature, motion detection, DMS, passenger flow meter.

### 7.7.1 I/O Alarm

Type	Level/Pulse	Filter View	Led	Buzzer	Out1	Out2
1 Off	High-Level	1	None	Off	Off	Off
2 Off	High-Level	0	None	Off	Off	Off
3 Off	High-Level	0	None	Off	Off	Off
4 Off	High-Level	0	None	Off	Off	Off
5 Off	High-Level	0	None	Off	Off	Off
6 Off	High-Level	0	None	Off	Off	Off
7 Off	High-Level	0	None	Off	Off	Off
8 Off	High-Level	1	None	Off	Off	Off

Save

- Type: Select the type of access signal.
- Level: level trigger, low level, 0~4V; high level, 4~25V; set high and low levels according to the connected peripherals, set to low level, the device detects low level input An alarm will be generated; if set to high level, the device will generate an alarm when it detects a high level input.
- Preview: Call out the channel video through preview, turn on this function to choose, no /CH1/CH2/CH3/CH4 channel.

### 7.7.2 Speed

Speed

Description	Enable	Value	Filter	Led	Buzzer	Out1	Out2
Speed	Off	0	0	Off	Off	Off	Off
Overspeed	On	100	10	Off	Off	Off	Off
OVSP Pre-alarm	Off	0	0	Off	Off	Off	Off
Park timeout(s)	Off	0	0	Off	Off	Off	Off
Fatigue	Off	0	0	Off	Off	Off	Off
Fatigue Pre-alarm	Off	0	0	Off	Off	Off	Off
Driving timeout(s)	Off	0	0	Off	Off	Off	Off

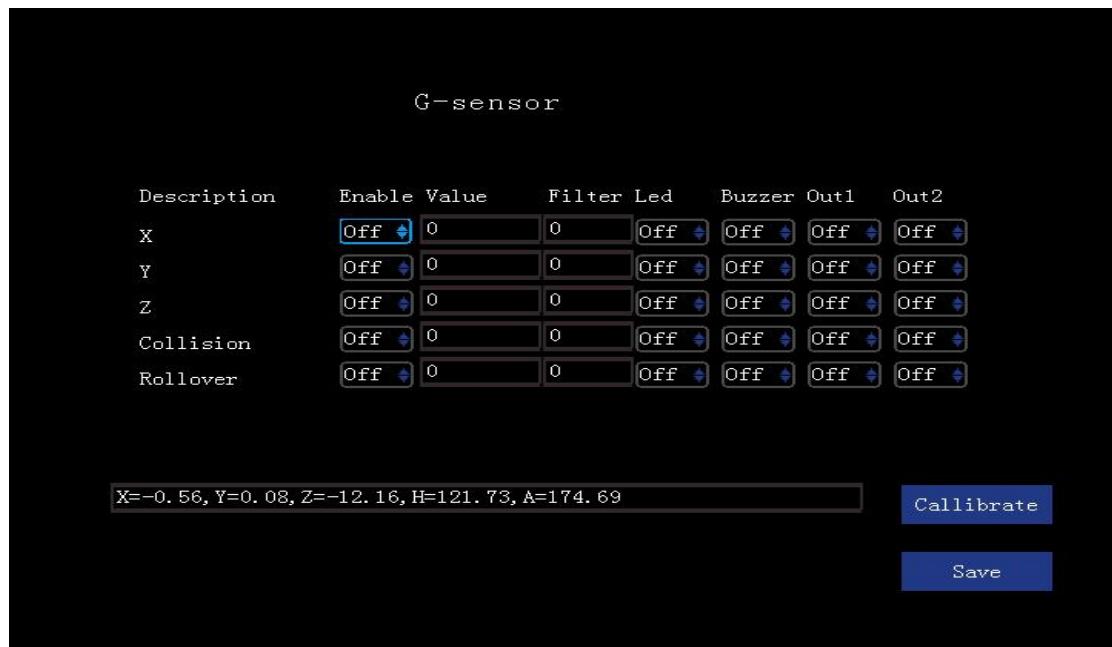
Speed Type: GPS Speed      Pulse Rate: 100

GPS Type: Local GPS      Min Rest Time: 0

**Save**

- Speed source: GPS speed/pulse speed. To select the pulse speed, you need to connect the speed pulse signal.
- GPS source: GPS positioning information source selection.
- Pulse coefficient: pulse speed of vehicle is one kilometer, need to set up speed source for vehicles.
- Minimum interval: judge fatigue parameters, if the rest time is less than the set value, judged to be driving in a row, included in the continuous driving time.
- Alarm at low speed: speed is below the set threshold to produce low speed alarm.
- High-speed alarm: high speed alarm at a faster rate than set threshold.
- High-speed warning: high-speed warning is generated when the speed exceeds the set threshold.
- Timeout: parking parking time more than set threshold timeout alarm.
- Fatigue alarm: drive over setting alarm threshold of fatigue.
- Fatigue warning: Fatigue warning is generated when driving time exceeds the set threshold.
- Cumulative timeout: driving time exceeding the set cumulative timeout will generate an overtime driving alarm.
- Enable: turn on/off, whether it is necessary to detect the current alarm item.
- Threshold: Set the threshold of alarm items.

### 7.7.3 Acceleration



- Separate detection and alarm on the acceleration 3D X, Y, Z axis, when the terminal is installed, you can choose to correct the current position.
- Enable: whether to detect alarms.
- Threshold value: alarm will be generated if the threshold value is exceeded.
- Alarm: turn on/off, whether to choose to turn on the alarm function.

Calibration: real-time display of the X, Y, Z axis size, press the calibration button in the appropriate direction to set the reference value

#### Description

Note: IO external gyroscope sensor is required

#### 7.7.4 Voltage

Description	Enable	Value	Filter	Led	Buzzer	Out1	Out2
Low-Voltage	On	11		Off	Off	Off	Off
High-Voltage	On	32		Off	Off	Off	Off
Lost voltage	On	9		Off	Off	Off	Off

Save

- Low voltage alarm: Low voltage alarm will be generated when the detected voltage is lower than the threshold value.
- High voltage alarm: If the detected voltage is higher than the threshold, a high voltage alarm will be generated.
- Power failure alarm: Sudden power failure alarm.
- Enable: turn on/off, whether to detect voltage alarm.
- Threshold value: set the range of high and low voltage alarm.

#### 7.7.5 DMS

Set terminal DMS parameters

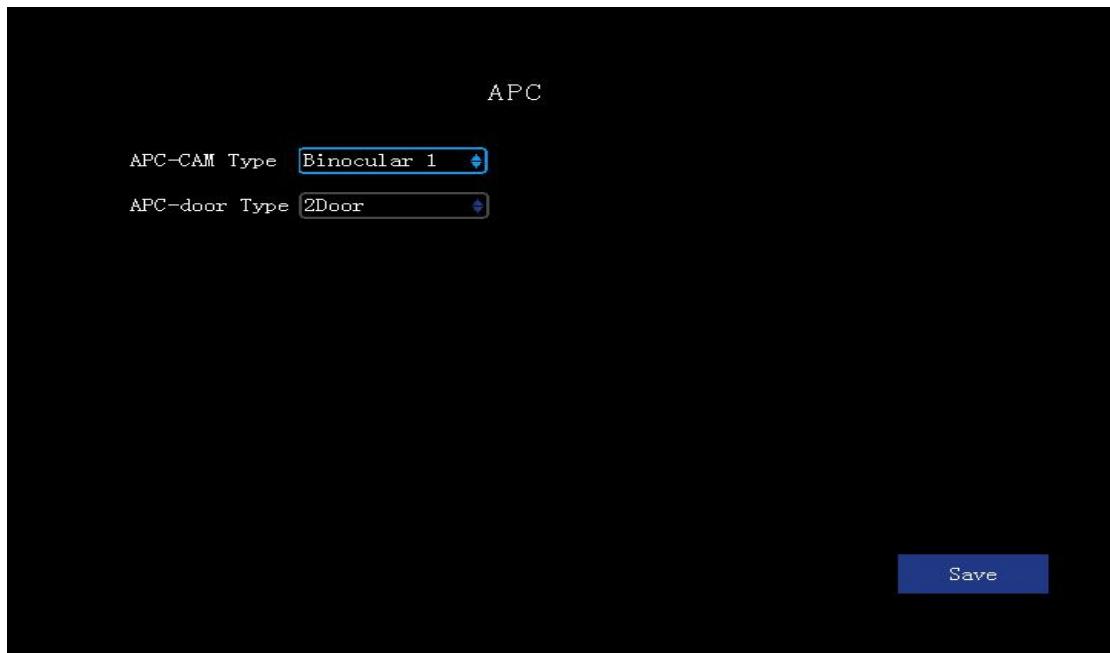
DMS

DMS Mode	OFF	Alarm interval (seconds, 0~3600)
Veriface Mode	OFF	Fatigue driving 0
Sensitivity	High	Phone call 0
Speed value	30	Smoke interval 0
Alarm type	MDVR	Distraction 0
Subiao server		Driving abnormal 0
Subiao port	0	No driver 0
Dsm[ver=, act=0]		一级报警使能 Off
Dsm[1970-01-01 00:00:00, FPS=0]		人脸识别间隔 0
Save		

- Speed threshold: When the vehicle speed exceeds the set threshold, the driving behavior analysis algorithm is activated.
- Sensitivity: Take smoking as an example. High-sensitivity may have 10 consecutive frames of smoking action images, which is judged as smoking, and low-sensitivity may require 20 consecutive frames of smoking action images to judge smoking.
- Alarm interval: The minimum time between two alarms of the same kind. For example, if the smoking interval is set to 30s, after the first smoking alarm, even if you have been smoking, the second smoking alarm will be issued after 30s.

### 7.7.6 APC

Flow camera type and flow gate type can be selected



Note: This function is mainly used for bus passenger flow statistics up and down the number of guests.

## 7.8 Systems and Security

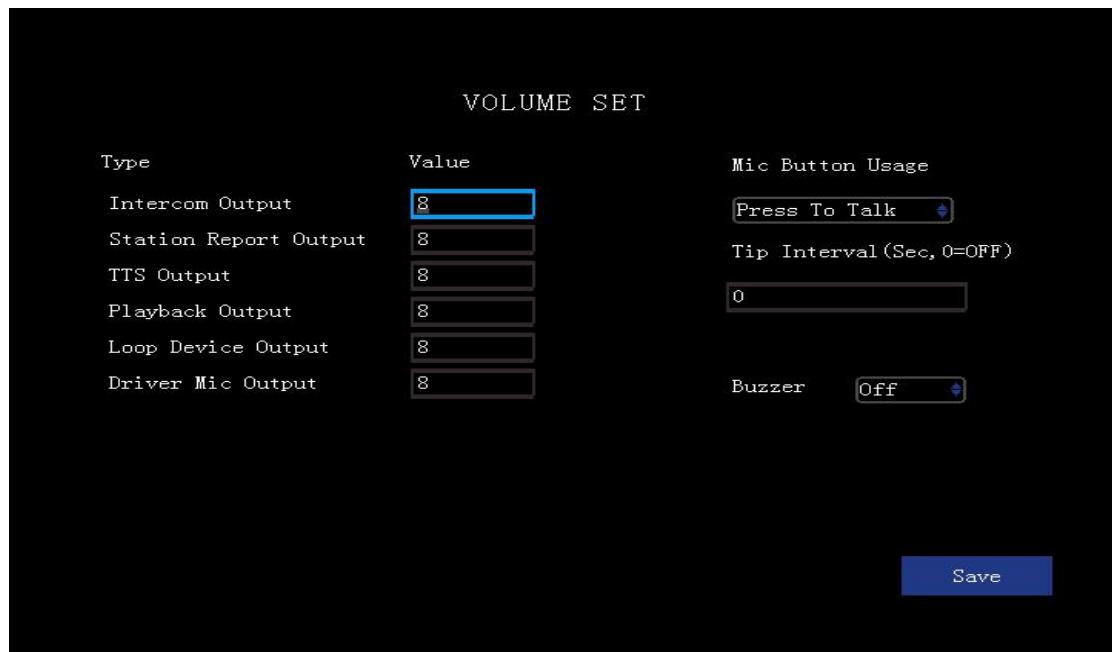
Submenus include: time Settings, volume Settings, password Settings, about the device, display



### 7.8.1 Time Setting

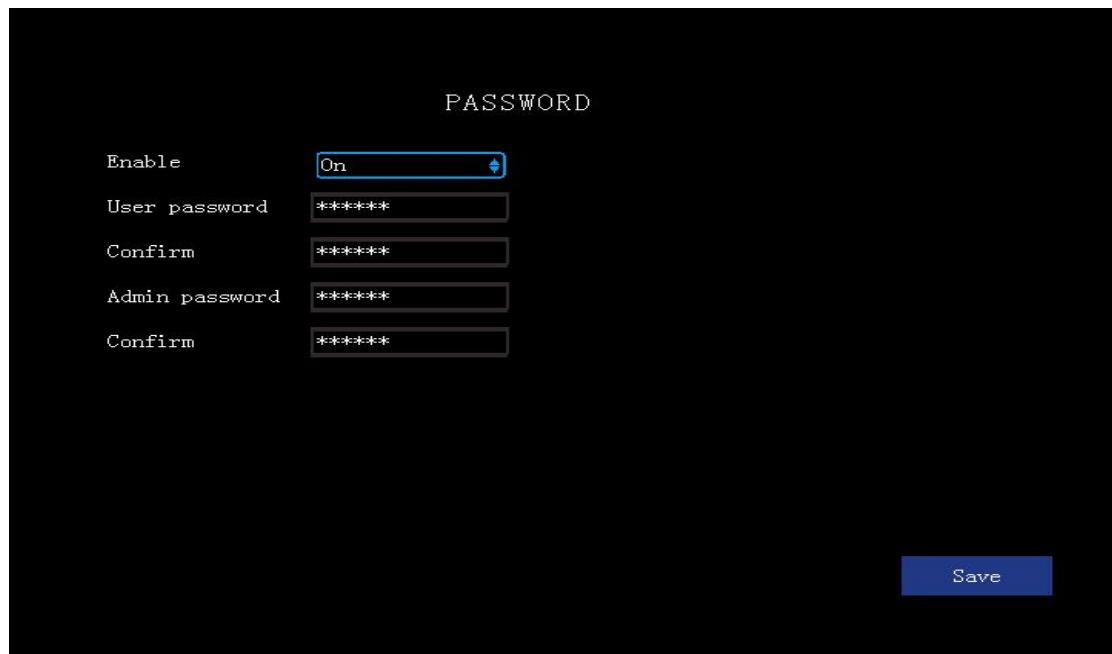
See 7.2.3 for details

### 7.8.2 Volume Setting



- Network intercom output: volume setting during video playback
- Stop announcement output: use the bus version software, the sound setting of the external speaker announces the stop
- TTS output: TTS voice broadcast volume setting
- Playback volume: volume setting during video playback
- Loopback output: terminal alarm volume.
- Driver Mic Output: external loudspeaker, loudspeaker volume setting
- Mic button Usage: Set the rules for using the megaphone button, press it once or press it frequently, and it can also be used for platform intercom application.
- Tip interval: This failure is storage failure, video loss and other failures.
- Buzzer: M525 does not have buzzer hardware, it needs an external speaker

### 7.8.3 Password Setting



- Enable: turn on/off; choose to turn off, without entering a password, press [LOGIN] key to log in successfully to the setting interface.
- respectively set the user password and the administrator password, the password for the 6 Numbers, two passwords cannot be set. Terminal default user: Admin password: 111111
- The administrator password has all permissions, and the user password only has the viewing function and cannot set parameters.

### 7.8.4 About Device

View detailed information parameters of the terminal device



### 7.8.5 Display

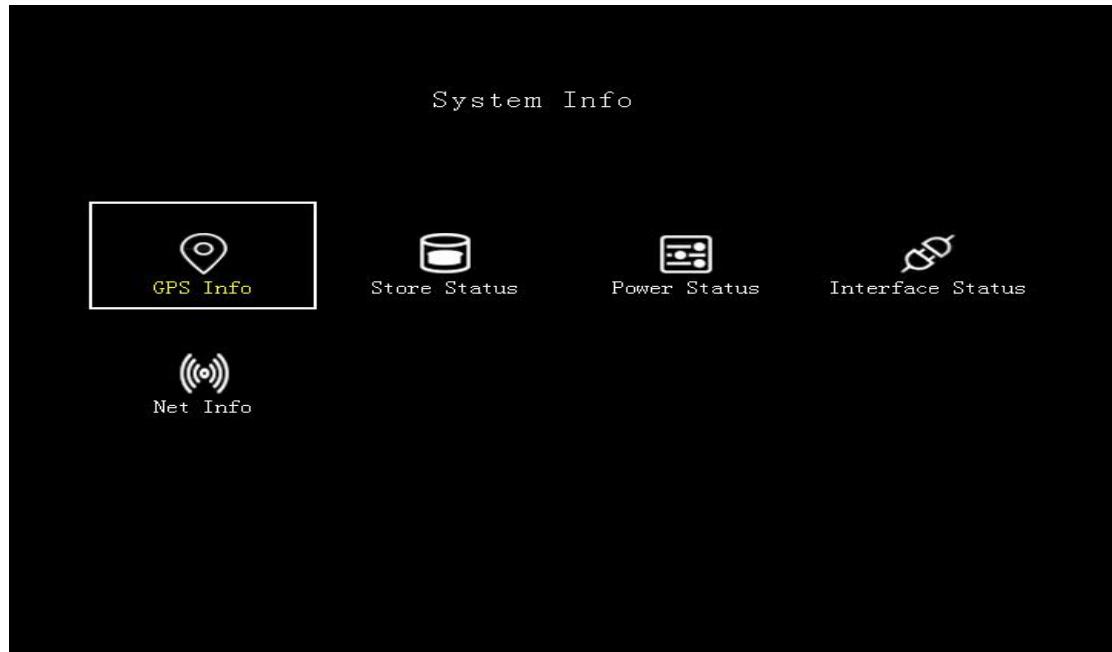
Set boot layout and notification bar display settings



- Boot layout: You can set the video interface such as four-square grid/ nine-square grid.
- Icon Dispaly: Set the items displayed in the notification bar.

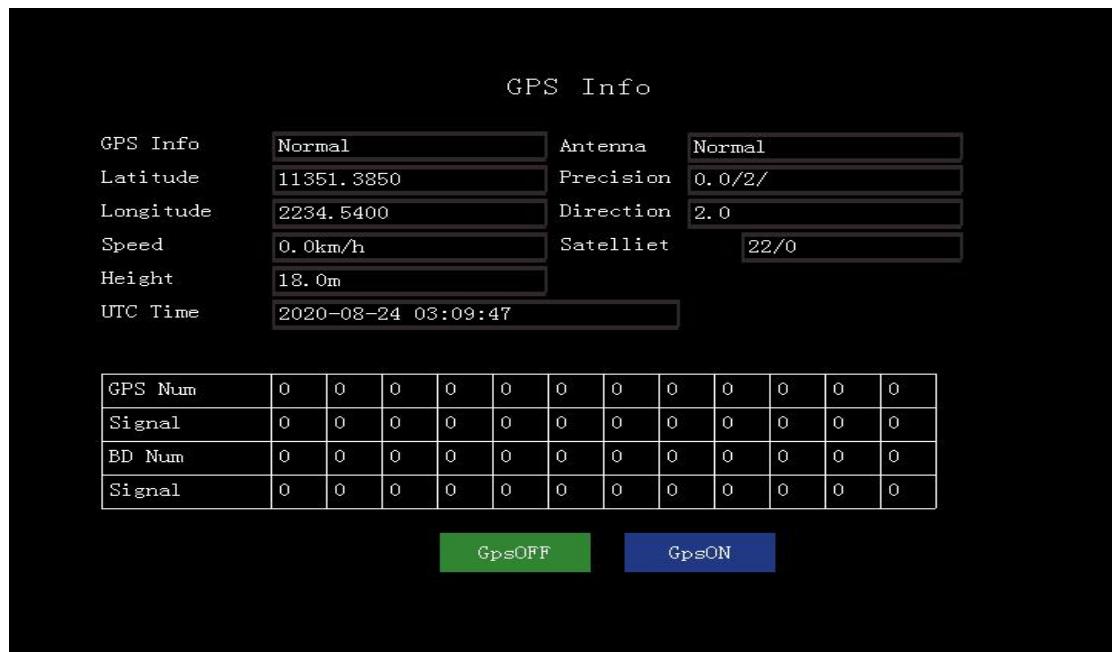
### 7.9.1 System Information

The sub-menu includes: location information, storage status, power status, interface status, and network information.



### 7.9.2 GPS Information

You can view the current positioning details, such as whether the positioning status is normal, the current latitude and longitude, speed, and GPS/BD signal reception



### 7.9.3 Store Status

You can see the current state of the existing storage device, used capacity, and available capacity

Store Status			
Disk name	Status	Time	Capacity
NAND	Normal	09:15:10	688.85M/696.77M
SD1	No Device	09:15:11	0/0
SD2	Normal	09:15:13	1.23G/14.12G
HDD2	No Device	09:15:12	0/0
Front USB	No Device	09:15:11	0/0
Back USB	No Device	09:15:11	0/0

### 7.9.4 Power status

You can see the current supply temperature, voltage and ACC voltage

Power Status	
Temp	0.00C
Vol	24.60V
ACC	12.00V

### 7.9.5 The Interface Status

View the device I/O interface status

Interface Status			
485-arm	232-mcu	485-mcu	485-mcuex
Printer(E26)	Close	DVR Serial Port	Close
---:---:--	---:---:--	---:---:--	---:---:--
---:---:--	---:---:--	---:---:--	---:---:--

Pulse0

I/O -----

### 7.9.6 Network Information

You can view the current 4G connection status, signal strength, whether it is connected to the reporting server, the reported primary and backup server, mobile phone number, and used traffic.

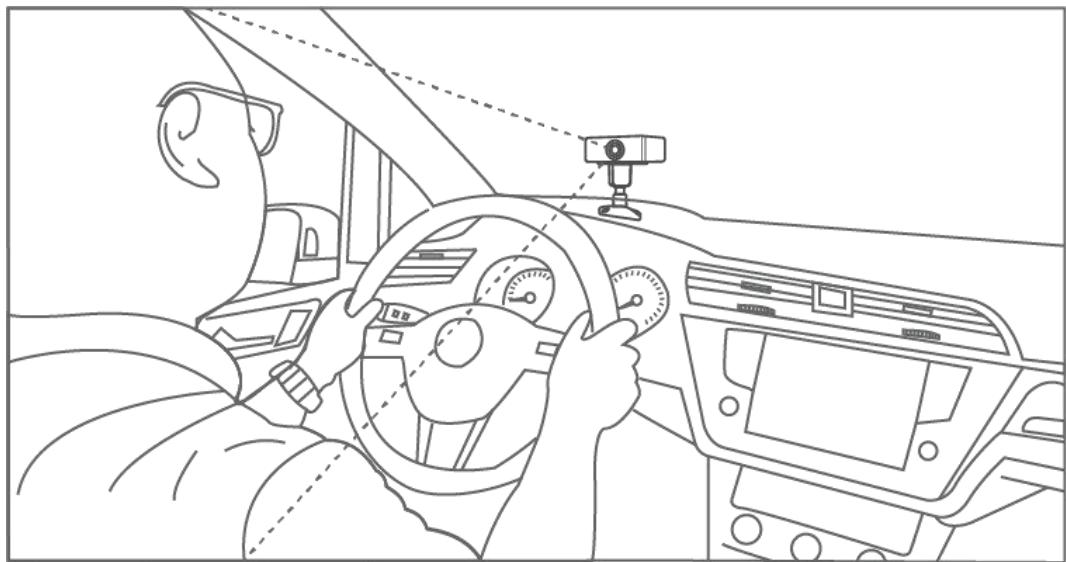
Net Info	
Net	4G Module (4G, 27, Dial Succeed )
Server	b
BB Proto M	60.247.145.250:8100
BB Proto B	by.fjxbpt.cn:7788
Device IP	10.30.66.252
Phone Num	101100200815
Flow	1.11M

## **Chapter 8 DMS/ADAS Test**

### **8.1 DMS Camera Installation**

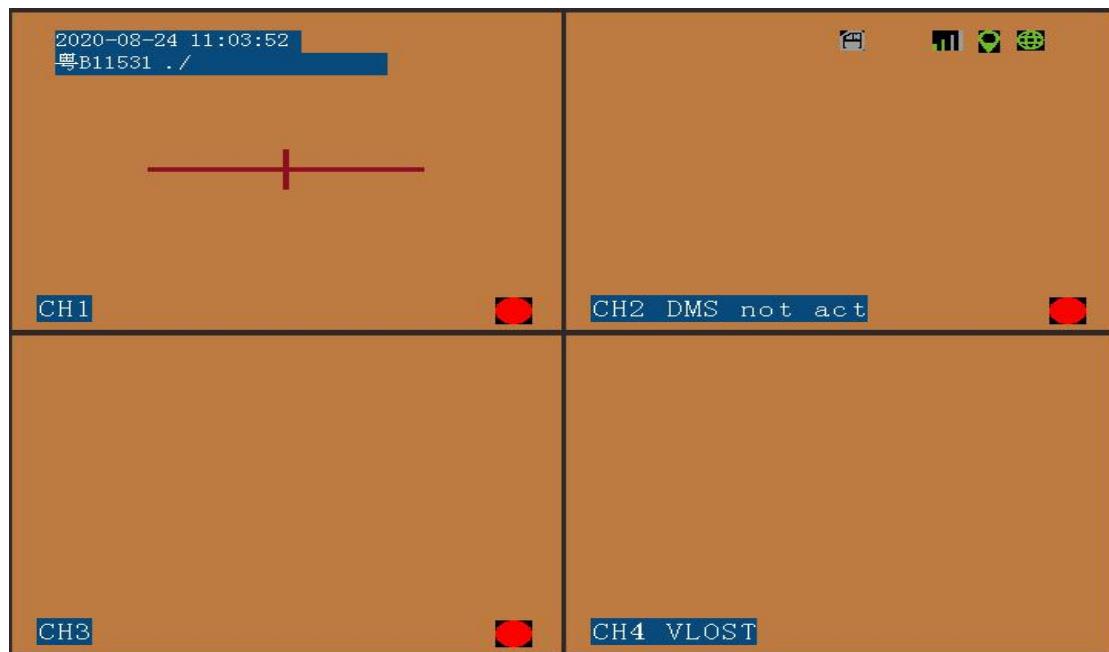
1. Before calibrating the fatigue detection lens, locate the approximate installation position, that is, the position of the center console to the right in front of the driver.
2. The distance between the fatigue detection lens and the driver's eyes is between 60-80CM. It is best to use self-tapping screws for the base.
3. The protective film of the fatigue detection lens needs to be removed after installation. Use a special hexagonal screwdriver to adjust the angle and fix it. The contact position of the base and the center console needs to be fixed with 3 self-tapping screws.
4. Please refer to the figure below for the size of the required quantity during calibration (note that the red, yellow and blue coordinate system lines in the figure are at a 90 degree angle), please do not install too far, it is better to have the yellow line X-axis data than the red line Y-axis data Half is less. (The X data is better to be less than 280MM, and the angle between the face camera and the Y axis is not more than 30 degrees).

**(The face camera is installed firstly in front of the steering wheel)**



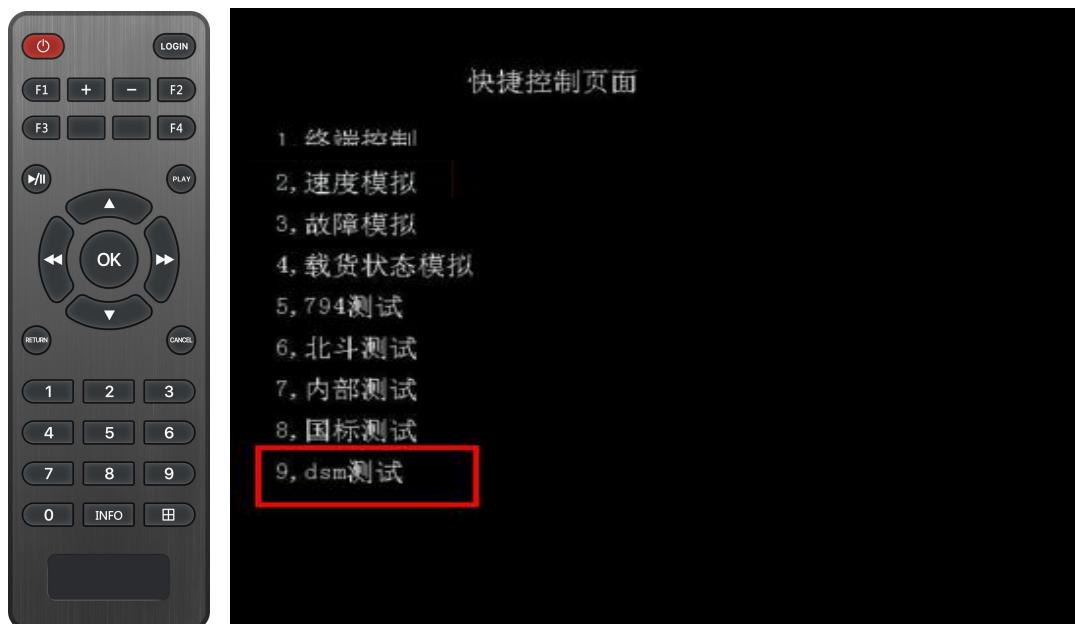
## 8.2 DMS Camera Calibration

DMS camera calibration can be calibrated through an external screen or mobile phone engineering treasure APP, as long as **the driver's face is in the center of the lens**. Confirm that the algorithm is activated before the test, as shown in the figure below, the red box on the screen does not prompt "DMS is not activated"...



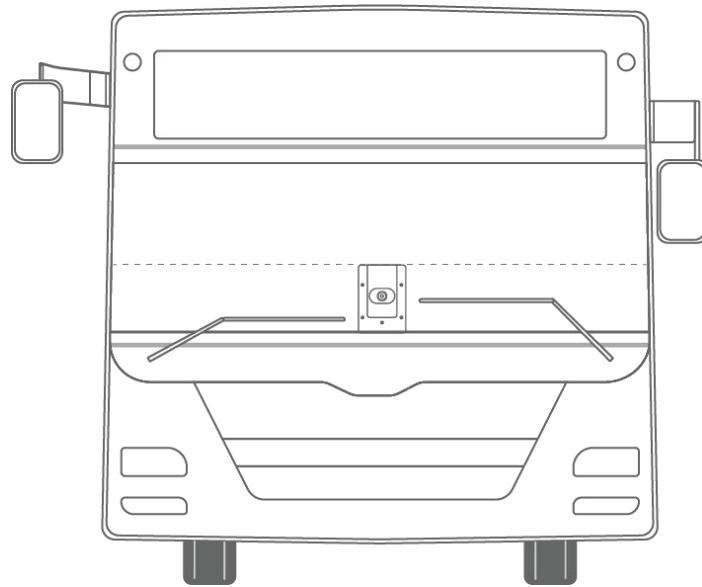
### 8.3 DMS Face Recognition

Connect the external display screen to the terminal, use the remote control  $\blacktriangleright/\|$  to enter the shortcut control page, press the shortcut key 9 to enter the test page, and perform face recognition and driving behavior analysis tests (driving behavior analysis includes smoking, calling, closing eyes, yawning, look around, put head off).



### 8.4 ADAS lane Detection Installation

1. Wipe clean the middle position inside the windshield in the red frame position as shown in the figure (the outside ensure that the wiper cannot cover it)
2. Use a tape measure to measure the position of the red box for number selection (preferably the middle of the windshield level)
3. As shown in the figure, the upper and lower positions cannot be blocked by the wiper, and the position is above the wiper.
4. The red line in the picture is the horizontal line drawn (that is, keep the upper end of the lens parallel to the horizontal line), it is not actually necessary to draw
5. Install the camera on the front glass (be careful not to leave fingerprints and stains on the lens when installing)



## 8.5 ADAS Lane Test

1. Detect the road status through ADAS cameras to realize front vehicle collision warning (FCW), lane departure warning (LCW), (FCW). The driver is reminded, and related events are reported to the platform at the same time, combined with the driver's identity and vehicle location information as evidence.

