AD Plus2.0 Series

User Manual

Streamax Technology CO.,Ltd.

Preface

The Manual mainly introduces the usage of various functions of the AD Plus2.0 series as well as precautions. All the contents involved in this manual, including texts, pictures, and graphics, belong to Shenzhen Streamax Technology Co., Ltd. No part of the Manual may be extracted, reproduced, translated, or modified in any form or by any means without the prior written consent of Shenzhen Streamax Technology Co., Ltd. Unless otherwise specified, the Manual is provided without representations or warranties of any kind.

About the Manual:

The Manual is intended to provide guidance for authorized users and technical support personnel of the product.

The product pictures and screen contents provided herein are for illustration only. The physical product (including but not limited to its appearance, color, and size) may differ from the displayed contents (including but not limited to the background, UIs, and pictures). Please refer to the physical product.

The data contained herein are theoretical values obtained from the internal laboratory of Streamax Technology in a specific test environment (refer to the specific instructions). The data may vary slightly in actual use with individual product differences, software versions, service conditions, and environmental factors. Please refer to the actual usage.

With the real-time changes in product batches and production-supply factors, in order to provide product information, features, specifications, and parameters as accurate as possible, Streamax may adjust and modify the text, pictures, and other contents in the Manual from time to time to match with the actual performance, specification, indexes, components, and other information of the product. Such changes and necessary adjustments may be made without special notice.

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Read the Manual before using the product, to ensure that you will use the product correctly and all necessary functions will work properly.

	**Warning: conditions that may involve the safety of the device user or injure the device user**
	**Important: conditions that may damage data integrity or firmware or hardware of the device**
	**Note: additional descriptions, explanations of terms, etc.**

Contents

Acronyms and Abbreviations

Abbr.	Full Name
1920P	Resolution ratio 2560×1920
ADAS	Advanced Driving Assistance System
DSC	Driving Safety Cockpit
DMS	Driver Monitoring System
VBR	Variable Bit Rate
CBR	Constants Bit Rate

1. Overview

The AD Plus2.0 series includes two types of devices, AD Plus2.0 and AD Plus2.0-S. The AD Plus2.0-S removes the rear cockpit camera, without the built-in function to detect unsafe driving behaviors. The product introduction in this Manual mainly takes the AD Plus2.0 as an example. The difference in functions will be explained in the remarks.

The AD Plus2.0 is an intelligent device that benefits drivers in reduced traffic accidents and fleets with improved management efficiency. Based on AI technology, it can actively identify dangerous driving events and unsafe driving behaviors, supporting sending local real-time reminders to the driver to avoid risks and uploading events to the fleet management platform for driver training. It transmits real-time and accurate vehicle position information and operation data to the fleet management platform while providing high-quality remote intercom and video preview playback to make the fleet management easier and more efficient.

1.1 Functions and Features

- Ultra-wide 140° DFOV road facing lens, supporting up to 1920P UHD video recording
- Ultra-wide 170° DFOV driver facing lens, supporting up to 1080P HD video recording (Not supported in the AD Plus2.0-S)
- Up to 4-channel video recording (The AD Plus2.0-S supports up to 3 channels)
- H.264/H.265 encoding
- 2 x 256 GB dual-Micro SD card storage, supporting the simultaneous storage of main streams and sub streams
- Built-in Wi-Fi, 4G communication module, and inertial navigation positioning module
- AES256 encryption for video/audio data, encryption protocol TLS1.3 for data transmission
- 4-channel IO input, 1-channel CAN and 1-channel RS232
- Compact design, not affecting the driver's sight regardless of vehicle size

- OBD power supply, easy for quick installation
- Built-in ADAS function, supporting lane departure warning (LDW), forward collision warning (FCW), and headway monitoring warning (HMW).
- Built-in DSC function, supporting the detection of unsafe driving behaviors (Not supported in the AD Plus2.0-S)
- Support echo & noise canceling algorithm to improve the quality of two-way audio communication
- Sleep mode, remote wakeup
- Built-in 6-axis gravity sensor, supporting rapid acceleration, rapid deceleration, harsh cornering, and accident detection

1.2 Main Purpose and Scope of Use

The AD Plus2.0 series is mainly applied in the field of vehicle-mounted safety to benefit drivers in reduced traffic accidents and fleets with improved management efficiency.

1.3 Model Number Composition and Its Specific Meaning

- AD Plus2.0: The high configuration version of the AD Plus2.0 series, with an ultra-wide 140° DFOV road facing lens and an ultra-wide 170° DFOV driver facing lens, as well as the built-in ADAS & DSC function
- AD Plus2.0-S: The express edition of the AD Plus2.0 series, with an ultra-wide 140° DFOV road facing lens, as well as the built-in ADAS function

1.4 Operating Environment

1. Power Supply System: Power supply range of DC 9 V~36 V
2. Operating Temperature: -40°C~+70°C (-40°F~+158°F)
3. Storage Temperature: -40°C~+70°C (-40°F~+158°F)
4. Operating Humidity: 15%~95% (non-condensing)
5. Storage Humidity: 15%~95% (non-condensing)
6. Salt Mist: Compliant with requirements in GB/T 2423.17

7. Light: No requirements
8. Altitude: No requirements
9. Waterproof and Dustproof: IP30 (The MDVR is non-waterproof)
10. Explosion-proof and Anti-smashing: Environment for vehicle use

Warning: We are not liable for the device damage and function abnormalities caused by the use of devices in the operating environment non-compliant with the requirements.

1.5 Influence on Environment and Energy Sources

- In standby mode, 13.5V@7.03mA, 27V@4.09mA
- In sleep (4G and MCU powered) mode, 13.5V@80mA, 27V@36.5mA
- Typical power consumption (with dual SD cards installed and SIM card for dialing): about 7.5 W
- Full-load power consumption (with dual SD cards installed, SIM card for dialing, Wi-Fi turned on, IPC and AHD connected, and infrared lamp turned on): about 13 W

Special notes: The typical and full-load power consumption of the AD Plus2.0-S version is about 0.15 W lower. The above data, as test data obtained in a specific environment in the laboratory, may vary with the individual product differences, service environment, and testing methods.

1.6 Safety

1. The product needs to be installed by professionals, otherwise, there may be a risk of electric shock, damage to vehicle lines, impact on AI experience, and device falling-off.
2. The surface temperature may exceed 60°C when the product is in use under direct sunlight. Please do not touch the surface exposed to direct sunlight to avoid burns.

2. System Composition

The system composition introduced in this chapter is a complete composition of the system solution, not a standard shipping package. It aims to enable users to understand the product functions from the system level.

2. 1 System Chart

2. 2 Function Introduction to Main Single Products

The AD Plus2.0 series: It benefits drivers in reduced traffic accidents and fleets with improved management efficiency.

Veyes: app professionally used for equipment O&M installation and configuration

R-watch: alarm reminder

C29N: professional fatigue detection camera

CA38: reversing camera

FT Cloud: professional SaaS video service platform

FT API: service API provided by the FT Cloud platform

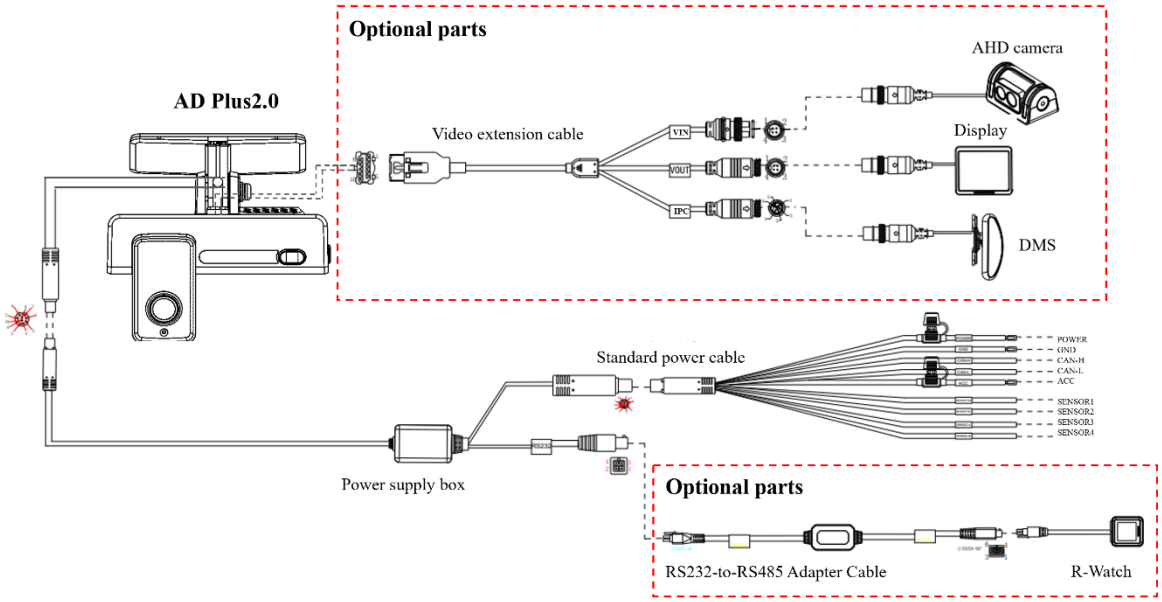
FT Vision: mobile app used with FT Cloud

2. 3 System Connection Diagram

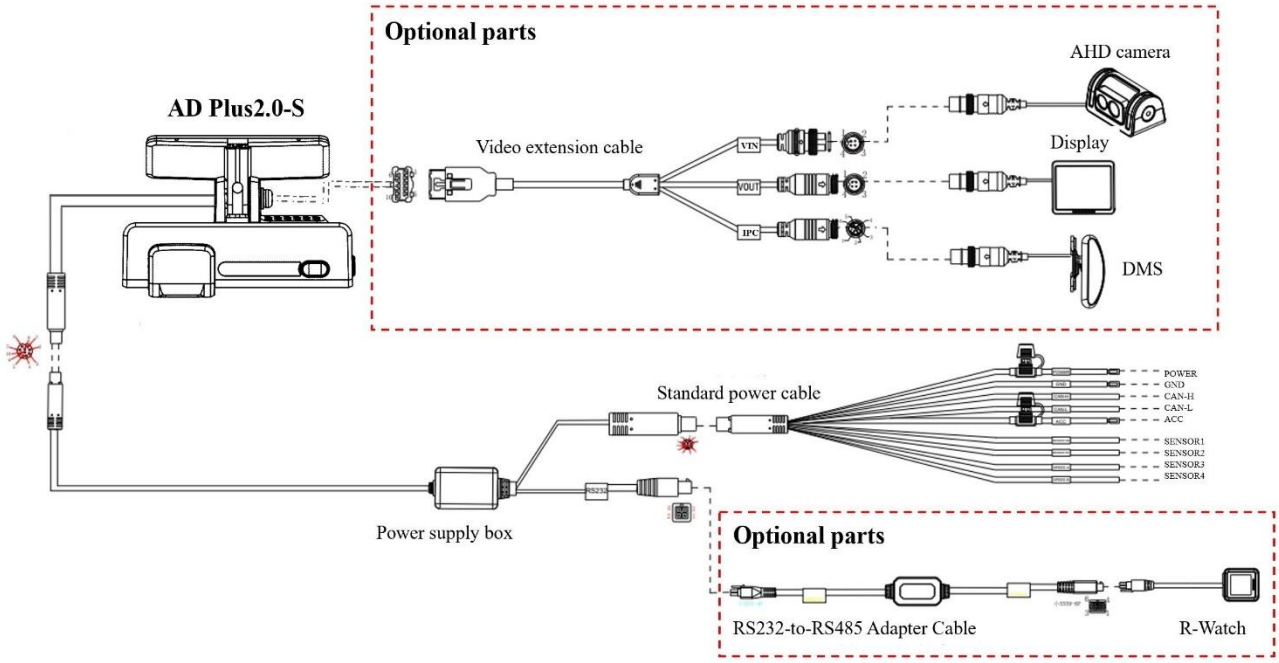
The standard packing list contains a standard power line that supports ACC power supply and vehicle connection. You can select OBD power supply which support OBD power supply and vehicle connection.

2. 3. 1 Connection Diagram of ACC Power Supply System

- AD Plus2.0

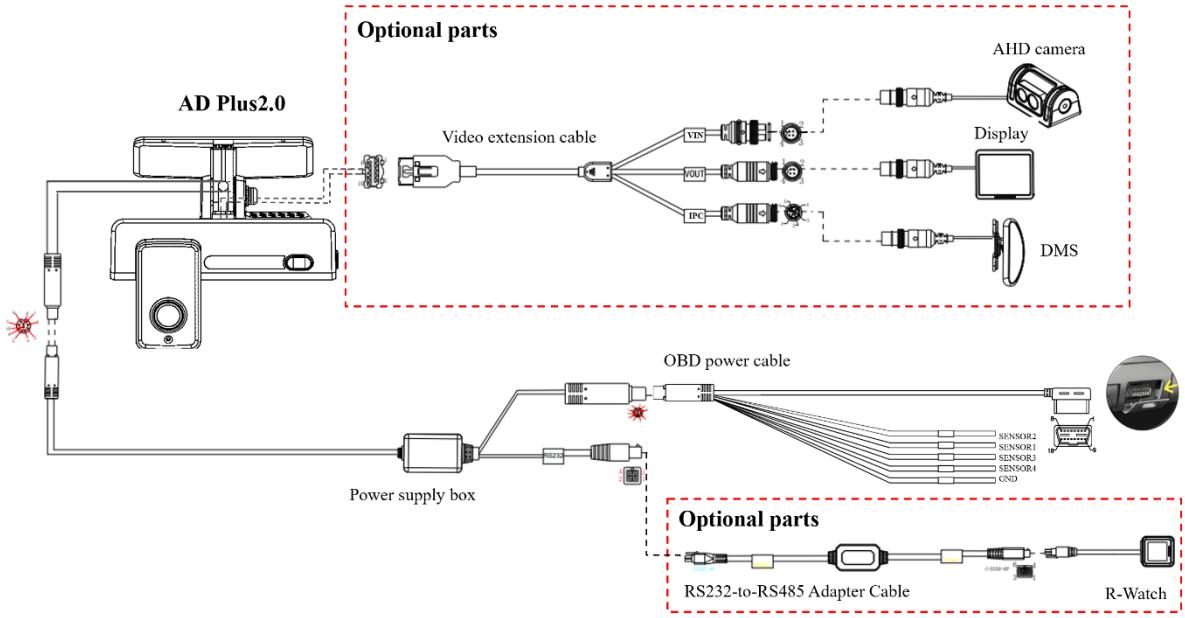


- AD Plus2.0-S

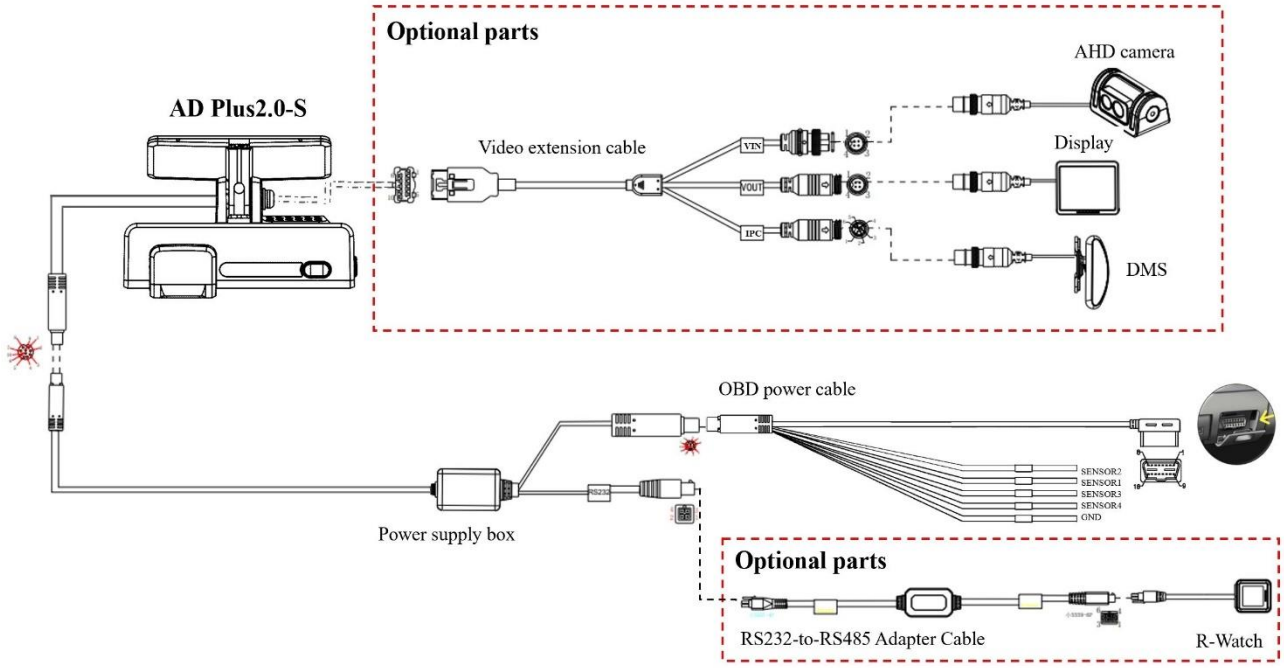


2. 3. 2 Connection Diagram of OBD Power Supply System

- AD Plus2.0



- AD Plus2.0-S



3. Technical Features

For more about technical features, please refer to AD Plus2.0 Specifications and AD Plus2.0-S Specifications

4. Installation and Commissioning

4. 1 Installation of Mobile Apps

- For Android phone users, please search for "Veyes" in Google Play, then download it and have it installed
- For iPhone users, please search for "Veyes" in App Store, then download it and have it installed

Special note: Mobile apps have requirements for the system version, requiring the system versions of Android 5.0 or iOS 11 and above. The following operations take Android as an example, and the installation effect will not be demonstrated separately here.

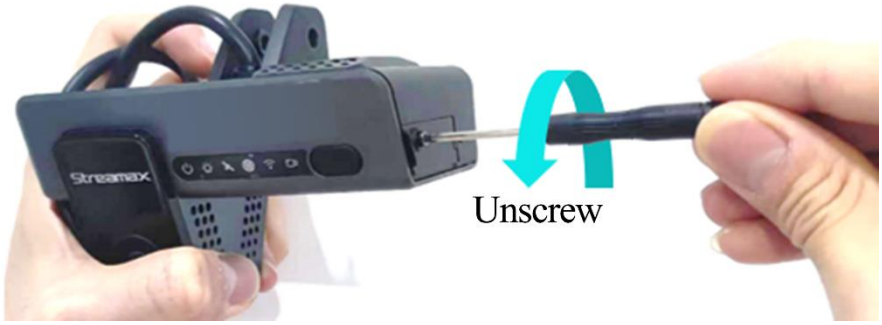
4. 2 Quick-start Guide

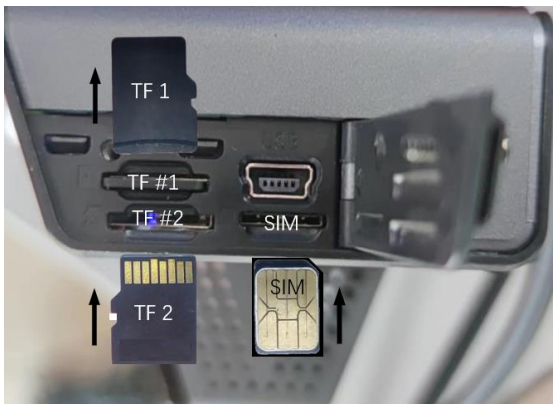
The quick-start guide briefly describes the installation and configuration of the device. For details, refer to the engineering installation and operation of the device.

4. 2. 1 Installation Preparations

1. Prepare and Check: product kit, Nano SIM card, Micro SD card, screwdriver kit, 5 m measuring tape, smartphone
2. Park the vehicle on the level ground and shut down the engine.

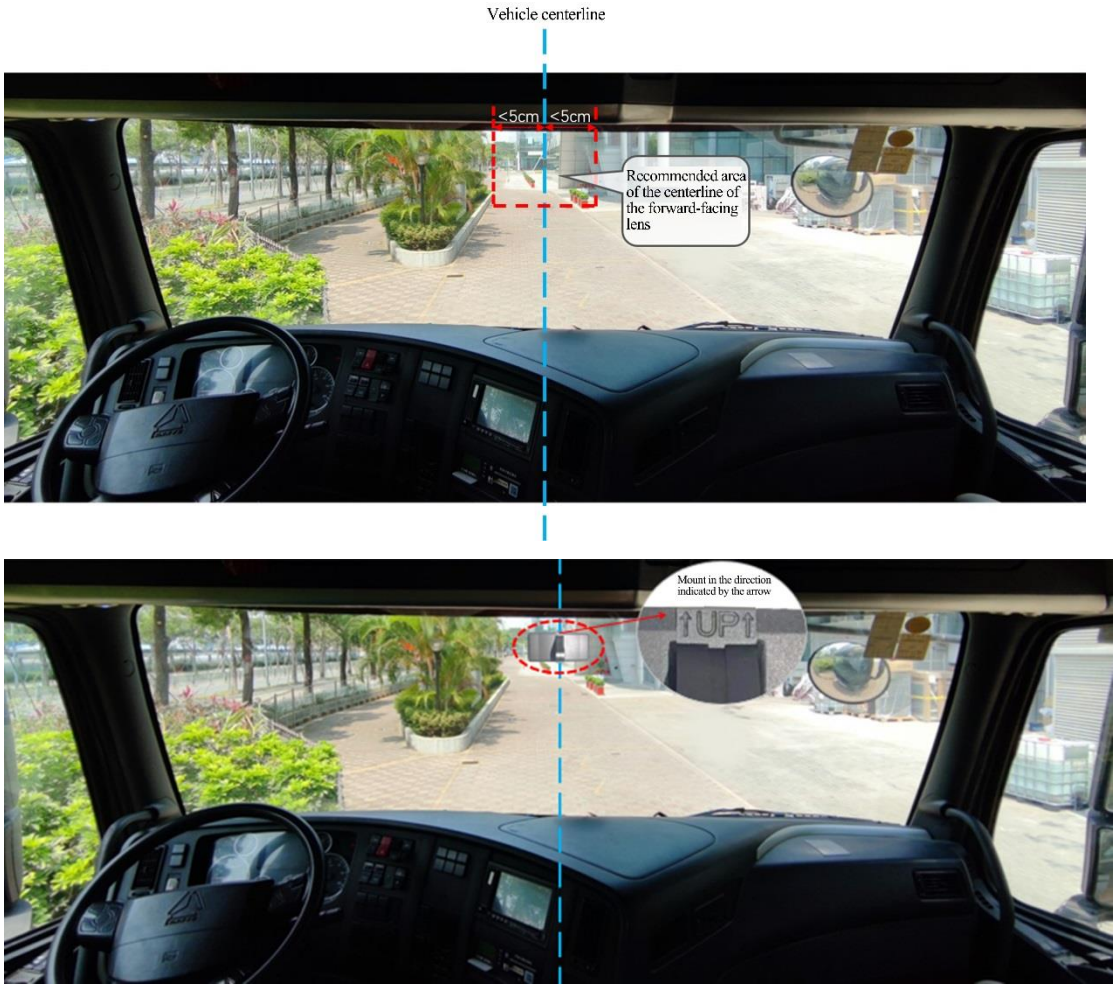
4. 2. 2 Step 1: Insert the SIM and Micro SD cards





Warning: The industrial SIM card (MP2) is required, and the ordinary SIM card (MP1) is prohibited. We are not liable for any problem caused by the use of the ordinary SIM card. The minimum read/write rate as required is Class 10, and Class 10 or above is recommended.

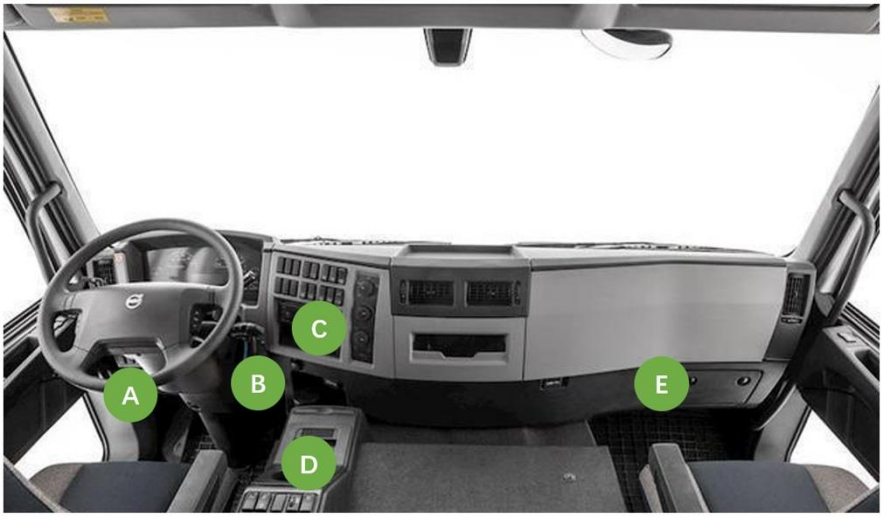
4. 2. 3 Step 2: Select a suitable area for bracket installation



4. 2. 4 Step 3: Install the device, adjust the angle and fix the device

4. 2. 5 Step 4: Route the cable and supply power

General Positions of OBD Port of Different Vehicle Models



4.2.6 Step 5: Connect Veyes

Refer to Section 5.3 Device Login and Logout

4.2.7 Step 6: Calibrate ADAS and DSC

Refer to Section 5.5.2 AI Calibration

4.2.8 Step 7: Configure server information and AI alarm

Refer to Section 5.7.5 Server Configuration in Network Settings

Refer to Section 5.10.4 AI Alarms

4.2.9 Step 8: Check the device status

Refer to Section 5.4 View General Information for the server connection status and memory status through the preview screen to view.

For any abnormality, refer to Chapter 7 Fault Analysis and Troubleshooting.

4.3 Device Engineering Installation

For more about installation, refer to the AD Plus2.0 Series Installation Guide.

5. Operation

5.1 Panel Button Description

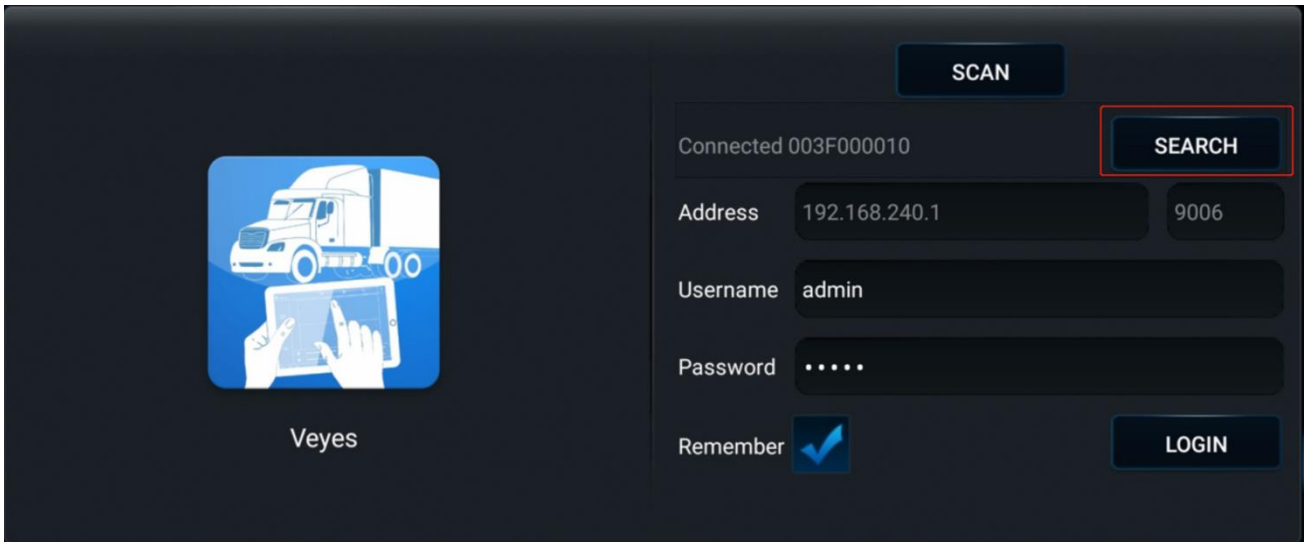
- Single Press: Press and pop up once within 2 seconds to trigger an emergency alarm. The emergency alarm should be enabled with related configurations. Refer to the Panel Alarm in the Base Alarms
- Double Press: Press and pop up twice within 2 seconds to start the AP mode of Wi-Fi
- Press and hold: Press and hold for more than 2 seconds to turn on or off the privacy mode. Refer to the privacy alarm description in the Video Alarms

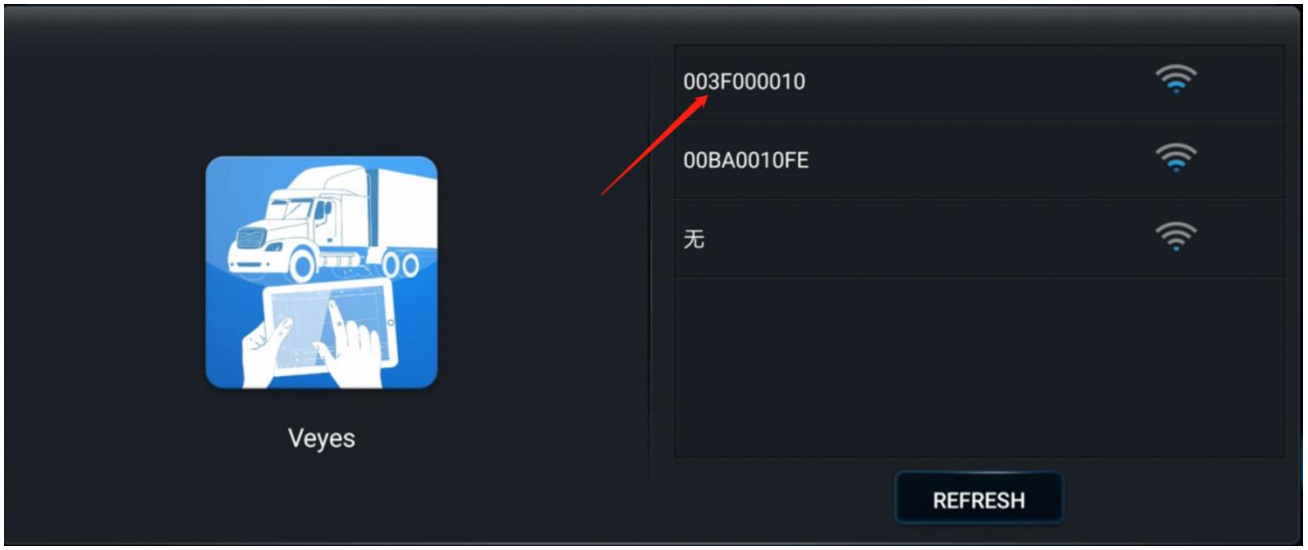
5.2 Status Indicator Lights of the Panel

LED Indicator Status	
Power status lights	Off/Green Off: The device is not powered on Steady green: The device is powered normally
Alarm indicator light	Off/Red Off: The device does not generate any alarm Red flashes three times: The device generates an alarm
GPS signal indicator	Off/Red Off: The device positioning runs normally Steady red: The device positioning runs abnormally (not positioned, or module not connected or damaged) Red flash (once per second): The device positioning is poor
Network status indicator	Off/Red Off: The device is connected to the server normally Steady red: The device is connected to the server abnormally Red flash (once per second): The device is in flight mode Flight mode: When the vehicle enters the gas station, turn off the wireless signal of the device to ensure safety
Wi-Fi status indicator	Off/Red/Green Off: The device is in Disable or Client mode Steady green: The device is in AP mode Steady red: The device Wi-Fi runs abnormally
Recording status indicator	Off/Red Off: The built-in or extended camera runs normally Steady red: The built-in or extended camera stops (including privacy mode)/fails * When the video recording function is enabled (main stream and sub stream), the prompt will be given if no recording is detected. If the video recording function is disabled (main stream and sub stream), it will be regarded as normal recording status.

5.3 Device Login and Logout

1. Turn on the Wi-Fi of the device as AP mode: After powering on the device, the Wi-Fi is in AP mode within 3 minutes, or double press the front panel button to enable the AP mode.
2. Turn on the Wi-Fi of the mobile phone, open Veyes, and tap **SEARCH** to open the Wi-Fi hotspot search interface to select the corresponding hotspot. For the initial login, the Wi-Fi hotspot is named after the serial number of the device (find SeriaNum on the device label). The license plate number, if not empty, is the hotspot name.
3. On the login screen, enter the corresponding username and password. Tap **LOGIN** to open the operation interface. Default username/password: admin/admin.



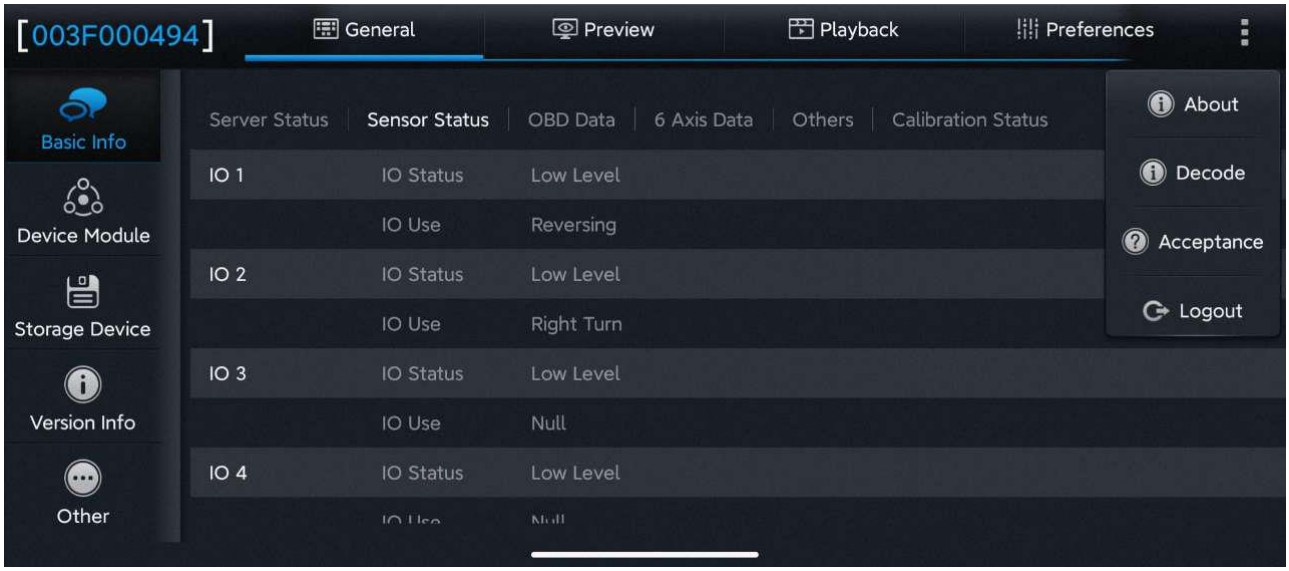


4. Tap **LOGIN**. The operation screen is displayed, as shown in the figure below.

5. Tap  in the upper right corner for help information, app version, and logout operations

   Tap **Logout** to log out of the connected device. Tap **Help** to view Veyes help document. Tap **About** to view the version information of Veyes on the mobile phone.

   Acceptance: The **Acceptance** mode can be applied to preset a simulated speed for the device when the device have no speed to trigger the alarm.

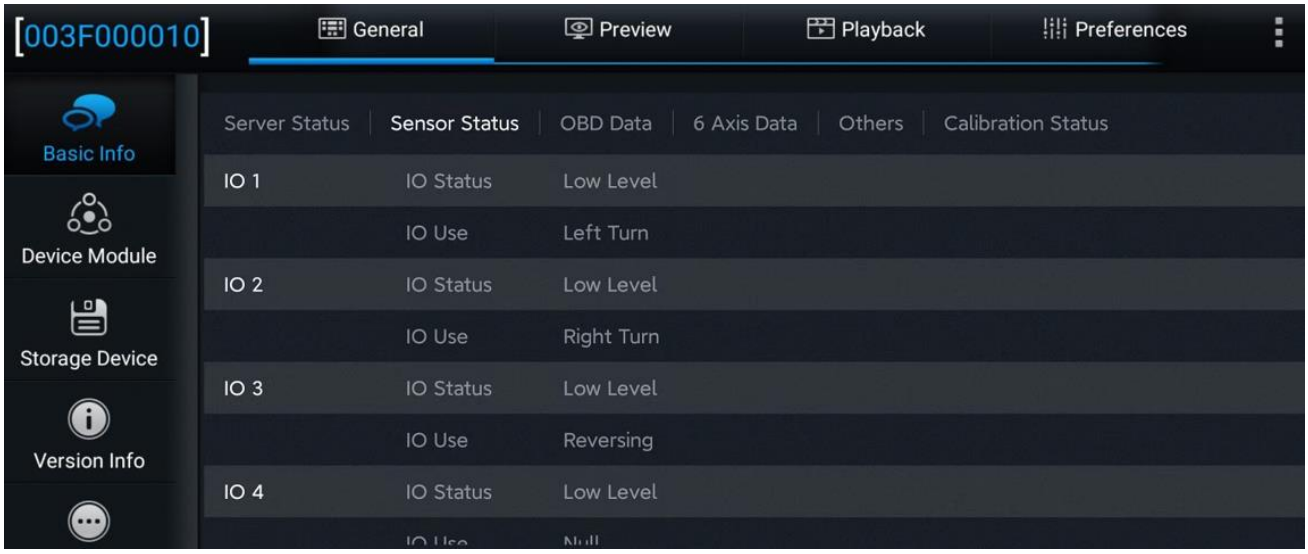


5.4 View General Information

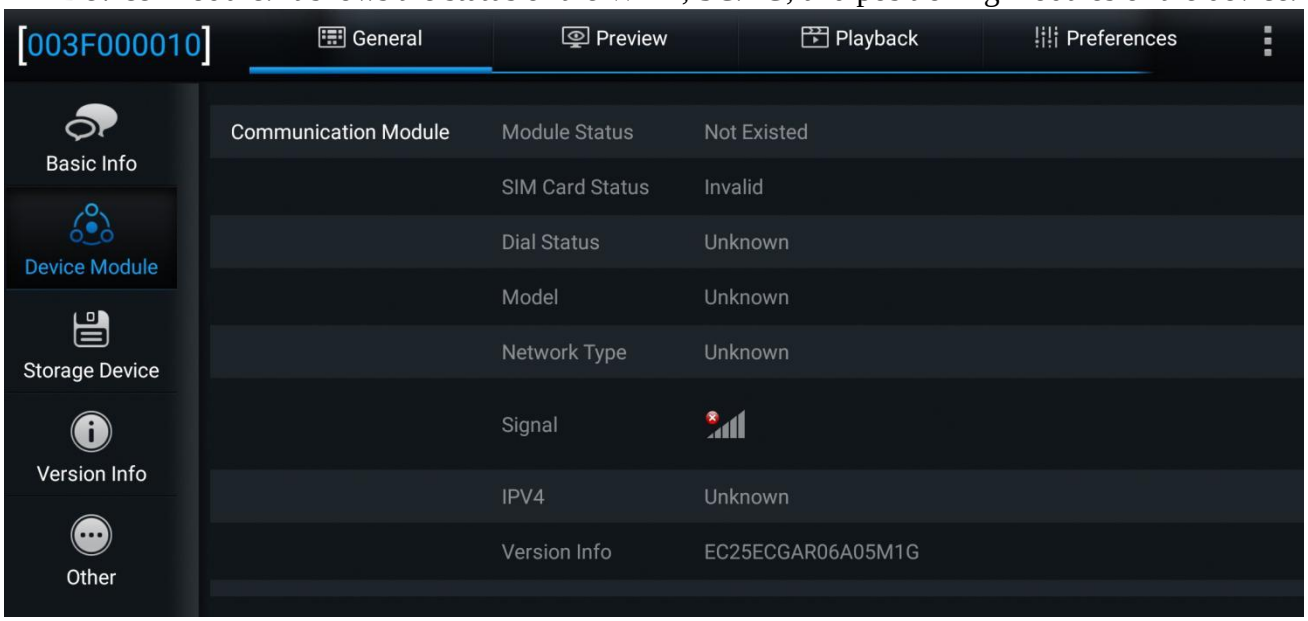
On the **General** screen, view the real-time device status, version information, import/export parameters, logs, and other files, as well as the software upgrade.

- **Basic Info**: It shows the server connection status, IO level status and use, OBD data, G-sensor

data, ACC status, pulse status, and device status, as well as the calibration status of the algorithm channel.



- **Device Module**: It shows the status of the Wi-Fi, 3G/4G, and positioning modules of the device.

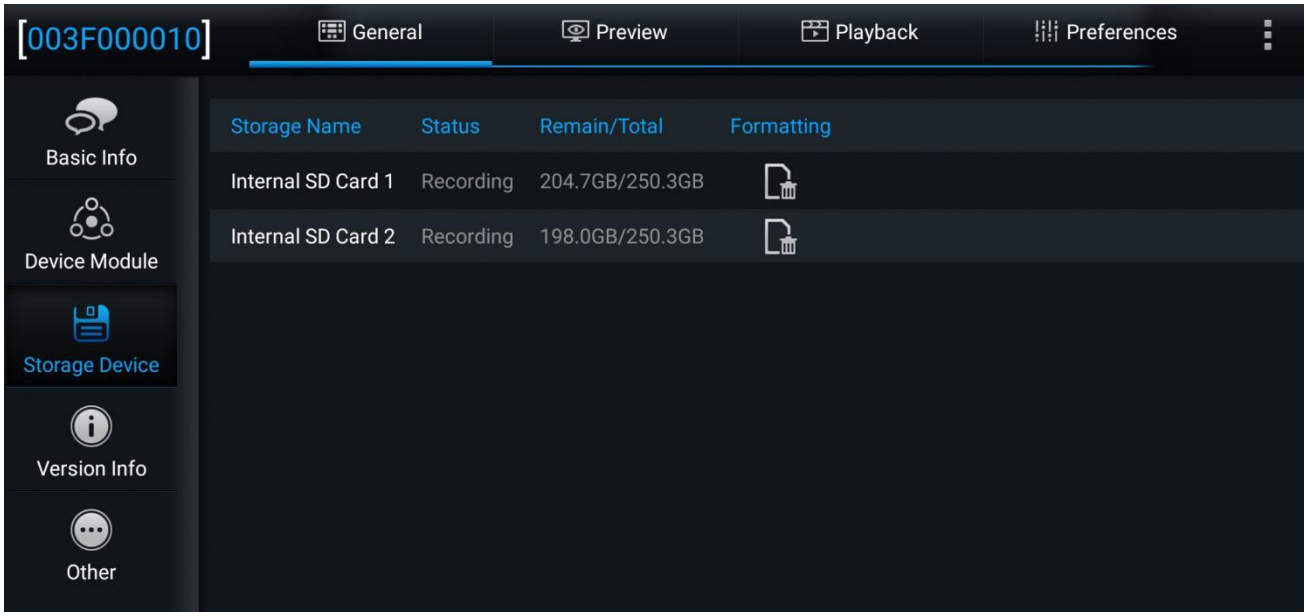


- **Location Info:** It is used to check the satellite positioning signal quality of the device, and help the installation, operation and maintenance personnel to evaluate the positioning capability and quality of the device, so as to perform corresponding maintenance actions. On this screen, the top row indicates the number of active satellites and the total number of satellites. PRN in the list below indicates the serial number of the satellite. GNSS indicates the global satellite navigation system (GPS, GLONASS, or GALILEO) that the satellite belongs to. SNR indicates the signal-to-noise ratio, which is a parameter reflecting the quality of satellite positioning

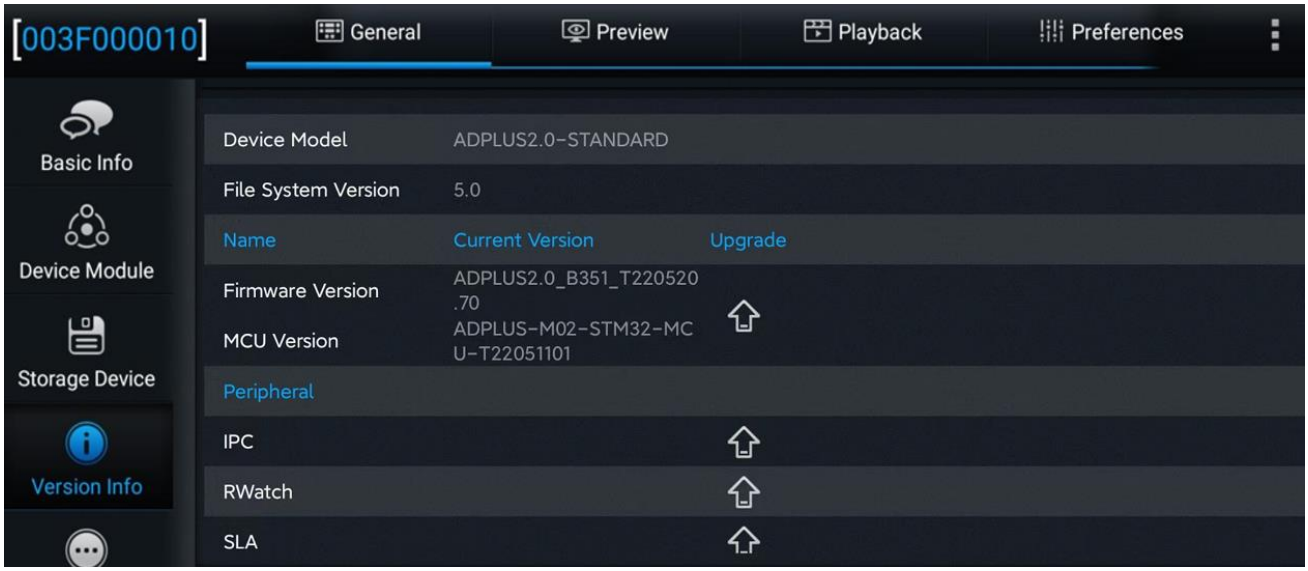
signals. The Direction angle represents the satellite azimuth angle, and the Altitude angle represents the satellite altitude angle.

Note: This screen is displayed only when the GPS raw data record command is opened. For specific operations, refer to the description of **Preferences > Collection > General > Location**

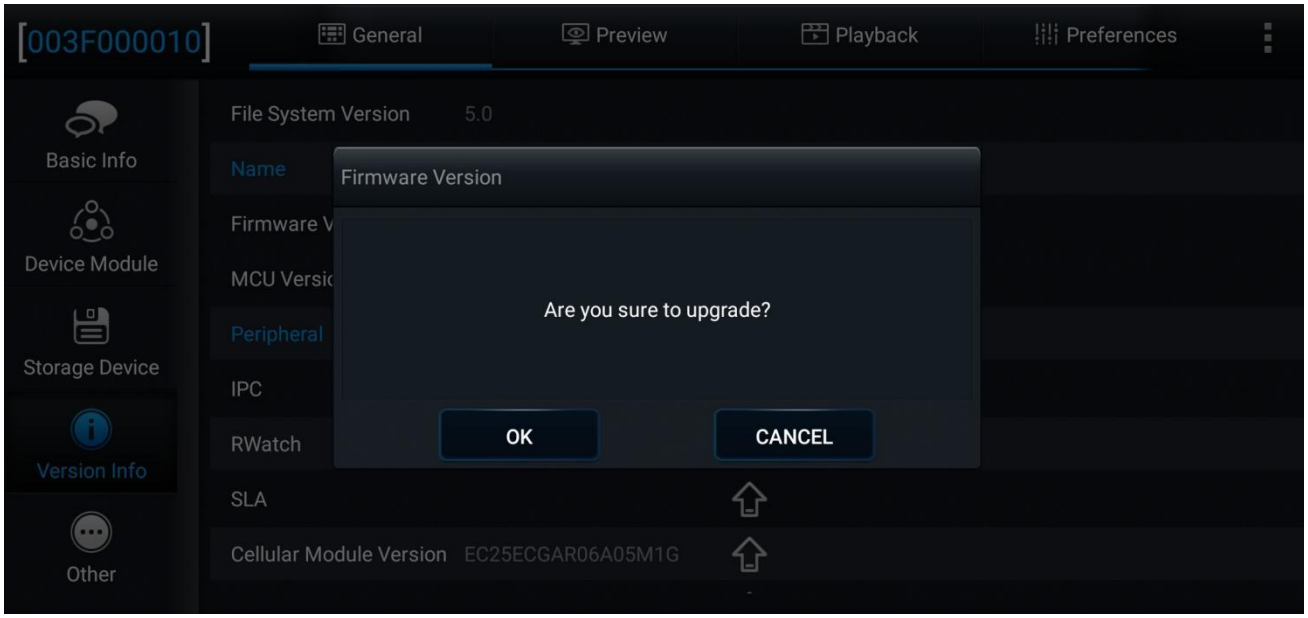
- **Storage Device**: Check the storage status of the device and support formatting. Tap **Formatting** and a pop-up appears. Tap to confirm the execution of formatting.



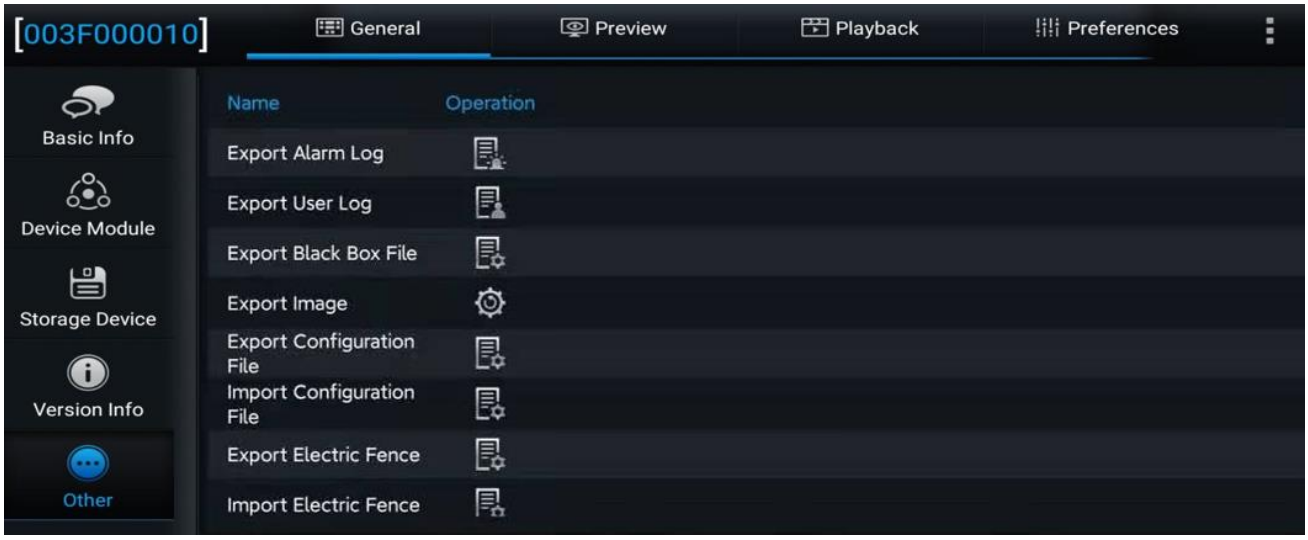
- **Version Info**: It shows the software version information.



On the **Version Info** screen, you can locally upgrade the version of the MDVR, IPC, R-Watch, Audible and Visual Alarm, communication module, GPS, or power box. The file to be upgraded should be placed in the U disk root directory Upgrade, and connect the U disk to the device. To upgrade the required item, tap  . In the displayed confirmation prompt box, tap **OK**.



- **Other**: Import and export of data and configuration, factory reset, device rebooting. For operations of data import and export, the connection of the device to an external U disk is required.



1. Export alarm log, user log, and black box file;
2. Export alarm capture images of specified time moments;
3. Import/Export the Geo-fence information;
4. Import/Export the AI configuration file;
5. Import/Export parameter configuration file;
6. Restore default settings;
7. Export print data within a specified time period;
8. Reboot the device;

5.5 Real-time Preview

On the **Preview** screen, you can view the real-time recording, turn on/off the sound or auxiliary line, and perform AI calibration.

5.5.1 Real-time Preview

On the **Preview** screen, you can view the real-time recording of each channel of the device. Double-tap on the preview screen of a channel to zoom in and double-tap again to return to the normal screen. If the camera is damaged or not connected, "**VIDEO LOSS**" will be displayed.

5. 5. 2 AI Calibration

ADAS calibration requires on-site measurement of installation height, left margin, front end width, and front end length of the ADAS lens. For the setup interface, refer to **Preferences** > **Alarm** > **AI App** > **Calibration Parameter**. This section introduces the conventional guided calibration method. On the **Preview** screen, the ADAS algorithm calibration method and the calibration method of the external DMS lens (optional) are available.

5.5.2.1 ADAS Calibration

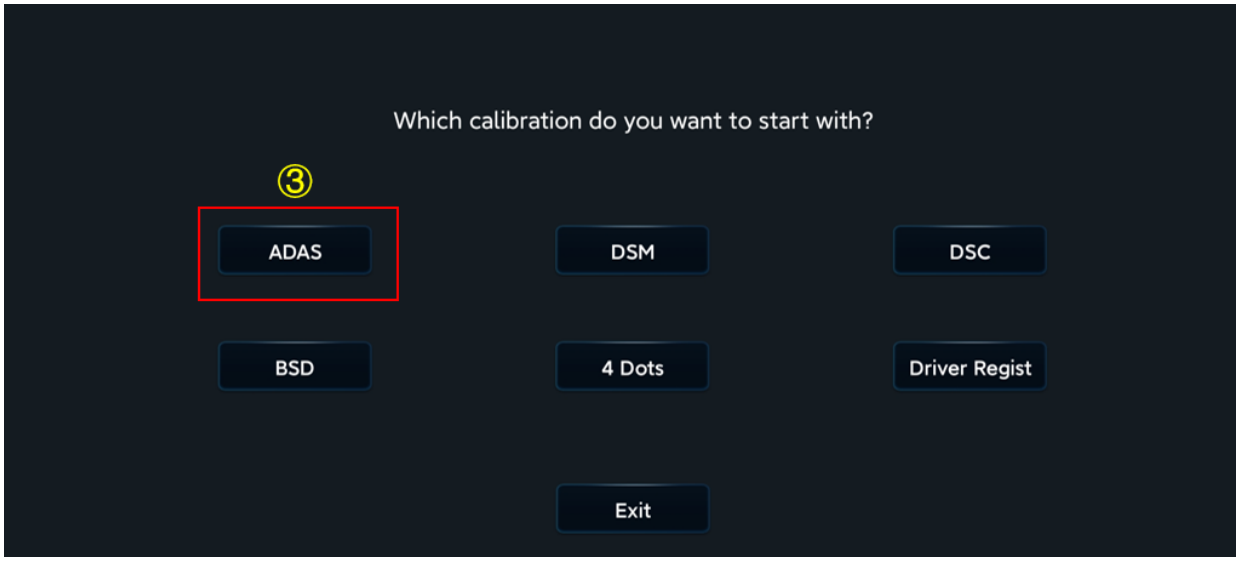
① On the home screen, tap **Preview**. The **Preview** screen is displayed.

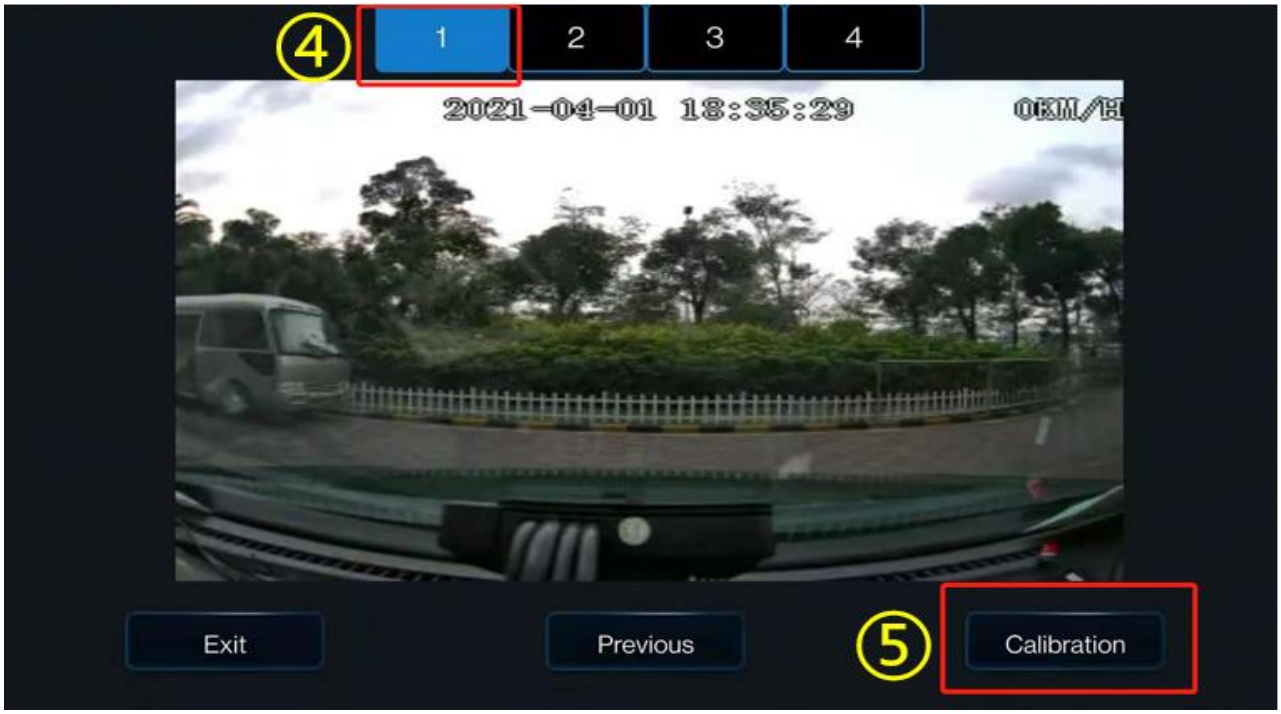
② Tap **AI Calibration** on the lower-left corner

③ Tap **ADAS** for calibration.

④ Select channel 1

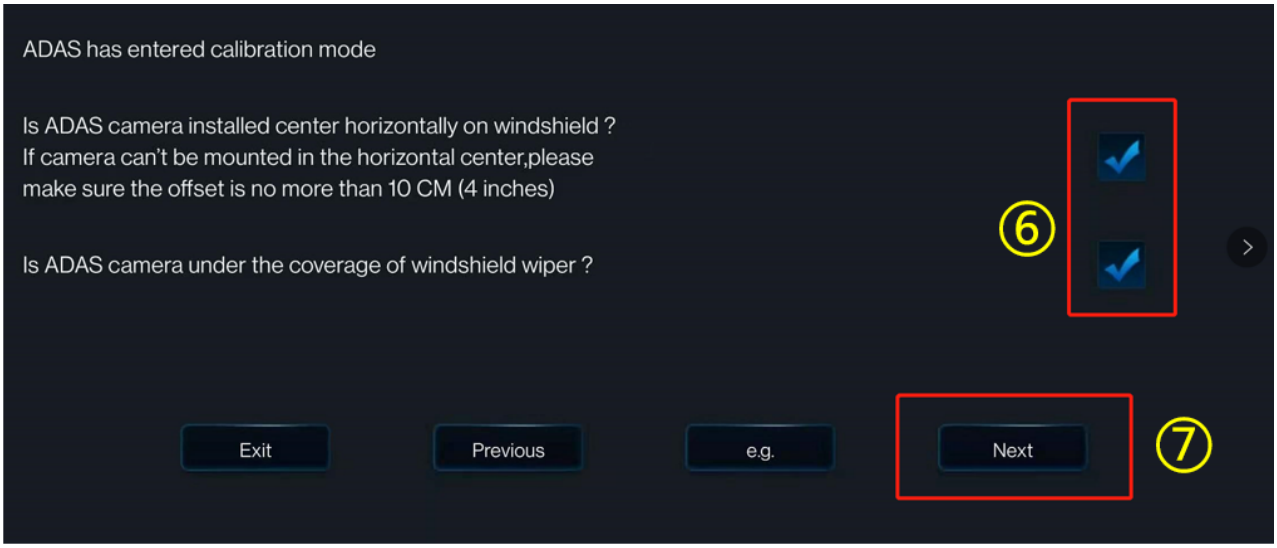
⑤ Tap **Calibration**





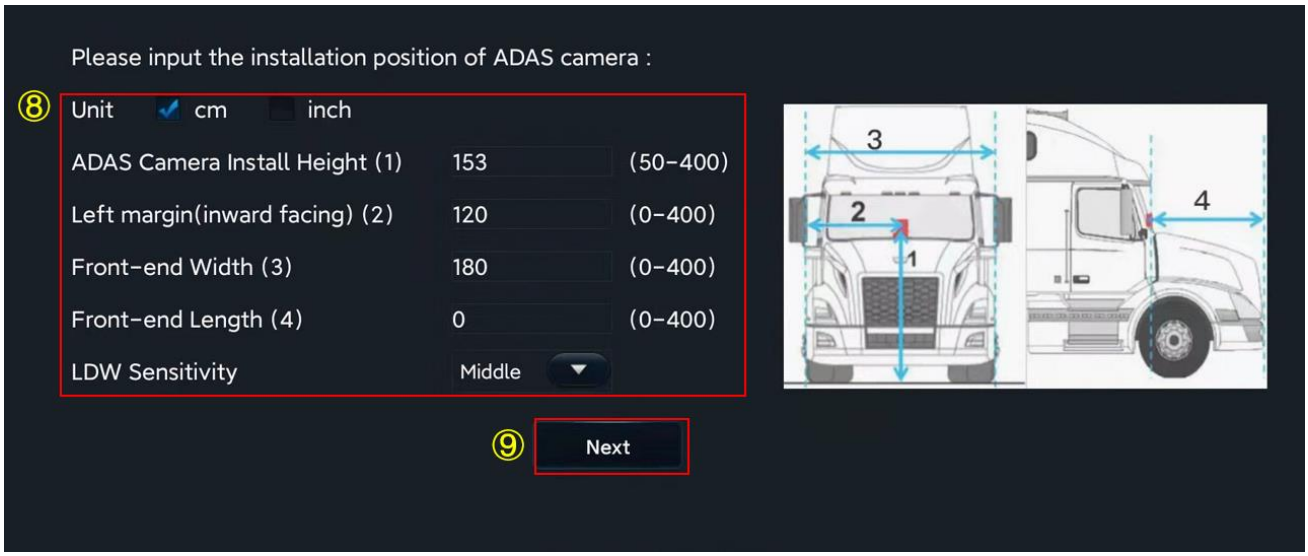
⑥ Confirm the prompts—Check the two boxes

⑦ Tap **Next**

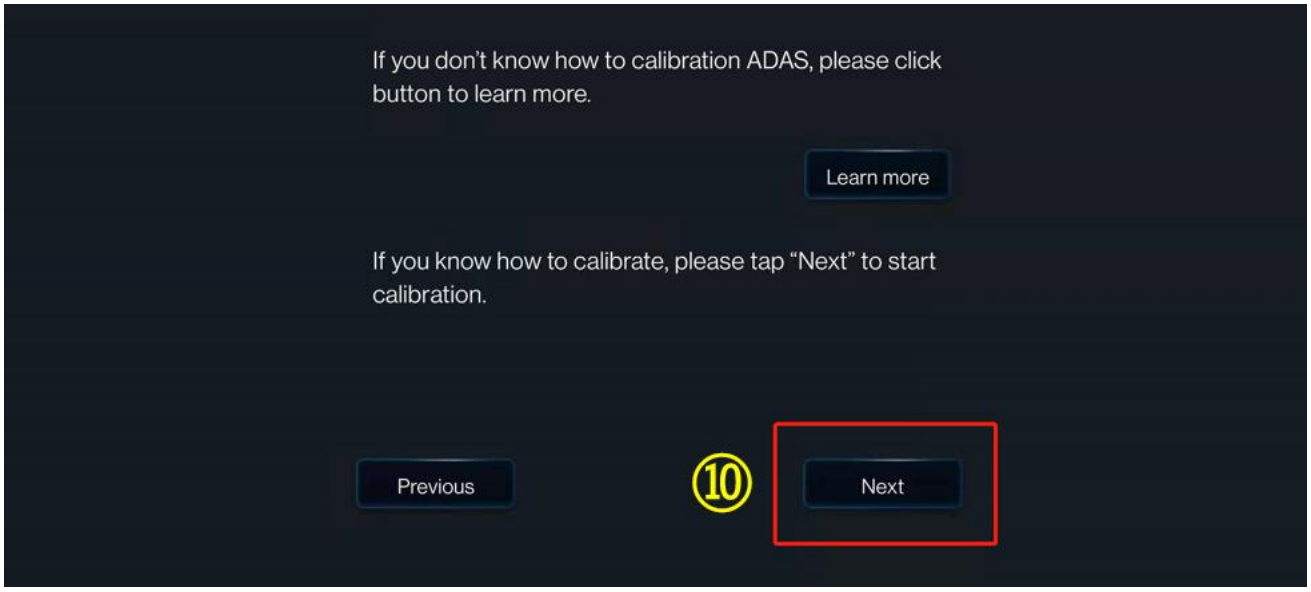


⑧ Enter the vertical height of the front-facing camera from the ground, the horizontal distance between the front-facing camera and the outer edge of the leftmost tire of the vehicle (on the left side of someone standing on the outside of the vehicle and facing the front end), and the front end width and length (in centimeters or inches; referring to the example on the right for the size measurement, with each parameter serial number corresponding to each legend serial number). In addition, this step is added with the setting of the lane departure alarm sensitivity, and the installation personnel can select the appropriate sensitivity according to the vehicle model during installation, so as to realize more accurate alarms. The lane departure sensitivity is optional for cross over line alarm (low), crossing line alarm (medium), and approaching line alarm (high). The default sensitivity is medium.

⑨ Tap **Next**



⑩ Tap **Next** (tap **Learn More** to learn how to calibrate the ADAS camera)



⑪ Tap **Next**

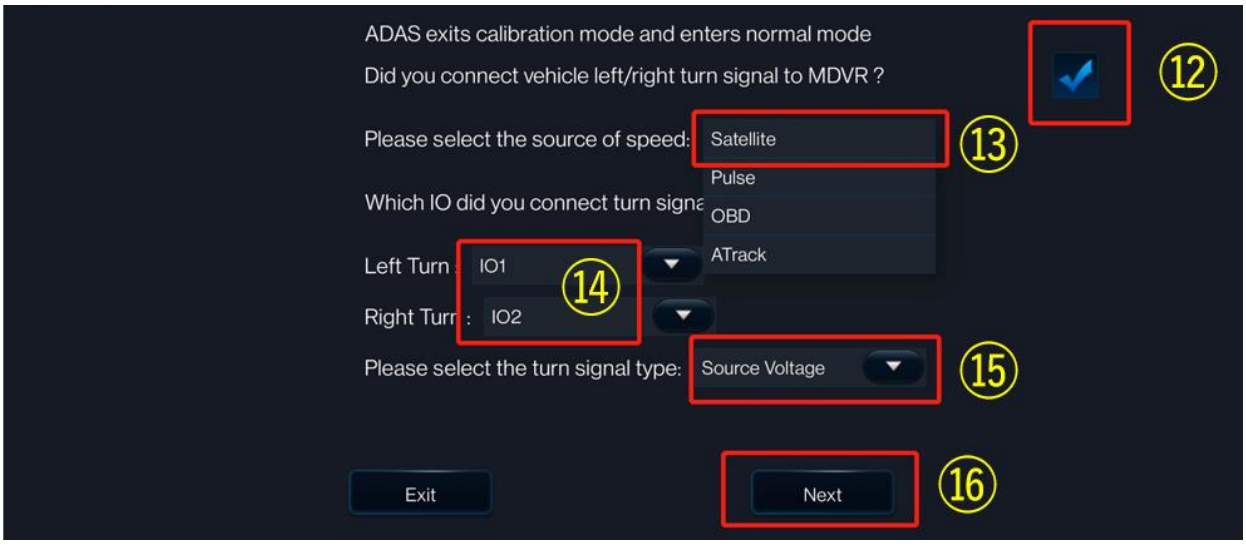
⑫ Confirm the prompts—Check the box

⑬ Select the required source of speed from Satellite, Pulse, OBD/CAN and ATtrack

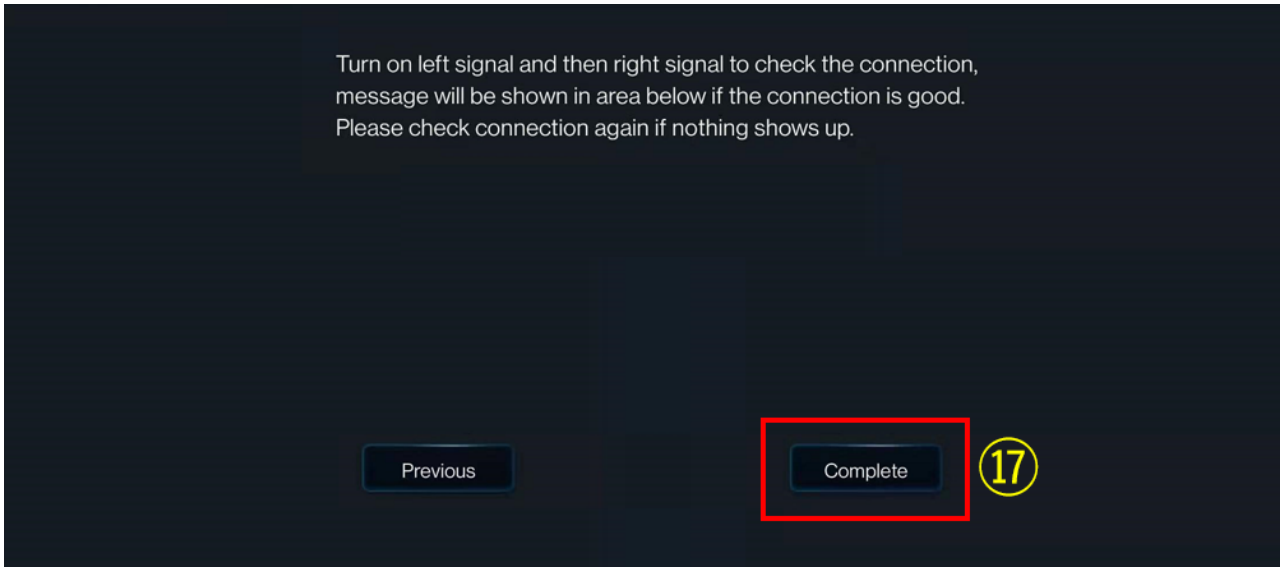
⑭ Select the required IO for the left/right turn signal in **Left Turn**/**Right Turn** respectively.

⑮ Select the required signal source type from **Source Voltage** and **Source Pulse**. Usually, **Source Pulse** is selected.

⑯ Tap **Next**



⑰ After checking that the left and right signal cables are in proper status, tap **Complete**. The calibration of the ADAS camera is completed.



Warning: The calibration of the ADAS camera must strictly comply with the requirements of the AD Plus2.0 Series Installation Guide. The parameters required for installation and calibration need careful measurement. The verification of the left and right turn signals must be carefully implemented, otherwise, ADAS cannot effectively detect road information for judgment, causing the alarm accuracy to drop or the function to be unavailable. We are not liable for abnormal functions caused by installation and calibration.

5.5.2.2 DSC Calibration (Not supported in the AD Plus2.0-S)

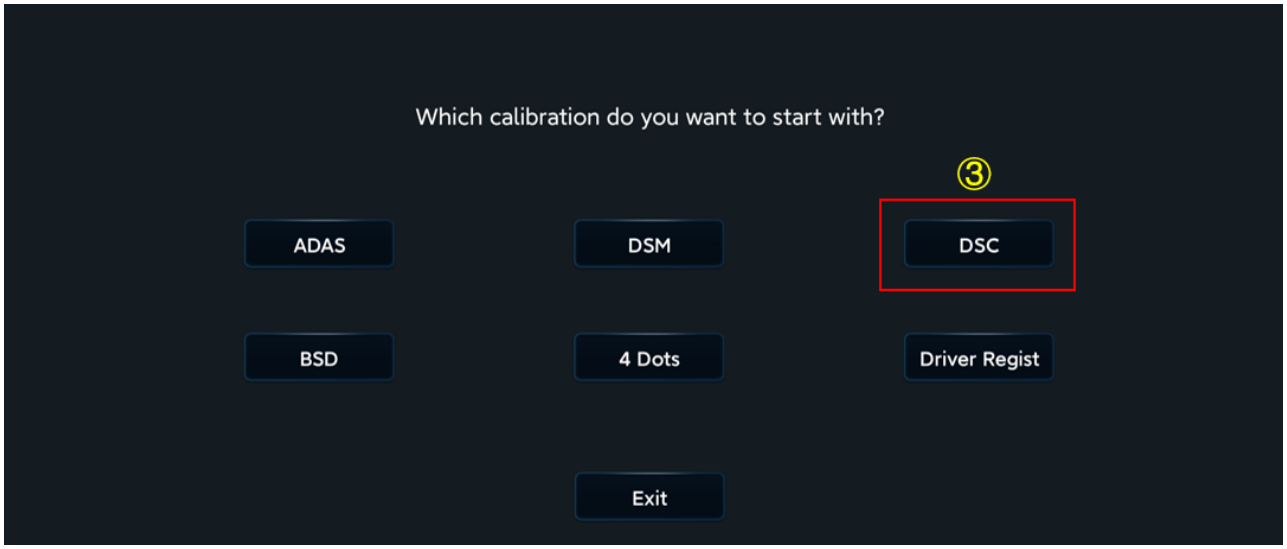
① On the home screen, tap **Preview**. The Preview screen is displayed.

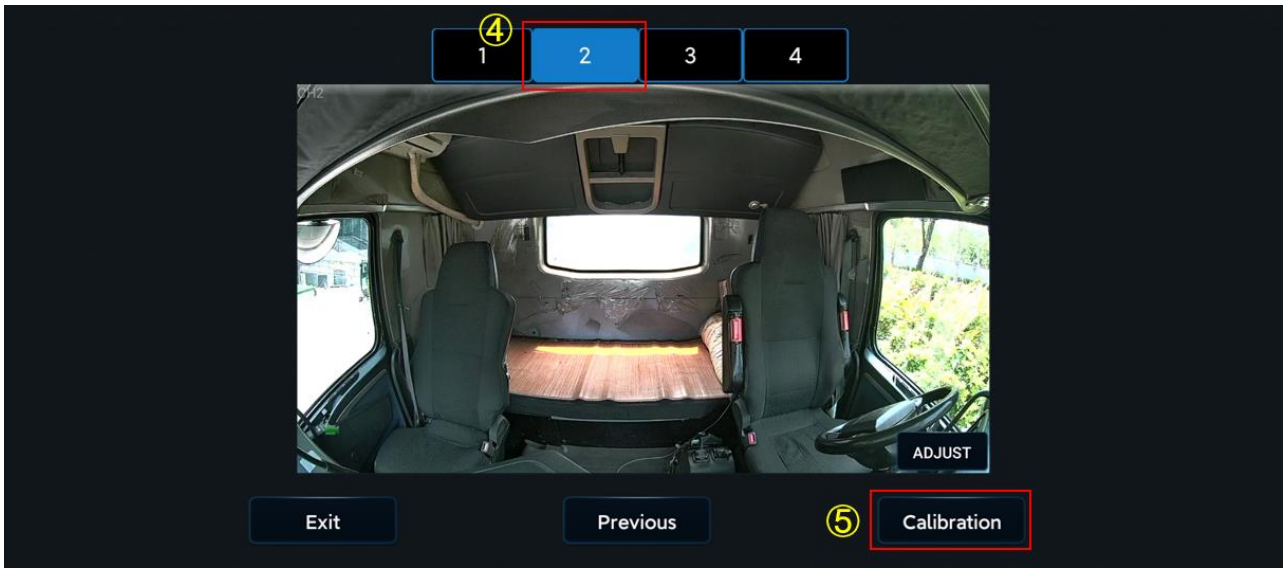
② Tap **AI Calibration** on the lower-left corner

③ Tap **DSC** for calibration

④ Select channel 2

⑤ Tap **Calibration**





⑥ Select left-hand drive or right-hand drive for the steering wheel (left-hand drive indicates that the steering wheel is on the left of the cockpit when the driver is seated in the cockpit and facing toward the front direction; right-hand drive indicates that the steering wheel is on the right of the cockpit when the driver is seated in the cockpit and facing toward the front direction)

⑦ Tap **Save** to save the operation. When the interface prompts the save is successful, the DSC calibration is completed.

⑧ Tap **Exit** to exit the DSC calibration.

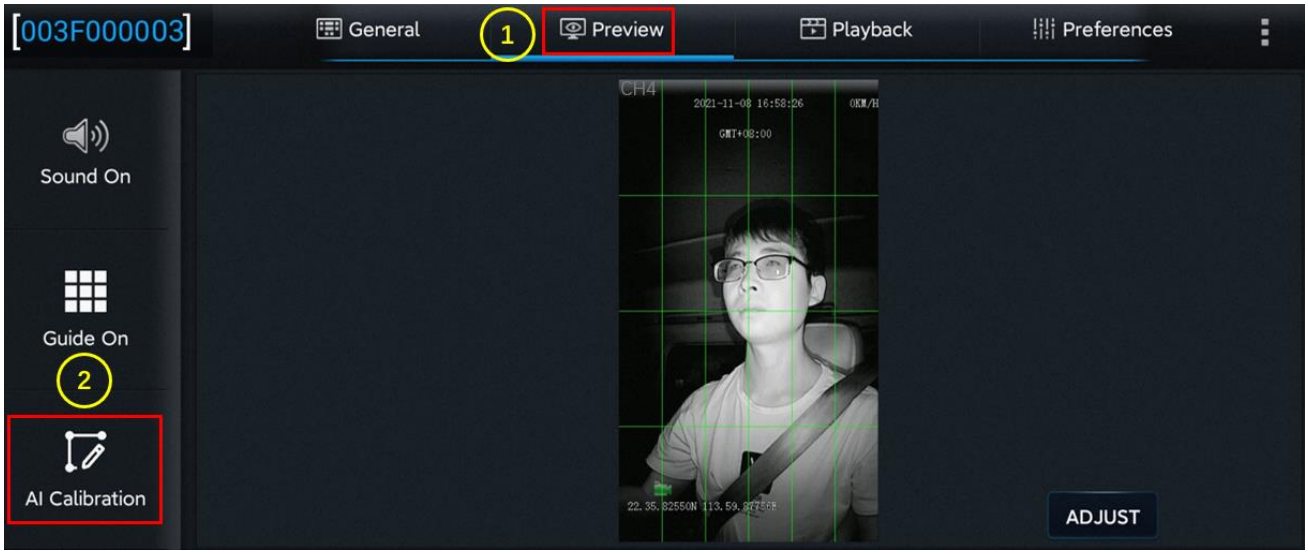
Warning: Choosing the correct left-hand and right-hand configuration of the driver has a great impact on the DSC alarm. The calibration process must be carefully implemented to ensure that the correct left-hand and right-hand information, otherwise the DSC cannot effectively detect the driver to make an alarm judgment, leaving the alarm failed to be triggered. We are not liable for any abnormality caused by the installation and calibration.

5.5.2.3 DMS Calibration (Optional)

C29N is the recommended optional DMS camera model. C29N, a camera with 0.7 T intelligent computing power, can provide professional DSM functions. Its built-in exposure of the central area of the face can cope with various complex light scenes (oblique sunlight, reflective clothing, black light-absorbing clothing, etc.). With a G-Sensor, it can automatically and flexibly adjust images to adapt to different installation statuses, such as left & right A-pillar installation or dashboard installation. It is also practical in the case where the camera is 50 cm to 100 cm away from the face, catering to the installation requirements of multiple vehicle models. Select an installation mode as needed to correctly install the C29N before DMS calibration.

① On the home screen, tap **Preview**. The **Preview** screen is displayed.

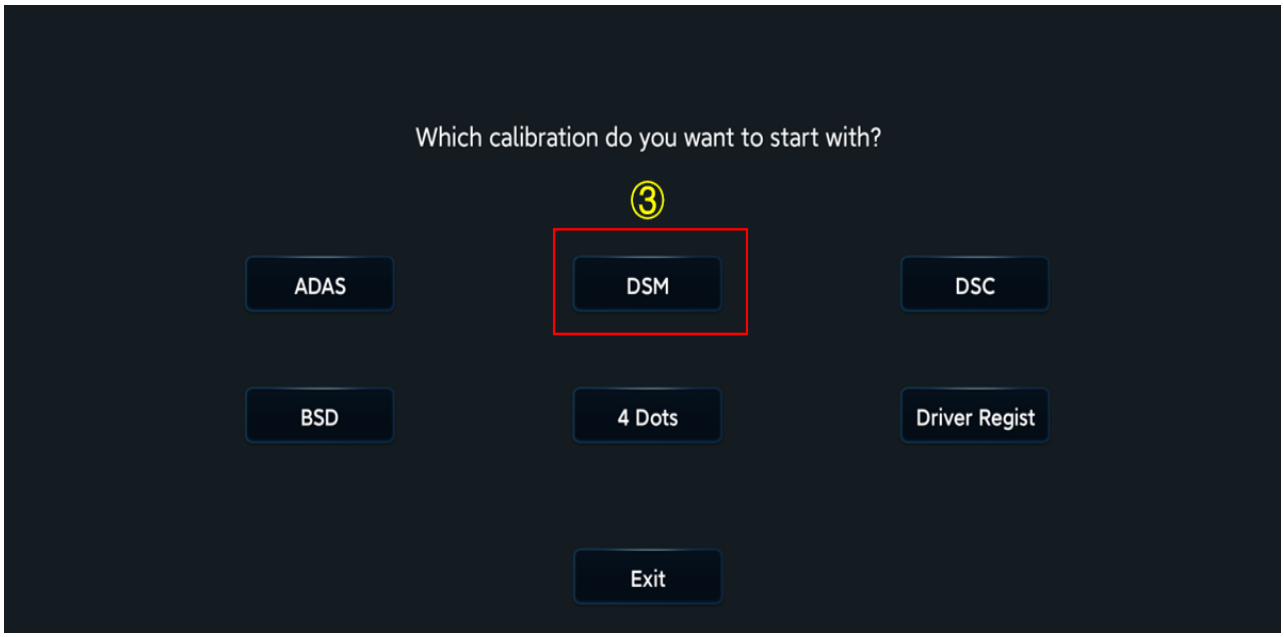
② Tap **AI Calibration** for calibration selection

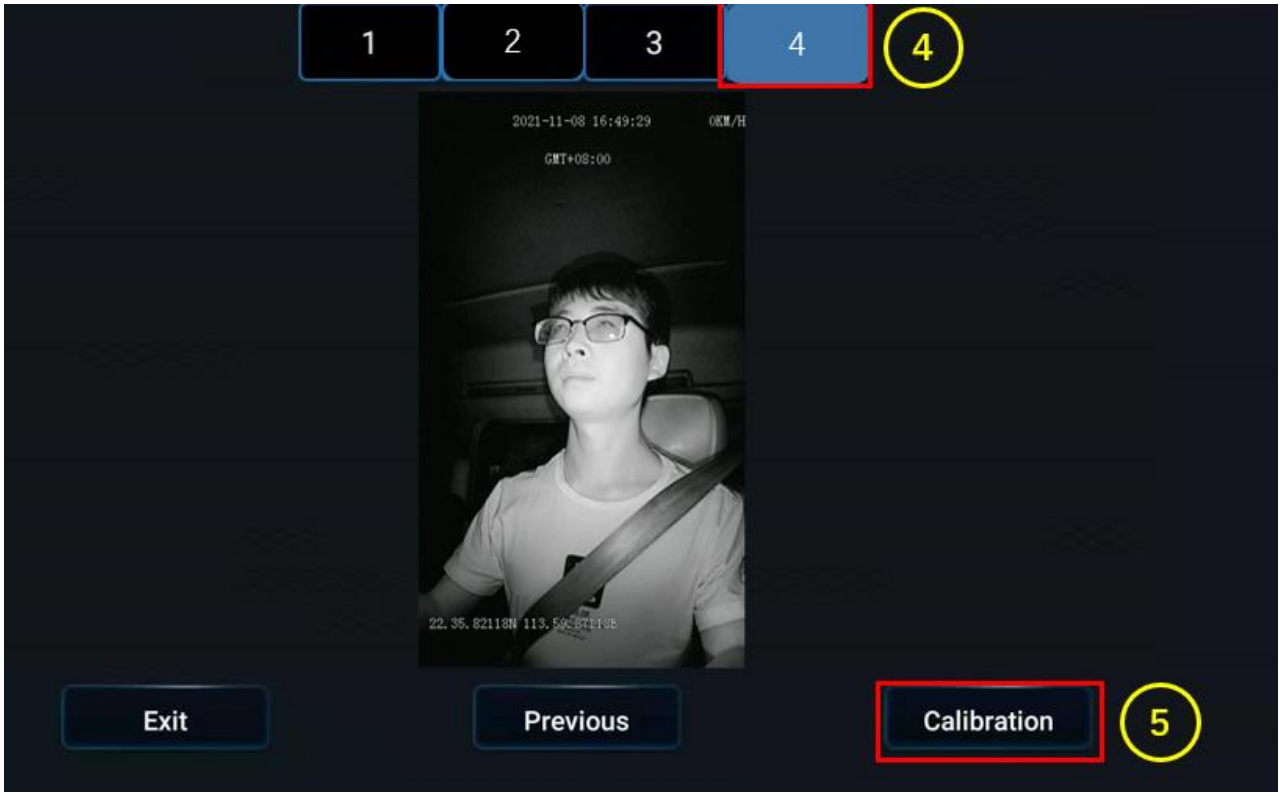


③ Tap **DMS** for calibration.

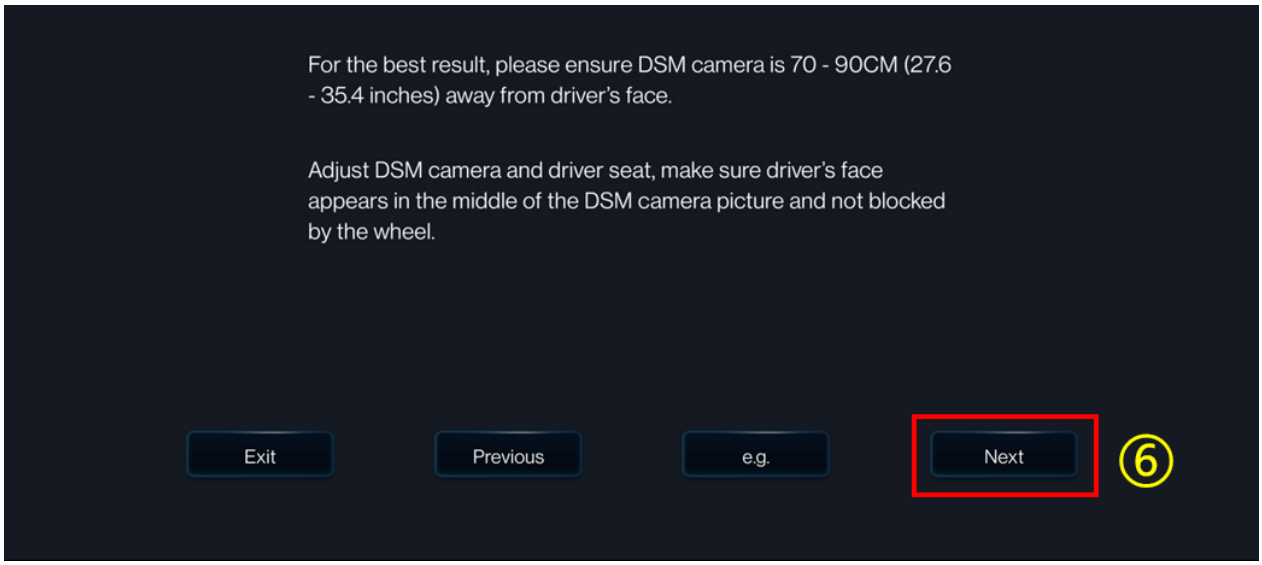
④ Select the corresponding channel of the DMS camera. C29N defaults to 4 channels

⑤ Tap **Calibration**





⑥ Confirm the prompts—Tap **Next**

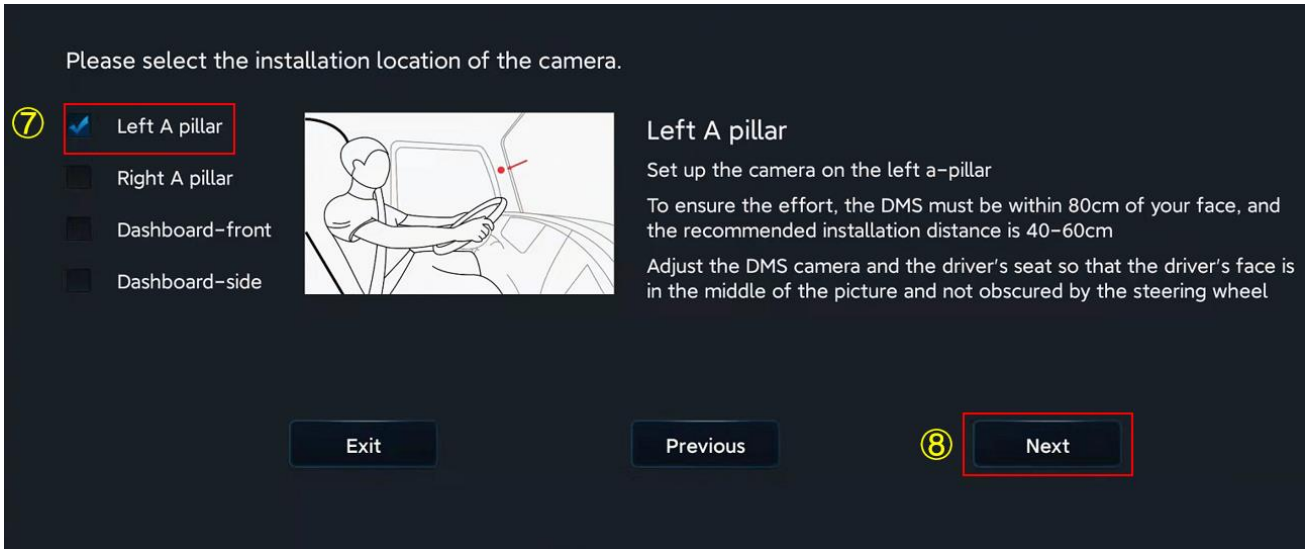


⑦ For the installation location of the DMS camera, the left A-pillar, the right A-pillar, the front side of the countertop, and the lateral side of the countertop are available. For any questions, please tap each option in turn, and refer to the legend and description on the right.

After selecting the corresponding installation mode, the software automatically associates the calibration method with the installation mode, not requiring any manual operation (for installation on the left A-pillar (near glass), the right A-pillar (near glass), and the lateral side of the dashboard,

the lateral side calibration is applied, and for the installation on the front side of the dashboard, the front side calibration is applied).

Special notes: This step is of great importance. The installation mode must be consistent with the actual installation mode.



Especially: Before tapping **Next** to make the official calibration, the drivers should sit in the normal driving posture and look straight ahead.

⑧ Tap **Next** to move on to the next step for automatic face calibration

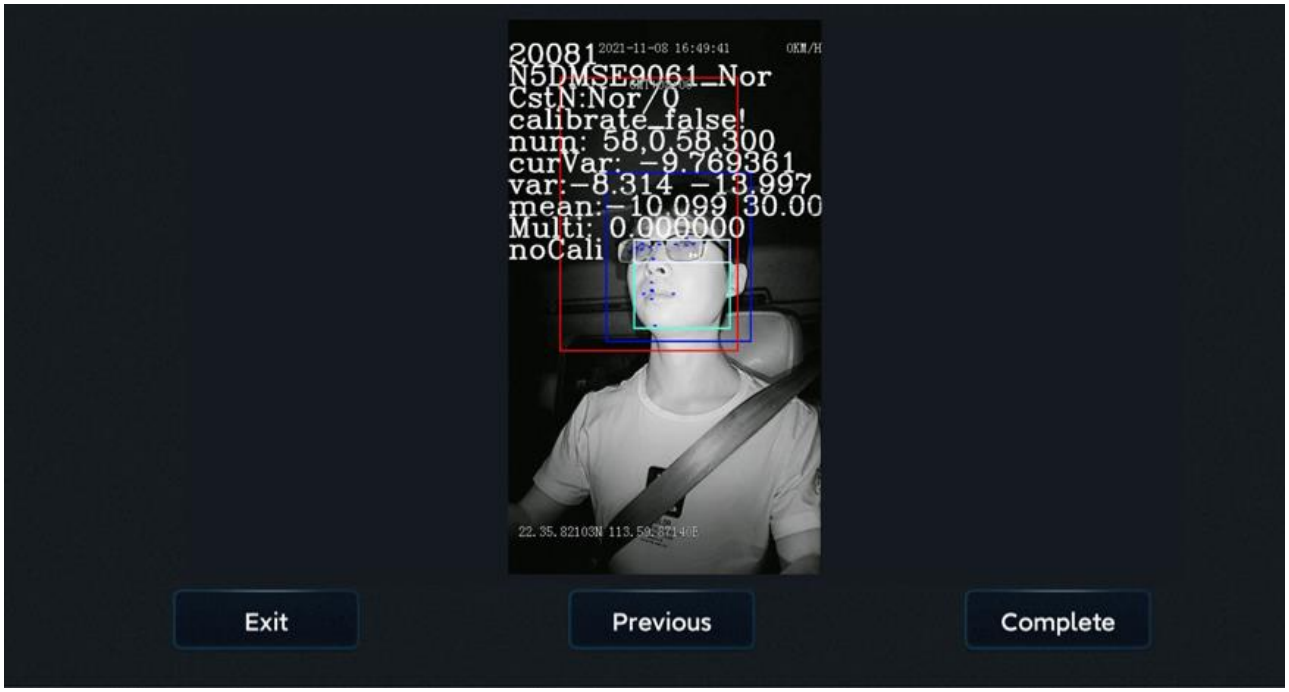
During calibration, make sure that the driver sits still according to normal driving habits and posture and looks straight ahead.

In the process of side calibration, the intelligent algorithm will automatically learn the driver's head deflection angle and face feature data. If the driver moves his/her head during the calibration, the calibration will restart automatically.

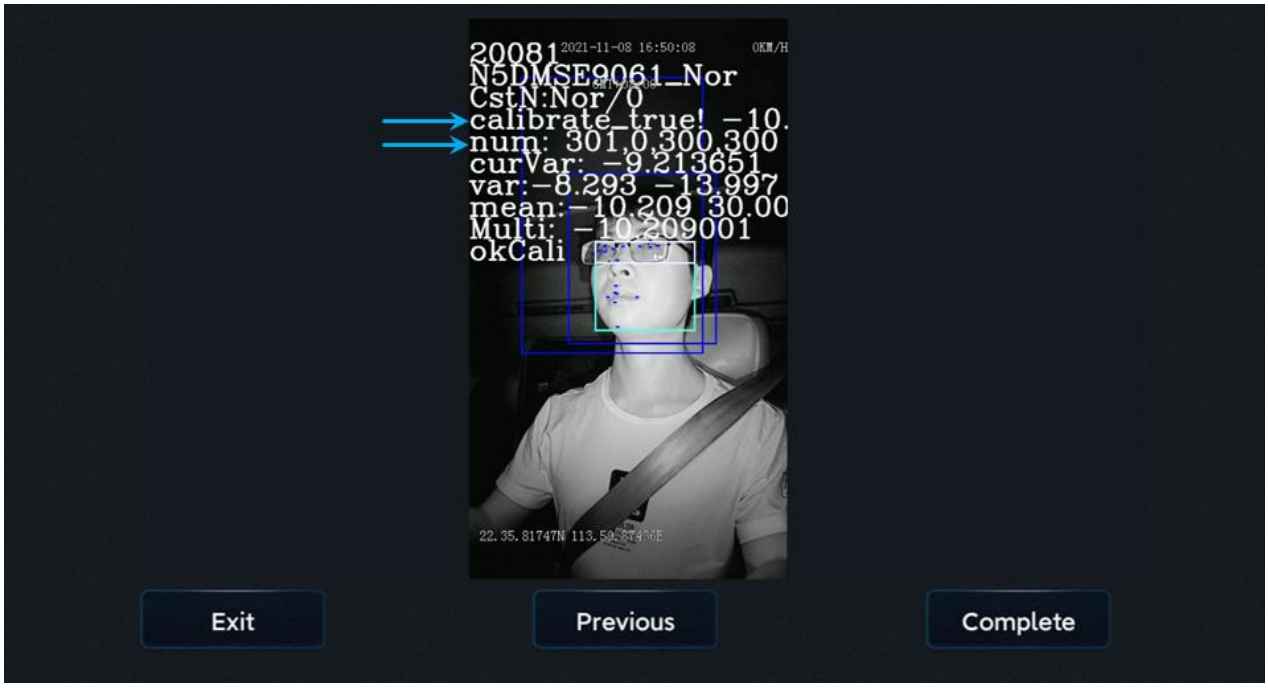
Special notes: For installation on the left A-pillar, the right A-pillar, and the lateral side of the dashboard, the human face and the camera must form a certain angle to complete the calibration. For installation on the front side of the dashboard, the human face must be in front of the camera to complete the calibration.

The driver sits still and waits for the equipment to be calibrated automatically. When the value of NUM reaches 301 in the mode of side installation and side calibration (51 in the mode of front installation and front calibration), the calibration frame turns from red to blue, and then the automatic calibration ends.

Calibration is ongoing:



Calibration is completed:

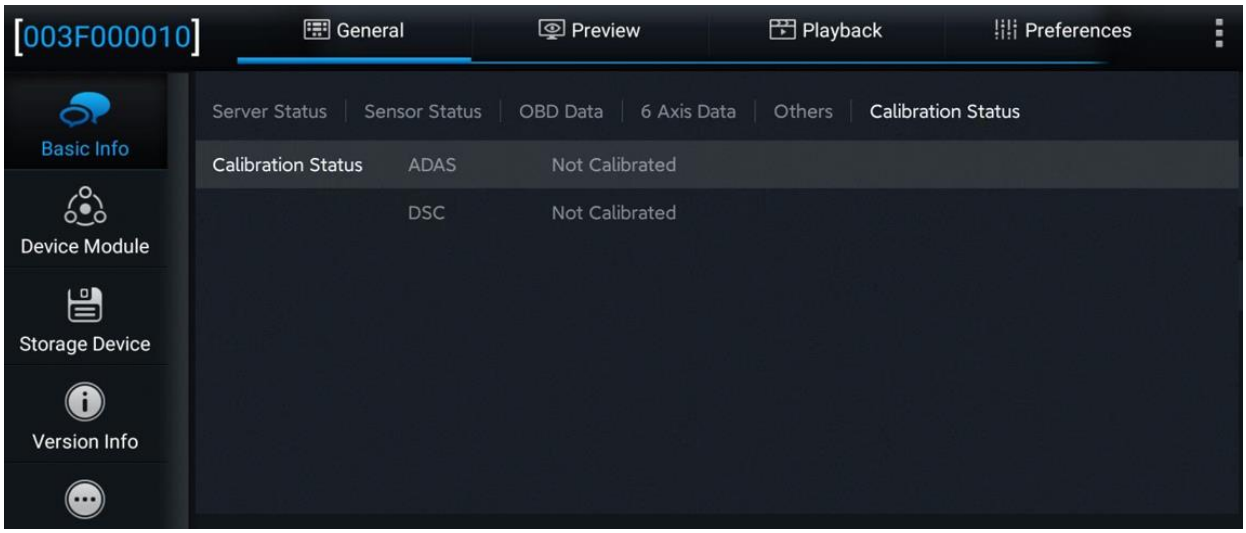


Tap **Complete** to complete the calibration and exit the calibration mode.

After the actual calibration of each algorithm channel is completed, check whether the calibration is successful through Veyes. Tap **General** > **Basic Info** > **Calibration Status** on the Veyes interface to check whether each channel is calibrated successfully.

Special Notes:

1) Only the channel with the algorithm enabled will display the calibration status. There are two types of calibration status: not calibrated and successfully calibrated;
2) Since both ADAS and DSC adopt the automatic calibration whose completion requires the vehicle to actually drive for a period of time, even if the parameters are configured, the status prompt that ADAS and DSC are successfully calibrated cannot be immediately seen.



Warning: The installation and calibration of the DMS camera must strictly comply with the requirements of the AD Plus2.0 Series Installation Guide. The installation distance from the lens to the face is 50~100 cm. The installation height of the lens is lower than that of the driver's face. Otherwise, the DMS cannot effectively distinguish whether the driver closes eyes, reducing the accuracy of relevant alarms. We are not liable for false positives caused by installation.

5.6 Video Playback

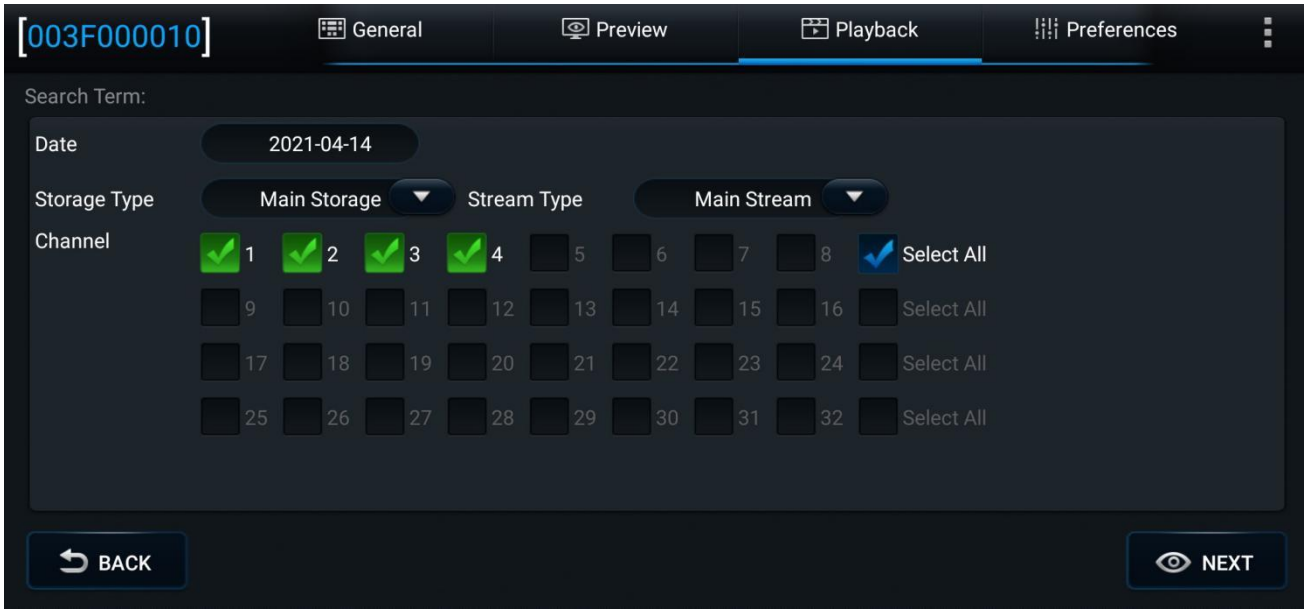
5. 6. 1 Video Playback

On the Playback screen, you can search for the main and sub stream videos in the main and sub memory on a certain date. When the sub stream video recording is selected and two SD cards are installed, the sub stream will be stored in the sub memory. The sub memory should be selected so that the sub stream video recording can search for the sub stream (For more about the application scenarios of the main and sub streams, please refer to the appendix of terminology).

On the **Playback** screen, select a date from the calendar for video playback. On the left part of the screen, you can select the year and month. Tap  and  to select different years and months. In the calendar, the color of the strip under a date indicates that videos were recorded on that day. Where:

No colored strip	No video recorded on that day
Green	Normal videos recorded on that day
Red	Alarm videos recorded on that day
Yellow	Alarm videos recorded on that day with files automatically locked (locked video)

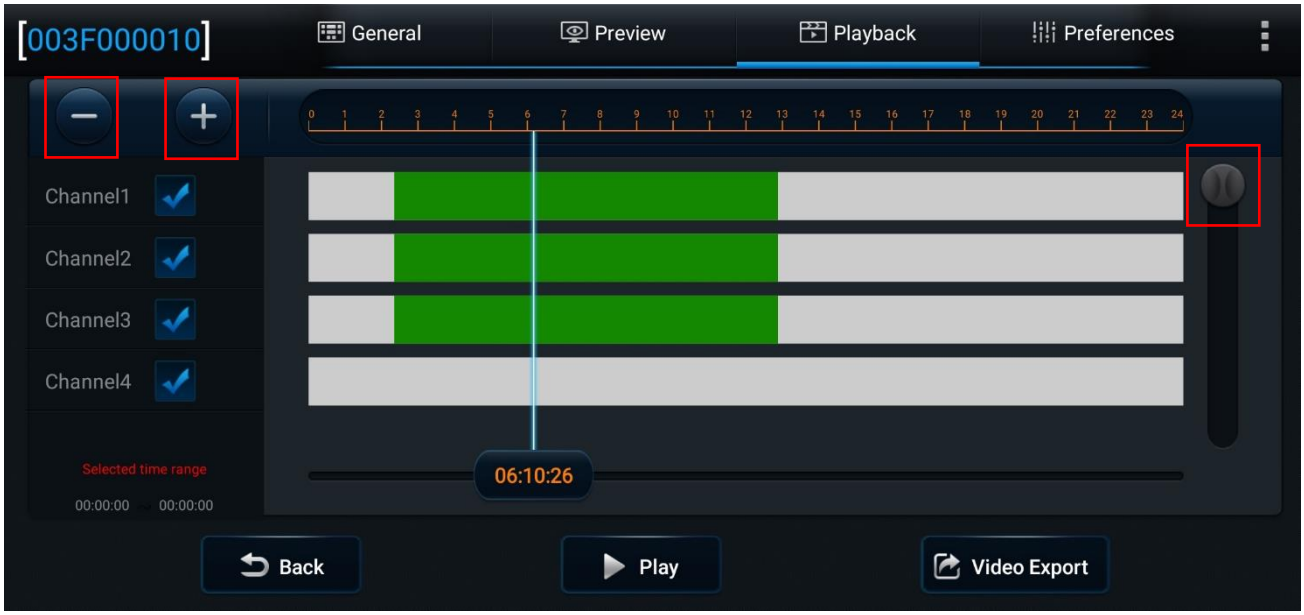
Tap the date of the video to be viewed in the calendar. On the displayed screen, select the channel of the video to be viewed. You can re-select the date and type of the video on this screen. Then, tap **Next**.



After the channel is selected, you can drag the timeline to select the playback time, and tap **Play**. During the playback, you can select the play operation. Double-tap on the screen to hide the operation screen and zoom in on the play screen.

- Timeline:
  1) The timeline at the top displays time at an interval of 1 hour.
  2) You can drag 

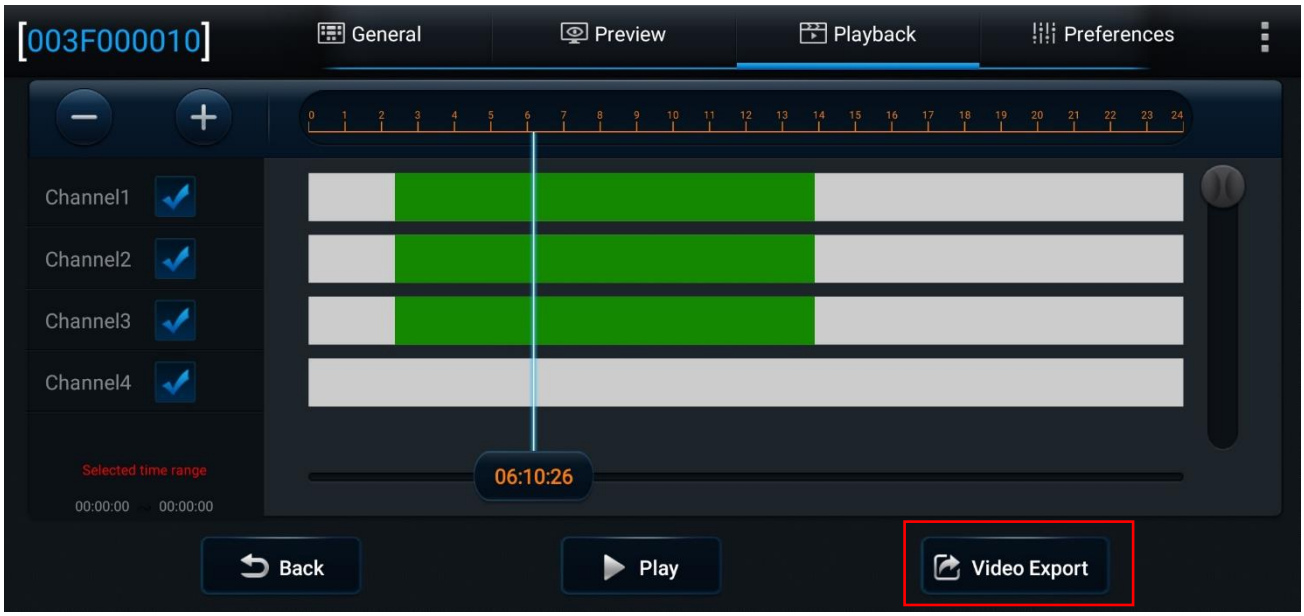
to any position in the timeline below.
  3) Tap  in the upper left corner of the screen to reduce the time interval, and tap  to enlarge the time interval. This function allows you to quickly locate a certain time period for the next playback/export operation when there are many video segments.
- Channel No.:
  1) The colored strip for each channel indicates the video types in different time periods.
  2) If there are many video channels, drag  on the right part of the screen upward and downward to view the video of each channel.
  3) Check a channel (or more) and select the timeline(s) to play back or export the videos in the channel(s) at the selected time.

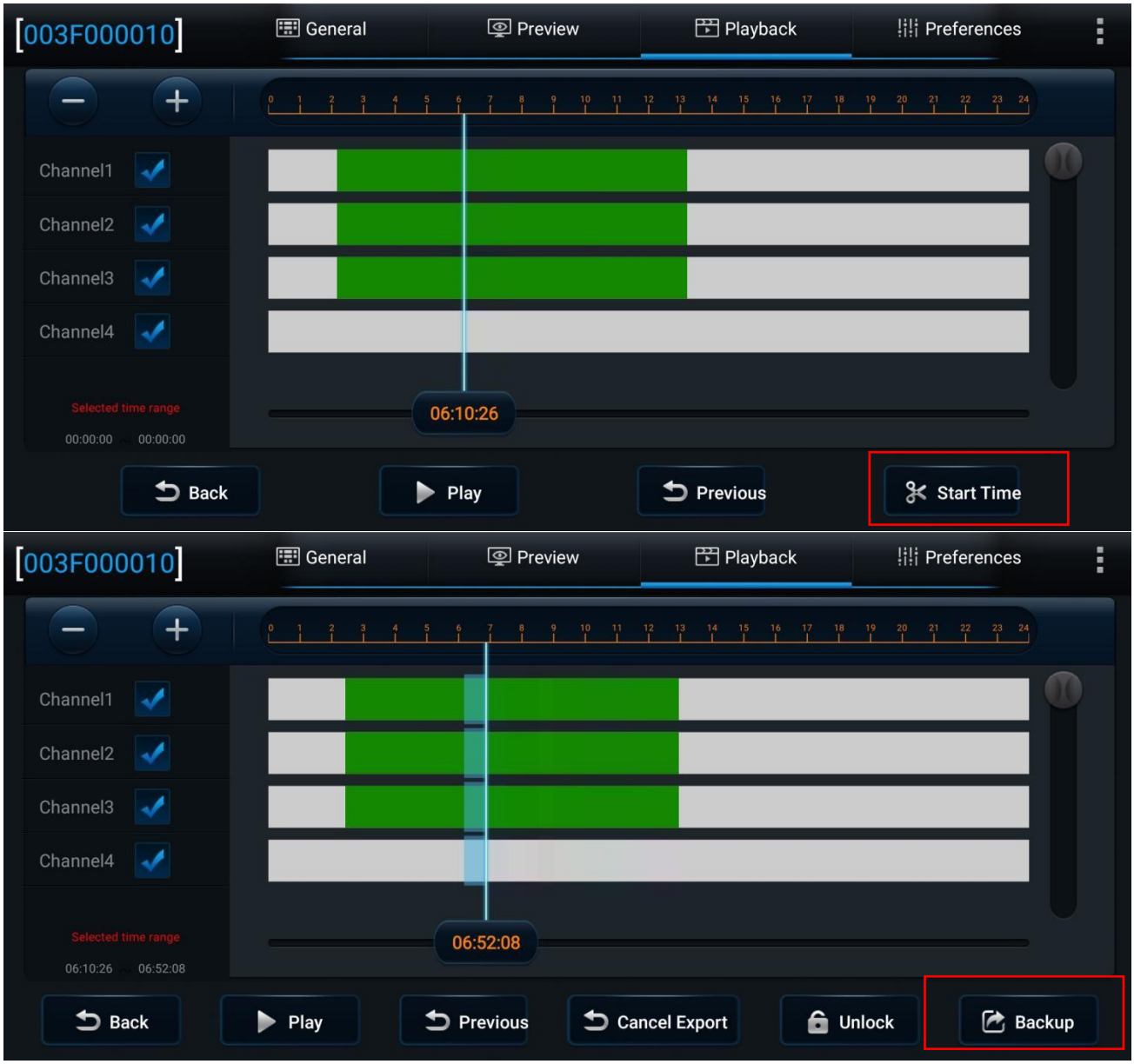


5.6.2 Video Export

You can also export the video of the selected time period.

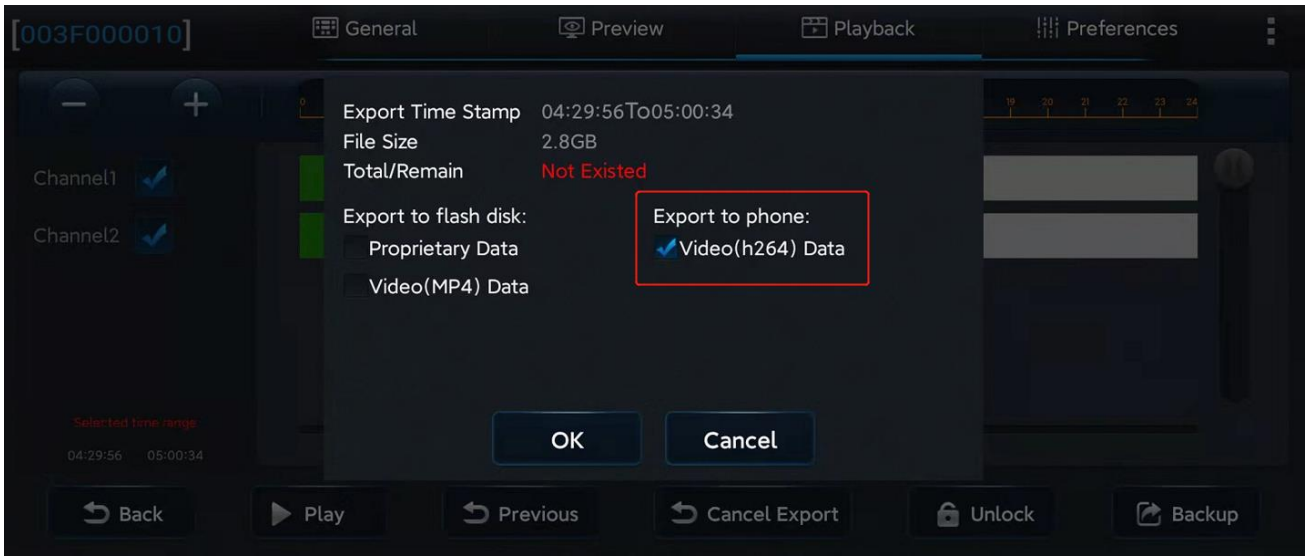
Tap **Video Export** at the bottom of the Playback screen and select the start time and end time. Tap **Backup** to export the video. Tap **Unlock** to lock and unlock the video of the selected time period.





In the video export options, you can choose to export the cropped video to an external USB flash drive or mobile phone, so that O&M personnel can quickly obtain and share the video.

Special notes: The exported MP4 format can be played with a common player, while the exported H264 format requires a dedicated player (CEIBA2 client). As the H264 format has more original data, it is convenient for troubleshooting video problems. For problems that need after-sales troubleshooting, please export in H264 format.



5. 7 Basic Setup

Note: On all parameter configuration screens, tap **Save** to save the modified parameters and tap **Default** at the bottom of the screen to restore the default settings of the parameters on the screen.

5. 7. 1 Registration Information

On this screen, you can set Device Info (Device ID), Vehicle Info (Vehicle Plate, License Plate, and Vehicle VIN), and Driver Info (Driver Number and Driver Name). After setting the license plate number here, the Wi-Fi hotspot will be named after the license plate number when you connect the device hotspot using Veyes.

Note: As the name of the Wi-Fi hotspot changes when the license plate number changes, reconnection and re-login to Veyes are required

5.7.2 Time Setup

- **General**: allows you to set the format of the time display and the time zone in which it is located.

1. **Date Format**: YEAR-MONTH-DAY/MONTH-DAY-YEAR/DAY-MONTH-YEAR. It is only reflected on the live view screen or in the video recording OSD.

2. **Time Format**: 24 Hours or 12 Hours. It is only reflected on the live view screen or in the video recording OSD.

3. **Enable Cross-time Zone**: controls whether to use the cross-time zone solution. If your vehicle is not in the time zone where the platform is located, for normal communication between your device and the platform, you need to enable the cross-time zone solution. After the function is enabled, the time zone settings turn gray automatically and are not editable. In this case, you can set the local time zone only. The local time zone indicates the time zone where the vehicle is located. After the function is disabled, you can set the time zone parameter only, which is the time zone where the vehicle is located.

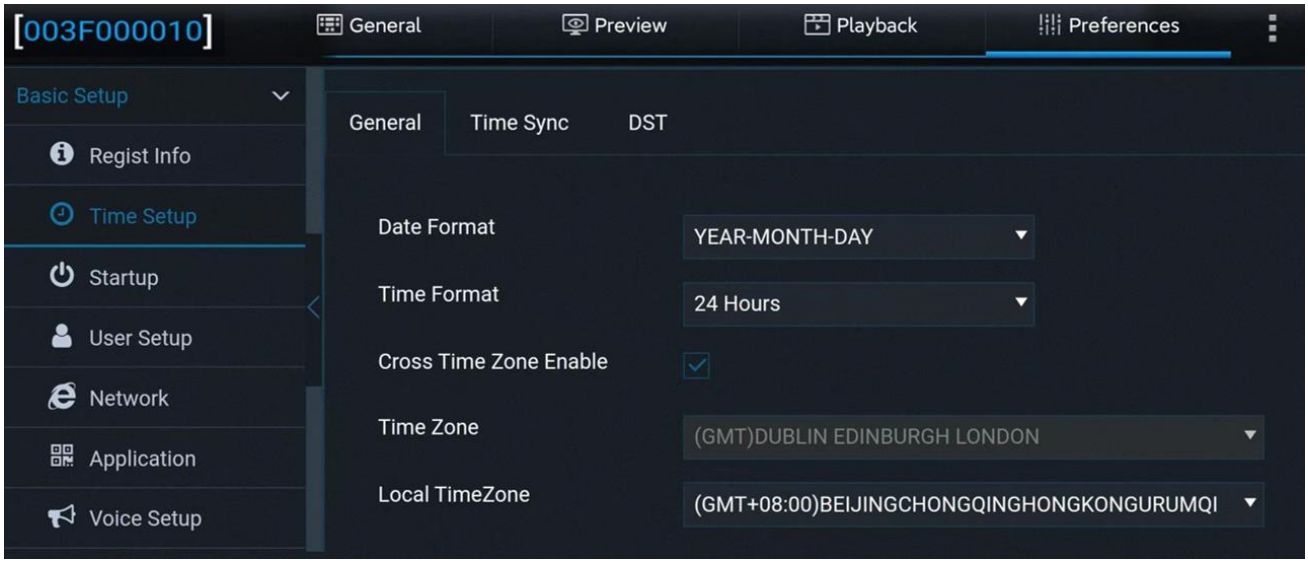
Warning: For devices using the CEIBA2 platform, the cross-time zone function is disabled, and the FT platform users should enable the cross-time zone function as needed.

4. **Time Zone**: allows you to select the time zone. This parameter can be set only when

the cross-time zone function is disabled. Otherwise, the parameter is set to Zero by default and cannot be configured.

5. **Local Time Zone**: allows you to select the local time zone. This parameter is displayed and can be configured only when the cross-time zone function is enabled.

Special notes: When the cross-time zone function is enabled, Time Zone is set to zero and cannot be configured, which means that the data interaction between the device and the platform adopts the zero time zone. Location Time Zone is used as time zone overlay in recording. When the cross-time zone function is disabled, Time Zone is subject to configuration and used as time zone overlay in recording.



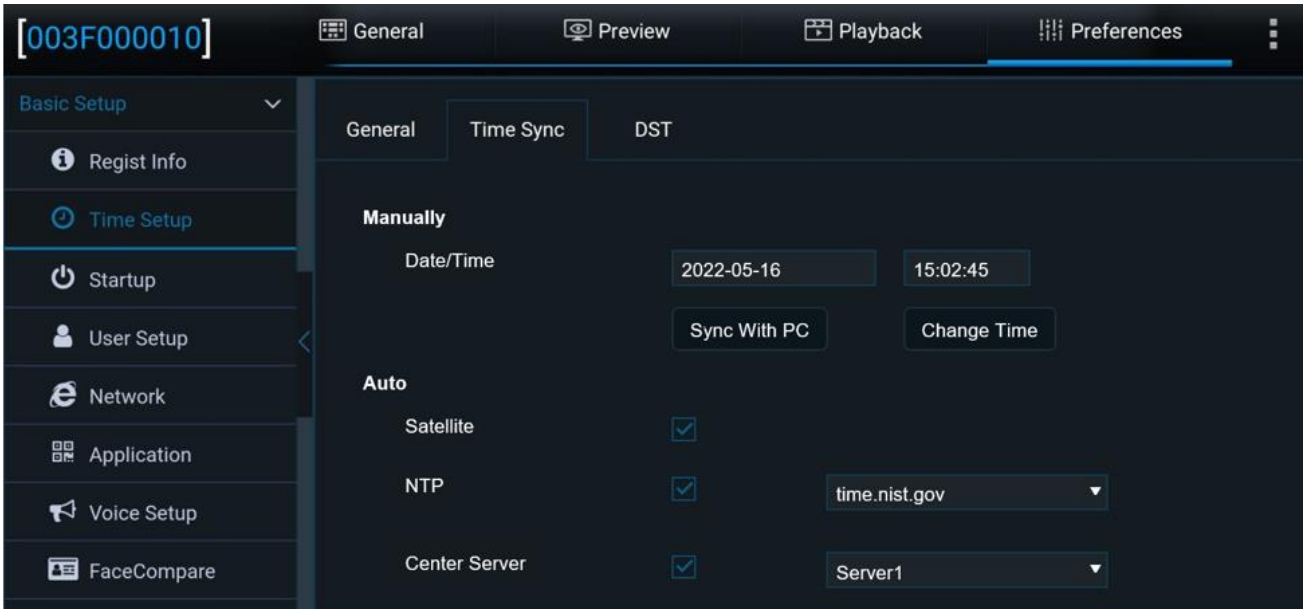
- **Time Sync**:

The time will be synchronized automatically when there is a deviation between the system time and the actual time. In the automatic time synchronization settings, you can enter the date and time manually, or set the time synchronization method.

1. Tap **Change Time** to change the date and time manually.
2. **Satellite**: allows you to synchronize time with the GPS.
3. **NTP**: allows the system to use the WAN network time. You can select the time of different WAN servers.
4. **Central Server**: allows the system to use the time of the reported platform. If multiple

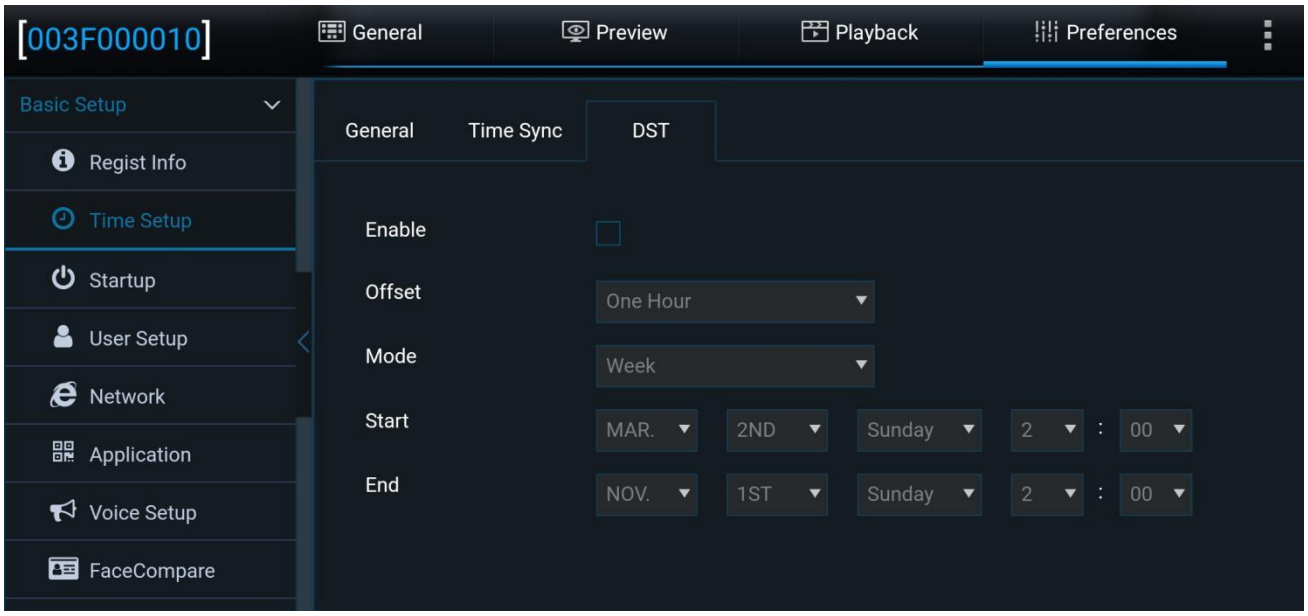
platforms are reported, you can select the time of different platforms.

5. If multiple time synchronization methods are selected at the same time, the synchronization will be started in order of priority: satellite > NTP > central server. Once the time synchronization is successful, the next method will be stopped.



- **DST**:

Allows you to set the DST, if any, in some regions. When the **DST** is enabled, the display time is increased by 1 or 2 hours. Tap **Preferences** > **Basic Setup** > **Time Setup** > **DST**, as shown in the following figure:



1. **Enable**: allows you to enable or disable the **DST** function. It is disabled by default.

2. **Offset**: allows you to increase the time by 1 or 2 hours.

3. **Mode**: can be set to **Week** or **Date**.

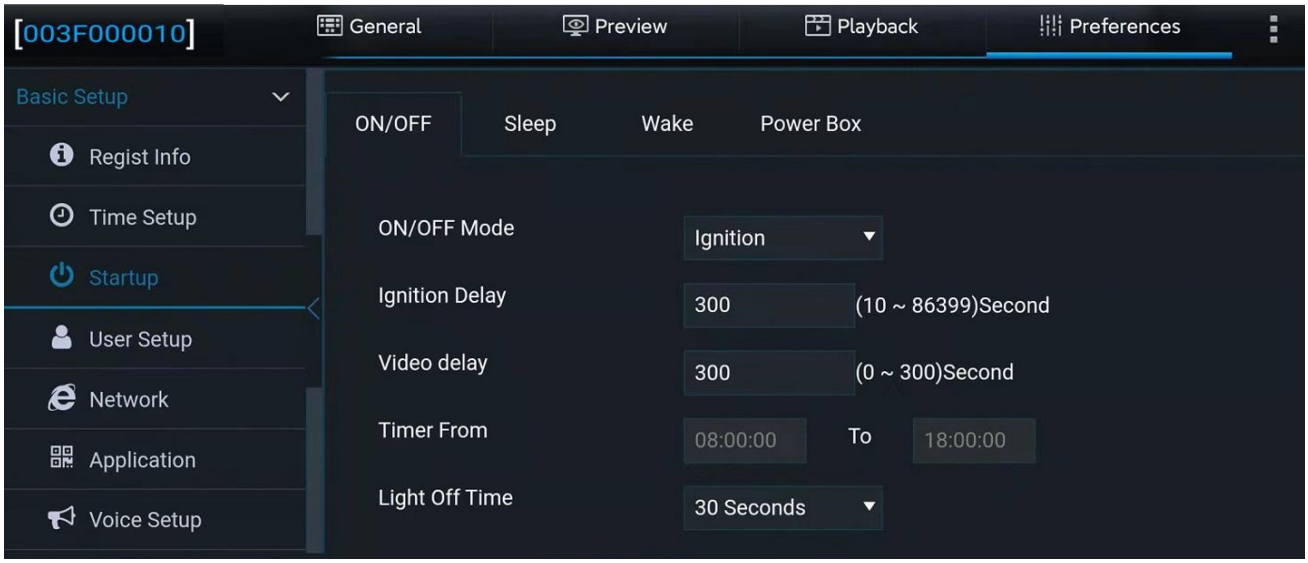
4. Week: allows you to set Start and End of the DST by setting the month, Nth day of the week, and hour/minute/second.

5. **Date**: allows you to set **Start** and **End** of the **DST** by setting the date and hour/minute/second.

5.7.3 ON/OFF

- ON/OFF

Tap **Preferences** > **Basic Setup** > **Time Startup** > **ON/OFF**, as shown in the following figure:



1. **ON/OFF Mode**: You can select **Ignition** (that is, use the car key to turn on the device).

2. **Ignition Delay**: allows you to set the time for the delayed shutdown after the car key is turned off, which can be set from 0 to 86399 seconds, and the default is 300 seconds.

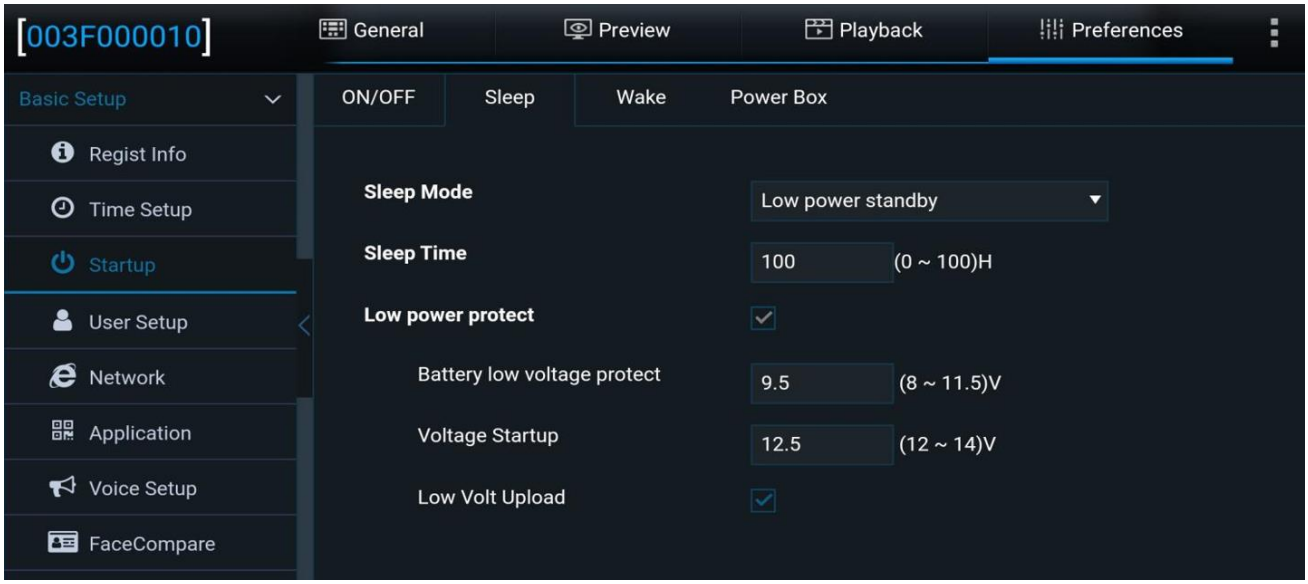
3. **Video Recording Delay**: allows you to set the time for the video recording after the car key is turned off. The configurable time range changes with the ignition delay. The maximum time for video recording delay is subject to the ignition delay. Specifically, the video recording delay is equal to or less than the configured ignition delay.

4. **Scheduled Power-on Time**: allows you to select the time range for powering on the device. Currently, the scheduled power-on and power-off are not available.

5. **Backlight Turn-off time**: when an external display is connected, the screen backlight turn-off time can be configured, including never, 30s, 1 min, 3 mins, 5 mins, and 10 mins.

- Sleep

Tap **Preferences** > **Basic Setup** > **Time Startup** > **Sleep**, as shown in the following figure:



Application scenario: Where the platform can also obtain vehicle positioning information after the vehicle needs to be stopped and turned off, and to remotely wake up the device is required for data downloading or video playback, select the low power standby mode (sleep), otherwise select the zero power standby. For remote wakeup in the trucking industry, the phone or SMS is recommended. If the SIM card used does not support SMS and phone services, the platform remote wakeup function is recommended. The platform remote wakeup should be used together with the platform. For the time being, only CEIBA2 supports platform remote wakeup. It is expected that the remote wakeup function of the FT platform will be launched in Q4, 2022.

1. **Sleep Mode**: can be set to Low power standby or Zero power standby.
   - **Zero Power Standby**: In this sleep mode, the system will not be waken up after the device is turned off in ignition or timing mode.
   - **Low Power Standby**: In this sleep mode, the system can be waken up by the IO alarm, phone call, or SMS and start the MDVR after the device is turned off in ignition or timing mode.
2. **Sleep Time**: allows you to set the sleep time to 0~100 hours. The default is 100 hours.

Sleep time refers to the duration of the low power standby when the device is not woken up or started, and the device will be in the zero power standby;

3. **Low Voltage Protect:** enables low voltage protection after being checked.

4. **Battery Low Voltage Protect**: enables the system to enter the sleep status when the car key is turned on and to enter the power-off status when the car key is turned off, thus protecting the battery power of the vehicle when the battery voltage is lower than the set value.

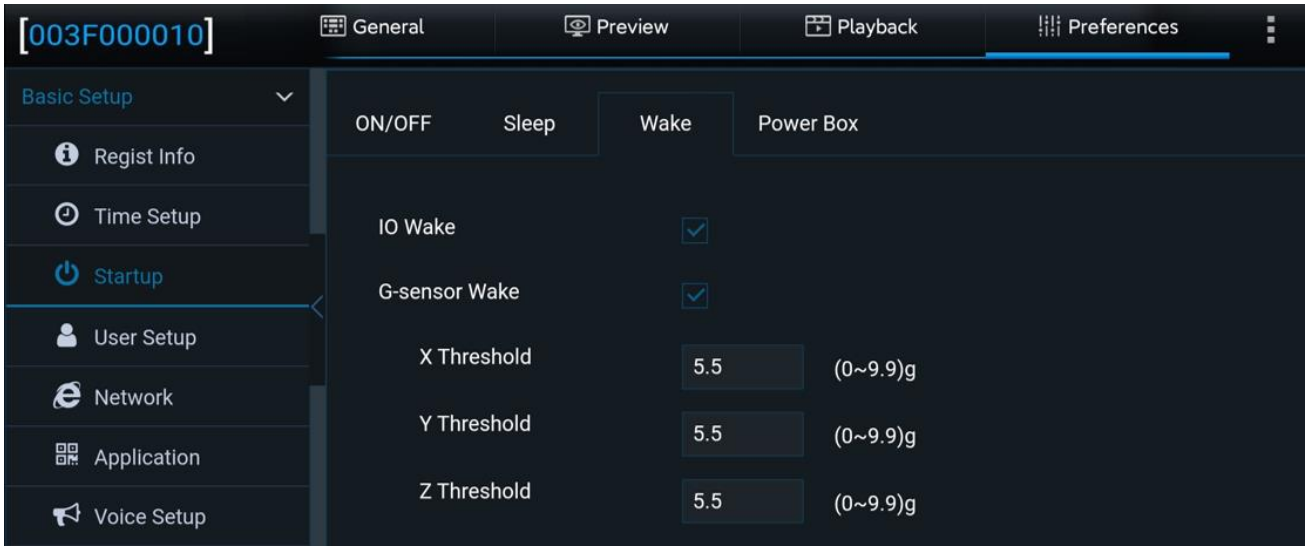
5. **Voltage Startup**: restarts the system when the battery voltage is higher than the set value in the sleep status.

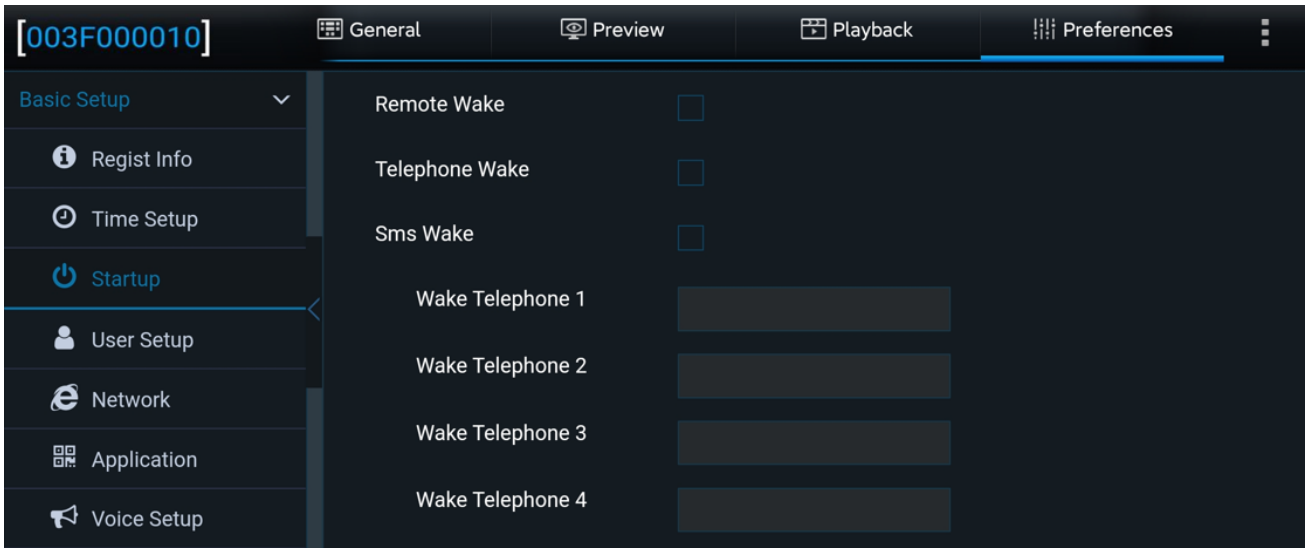
6. **Low Volt Upload**: automatically reports the low voltage to the platform after being checked when the low voltage protection is triggered.

Special Note: When the low voltage protection is not enabled, 7 V is the judgment condition for low voltage protection by default.

- **Wake**

Tap **Preferences** > **Basic Setup** > **Time Startup** > **Wake**, as shown in the following figure:





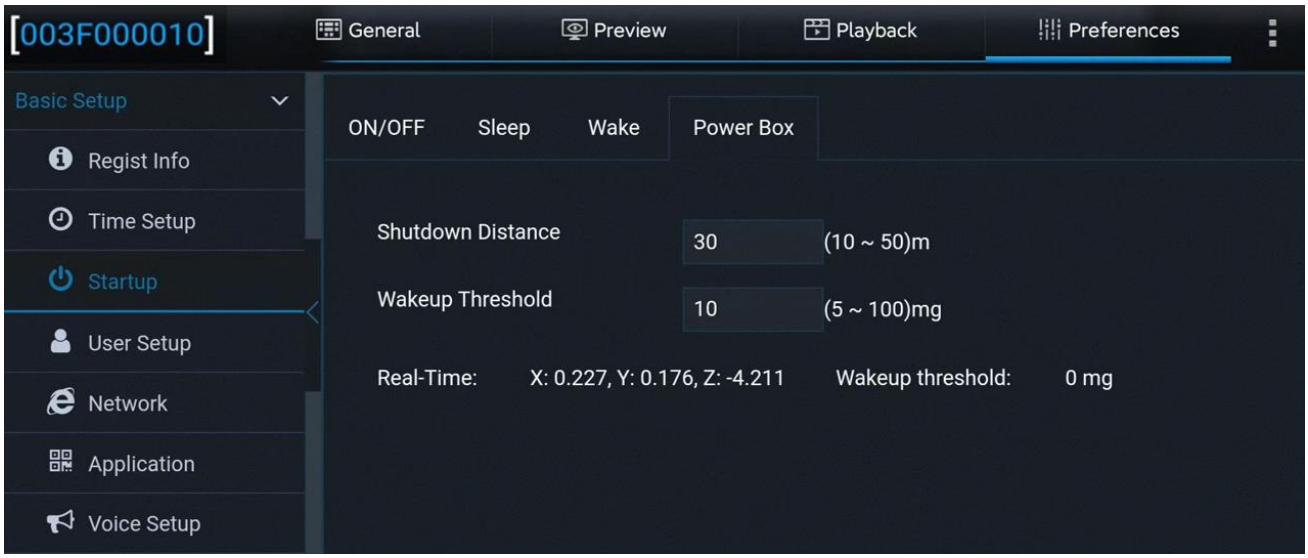
To select a wake method, check the corresponding check box.

1. **IO Wake**: wakes up the MDVR by triggering the IO alarm.
2. **G-Sensor Wake**: wakes up the MDVR by shaking the device in the X, Y, or Z direction. The default waking thresholds for the X, Y, and Z axes are all 5.5 g;
3. **Remote Wake**: remotely wakes up the MDVR by sending commands. When the device is in sleep status, the platform sends commands to wake up the MDVR. Currently, remote wakeup is supported through FT Cloud and CEIBA2, and only the first N9M server is supported for remote wakeup. The FT platform currently does not support remote wakeup.
4. **SMS Wake**: To wake up the MDVR by sending a text message to the device needs to set a mobile phone number that supports wakeup in advance. The message text is "WAKEUP".
5. **Telephone Wake**: To wake up the MDVR by a phone call needs to set the mobile number to wake up the device in advance.

Special notes: Both the SMS and telephone wakeup requires the SIM card in the device to support the SMS and phone services.

- **Power Box**

Tap **Preferences** > **Basic Setup** > **Time Setup** > **Power Box**. The displayed screen is as shown in the following figure:



It contains the following parameters controlled by the power box:

1. **Shutdown Distance**: allows you to determine whether the vehicle's movement distance within 1 minute collected by the device is less than the configured threshold. If not, it constitutes one of the conditions for device shutdown, that is, after other conditions are met, the distance must be less than the threshold before shutdown. The distance range is 10 to 50 m, and the default value is 30 m;

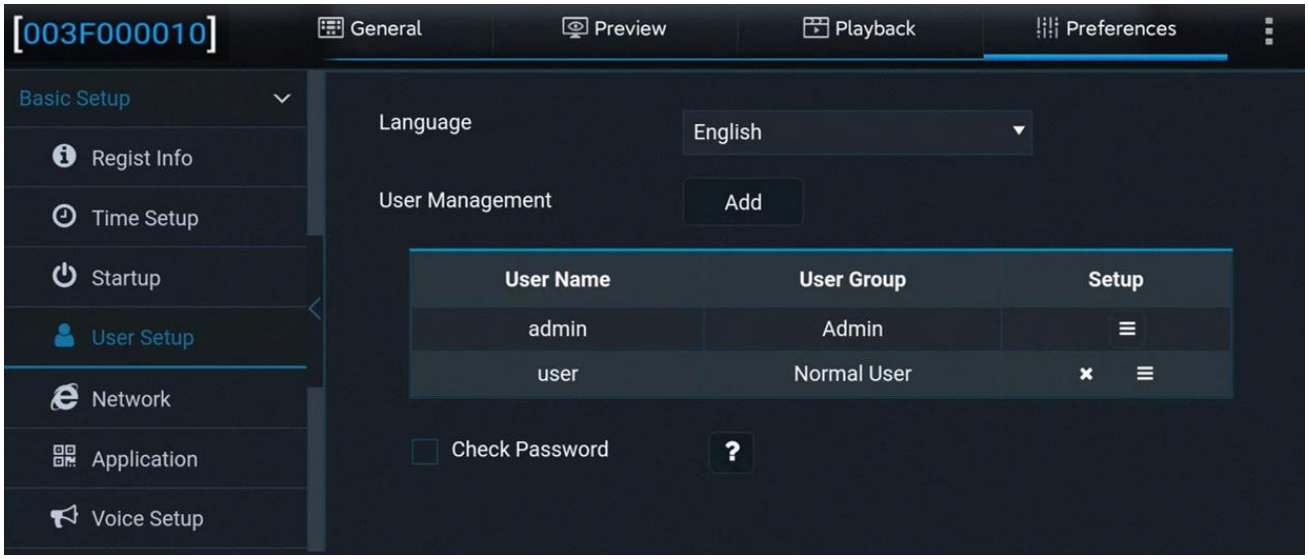
2. **Wakeup Threshold**: determines whether to wake up the MDVR according to the acceleration received by the built-in G-Sensor of the power box when the ACC detects that the movement in any axis exceeds the threshold. It can be set to 5~100 mg, 10 mg by default. For different vehicles, where opening and closing the door and starting the engine cannot wake up the device, please try to set a smaller threshold value. If it is easy to trigger the start of the device by mistake, a larger threshold value can be set;

Warning: For the G-sensor wakeup, the device may be started after the start of the vehicle due to the too small vibration of some vehicles, or the device shuts down during the idling stop (The setting of the shutdown delay can solve the problem of idling shutdown at traffic lights).

3. The **Real-Time** displays the data on 3 axes, and the currently detected wakeup value.

5.7.4 User Setup

Tap **Preferences** > **Basic Setup** > **User Setup**, as shown in the following figure:



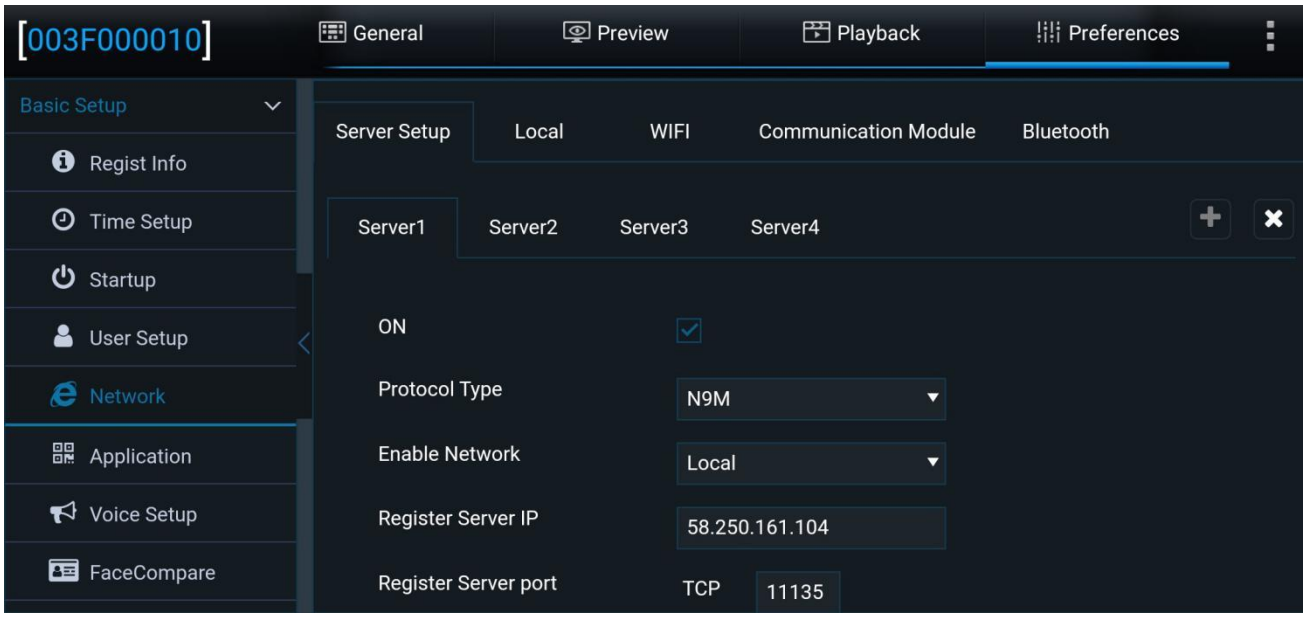
On the **User Setup** screen, you can set the language, MP3 voice option, and login user account information. You can also select **Check Password** below if the password complexity is required.

1. The language options and MP3 voice options include Chinese, English, Portuguese in Latin America, Spanish in Latin America, French, Russian, and Japanese, a total of 7 languages. On the Veyes, you can only set the voice. The screen language automatically switches with the operating system of your mobile phone, but the entries remain unchanged. This function takes effect when you set the parameter and tap to save on the Veyes.
2. Tap **Add**. You can add a user and set the password for the new user.
3. Tap ≡ in the **Setup** column to set the password for the user login.
4. **admin**: indicates an administrator account that comes with the system by default. The administrator has permission to add/delete common users and set parameters. It can add a maximum of two common users.
5. **user**: The system has one user account by default, with permissions to query settings only.

5.7.5 Network Setup

- **Server Setup**

Tap **Preferences** > **Basic Setup** > **Network** > **Server Setup**, as shown in the following figure:



1. Tap  on the right part of the screen to add a server; tap  to delete a server on the screen, but Server1 cannot be deleted.

2. **ON**: selects and enables one or more servers. A maximum of 4 servers can be enabled simultaneously. If it is unchecked, the device will not report the server information yet with server parameters reserved.

3. **Protocol Type**: can be set to N9M or 808.

- **N9M**: indicates the protocol type for the device to report information to the video surveillance platform CEIBA2 or FT Cloud.
- **808**: indicates the protocol type for the device to report information to the 808 platform (not used for overseas trucks).

4. Enable Network: Local, Wi-Fi, Communication Module, or Adaptive available. Adaptive means that the system automatically selects the available network for platform connection. The adaptive priority is **WIFI** > **Local** > **Communication Module**;

5. **Register Server IP**: specifies the IP address or domain name of the register server of the platform to which the device reports information.

6. **Register Server port:** specifies the corresponding device port through which the device reports information to the platform.

7. **TLS encrypted port number**: During the normal startup and operation of the device, the interactive data between the device and the platform is transmitted through TLS encryption, which can ensure the security of the interactive data between the device and the platform. For the usage, you need to enable TLS and configure the encrypted port number. For the time being, only the FT Cloud platform supports TLS encryption.

 Warning: TLS encryption is not supported in sleep status

8. **Media Server IP**: specifies the IP address of the media server of the platform to which the device reports information.

9. **Media Server port**: specifies the corresponding device port through which the device reports information to the platform.

The register and media servers have the same default IP address and port number.

10. It allows modifying server parameters by sending SMS messages. When the server address changes or is abnormal, the device will be disconnected from the server. All remote services of the vehicle are stopped. To avoid this situation, you can change the IP address and port number of the device server by sending SMS messages.

Command keyword: SMCM

Command parameters: Server Serial Number, Enable, N9M Register Server, N9M Media Server, N9M Register Server Port, N9M Media Server Port, Server Serial Number, Enable, N9M Register Server, N9M Media Server, N9M Register Server Port, N9M Media Server Port, Server Serial Number, Enable, N9M Register Server, N9M Media Server, N9M Register Server Port, and N9M Media Server Port

Remarks: 113.14.232.88 (IP address), 6605 (port number)

Enable. 0: Disable; 1: Enable

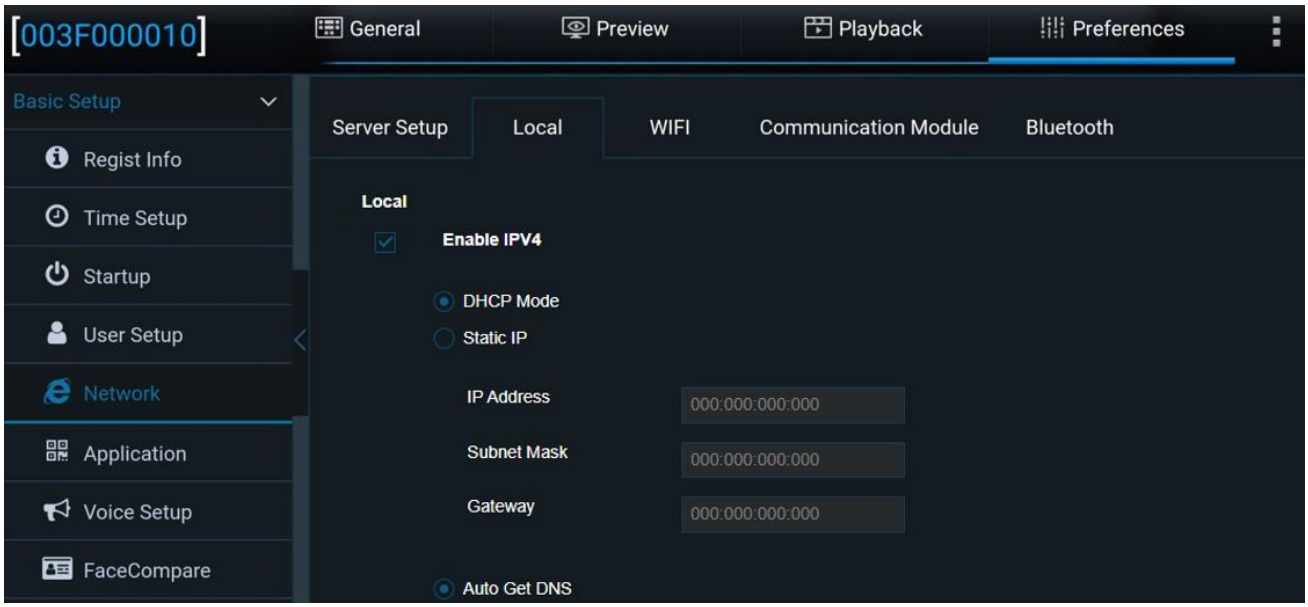
Example:

99admin,120223,SMCM1,1, 113.14.232.88, 113.14.232.88,6605,6606

(,1,1, 113.14.232.88, 113.14.232.88,6605,6606) (,1,1,113.14.232.88, 113.14.232.88,6605,6606)

- **Local**

Tap **Preferences** > **Basic Setup** > **Network** > **Local**, as shown in the following figure:



Besides IPV4, the IPV6 is added on the **Local** screen to avoid address conflict and expand the address space. For the IP address, default gateway, preferred DNS server, and standby DNS server, you can enter up to 128 bytes. If the system determines the address you entered is an IPV6 address, there is no subnet mask. Letters, numbers, and symbols are supported.

1. **Enable IPV4**: After Enable IPV4 is selected, the corresponding parameter setting screen is displayed.

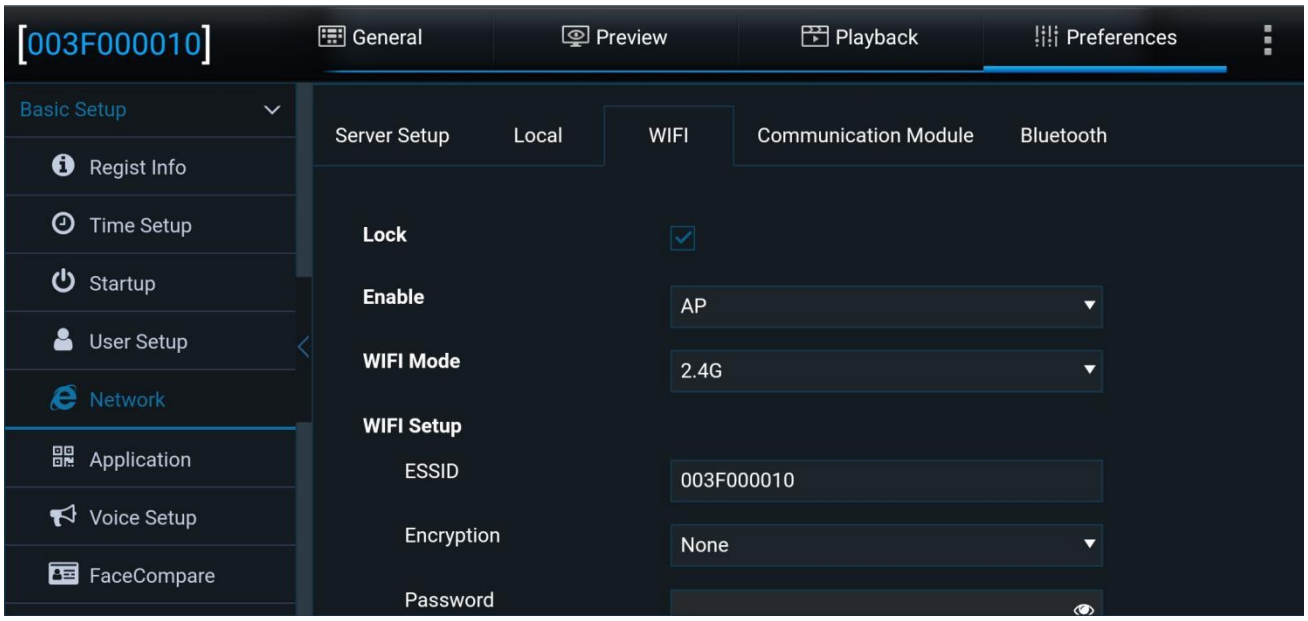
   DHCP Mode: indicates that the device automatically obtains the IP address. After it is selected, the network automatically allocates a dynamic IP address, and the DNS server address can be specified automatically or manually.

   Static IP: indicates that the device uses the static IP address. Use the configured static IP address, subnet mask, and default NMS. In this case, the DNS must be specified statically.

2. **Enable IPV6**: After Enable IPV6 is selected, the corresponding parameter setting screen is displayed. The parameter description is the same as the IPV4.

- **WIFI**:

Tap **Preferences > Basic Setup > Network > WIFI,** as shown in the following figure:



1. **Lock**: enables/disables the modification of Wi-Fi hotspot parameters. After it is checked, the relevant parameters of the Wi-Fi hotspot will not be modified during parameter import.

2. **Enable**: specifies the Wi-Fi connection mode. Options: AP, Client, or Disable. Default: Disable.

- AP: In this mode, the Wi-Fi name is automatically associated with the vehicle license plate number. You cannot change it or set a password for it on this screen. Moreover, the device maintains the hotspot status during and after the startup.
- Client: When you choose the Client mode and enter ESSID and password with a Wi-Fi network available nearby, the device can automatically research for nearby Wi-Fi hotspots available and report to the platform after a successful connection. When your vehicle enters this area again, it can automatically connect to the Wi-Fi network. In Client mode, when the AP mode is used upon the startup by default, without connection to Veyes, it will automatically switch to the Client mode within 3 minutes (this is a default value and can be configured). In Client mode, the duration of AP mode after startup is configured in order to make the device report to the platform as fast as possible after startup. You can set an appropriate duration of AP mode as needed. If the duration of AP mode is set to any other value (between 0 and 180 seconds), without connection to Veyes after startup, upon reaching the set duration value, the device will exit the AP mode and automatically switch to the Client mode,

with a report to the platform.

Please note that the parameter for setting the duration of AP mode is displayed only when the Wi-Fi mode is set to Client and Disable, and this parameter only controls the device entering the AP mode after startup. The display duration of AP mode entered by pressing the button is not restricted by this parameter.

During the normal use of the device, to switch to the AP mode, press the switching button twice. After the switch, without connection to Veyes within 3 minutes (fixed), the device will automatically switch to the Client mode.

- Disable: In this mode, the Wi-Fi network is not enabled and the client mode fails. The device uses the AP mode within 3 minutes after the startup by default. (The AP mode switch button is equipped in this device, through which the device can be switched to the AP mode. After the switch, without connection to Veyes within 3 minutes, the device will exit the AP mode and the module will enter the sleep mode)

3. **WIFI Mode**: When the Wi-Fi is set to AP mode, you can set the Wi-Fi frequency band. Options: 2.4G, 5G, or self-adaptive.

4. **ESSID**: In AP mode, the entered value is the hotspot name when the hotspot function of the device is turned on, and the Wi-Fi name when a mobile device connects to the device (no longer a serial number. After the connection, it can access Veyes, but also the Internet as a mobile terminal (the hotspot should be enabled)). In Client mode, the entered value is the name of the external Wi-Fi that the device connects.

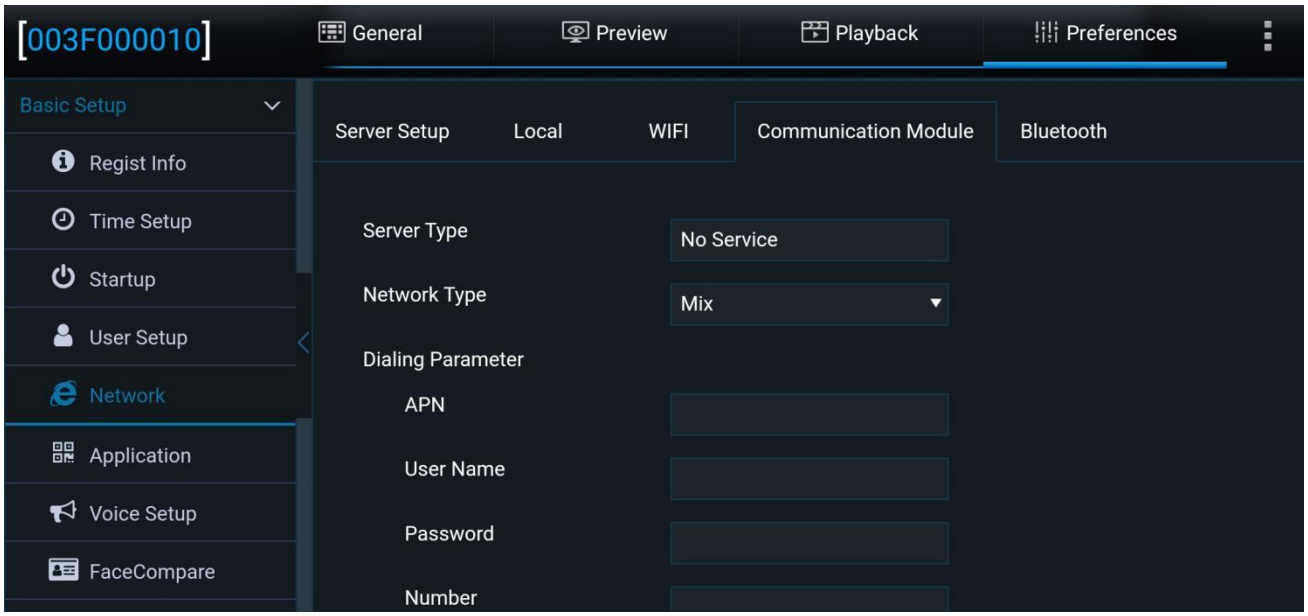
5. **Encryption Mode**: In AP mode, the encryption mode can be None/WEB/WPA; in client mode, the encryption mode can be None, WEP, WPA/WPA2-PSK, and WPA2.ENTERPRISE.

6. **Password**: In AP mode, the password is used for other mobile devices to access Streamax MDVR. The correct password is required to connect the Wi-Fi network (No password is required if the name and password are not configured. In this case, tap the serial number or license plate number to connect). In client mode, the password is used for connecting external Wi-Fi networks.

- **Communication Module**:

Tap **Preferences** > **Basic Setup** > **Network** > **Communication Module**, as shown in the

following figure:



1. **Server Type**: After the SIM card is inserted into the device, the module type will be automatically monitored and displayed. No service will appear if there is no module.

2. **Network Type**: It is mixed mode by default, meaning that the communication module supports 2G/3G/4G.

3. **Dialing Parameter**: includes APN, User Name, Password, Number, and Certification (None, PAP, CHAP, or Mix). Enter the parameters provided by the SMI card manufacturer. The fields are null by default. If so, dialing will be implemented according to the program's parameters.

4. **Active Mode**: The network module can be activated by external conditions. The modes include Always, Telephone or SMS.

    1) **Always**: After the device is started, the network module automatically starts to dial and connect to the server.

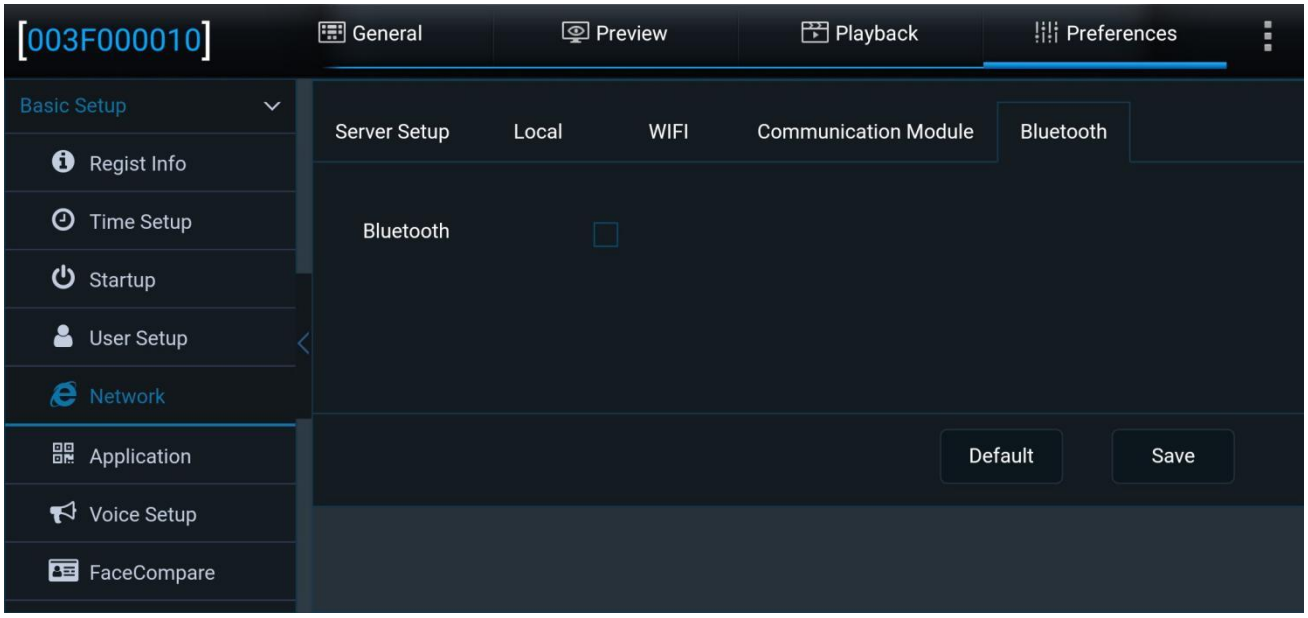
    2) **Telephone or SMS**: After the device is started, the network module does not work. Only by calling or sending a message to the phone number of the device can the network module be activated to start dialing and connect to the server. Up to 5 dialable phone numbers can be configured.

    3) **IO**: After the device is started, the network module does not work. Only after the IO sensor is triggered, can the network module be activated to start dialing and connect to the server.

- **Bluetooth**

  Tap **Preferences** > **Basic Setup** > **Network** > **Bluetooth**, as shown in the following figure:

  Turn on/off Bluetooth. Currently, the Bluetooth function is unavailable.



- **Ports**

WEB Port: Default: 80. This port is used for IE access.

RTSP Port: 554 by default. After entering the correct username and password, configure a fixed IP address for the MDVR, enabling the real-time preview and playback of videos through RTSP.

Warning: Each stream supports only one RTSP request at the same time

RTSP stream format:

a. Main streaming video: rtsp://user:pwd@IP:554/mainstreamX

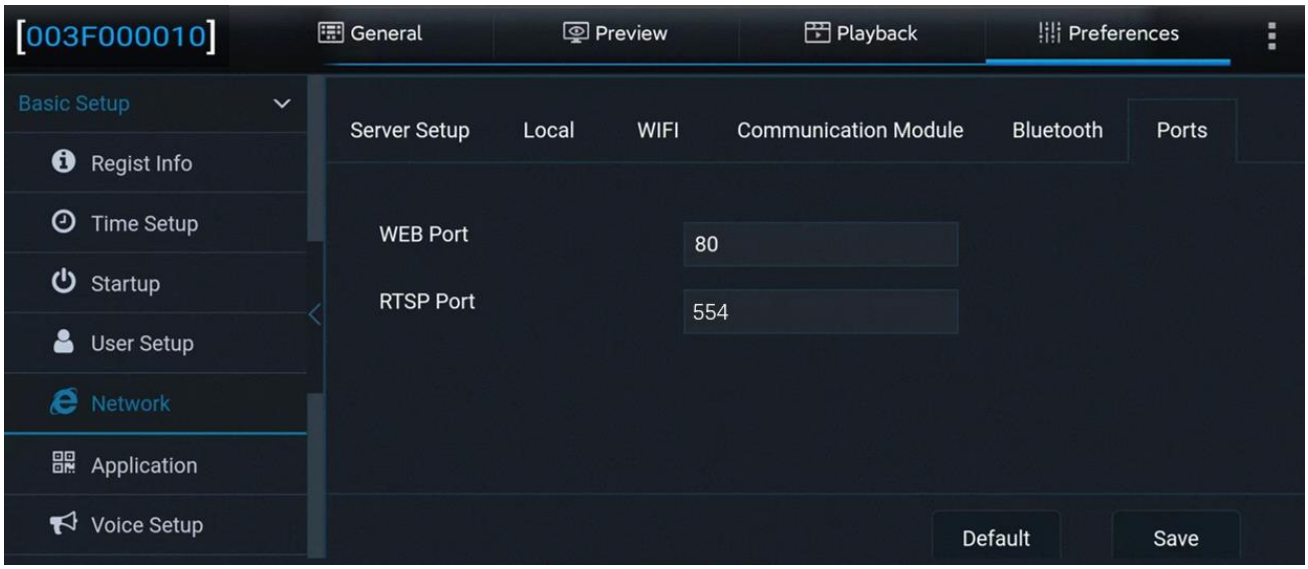
b. Sub streaming video: rtsp:// user:pwd@IP:554/substreamX

X is Channel number. Start from zero

For example:

rtsp://admin:admin@10.20.112.17:554/mainstream0

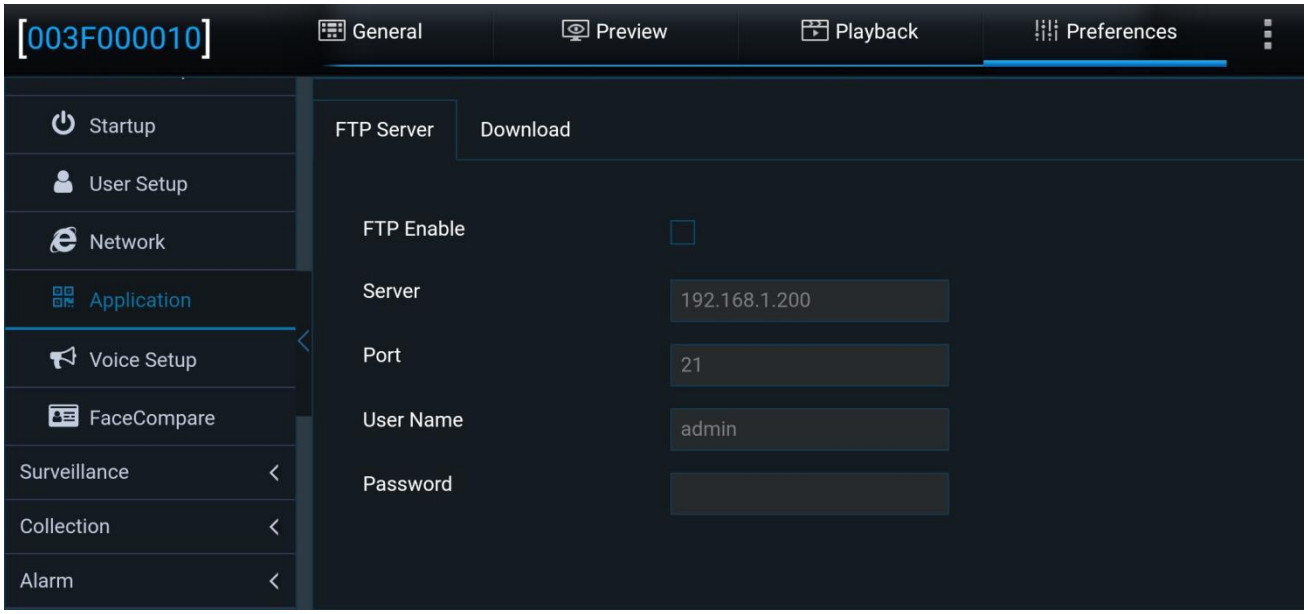
rtsp://admin:admin@10.20.112.17:554/substream1



5.7.6 Application

- **FTP Server**:

The device allows connecting to an FTP server. After the IP address, port number, user name, and password of the established FTP service are configured, the device can connect to the FTP server to upload images or download files. Tap **Preferences** > **Basic Setup** > **Application** > **Communication Module** > **FTP Server**, as shown in the following figure:

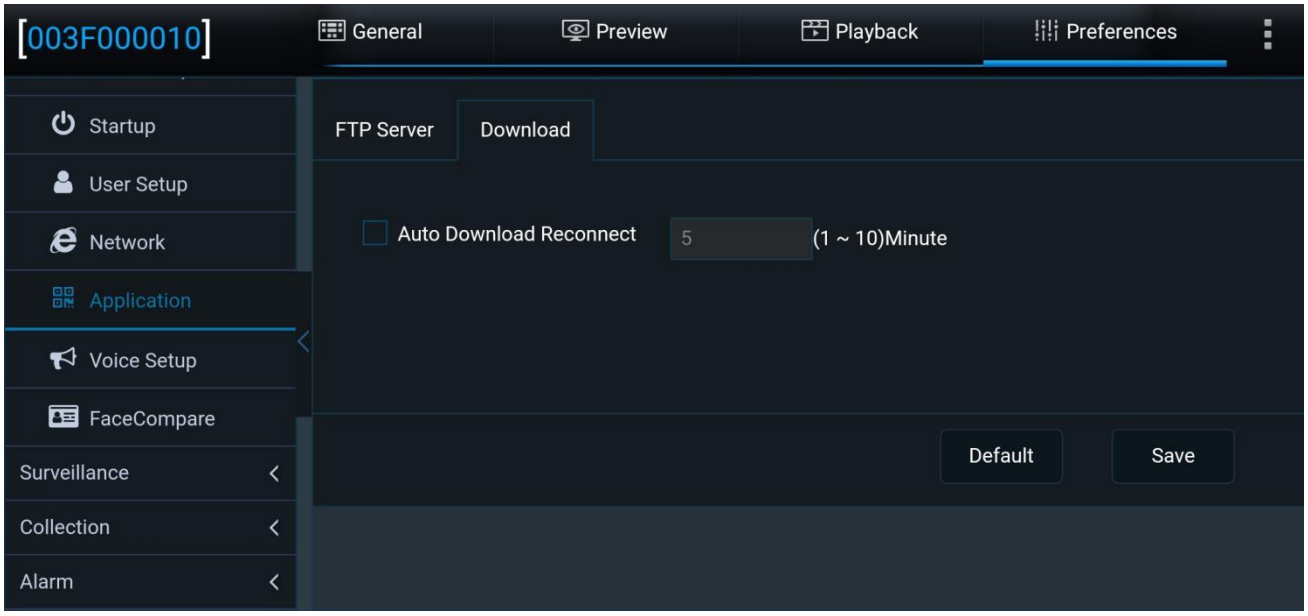


- **Auto Download Reconnect**: needs to be used with the CEIBA2 platform. The automatic download tasks created through the CEIBA2 are managed by the platform. Specifically, you can view the vehicles with downloads, networks (4G or Wi-Fi) used for the downloads, used

Wi-Fi AP by each vehicle if the Wi-Fi network is used, and the maximum number of vehicles connected to each AP for simultaneous downloads on the platform.

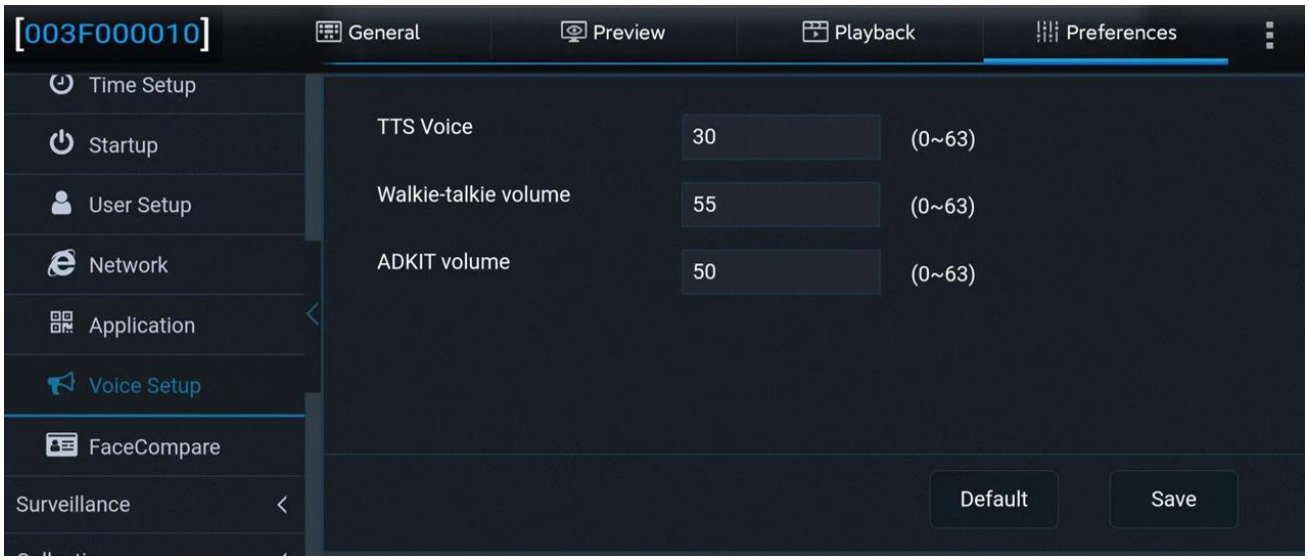
After **Auto Download Reconnect** is enabled, when the vehicle returns to the station and cannot connect to the service, it will restart and try to download again after entering the sleep mode for a while. When the download tasks are full, or the set AP reaches the upper limit, the platform will instruct the device to enter sleep mode, and at the same time tell the device how long to sleep before restarting. (That is, the sleep mode avoids wasting resources when queuing or waiting for the upgrade.)

Check to enable **Auto Download Reconnect** and set the reconnection time between 1 and 10 min, the default is 5 min.



5.7.7 Voice Setup

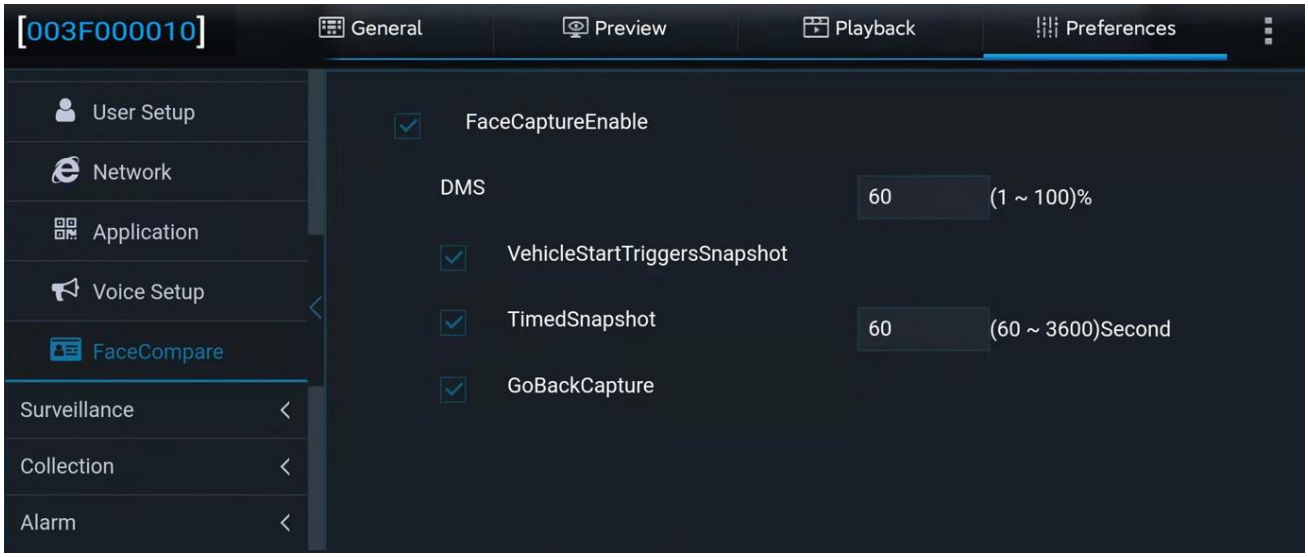
Tap **Preferences** > **Basic Setup** > **Voice Setup** to manually configure the walkie-talkie volume (including MP3 broadcast volume) and TTS voice. The range is 0 to 63, 55 by default. The screen is as follows:



Warning: TTS now only supports Chinese and English.

5.7.8 Face Compare

Tap **Preferences** > **Basic Setup** > **Face Compare** to set the driver face comparison parameters. This function needs to be used with the FT Cloud platform. The screen is as follows:



1. **Face Capture Enable**: enables face comparison after being selected.
2. **DMS**: allows you to set the threshold of the face comparison similarity. If the similarity is greater than or equal to the set threshold, the driver can be identified.
3. Face capture method:

- Vehicle Start Trigger Snapshot: The device captures a snapshot when the ACC is

turned on from the off status, and the vehicle is moving at a certain speed.

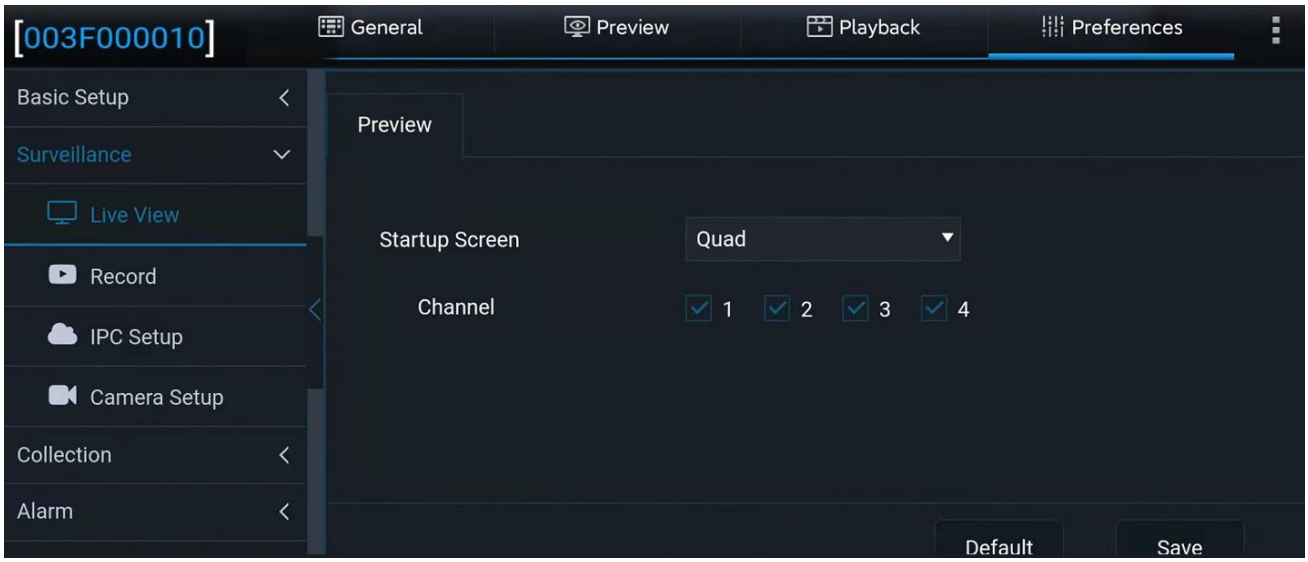
- Timed Snapshot: allows you to set the scheduled time to 60~3600 seconds, 300 seconds by default
- Go Back Capture: The device captures a snapshot when no-driver-alarm is triggered until the alarm is cleared

Warning: The face comparison function is still in the verification stage and has not met the conditions of the official release for commercial use. If needed, please contact your local agent or technical support. The expected official release will be in Q4 2022.

5.8 Surveillance

5.8.1 Preview

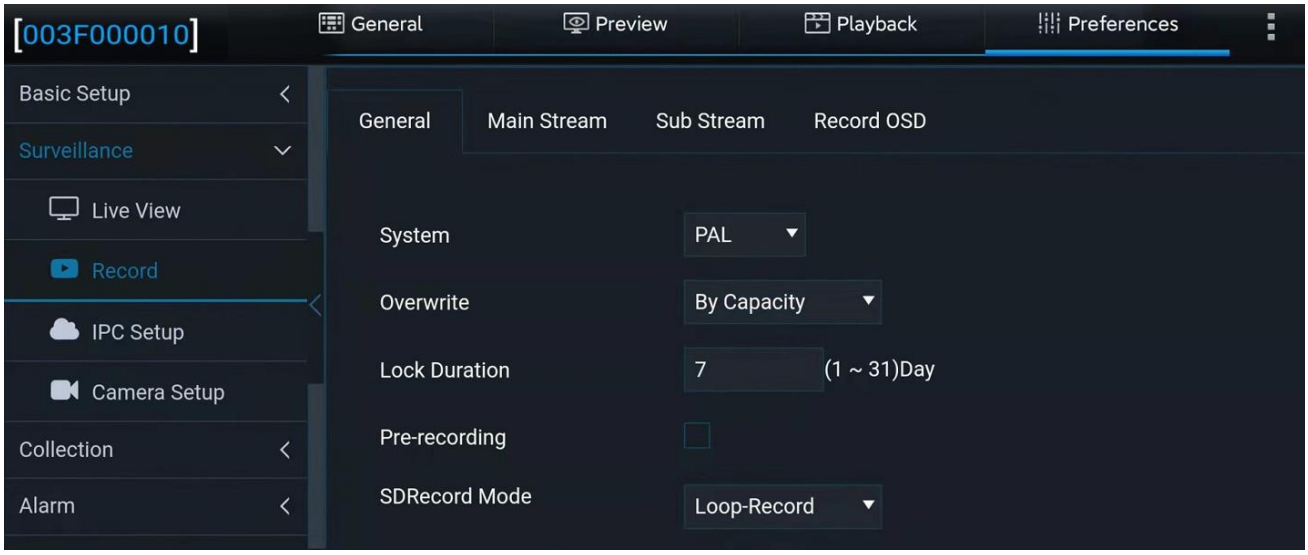
The preview setting screen is mainly used for the display form on the externally connected display, which supports single-screen and four-screen displays. The channel to be displayed can be selected in a single-screen display. Tap **Preferences** > **Surveillance** > **Live View**, as shown in the following figure:



5.8.2 Video Recording

5.8.2.1 General Settings for Video Recording

This module includes system mode selection, overwrite function, lock duration setting, pre-recording, and SD record mode. Tap **Preferences** > **Surveillance** > **Record** > **General**, as shown in the following figure:



1. **System**: can be set to **PAL** or **NTSC**.

Warning: The system settings must be consistent with the video source (camera system), otherwise the device cannot identify the camera.

2. **Overwrite**: can be set to **By Capacity**, **By Day**, **By Minute**, or **Never**.

Special note: Only after the protection time is passed or manually canceled, can the locked recordings be overwritten and deleted.

- **By Capacity** (default):
    1) When the remaining memory space is insufficient, the historical recordings are overwritten automatically for storing new recordings. Generally, it starts when the remaining capacity is less than 1% and is performed based on memory blocks. The block sizes of different memory capacities vary, and users need not focus on the details.
    2) For multi-memory, if Loop Recording is selected, Overwriting by capacity is performed before the multi-memory. For example, when memory 1 is full, video

recording is performed using memory 2, and when memory 2 is full, historical videos in memory 1 are overwritten.

3) When **By Capacity** is selected, the earliest recordings are overwritten first, and the locked recordings are overwritten when the lock time is up or if unlocked manually.

- By Day:
  1) Files are overwritten by the set number of days, which ranges from 1 to 31.
  2) If it is set to 1, the recording is saved for 1 day. If it is set to 31, the recording is overwritten after being saved for 31 days.
  3) 31-day storage duration is only possible when the disk has sufficient space. If you have set a 31-day duration but the recording is only available for 7 days, earlier recordings will be overwritten immediately after the SD card is full.
- **Never**: Overwriting is not enabled for main-stream recording, mirrored stream, sub-stream, and alarm stream. Recording stops after the storage is full.
- **By Minute**:

  Recordings are overwritten by the set number of minutes, which ranges from 30 (by default) to 1,440. The overwriting accuracy is about 2 min, which means that if it is set to 30 min, the maximum recording duration is not more than 31 min.

3. **Lock Duration**:

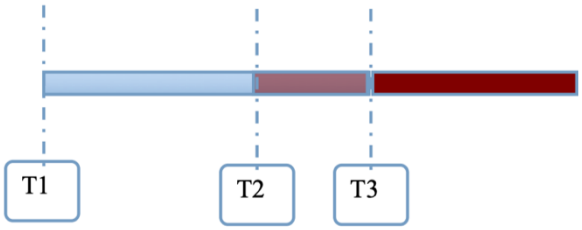
Specifies the day(s) that locked recordings are retained. This setting prevents them from being deleted earlier than expected. It is set to 7 days by default. For the operation of locking the recordings, see **Preferences** > **Alarm**.

4. Pre-recording:

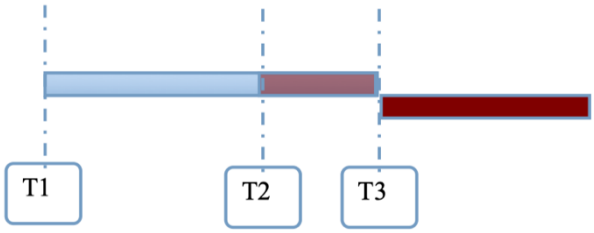
In alarm recording, recording files generated before the linkage alarm are extracted for event analysis. The parameter value ranges from 1 to 60 minutes and is defaulted to 15 minutes.

1）In normal video recording, when an alarm is triggered, earlier recording data with a duration indicated by the pre-recording time on alarm linkage is extracted and marked as alarm recording. As shown in the figure below, T1-T3 is a normal recording. After an alarm is generated at T3, T3 and later period, as well as the duration between T2 and T3, are

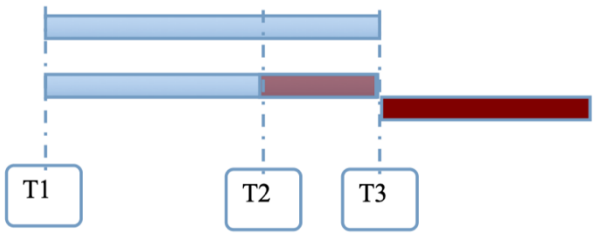
marked as alarm recording.



2）If there is no normal recording ongoing and the pre-recording function is enabled, the device establishes a pre-recording stream segment upon startup. When an alarm is triggered at T3, the recording generated between T2 and T3 in the pre-recording stream segment is marked as alarm recording.



3）When non-alarm recording proves to be I-frame recording: After startup, two stream segments are established, one is I-frame stream segment and the other is pre-recording stream segment. When an alarm is triggered, the recording between T2 and T3 in the pre-recording stream segment is marked as alarm recording.

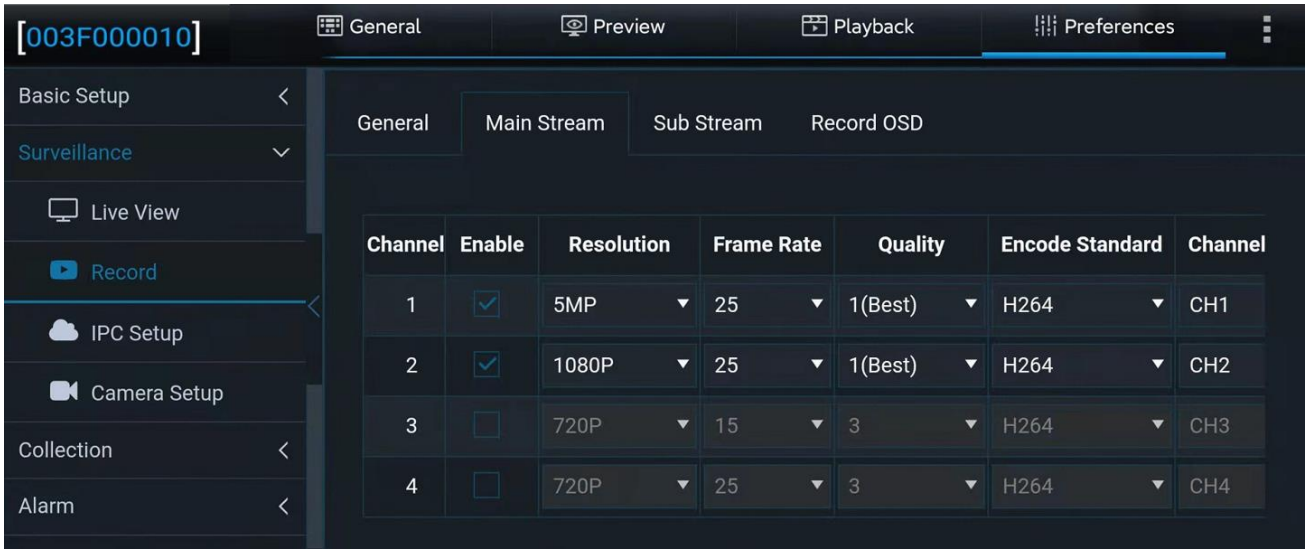


5. **SD Record Mode**: specifies the recording mode of the secondary SD card. It can be set to **Sub-Record**, **Mirror Record**, **Alarm Record Backup**, or **Loop Recording**.
   - **Sub Stream Recording**: stores sub-stream recordings on the SD card.
   - **Mirror Recording**: uses main stream parameters, and the mirror recording data includes video data, log information, and black box data. If the channel of main stream video is disabled, mirror recording does not apply to this channel.
   - **Alarm Record Backup**: stores recording data only when an alarm is triggered.

- **Loop Recording**: It is loop recording for dual SD cards.

5.8.2.2 Main Stream

On this screen, you can set the recording mode, recording parameters, and audio parameters for each channel. Tap **Preferences** > **Surveillance** > **Record** > **Main Stream**, as shown in the following figure:



Note: The recording mode can be configured for channels individually.

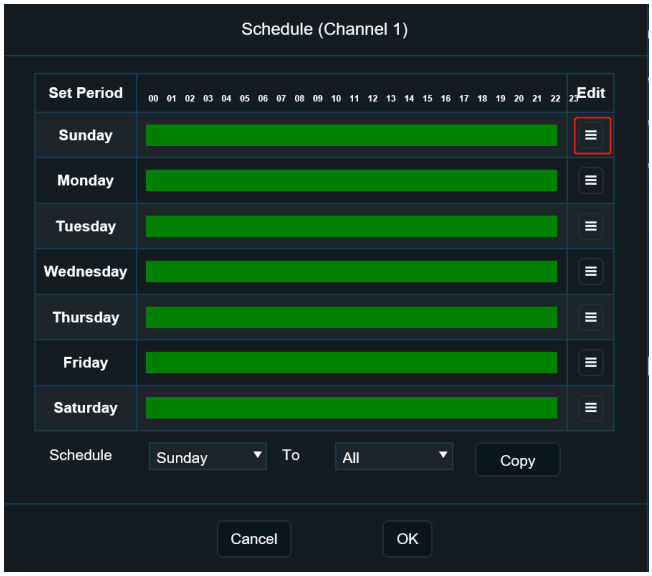
Once a recording mode is selected, it applies to both sub stream and mirrored recording.

1. **Enable**: enables main stream recording after being checked.
2. **Resolution**: can be set to 720P or 1080P if a digital camera is connected (the final selection is determined by the support of the digital camera), and CIF/WCIF/HD1/WHD1/D1/WD1/720P/960P/1080P if an analog camera is connected.

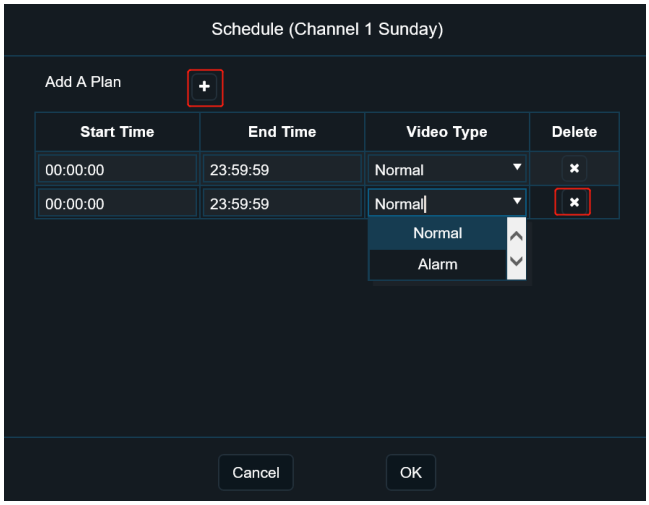
Note: The ADAS channel (Channel 1) of the AD Plus2.0 measures up to 1920P.

3. **Frame Rate**: specifies the recording frame rate or the number of frames played per second. It ranges from 1 to 25 for a PAL camera and 1 to 30 for an NTSC camera.
4. **Quality**: specifies the recording quality. The value ranges from 1 to 8. The smaller the value, the better the quality. 1 indicates the best quality.
5. **Encode Standard**: can be set to H264 or H265, and the default value is H265.
6. **Channel Name**: can be customized.
7. **Record Mode**: can be set to **Startup**, **Schedule**, or **Alarm**.

- **Startup**: indicates that the device keeps recording when it is started if the SD card is available and recording is enabled.
- **Alarm**: starts recording when the device alarms. For Alarm settings, see **Preferences** > **Alarm**; you can also pre-record the recording before the alarm.
- **Schedule**: indicates that the device records as scheduled. Tap on the right of Schedule to navigate to the screen shown below. Tap corresponding to a specific day to add a scheduled recording plan.

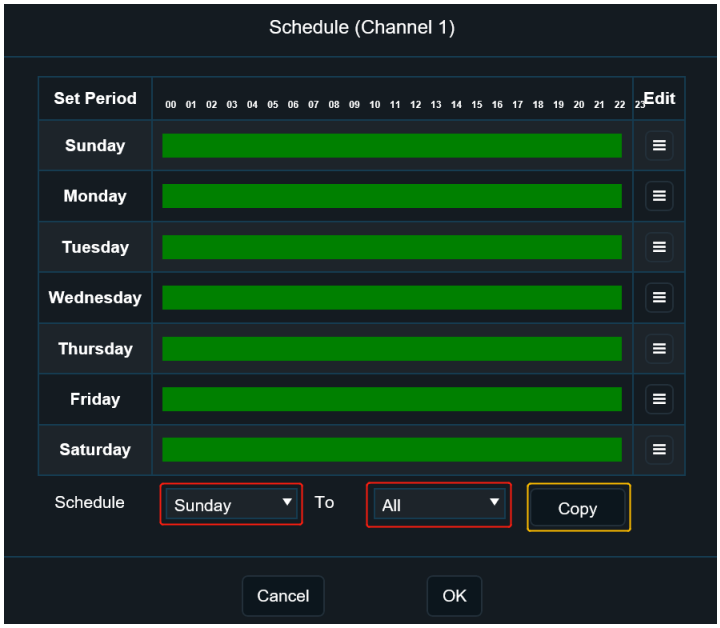


To add a scheduled recording plan, tap , as shown in the figure below. To delete this plan, tap on the right of the plan. You can select **Normal** or **Alarm** from the **Video Type** drop-down list to define the recording.



After setting the scheduled recording plan, tap **OK** to return to the previous step. Apply the

defined scheduled plan to other dates by tapping **Copy**, as shown in the following figure:



8. **Audio**

Note: Separate audio recording is not supported.

- **Audio**: indicates whether to record audio during video recording. It can be set to **Always Audio** or **No Audio**, and it is **Always Audio** by default.
    1) **Always Audio**: The video is always recorded in audio recording.
    2) **No Audio**: The video is not recorded in audio recording.

9. **Alarm Quality:** specifies the quality of alarm recording. The smaller the value, the better the quality. The default value is 3.

10. **Encode Mode:** You can choose the encoding format of **VBR** or **CBR,** and it is VBR by default.

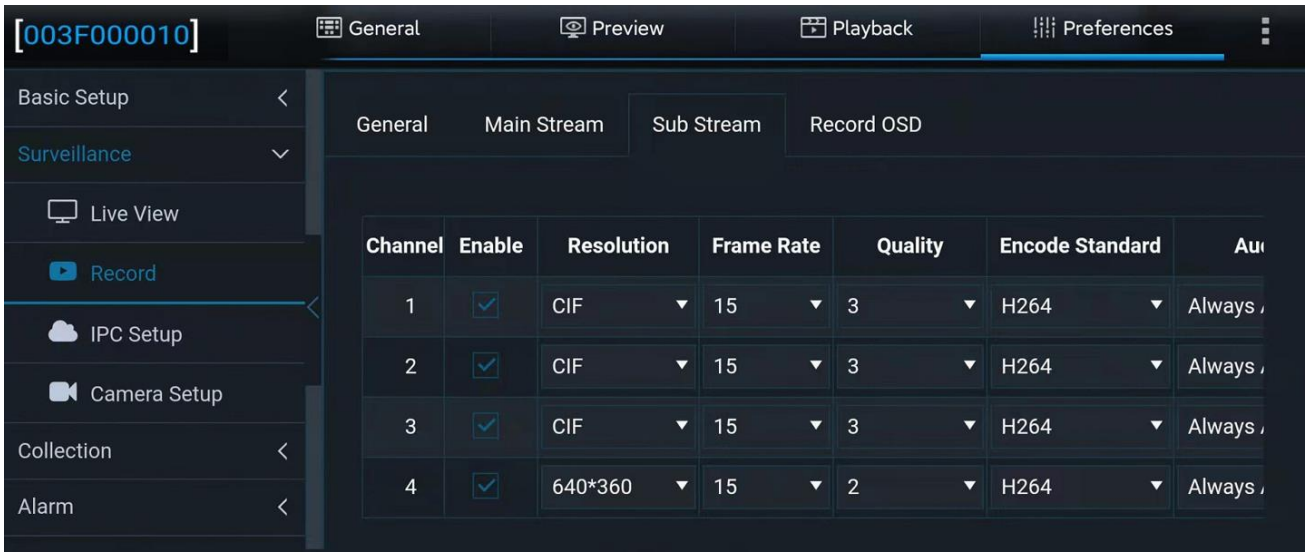
11. **Audio Coding Format**: You can choose **G711A**, **G711U**, **ADPCM**, and **G726**, and it's **ADPCM** by default.

5.8.2.3 Sub Stream

On this screen, you can set the sub stream video and audio recording parameters for each channel.

Note: The sub stream video recording can be enabled only when the sub stream video recording is selected in the recording mode, and a SD card is installed in the second slot.

Tap **Preferences** > **Surveillance** > **Record** > **Sub Stream**, as shown in the following figure:

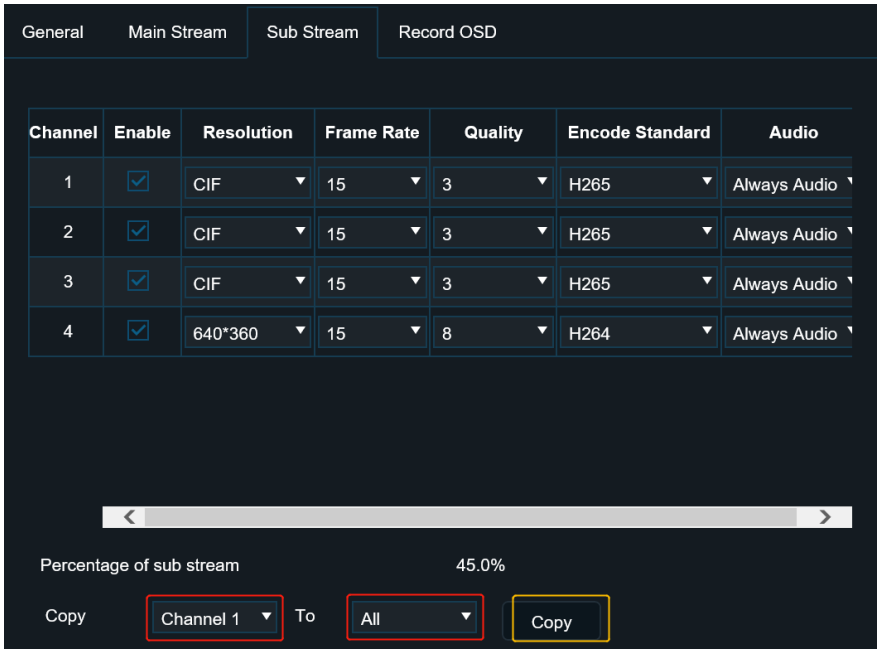


1. **Enable**: enables **Sub Stream Recording** for a specific channel after being checked.

Special note: When **Main Stream** is disabled, the entire video input is disabled. At this time, the sub-stream video recording does not start when the **Sub-Stream** is enabled.

2. **Resolution**: Options: CIF, HD1, or D1 for an analog camera, and QVGA or 640×360 for a digital camera.
3. Frame Rate: specifies the recording frame rate or the number of frames played per second. It ranges from 1 to 25 for a PAL camera and 1 to 30 for an NTSC camera. It is 15 for sub stream by default.
4. **Quality:** specifies the recording quality. The value ranges from 1 to 8. The smaller the value, the better the quality. 1 indicates the best quality.
5. **Encode Standard:** can be set to H264 or H265, and the default value is H264.
6. **Audio:** indicates whether to record audio during video recording. It can be set to **Always Audio** or **No Audio**.

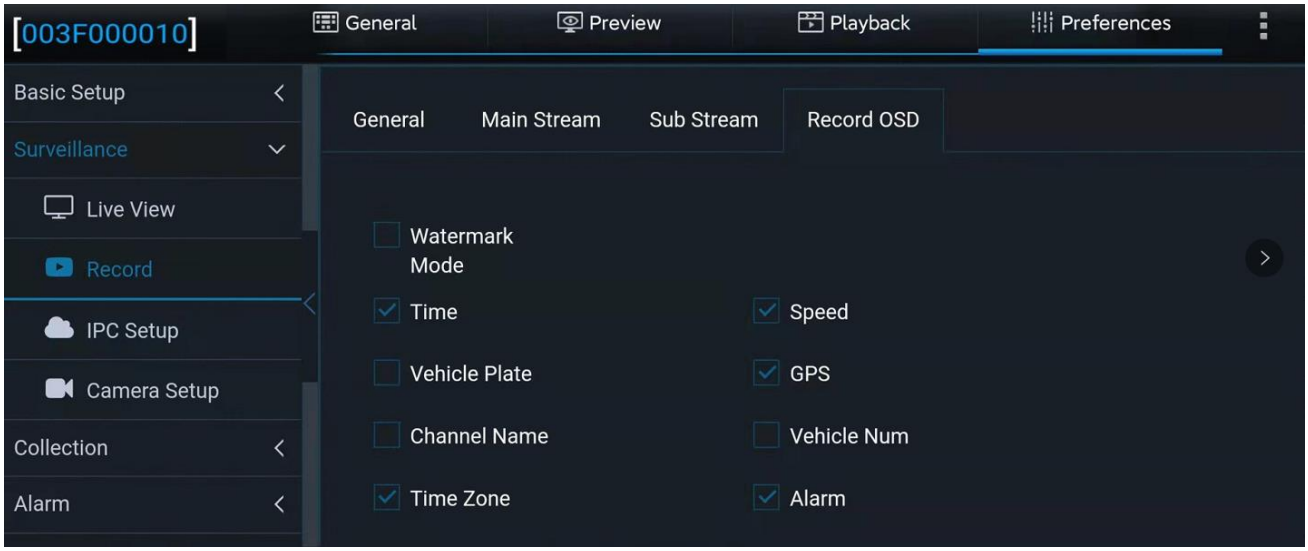
Tap **Copy** to apply the sub stream setting parameters of a channel to other channels, as shown in the following figure:



Special note: Using the stream calculation tool in the instruction package allows you to calculate the required disk size according to the required recording specifications. The calculated capacity size by this tool is a theoretical value for reference only.

5.8.2.4 Record OSD

Tap **Preferences** > **Surveillance** > **Record** > **Record OSD**. The screen for setting recording superimposition is displayed, as shown in the following figure:



OSD superimposition here allows you to superimpose the selected information on the recording, which is different from OSD superimposition on the live view preview screen. Record OSD

supports the selection of 8 areas for enabling and location setting. In addition, in order to provide better OSD overlay capability and effect of the video on the platform, especially to overlay the processing information of AI, this screen is added with the video watermark mode function, and when the function is checked, it can overlay the watermarking information onto videos of the analog channel.

5. 8. 3 IPC Setup

Tap **Preferences** > **Surveillance** > **IPC Setup** to set a connected IPC, as shown in the following figure:

- Search:

1. **ONVIF**: allows enabling IPCs external to the channels, searching and allocating channels for IPCs, and modifying IPC IP addresses.

2. **N9M**: Streamax IPCs are plug-and-play and need no configuration.

✧ Setup:

1. Configure AI-capable cameras:

1) **Normal**: normal recording, algorithm recognition

2) **Calibration**: The camera is calibrated during installation. Algorithm recognition-based alarming is not supported in this mode.

5.8.4 Camera Setup

On the Camera Setup screen, you can flip, mirror, and rotate the cameras in all channels. Tap **Preferences** > **Surveillance** > **Camera Setup**, as shown in the following figure:

In the lower left corner of the screen, select the target channel to set the rotating angle of the camera in this channel, and enable or disable mirroring and flipping for the camera.

Warning: Generally, the default screen angle of DashCam is normal. Please do not modify the screen angle or flip the image at will; otherwise, Streamax will not be responsible for the abnormal image.

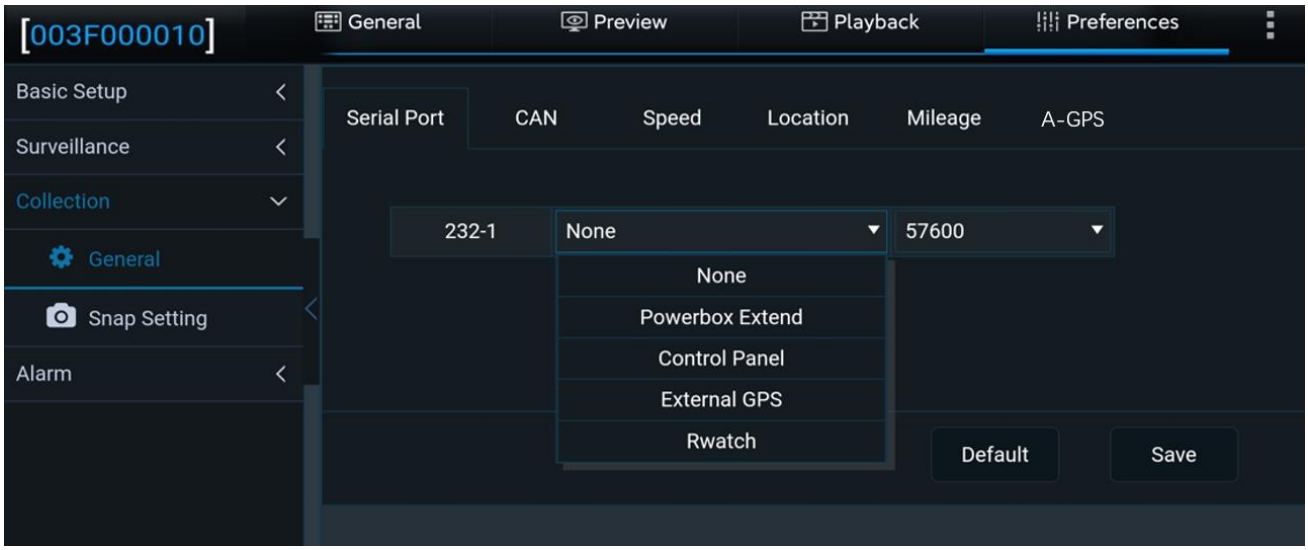
5.9 Data acquisition

On the Collection screen, you can set parameters related to the serial port, CAN, speed, location, mileage, and snap.

5.9.1 General

On the **General** screen, you can set parameters related to the serial port, CAN, speed, location, mileage, and A-GPS.

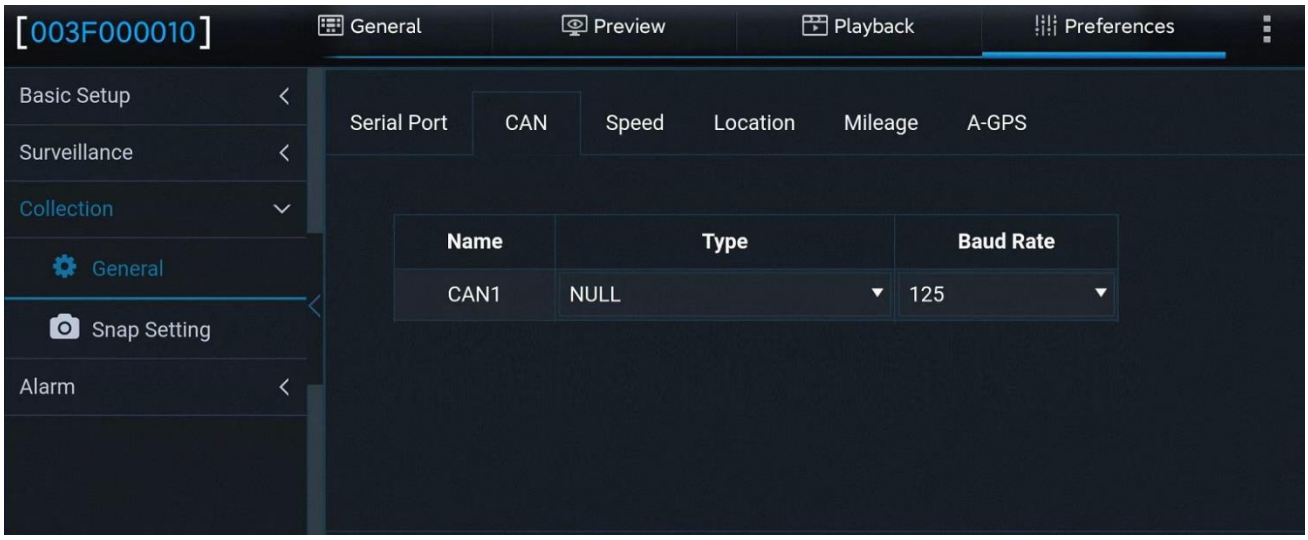
1） Tap **Preferences** > **Collection** > **General** > **Serial Port**. The screen for setting the serial port is displayed, as shown in the following figure:



Serial Port: allows selecting the peripheral you want to connect. The corresponding baud rate will be displayed automatically. If the baud rate is incorrect, change it manually.

Note: If it is connected to an R-Watch, the usage of 232-1 serial port must be set to R-watch on this screen.

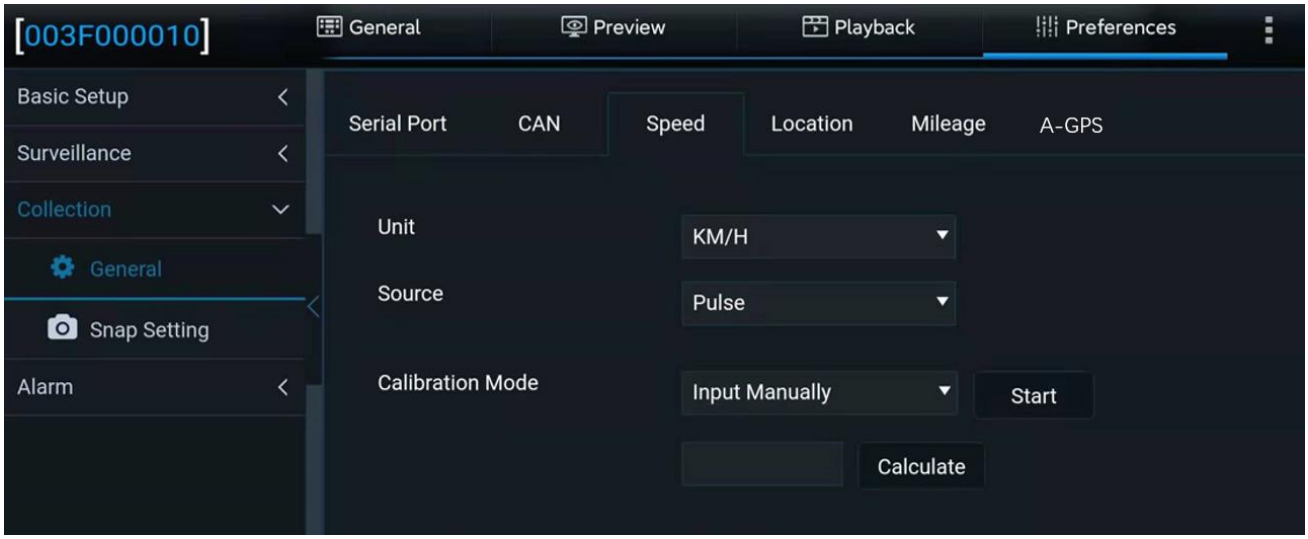
2） Tap **Preferences** > **Collection** > **General** > **CAN**. The **CAN** setting screen is displayed as follows:



On this screen, you can configure the function type and Baud rate of the CAN to be accessed.

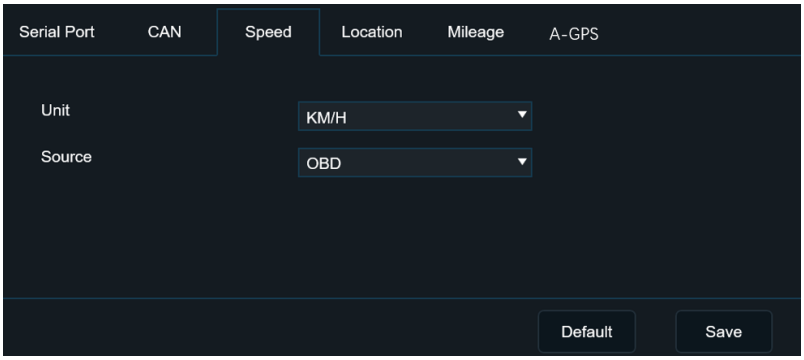
Warning: It supports the SAE J1939 standard. As some data fields may be customized by automobile manufacturers, the final measured data shall prevail. In the event that any required data is not supported, the integrated development is acceptable based on a specific protocol.

3） Tap **Preferences** > **Collection** > **General** > **Speed**. The **Speed** setting screen is displayed as follows:

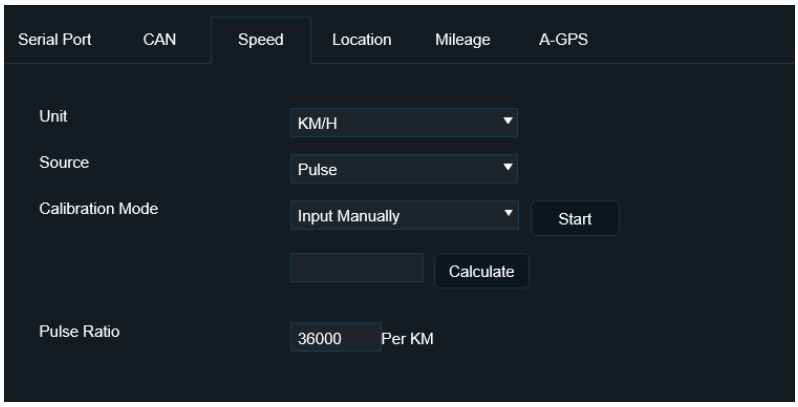


1. **Unit:** sets the speed unit to **KM/H** or **MPH**.
2. **Source:** can be set to **Satellite**, **Pulse**, **OBD**, or **Mix**.

➢ When **Satellite** or **OBD** is selected, the screen is displayed, as shown in the following figure:

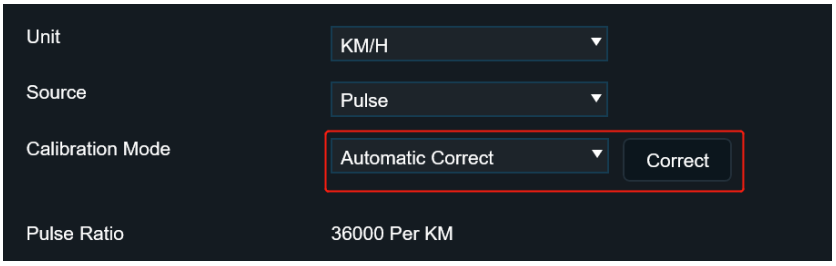


➢ When **Pulse** is selected, the screen is displayed, as shown in the following figure:

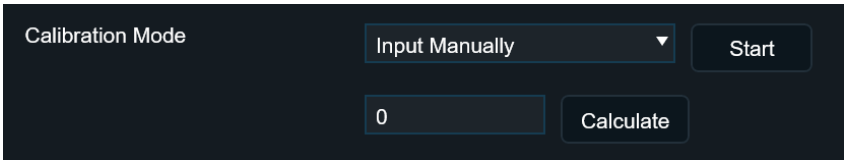


Calibration Mode: can be set to **Input Manually** or **Automatic Correct**.

- If **Automatic Correct** is selected, tap **Correct** to calibrate the pulse ratio directly.



- If **Input Manually** is selected:



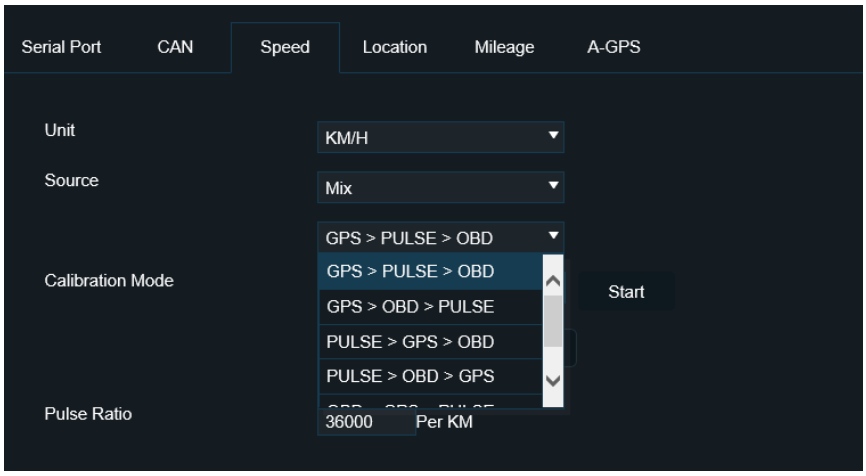
1） You need to manually enter the initial mileage of the odometer, and the system will calculate the initial mileage of the odometer.

2） Tap **Start**. The MCU will automatically record the number of pulses.

3） At any time, you can tap **End**, record the mileage of the odometer again, and calculate the mileage difference.

4） Enter the mileage difference, and tap Calculate. The calculation result will be automatically displayed in Pulse Ratio. (The calculation result unit is consistent with the speed unit.)

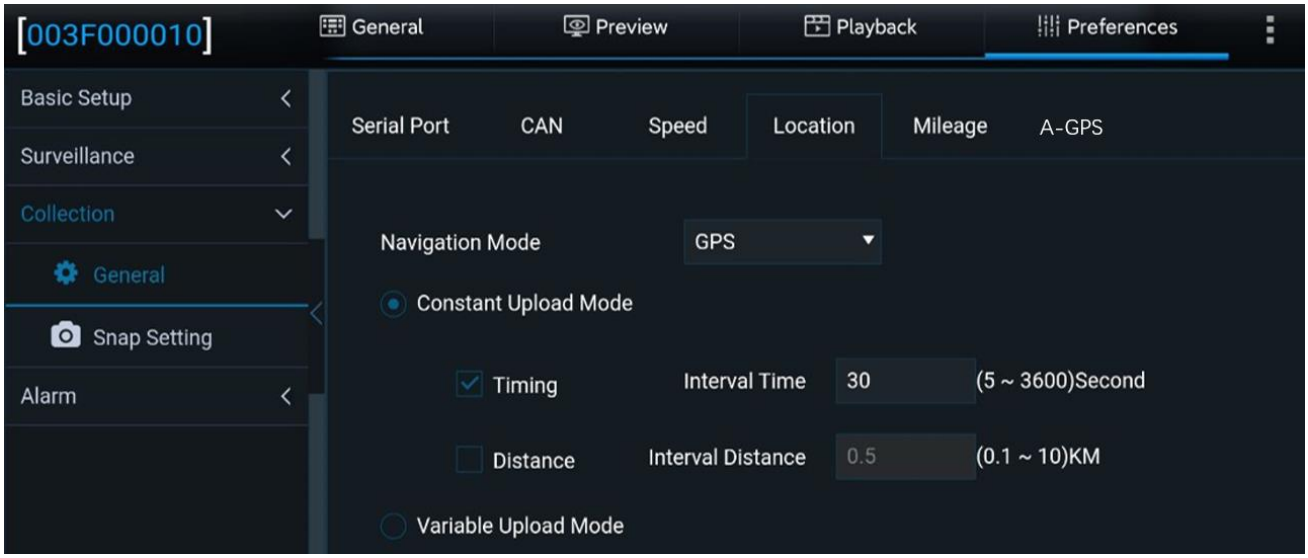
When **Mix** is selected in **Source**, you can set the priority of the speed source, which comes in 6 choices. The screen is as follows:



Special note: Different power boxes support different pulse speeds. The default standard power box does not support pulse function.

4） Tap **Preferences** > **Collection** > **General** > **Location**. The screen for setting **GPS** reporting strategies is displayed. You can select different ways of uploading GPS signals as required by the market.

Warning: You can see this interface and set the parameters only when the device detects the GPS module.



Based on ACC status, the GPS upload mode includes constant upload, variable upload, and sleep upload.

ACC Status	Constant Upload Mode	Variable Upload Mode

ACC ON	1. **Timing**: can be checked to set **Interval Time** that can be modified manually. Value range: 3~3600 s. Default value: 10 s. 2. **Distance**: can be checked to set **Interval Distance** that can be manually modified. Value range: 0.1~10 km. 3. **Timing** and **Distance** can be checked at the same time.	For more information, see the detailed description. Note that you can select either **Constant Upload Mode** or **Variable Upload Mode**. **Constant Upload Mode** is selected by default.
ACC OFF	Sleep upload	

1. Descriptions of variable upload mode:

First, variable uploads are defined by two parameters, **Moving Start** and **Moving Stop**.

Second,

- **Moving Start**: When the vehicle speed is higher than a value for a specified time period, the vehicle is considered as having started. The default speed is 30 km/h and the default time is 60s.
- **Moving Stop**: When the vehicle speed is lower than a value for a specified time period, the vehicle is considered as having stopped. The default speed is 20 km/h and the default time is 5 minutes.

Upload mode:

- When the vehicle status changes from **Moving Stop** to **Moving Start**:

Timing: can be modified manually and the default value is 60s.

Distance: can be modified manually and the default value is 0.1 km.

- When the vehicle status changes from Moving Start to Moving Stop:

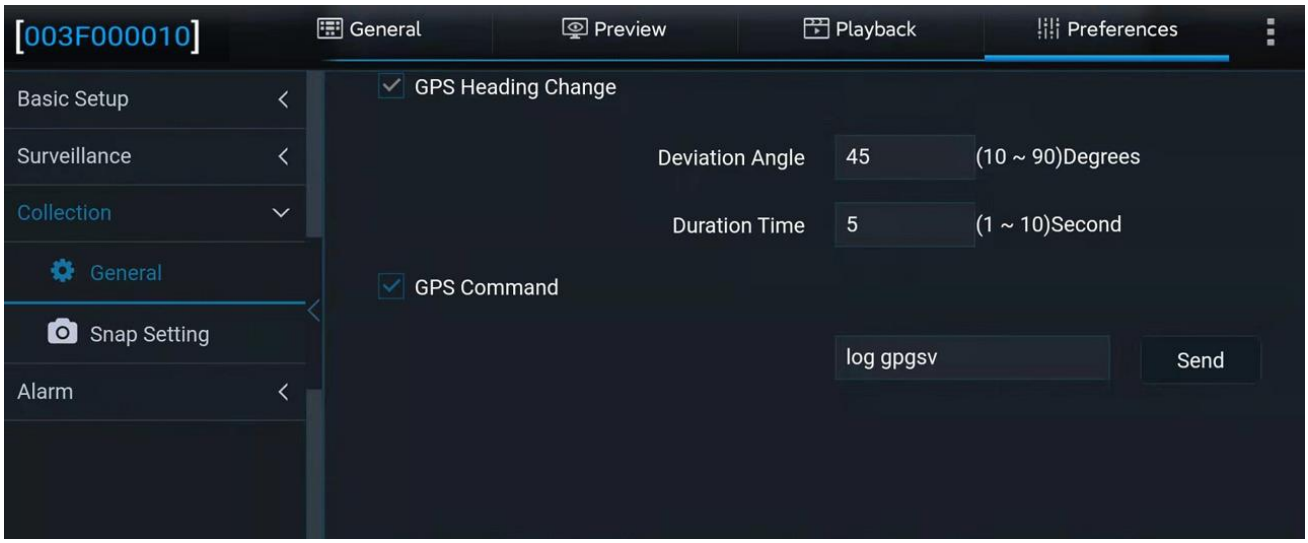
Timing: can be modified manually and the default value is 60s.

2. GPS data is uploaded repeatedly if the vehicle running angle changes significantly. The angle can be defined by the user. By default, a piece of GPS data is uploaded when the vehicle angle is 45°.

3. ACC status is reported alongside GPS data.

4. For details of the sleep upload function, see ON/OFF settings in **Preferences** > **Basic Setup** > **Time Setup**.

GPS Command: in order to ensure that the original GPS data can be obtained for analysis when the inertial navigation GPS goes wrong, the GPS original data acquisition command is added. Tap **Positioning** > **GPS Command**, and enter "log gpgsv" in the command input box; then, tap **Send** and save to enable the GPS raw data recording. At this time, the data is recorded in the black box of the device, which can be obtained locally on the device or remotely on the platform, and you can obtain GPS data for analysis after analyzing the recorded data. The GPS original data recorded in the black box includes RMC, GGA, GSA, GSV, and GPATT. The screen is as follows:

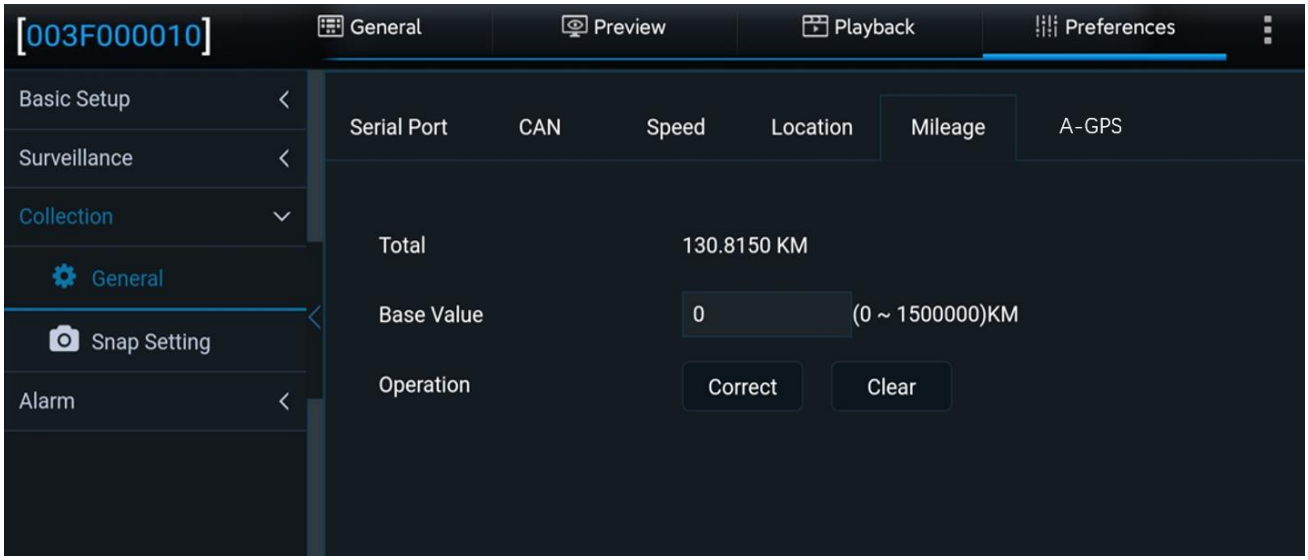


After the "log gpgsv" command is sent at the same time, the general information display interface of "Veyes" displays the satellite positioning signals received by the device. By tapping **General** > **Positioning Information**, you can view the number of satellites and the corresponding satellite signal quality.

If you want to manually turn off the GPS original data recording, you can choose to turn off the GPS command enabling or enter "unlog gpgsv" in the command box; then, tap **Send** and save to stop recording the GPS original data into the black box.

In addition, when the device detects that the GPS signal quality is poor, it makes prompts via the LED light on the front panel of the device. At this time, the LED light indicating GPS on the front panel flashes repeatedly (at intervals of 1 s), and it stops flashing when the positioning signal is recovered.

5） Tap **Preferences** > **Collection** > **General** > **Mileage**. The screen for setting the **Mileage** is displayed. On this screen, you can specify the **Base Value**, and correct or clear the mileage data, as shown in the following figure:

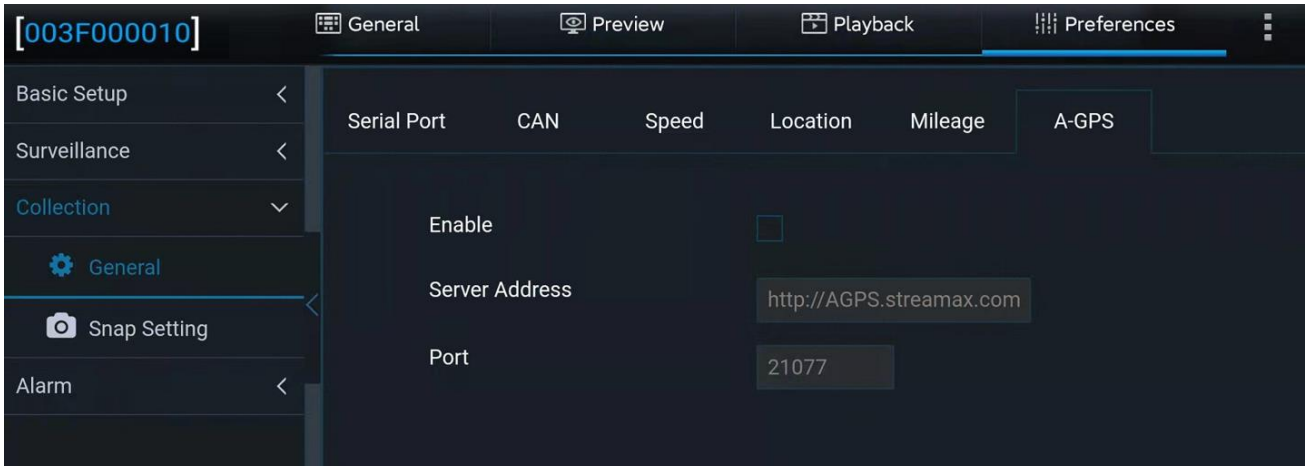


6） Tap **Preferences** > **Collection** > **General** > **A-GPS**. The screen for setting the **A-GPS** is displayed.

In a strong signal environment, the autonomous GNSS receiver can cold start positioning in about 30 seconds; but in a weak signal environment (such as under an elevated road, a tree-lined path, between urban high-rise buildings, just out of a tunnel, just out of an underground garage, etc.), Receivers without external assistance are slow to acquire satellites, have difficulty acquiring a text from satellites, and therefore take a long time to locate, or even impossible to locate. The AGNSS (AGPS) service can provide the receiver with auxiliary information necessary for positioning, such as text, rough position, and time. Whether in a strong signal or weak signal environment, the information can significantly shorten the time of first positioning time to achieve fast startup and fast positioning.

When in use, the AGPS proxy server regularly obtains all ephemeris data from various chip manufacturers and stores the data on the server. The device connects to the proxy server

through the default IP/domain name and port of the proxy server (parameters can be modified manually). After the device is started, check whether the AGPS auxiliary information file expires (different chip files have different due time). If it expires, request the AGPS proxy server to obtain the latest ephemeris data, and download it to the local by overwriting. If the data cannot be obtained, keep trying.

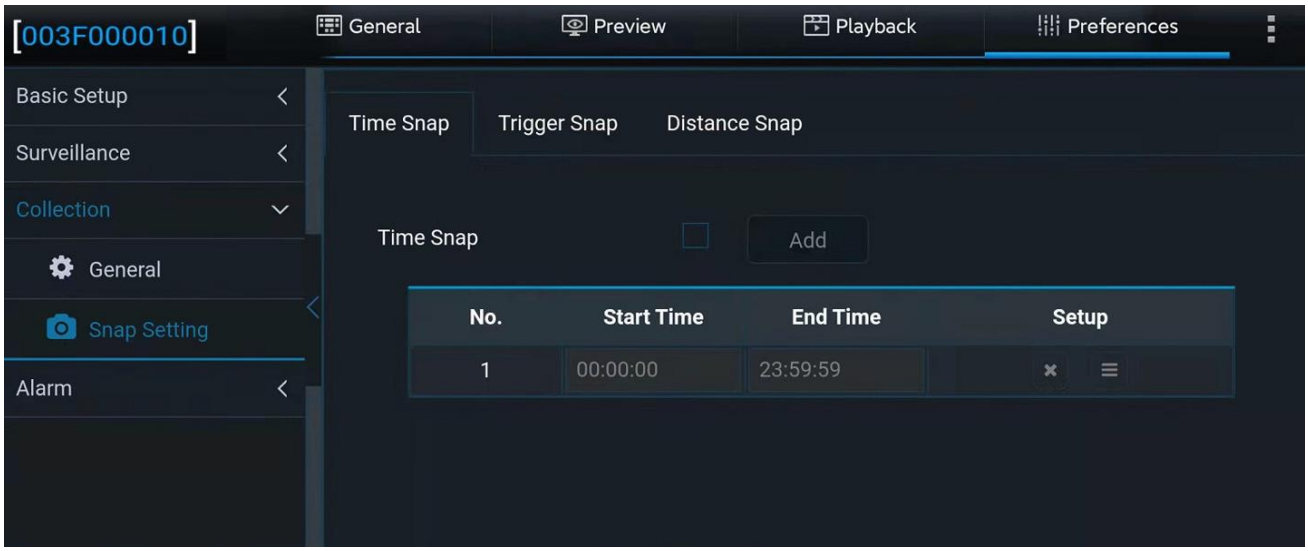


Warning: This feature requires the deployment of a server, which is not officially open for commercial use for the time being. The expected official server deployment to support commercial use will be in Q4 2022.

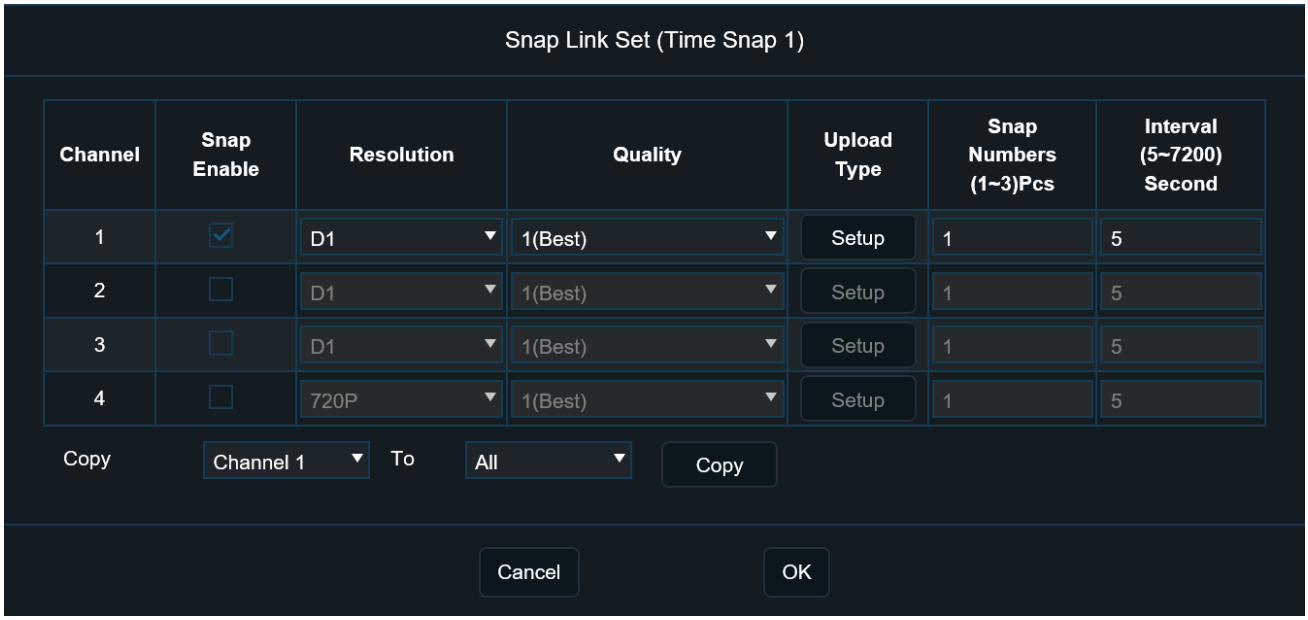
5. 9. 2 Capture settings

5.9.2.1 Time Snap

You can set the time period during which the device will automatically take snaps at regular intervals. Tap **Preferences > Collection > Snap Setting > Time Snap**. The **Time Snap** screen is displayed, as shown in the following figure:



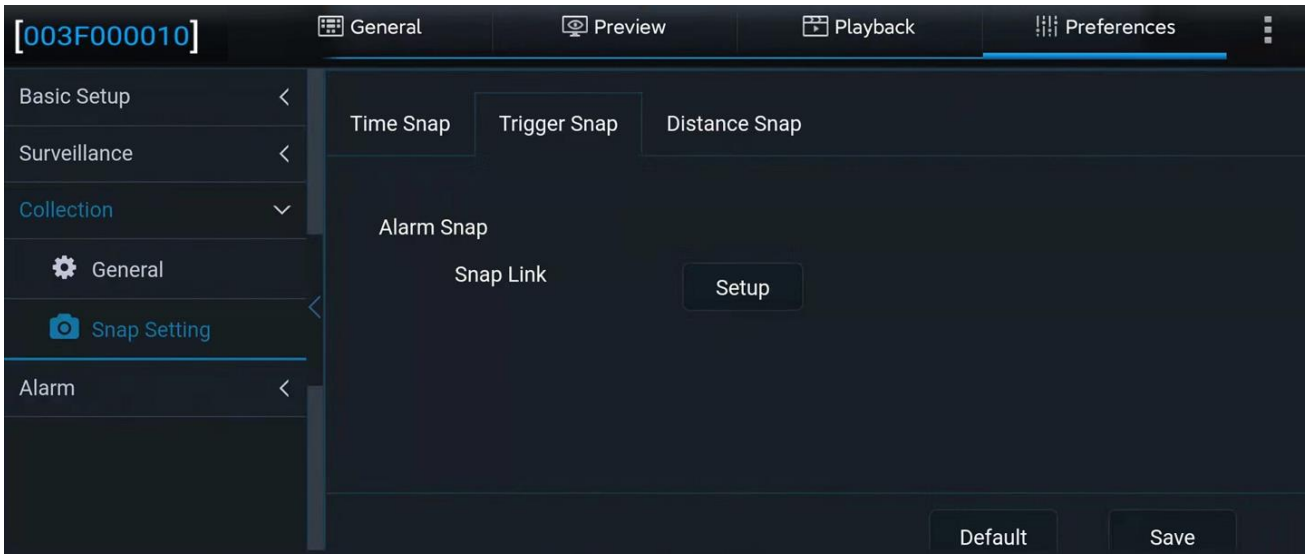
- Check the **Time Snap** check box to enable time snap. Tap **Add** to add a period for this function.
- **Start Time/End Time**:
  1) Set a time period and enable the snap function during this time period.
  2) The time period of time snap is within one day.
  3) It supports up to 8 time periods of time snap every day.
  4) You can add, delete, and edit time periods.
- Independent snap parameters can be set for each time period. Specifically, tap the **Operate** icon. The **Snap Link Set** screen is displayed, as shown in the following figure:



1) **Channel**: selects the camera channel to snap.
2) **Snap Enable**: enables the time snap function of this channel after being checked.
3) **Resolution**: selects the snap resolution.
4) **Quality**: ranges from 1 to 8. 1 indicates the best image quality.
5) **Upload Type**: supporting FTP upload and HTTP upload. Snaps can be automatically uploaded through FTP. For FTP settings, see **Preferences** > **Basic Setup** > **Application** > **Communication Module** > **FTP Server**. When HTTP is selected, the snaps are uploaded to the specified platform in HTTP mode. The HTTP parameter is empty by default, and the HTTP address is issued through the platform.
6) **Snap Number**: ranges from 1 to 3.
7) **Interval**: specifies the interval between each snap in this time period, in seconds.
8) **Copy**: copies the settings to other video channels.

5.9.2.2 Trigger Snap

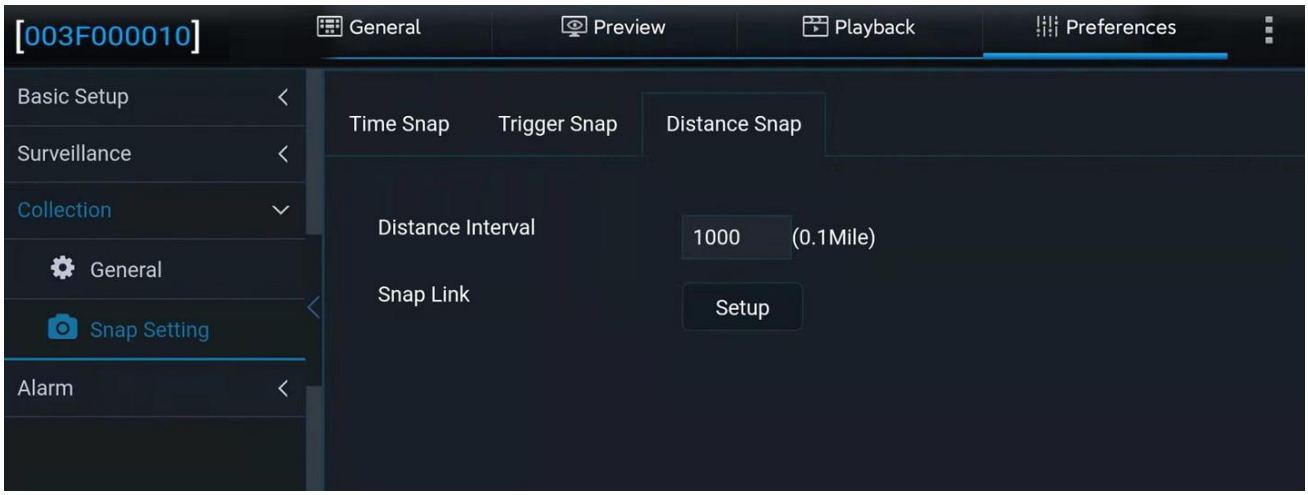
The device supports the alarm linkage snap, that is, the device starts to take snaps once an alarm is triggered. Tap **Preferences > Collection > Snap Setting > Trigger Snap**. The setting method is the same as that for time snap. Therefore, no more descriptions are provided here.



5.9.2.3 Fixed-range Capture

The fixed-distance capture is supported, that is, capturing pictures at a fixed distance and uploading them to the platform. Tap **Preferences** > **Collection** > **Snap Setting** > **Distance Snap**.

The fixed-distance capture is disabled by default, and the distance unit follows the system unit. The difference between the capture linkage setting method and the timed capturing is that the fixed-distance capture setting does not contain capturing time interval setting.



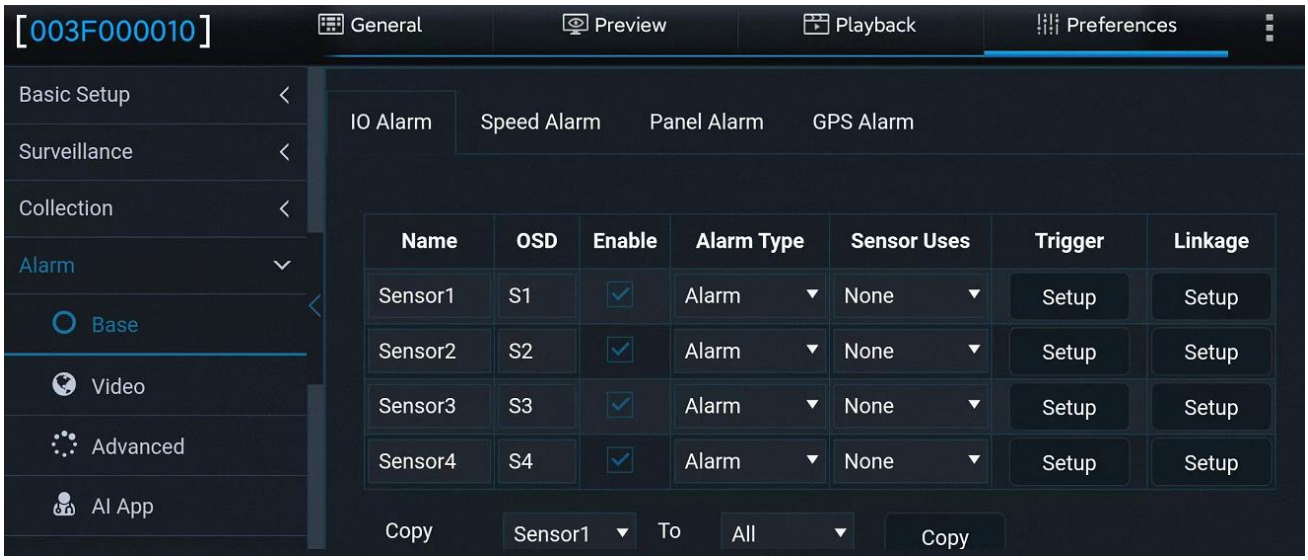
Warning: The snap function consumes certain system resources, and various snap settings cannot allow the average frequency of snapping in all channels to exceed 3 snaps in 5 seconds. Streamax is not responsible for the system resource problem caused by frequent snapping due to improper snap settings.

5. 10 Alarm Settings

5. 10. 1 Basic alarms

On the **Base** screen, you can set **IO Alarm**, **Speed Alarm**, **Panel Alarm**, and **GPS Alarm**.

Tap **Preferences** > **Alarm** > **Base**. The screen is displayed, as shown in the following figure:



The device uses a conventional power box and supports 4 IO inputs.

- **IO Alarm** screen:

1. **Serial Number**: Options: **Sensor1**, **Sensor2**, **Sensor3**, and **Sensor4** (eight IO inputs supported only when the UPS power box is used).
2. **Name**: You can customize or modify sensor names.
3. **OSD**: indicates the sensor name abbreviation that can be customized in OSD superimposition.
4. **Alarm Type**: **Alarm** and **Event**.

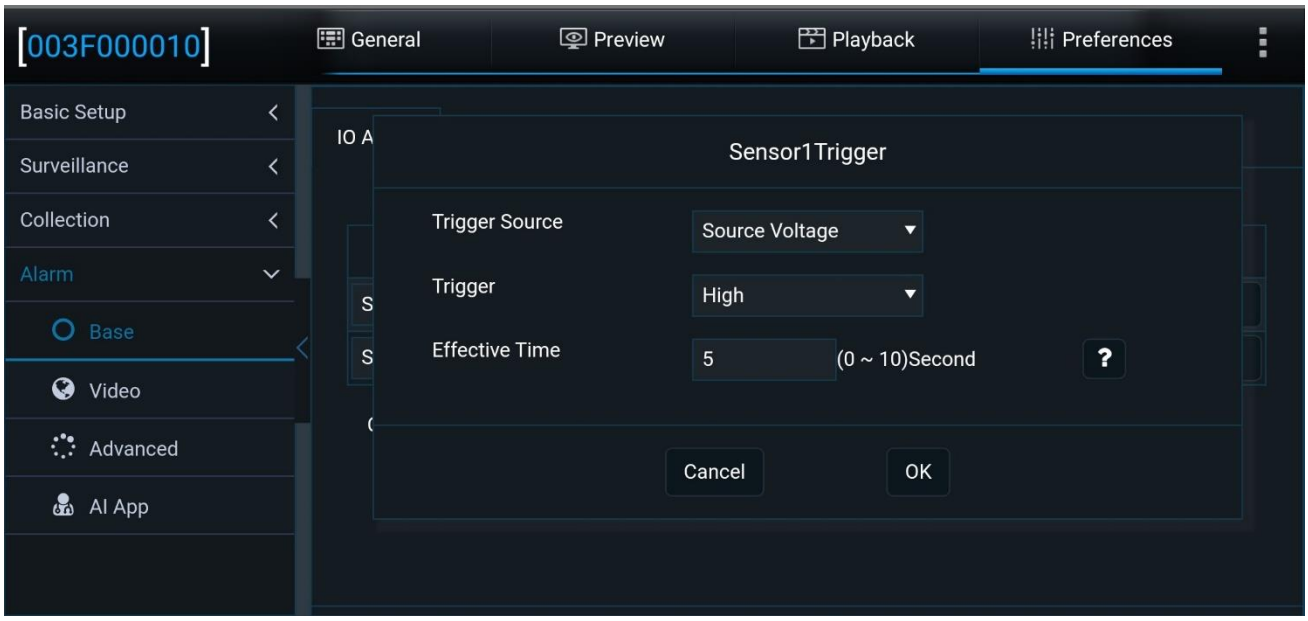
➢ When **Alarm Type** is **Alarm**:

1) The alarm can be superimposed on the preview screen and in the recording.
2) The alarm will be uploaded to the platform.
3) Alarm logs are written.

➢ When **Alarm Type** is **Event**:

1) OSD superimposition;
2) The alarm will not be reported to the platform.
3) Alarm logs are written.

5. **Sensor Uses**: sets the purpose of the sensor, which can be **Left Steering**, **Right Steering**, **Brake**, or **Privacy**.
6. **Trigger**: Tap **Setup** to enter the following screen:



1) **Trigger**: can be set to **High**, **Low**, or **Pulse**, and it is **High** by default.

   High: Normal state is Low, and it is High when triggered.

   Low: Normal state is High, and it is Low when triggered.

   Pulse: Normal state is Low, and it is level fluctuation when triggered.

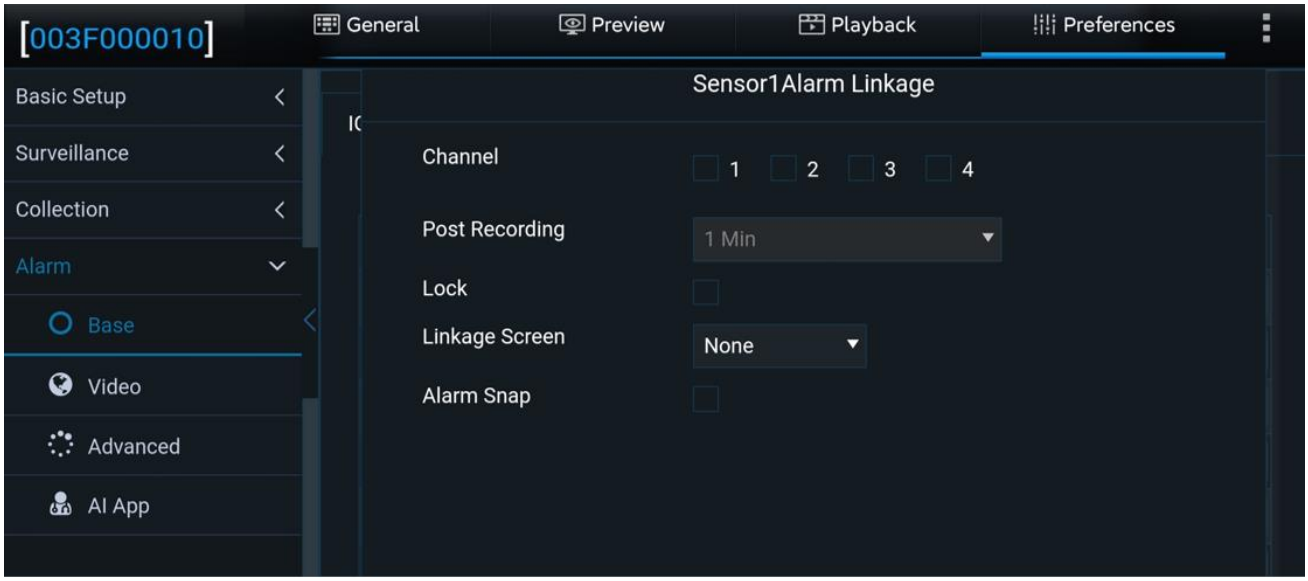
   Warning: Voltage can be detected by IO port ranges from 0-36V. Below 3.5V is low, and above 3.5V is high. Please use in accordance with the visible range. Streamax is not responsible for device damage due to exceeding the detectable range.

2) **Effective Alarm Time**: indicates a time period during which an alarm is repeatedly triggered after being cleared. These repeated alarms within the period are considered a single alarm. Value range: 0~10s. Default value: 5 s

For example, a motion detection alarm is triggered at 13:23:30 and cleared at 13:23:50. If the effective time is set to 10 seconds, and a motion detection alarm is triggered within 10 seconds, the two motion detection alarms are considered to be the same alarm and are recorded in the alarm log as one. The alarm linkage will not stop until the subsequent motion detection is canceled.

7. **Alarm Linkage**: includes service functions that can be linked when an alarm occurs.

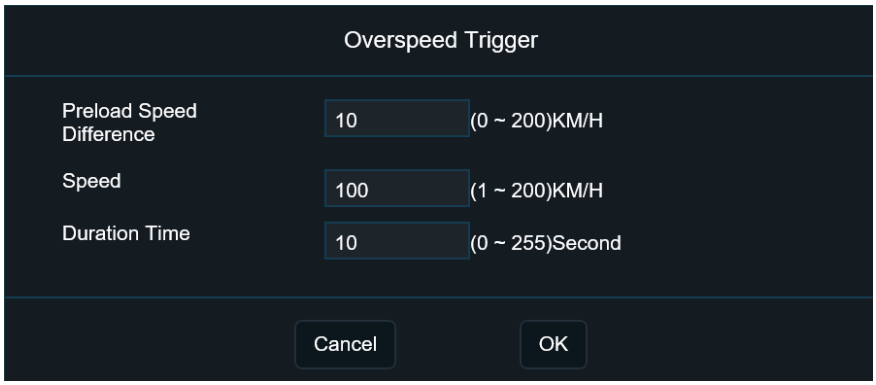
Tap **Setup** to enter the following screen:



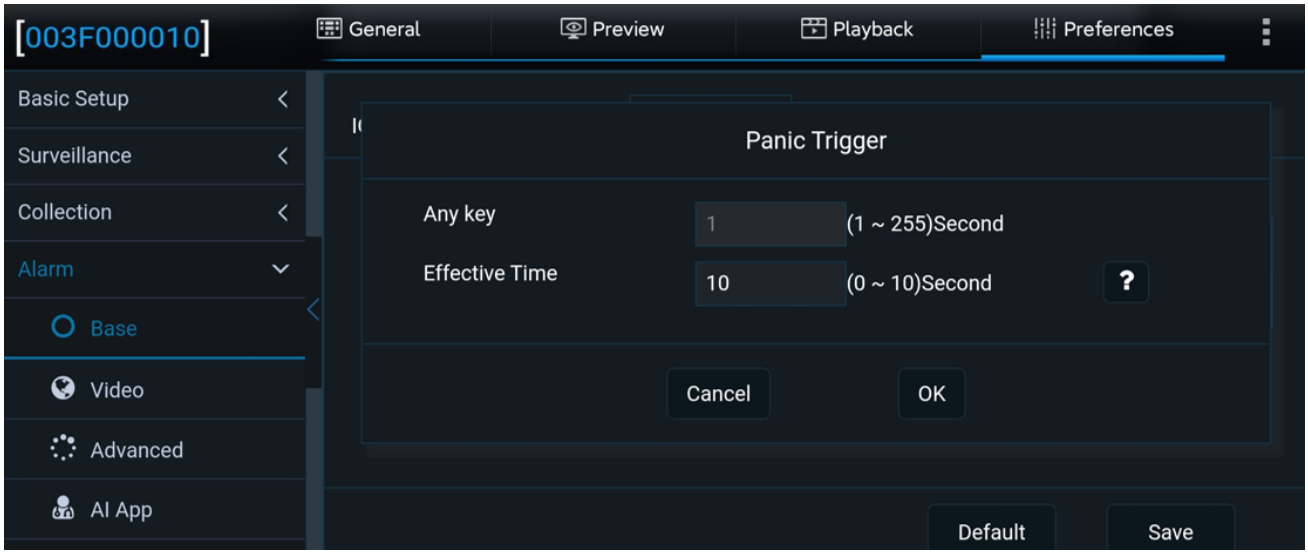
1) **Channel**: indicates the channel that needs to be recorded after an alarm is triggered. The recording of these channels will be marked as alarm recording.
2) **Post Recording**: indicates the time for the recording to continue when the alarm is cleared. Value range: 1-30 min. Default value: 1 min.
3) **Lock**: specifies whether to lock the alarm recording. If this option is selected, alarm recording will be locked once the IO alarm is triggered. The recording is unlocked after the alarm is cleared.
4) **Linkage IO Output:** The IO output volume can be configured after the IO alarm is triggered. The IO output can be configured and used only when the UPS power box is used (conventional power supply boxes do not provide IO outputs). The duration for IP output can be configured, and the value range is 0 to 255 seconds.
5) **Linkage Screen**: indicates the required live view screen after an alarm is triggered. It can be set to **Single** or **Quad**, and it is not displayed by default.
6) **Alarm Snap**: specifies whether to take a snap after the alarm is triggered. In the case of setting the FTP address, after the IO alarm is triggered, the channel snap will be enabled, and the snaps will be exported via FTP. If the platform is configured with the alarm evidence upload parameters, snaps can also be uploaded to the platform.

- Speed Alarm: allows you to enable the over speed alarm function and set **Alarm Type**

to **Alarm** or **Event**. On the **Overspeed Trigger** screen, specify **Preload Speed Difference**. A warning is generated if the difference between the vehicle speed and limited speed is smaller than the value of this parameter. An overspeed alarm is generated if the vehicle speed is greater than the limited speed. The voices are different for the two alarms. Other parameters can be set in the same way as for IO Alarm.



- **Panel Alarm:** allows you to check the **Panic Button** to enable the panel alarm and set alarm linkage parameters. On the **Panic Trigger** screen, you can set the trigger time for pressing the button to trigger the panel alarm to 1~255s. Default value: 1s (now it cannot be modified). Other parameters can be set in the same way as for IO Alarm.

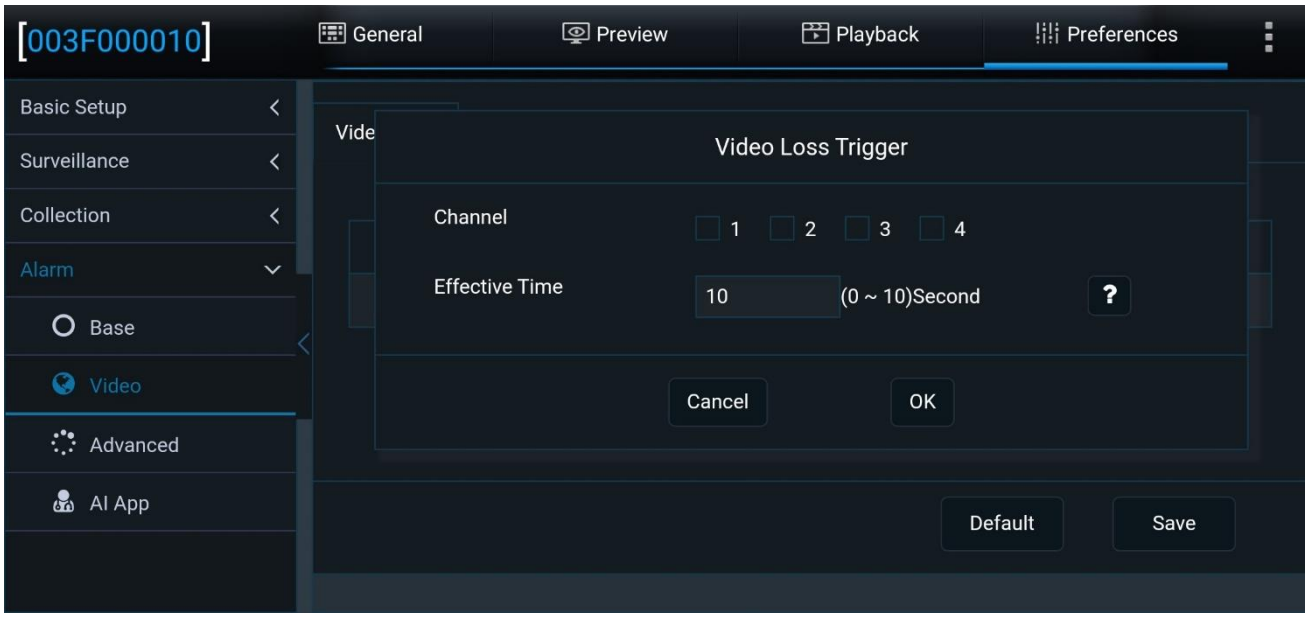


- GPS Alarm: specifies alarms generated when GPS signals are lost. Parameters can be set in the same way as for IO Alarm.

5. 10. 2 Video Alarms

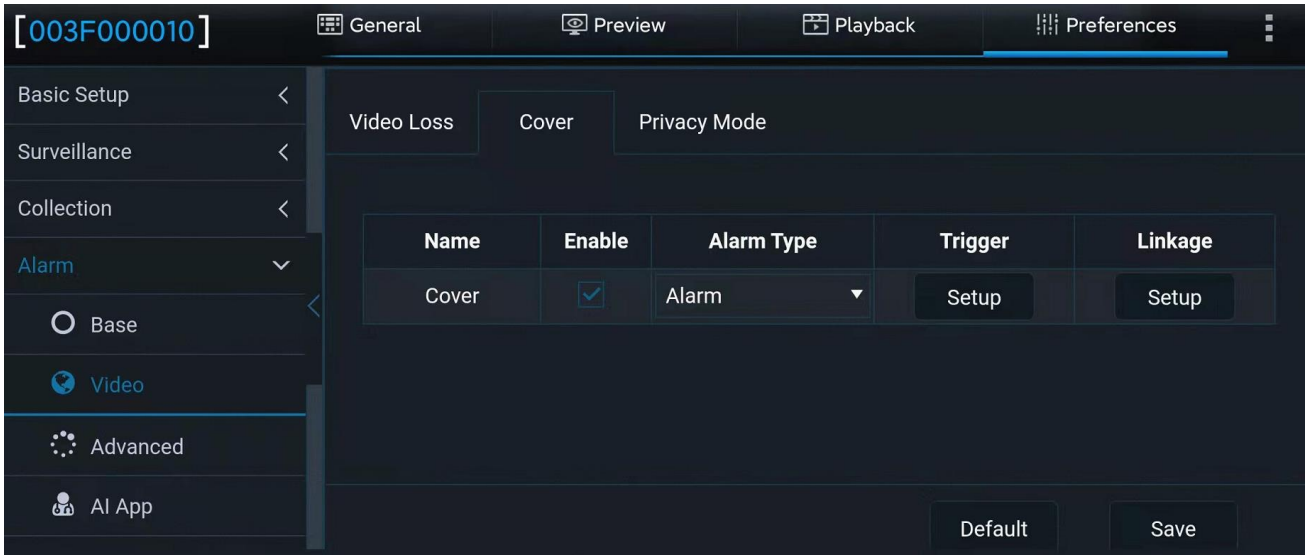
- Video loss

On the Video Loss screen, you can set parameters for video loss alarms. Tap **Preferences** > **Alarm** > **Video** > **Video Loss** and tap **Setup** in the **Trigger** column. The **Video Loss Trigger** screen is displayed, as shown in the following figure: You can specify the channel for which video loss alarms are generated. Alarm linkage parameters can be set in the same way as for IO Alarm.



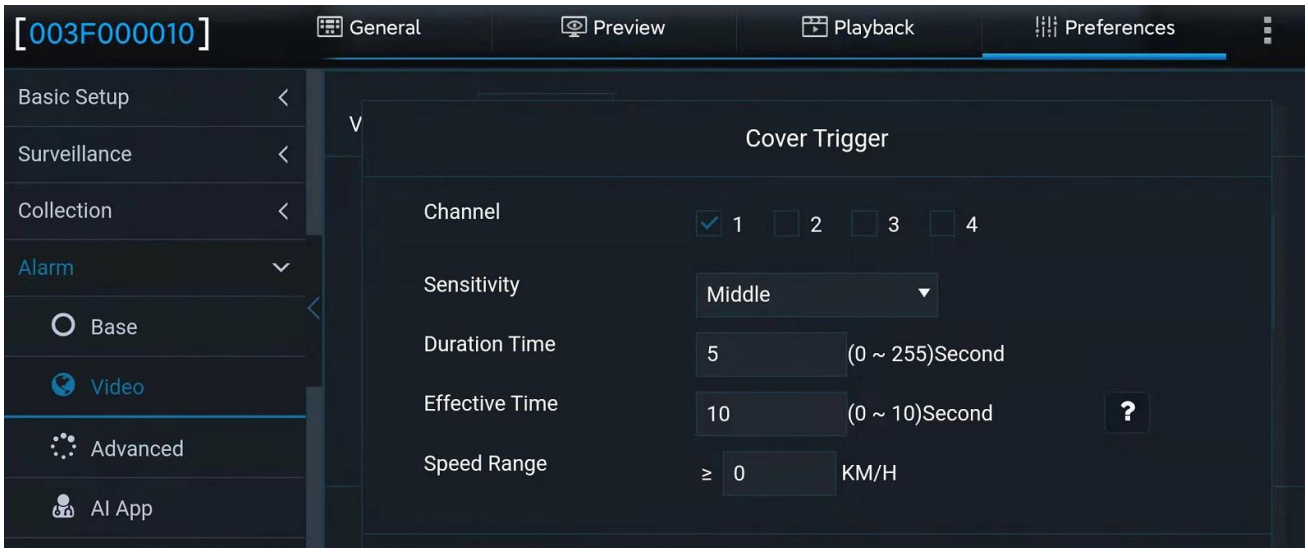
- Camera occluded

You can configure parameters for the camera cover alarm in the Cover screen. Tap **Preferences** > **Alarm** > **Video** > **Cover**. The Cover screen is displayed, as shown in the following figure:



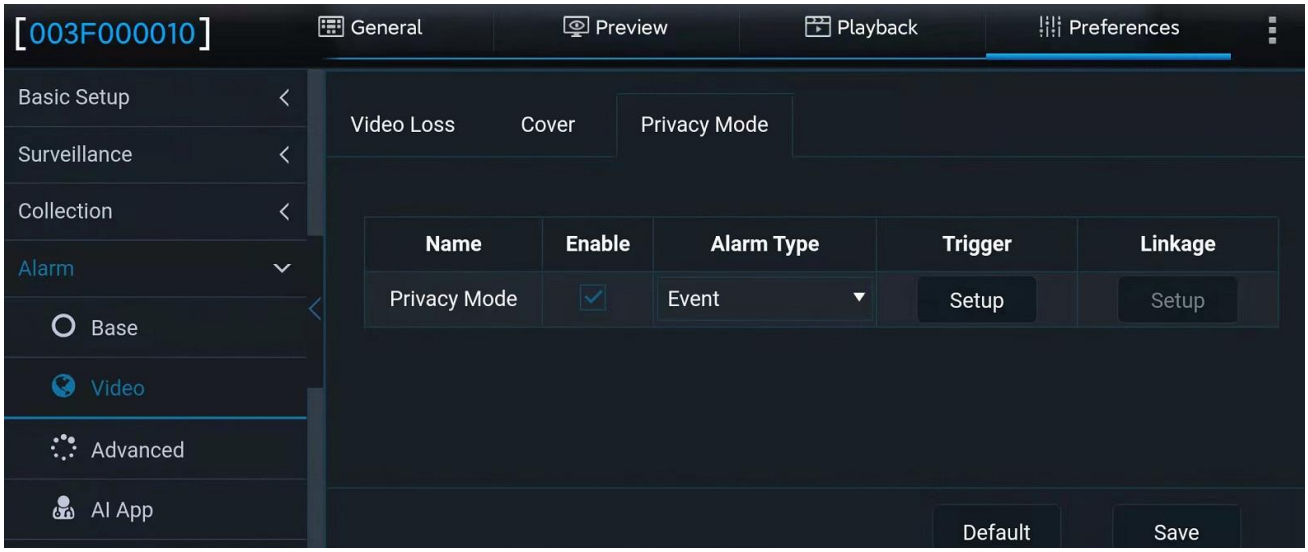
Tap **Setup** under **Trigger** to open the following screen. You can configure the channel, sensitivity, duration time, valid time, and speed threshold for the camera cover alarm. In the AI channel, the algorithms are used for detection. In the non-AI channel, the MDVR is used for judgment. Alarm linkage parameters can be set in the same way as for IO Alarm.

The camera cover alarm of the ADAS channel is triggered when the vehicle speed exceeds 10 km/h and the duration of covering lasts for 15s. The cover alarm of the DMS channel is triggered when the duration of covering lasts for 5s, and the speed exceeds the set speed value on the cover alarm screen. The cover alarm of the DSC channel is triggered when the duration of covering lasts for 6s, and the speed exceeds the set speed value on the cover alarm screen.



- Privacy mode

The privacy mode trigger and release mode can be set on the privacy mode setting screen. Tap **Preferences** > **Alarm** > **Video** > **Privacy Mode**. The screen is displayed, as shown in the following figure:



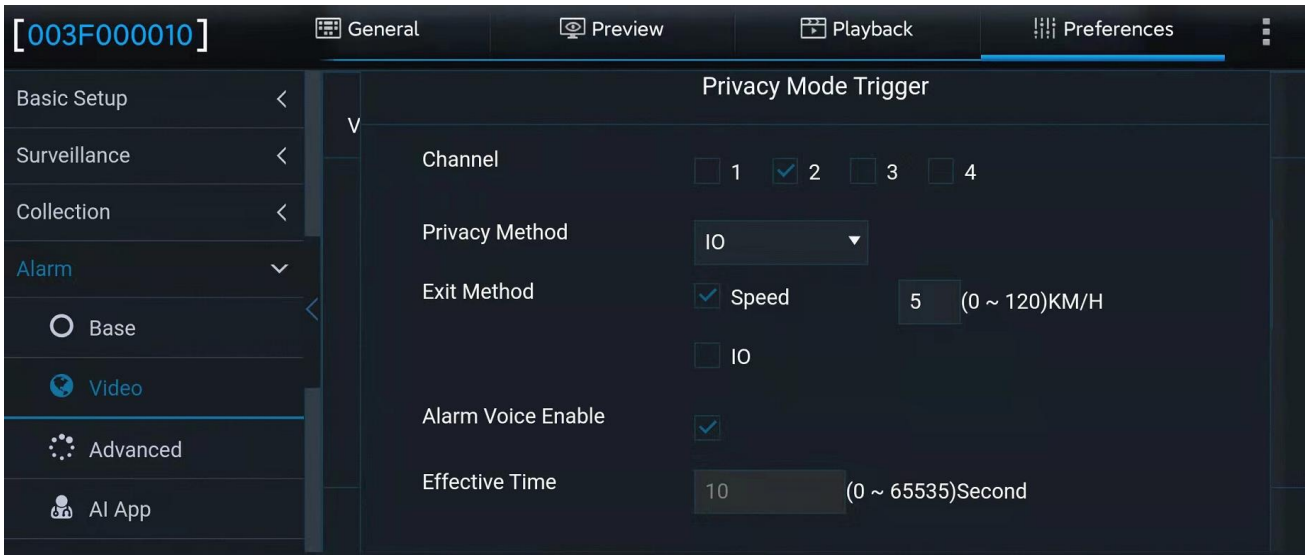
Tap the **Settings** button to enter the following screen, where you can set the privacy channel, privacy mode trigger mode, privacy mode release mode, and privacy mode voice enabling.

Privacy channel: when the privacy mode of a channel is turned on, it means that the audio and video recording of this channel is turned off, and it is enabled after turned on;

Privacy mode trigger mode: by IO or ACC, which are optional. After the IO usage is configured, the IO can be triggered to realize privacy mode on/off. For the specific setting method of IO, see **Preference** > **Alarm** > **Base**. The ACC trigger mode means that the privacy mode (stopping audio and video recording) is turned on after the ACC is turned off for 10s.

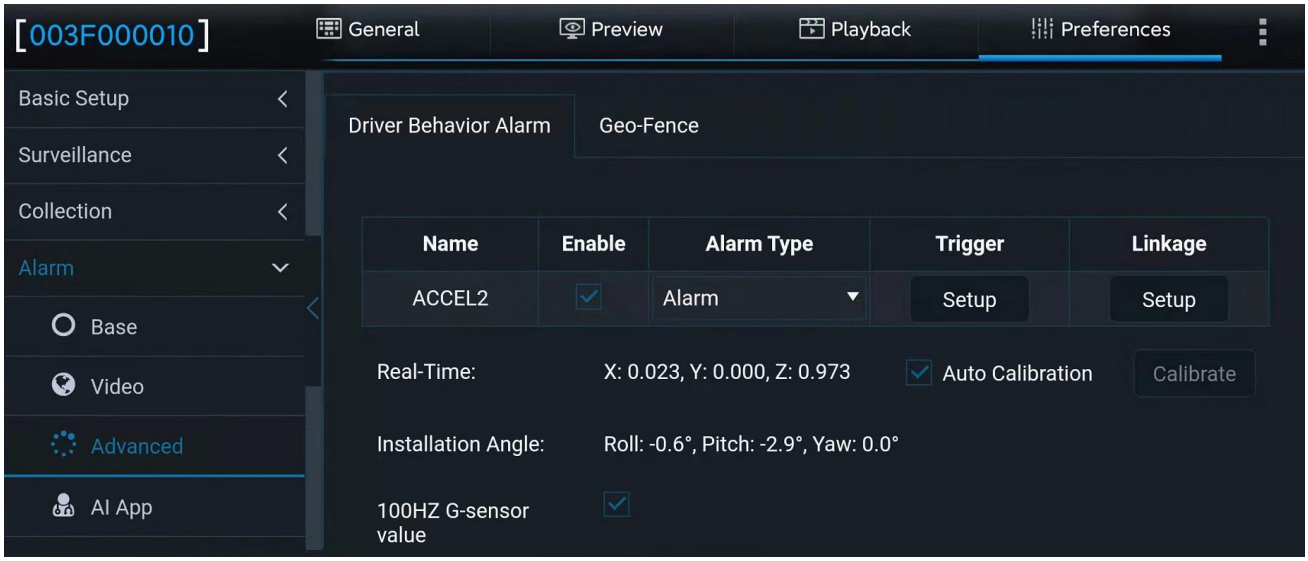
Privacy mode release method: there are two methods--by speed or by IO, and either of which must be selected. The setting and usage of IO are consistent with the trigger mode. As long as the IO is set, it can be used for triggering and releasing. Speed mode means that, when the privacy mode is enabled, the privacy mode can be released if the vehicle speed is greater than a certain value.

Privacy mode voice-enable: it refers to whether the broadcast voice is enabled when the privacy mode is triggered or disabled. This function simultaneously controls the voices with the privacy mode on/off, which cannot be controlled separately.



5. 10. 3 Advanced Alarms

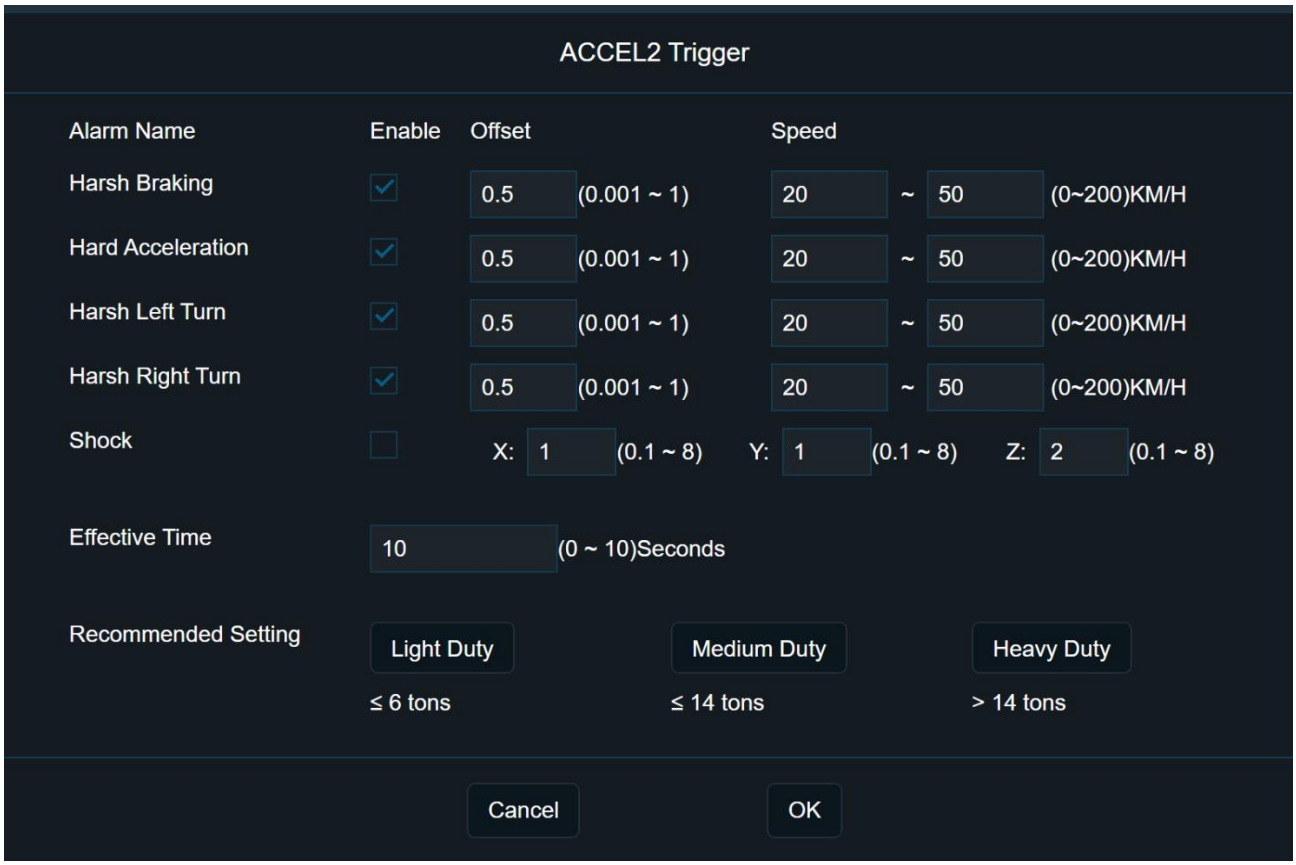
On this screen, you can set G-Sensor alarm and Geo-fence alarm parameters. Tap **Preferences** > **Alarm** > **Advanced**, as shown in the following figure:



- On the **Driver Behavior Alarm** screen:

1. **ACCEL2** is the name of the driver behavior alarm algorithm. If **Enable** is selected for it, this algorithm is effective.
2. **Alarm Type** indicates the type of event triggered by intense driving behavior.
3. **Trigger** indicates the condition for triggering driving behavior alarms: The alarm can be triggered by Harsh Braking, Hard Acceleration, Harsh Left Turn, and Harsh Right Turn.

Other parameters including Offset and Speed can be configured, as shown in the following figure:



Shock: refers to collision detection. The G-Sensor is used to determine whether the collision occurs. The collision thresholds can be configured in this parameter.

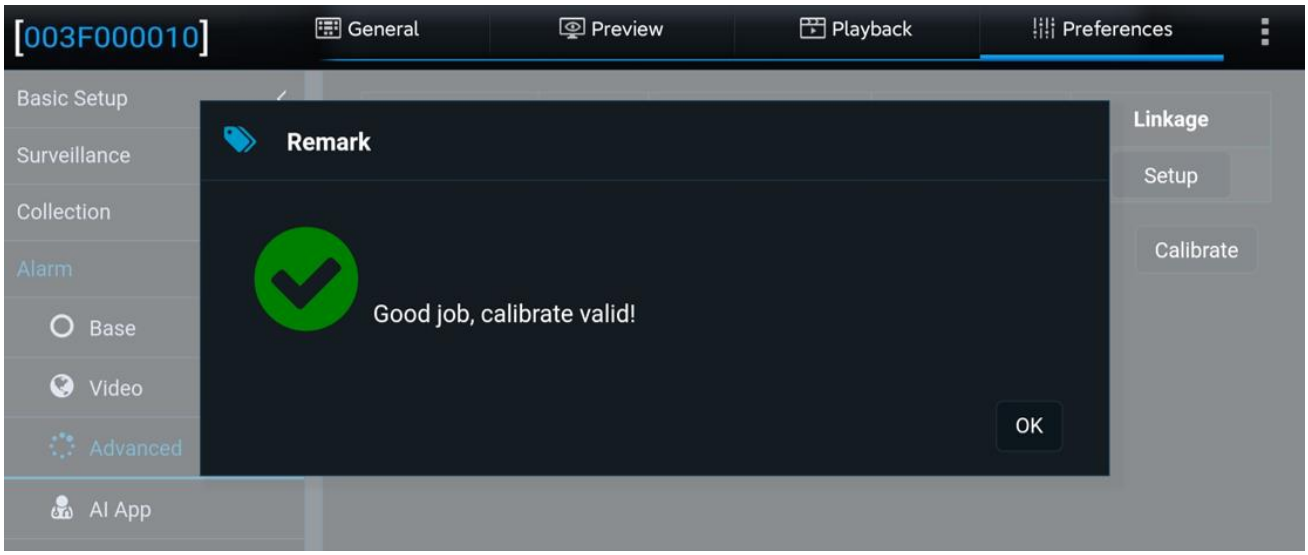
Note: In the **ACCEL2 Trigger** screen, the offset values of the four types of alarm, **Harsh Braking**, **Hard Acceleration**, **Harsh Left Turn**, and **Harsh Right Turn**, are determined by complex formulas. The general setting logic is that the recommended offset value is based on the vehicle tonnage below. The offset value can be increased if the alarm is too easy to trigger and reduced if the alarm is difficult to trigger. The offset values of the four types of alarms are not completely linear. The higher the offset value, the more obvious the driver will feel. **Shock**'s XYZ value is in units of gravitational acceleration G. The parameter setting presents the threshold of acceleration in the XYZ direction during collision.

4. **Linkage**: specifies the service functions linked with the alarm that is triggered. The setting is the same as that for IO Alarm.

5. The G-sensor can be calibrated either automatically or manually.

➢ Manual calibration:

After the manual calibration is saved, the calibration is considered successful when the XYZ value at (0,0,1) is detected, and the successful calibration is recorded in the operation log. The calibration success log contains the following information: G-sensor calibration success status, time, and real-time values on the X, Y, and Z axes. The following screen will be displayed after the manual calibration is successful:



➢ Automatic calibration:

The original logic is used. After the fifth calibration is completed, the deviation is less than ±0.1 from the original values on the X, Y, and Z axes (0, 0, 1). The calibration success log contains the following information: G-Sensor calibration success status, time, and real-time values on the X, Y, and Z axes.

When the device enters the calibration process again and completes the calibration, the data is recorded again.

➢ Calibration failure status judgment:

Manual calibration: After the manual calibration is saved, the detected values on the X, Y, and Z axes are not (0, 0, 1). As manual calibration forcibly sets the values to (0, 0, 1), there are almost no manual calibration failures.

Automatic calibration: Automatic calibration is a continuous process. Therefore, the calibration

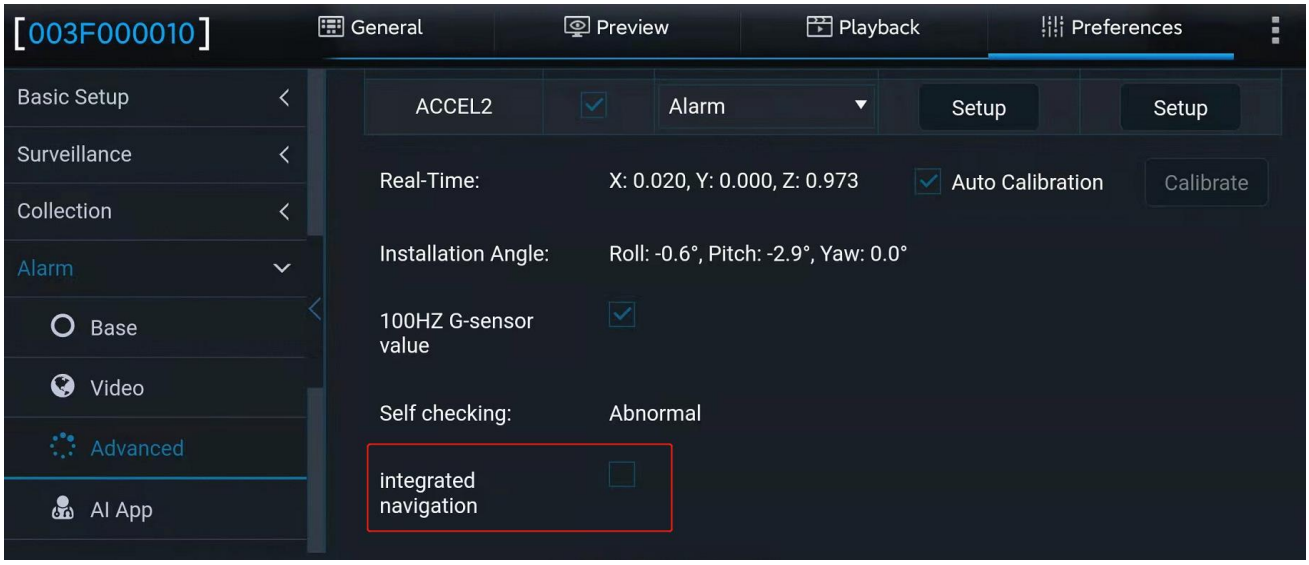
status abnormality, time, and real-time values on the X, Y, and Z axes are recorded when the deviation of values on the X, Y, and Z axes are detected to be within ±0.1 from (0, 0, 1) for 5 consecutive times of calibration

6. **Installation Angle** specifies the angles of the installed device.

7. Pass-through of 100 Hz G-sensor data is supported. Select or deselect to enable or disable this function.

8. **Integrated Navigation**: When the device is connected to the inertial navigation module that supports vehicle attitude detection, this enabling is displayed on the screen. Since the vehicle attitude output by the inertial navigation module is more accurate than the attitude events calculated by pure three-axis/six-axis, this function is used to determine sudden acceleration, sudden deceleration, sharp left/right turning, acceleration, deceleration, turning, and vibration events. When the function is enabled, the device can detect these events through inertial navigation.

Note: The newly introduced integrated navigation function works well in small vehicles and still needs optimization through road tests for large vehicles. Meanwhile, due to the combination of speed change and G-sensor data introduced by the integrated navigation, there is a delay alarm of about 10 seconds that is only suitable for post-event analysis. The expected improvement of this function will be in Q4 2022.



- On the Geo-Fence screen, you can set the processing strategies for fence entry/exit and paths. This function must co-work with the CEIBA2 or FT Cloud platform.

5.10.4 AI Alarms

You can set AI alarm parameters through Veyes. Tap **Preferences** > **Alarm** > **AI App** to enter the AI alarm setting screen. The AI alarms are shown below.

ADAS Alarm	LDW, FCW, HMW, and PCW
DMS/DSC Alarm	**Driver Fatigue, No driver, Handheld Devices, Smoking, Distraction, Yawn, Seatbelt,** No Mask, and Infrared Block Alarm (the red bold letters indicate the currently supported alarm types) DSC functions include **Handheld Devices, Seatbelt, No driver, Smoking、Distraction, and Yawn (The single-lens model does not support DSC functions);** DMS functions include **Driver Fatigue, No driver, Handheld Devices, Smoking, Distraction, Yawn, and Seatbelt.**

The parameter settings of all AI alarms share the same logic. The trigger conditions of each alarm include the following and can be set as required. Speed range, sensitivity, effective time (only one alarm is recorded when multiple alarms are triggered within this time range), and duration (duration of the alarm persists), among others. However, there are slight differences in the settable parameters of different alarms, as shown in the following table:

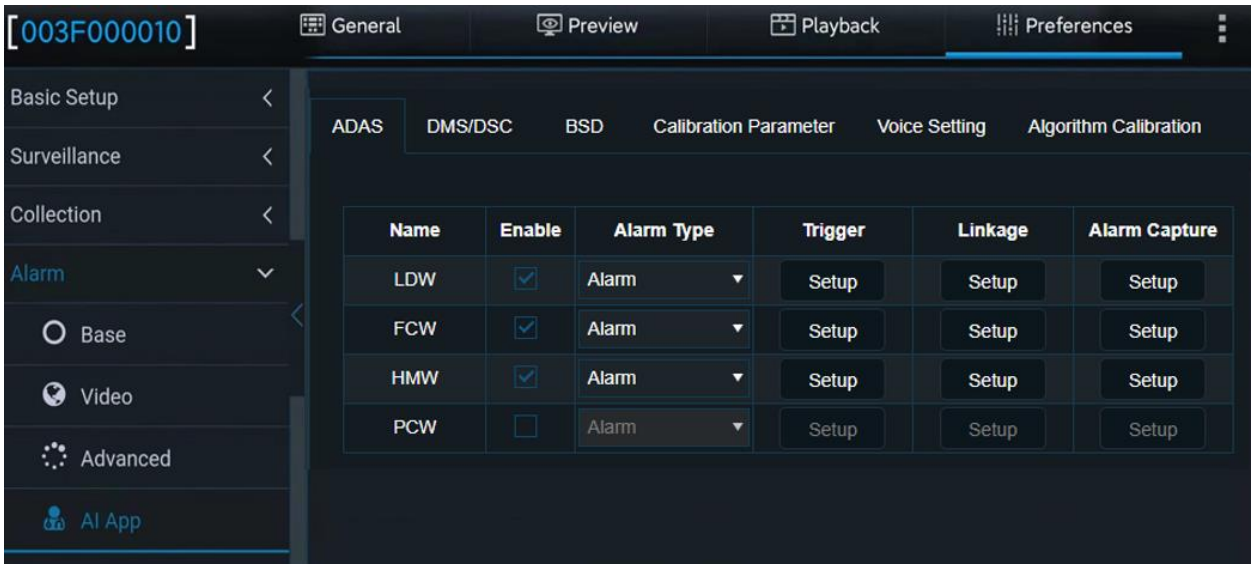
Alarm Main Type	Alarm Type	Settable Parameters					
		First-level and Second-level Speed Distinction	Sensitivity	Duration	Effective Time	Linkage	Capture
ADAS	LDW	Available	**Available**	None	Available	Identical	Identical
	FCW	Available	**None**	None	Available	Identical	Identical
	HMW	Available	Available	Available	Available	Identical	Identical

	PCW	Available	**None**	None	Available	Identical	Identical
DMS/DSC	Driver Fatigue	Available	Not adjustable	None	Available	Identical	Identical
	No driver	**None**	Available	None	Available	Identical	Identical
	Handheld Devices	Available	Available	None	Available	Identical	Identical
	Smoking	Available	Available	None	Available	Identical	Identical
	Distraction	Available	Available	None	Available	Identical	Identical
	Yawn	Available	Available	None	Available	Identical	Identical
	Seatbelt	Available	Available	None	Available	Identical	Identical
	No Mask	Available	Available	None	Available	Identical	Identical
	Infrared Block Alarm	Available	Available	None	Available	Identical	Identical
BSD	Right blind spot detection	None	None	Available	Available	Identical	Identical
	Left blind spot detection	None	None	Available	Available	Identical	Identical
	Front blind area	None	None	None	Available	Identical	Identical

Since the parameter settings for all AI alarms are basically the same, the following exemplifies how to set HMW alarm parameters. In addition, the No Driver and Distraction alarms in LDW/DMS alarms under the ADAS alarm are used as an example to show the parameter setting differences between these AI alarms and other alarms.

- HMW

Tap **Preferences** > **Alarm** > **AI App** > **ADAS**. Check **Enable** for HMW, as shown in the following figure:

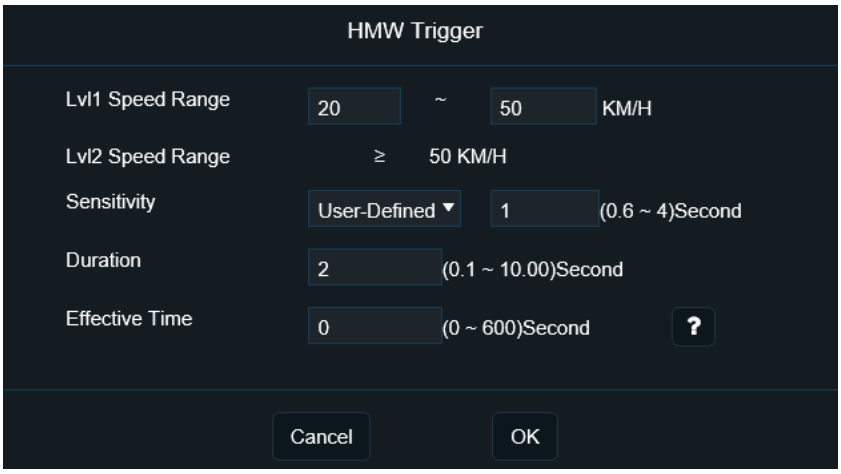


Alarm Type: Select **Alarm** or **Event**. When an **Event** is selected, generated alarms are not reported to the platform. For details about the difference, see Section 2.9.1 "Base Alarm."

Trigger: Tap **Setup** to set alarm triggering conditions, as shown in the following figure:

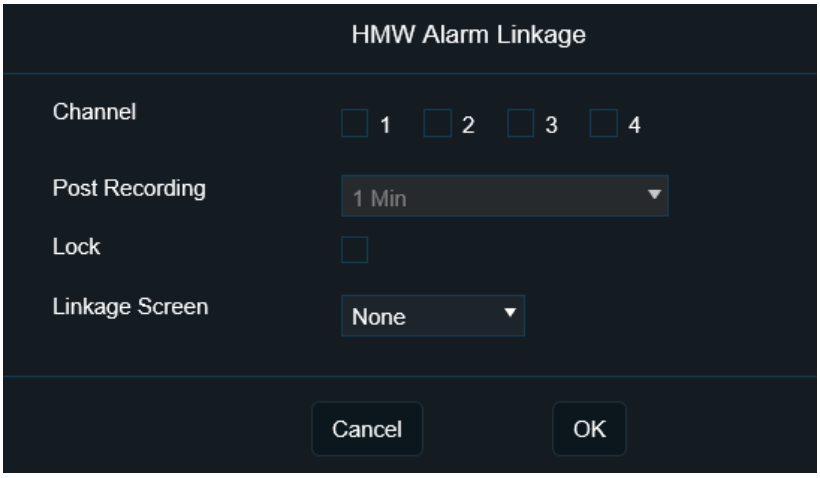
- **LvI1 Speed Range**: specifies the speed range of level-1 alarms. The default value ranges from 20 to 50 km/h. When a level-1 alarm is triggered, an MP3 voice is announced from the MDVR;
- **LvI2 Speed Range**: specifies the speed range of level-2 alarms. The lower threshold of this parameter depends on the upper threshold of level-1 alarms. When the upper threshold of level-1 alarms is changed, the lower threshold of level-2 alarms changes accordingly. When a level-2 alarm is generated, the MDVR gives out a "beep" sound only.

- **Sensitivity**: specifies the sensitivity that an alarm is triggered. Optional values are **Low**, **Middle**, **High**, and **Custom**. **Middle** is selected by default. When **Custom** is selected, enter the target value. In the ADAS open alarm, sensitivity is configurable only for the HMW. The value range is 0.6 to 4 (the time is the relative distance divided by the vehicle speed, and is not natural time). See the following figure.



- **Duration**: the duration of the headway monitoring warning (HMW) refers to a certain period of time that the conditions for HMW last, and the alarm will not be generated until the certain period of time is reached. The setting range of the HMW duration is 0.10 ~ 10.00, and 2 can be a floating-point input. The default value is 2s.
- **Effective Time**: a time period during which a cleared alarm is reported again. Alarms generated in this period are considered the same. 0 ~ 600s is optional.

Linkage: Tap **Setup** to enter the screen shown below.

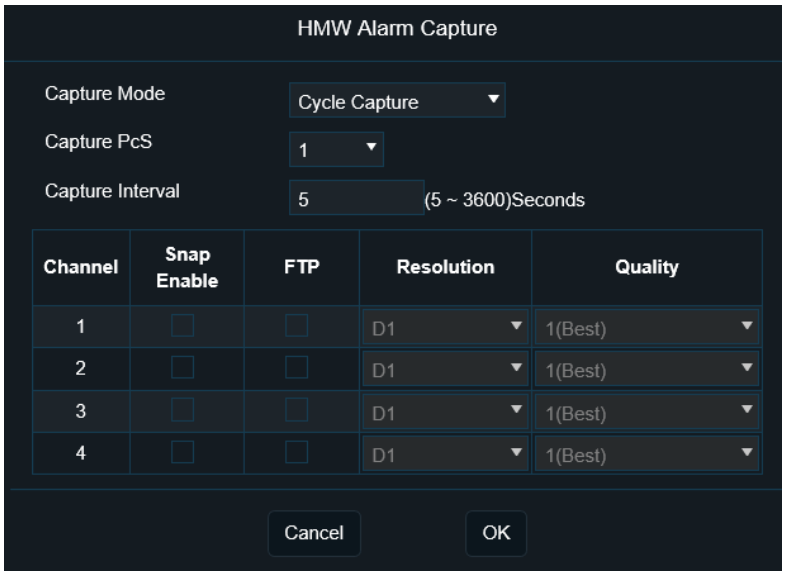


- **Channel**: indicates the channel that needs to be recorded after an alarm is triggered; the

recording of these channels will be marked as alarm recording.

- **Post Recording**: indicates the time for the alarm recording to continue when the alarm is cleared. Value range: 1-30 min. Default value: 1 min. Prerequisite: The alarm recording is selected for at least one channel.
- **Lock**: specifies whether to lock the alarm recording. If this option is selected, the alarm recording will be locked once the LDW alarm is triggered. The recording is unlocked after the alarm is cleared.
- **Linkage IO Output**: The IO output volume can be configured after the IO alarm is triggered. The IO output can be configured and used only when the UPS power box is used (conventional power supply boxes do not provide IO outputs). The duration for IP output can be configured, and the value range is 0 to 255 seconds.
- **Linkage Screen**: indicates the required live view screen after an alarm is triggered. It can be set to **Single** or **Quad**, and it is not displayed by default.

Capture: Tap **Setup** under **Alarm Capture** to enter the screen shown below.



In previous versions, for alarm capture setting, you have to check the **Enable Alarm Capture** under the **AI Alarm**, and go to **Data Acquisition** > **Alarm Capture** to set the parameters of capture images, including resolution and number of images. In order to simplify operations, we gather all parameters of alarm capture on each AI alarm setting screen.

- **Capture Mode**: **Single Capture** and **Cycle Capture** are optional. **Single Capture**

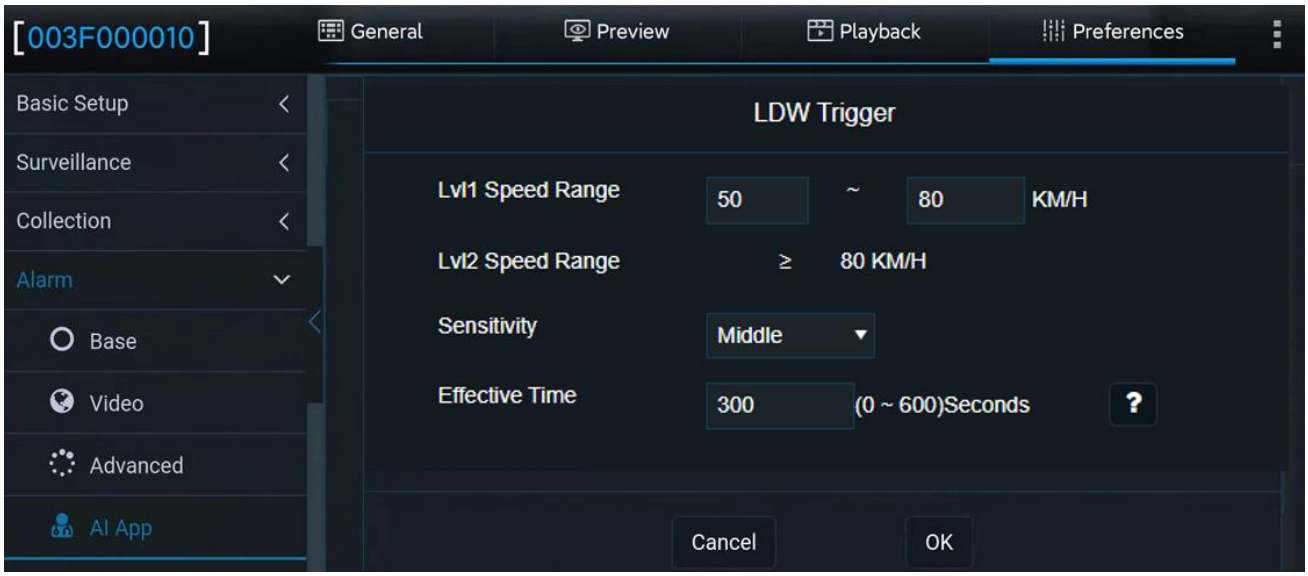
indicates the device captures only one image each time and repeats the operation after a certain time period, which is determined by the following parameter **Capture Interval**. For example, if the **Capture Pcs** is set to 3 and the **Capture Interval** is set to 1s for single capture, when an alarm is triggered, the device captures one image every 1s. Cycle capture indicates the device captures multiple images each time and repeats the operations at the capture interval again and again until the effective time of the alarm expires. The number of captured images and the capture interval are determined by the following parameters: **Capture Pcs** and **Capture Interval**. For example, if the **Capture Pcs** is set to 3 and the **Capture Interval** is set to 5s, when an alarm is triggered, the device captures 3 images simultaneously and then repeats the operation every 5s until the effective time of the alarm expires.

- **Capture Pcs**: 1~3, default: 1.
- **Capture Interval**: 5~3600s, default: 5s. For single capture, if the **Capture Pcs** is set to 3 and the **Capture Interval** is set to 5s, when an alarm is triggered, the device captures one image and repeats the operation every 5s to capture the second, and then the third.
- Channel: Selects the channel to capture images when an alarm is triggered. You need to set the **Snap Enable**, **FTP**, and **Resolution** parameters of the captured images.

- LDW

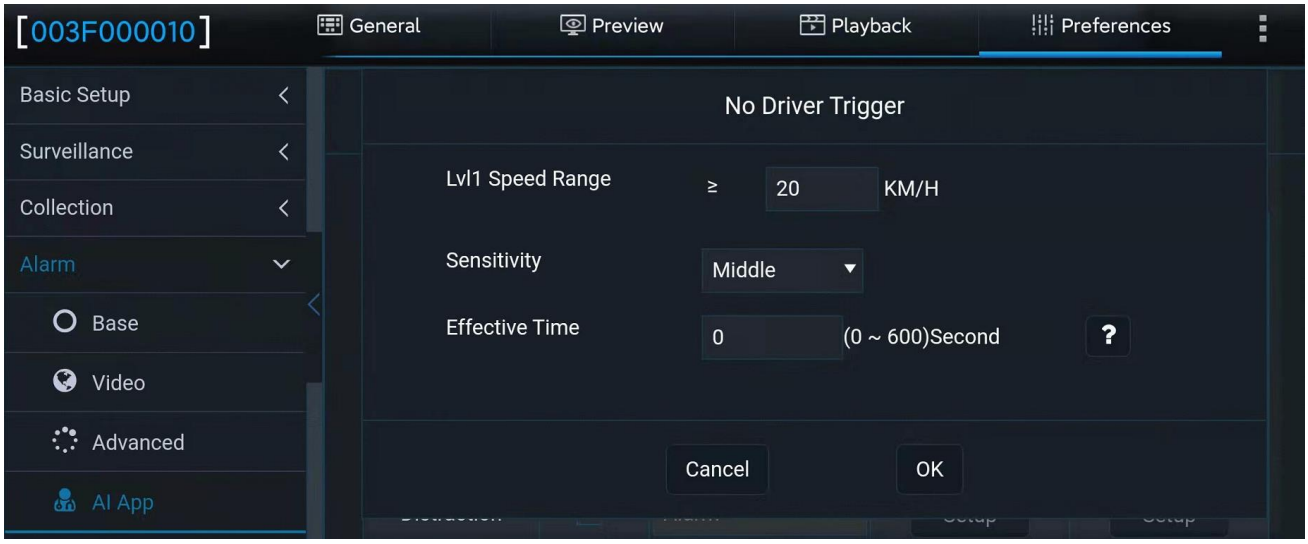
Tap **Preferences** > **Alarm** > **AI App** > **ADAS**. Enable LDW alarm. On the alarm triggering setting screen, tap **Setup** to configure alarm parameters, as shown in the following figure:

Comparing LDW alarm with HMW alarm, the setting screen has no duration and comparing FCW alarm with HMW alarm, the setting screen has no sensitivity and duration, with other setting parameters the same. Therefore, no more descriptions are provided here.



- No Driver

Tap **Preferences** > **Alarm** > **AI App** > **DMS/DSC**. Enable **No Driver** alarm. On the alarm triggering setting screen, tap **Setup**, as shown in the following figure:



No Driver alarms have only one level. When a **No Driver** alarm is triggered, there is a voice prompt. The alarmed speed can be customized and is defaulted to 20 km/h.

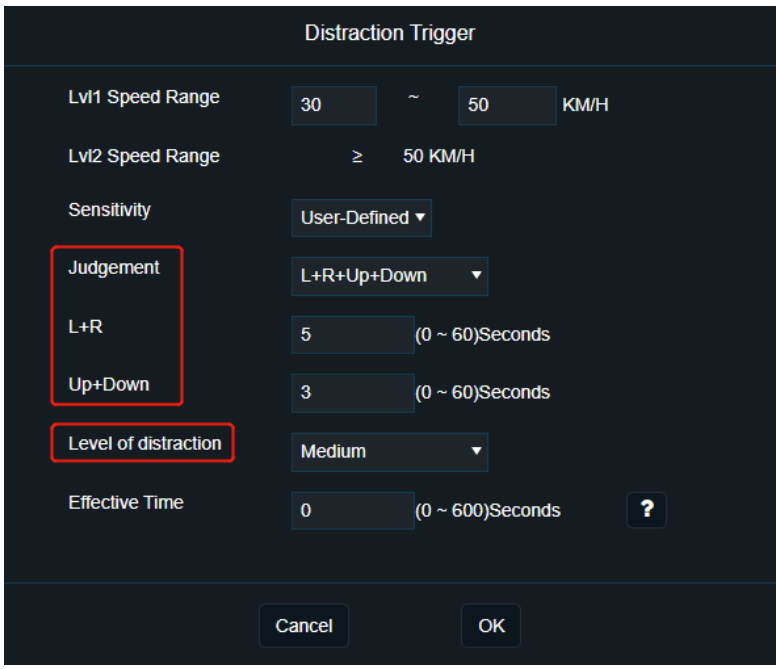
Other parameters are the same as those of HMW and are not described here.

- Distraction

The trigger conditions of Distraction alarms are similar to those of other alarms, except that Distraction alarms have the parameters: Judgement and Level of distraction parameters. By setting

these parameters, you can control the Distraction alarm scenarios more accurately.

- **Judgement**: indicates whether the drive is looking leftward/rightward or looking downward. There are different sensitivity thresholds for different conditions (you need to set the Sensitivity parameter to User-Defined in advance).
- **Level of distraction**: It is normal for a driver looking leftward/rightward to check the rearview mirror during their drive. In order to avoid such false alarms, you can set the Level of distraction parameter, allowing drivers to turn around to a certain degree. The **Level of distraction** parameter can be set to **Light**, **Medium**, or **High**. Light indicates that an alarm is triggered when the driver slightly turns around; High indicates that an alarm is triggered when the driver turns around to a larger angle.



In the AI function, BSD alarm is supported. Tap **Preferences** > **Alarm** > **AI App** > **BSD**. The following screen is displayed, where you can set the relevant parameters of the BSD alarm. The BSD alarm does not distinguish Level I and Level II alarms by the speed range, but according to the distance between the pedestrian and the vehicle, as follows:

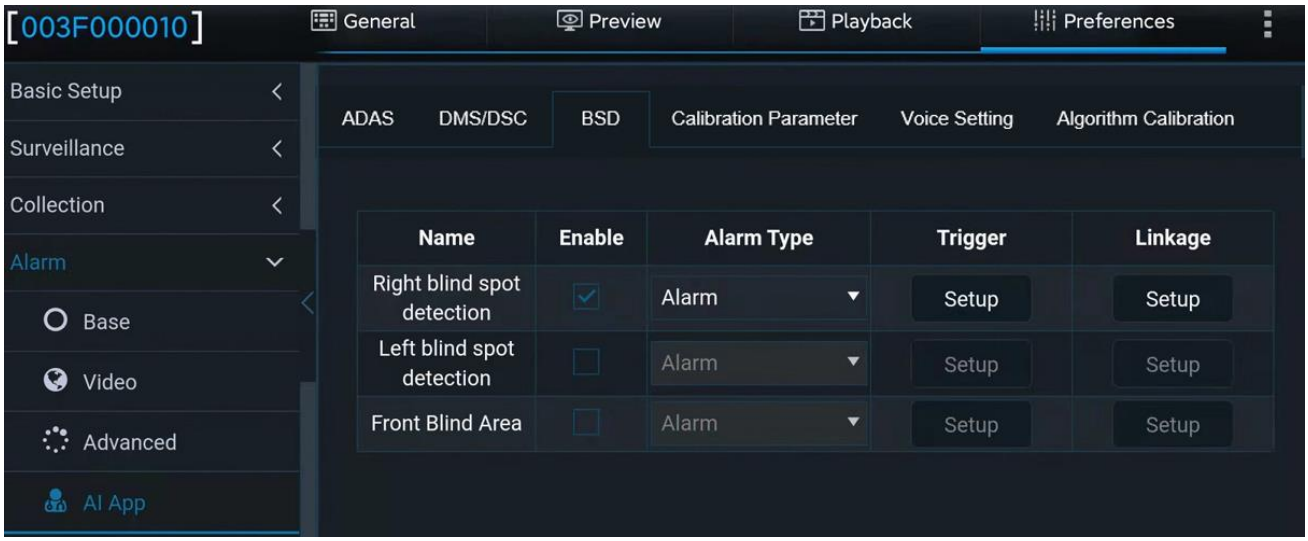
Right/Left blind spot warning:

- Level I alarm: 2 - 3 m distance from the vehicle body
- Level II alarm: 1 - 2 m distance from the vehicle body

- Level III alarm: 0 - 1 m distance from the vehicle body

Front blind area warning:

- Collision warning: 2 m in front of the vehicle body



Note: The device does not support the BSD alarm at present. We will reserve the interface and make plans at the later stage.

Warning: The accuracy of AI alarms depends on standard installation. In addition, lane departure alarms can occur a lot because the driver often crosses the marking while driving. Seatbelt alarms are often triggered because of the color of clothes, deliberately blocking seatbelts, etc. In terms of alarm application, it is recommended not to use the local reminders and video upload functions for lane departure alarms, and the number of alarms is only a data evaluation dimension for drivers to follow the traffic rules. For seatbelt detection, the local reminder is disabled, and image upload is set. This function can be used for patrol inspection, and the images uploaded can be used as the classic training cases of seatbelt unfastened.

5.10.4.1 **Algorithm**

On the algorithm parameter setting screen of AI alarms, you can modify the installation height and left margin of the ADAS lens, as well as the front end width and length, set the left and right

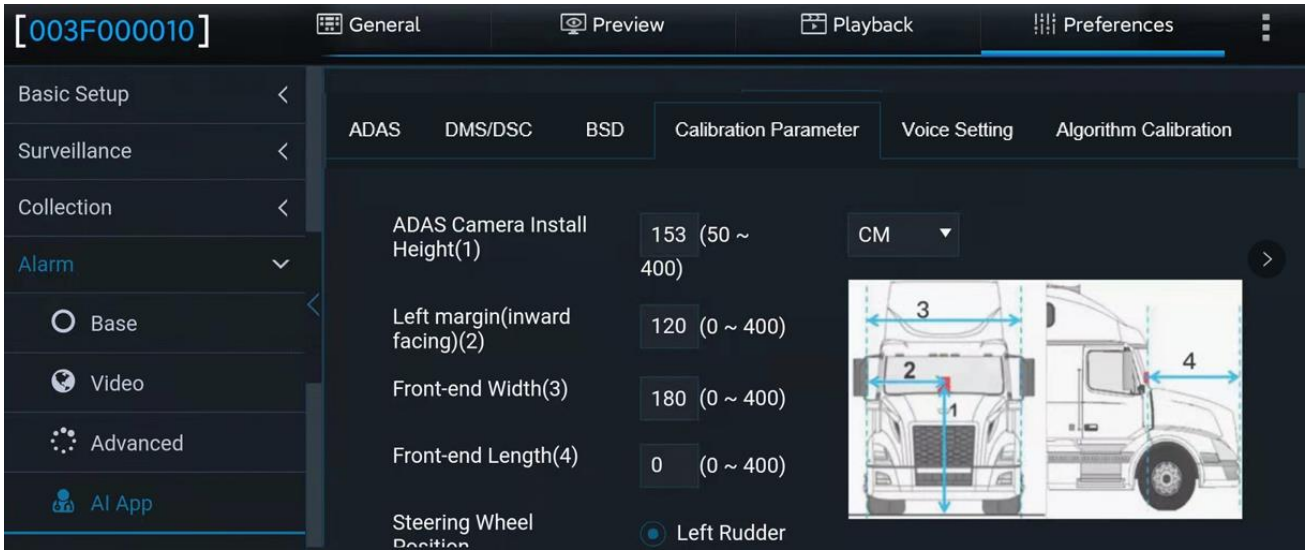
rudders，, and enable or disable the AI alarm voice, R-Watch (if connected), and audible and visual alarm B1 (if B1 is connected).

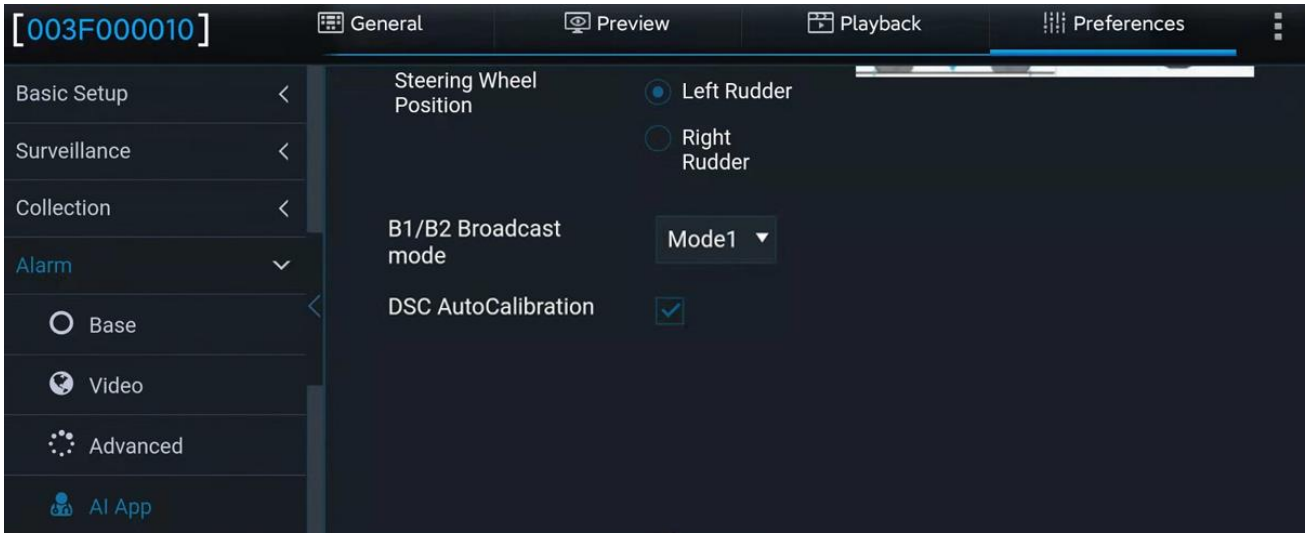
Tap **Preferences** > **Alarm** > **AI App** > **Calibration Parameter**, as shown in the following figure.

The ADAS calibration value can be in centimeters or inches. After the unit is selected, the value range will change automatically.

In addition, the DSC automatic calibration option is added to the screen, and it is enabled by default. After checking Enable, even if manual calibration is not performed, the device will automatically complete the calibration process during normal use.

Note: At present, DSC uses automatic calibration for propulsion. After DSC Auto Calibration is checked, you cannot select manual calibration by tapping **Preferences** > **Alarm** > **AI App** > **Algorithm Calibration**. Normally, manual calibration applies to calibration tests in the office.

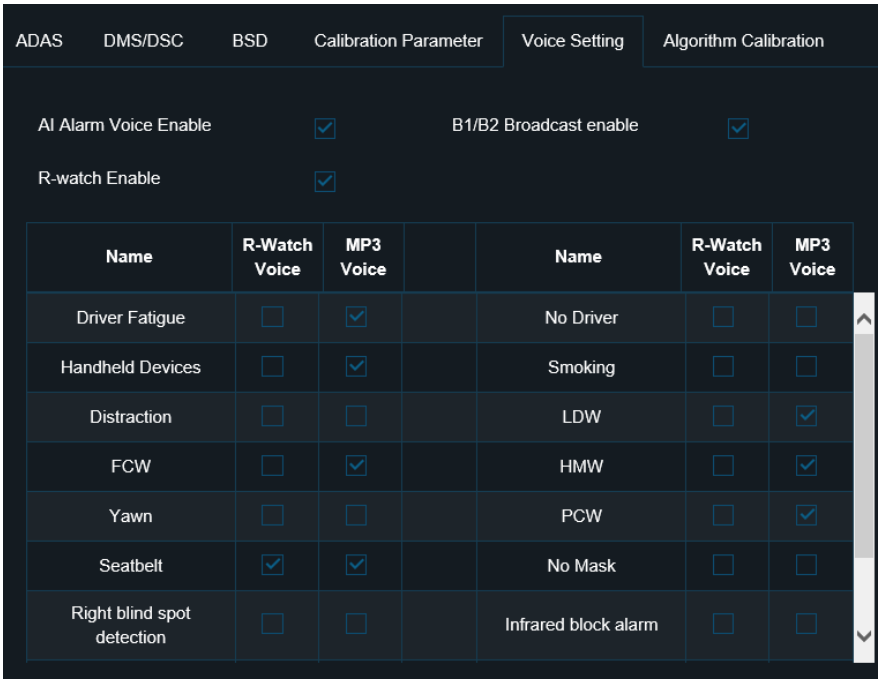




5.10.4.2 **Voice Control**

On the Voice Control screen, you can uniformly control the switches of AI alarm voices, R-watch voices, and audible and visual alarm B1/B2 voices. After the main switch for voice control is enabled, you need to turn on the sub-switch of each alarm (not applicable for audible and visual alarm B1/B2) before the voice prompt can be broadcast. If the main switch is disabled, even though you turn on the sub-switch of every alarm, no voice prompt will be announced.

Tap **Preferences** > **Alarm** > **AI App** > **Voice Setting**, as shown in the following figure.

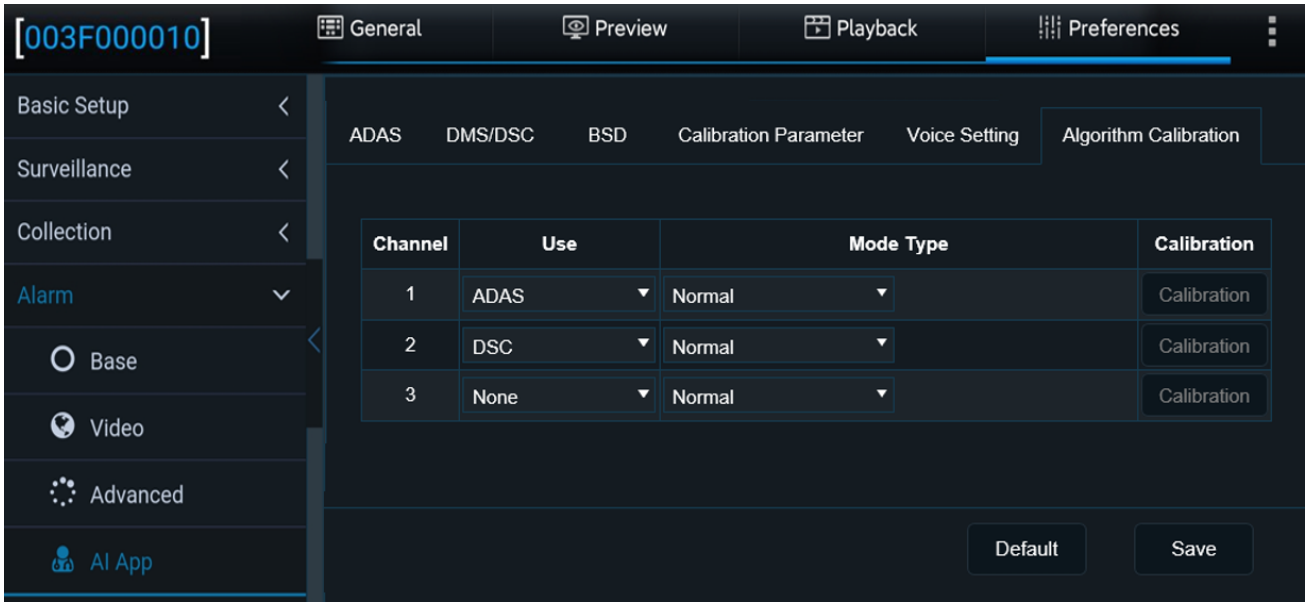


- **AI Alarm Voice Enable**: enables or disables the MP3 alarm voice. After this option is selected, when an alarm is triggered, the MDVR will play an MP3 alarm voice. For level-1 alarms, the voice is alarm prompt; and for level-2 alarms, the voice is "beep".
- **R-Watch Enable**: enables or disables the R-Watch voice. If this option is selected, R-Watch will play the beep alarm sound and display the icon when an R-Watch peripheral is connected and an alarm is triggered.
- **B1/B2 Broadcast Enable**: enables or disables the voice control of the Audible and Visual Alarm. After the device is connected with a BSD camera and an audible and visual alarm, when a BSD alarm is triggered, the audible and visual alarm will give voice and flash prompts.
- Enabling or disabling the MP3 Voice and R-Watch Voice of the following alarms may separately control the prompt voice of each alarm.

5.10.4.3 Calibration

On the algorithm calibration screen of AI alarms, set the algorithms used by the camera channels.

Tap **Preferences** > **Alarm** > **AI App** > **Algorithm Calibration**, as shown in the following figure.



When the Road Facing Camera is used for advanced assistant driving, the usage of the 1-channel algorithm needs to be set to ADAS, and the mode type needs to be set to normal mode

When the Cabin Facing Camera is used for the intelligent cockpit, the 2-channel algorithm needs to be set to DSC, and the mode type needs to be set to normal mode

When the IPC channel (CH4) is connected with an external DMS camera (C29N) and needs to be used for driving status detection, the 4-channel algorithm needs to be set to DMS and cannot be modified, the 2-channel algorithm needs to be set to None, and the mode type needs to be set to normal mode.

Special note: In the current status, only simultaneous operations of two AI algorithms are supported, that is, ADAS+DSC or ADAS+DMS (either DSC or DMS). Please be noted that currently, simultaneous operations of three algorithms are not supported.

6. Instructions of Special Function Operation

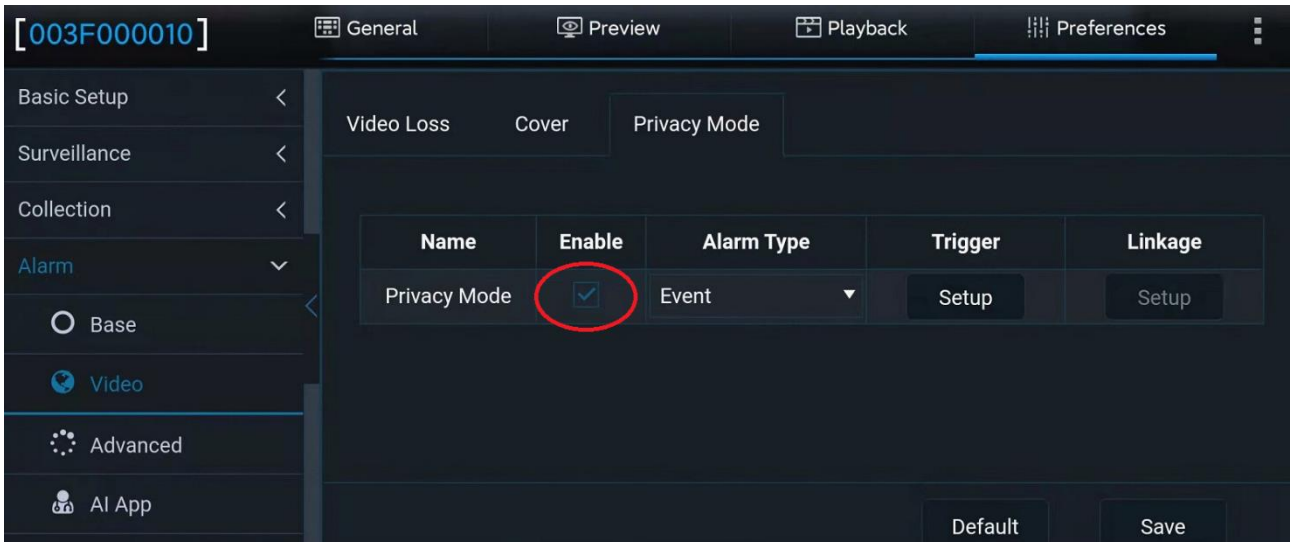
6.1 Privacy Protection Function

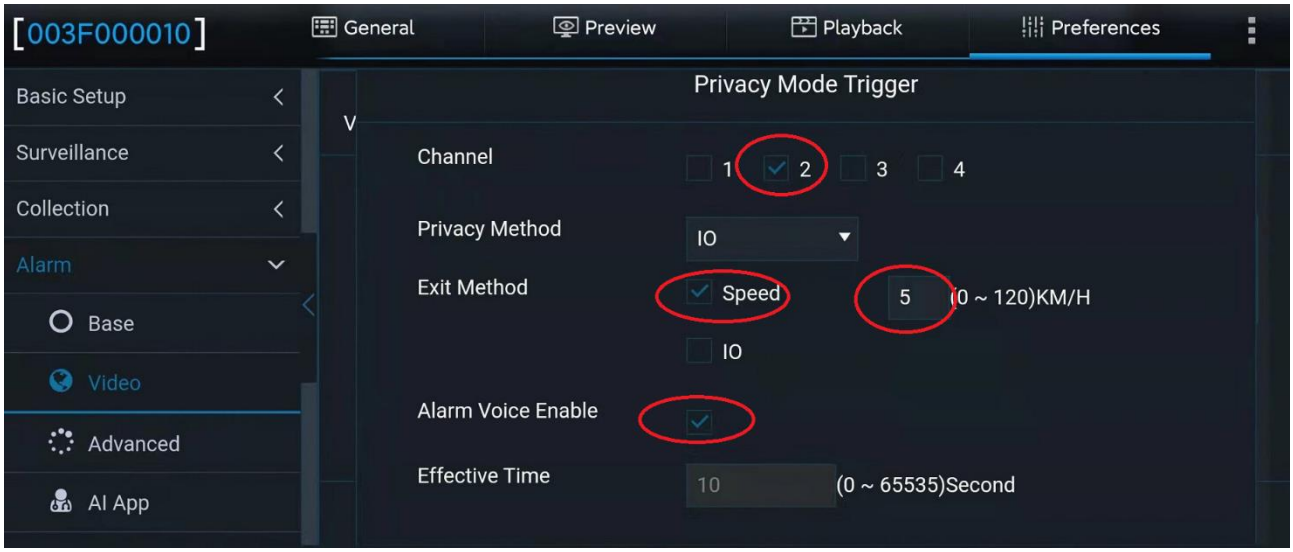
6.1.1 Function Introduction

We attach great importance to the privacy protection of the driver, so the privacy mode function is specially designed for the device to ensure that the remote preview and recording are disabled when the driver is in the parking scene. Privacy mode function: When the driver parks, the device can be manually triggered to disable the recording of the corresponding channel. The device supports various trigger modes, automatic exit, and flexible configuration of the recording channel to be disabled, and a separate panel button for the privacy mode is designed to facilitate the driver's operation. The following describes how to quickly configure and use the privacy mode function.

6.1.2 Related Configuration

Refer to the privacy mode in **Video Alarms**, as shown in the following figure:





1. Tap **Enable** in the **Privacy Mode** screen
2. Select the channel to be closed when the privacy mode is triggered
3. Tap **Speed** as the **Exit Method**, and set the speed to 5 KM/H
4. Tap **Alarm Voice Enable**
5. Save setting parameters

6. 1. 3 How to Use

1. Park
2. Press and hold the panel button for 2s, release the button, and the voice "privacy mode enable" is announced.

3. At this time, the privacy channel is closed to protect the driver's privacy.
4. If the vehicle starting speed exceeds the threshold, the privacy mode automatically exits, and the voice "privacy mode disable" is announced.
5. Manually exit the privacy mode: press and hold the panel button for 2s, release the button, and the voice "privacy mode disable" is announced.

Refer to the privacy mode of Video Alarms for other methods.

7. Fault Analysis and Troubleshooting

7.1 Device startup failure

- Check whether the power cable is well connected and whether the fuse is intact and fully inserted.
- According to the power supply logic designed for the system, when the device is powered by OBD, it is powered when the vehicle is moving (G-sensor acceleration value > 10 g). If the OBD is installed under normal power supply, shake the power box slightly.

7.2 Device Networking Failure after Startup

- Make sure that the SIM card is inserted before device startup. If it is inserted after device startup, please power off and restart the device.
- Check whether the SIM card is installed correctly.
- Check whether the network signal at the current position is good.
- Check the traffic condition of the SIM card.

7.3 Device Recording Failure after Startup

- Make sure that the SD card is inserted before device startup. If it is inserted after device startup, please power off and restart the device.
- Check whether the SD card is installed correctly.
- After the SD card is inserted into the device, format it before use.

7.4 No Image after Insertion of Device Analog Channel to Camera

- Check whether the camera system matches the current system mode. If not, modify the system mode.
- Check whether the camera wire connection is correct.

8. Appendix

8.1 Interpretation of Proper Nouns

Main stream: HD stream, which is mainly used to store the recordings for post-event evidence analysis.

Sub-stream: SD stream, which is generally used for remote preview and recording storage. When the memory capacity is limited and cannot meet the marketing demand, dual memory can be considered to save the main stream for general recording storage and evidence analysis and the sub-stream for super long time storage.

CEIBA2: The client software of the previous generation of video service platform based on CS architecture, which supports playing H264 (original data, including black box data) exported by the device. If needed, contact your local technical support for docking and acquisition.

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