



Intelligent Driving Assistance Terminal

User Manual

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This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.


FCC Conditions


This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

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 This product and - if applicable - the supplied accessories too are marked with "CE" and comply therefore with the applicable harmonized European standards listed under the EMC Directive 2014/30/EU, the LVD Directive 2014/35/EU, the RoHS Directive 2011/65/EU.

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 2006/66/EC (battery directive): This product contains a battery that cannot be disposed of as unsorted municipal waste in the European Union. See the product documentation for specific battery information. The battery is marked with this symbol, which may include lettering to indicate cadmium (Cd), lead (Pb), or mercury (Hg). For proper recycling, return the battery to your supplier or to a designated collection point. For more information see: www.recyclethis.info

Industry Canada ICES-003 Compliance

This device meets the CAN ICES-3 (A)/NMB-3(A) standards requirements.

Symbol Conventions

The symbols that may be found in this document are defined as follows.

Symbol	Description
 Note	Provides additional information to emphasize or supplement important points of the main text.
 Caution	Indicates a potentially hazardous situation, which if not avoided, could result in equipment damage, data loss, performance degradation, or unexpected results.
 Danger	Indicates a hazard with a high level of risk, which if not avoided, will result in death or serious injury.

Safety Instructions

- Proper configuration of all passwords and other security settings is the responsibility of the installer and/or end-user.
- In the use of the product, you must be in strict compliance with the electrical safety regulations of the nation and region. Please refer to technical specifications for detailed information.
- Input voltage should meet both the SELV (Safety Extra Low Voltage) and the Limited Power Source with 100 to 240 VAC or 12 VDC according to the IEC60950-1 standard. Please refer to technical specifications for detailed information.
- Do not connect several devices to one power adapter as adapter overload may cause overheating or a fire hazard.
- Please make sure that the plug is firmly connected to the power socket.
- If smoke, odor or noise rise from the device, turn off the power at once and unplug the power cable, and then please contact the service center.

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Chapter 1 Introduction

1.1 Product Overview

Intelligent driving assistance terminal (abbreviated as intelligent terminal) integrates forward car leaving detection, abnormal detection, and right side blind spot vehicle discern system (optional). Based on the deep-learning algorithm, the device can precisely warn against various kinds of situations with timely video and audio warning to inform the driver of the potential danger and to drive in a safer way.

Due to its unique features, this intelligent terminal adapts to most weather conditions and can be widely deployed on commercial vehicles, such as bus, truck, industrial vehicle, and vehicle carrying dangerous chemicals.

1.2 Key Feature

The device supports various kinds of event-triggered detection. When an event occurs, it can release warning sound, capture and record relevant event. The device also supports exporting images and recordings by SD card for accident investigation.



- You need to set warning parameter, capture, and recording function of device with dedicated app.
 - The device only serves as driving assistance system to improve driving safety and you cannot solely rely on the device for driving. Drivers should be responsible for driving safety.
 - The prerequisite of uploading to the platform is that the terminal should support 3G/4G dial and can connect to the platform.
-

1.2.1 Abnormal Detection

Abnormal Detection can detect risky driving behaviors and trigger alarm.

- **Fatigued Driving Detection Warning**
When detecting driver dozing off during driving, the device triggers audio alarm.
- **Sight Detection Warning**
When the driver does not focus on the road and display unsafe behaviors such as tilting head down to look at the phone, glancing around or looking into mirror and doing makeup during driving, the device triggers audio alarm.
- **Smoking Detection Warning**
When the driver smokes during driving, the device triggers audio alarm.
- **Phone Call Detection Warning**
When the driver answers the phone during driving, the device triggers audio alarm.

- Seatbelt Not Fasten Detection Warning

When the seatbelt of the driver is not fasten, the device triggers audio alarm.


- IR Interrupting Sunglasses Detection

When the driver puts on the sunglass that interrupts the infrared for a period of time, the device triggers audio alarm, for this would tamper the function of the Abnormal Detection.

1.2.2 ADAS

ADAS (Advanced Driving Assistance System) can detect driving environment, warn against potential danger, and upload the corresponding information to the platform.

Table 1-1 ADAS Warning Type Description

Event	Prerequisite	Warning	No Warning
Forward Collision Warning (FCW)	The vehicle speed is between 0 and 120 km/h and FCW is enabled (triggered). I degree alarm is triggered when the speed is within 30 km/h to 50 km/h. II degree alarm is triggered when the speed is over 50 km/h.	When your vehicle drives faster than the front vehicle where collision may occur, the terminal will release warning.	<ul style="list-style-type: none"> ● Bad weather with low visibility, such as heavy fog and heavy rain. ● Vehicles with special shapes. ● The vehicle speed is lower than 30 km/h or the set value. ● FCW is disabled.
		 Note The warning will be released no earlier than 4 s.	

<p>Lane Departure Warning (LDW)</p>	<p>The vehicle speed is higher than 30 km/h and HMW is enabled.</p> <p>I degree alarm is triggered when the speed is within 30 km/h to 50 km/h.</p> <p>II degree alarm is triggered when the speed is over 50 km/h.</p>	<p>When the vehicle is deviating from the lane, the terminal will release warning.</p>	<ul style="list-style-type: none"> ● Turning signal is on when the vehicle is changing lane or hazard warning lamps are on. ● There is no lane line on the road or the lane line is not clear. ● The vehicle speed is lower than 30 km/h or the set value... ● Bad weather with low visibility, such as heavy fog and heavy rain. ● LDW is disabled.
<p>Headway Monitoring Warning (HMW)</p>	<p>The vehicle speed is higher than 30 km/h and HMW is enabled.</p> <p>I degree alarm is triggered when the speed is within 30 km/h to 50 km/h.</p> <p>II degree alarm is triggered when the speed is over 50 km/h.</p>	<ul style="list-style-type: none"> ● When TDC (Time to Collision) is shorter than 0.8 s, the terminal will release warning. ● When TDC (Time to Collision) is less than both 0.8 s and the set value, the terminal will not release warning repeatedly until the interval is 1.5 times larger than the set value. HMW will refresh automatically and upload warning information to the platform. 	<ul style="list-style-type: none"> ● The vehicle speed is lower than 30 km/h or the set value. ● Bad weather with low visibility, such as heavy fog and heavy rain. ● HMW is disabled.

<p>Pedestrian Collision Warning (PCW)</p>	<p>The vehicle speed is between 1 km/h and 50 km/h and PCW is enabled (triggered). I degree alarm is triggered when the speed is under 20 km/h. II degree alarm is triggered when the speed is within 20 km/h to 50 km/h.</p>	<p>When there is potential collision risk, the device will release warning.</p>	<ul style="list-style-type: none"> ● Night with low visibility. ● Pedestrian is shorter than 0.8 m (2.6 ft.). ● Bad weather with low visibility, such as heavy fog and heavy rain. ● The vehicle speed is higher than 50 km/h or the set value. ● PCW is disabled.
<p>Sharp Turn Warning</p>	<p>-</p>	<p>When the sharp turn behavior occurs during driving, the device will release warning.</p>	<p>-</p>
<p>Right Side Blind spot vehicle Discern System (R- BSD) (Optional)</p>	<p>When the vehicle speed is lower than 30 km/h and R-BSD is enabled (triggered).</p>	<p>When motor vehicle, non-motor vehicle, or pedestrians are detected among the right side blind spot of the vehicle, the intelligent will release warning.</p>	<ul style="list-style-type: none"> ● Incorrect blind spot settings. ● Camera image error. ● BSD is disabled.

1.2.3 BSD

BSD (Blind Spot Detection) can trigger high frequency voice or light alarm when it detects vehicles, pedestrians, bicycles and tricycles that enter the right side blind spot of the truck or bus. The alarm will stop when these objects leave the alarm zone.

- Filter the non-attended zone warning

BSD will not alarm for the object that is in the traffic island, bus station, crossing road, and green belt.

- Send alarm based on the tendency of movement of the object vehicle

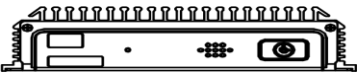
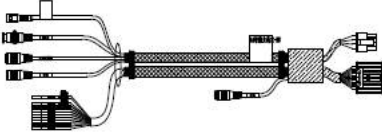


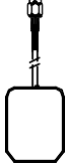
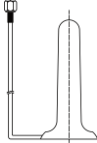
BSD will send alarm when the object vehicle move in the same direction of the current vehicle and tends to over take.

Chapter 2 Packing List and Appearance

2.1 Packing List

After receiving the product, first check the integrity of the product package, and then open the package to check whether all the accessories shown in Table 2-1 Packing List are included.

Table 2-1 Packing List

No.	Picture for Illustration	Name	Quantity
1		Intelligent Driving Assistance Terminal	1
2		Main Bundle	1
3		Screw Package	1
4		Panel Key	1
5		GPS Antenna (Only for the device which supports GPS function)	1
6		3G/4G Antenna (Only for the device which supports dial function)	1

2.2 Front Panel

Insert the panel key and switch it to the unlocking position to open the front panel. Interfaces on front panel are shown in Figure 2-1 and the corresponding functions are described in Table 2-2.

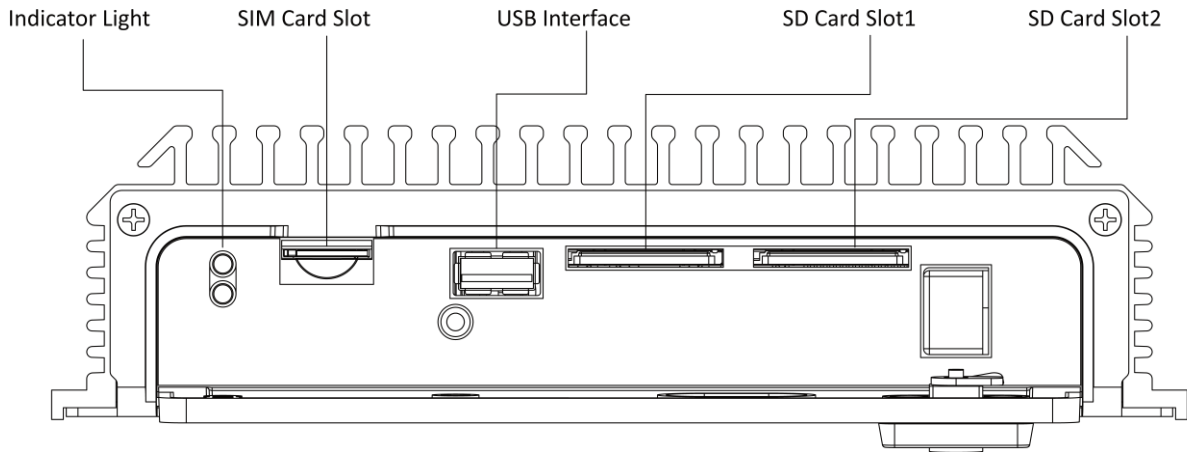


Figure 2-1 Front Panel

Table 2-2 Interfaces Description (Front Panel)

Name	Description
Indicator Light	Power: Solid red: the device is powered on.
	Status: <ul style="list-style-type: none"> • Solid green: ADAS works properly. • Fast flashing: exception occurs.
SIM Card Slot	Dial to connect to network after inserting SIM card.
USB Interface	Calibrate the Device.
SD Card Slot	Insert SD card for local storage.

2.3 Rear Panel

Interfaces on rear panel are shown in Figure 2-2 and their corresponding functions are described in Table 2-3.

Note

Interfaces on rear panel may vary by model. Please refer to the actual model. This manual illustrates all the interfaces which can be found on different device models.

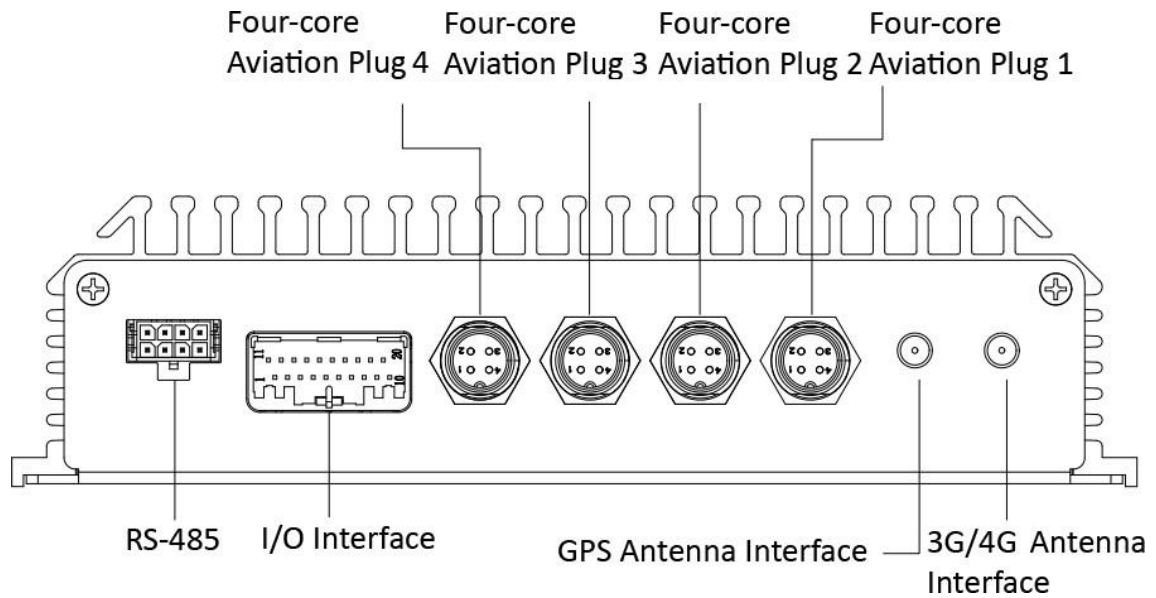


Figure 2-2 Rear Panel

Table 2-3 Interfaces Description (Rear Panel)

Name	Description
Four-core Aviation Plug 4	Connects to mobile camera.
Four-core Aviation Plug 3	Connects to mobile BSD camera.
Four-core Aviation Plug 2	Connects to mobile Abnormal Detection camera.
Four-core Aviation Plug 1	Connects to mobile ADAS camera.
RS-485	Reserved.
I/O Interface	Connects to main bundle. Refers to Chapter 4 Wiring for details.
GPS Antenna Interface	Connects to GPS antenna and GPS device.
3G/4G Antenna Interface	M-ANT. Connects to 3G/4G antenna.

Chapter 3 Installation

3.1 Preparation



Danger

Disconnect the power when you assemble, disassemble, or wire the device. DO NOT operate when the power is on to avoid safety hazards.

Before installation, take out the device from the package and check whether the device and accessories are included and whether they are damaged. Refer to Section 2.1 Packing List for accessories checking.



Note

This manual takes one type of various devices as an example for installation illustration. Devices may vary from each other in appearance and size. Please refer to the actual device.

3.1.1 Installation Environment

Before installation, you need to select an appropriate installation location and arrange cable routing to make sure the power and cables are safe and stable. Convenience and rationality should also be considered.

- Select the location where the vehicle vibration is relatively weak (such as the rear space of the driver seat or front passenger seat) and is away from the vehicle engine.
- Make sure the intelligent terminal is away from the heat source of the vehicle and is installed on the location with good ventilation for heat dissipation.
- Due to the special heat dissipation feature of the intelligent terminal, please reserve enough installation space for the device. The recommended space is illustrated in Figure 3-1.

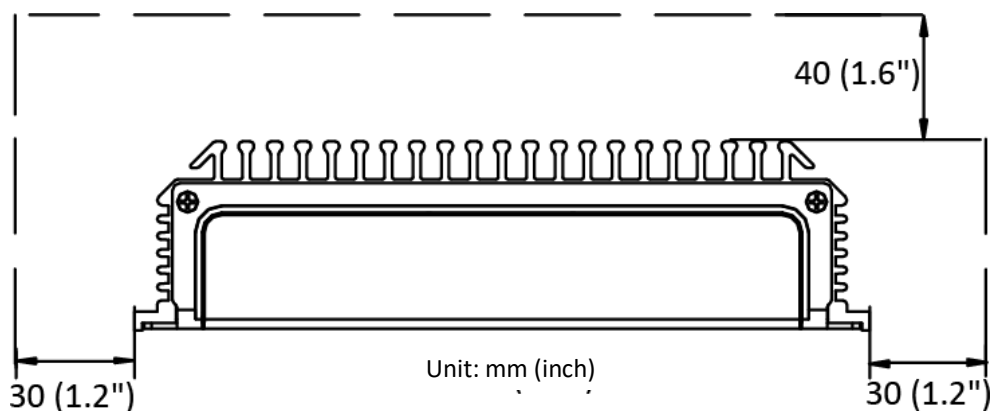


Figure 3-1 Recommended Installation Space

- Place the device horizontally. Installing the device from any other angles may damage the device.

3.1.2 Installation Safety Instructions

Basic Requirements

- Work related to electricity must be in strict compliance with the local electrical safety regulations, fireproof regulations, and other relevant regulations.
- Disconnect all the power related to the device during installation.

Cable Routing Requirements

- The cable direction should be the same as the direction of original vehicle cables. Route cables along the original cable slot of the vehicle and bundle them with the original cables.
- Make sure the cable routing is neat and hidden.

3.1.3 Tools for Installation

Prepare anti-static gloves, cross screwdriver, and L-shape hex screwdriver.

3.2 Device Installation

3.2.1 Insert SIM Card and SD Card

Before you start

You need to purchase SD card and SIM Card in advance. Select the card according to your need.

- SIM Card is used for dial-up Internet connection for the device.
- SD card is used for local storage. After installation, the intelligent terminal can store data like recordings, warning information, and captures in the SD card.

Note

To use the SD card, it needs to be formatted first.

Step 1 Wear anti-static gloves.

Step 2 Insert panel key and rotate it to the unlocking position to open the front panel.

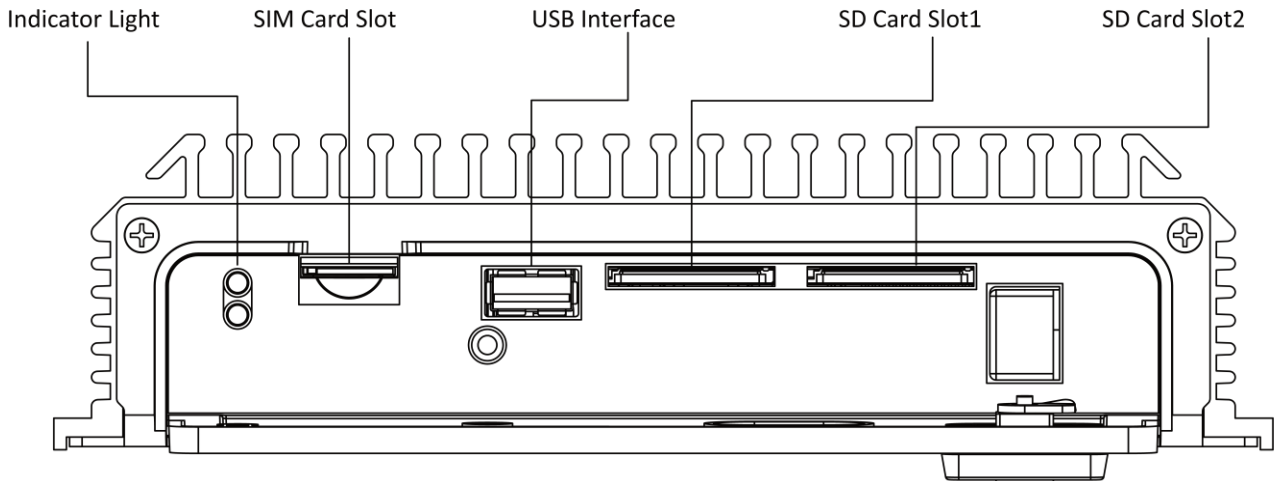


Figure 3-2 Interface Description

Step 3 Insert cards.

- Insert SIM card slowly into the SIM card slot.
- Insert SD card slowly into the SD card slot and when you hear a click sound, the installation is completed.

3.2.2 Fix the Device

Step 1 Drill holes on the vehicle according to the holes on the intelligent terminal.

Step 2 Align the holes on both terminal and vehicle.

Step 3 Fix the terminal on the vehicle with four fixing screws and the installation is completed.

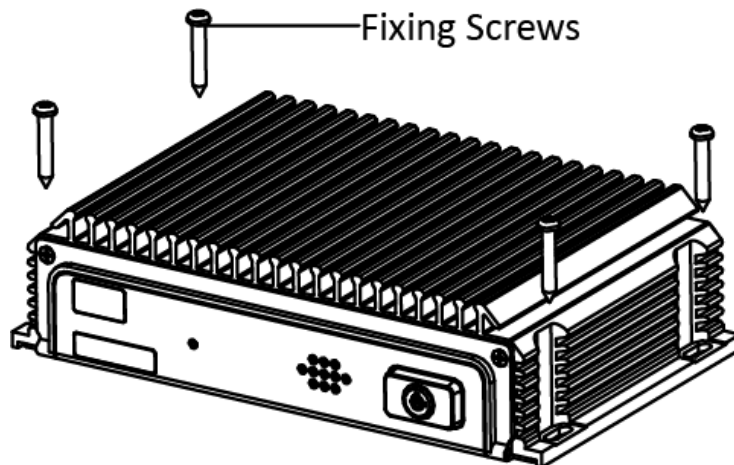


Figure 3-3 Fix the Device

3.2.3 Install Antenna

Install the 3G/4G antenna and GPS antenna on the appropriate location and connect the cables to the corresponding interfaces.

Requirements:

- Place the antenna vertically and make sure the signal receiving end faces up.

- If the cable is too long, roll it into circle and bundle it to ensure signal receiving quality.
- Install 3G/4G antenna on the non-metal object, such as windshield screen and seat back, and make sure the antenna is 50 cm or farther away from the metal objects.

Install the antenna vertically and make sure it is not blocked.

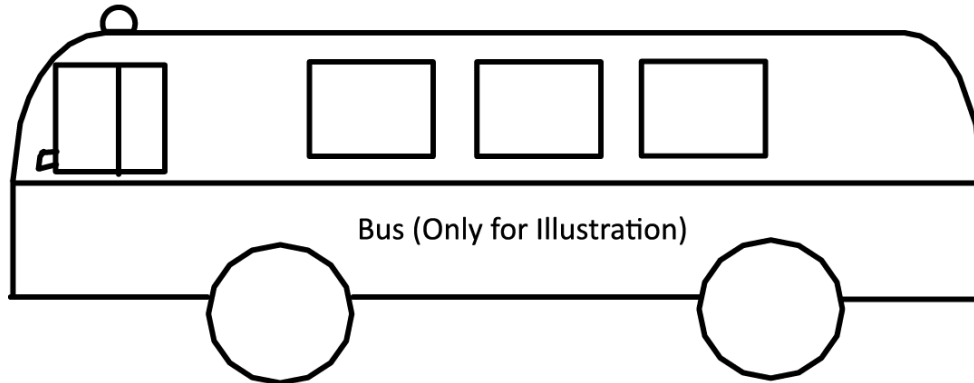


Figure 3-4 Install the Antenna

- It is recommended to install the GPS antenna on the top of the vehicle, and connect the wire to the antenna by punctuate a hole or through the gap of the door. In the former case, make sure that hole is water tight.
- If the GPS antenna has to be installed inside the vehicle due to special situations, the requirements are as follows.
- Install the antenna on the platform under the windshield screen.
- Fix the antenna with neutral silicone sealant.
- Adjust the antenna location to make sure signal quality.

Chapter 4 Wiring

4.1 I/O Wiring

After connecting to the main bundle, the I/O interface of the intelligent terminal can be connected to the vehicle battery for power supply. Or it can be connected to signal, such as vehicle turning, to collect driving information and store the information in the terminal.

Connect cables to their corresponding interfaces according to Figure 4-1 and Table 4-1.

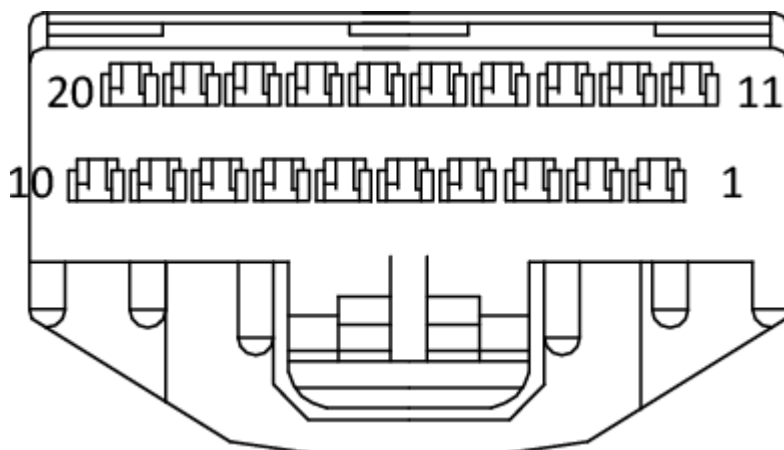


Figure 4-1 Interface Description

Table 4-1 I/O Interface Description

No.	Description	No.	Description	No.	Description
1	Power	2	Reserved	3	Reserved
4	ACC	5	Speed	6	Turn Left
7	Reserved	8	Buzzer+	9	Reserved
10	CAN+	11	Reserved	12	GND
13	Reserved	14	Reserved	15	Turn Right
16	Brake	17	Reserved	18	Buzzer-
19	Reserved	20	CAN-	-	-

4.2 Power Wiring

Caution

To ensure correct wiring, consult with the vehicle manufacturer about the connection method of vehicle starter to avoid device damage resulted by mismatch.

The device supports ignition startup and the prerequisite is that the terminal power is connected to the vehicle ignition starter.

Refer to Section 4.1 for interface description, find 1 (Power), 4 (ACC), 12(Ground) and connect them to vehicle battery as shown in Figure 4-2.

Step 1 Connect device power to the anode of vehicle constant power. Skip the main switch of vehicle constant power.

Step 2 Connect the ground interface of the device to the cathode of vehicle constant power.

Step 3 Connect the AAC interface of the device to the vehicle ignition starter.

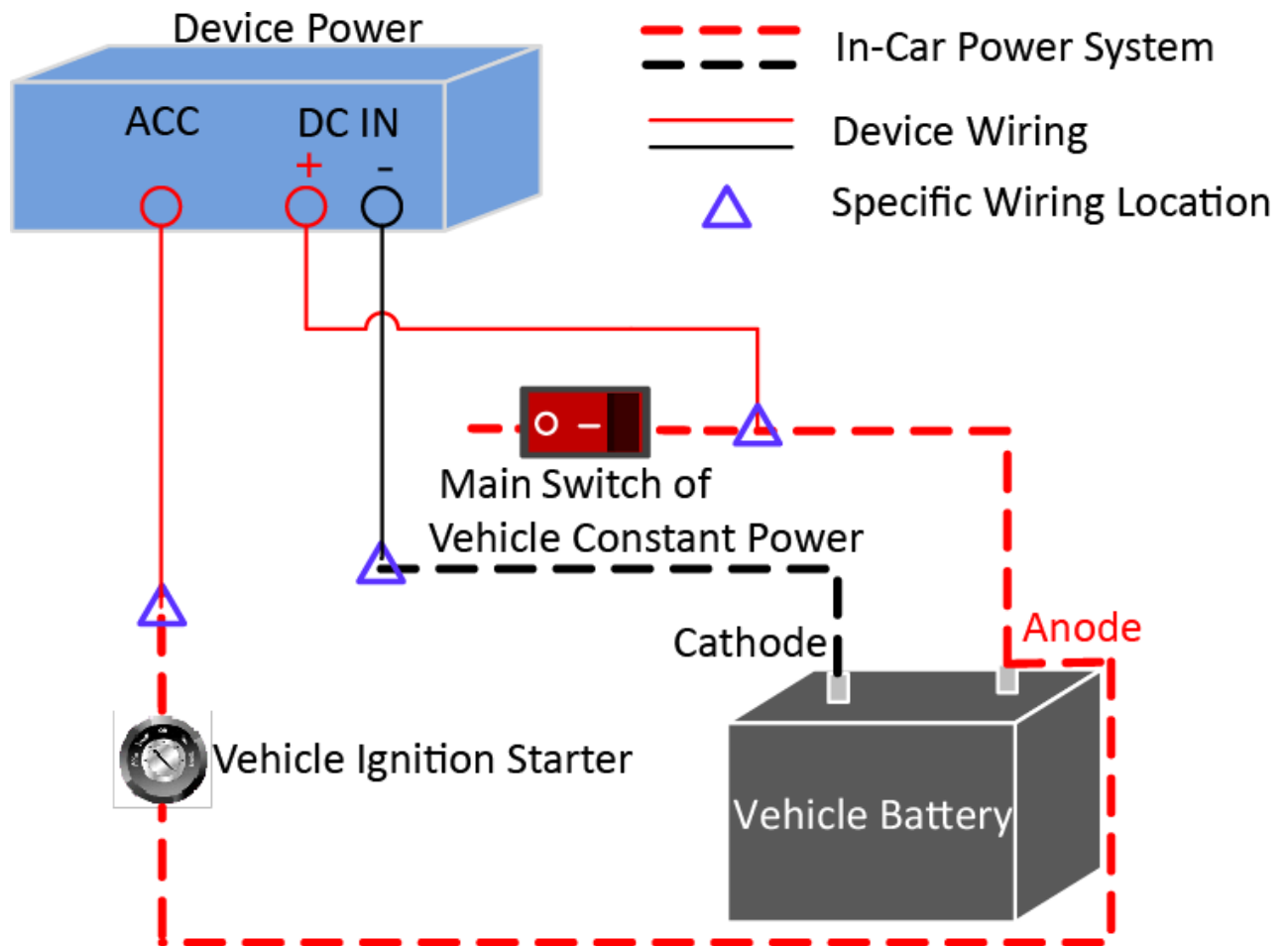


Figure 4-2 Power Wiring

Note

The vehicle constant power refers to the master switch of vehicle power system. After flaming out, the constant power can still supply direct current to devices in vehicle.

4.3 Power Up and Check Device

After completing the above installation steps, power the device up.

- Observe the power status indicator: If the indicator is solid red, it means the device is powered up.

- Insert panel key, rotate it to the locked position to lock the front panel. The installation is completed.
-

 **Note**

The debugging and parameter configuration of the device is completed by professionals via dedicated APP.

Before configuration, connect the APP to the intelligent terminal Wi-Fi. The SSID is ADAS-A4H-XXXX (XXXX refers to the last four digits of the device serial No.) and the default password is 1234567890

Chapter 5 APP Operation

5.1 Install the Calibration App

Calibration is to set up the physical coordinate of the device for accurate algorithmic detection.

 **Note**

- When installing the app, it is recommended to receive the technical support in setting up the actual parameters for “place of installation”.
 - The user needs to apply for the account and password from headquarter.
-

Step 1 Scan the following QR code in the following figure to download the calibration app.



IOS



Android

Figure 5-1 QR Code for App Downloading

Step 2 Connect the device to power supply and plugin the calibration module.

Step 3 Open the app and connect the Wi-Fi name starting with ADAS

Step 4 Enter the password: the password is 1234567890 by default.

Step 5 Change the password to activate the device.

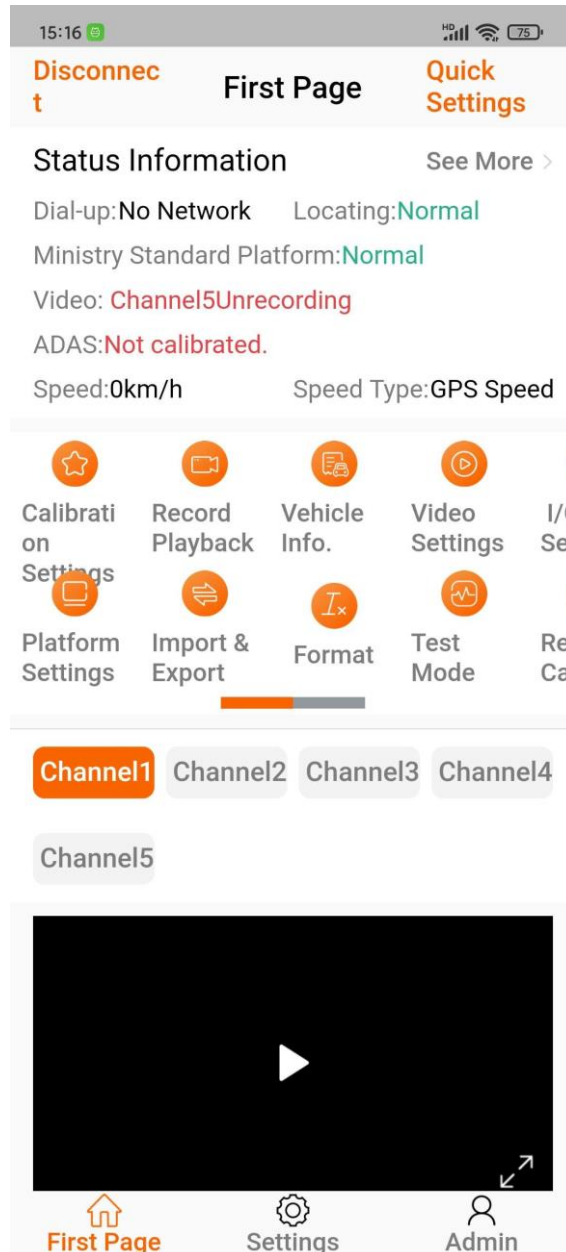


Figure 5-2 First Page

Step 6 Connect the Wi-Fi with new password to enter the First Page.

5.2 ADAS Calibration

To calibrate ADAs camera, you need to enter the following parameters in the app:

- the height of ADAS camera
- the distances between ADAS camera and the outer edge of the two wheels
- the distance between ADAS camera and the bumper

Step 1 Tap Camera Setting on the ADAS Settings page.

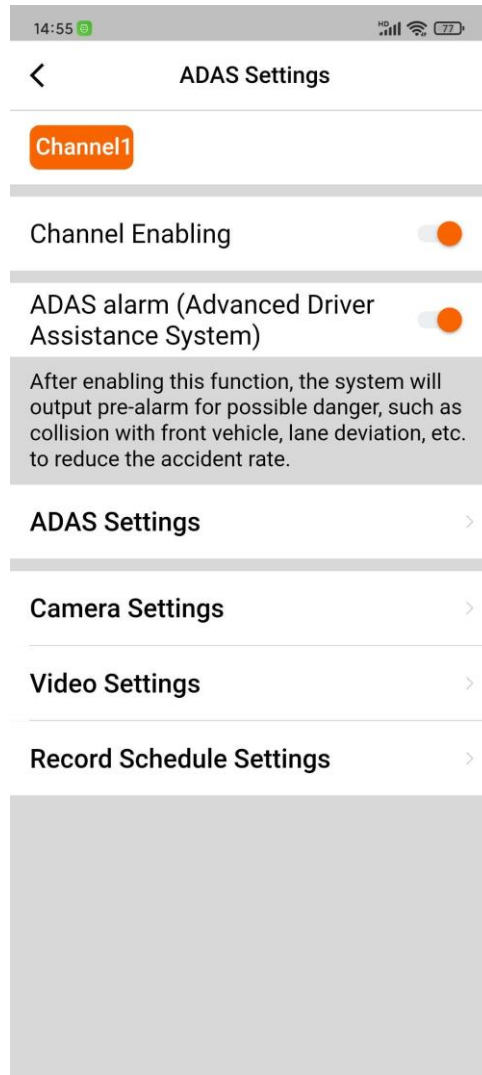


Figure 5-3 Camera Settings on ADAS Settings

Step 2 On the Camera Settings page, fill in the parameters.

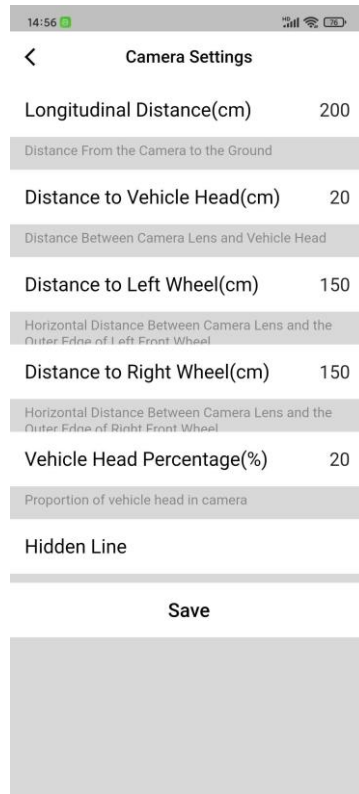


Figure 5-4 Camera Parameters

Step 3 Tap save to complete setting.

There are two methods to conduct the ADAS calibration: the calibration pole method and the disappearance line method

5.2.2 Calibration Pole Method

Before You Start:

Prepare a calibration pole before calibration.

Step 1 Place the calibration pole 1.5 m away from the front of the car at the middle. Make sure that the calibration pole is vertical and at the same height with the camera.

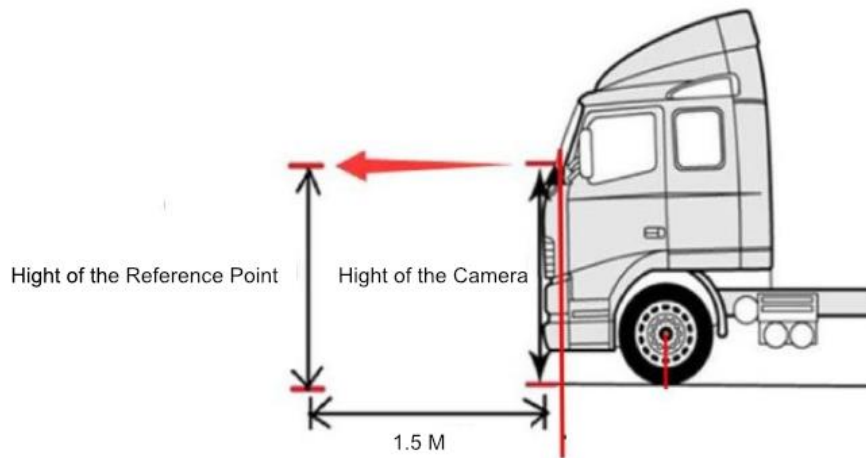


Figure 5-5 The Position of the Calibration Pole

Step 2 Open the side of the camera and adjust two black screws of the ADAS camera with a small cross screwdriver. The visible one is for fixing the camera, and the deeper, non-visible one is for calibrating the angle of camera. Make sure that the apex of the pole is within the yellow rectangle.

Step 3 Tap move in the app to adjust the horizontal line and vertical line, and make sure that they coincide with the pole.

Step 4 Save and tap **Next**.

5.2.3 Disappearance Line Method

Step 1 Park the car along the middle line of the road with equal distance to each side. Make sure that the road is even and the horizontal line is visible.

Step 2 Adjust the black screw of the ADAS camera to calibrate its angle, and make sure that the apex of the pole is within the yellow rectangle.

Step 3 If due to the angle of the camera, the apex of the calibration pole cannot appear within the yellow rectangle, then tap move in the app to adjust the horizontal line and vertical line until they coincide with the pole.

Step 4 Save and tap **Next**.

5.3 Abnormal Detection and BSD Camera Parameters

You can configure the parameters of Abnormal Detection and BSD according to your actual need. On the First Page, 5 “Channels” are available. Channel 2 is for Abnormal Detection and Channel 3 is for BSD. After choosing the channel you need, tap **Channel Configuration**.

In each of these configuration pages, you can choose whether to enable this channel and perform the required function to send alarm. In addition, there are and 3 types of settings, among which the **Video Settings** and **Record Schedule Settings** are the same for different channels.

5.3.1 Configure Parameters for Abnormal Detection Camera

Step 1 On the First Page, choose Channel 2 and tap Channel Configuration to enter the Abnormal Detection setting page.

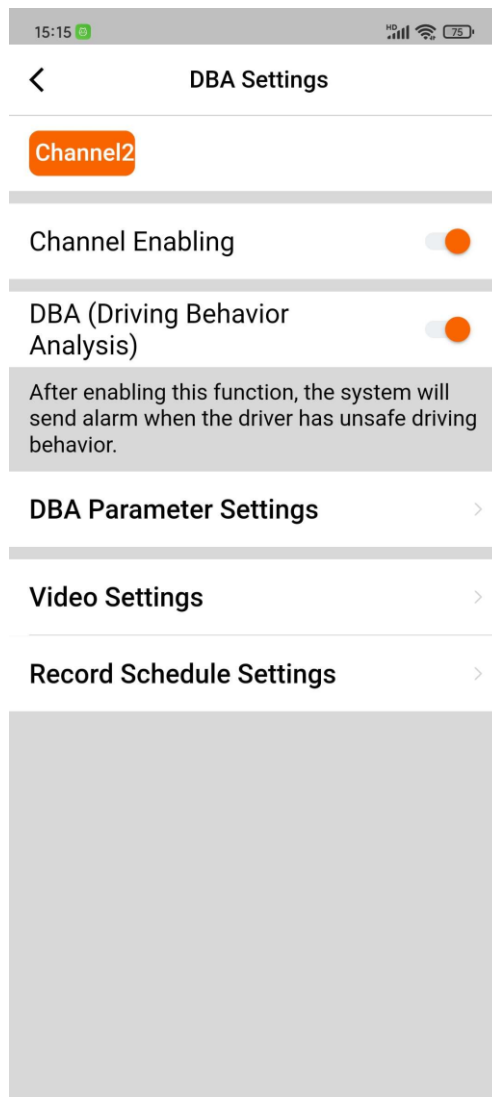


Figure 5-6 Abnormal Detection Settings

Step 2 Tap Abnormal Detection Setting to enter the setting page for parameters configuration.

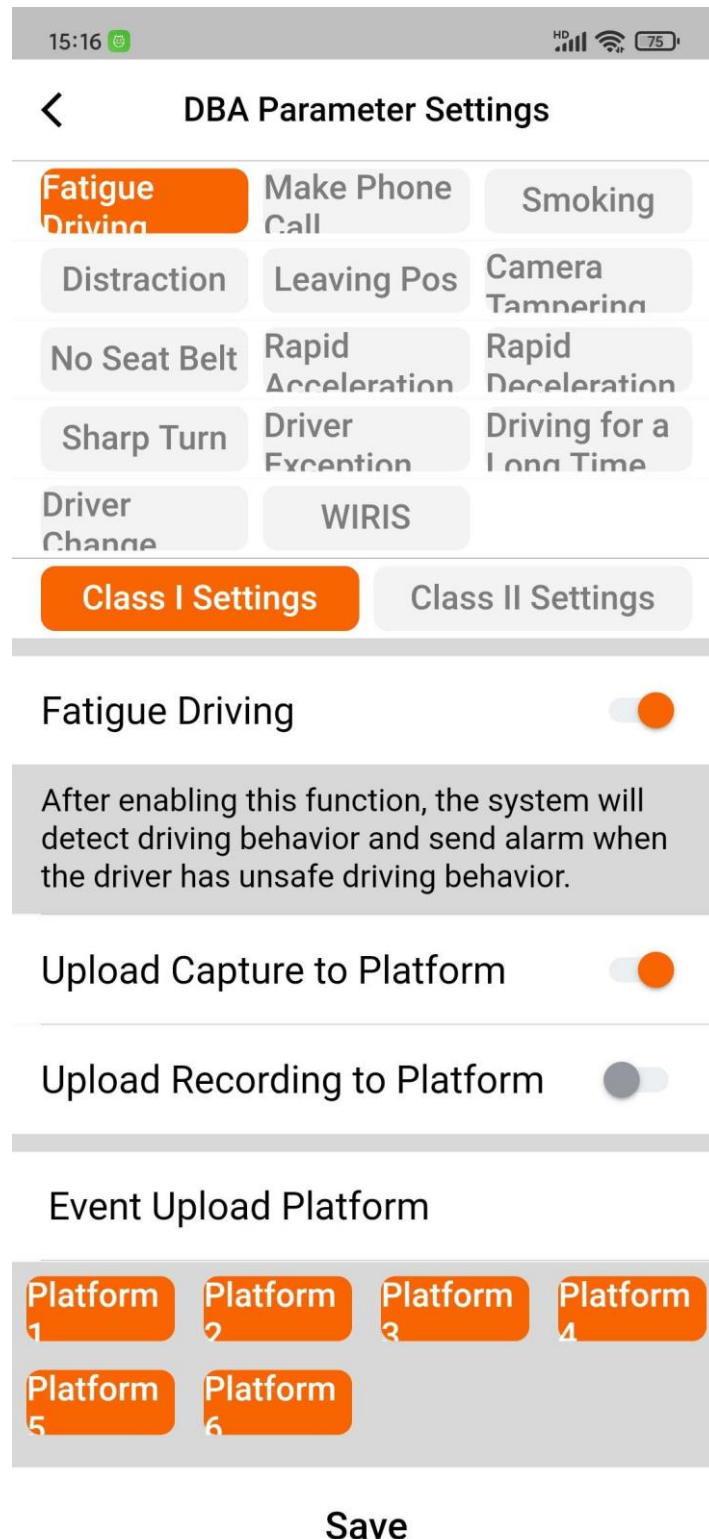


Figure 5-7 Abnormal Detection Parameter Settings

Step 3 Tap Save to enable your configuration.

- On the **Abnormal Detection Parameter Settings** page, you can specify the behavior that will trigger alarm, the specific way to store the capture and recording, the volume and sensitivity of the alarm.
- On the **Advanced setting** page, you can lower the alarm frequency by lowering its sensitivity.

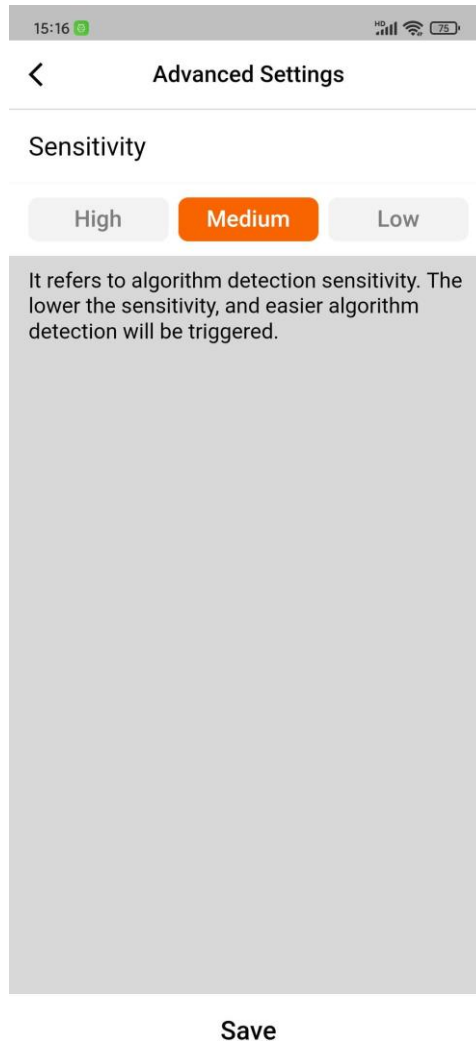


Figure 5-8 Advanced Settings for Abnormal Detection

5.3.2 Configure Parameters of BSD Camera

Step 1 On the First Page, choose Channel 3 and tap Channel Configuration to enter the BSD setting page.

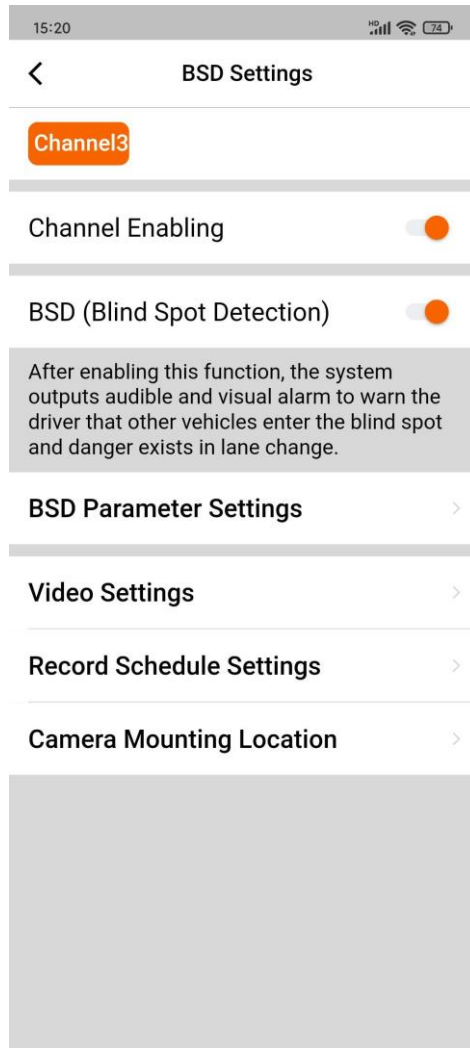


Figure 5-9 BSD Settings

Step 2 On the BSD setting page, tap BSD Setting to enter the setting page and configure parameters.

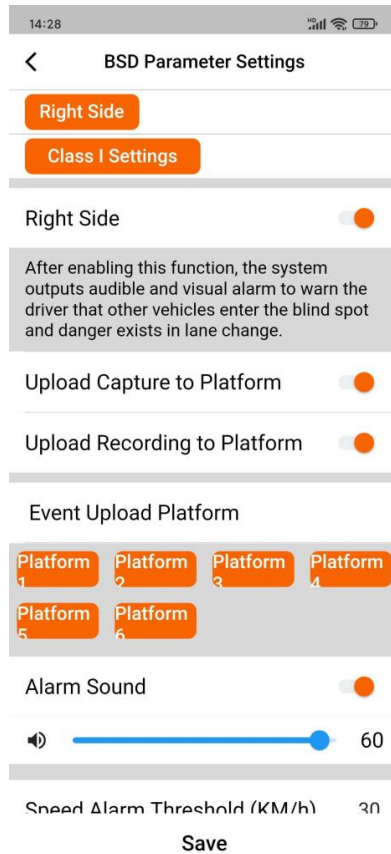


Figure 5-10 BSD Settings

Step 3 Tap Save to enable your configuration.

On BSD Parameter Settings page, you can

- enable Right Side to warns against vehicles in the blind spot
- choose the specific way to store the capture and recording
- set the volume of the alarm

Step 4 Tap Advanced Setting on BSD Parameter Settings page to enter advance setting.

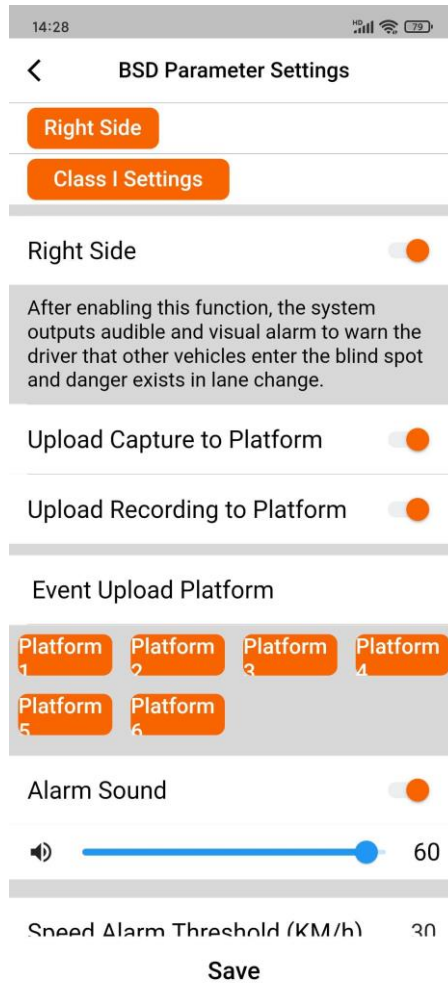


Figure 5-11 Advanced Setting

On the **Advanced setting** page, you can

- Configure the sensitivity of detection: the more sensitive it is, the easier that the algorithm detection will be triggered.
- Choose the algorithm detection type, calibrate the detection area.
- Set the steering angle and link it.
- Set the **Calibration Detection Area**

To calibrate the detection area:

Step 1 Tap the **Calibration Detection Area** on the **Advanced setting** page.

Step 2 Set the area by moving the 5 coordinate points.



Figure 5-12 Area Setting for BSD

Step 3 Choose the level and view point of the area by tapping corresponding items.

Step 4 Tap save to complete setting.

5.4 IPC Support

5.4.1 Add IPC

Step 1 Tap **Network Camera** on the “First Page”.

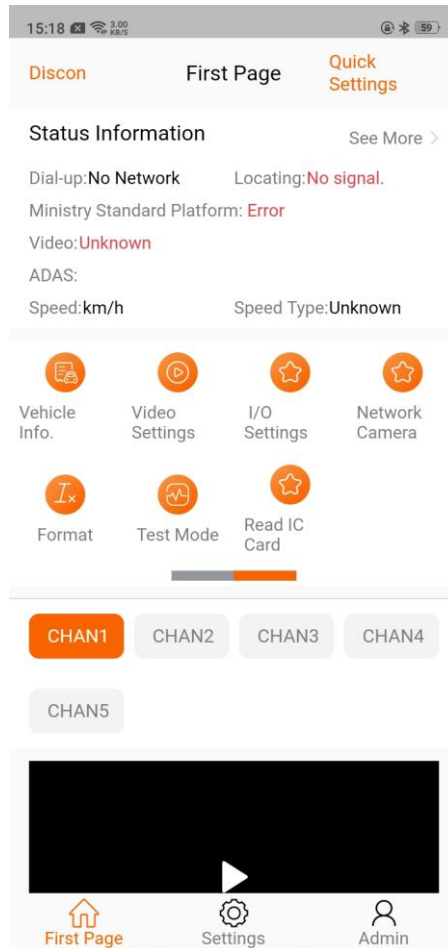
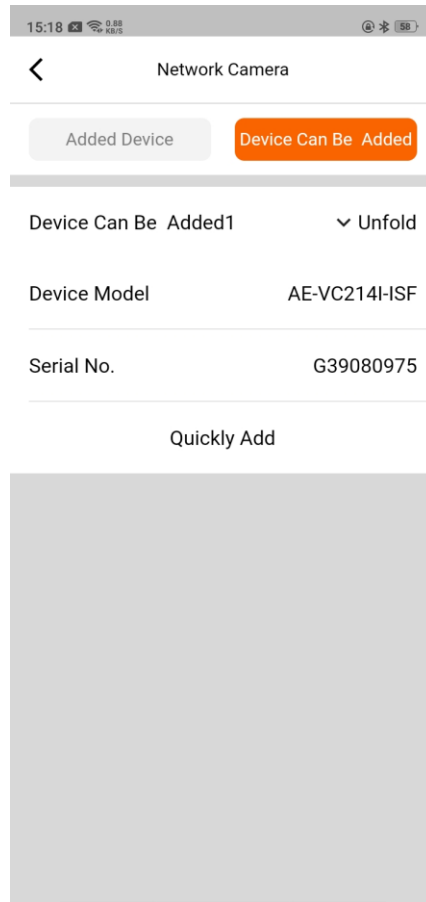


Figure 5-13 Network Camera

Step 2 Tap Device Can be Added and choose the IPC camera



Step 3 Tap Quickly Add.

To check IPC added, tap **Added Device**.

To view video recorded, tap CHAN5 on the "First Page".

 **Note**

At most 1 IPC can be added.

5.4.2 Delete IPC

Step 1 Tap **Network Camera** on the "First Page".

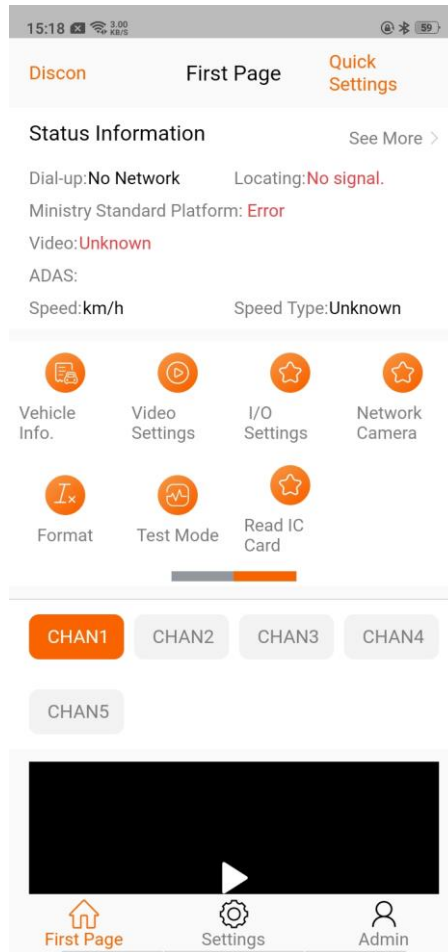


Figure 5-14 Network Camera

Step 2 Tap **Added Device** and select the device to be deleted.

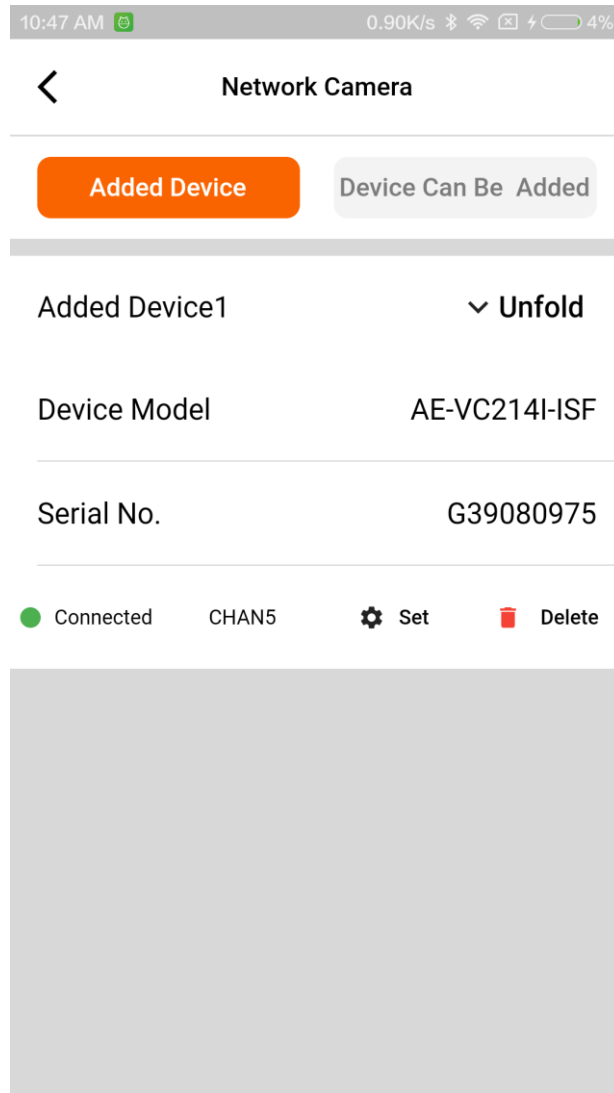


Figure 5-15 Select the Device to be Deleted

Step 3 Tap **Delete**.

5.5 Device Calibration

5.5.1 Format the Storage

Step 1 Tap **Format** on the “First Page”.

Step 2 Choose the device to be formatted.

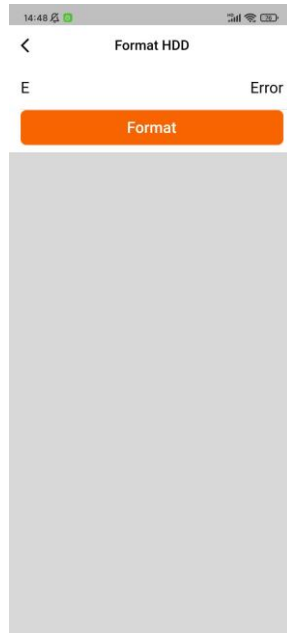


Figure 5-16 Format HDD

5.5.2 Configure the Platform Parameters

Step 1 Tap **Settings** on the “First Page”.

Step 2 Tap **Other Platform**.

Step 3 Tap **Ehome** and enter HCP IP Address, Port No., and Secret key.

Step 4 Configure parameters on HCP platform. To verify ISUP protocol, the device id needs to be provided, which is identical to the serial number of the device.

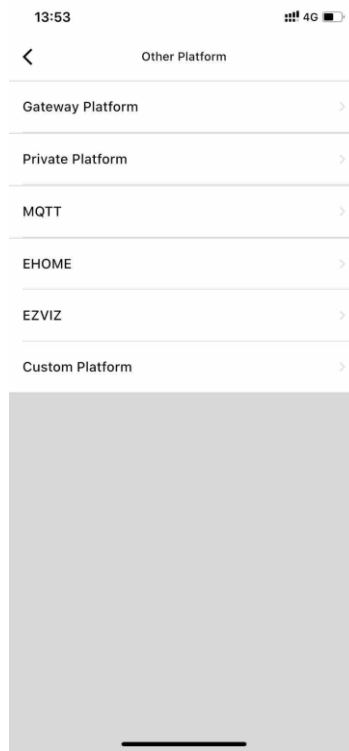


Figure 5-17 Other Platform

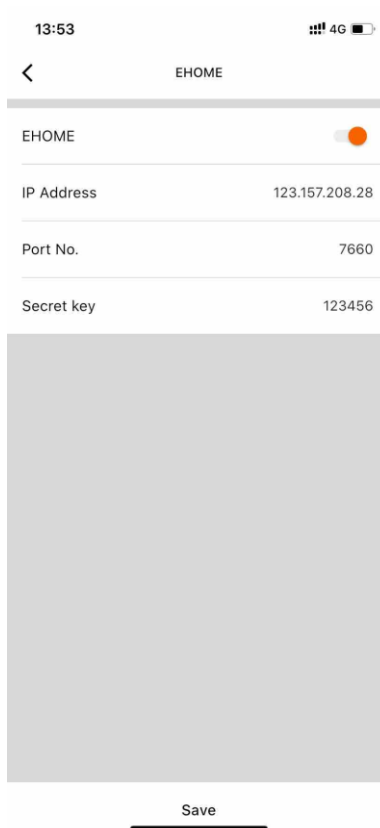


Figure 5-18 Ehome

5.5.3 Update the Device by SD Card

Before you start:

Format the SD Card in the device. For details, see 5.5.1 Format the Storage.

Step 1 Copy the digicap.dav program to the root directory of the SD Card.

Step 2 Insert the SD Card into the slot at the bottom of the device.

Step 3 Connect the device to power supply and the update will start.

In the updating process, there will be voice prompt. The device will reboot after the update. The digicap.dav program will be deleted. For testing and batch updating purpose, rename the update program to “digicap_FACTORY_BACK_DOOR.dav” to keep it.

5.5.4 Display Output Configuration

The display output can be configured to show the video of different cameras. 4 kinds of window division are available: 1, 2, 4 and 6 window division.

To configure the output:

Step 1 Choose the camera to be displayed.

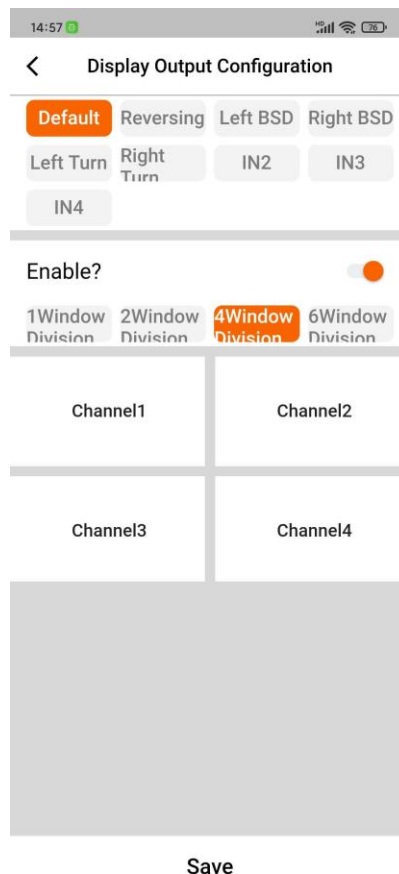


Figure 5-19 Display Output Configuration

Step 2 (optional) Enable the window division and choose the type of window division.

Tap Save to complete the setting.



See Far, Go Further