

# KOHLTECH

Solutions For Every Industry & Every Build

## AI4DC USER MANUAL



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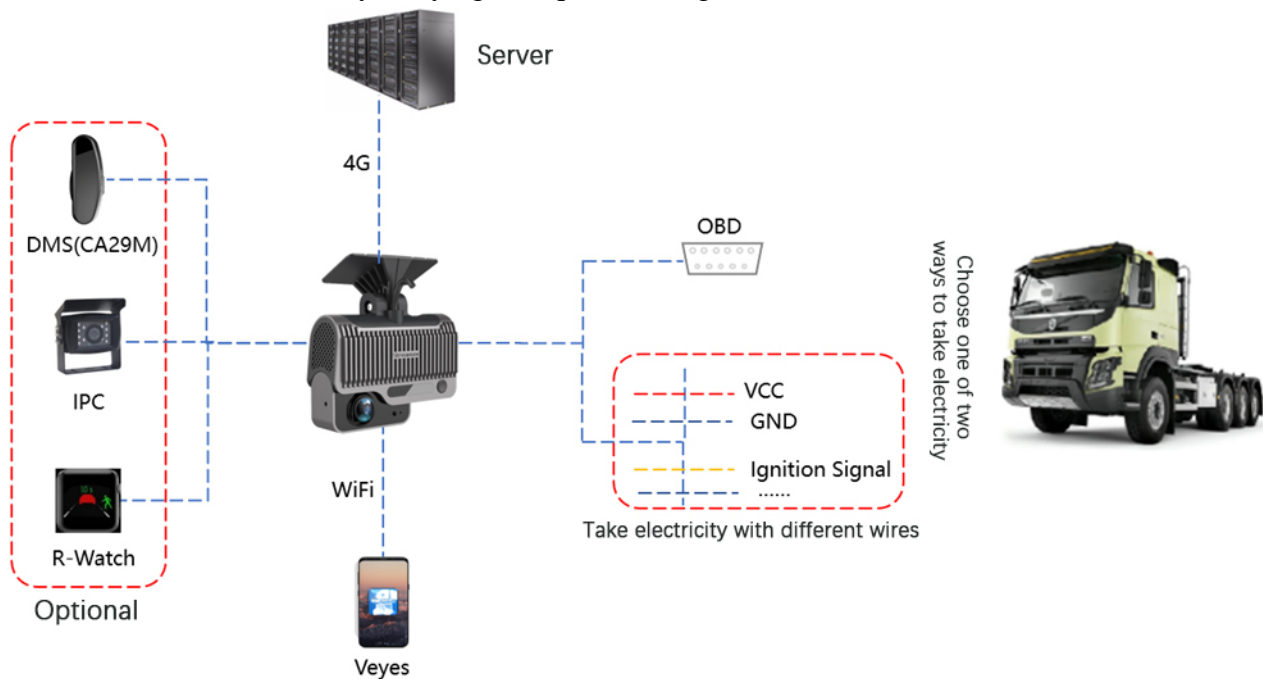
# 1. Overview

The *AI4DC User Manual* is intended to help users to better understand and apply the powerful functions available in the device system. Please note that only professional personnel can set the device.

## 1.1. System Introduction

The AI4DC is an intelligent device that integrates the functions of the active collision avoidance alarm system, the driver abnormal behavior alarm system, the alarm prompter and the event data recorder (EDR), and can perform intelligent algorithm analysis and processing. Employing the deep learning technology, it can effectively identify hazards such as forward collision and too short following distance, and provide alarms for the driver's abnormal behaviors, thus reducing the traffic accidents due to the driver's personal reasons.

The truck EasyCheck app or IE settings can increase its efficiency. The EasyCheck app is recommended to facilitate easy carrying and quick settings.



## 1.2. Function Overview

The KOHLTECH AI4DC is a cost-effective intelligent device specially developed for remote video surveillance and driving safety surveillance of trucks. It has the following functions and features:

1. 4-channel video, 2-channel by default (ADAS and DSC), and extended 2-channel Integrating

the ADAS camera, DSC camera and MDVR

2. Uploading the alarm event and relevant video evidence to the cloud platform via a wireless network, providing real-time alarms, and preserving the onsite video evidence to facilitate evidence collection and truth restoration

3. Front 500 W ADAS camera, with an ultra-wide viewing angle, to provide 110° surveillance and 70 m vehicle detection

4. 1080p cockpit lens to provide HD surveillance of the whole cockpit

5. Integrating 3G/4G, Wi-Fi, Bluetooth, G-Sensor, and other modules to provide various functions

6. Adopting the GPS positioning technology to record the vehicle track in real time for background analysis

7. 2 × Micro SD card for video storage, with the maximum capacity of a single card up to 256 GB

8. Remote monitoring and IP voice intercom

## **2. Instructions for Use of Functions**

### **2.1. Software Download and Installation**

For Android phone users, please search for "Veyes" in Google Play, and for iPhone users, please search for "Veyes" in Apple Store. Install the downloaded software.

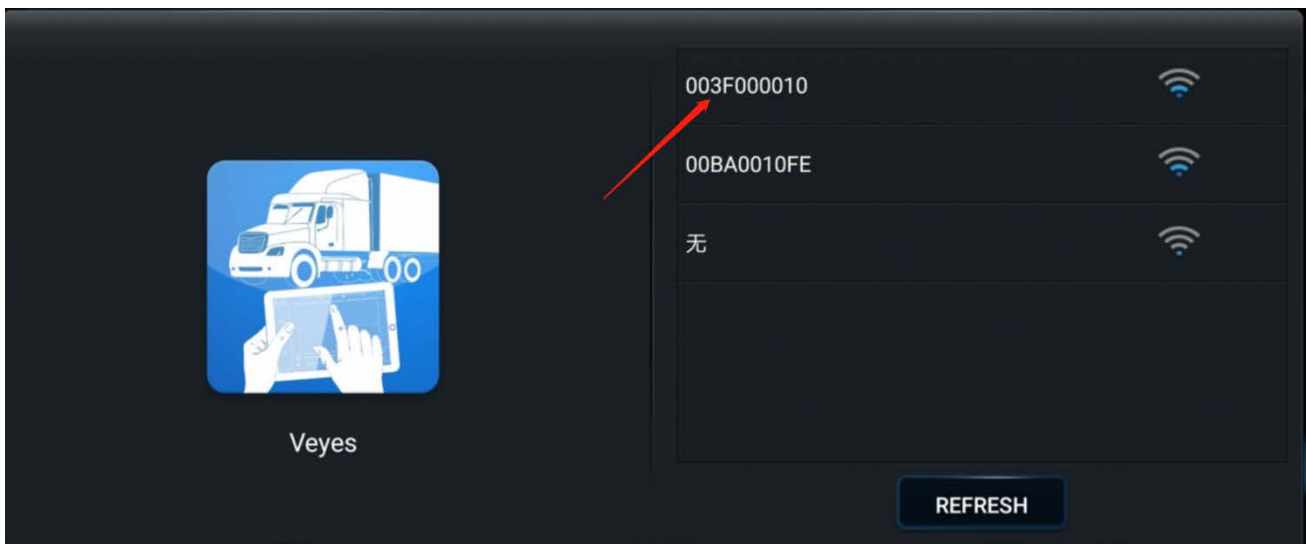
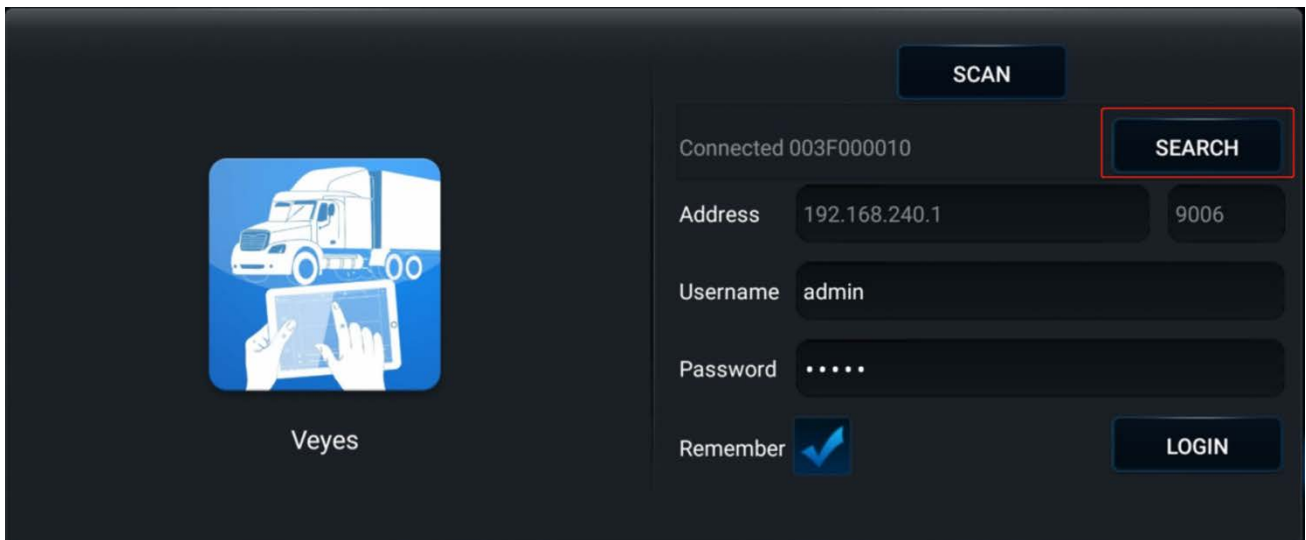
### **2.2. Login/Logout**

Turn on Wi-Fi and GPS on your mobile phone before connecting the device with the truck EasyCheck app.

After the AI4DC device is powered on, it will remain in AP mode within 2 minutes. Then, run the truck EasyCheck app on your mobile phone and tap **SEARCH**. The screen listing the Wi-Fi hotspots found is displayed. During the first login, the Wi-Fi hotspot is named after the encrypted chip number of the AI4DC. If the license plate number is changed, the hotspot name is the new license plate number. Search for a Wi-Fi hotspot named after the encrypted AI4DC chip number or the license plate number you have entered. The login screen is displayed.


On the login screen, enter the corresponding username and password. Default

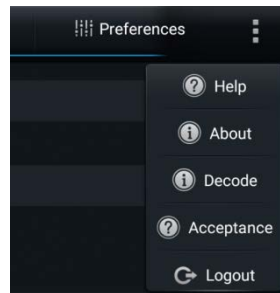
username/password: **admin/admin**.



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

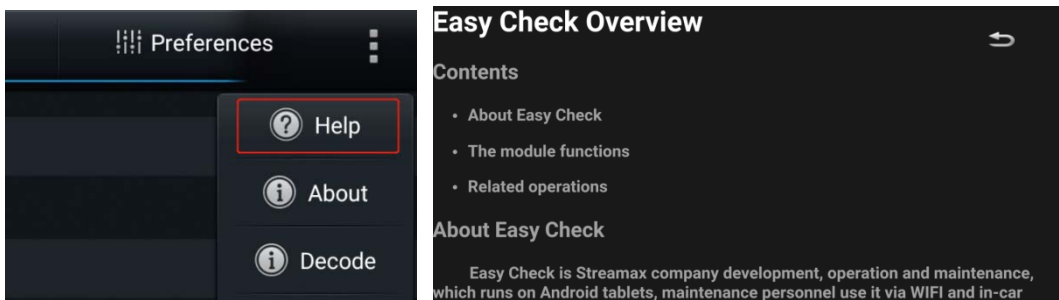


Tap  on the upper right corner. The menu including **Help**, **About**, and **Logout** is displayed.

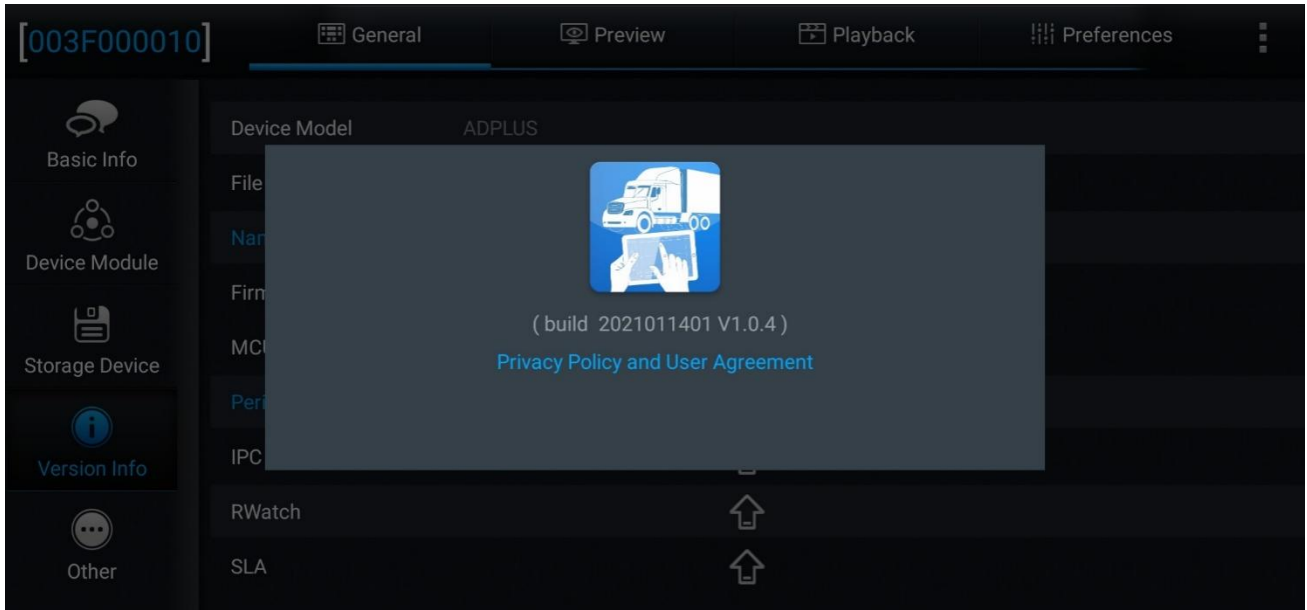


Tap **Logout** to log out of the connected device.

Tap **Help** to view the help document of the truck EasyCheck app, as shown in the figure below.



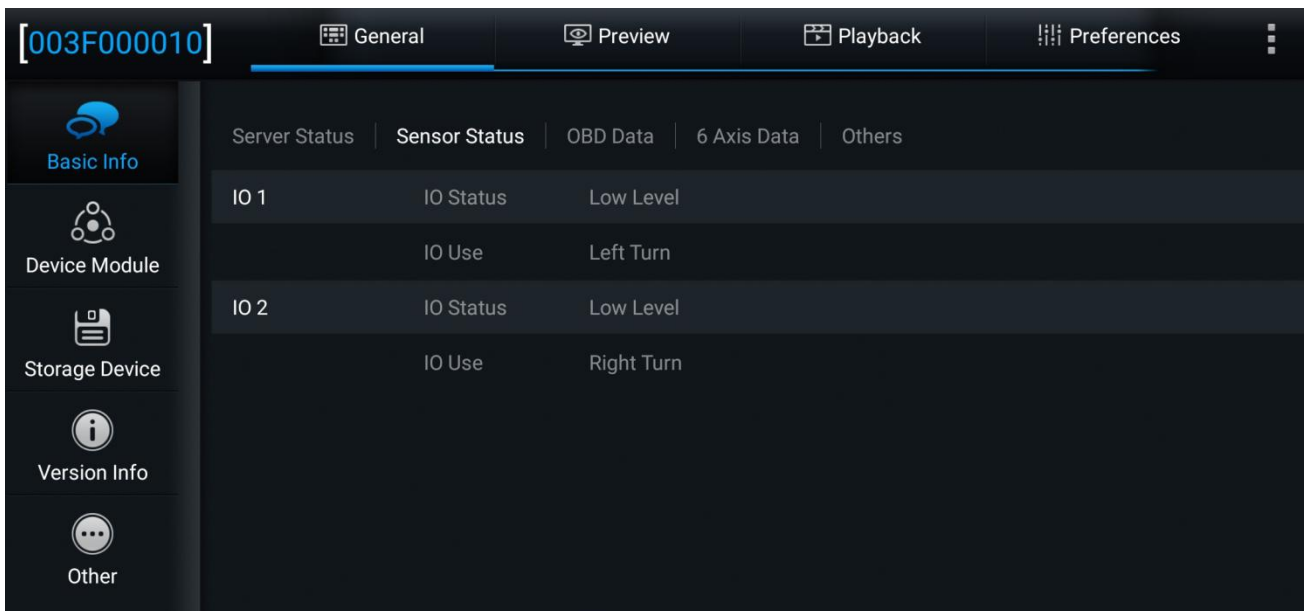
Tap **About** to view the version information of the truck EasyCheck app on your mobile phone.



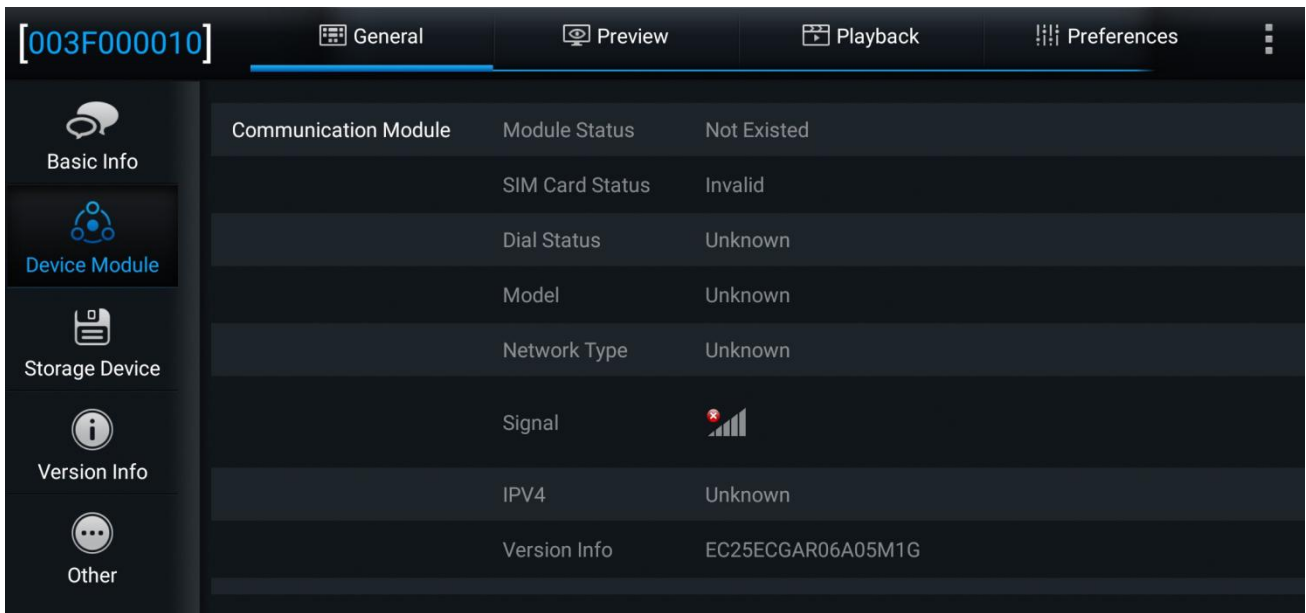
### 2.3. General

On the **General** screen, you can view the real-time status of the device, import/export parameters, logs, and other files, and upgrade the software.

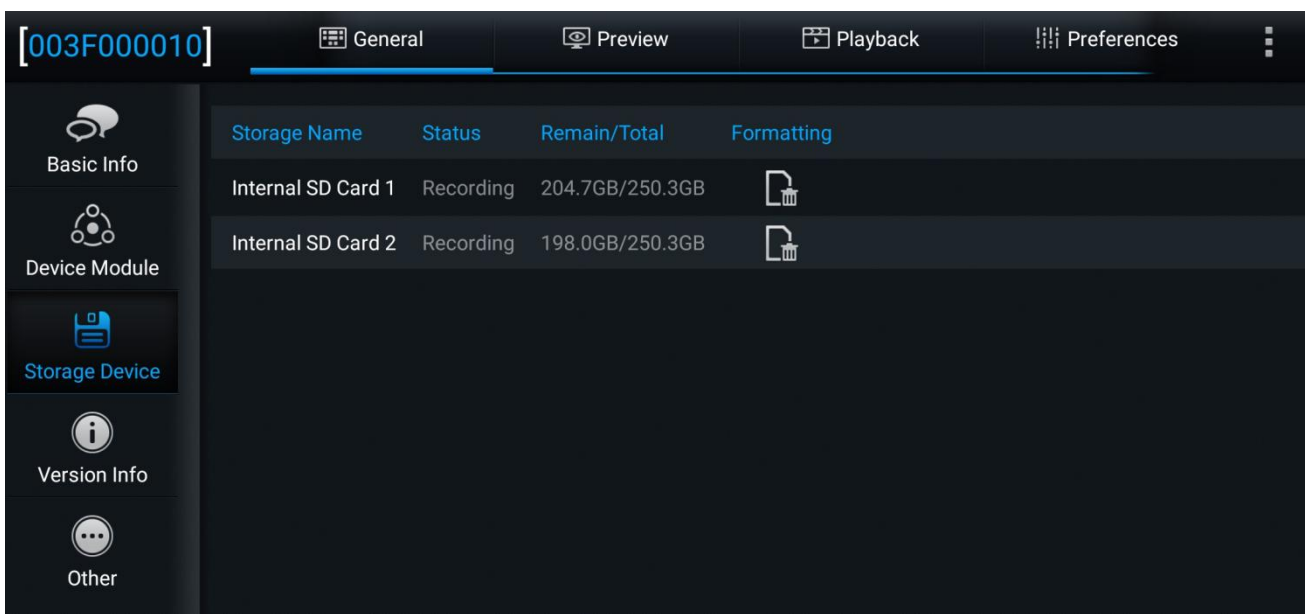
- ● **Basic Info:** shows the server connection status, IO level status and use, OBD data, G-Sensor data, ACC status, pulse status, and device status.



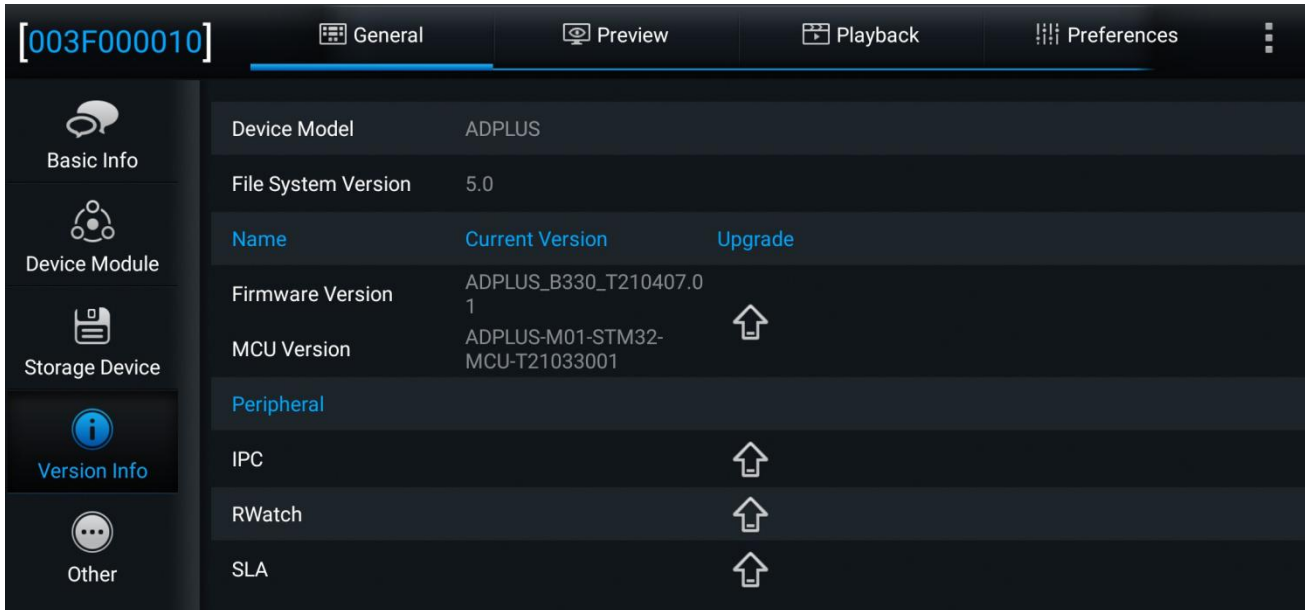
- ● **Device Module:** shows the status of the Wi-Fi, 3G/4G, and positioning modules of the device.




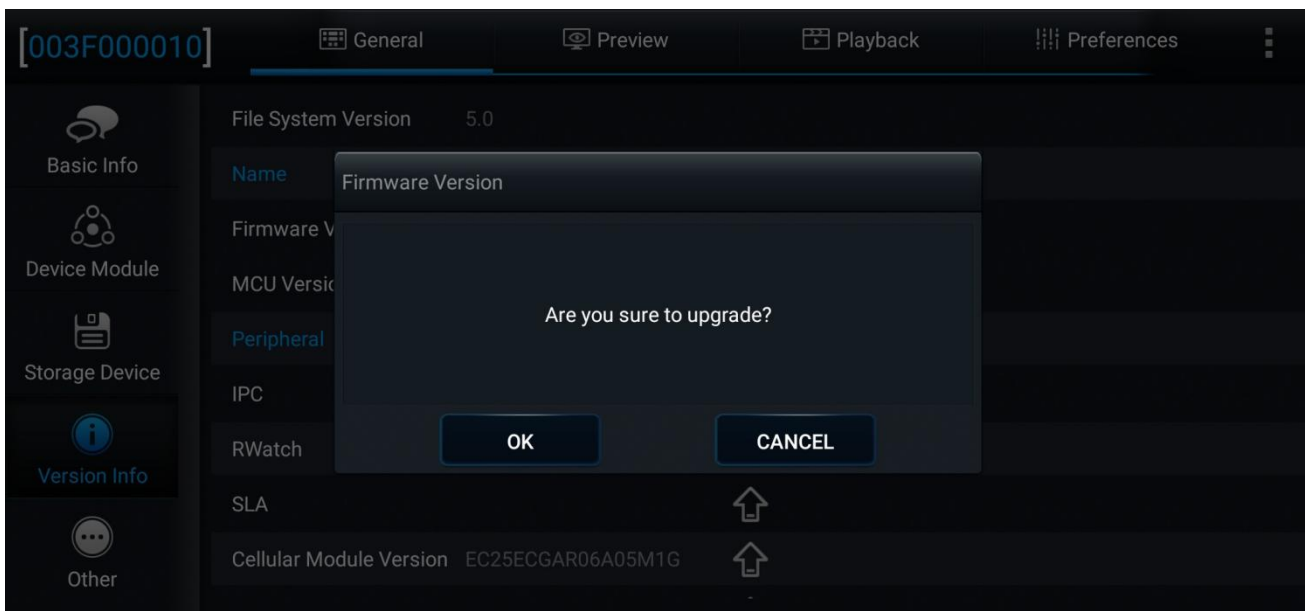
□ ● **Storage Device:** shows the information of the built-in and external storage devices of the device and allows formatting them. For the built-in memory, a prompt will be displayed after you tap the icon in the **Formatting** column, for you to confirm the formatting operation.



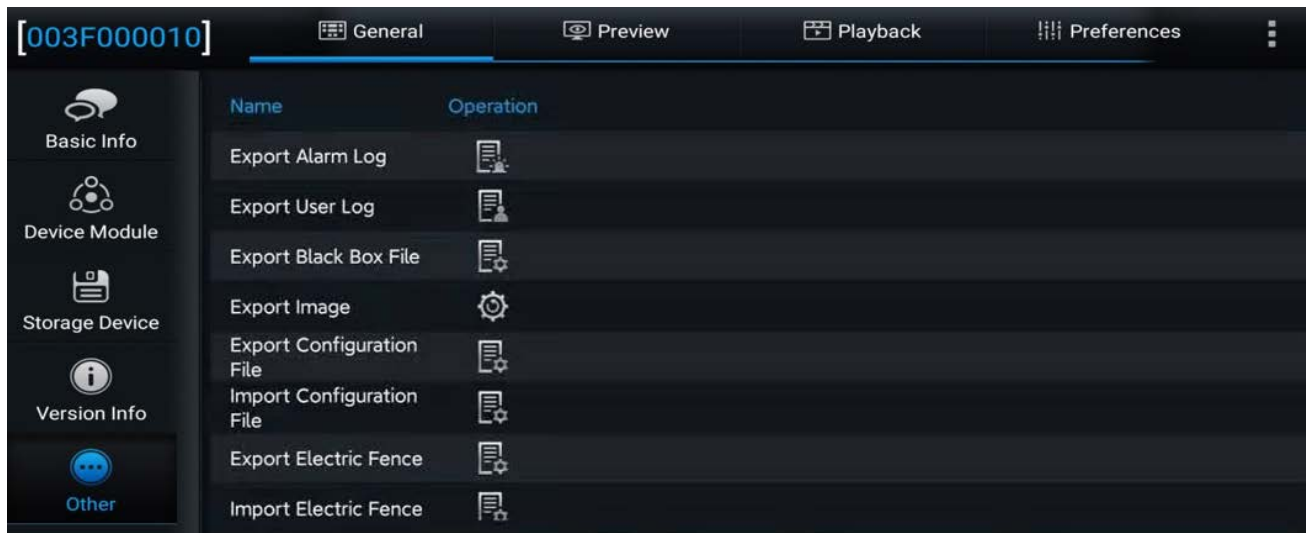
□ ● **Version Info:** shows the software version information.



● On the **Version Info** screen, you can locally upgrade the version of the MDVR, IPC, R-Watch, communication module, GPS, or power box. A USB adapter cable is required to connect to a USB flash drive or the EasyCheck App with the SD card for the upgrade. To upgrade the required item, tap . In the displayed confirmation prompt box, tap **OK**.



□ ● **Other:** allows importing/exporting O&M logs, restoring default settings, and rebooting the device. A USB adapter cable is required to connect to a USB flash drive or the EasyCheck app with the SD card for data import/export operations.



□ It allows logging in to the device via the EasyCheck app to perform the following operations:

1. Import/Export the Geo-fence information
2. Import/Export the AI configuration file
3. Restore default settings
4. Export print data within a specified time period
5. Reboot the device
6. Import and clear the encryption key

□ ✦ It allows logging in to the device via the IE browser to perform the preceding operations.

## 2.4. Preview

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

### 2.4.1 Viewing Real-Time Recording

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.

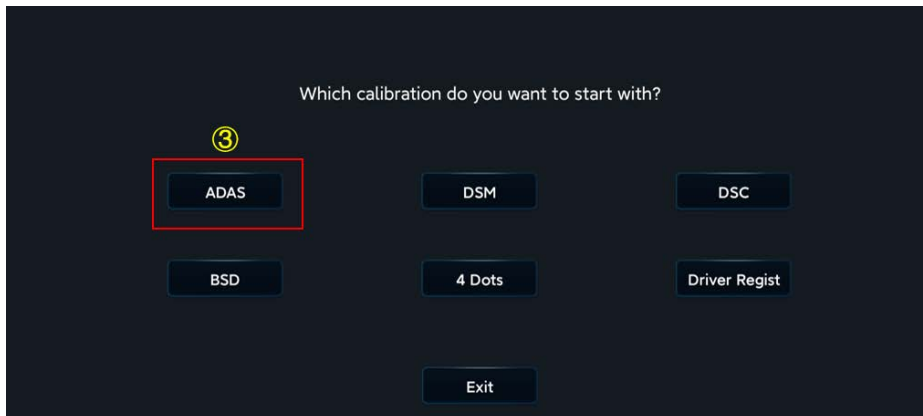
### 2.4.2 AI Calibration

#### 2.4.2.1 ADAS Calibration

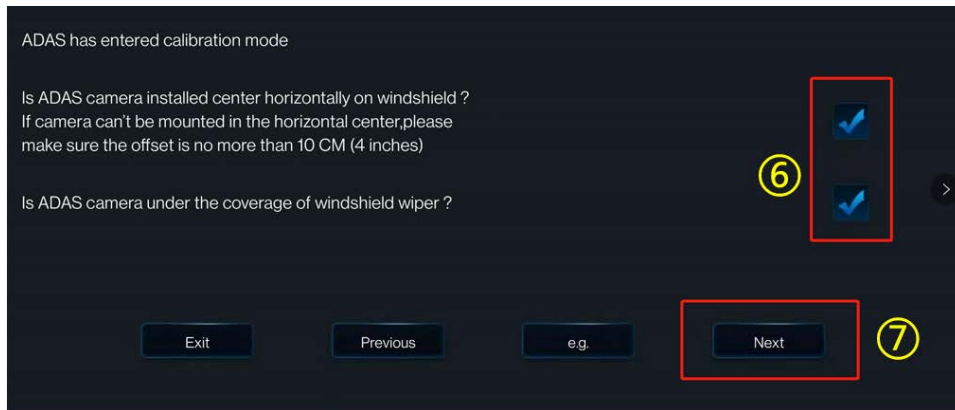
- ① On the home screen, tap **Preview**. The **Preview** screen is displayed.
- ② Tap **AI Calibration** on the lower left corner.



- ③ Tap **ADAS** for calibration.
- ④ Tap channel 1.
- ⑤ Tap **Calibration**.

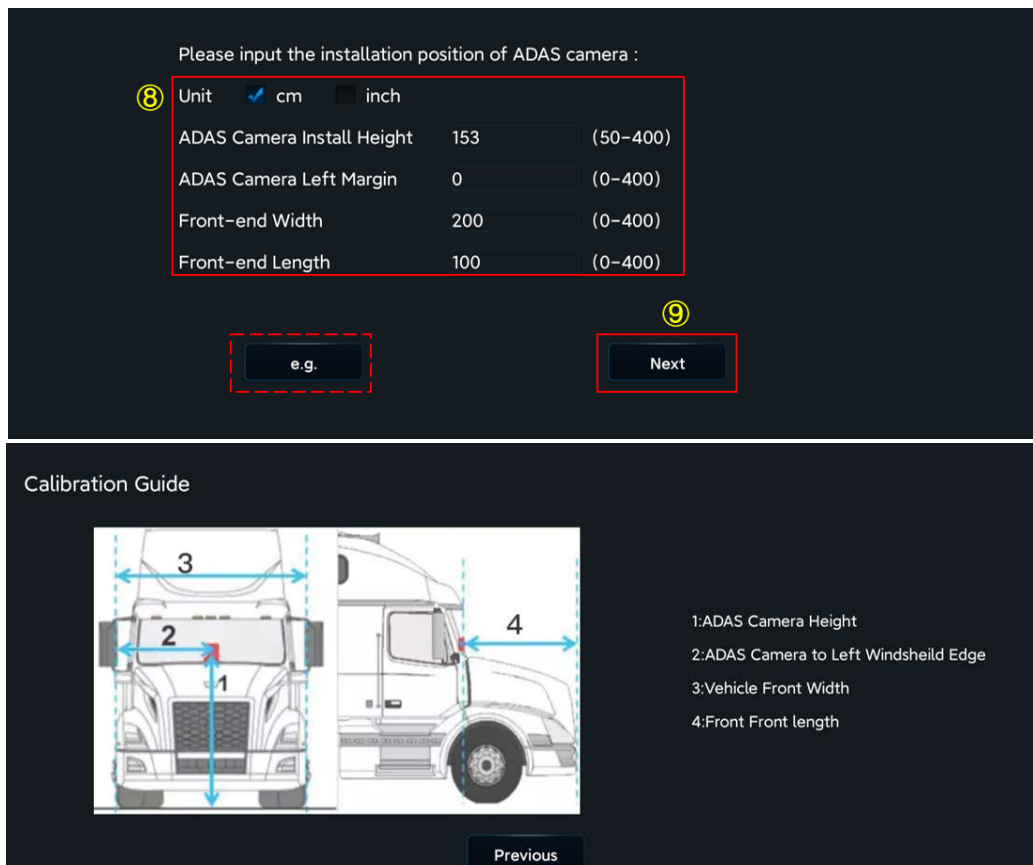


- ⑥ Select the two check boxes.
- ⑦ Tap **Next**.

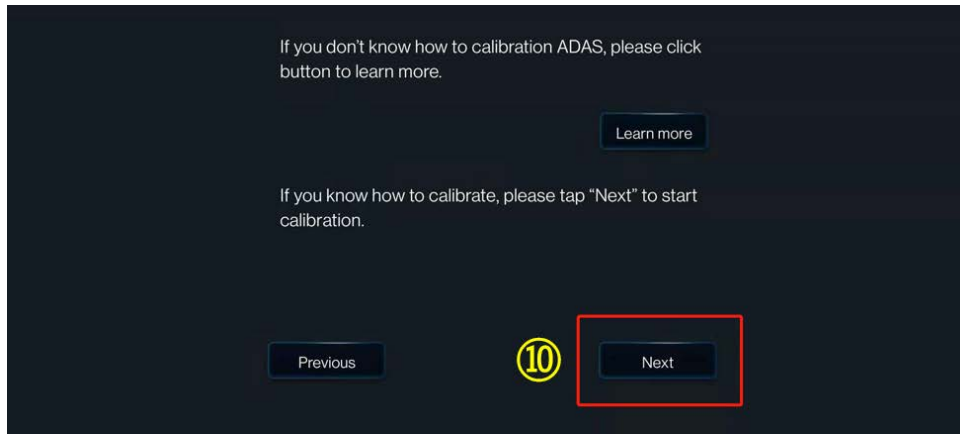


⑧ Enter the vertical height of the front camera, the horizontal height of the front camera to the edge of the left tire (from the view when you stand outside of the vehicle and face towards the left of the vehicle), and the width and length of the vehicle head (you can select centimeters or inches and tap the example of measuring the height to view it)

⑨ Tap **Next**.



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



⑩ Tap **Next**.



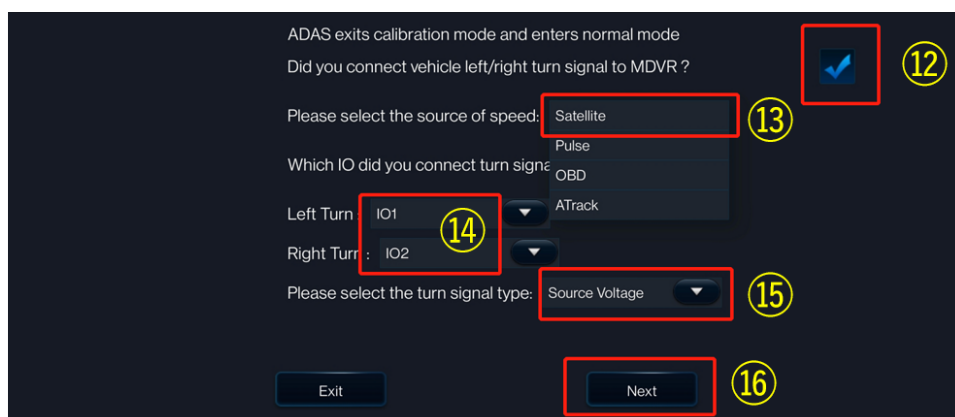
⑪ Select the check box.

⑫ Tap the required source of speed from **Satellite, Pulse, OBD, and ATrack**.

⑬ Select the required IO for the left/right turn signal in **Left Turn/Right Turn** respectively.

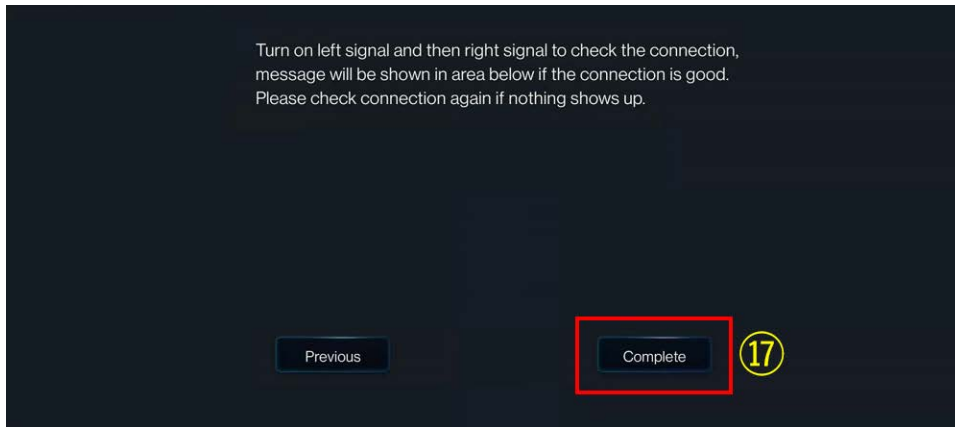
⑭ Tap the required signal source type from **Source Voltage** and **Source Pulse**. Usually, **Source Pulse** is selected.

⑮ Tap **Next**.



⑯ After checking that the left and right signal cables are properly connected, tap **Complete**. The

calibration of the ADAS camera is completed.

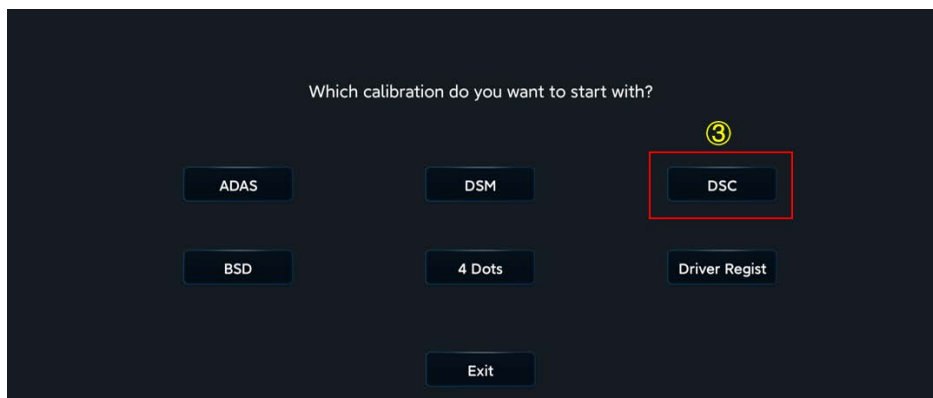


### 2.4.2.2 DSC Calibration

- 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 Tap **channel 2**
- ⑤ Tap **Calibration**

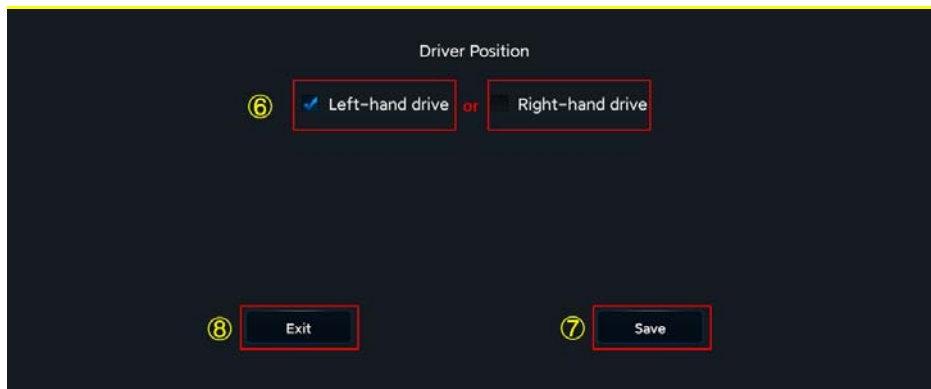




⑥ Select left-hand drive or right-hand drive for the steering wheel (left-hand drive indicates that the steering wheel is on the left of the cockpit when the driver is seated in the cockpit and facing toward the front direction; right-hand drive indicates that the steering wheel is on the right of the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

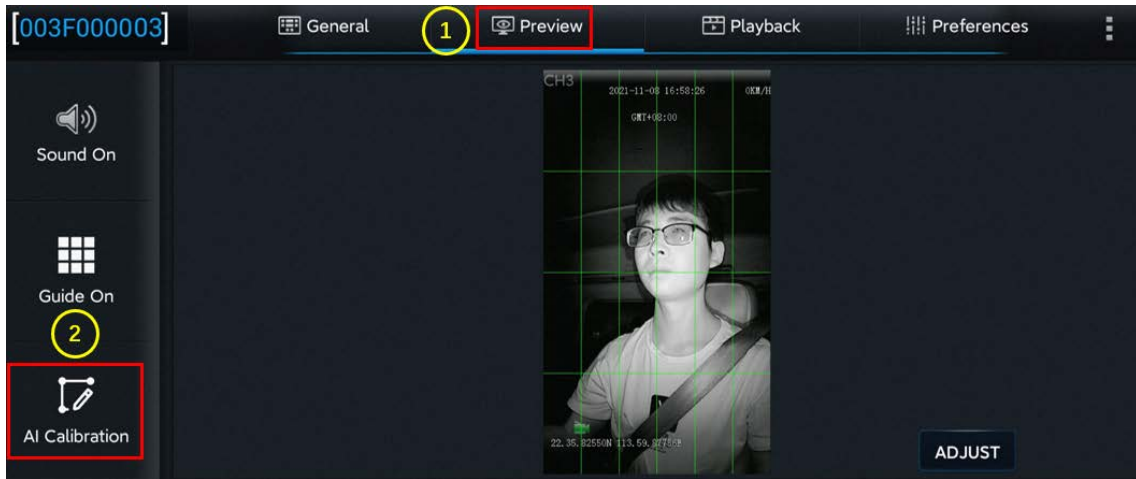
⑦ Tap **Save** to save the operation. The DSC calibration is complete

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

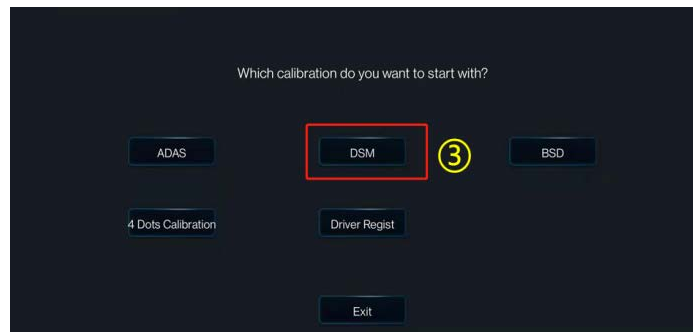


### 2.4.2.3 DMS Calibration (Optional)

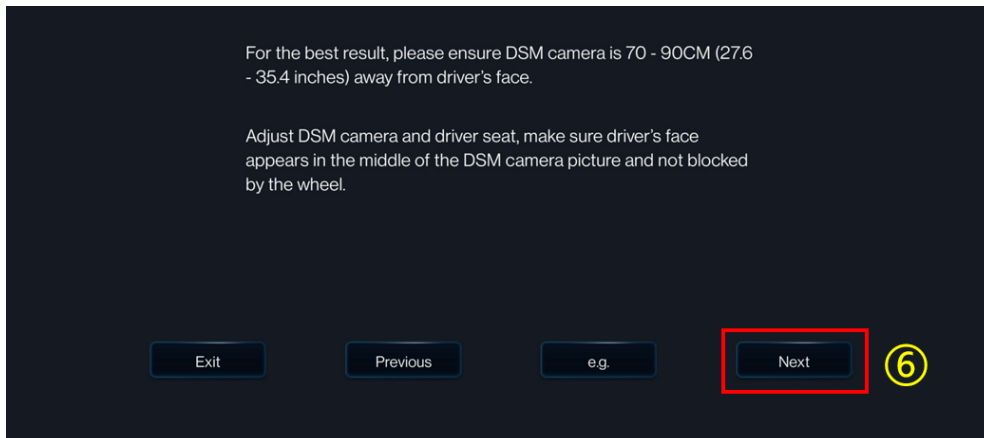
1. Click **Preview** on the homepage to enter the Preview screen
2. Click **AI Calibration** for calibration



3. Click **DMS** for calibration
4. Choose the channel corresponding to the DMS camera
5. Click **Calibration** for the next step



6. Confirm the prompt--Click **Next** for the next step

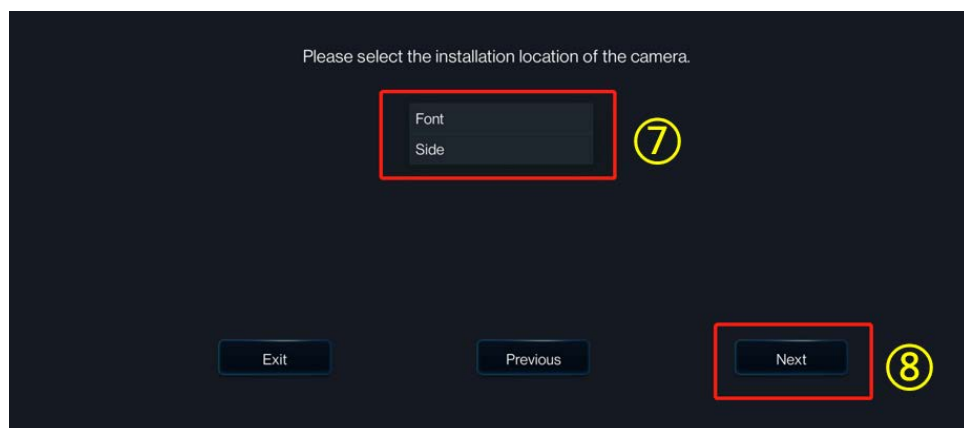


### 7. Select Front or Side for the DMS camera

When the camera is installed on the A-pillar, it must be side-mounted. Select Side for side calibration.

If the camera is installed in the middle of the instrument panel, select Front for front calibration

**(This step is vital, and please ensure you make the right decision)**



**\*Notes:**

**Sit properly in the position according to normal driving habits and look ahead before clicking Next for formal calibration.**

**You mustn't choose Front when it's actually for side mounting.**

### 8. Click Next for auto facial calibration

Make sure you sit properly in the position, look ahead and stay still during the calibration process.

The intelligent algorithm will automatically learn the driver's face deflection angle and the

location of facial features during the side calibration. If the face moves during the process, the calibration will automatically restart

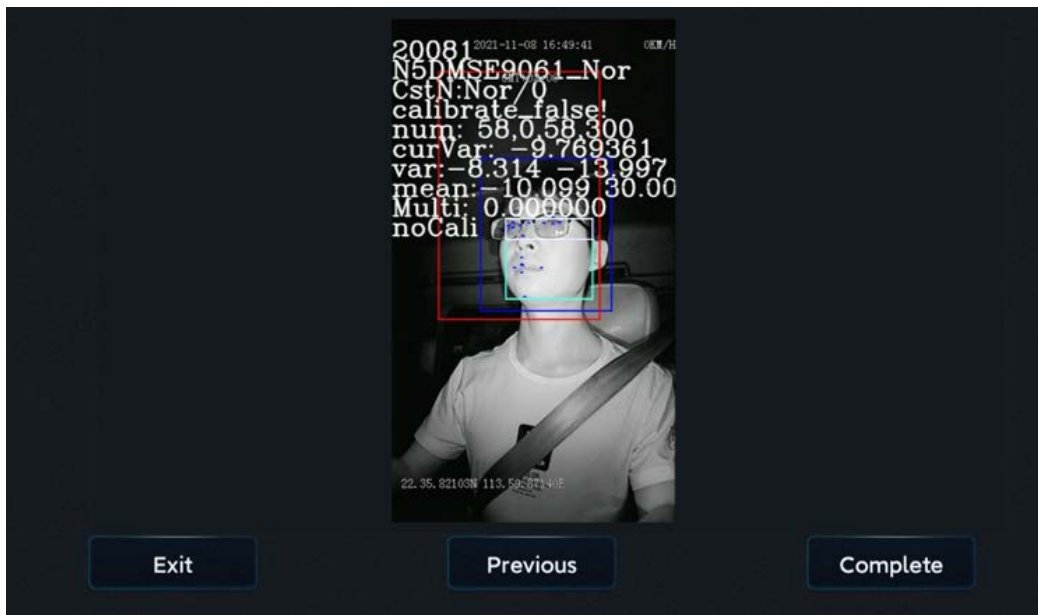
**\*Notes:**

In the side calibration mode, there must be some angle between the face and the camera to complete the calibration.

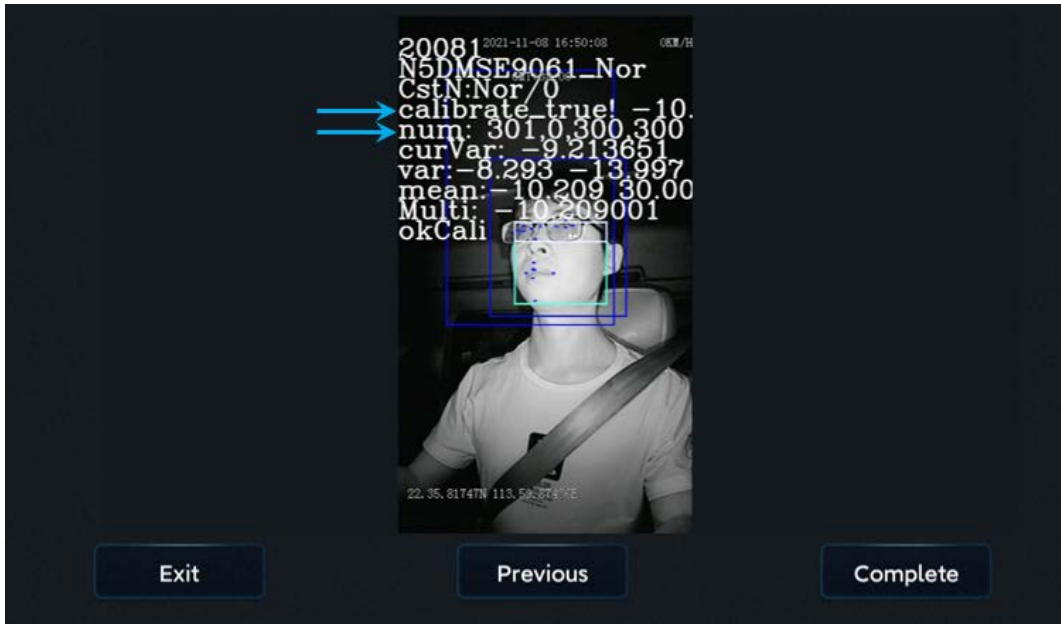
In the front calibration mode, the camera must be right ahead to complete the calibration.

Sit and wait for the device to automatically calibrate. When the NUM value of side calibration reaches 301 (51 for front calibration), the calibration box changes from red to blue and auto calibration is completed.

During the calibration process:



Calibration completed

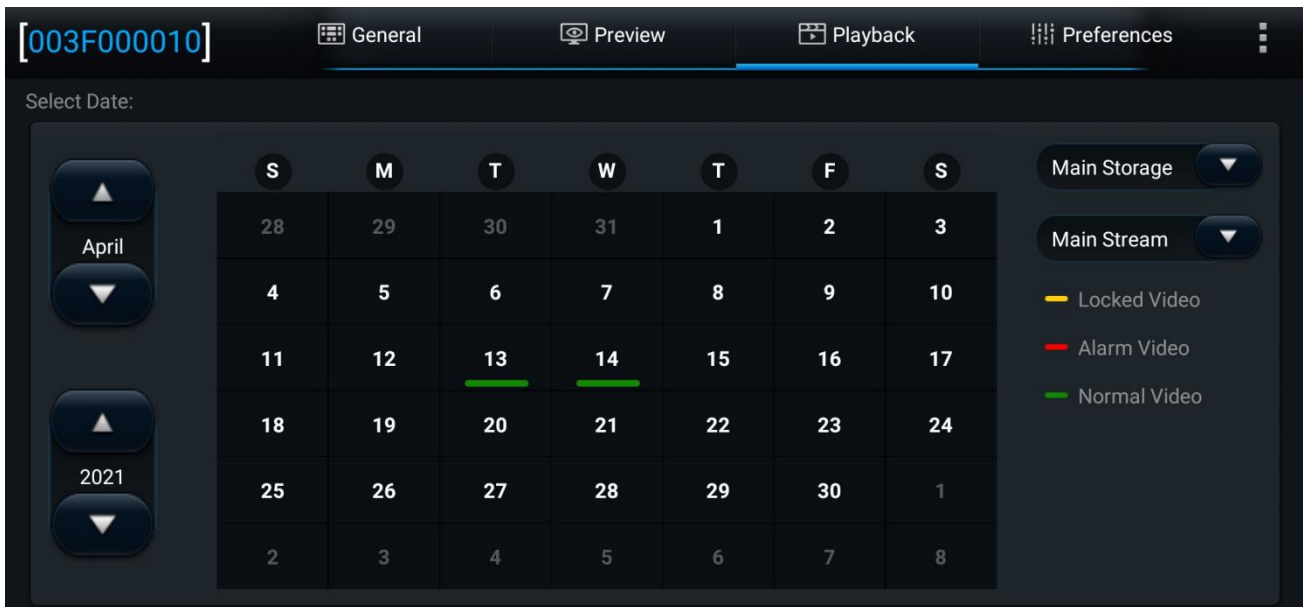




Click **OK** to complete the calibration and exit the calibration mode.

## 2.5. Playback

### 2.5.1. Video Playback

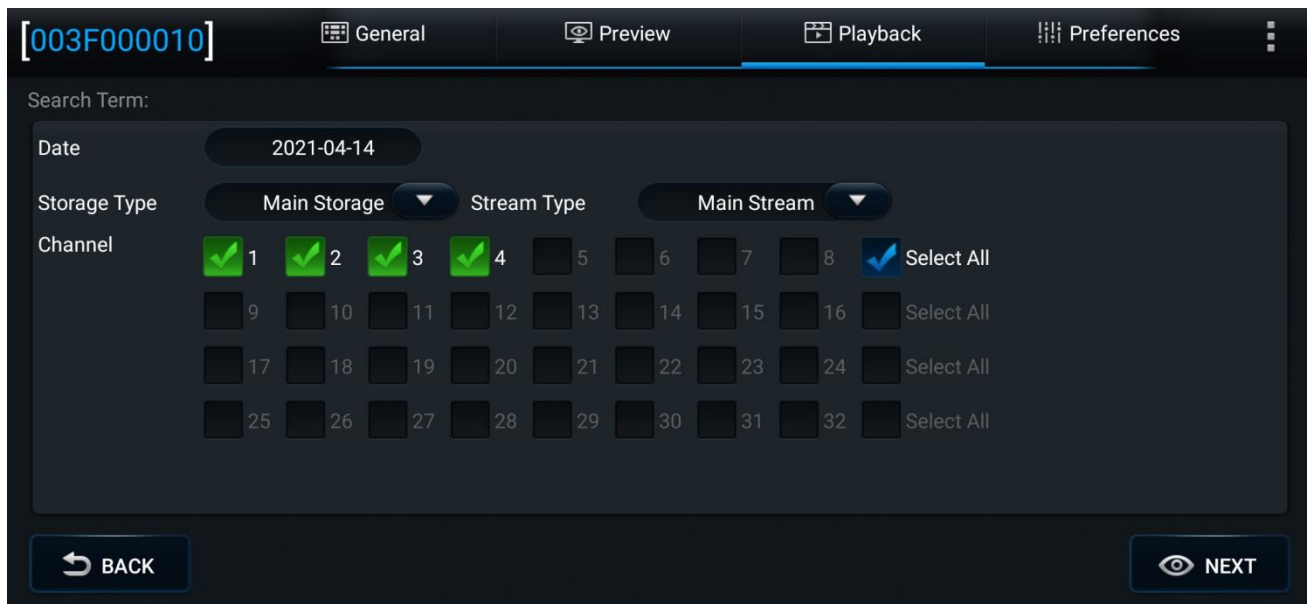
On the **Playback** screen, you can search for the main-stream video/sub-stream video in the main storage/sub-storage on a certain date.



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 and file automatically locked (videos locked)

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 the  to any position in the timeline below.
- 3) Tap  on 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 playback or export the videos in the channel(s) at the selected time.



### 2.5.2. 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.

To export the video, tap **Backup**; to lock the video of the selected time period, tap **Unlock**.

[003F000010] General Preview Playback Preferences

Channel1  Channel2  Channel3  Channel4

Selected time range: 00:00:00 00:00:00

06:10:26

Back Play Video Export

[003F000010] General Preview Playback Preferences

Channel1  Channel2  Channel3  Channel4

Selected time range: 00:00:00 00:00:00

06:10:26

Back Play Previous Start Time

[003F000010] General Preview Playback Preferences

Channel1  Channel2  Channel3  Channel4

Selected time range: 06:10:26 06:52:08

06:52:08

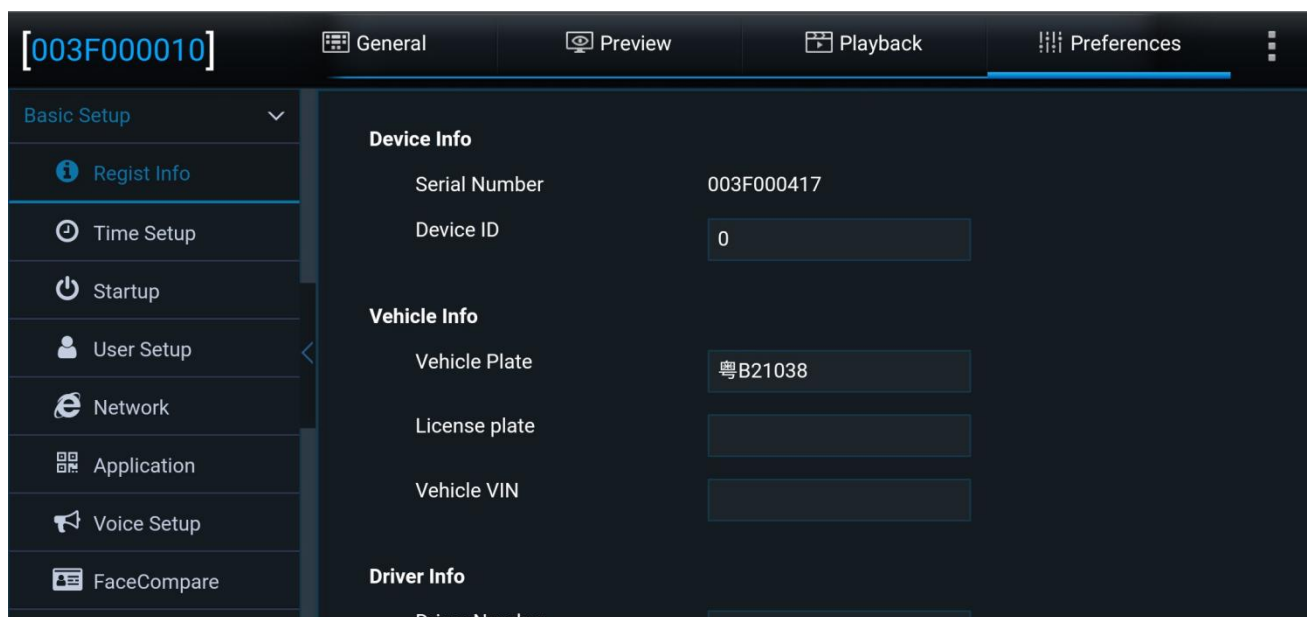
Back Play Previous Cancel Export Unlock Backup

## 2.6. Basic Setup

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

### 2.6.1. Regist Info

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.



### 2.6.2. Time Setup

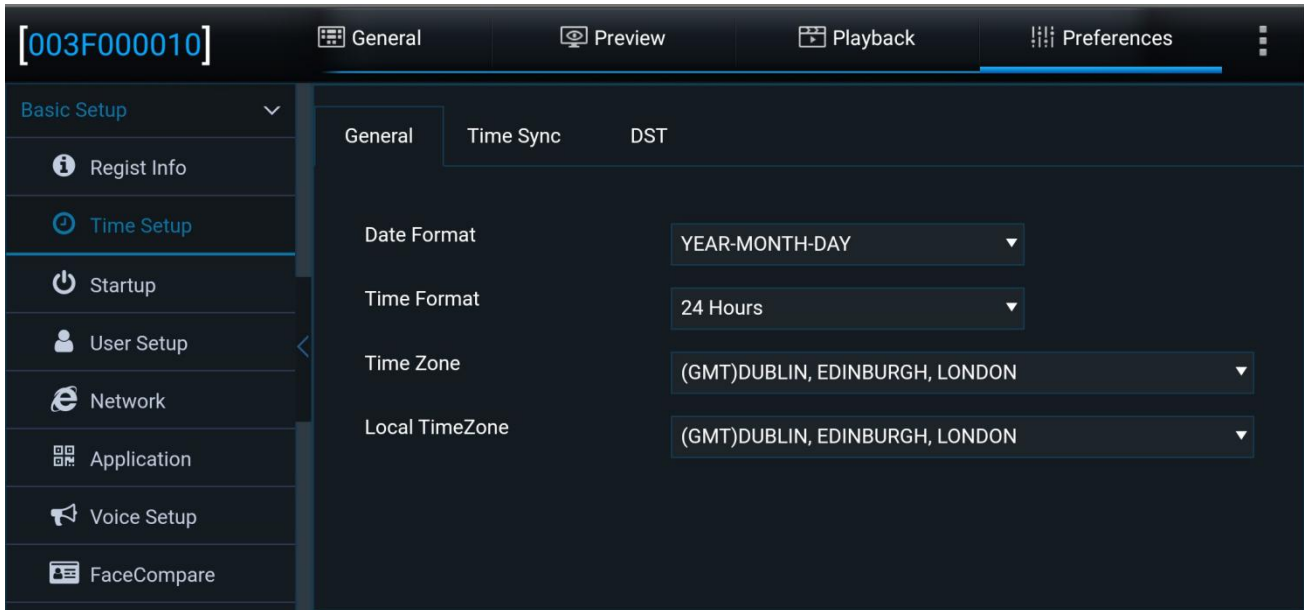
- **General:** allows you to set the format of the time display and the time zone in which it is located.

1. **Date Format:** can be set to **YEAR-MONTH-DAY**, **MONTH-DAY-YEAR**, or **DAY-MONTH-YEAR**. It is reflected only in the live view and recording OSD.

2. **Time Format:** can be set to **24 Hours** or **12 Hours**. It is reflected only on the live view screen and in recording OSD.

3. **Time Zone:** allows you to select the required time zone.

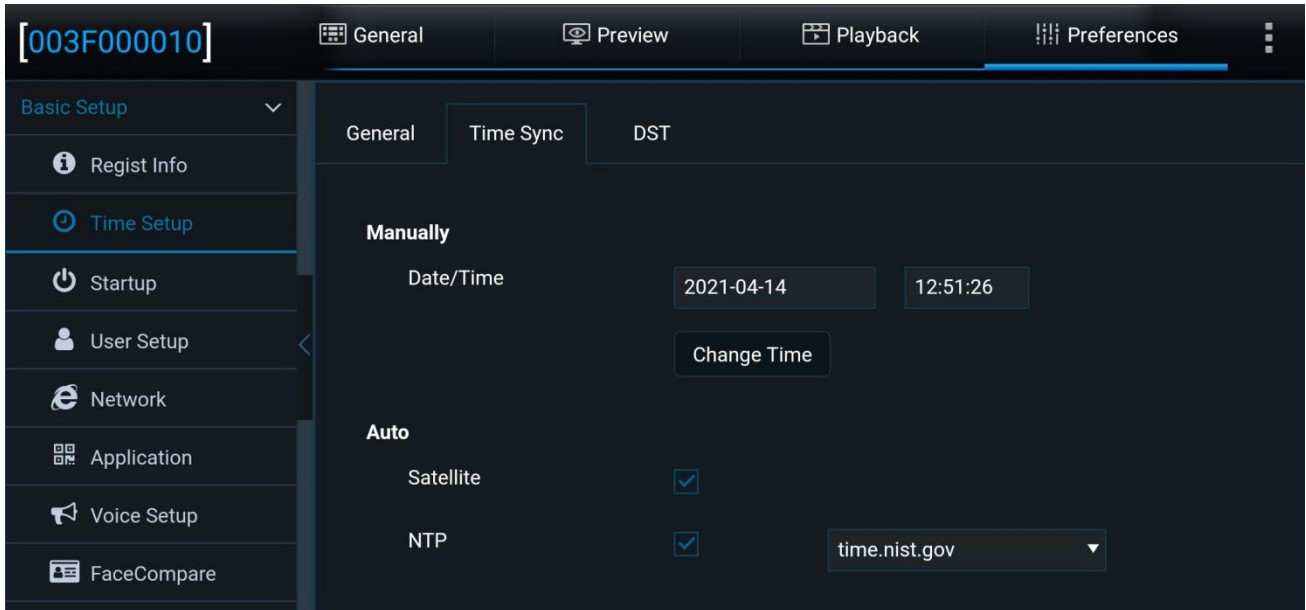
4. **Local TimeZone:** allows you to choose the local time zone (Local TimeZone is available only when Time Zone is set to UTC+0)



•  **Time Sync:**

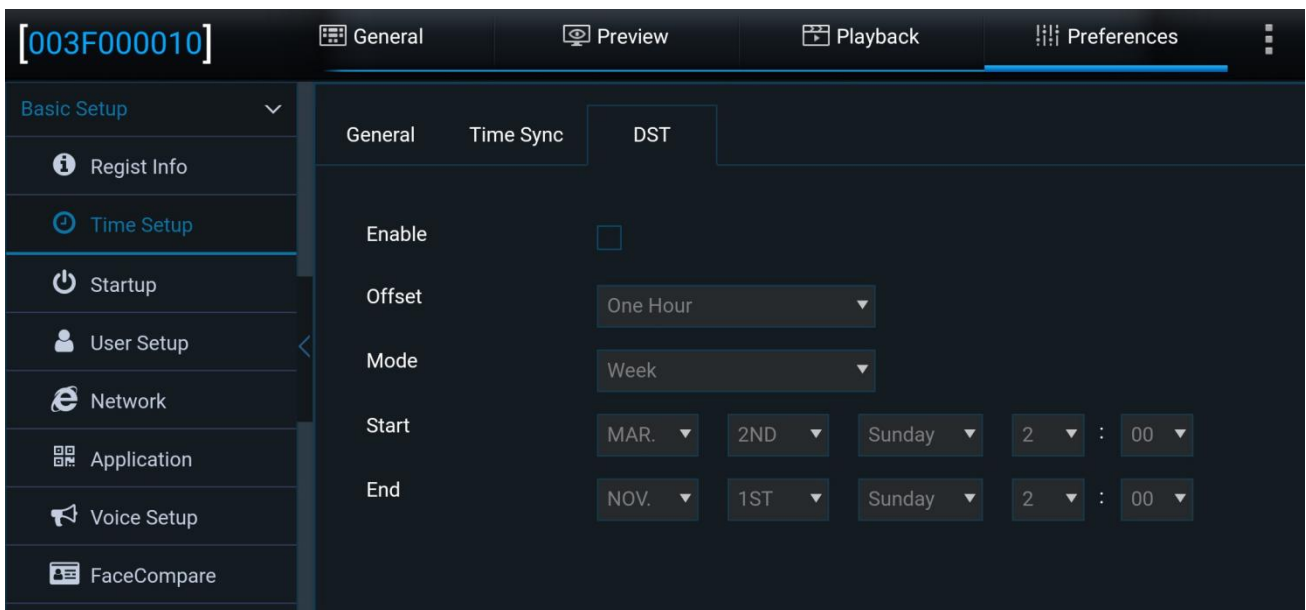
The time will be synchronized automatically when there is a deviation between the system time and the actual time. In the automatic time synchronization settings, you can enter the date and time manually, or set the time synchronization method.

1. Tap **Change Time** to modify 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:**

For some regions, you need to set the DST due to the time zone reason. Specifically, you can set the start & end time, and offset in weeks or days. Tap **Preferences > Basic Setup > Time Setup > DST**, as shown in the following figure:



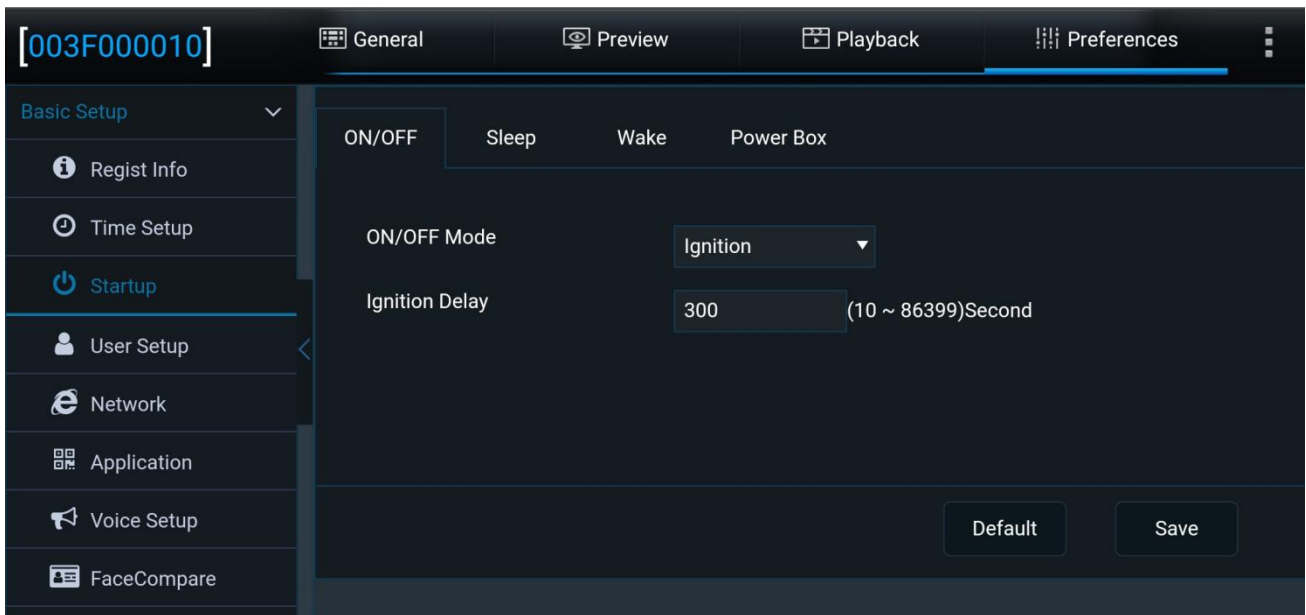
1. **Enable:** allows you to enable or disable the DST function. It is disabled by default.
2. **Offset:** can be set to **One Hour** or **Two Hours**.
3. **Mode:** can be set to **Week** or **Date**.
4. **Week:** allows you to set **Start** and **End** of the DST by setting the month, Nth day of the 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.

### 2.6.3. ON/OFF

- ON/OFF

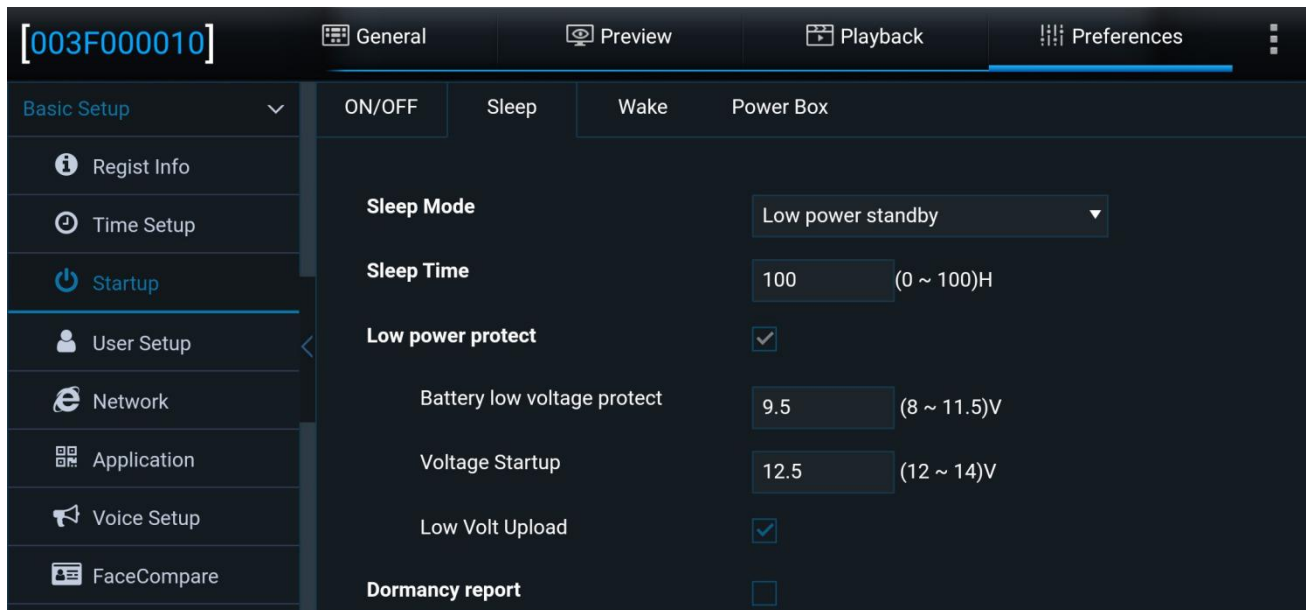
Tap **Preferences > Basic Setup > Time Setup > ON/OFF**, as shown in the following figure:



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.

- Sleep

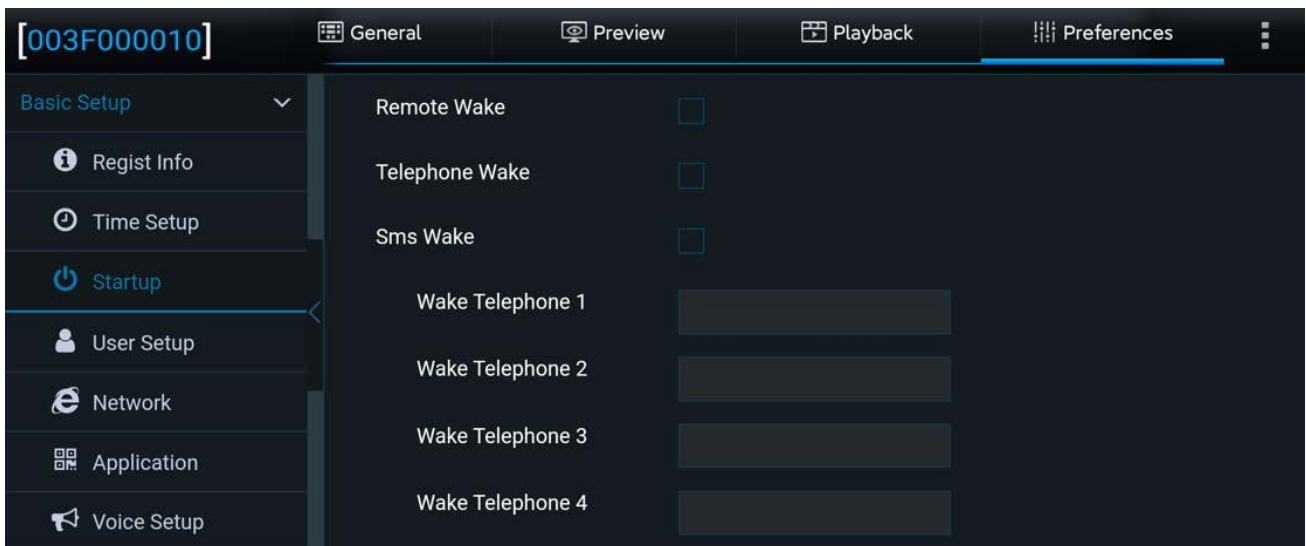
Tap **Preferences > Basic Setup > Time Setup > Sleep**, as shown in the following figure:



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.
3. **Low power protect:** enables low voltage protection after being selected.
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 selected when the low voltage protection is triggered.
7. **Note:** When the low voltage protection is not enabled, 7 V is the judgment condition for low voltage protection by default.
8. **Sleep Upload:** reports the GPS information so that you can view the vehicle location information when the device restarts at regular intervals (can be specified) after the vehicle is turned off and goes online properly. The interval can be set to 5–1440 min, 180 min by default.

- Wake

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



To select a wake method, select 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.

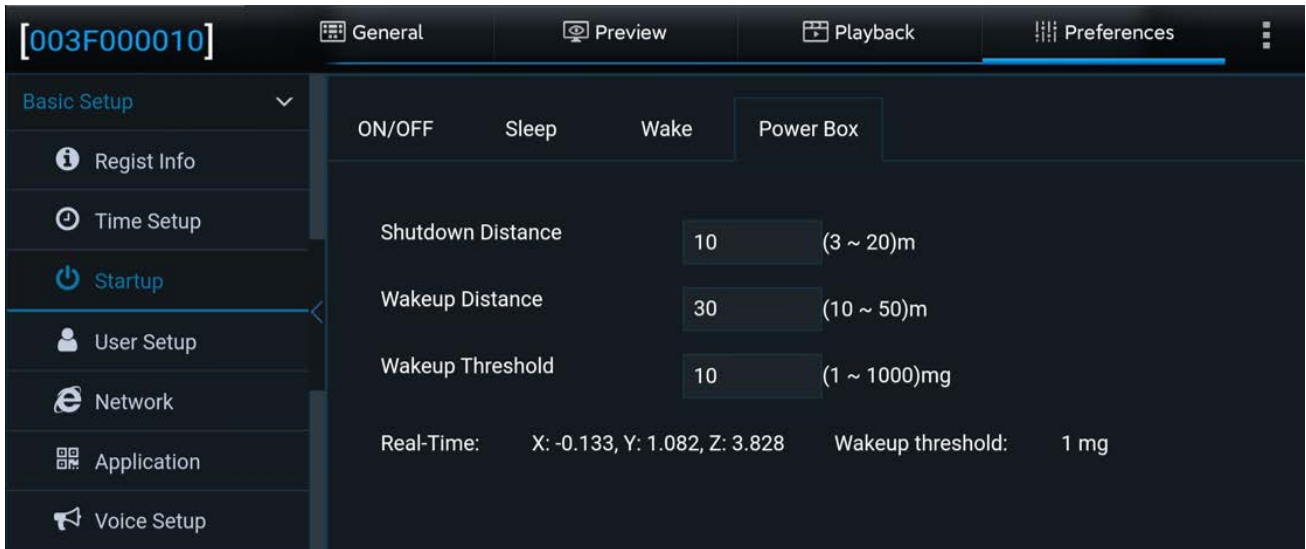
The default waking thresholds for the X, Y, and Z axes are all 5.5 g;

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 wake is supported only through FT API, and only the first N9M server is supported for remote wakeup;

4. **Telephone Wake/SMS Wake:** wakes up the MDVR by calling or sending SMS messages to the device. You need to set the mobile number to wake up the device in advance.

- Power Box

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



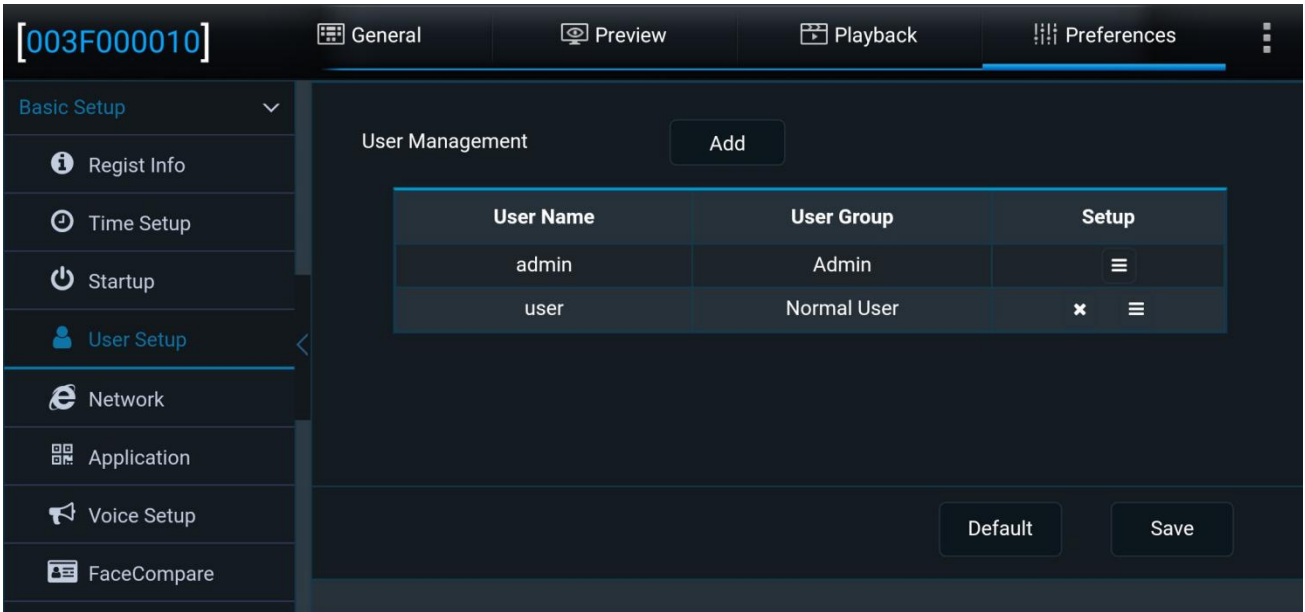
Set the shutdown and wake-up thresholds controlled by the power box

1. **Shutdown Distance:** When ACC is disabled and the vehicle movement distance is less than the configured threshold, the device is shut down. The threshold range is 3 to 20 m, and the default value is 10 m;
2. **Wakeup Distance:** This parameter is currently not used;
3. **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 1–1000 mg, 10 mg by default.

The following displays the data on the 3 axes, and the currently detected wakeup value.

### 2.6.4. User Setup

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

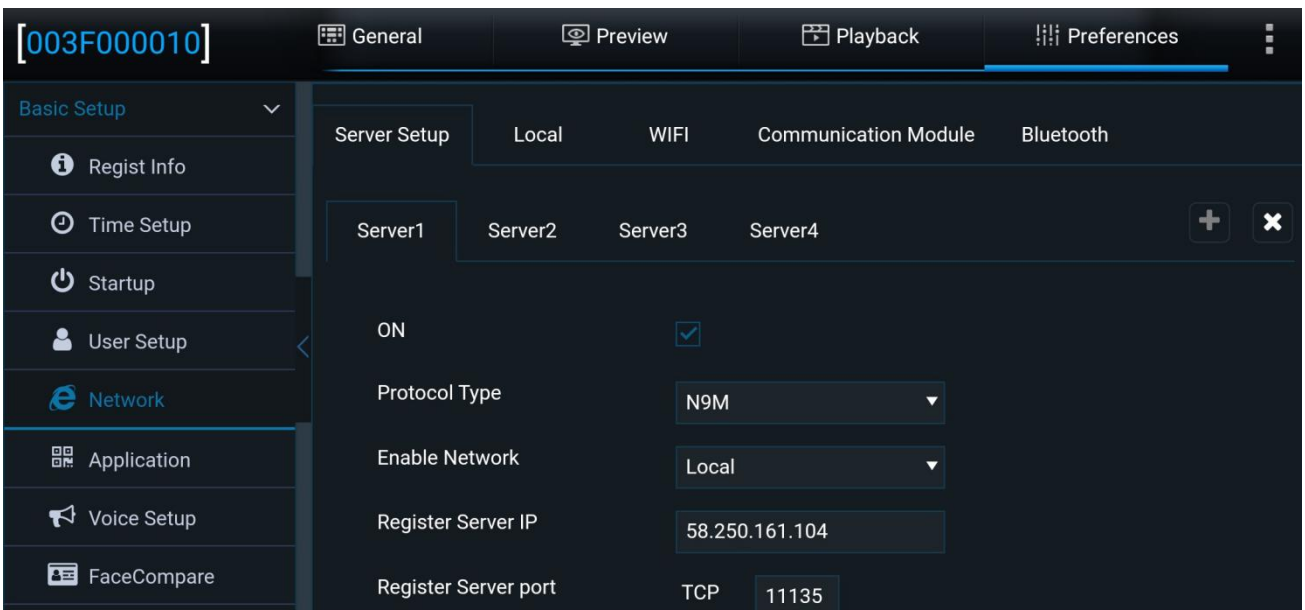






1. Tap **Add** to add a user.
2. Tap ☰ in the **Setup** column to set the password for the user login.
3. **admin (Admin)**: The system has an administrator account by default. The administrator has the permission to add/delete common users and set parameters. It can add a maximum of two common users.
4. **user (Normal User)**: only has the permission to query settings.

### 2.6.5. Network

- 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**: enables a server after being selected. A maximum of three servers can be enabled simultaneously. If it is deselected, 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.
    -  **808**: indicates the protocol type for the device to report information to the 808 platform (not used for overseas trucks).
  4. **Enable Network**: can be set to Local, WIFI, or Communication Module.
  5. **Register Server IP**: specifies the IP address 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. **Media Server IP**: specifies the IP address of the media server of the platform to which the device reports information.
  8. **Media Server port**: specifies the corresponding device port through which the device reports information to the platform.
- The registrar and media server have the same default IP address and port number.**
9. It supports 4G SIM cards, which can provide mobile hotspots for mobile terminals such as mobile phones and pads for Wi-Fi network transmission.

In order to prevent end users from using traffic beyond the control or forgetting the password, the dealer needs to control the account and password. However, it is impossible to set the device on site due to the site environment. In this case, you can send SMS messages to enable/disable hotspots or change the account password in the AP mode.

The Wi-Fi module allows modifying parameter formats and contents by sending SMS messages, as shown in the following:

Command keyword: WIFI

Enable. **1**: Enable; **0**: Disable

99admin,120223,WIFI0 -- None

99admin,120223,WIFI1 -- Client

99admin,120223,WIFI2 -- AP

The command parameters have different formats and contents due to different parameters in different modes:

1) AP mode:

Command parameters: **Mode, Encryption Type, ESSID, Password, and Hotspot Enable!**

Example:

99admin,120223,WIFI2,WPA,KOHLTECH,1!

99admin,120223,WIFI2,WEP,KOHLTECH,1!

99admin,120223,WIFI2,NONE,KOHLTECH,1!

Client mode:

Command parameters: **Mode, Encryption Type, ESSID, Account, Password, Static Enable, Static IP Address, Subnet Mask, and Gateway!**

**0** indicates that the static IP address is enabled and **1** indicates that the dynamic IP address is enabled.

Example:

99admin,120223,WIFI1,WEP,KOHLTECH,1!

99admin,120223,WIFI1,WPA/WPA2-PSK,KOHLTECH,1!

99admin,120223,WIFI1,WPA2.ENTERPRISE,KOHLTECH,1!

2) None mode:

Command parameter: **Mode!**

Example: 99admin, 120223, WIFI0!

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

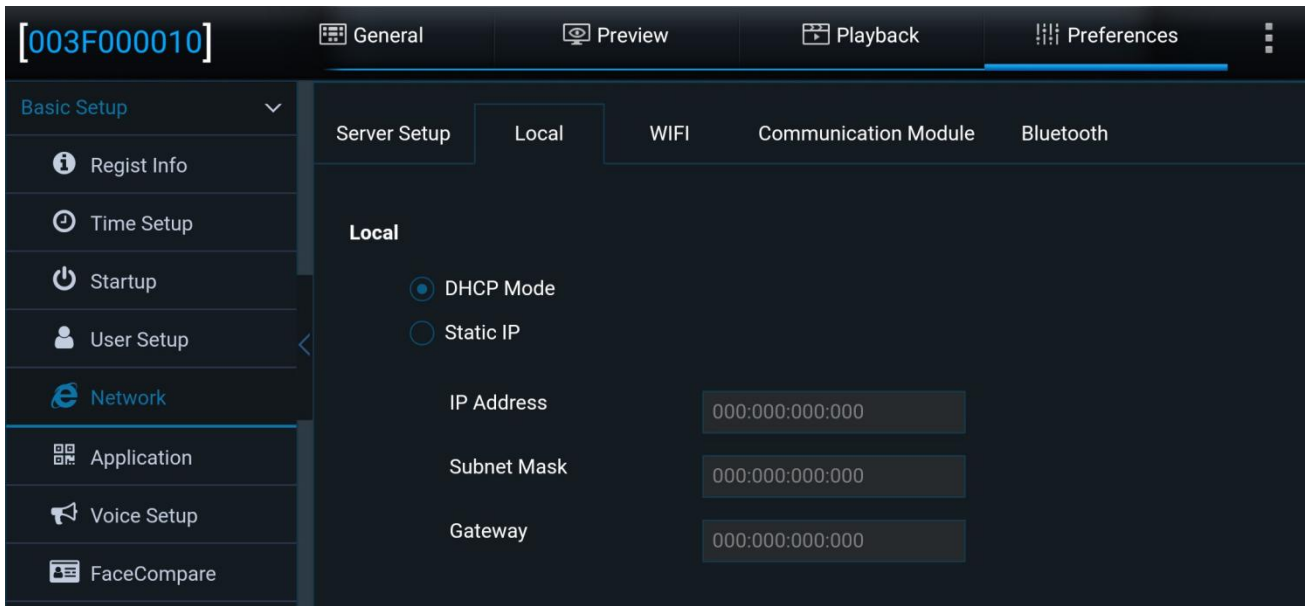
Example:

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:



1. **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 address can be dynamically or statically customized.

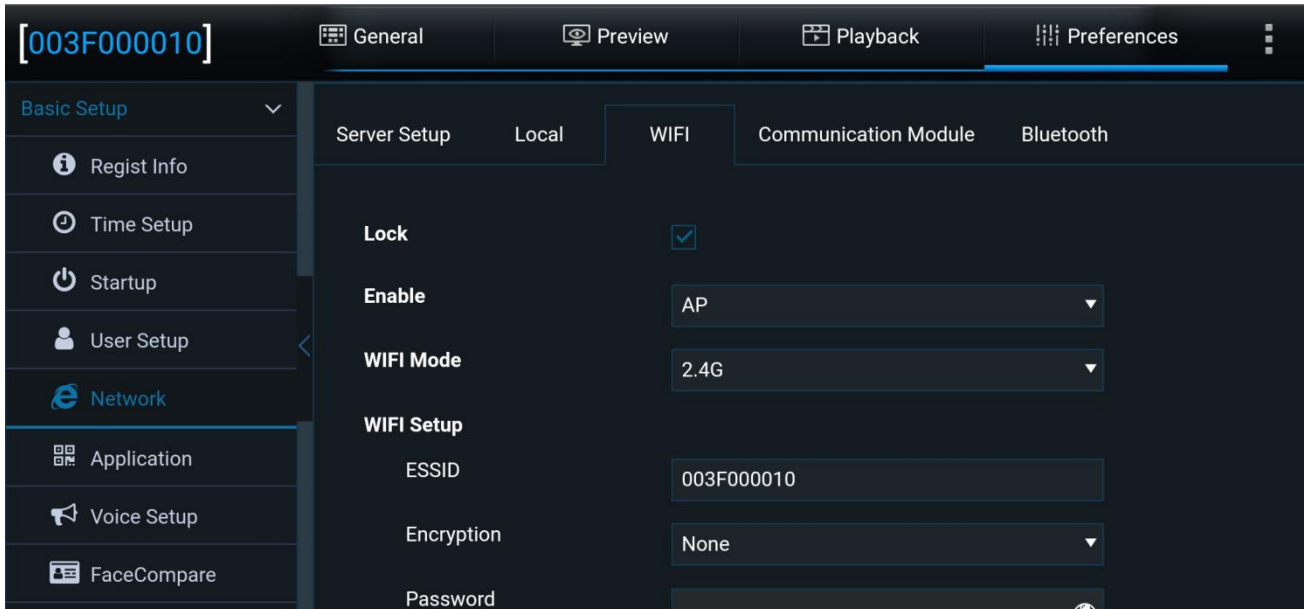
2. **Static IP:** indicates that the device uses the static IP address. If the preset static IP

address is used, the DNS address must be specified statically.

3. **Direct Port:** Set to 80 by default. This port will be used for IE access.

● **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 selected, the relevant parameters of the Wi-Fi hotspot will not be modified.

2. **Enable:** specifies the Wi-Fi connection mode and can be set to **AP**, **Client** or **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. (If the AD Plus has the AP mode switch button, the button is disabled.)
- **Client:** In this mode, the device can automatically search for a valid Wi-Fi hotspot nearby for connection. After the successful connection, the device can automatically connect to this hotspot after rebooting or re-entering this area. By default, the AP mode is used upon the startup. If the device is not connected with the EasyCheck app within 3 minutes, it will automatically switch to the client mode. The device can be switched to the AP mode when you push the button twice. After the switch, if the device fails to connect to the EasyCheck App within 3 minutes, 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. (If the AI4DC is equipped with the AP mode switch button, you can switch the device to the AP mode with the button. After the switch, if the device fails to connect to the EasyCheck app within 3 minutes, the device will exit from the AP mode and the module will enter the sleep mode.)

**3. WIFI Mode:** specifies Wi-Fi frequency bands and can be set to 2.4G, 5G or Adaptive.

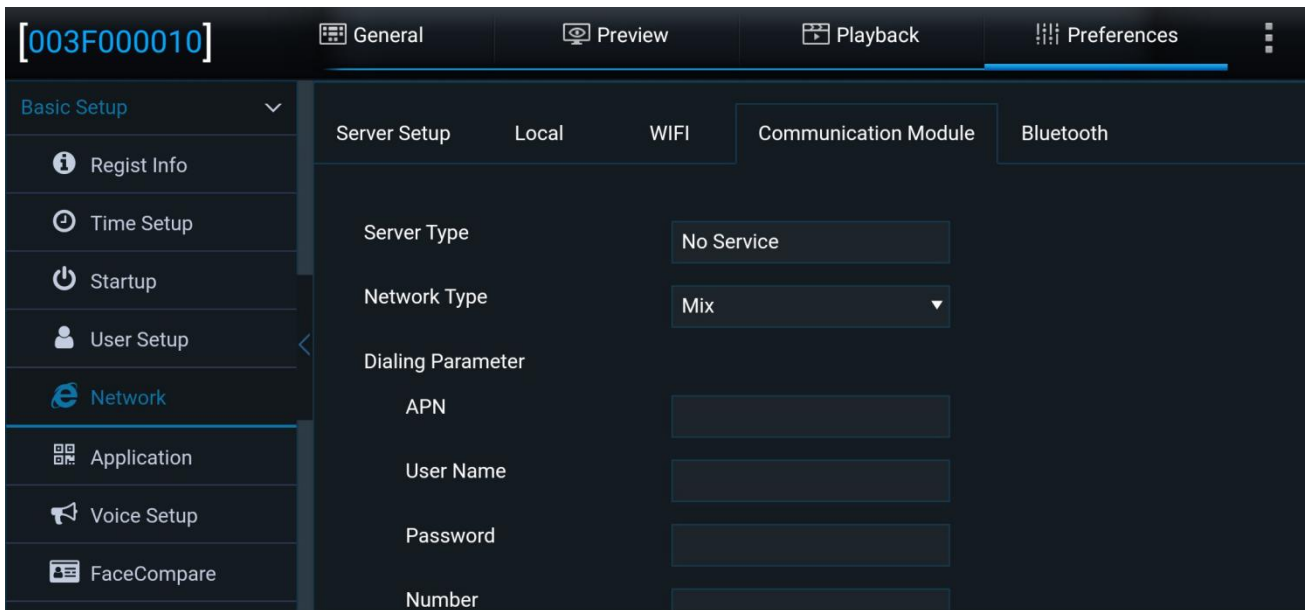
**4. ESSID:** In AP mode, the entered value is the hotspot name when the hotspot function of the device is turned on, and the Wi-Fi name when a mobile device connects the device (no longer a serial number. After the connection, the EasyCheck App can be accessed, and it can access the Internet as a mobile terminal when the hotspot is enabled); In client mode, the entered value is the Wi-Fi name when the device connects an external Wi-Fi.

**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 KOHLTECH 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: is set to Communication Module.

2. Network Type: is set to Mix.

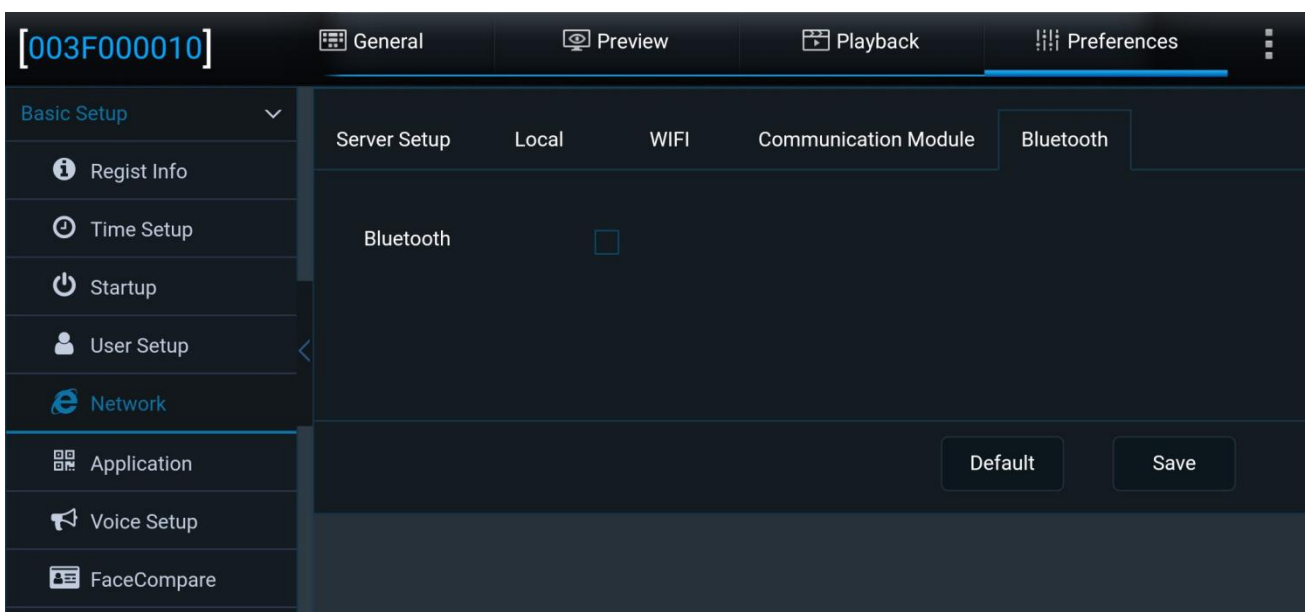
3. Dialing Parameter: allows setting the APN, which can be configured as VPN network parameters.

4. You can also configure information of the communication module, such as the authentication or activation mode.

Bluetooth

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

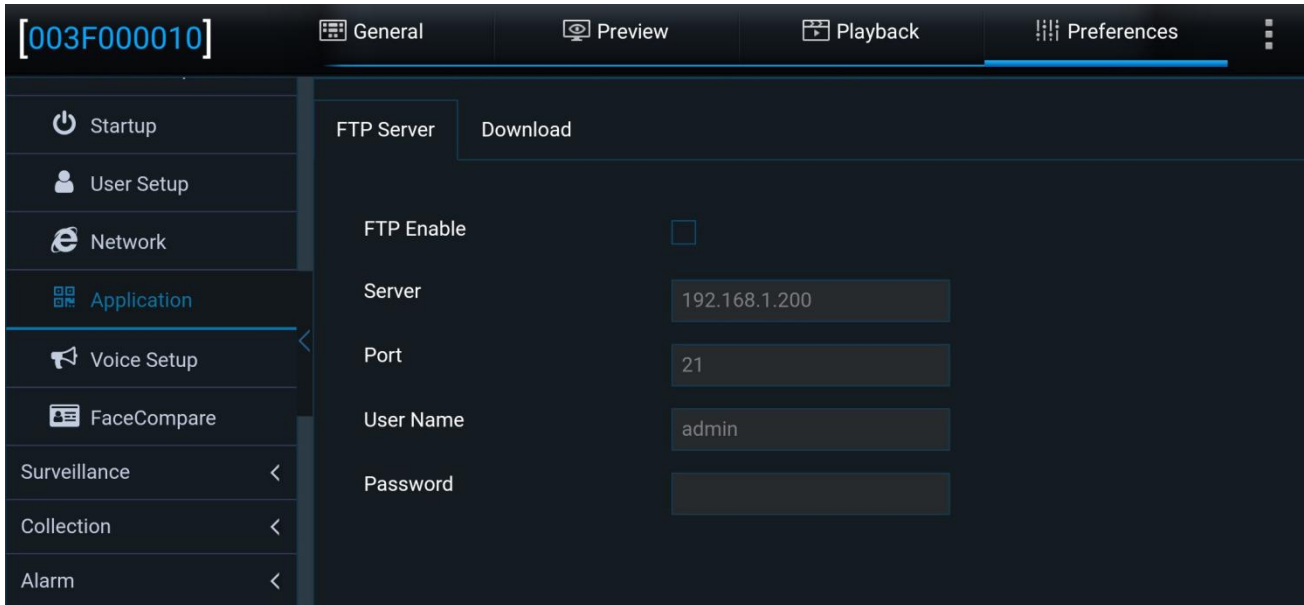
Turn on/off Bluetooth. Currently, the Bluetooth function is unavailable.



## 2.6.6. Application

FTP Server:

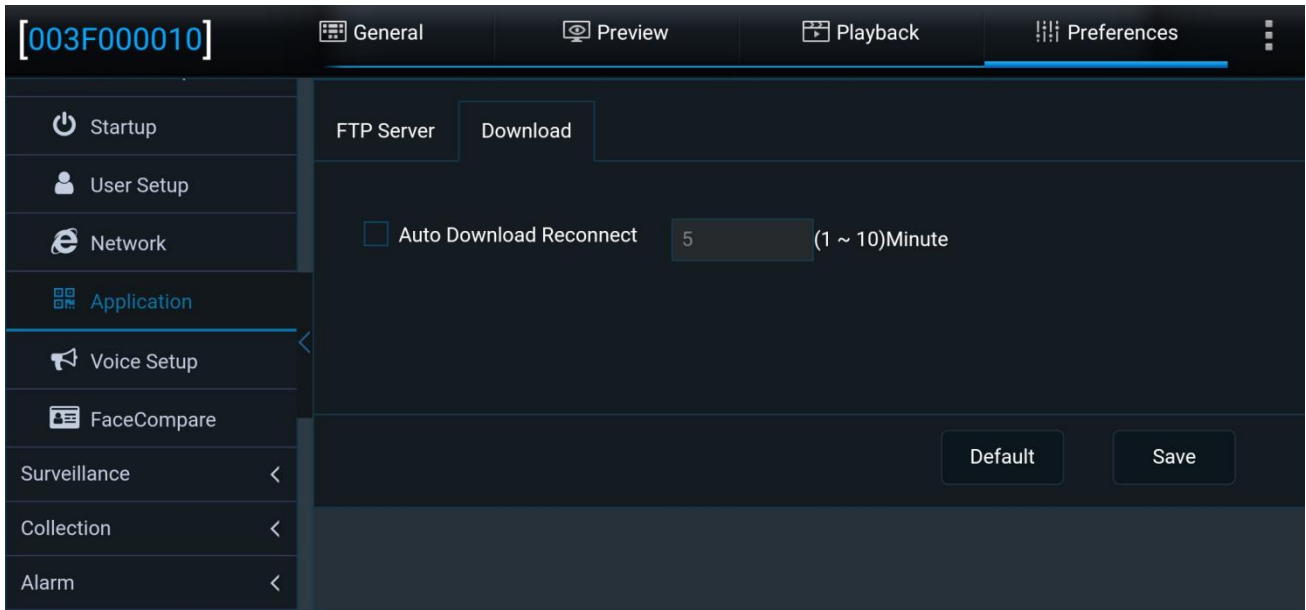
The device allows connecting to an FTP server. After the IP address, port number, user name, and password of the established FTP service are configured, the device can connect to the FTP server to upload pictures or download files. Tap **Preferences > Basic Setup > Application > FTP Server**, as shown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

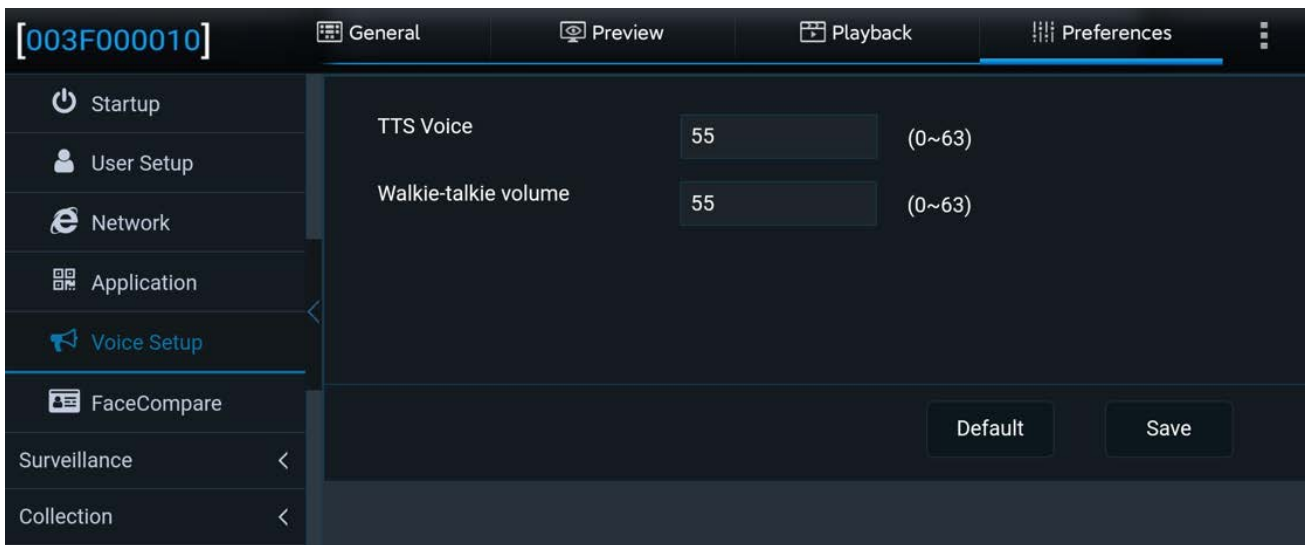
Auto Download Reconnect, that is, when the vehicle returns to the station and cannot connect to the service, it will restart and try to download again after entering the sleep mode for a while. When the download tasks are full, or the set AP reaches the upper limit, the platform will notify the device 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).

Tick to enable **Auto Download Reconnect** and set the re-connection time between 1 and 10 min, the default is 5 min.



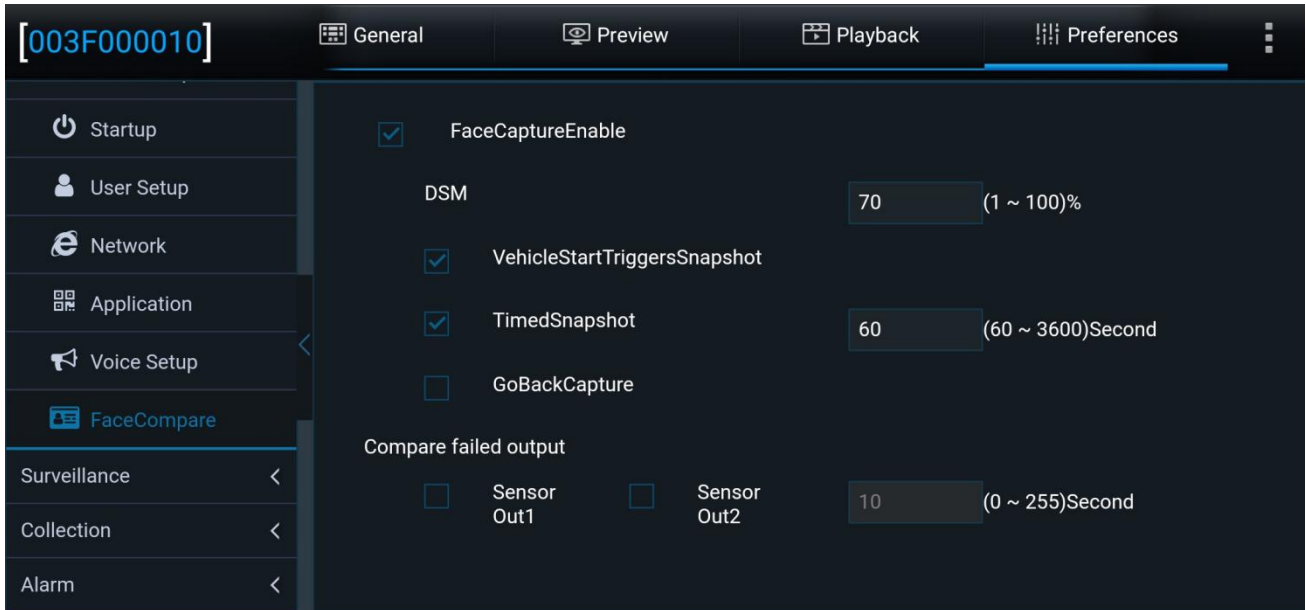
### 2.6.7. Voice Setup

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



### 2.6.8. 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. **FaceCaptureEnable**: enables face comparison after being selected.
2. **DSM**: allows you to set the threshold of the face comparison similarity. If the similarity is greater than or equal to the set threshold, the two faces are considered to be owned by the same driver.
3. Face capture method:
  - **VehicleStartTriggerSnapshot**: The device captures a snapshot when the ACC is turned on from the off status, and the vehicle is moving at a certain speed
  - **TimedSnapshot**: allows you to set the scheduled time to 60–3600 seconds, 300 seconds by default
  - **GoBackCapture**: The device captures a snapshot when the no driver alarm is triggered until the alarm is cleared
4. **Compare failed output**: When the comparison similarity between the driver's face and the face sent by the platform is less than the set threshold, the comparison fails and you can set the output after the comparison failure here. Specifically, select an output and set the output time to 0–255 seconds, 10 seconds by default.

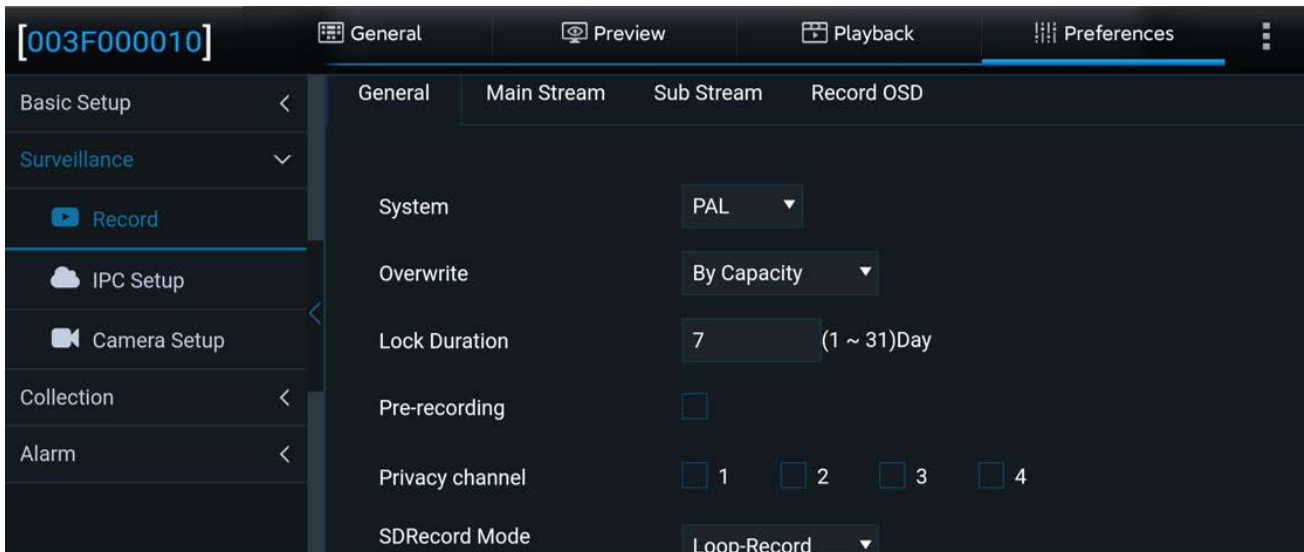
## 2.7. Surveillance

### 2.7.1. Recording

#### 2.7.1.1 General Settings

In this module, you can specify the system mode, overwrite function, lock duration, pre-recording, SD record mode, and privacy channel configuration.

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



1. **System:** PAL and NTSC are available.

**Note:** This setting must be consistent with the video source system.

2. **Overwrite:** You can select **By Capacity**, **By Day**, or **Never**.

**Note:** Locked recording is overwritten only after its locking duration expires.

- **By Capacity** is selected by default. In this case:
  - 1) The SD card is overwritten by capacity. When the SD card storage space is less than 2 GB, overwriting starts, with files of 128 MB deleted each time.
  - 2) The deletion proceeds by channel number and deletes 250 MB files from each channel in one deletion. If one channel has a section less than 100 MB, the system moves to the next channel with longer duration.
- **By Day:**
  - 1) Files are overwritten by configured days, which range from 1 day to 31 days.
  - 2) If 1 day is configured, the recording is saved for 1 day. If 31 days are configured, the recording is overwritten after having 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, mirror stream, sub-stream, and alarm stream. Recording stops after the memory is full.

### 3. Lock Duration:

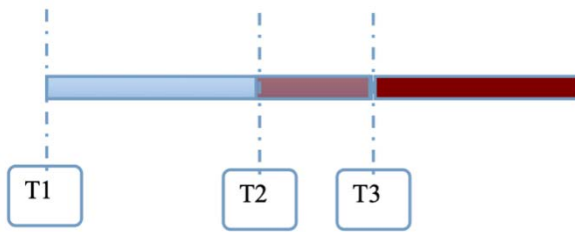
Specifies the day(s) that locked recordings are retained. This setting prevents them from being deleted earlier than expected. It is set to 7 days by default.

For details about how to lock recording, see Section 2.9.

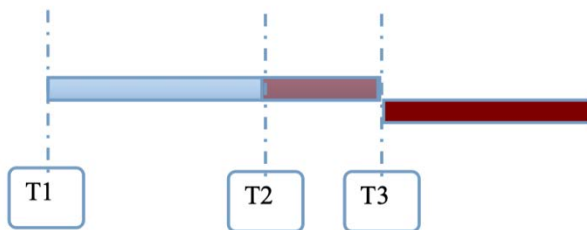
### 4. Pre-recording

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

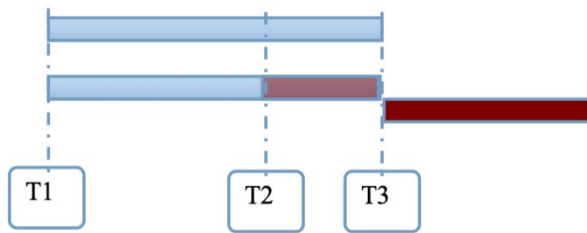
- 1) In normal video recording, when an alarm is triggered, earlier recording data with a duration indicated by this parameter is extracted and marked as alarm recording as well. As shown in the figure below, T1-T3 is a normal recording. After an alarm is generated at T3, T3, and later period, as well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



- 2) If there is no 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.

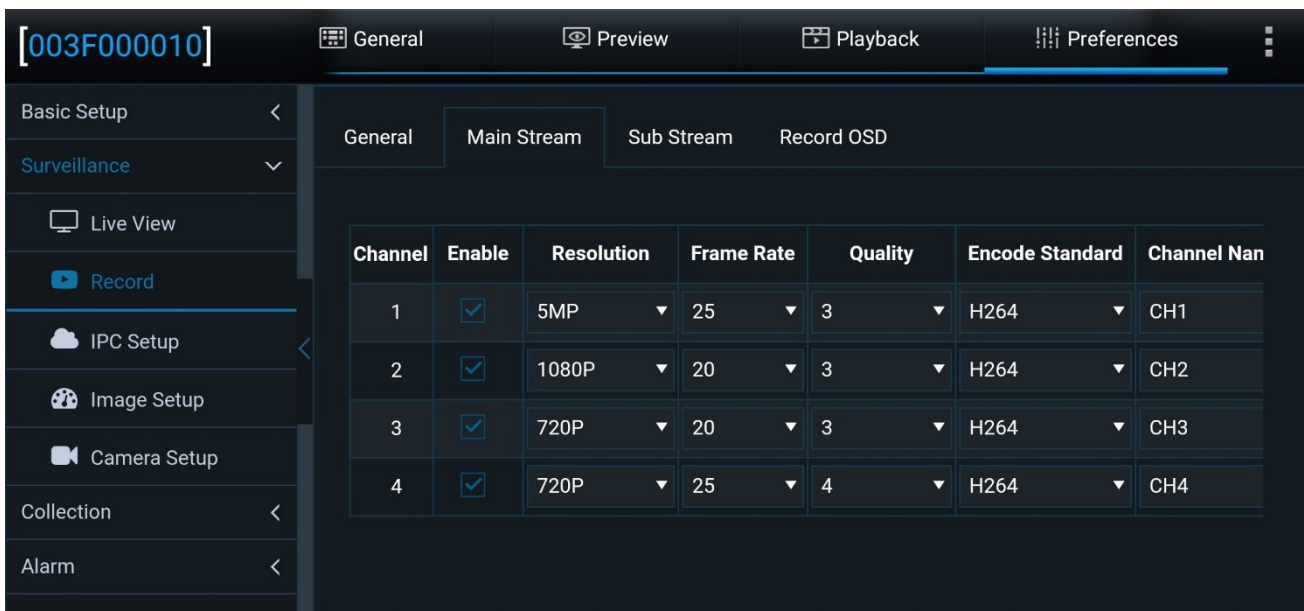


5. **TF Record Mode:** specifies the recording mode of the secondary TF card. It can be set to Sub-Record, Mirror Record, Alarm Record Backup, or Loop Recording.

- **Sub-Record:** stores sub stream recordings in the SD card.
- **Mirror Record:** uses main stream parameters, and its 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 Record:** is the loop recording for dual TF card.

### 2.7.1.2 Main Stream Setting

On this screen, you can set the recording mode, video 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 recording mode is selected, it applies to both sub-stream and mirror recording.

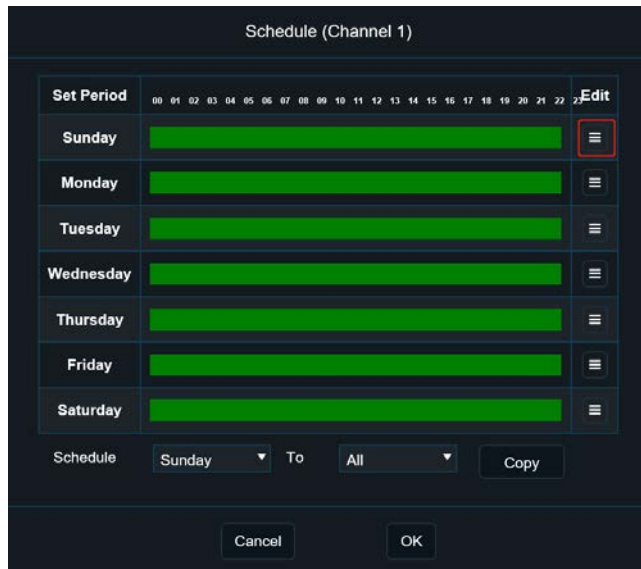
1. **Enable:** Main stream recording is enabled after this option is selected.
2. **Resolution:** The value is CIF, WCIF, HD1, WHD1, D1, WD1, 720P, 960P, or 1080P for an



analog camera and is 720P or 1080P for a digital camera.

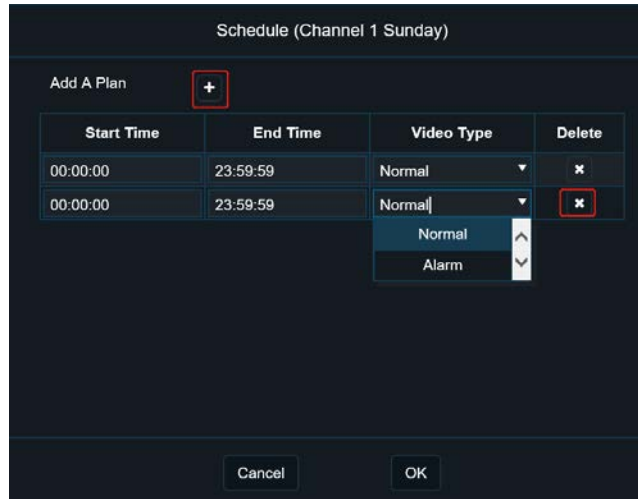
Note: Resolution of the ADAS channel (channel 1) of AI4DC can be up to 5MP (500 W)

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 H264.
6. **Channel Name:** Customizable
7. **Record Mode:** Available values are **Startup**, **Schedule**, and **Alarm**.

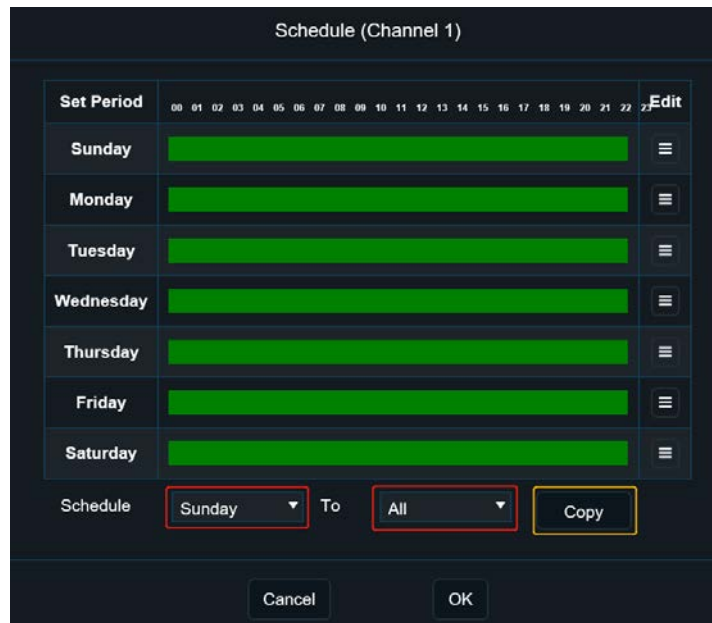
- ☐ ➤ **Startup:** If a Micro SD card is present and recording is enabled, the device keeps recording upon startup.
- ☐ ➤ **Alarm:** Recording is triggered by device alarms. For details about how to set alarm recording, see Section 2.9. Alternatively, you can enable pre-recording before alarm triggering.
- ☐ ➤ **Schedule:** Recording is performed as scheduled. Tap  on the right of **Schedule** to navigate to the screen shown below. Tap  corresponding to a specific day to add a recording plan.



To add a scheduled recording plan, tap  on the screen shown below. To delete this plan, tap  on the right of the plan. Select **Normal** or **Alarm** under the **Video Type** area to define the recording.



After setting the scheduled recording plan, tap **OK** to return to the previous step. Apply the well-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:** Whether to record audio during video recording. You can select **Always Audio** or **No Audio**.

1) **Always Audio:** The video is always accompanied by audio.

2) **No Audio:** The video is not accompanied by audio.

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

10. **Encode Mode:** VBR or CBR optional

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

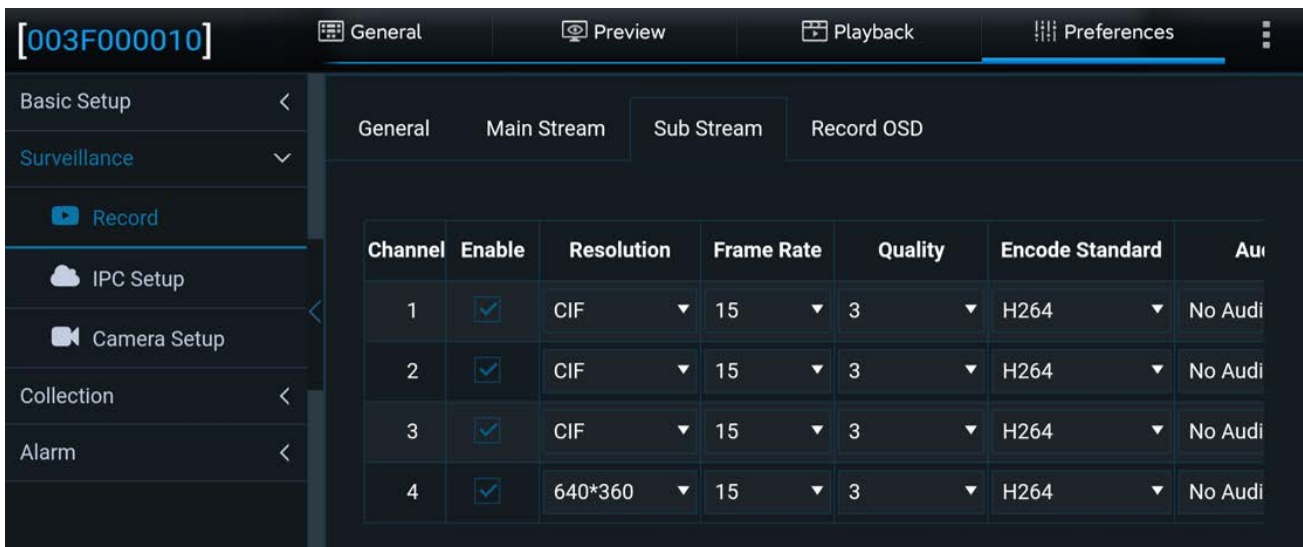
by default.

### 2.7.1.3 Sub-Stream Setting

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

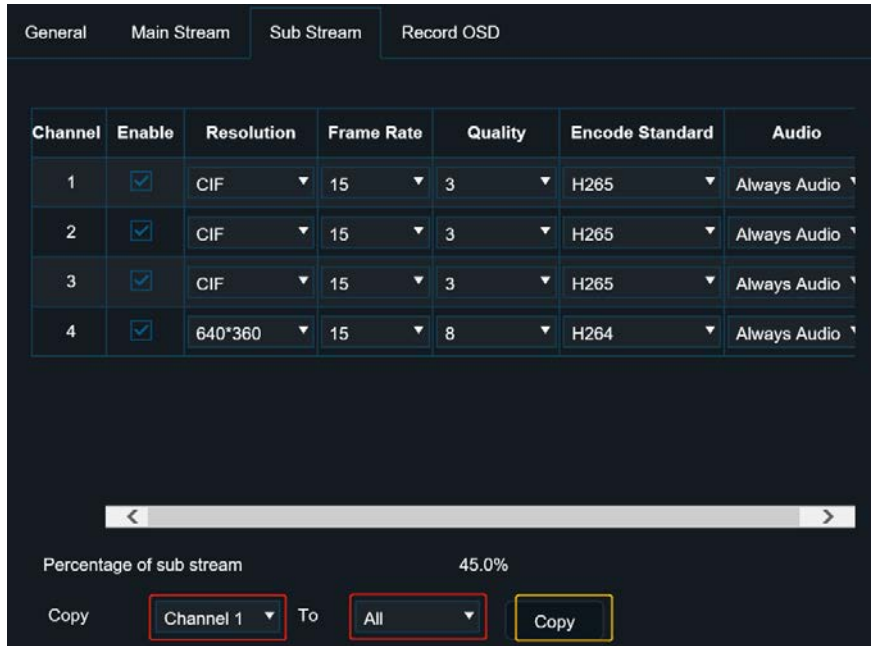
Note: The sub stream video recording can be enabled only when the sub stream video recording is selected in the recording mode, and a TF card is installed in the second slot.

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



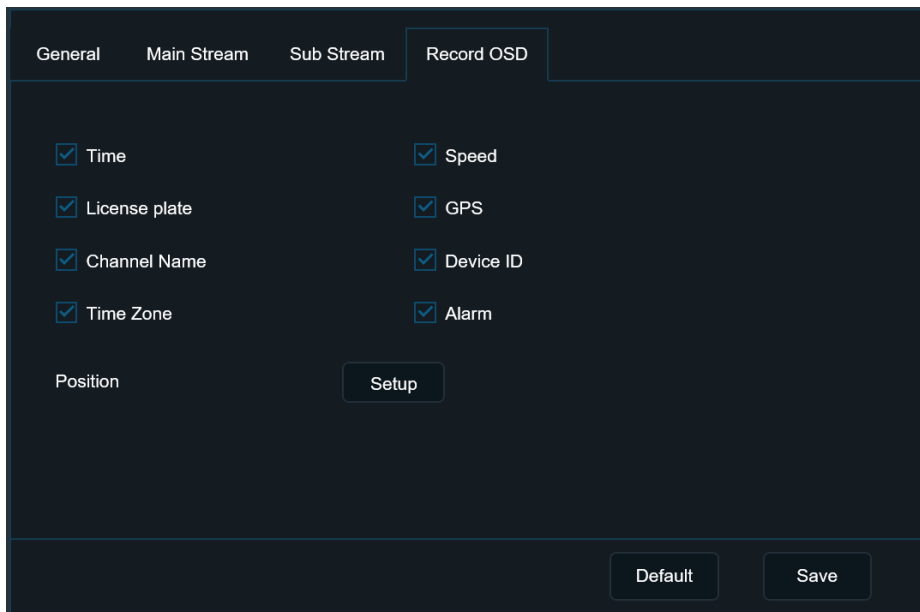
1. **Enable:** Sub-stream recording is enabled for a specific channel after this option is selected.
2. **Resolution:** The value is CIF, HD1, or D1 for an analog camera and is QCGA/640\*360 for a digital camera.
3. **Frame Rate:** specifies the recording frame rate, or the number of frames played per 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:** Whether to record audio during video recording. You can select **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:



### 2.7.1.4 Video Recording OSD Superimposition

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



Video OSD superimposition allows you to superimpose selected information on the recording and is different from OSD superimposition in live view preview.

Other settings are the same as those for live view preview and are not described here.

### 2.7.2. IPC Setting

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



☐ ● **Search:**

1. Onvif: You can enable IPCs external to the channels and search and allocate channels for them. In addition, the IP address of the IPCs can be modified.
2. N9M: KOHLTECH 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.

### 2.7.3. Camera Setting

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



On 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.

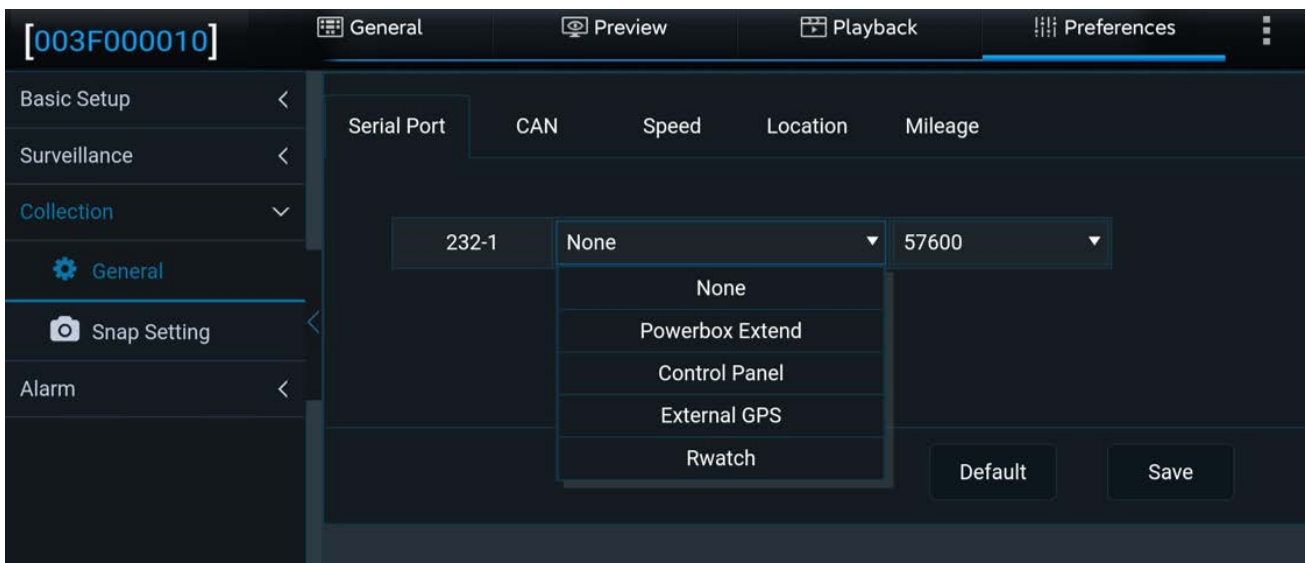
## 2.8. Data Collection

In this module, you can set serial port, CAN, speed, location, milestone, and capture parameters.

### 2.8.1. General Setting

In this module, you can set serial port, CAN, speed, location, and milestone parameters.

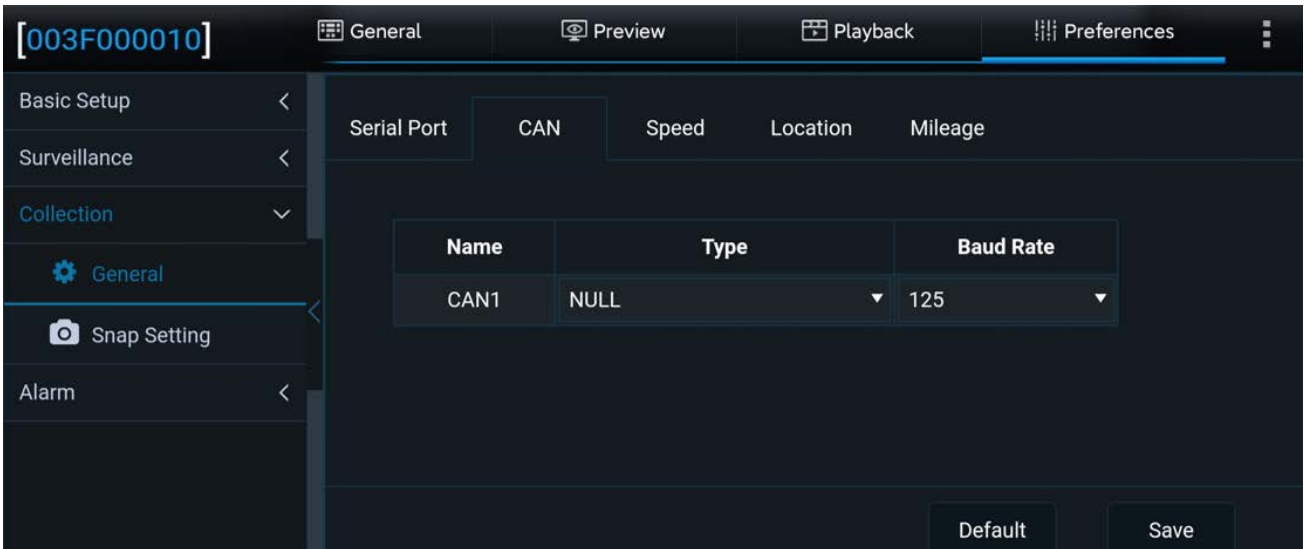
Tap **Preferences > Collection > General > Serial Port**. The **Serial Port** setting screen is displayed.



**Serial Port:** Select the peripheral you want to connect. The baud rate is filled by the corresponding value automatically. If the baud rate is incorrect, modify it manually.

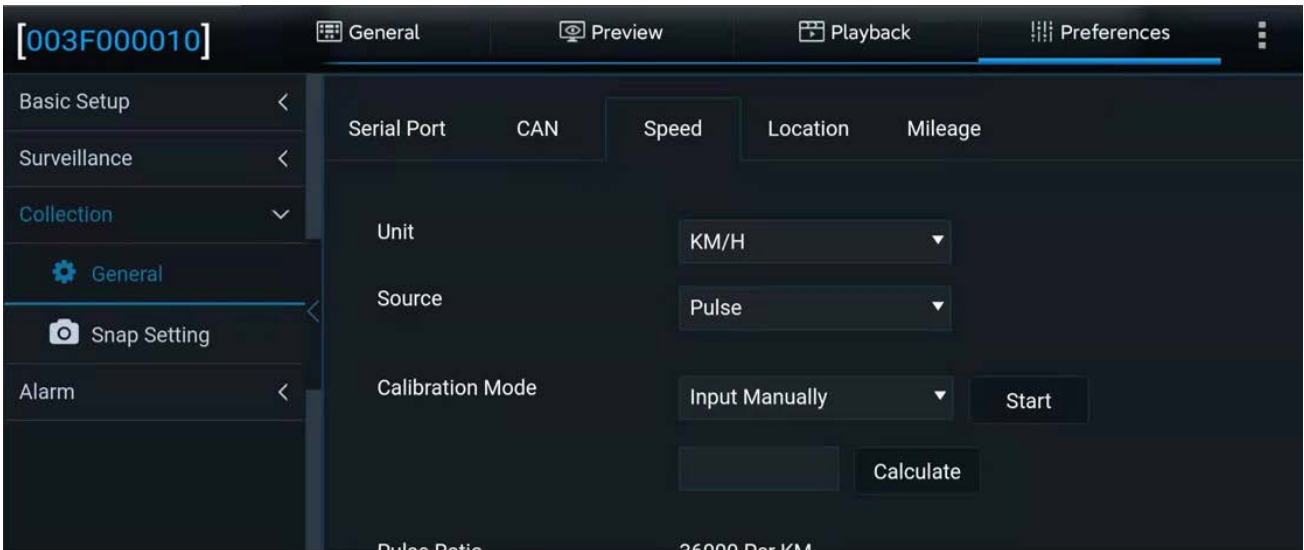
Note: If the AI4DC is connected to an R-Watch, the usage of 232-1 serial port must be set to Rwatch on this screen.

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



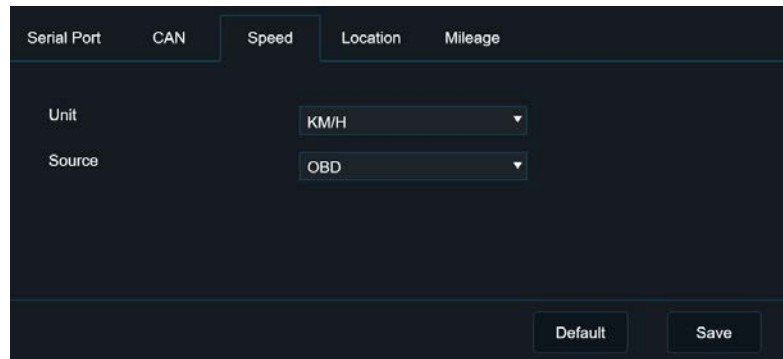
On this screen, you can configure the function type and Baud rate of the CAN to be accessed.

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

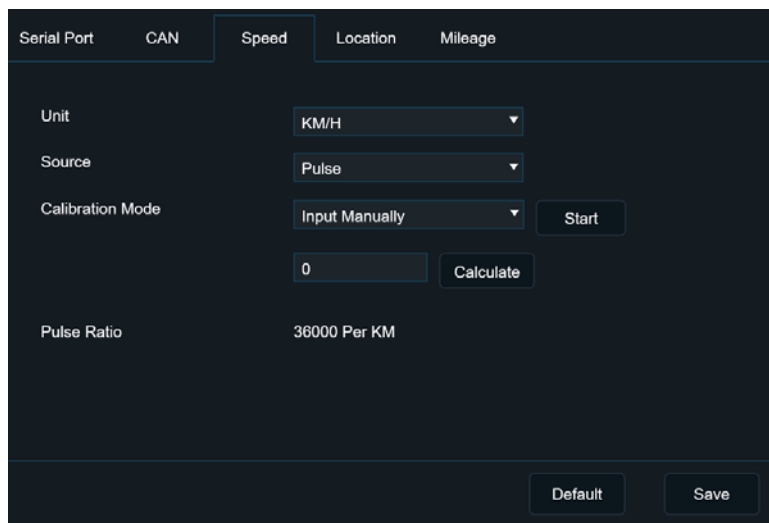


1. **Unit:** Set the unit of vehicle speed, unit: km/h or MPH.
2. **Source:** Select **Satellite**, **Pulse**, **OBD**, or **Mix**.

➤ When **Satellite** or **OBD** is selected, the screen is shown as below:



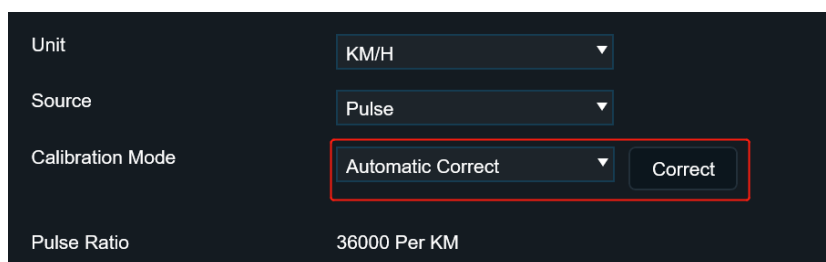
➤ When **Pulse** is selected, the screen is shown as below:



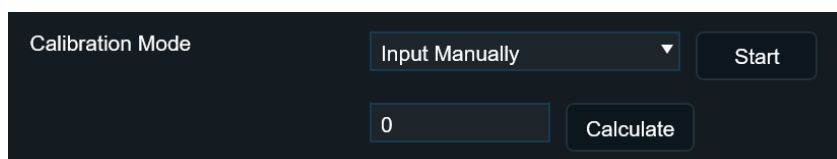
Where

3. **Calibration Mode:** Select **Input Manually** or **Input Automatically**.

➤ When **Input Automatically** is selected, tap **Correct** to proceed with the calibration.



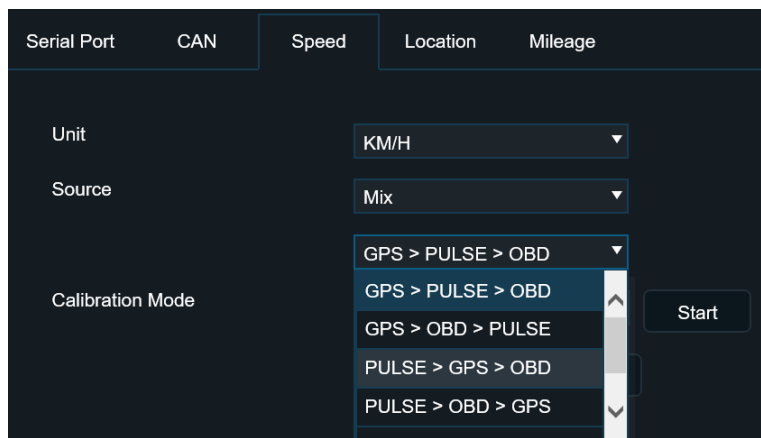
➤ Select **Input Manually**:



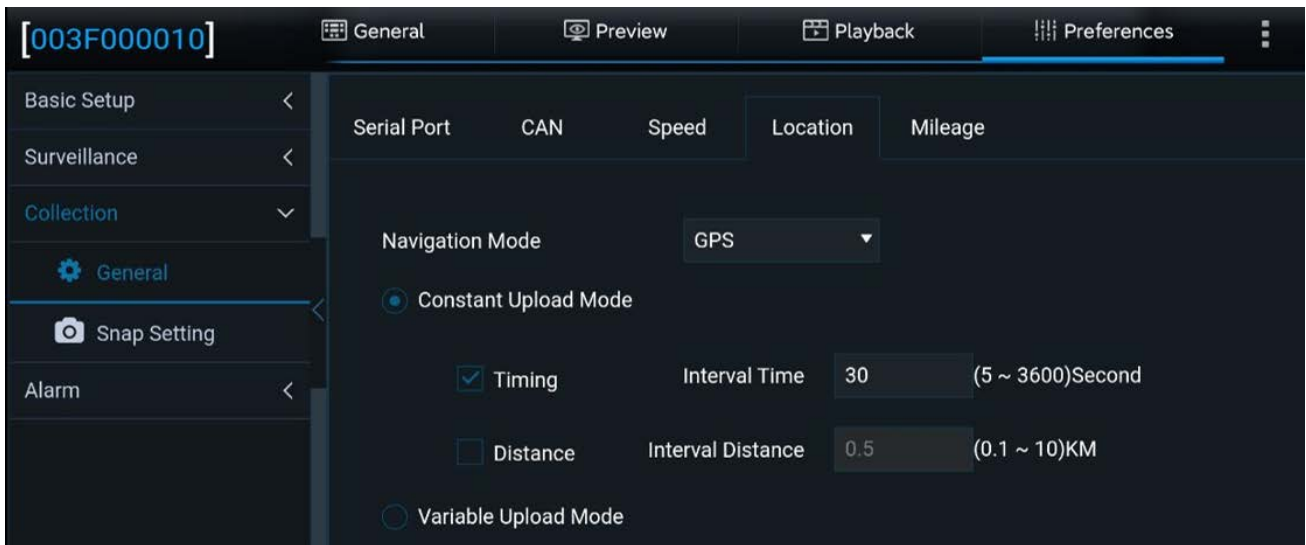
- 1) You need to input manually the initial mileage of the odometer and the system will calculate it accordingly;

- 2) Click Start; (MCU will automatically record the number of pulses)
- 3) When you click to end learning, you record the driving mileage of the odometer again to calculate the mileage difference;
- 4) Then you input the mileage difference and click Calculate, and the pulse coefficient will automatically display the calculation result; (the calculation result unit is consistent with the speed unit)

When you select Mix for speed source, you can set its priority. There are 6 priorities in total. The figure is shown as follows:



Click **Preferences > Collection > General > Location** to enter the GPS Report Strategy setting screen. You can select different modes to upload GPS signals according to market demands.



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

ACC	Constant upload	Variable upload
-----	-----------------	-----------------

status		
ACC ON	<p>1. <b>Timing:</b> The constant upload time can be modified. Value range: 5-3600s. Default value: 10s</p> <p>2. <b>Distance:</b> The interval for constant upload can be modified. Value range: 0.1-10 km</p> <p>3. <b>Timing</b> and <b>Distance</b> can be selected at the same time.</p>	See the detailed description. Note that you can only choose constant upload or variable upload.
ACC OFF	Sleep upload	

1、Description to variable uploads: :

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

Second,

The definition of 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.

The definition of 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:** The time can be modified and the default value is 60s.

**Distance:** The interval can be modified and the default value is 0.1 km.

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

**Timing:** The time can be modified and the default value is 60s.

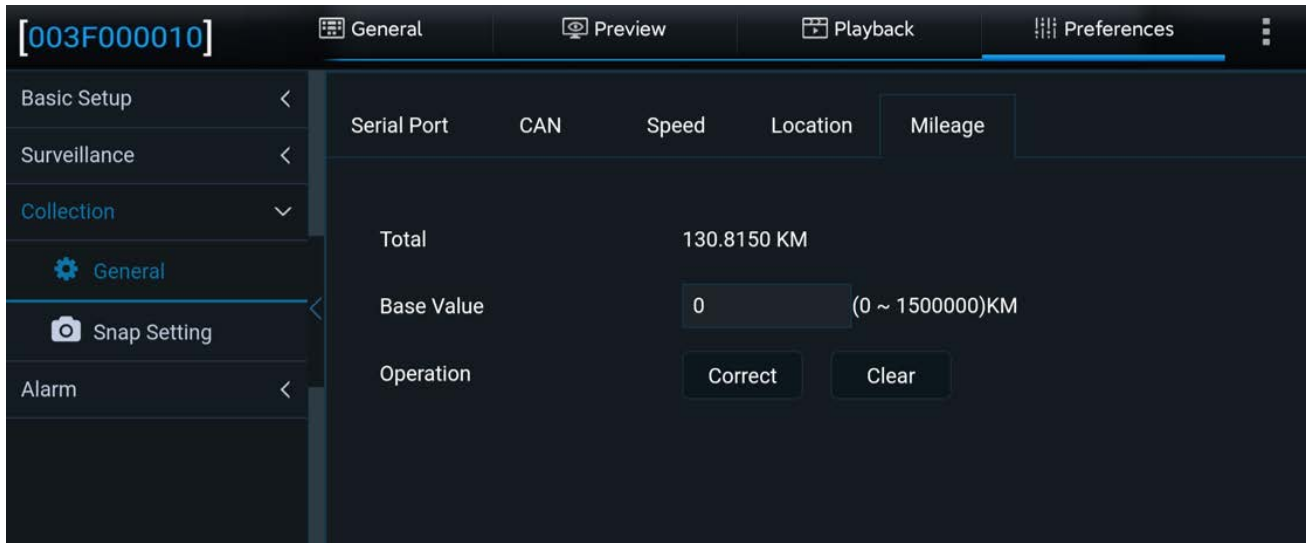
There will be multiple uploads if the vehicle running angle changes significantly: The angle can be set by the user. By default, a piece of GPS data is reported when the vehicle angle is 45°.

3、ACC status is uploaded alongside with GPS data.。

4、For details about the sleep upload function, see description in Section 2.6.3 On/Off.

Click **Preferences > Collection > General > Mileage** to enter the mileage setting screen. On

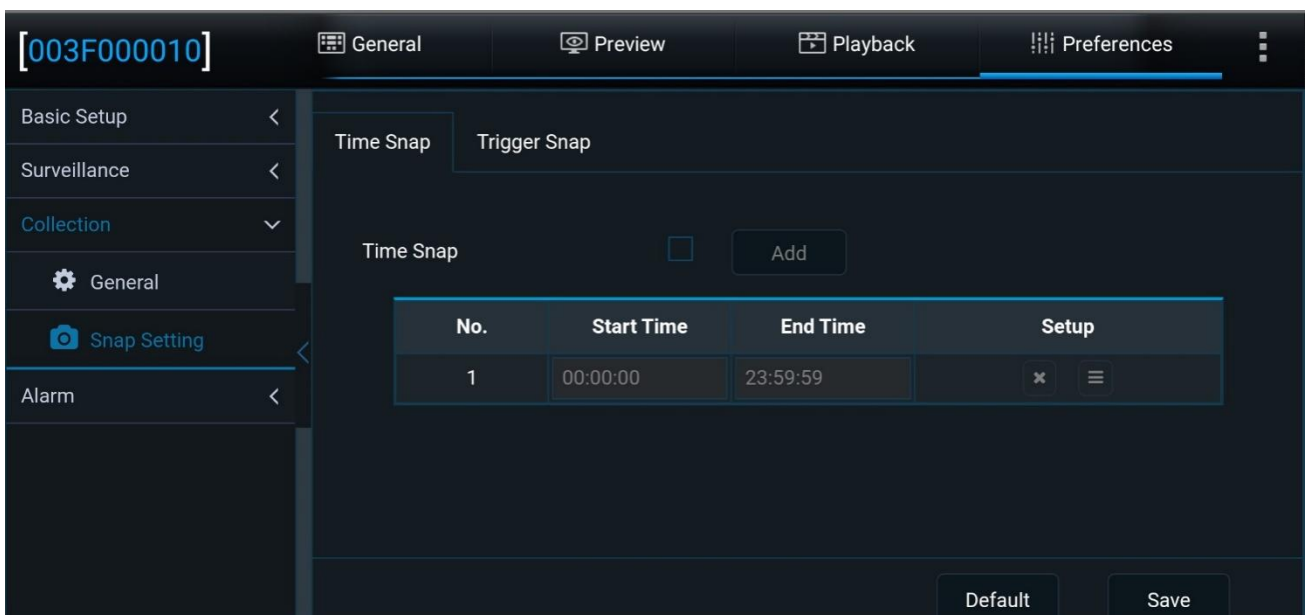
the screen, you can set basic value of mileage and correct or clear the mileage data, as shown in the following figure:




## 2.8.2. Capture Setting

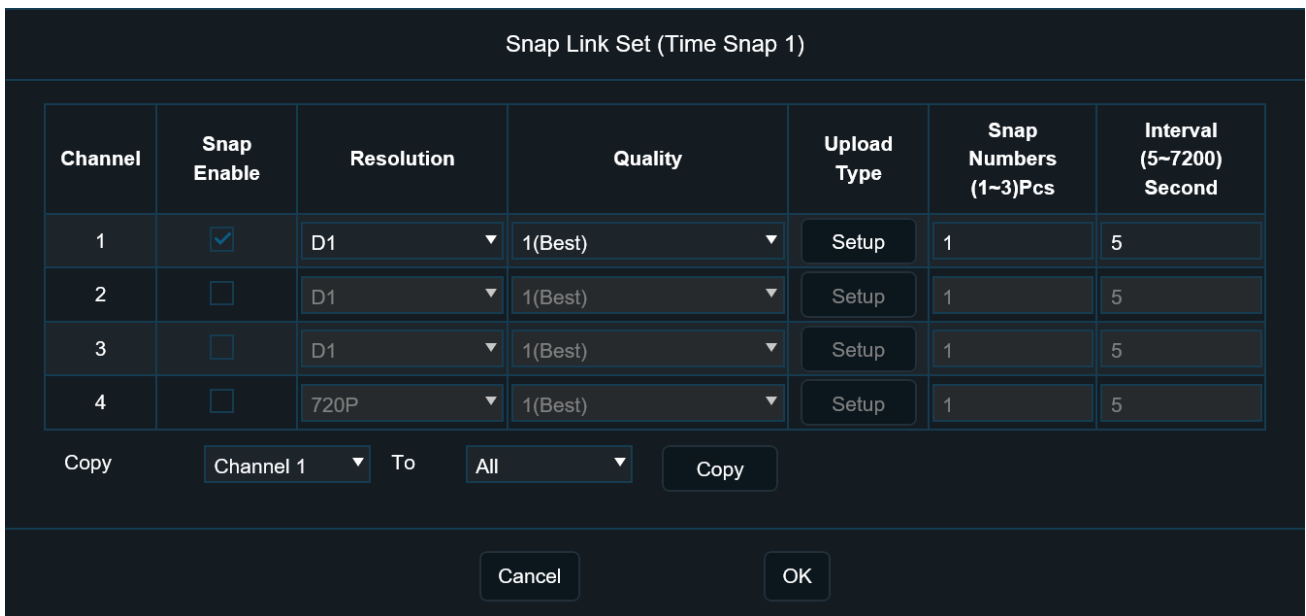
### 2.8.2.1 Timed Capture

A time period can be specified to enable the device to capture images automatically. **Tap Preferences > Collection > Snap Setting > Time Snap.** The **Time Snap** screen is displayed, as shown in the following figure:



- Select **Enable** to enable timed capture and tap **Add** to add a period for this function.
- **Start Time/End Time:**

- 1) Set a time period, during which timed capture is enabled.
  - 2) The period must be within a day.
  - 3) A maximum of 8-time segments can be specified for timed capture.
  - 4) You can add, edit, or modify the time periods.
- Capture parameters can be specified for each time period independently. Tap the icon to enter the **Snap Link Set** screen, as shown in the following figure: 

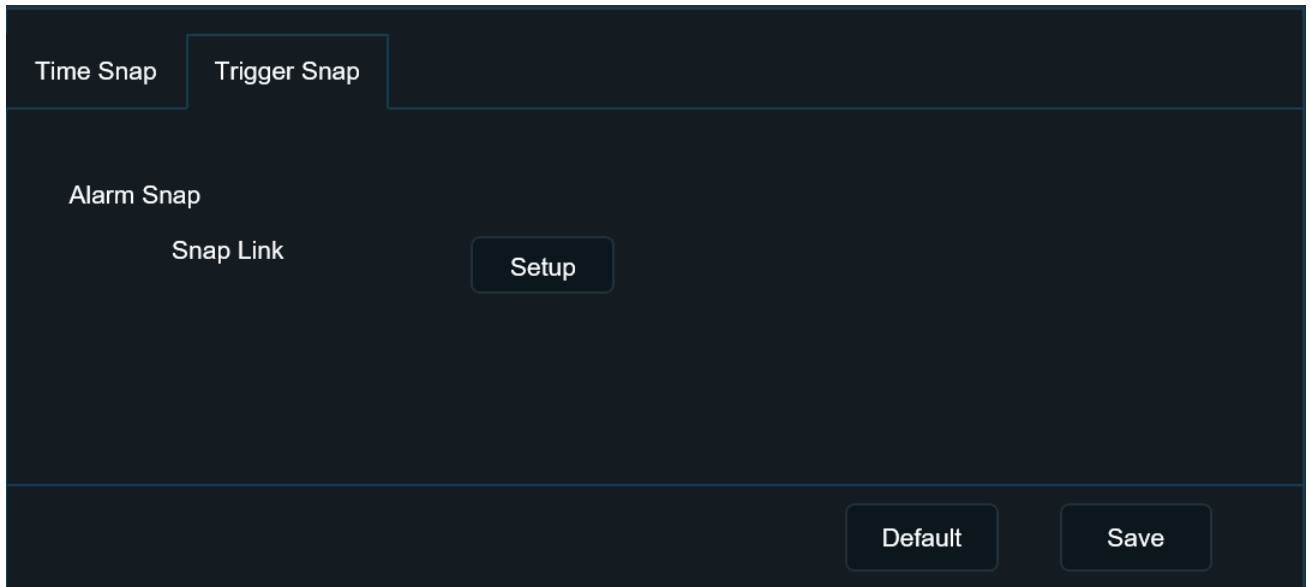


- 1) **Channel:** Select the camera channel for capture.
- 2) **Snap Enable:** Select to enable timed capture for this channel.
- 3) **Resolution:** Select the capture resolution.
- 4) **Quality:** Select from 1 to 8. Value **1 (Best)** indicates the best image quality.
- 5) **Upload Type:** Automatic upload via FTP is supported. For details about how to set FTP upload, see Section 2.6.6.
- 6) **Snap Numbers:** Set it to **1, 2, or 3.**
- 7) **Interval:** specifies the interval between each capture, unit: s
- 8) **Copy:** Well-defined parameters can be applied to other channels by this button.

### 2.8.2.2 Capture at Alarm

Alarm-linked capture is supported, that is, capture starts once an alarm is triggered. **Tap Preferences > Collection > Snap Setting > Trigger Snap.** The setting method is the same as that

for timed capture and is not described here.

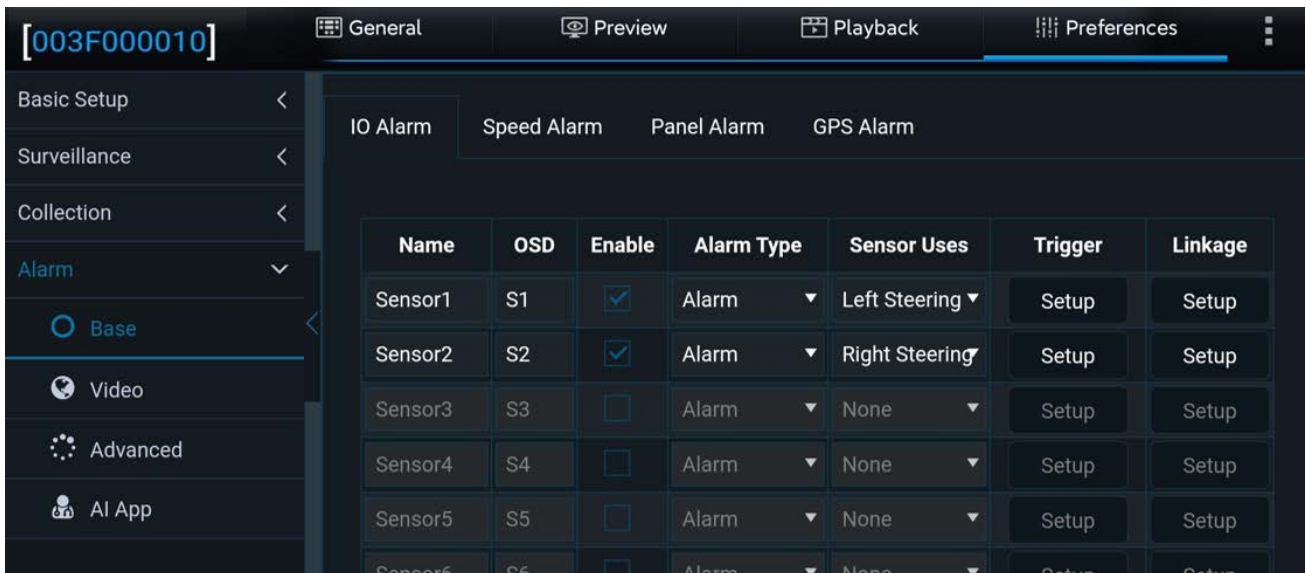


## 2.9. Alarm Setting

### 2.9.1. Base Alarm

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

**Tap Preferences > Alarm > Base** to enter the screen shown below.



The AI4DC supports conventional power boxes. If the power is supplied using loose wires, 2 IO inputs are supported.

- IO Alarm screen:

1. **No.:** can be set to Sensor1, Sensor2,..., Sensor8 (there will be 8 IO inputs only when the

UPS power box is used);

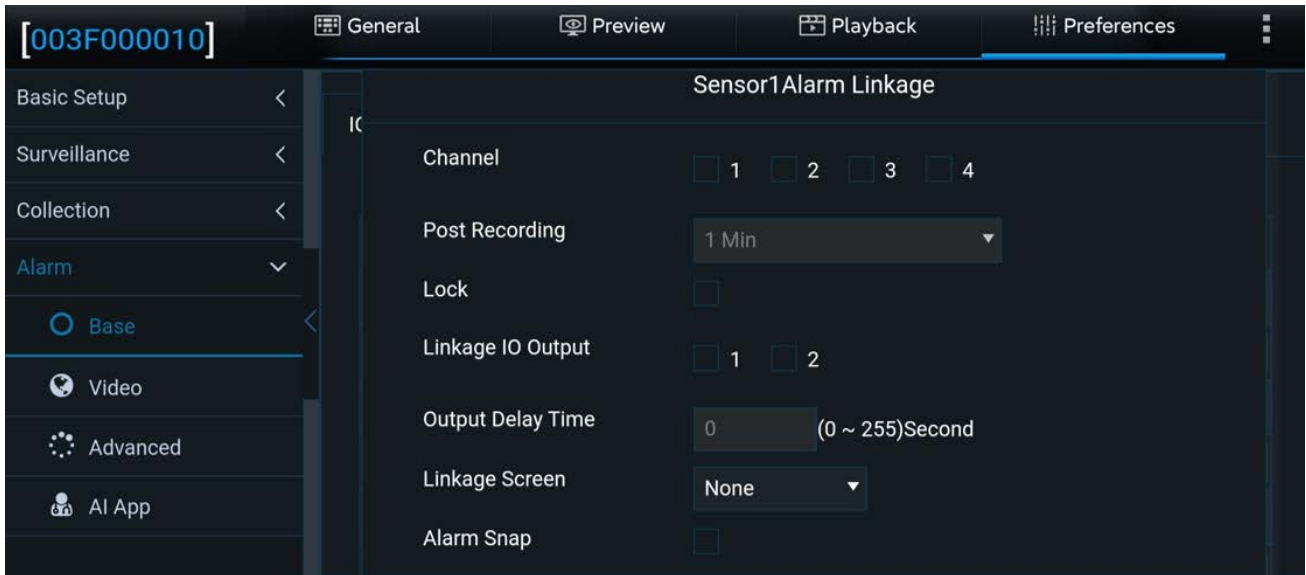
2. **OSD:** Customizable, tap to modify
3. **Abbreviation:** can be set to the IO abbreviation configured in OSD superimposition.
4. **Alarm Type: Alarm or Event**
  - When **Alarm Type** is **Alarm:**
    - 1) Alarms are superimposed on the preview and recording screen.
    - 2) Alarms are uploaded to the platform.
    - 3) Alarm logs are write-accessible.
  - When **Alarm Type** is **Event:**
    - 1) OSD superimposition does not apply.
    - 2) Alarms are not uploaded to the platform.
    - 3) Write an alarm log.
5. **Sensor Uses:** Set the purpose of the IO, which can be **Left Steering, Right Steering, Brake, and Privacy.**
6. **Trigger:** Tap **Setup** to enter the screen shown below:



- 1) **Trigger Source:** High/Low level or Pulse. High level by default.
- 2) **Effective Time:** a time period during which a cleared alarm is reported again. Alarms generated in this period are considered the same. Value range: 0-10s. Default value: 5s

Assume that a motion detection alarm is generated at 13:23:30 and is cleared at 13:23:50. If **Effective Time** is set to 10 seconds and the motion detection alarm is generated within 10 seconds, the two motion detection alarms are considered to be the same one. The alarm log records one alarm and alarm linkage stops only after subsequent motion detection is canceled.

7. **Linkage:** Set service functions to be linked with the alarm. Tap to enter the screen shown below.



- 1) **Channel:** specifies the recording channel after an alarm is generated. The recordings of selected channels will be marked as alarm recordings.
- 2) **Post Recording:** specifies the duration, during which recording continues after an alarm is cleared. Value range: 1-30 minutes. Default value: **1 Min**.
- 3) **Lock:** specifies whether to lock alarm recordings. If this option is selected, alarm recording will be locked once 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 boxes do not provide IO outputs). The duration for IP output can be configured, and the value range is 0 to 255 seconds. Note: AI4DC V1.1.0 does not support UPS power boxes.
- 5) **Alarm Snap:** specifies whether to capture images after an alarm is generated. If an

FTP address has been configured, channel capture will be enabled after an IO alarm is generated, and captured images will be output via FTP. If alarm evidence uploads parameters have been configured on the platform, captured images can also be uploaded to the platform.

- **Speed Alarm:** allows you to enable the overspeed 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**.

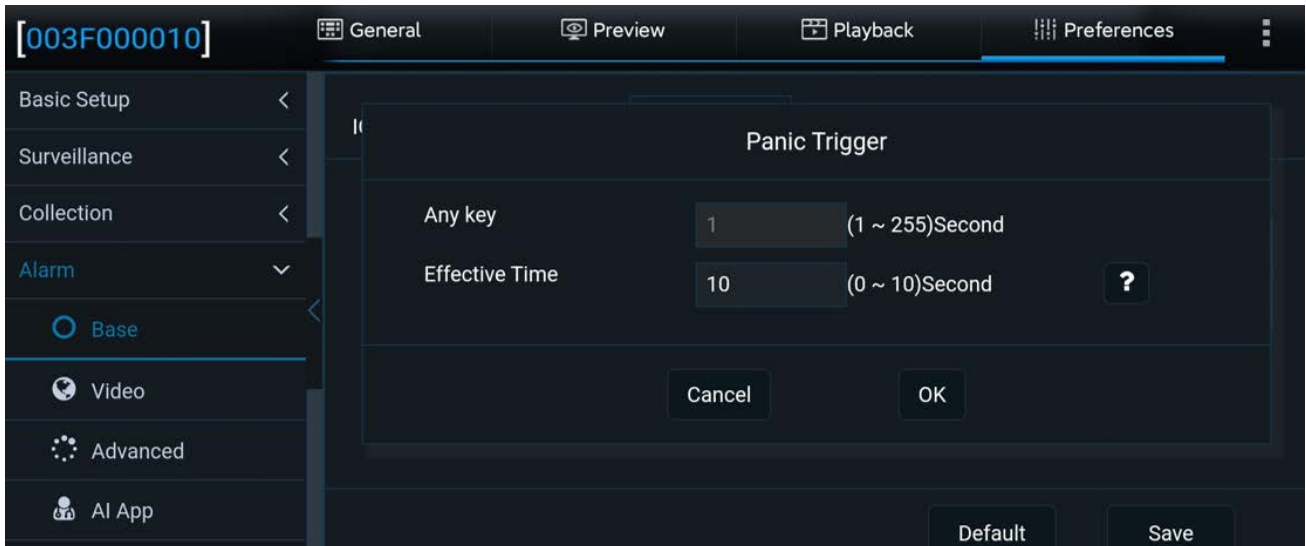
### Overspeed Trigger

Preload Speed Difference	<input style="width: 100px;" type="text" value="10"/>	(0 ~ 200)KM/H
Speed	<input style="width: 100px;" type="text" value="100"/>	(1 ~ 200)KM/H
Duration Time	<input style="width: 100px;" type="text" value="10"/>	(0 ~ 255)Second

Cancel

OK

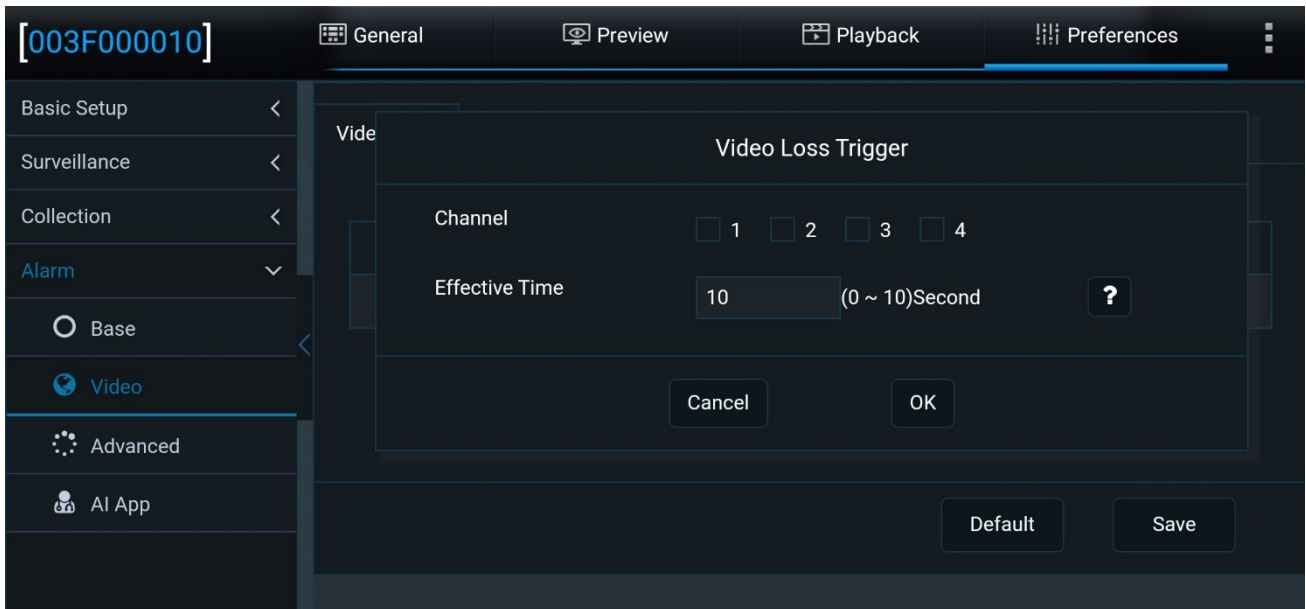
- **Panel Alarm:** allows you to check the **Panic** Button to enable the panel alarm and set alarm linkage parameters. On the **Panic Trigger** screen, you can set the trigger time for pressing the button to trigger the panel alarm to 1–255s. Default value: 1s (now it cannot be modified). Other parameters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

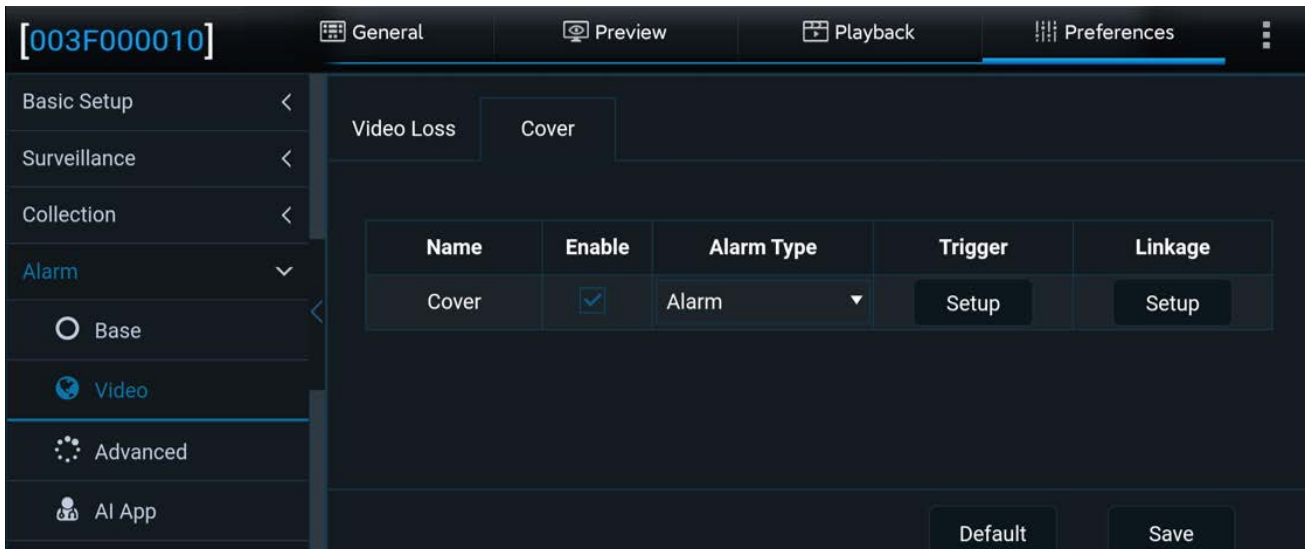
### 2.9.2. Video

On the **Video Loss** screen, you can set parameters for video loss alarms. Choose **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.



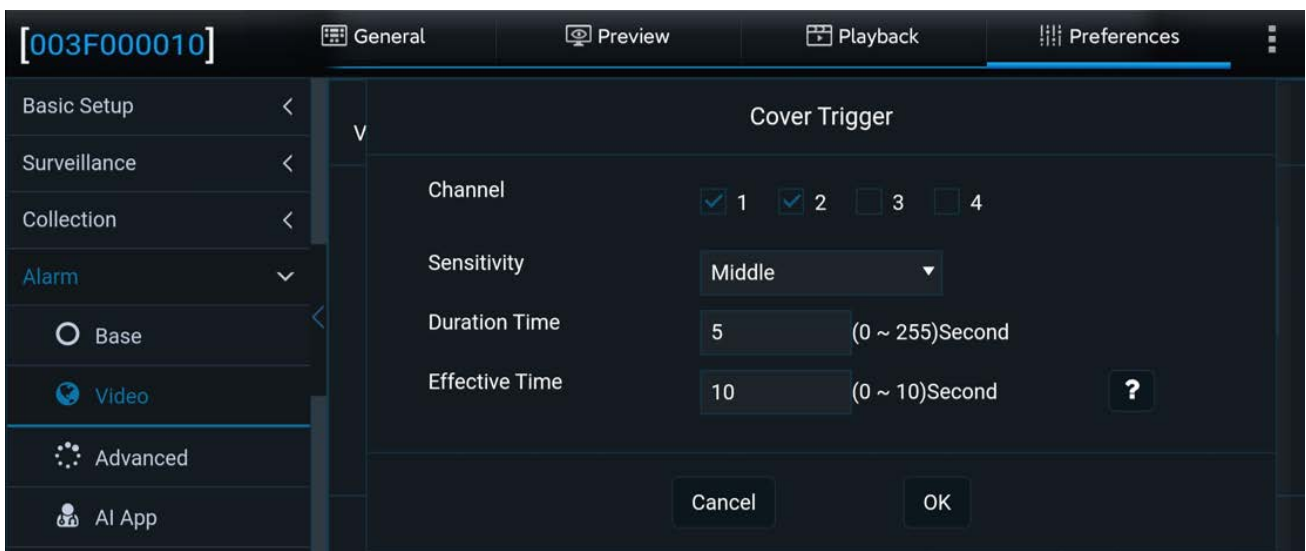
●  Camera cover

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



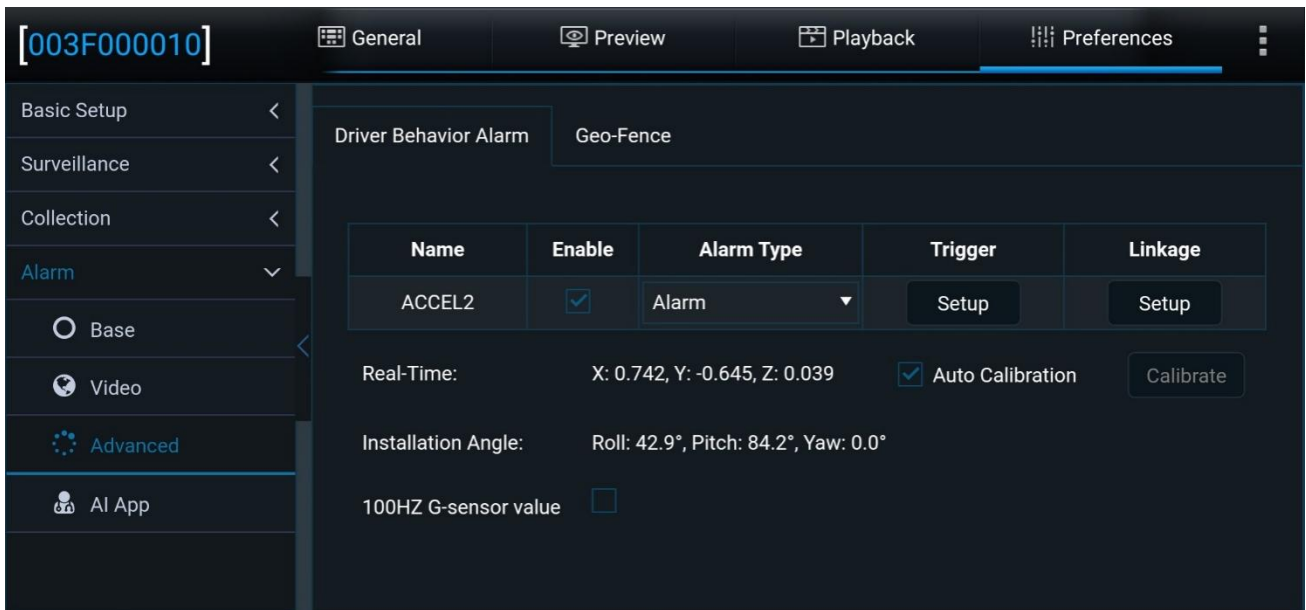
Tap **Setup** under **Trigger** to open the following screen. You can configure the channel, sensitivity, duration time, and valid time for the camera cover alarm. In the AI channel, the algorithms are used for detection. In the non-AI channel, the MDVR is used for judgment. Alarm linkage parameters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

Note: AI4DC V1.1.0 only supports the cover alarm (algorithm detection) of the ADAS channel (1 channel) and DMS channel (3 channels), and does not support DSC (2 channels) (it will be supported later).



### 2.9.3. Advanced

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:

ACCEL2 Trigger						
Alarm Name	Enable	Offset	Speed			
Harsh Braking	<input checked="" type="checkbox"/>	0.5 (0.001 ~ 1)	20	~	50	(0~200)KM/H
Hard Acceleration	<input checked="" type="checkbox"/>	0.5 (0.001 ~ 1)	20	~	50	(0~200)KM/H
Harsh Left Turn	<input checked="" type="checkbox"/>	0.5 (0.001 ~ 1)	20	~	50	(0~200)KM/H
Harsh Right Turn	<input checked="" type="checkbox"/>	0.5 (0.001 ~ 1)	20	~	50	(0~200)KM/H
Shock	<input checked="" type="checkbox"/>	X: 1 (0.1 ~ 8)	Y: 1 (0.1 ~ 8)	Z: 2 (0.1 ~ 8)		
Effective Time	10 (0 ~ 10)Second					

**Shock:** refers to collision detection. The G-Sensor is used to determine whether the collision occurs.

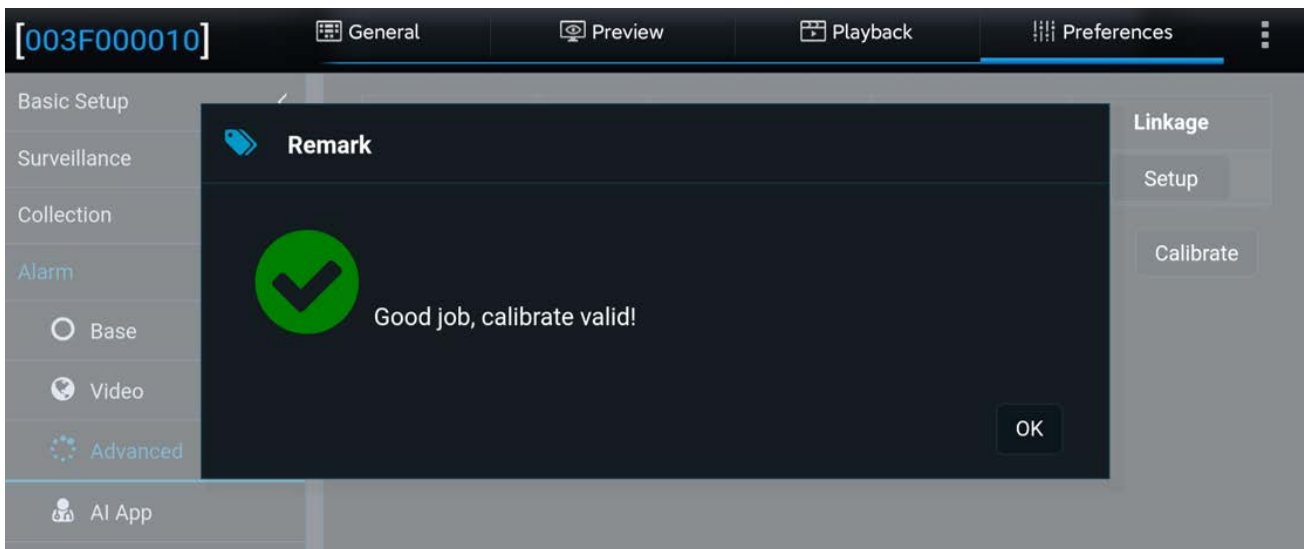
The collision thresholds can be configured in this parameter.

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 successful and the successful calibration will be recorded in the operation log if the detected values on the X, Y, and Z axes are (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. 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  $\pm 0.1$  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  $\pm 0.1$  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.
  - 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.

### 2.9.4. AI Alarm

You can set AI alarm parameters by using the EasyCheck App. Tap **Preferences > Alarm > AI App** to enter the AI alarm setting screen. Supported AI alarms are shown below.

ADAS Alarm	<b>LDW, FCW, HMW, PCW</b> 、Aisle occupation、Solid lane violation、Virtual Bumper、Intersection Speed、Pedestrian Detection、Pedestrian Priority(alarm types in bold red texts are currently supported)
DMS/DSC Alarm	<b>Driver Fatigue, No driver, Handheld Devices, Smoking, Distraction, Yawn, Seatbelt</b> 、No Mask、Infrared Block Alarm(alarm types in bold red texts are currently supported) DSC functions supported in V1.1.0 include <b>Handheld Devices and Seatbelt</b> ; DMS functions supported in V1.1.0 include <b>Driver Fatigue, No driver, Handheld Devices, Smoking, Distraction, and Yawn</b>

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 the alarm persists). However, there are slight differences in the settable parameters of different alarms, as shown in the following table:

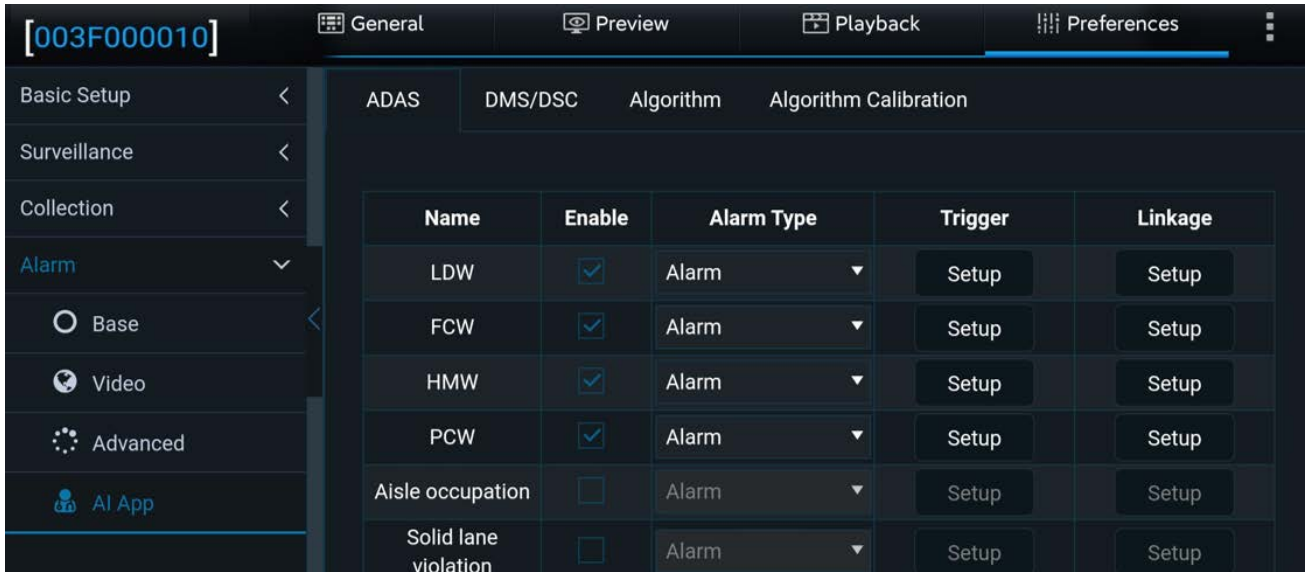
Alarm Main Type	Alarm Type	Settable Parameter			
		First-level	Sensitivity	Duration	Valid Time

		and Second-level Speed Distinction				
ADAS	LDW	Yes	None	None	Yes	Identical
	FCW	Yes	None	None	Yes	Identical
	HMW	Yes	Yes	None	Yes	Identical
	PCW	Yes	None	None	Yes	Identical
	Solid lane violation	Yes	Yes	None	Yes	Identical
	Virtual Bumper	Yes	Yes	None	Yes	Identical
	Aisle occupation	Yes	Yes	None	Yes	Identical
	Intersection Speed	Yes	Yes	None	Yes	Identical
	Pedestrian Detection	Yes	Yes	None	Yes	Identical
	Pedestrian Priority	Yes	Yes	None	Yes	Identical
DMS/DSC	Driver Fatigue	Yes	Yes	Yes	Yes	Identical
	No driver	None	Yes	Yes	Yes	Identical
	Handheld Devices	Yes	Yes	Yes	Yes	Identical
	Smoking	Yes	Yes	Yes	Yes	Identical
	Distraction	Yes	Yes	Yes	Yes	Identical
	Yawn	Yes	Yes	Yes	Yes	Identical
	Seatbelt	Yes	Yes	Yes	Yes	Identical
	No Mask	Yes	Yes	Yes	Yes	Identical
Infrared Block Alarm	Yes	Yes	Yes	Yes	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 alarm in LDW/DMS alarms under the ADAS alarm is used as an example to show the parameter setting differences between the LDW/DMS alarms and other alarms.

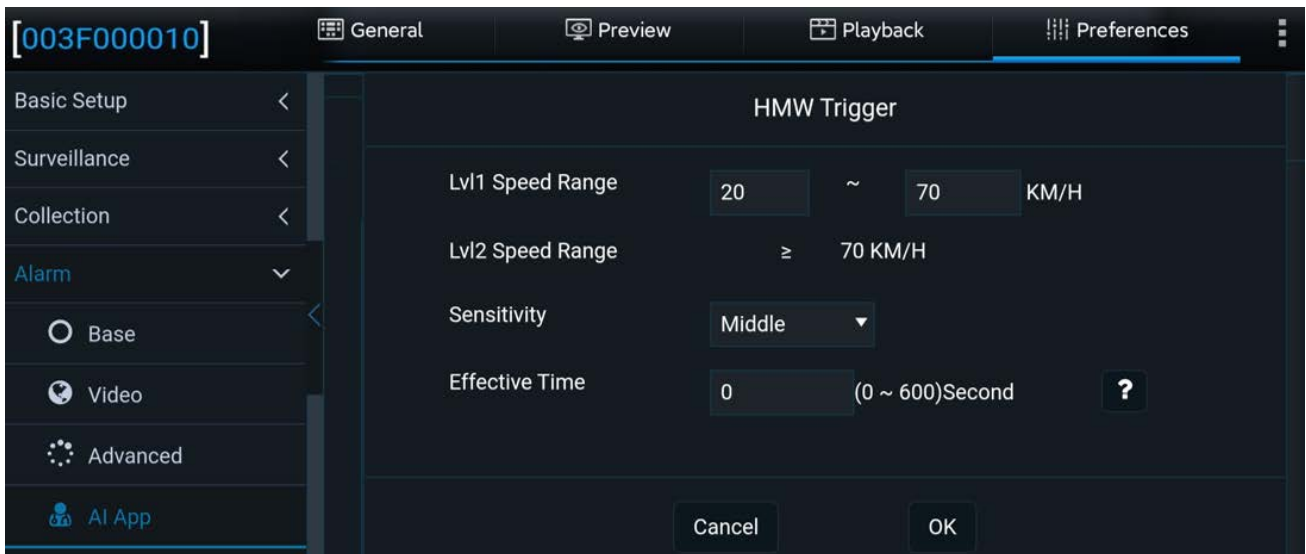
- HMW

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



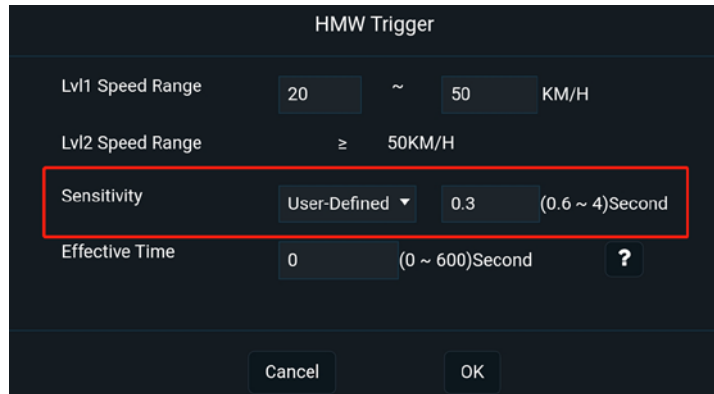
**Alarm Type:** Select **Alarm** or **Event**. When **Event** is selected, generated alarms are not reported to the platform. For details about the difference, see Section 2.9.1 "Base Alarm."

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



- ➤ □ **Lvl1 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, MP3 voice is announced from the MDVR;
- ➤ **Lvl2 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.

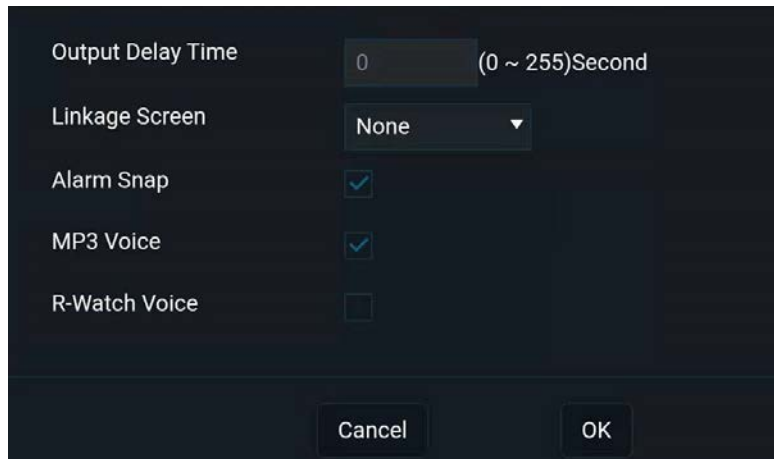
- **Sensitivity:** specifies the sensitivity that an alarm is triggered. Optional values are Low, Middle, High, and Custom. Middle is selected by default. When Custom is selected, enter the target value. In the ADAS open alarm, sensitivity is configurable only for the HMW. The value range is 0.6 to 4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



- **Duration:** specifies the time alarmed operation persists before an alarm is triggered. Value range: 0-600 s.
- **Effective Time:** a time period during which a cleared alarm is reported again. Alarms generated in this period are considered the same. Value range: 0-10s. Default value: 5s. For details, see Section 2.9.1 "Base Alarm."

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





1) **Channel:** specifies the recording channel after an alarm is generated. The recordings of selected channels will be marked as alarm recordings.

2) **Post Recording:** specifies the duration that recording continues after an alarm is cleared. Value range: 1-30 minutes. Default value: 1 Min.

3) **Lock:** specifies whether to lock alarm recordings. If this option is selected, alarm recording will be locked once LDW 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 boxes do not provide IO outputs). The duration for IP output can be configured, and the value range is 0 to 255 seconds. Note: AI4DC V1.1.0 does not support UPS power boxes.

5) **Linkage Screen:** specifies the screen to be displayed in live view after an alarm is generated. By default, this parameter is set to None. You can also set it to Single or Quad screen display.

6) **Alarm Snap:** specifies whether to capture images after an alarm is generated. If an FTP address has been configured, channel capture will be enabled after an IO alarm is generated, and captured images will be output via FTP. If alarm evidence uploads parameters have been configured on the platform, captured images can also be uploaded to the platform.

7) **R-Watch Voice:** Select or deselect this option to enable or disable the R-Watch function. If this option is selected, R-Watch will play the beep alarm sound and display the icon when the AI4DC connects to an R-Watch peripheral and an alarm is triggered.

8) **MP3 Voice:** Select or deselect this option to enable or disable the MP3 voice function. If this option is selected, the MDVR will play the MP3 alarm voice when an alarm is triggered.

●  LDW

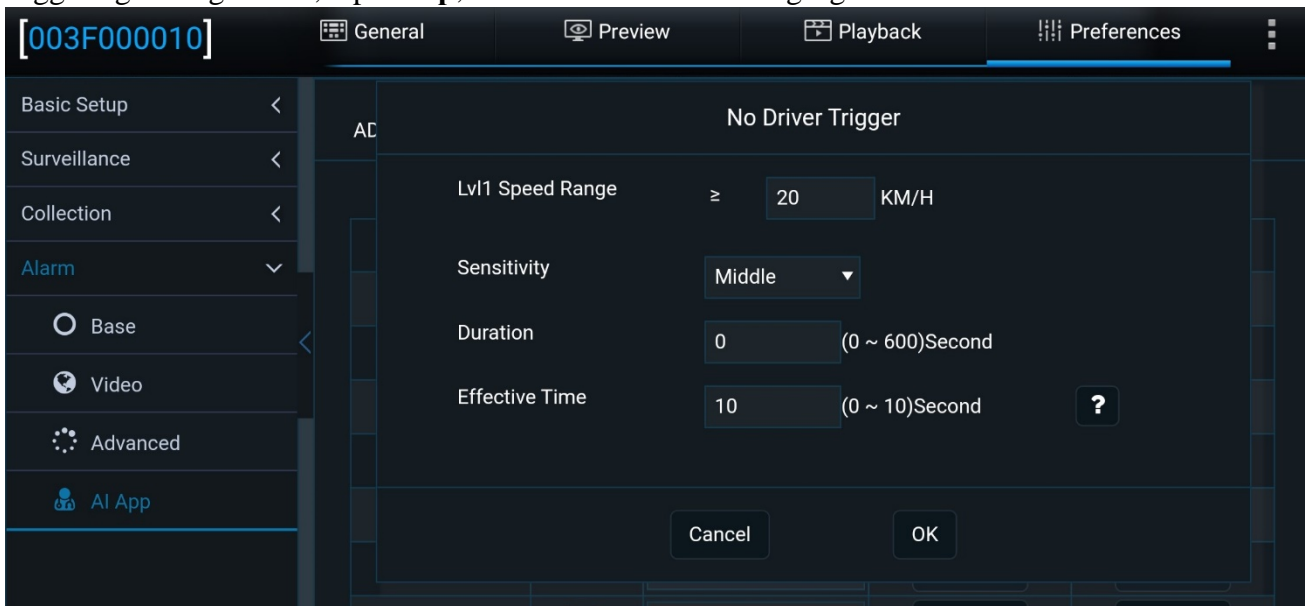
Tap **Preferences** > **Alarm** > **AI App** > **ADAS**. Enable LDW alarm. On the alarm triggering setting screen, tap **Setup** to configure alarm parameters, as shown in the following figure:

Compared with FCW and PCW alarms, HMW alarm does not have a sensitivity setting screen. Other parameters are the same as those of HMW and are not described 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 PCW and are not described here.

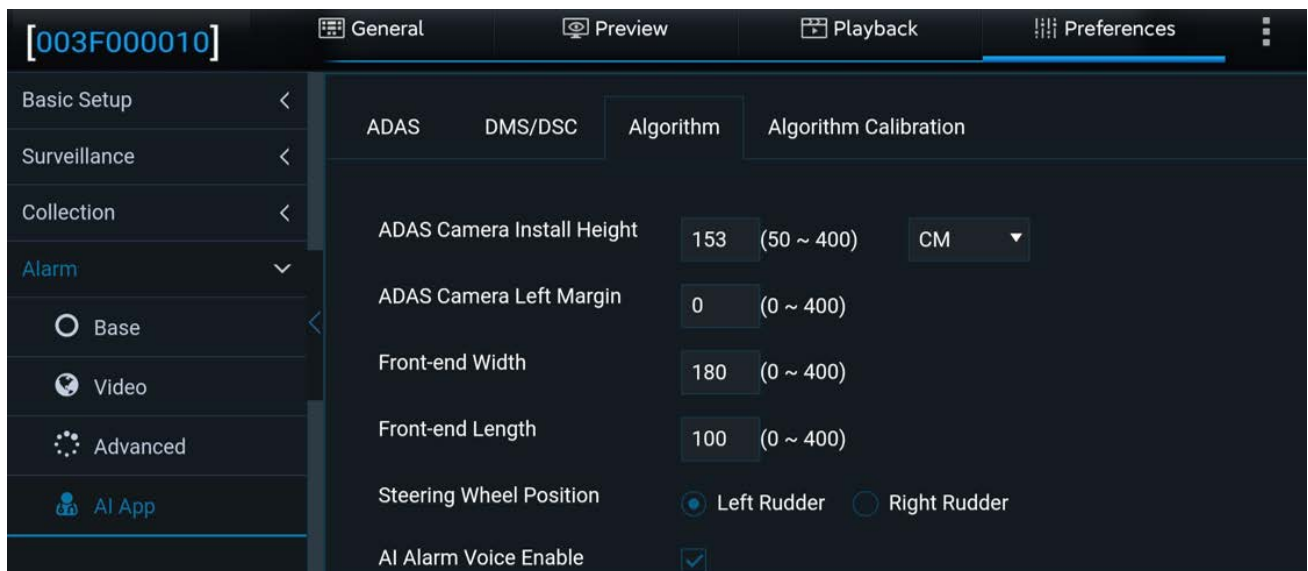
On the **DMS/DSC** screen, a new parameter is displayed for all AI functions, namely, the duration time. This parameter is usually set to 0.

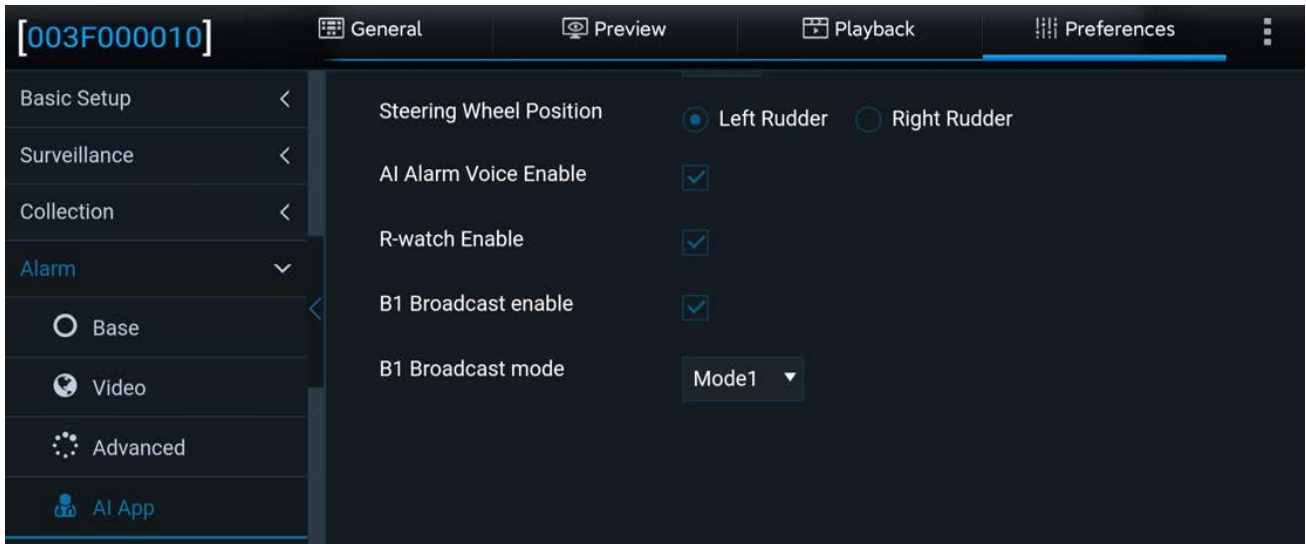
### 2.9.5. Algorithm Parameters

On the algorithm parameter setting screen of AI alarms, you can modify the ADAS calibration height, and enable or disable AI alarm voice prompt and the R-Watch function (if R-Watch is present).

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

The unit of **ADAS Camera Install Height** can either be cm or inch. If cm is selected, the value range is 50 to 400 cm and the default value is 153 cm. If inch is selected, the value range is 20 to 157 inches and the default value is 59 inches.

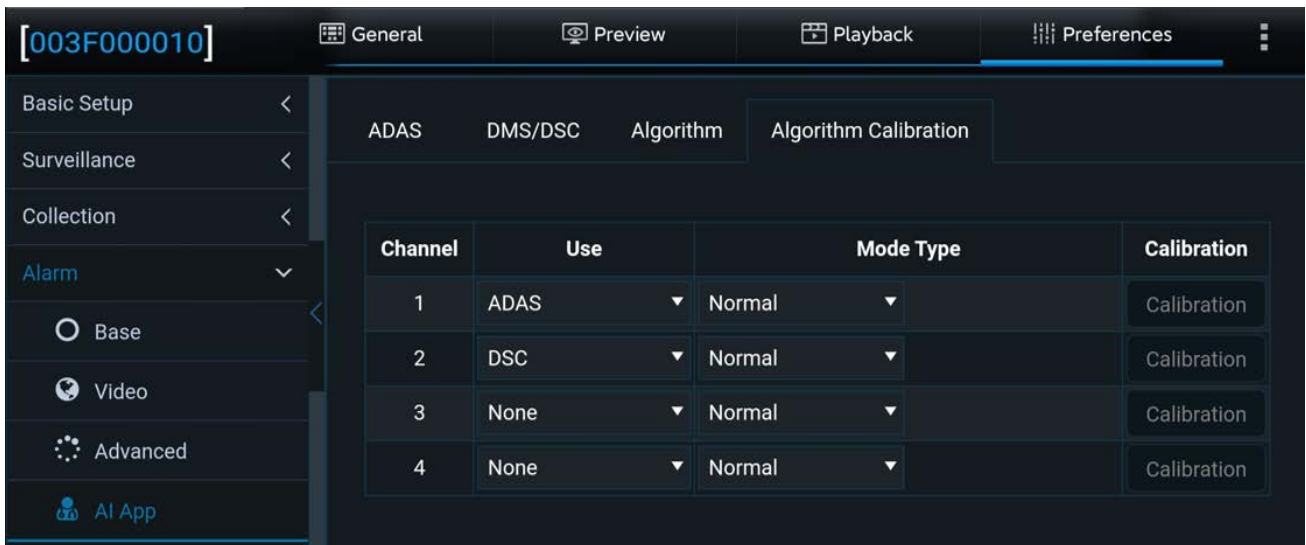




### 2.9.6. Algorithm Calibration

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 AHD port is connected to a 1-channel DMS camera and used for driving status detection, the 3-channel algorithm needs to be set to DMS, and the mode type needs to be set to normal

mode

Note: In the current status, the AI4DC only supports simultaneous operations of two AI algorithms, that is, ADAS+DSC or ADAS+DMS (either DSC or DMS). Please be noted that currently, simultaneous operations of three algorithms (ADAS+DSC+DMS) are not supported.