Intelligent Video Surveillance Server

Quick Start Guide

V2.1.0

Foreword

General

This manual describes the structure, function and operation of intelligent video surveillance server (IVSS).

Model

8-HDD, 12-HDD, 16-HDD, and 24-HDD.

Safety Instructions

The following categorized signal words with defined meaning might appear in the Manual.

Signal Words	Meaning
DANGER	Indicates a high potential hazard which, if not avoided, will result in death or serious injury.
WARNING	Indicates a medium or low potential hazard which, if not avoided, could result in slight or moderate injury.
CAUTION	Indicates a potential risk which, if not avoided, could result in property damage, data loss, lower performance, or unpredictable result.
TIPS	Provides methods to help you solve a problem or save you time.
NOTE	Provides additional information as the emphasis and supplement to the text.

Revision History

Version	Revision Content	Release Time
V2.1.0	Add video structuring, vehicle recognition, and vehicle comparison functions.	April 2019
V2.0.1	Add attention in important safeguards and warnings.	January 2019
V2.0.0	Update figures of 16-HDD series IVSS.	December 2018
V1.0.0	First release.	November 2018

Privacy Protection Notice

As the device user or data controller, you might collect personal data of other such as face, fingerprints, car plate number, Email address, phone number, GPS and so on. You need to be in compliance with the local privacy protection laws and regulations to protect the legitimate rights and interests of other people by implementing measures include but not limited to: providing clear and visible identification to inform data subject the existence of surveillance area and providing related contact.

About the Manual

- The Manual is for reference only. If there is inconsistency between the manual and the actual product, the actual product shall prevail.
- We are not liable for any loss caused by the operations that do not comply with the manual.
- The manual would be updated according to the latest laws and regulations of related regions. For detailed information, see the paper manual, CD-ROM, QR code or our official website. If there is inconsistency between paper manual and the electronic version, the electronic version shall prevail.
- All the designs and software are subject to change without prior written notice. The product updates might cause some differences between the actual product and the manual. Please contact the customer service for the latest program and supplementary documentation.
- There still might be deviation in technical data, functions and operations description, or errors in print. If there is any doubt or dispute, please refer to our final explanation.
- Upgrade the reader software or try other mainstream reader software if the manual (in PDF format) cannot be opened.
- All trademarks, registered trademarks and the company names in the manual are the properties of their respective owners.
- Please visit our website, contact the supplier or customer service if there is any problem occurred when using the device.

Important Safeguards and Warnings

The following description is the correct application method of the Device. Read the Guide carefully before use to prevent danger and property loss. Strictly conform to the Guide during application and keep it properly after reading.

Operating Requirement

- Do not place and install the Device in an area exposed to direct sunlight or near heat generating devices.
- Do not install the Device in a humid, dusty or fuliginous area.
- Install the Device at stable places horizontally.
- Make the Device stay away from liquid.
- Install the Device at well-ventilated places; do not block its ventilation opening.
- Use the Device only within rated input and output range.
- Do not dismantle the Device arbitrarily.
- Transport, use and store the Device within allowed humidity and temperature range.

Power Requirement

- Be sure to use the designated battery type. Otherwise there may be explosion risk.
- Be sure to use batteries according to requirements; otherwise, it may result in fire, explosion or burning risks of batteries!
- To replace batteries, only the same type of batteries can be used.
- Be sure to dispose the exhausted batteries according to the instructions.
- The product shall use electric wires (power wires) recommended by this area, which shall be used within its rated specification.
- Be sure to use standard power adapter matched with this device. Otherwise, the user shall undertake resulting personnel injuries or device damages.
- Use power supply that meets SELV (safety extra low voltage) requirements, and supply power with rated voltage that conforms to Limited Power Source in IEC60950-1. For specific power supply requirements, please refer to device labels.
- Products with category I structure shall be connected to grid power output socket, which is equipped with protective grounding.
- Appliance coupler is a disconnecting device. During normal use, keep an angle that facilitates operation.

Attention

AI module does not support hot plug. If you need to replace the AI module, unplug the device power cable first. Otherwise, it will lead to file damage on the AI module.

Table of Contents

1 Overview

1.1 Introduction

Intelligent video surveillance server (IVSS) is compatible with most video surveillance products. Based on deep learning technology, IVSS has AI functions including human face recognition, and features extraction.

- Supports general system settings, video surveillance, video storage, alarm settings, log management, record search and playback, intelligent analysis (such as human face real-time recognition, search human face by specified image and then play back video).
- User-friendly interface.
- Supports 4K and H.265 decoding, meeting the main development trend of current market.
- Widely used in intelligent building, large parking lot, safe city project, financial planning area, and so on.

1.2 Login Mode

The device supports local, web and IVSS client operation. For details, see Table 1-1.

Operations and system configurations in the Guide are mainly based on IVSS client. There might be differences from local or web operation, and the actual interface shall prevail.

Table 1-1 Login mode

Login Mode	Operation	Description
Local login	Connect the display, mouse and keyboard to the device. View and operate the local menu on the display.	Support all functions of the device.
Web login	Connect the device and PC into the same network, and remotely access the device through browser (Google Chrome and Firefox) on PC.	Support majority functions of the device, except live preview, record playback and video-related function.
IVSS client login	Connect the device and PC into the same network, download and install IVSS Client on PC, and then remotely access the device with IVSS Client.	Support all functions of the device.

2 The Grand Tour

It is to introduce front panel, rear panel, port function and button function, indicator light status, and so on.

This section takes 16-HDD for example. For other models, refer to user's manual.

2.1 Front Panel

Figure 2-1 Font panel with LCD

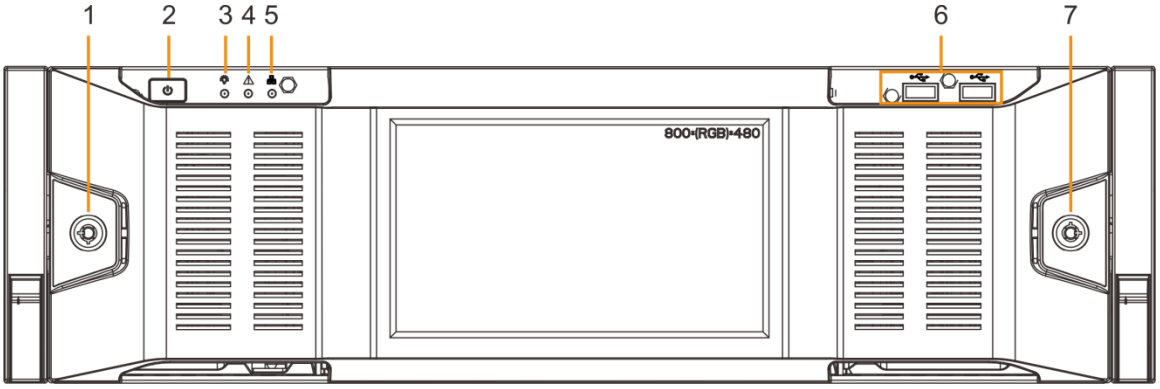


Figure 2-2 Front panel without LCD

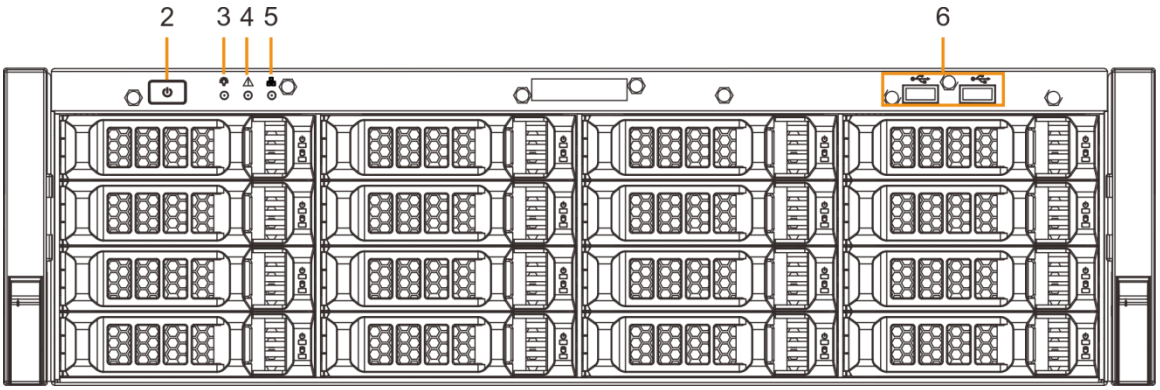


Table 2-1 Front panel description

No.	Name	Description
1	Front panel lock	Once the front panel lock is secure, it can prevent HDD from being stolen or removed by mistake. Unlock the front panel lock and remove the front panel, you can view 16 HDD slots. See Figure 2-2.
2	Power on/off button	Boot up or shut down device. The power on/off button has the indicator light. It can display device running status. ● When device is off (indicator light is off), press the button for a short period to boot up device. ● When device is running, (blue indicator light is on), press the button for at least 4 seconds to shut down the device.

No.	Name	Description
3	System status indicator	Displays the system running status. ● The blue light is on: Device is running properly. ● The indicator light is off: The device is not running.
4	Alarm indicator light	Displays local input alarm status. ● Red indicator light is on: There is local alarm input event. ● The indicator light is off: There is no local alarm input event.
5	Network indicator light	Displays current network status. ● The indicator light is blue: It means at least one Ethernet port has connected to the network. ● The indicator light is off: No Ethernet ports are connected to the network.
6	USB port	Connects to external devices such as USB storage device, keyboard and mouse.
7	16-HDD slot	After you remove the front panel, you can see there are 16 HDDs. From the left to the right and from the top to the bottom, it ranges from 1–4, 5–8, 9–12, and 13–16. There are two indicator lights on the HDD slot: HDD indicator light and HDD read/write indicator light. ● : HDD indicator light. The light is yellow after you install the HDD. ● : Read/write indicator light. The blue light flashes when it is reading and writing data.

2.2 Rear Panel

Figure 2-3 Rear panel

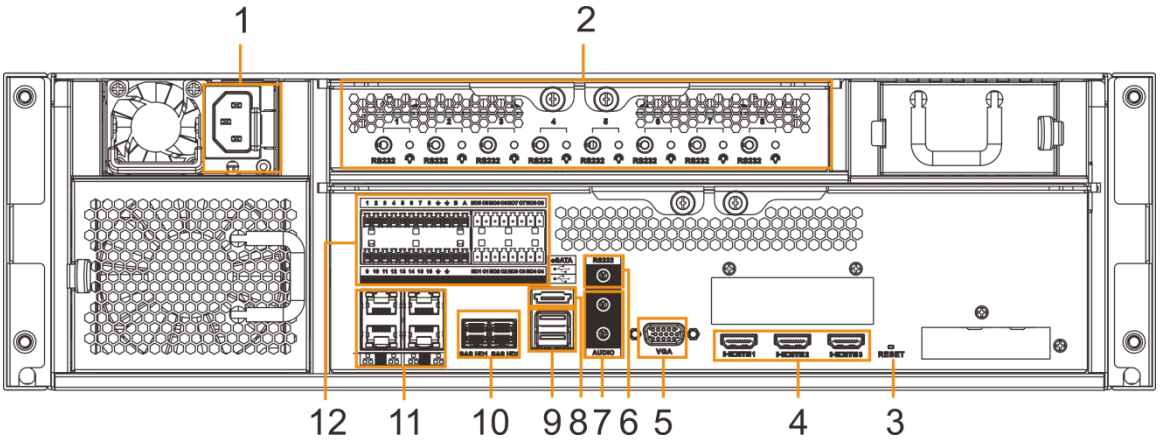


Table 2-2 Rear panel description

No.	Name	Description
1	Power input port	Inputs AC 100V-240V power.

No.	Name	Description
2	AI module indicator light	Displays AI module status. ● The yellow light flashes: AI module is running properly. ● The yellow light is on: AI module is malfunctioning. This function is valid if there is AI module.
3	RESET button	Reserved.
4	HDMI port	High definition audio and video signal output port. The port outputs the uncompressed high definition video and multi-channel audio data to the connected display with HDMI port. The three HDMI ports are different source output.
5	VGA port	VGA video output port. Output analog video signal. It can connect to the monitor to view analog video. The VGA port and HDMI 1 port are same source output.
6	RS-232 port	RS-232 COM debug. It is for general COM debug, set IP address, transmit transparent COM data.
7	AUDIO IN	Audio input port
	AUDIO OUT	Audio output port
8	eSATA port	SATA peripheral port. Connect to SATA port or eSATA device.
9	USB port	Connects to external devices such as USB storage device, keyboard and mouse.
10	SAS port	SAS extension port. It can connect to the SAS extension controller.
11	Network port	10M/100/1000Mbps self-adaptive Ethernet port. Connect to the network cable.
12	Alarm input	16 groups (1–16) alarm input ports, they are corresponding to ALARM 1–ALARM 16. The alarm becomes valid in low level. ● A and B: Control the A/B cable of the RS-485 device. It is to connect to the PTZ camera. Connect in parallel 120Ω between A/B cables if there are too many PTZ decoders. ● ⏚: GND end.
	Alarm output	8 groups of alarm output ports (NO1 C1–NO8 C8). Output alarm signal to the alarm device. Make sure there is power to the external alarm device. ● NO: Alarm output port of Normally Open type. ● C: Common alarm output port. ● ⏚: GND end.

2.3 Dimensions

Figure 2-4 Dimensions with LCD (mm[inch])

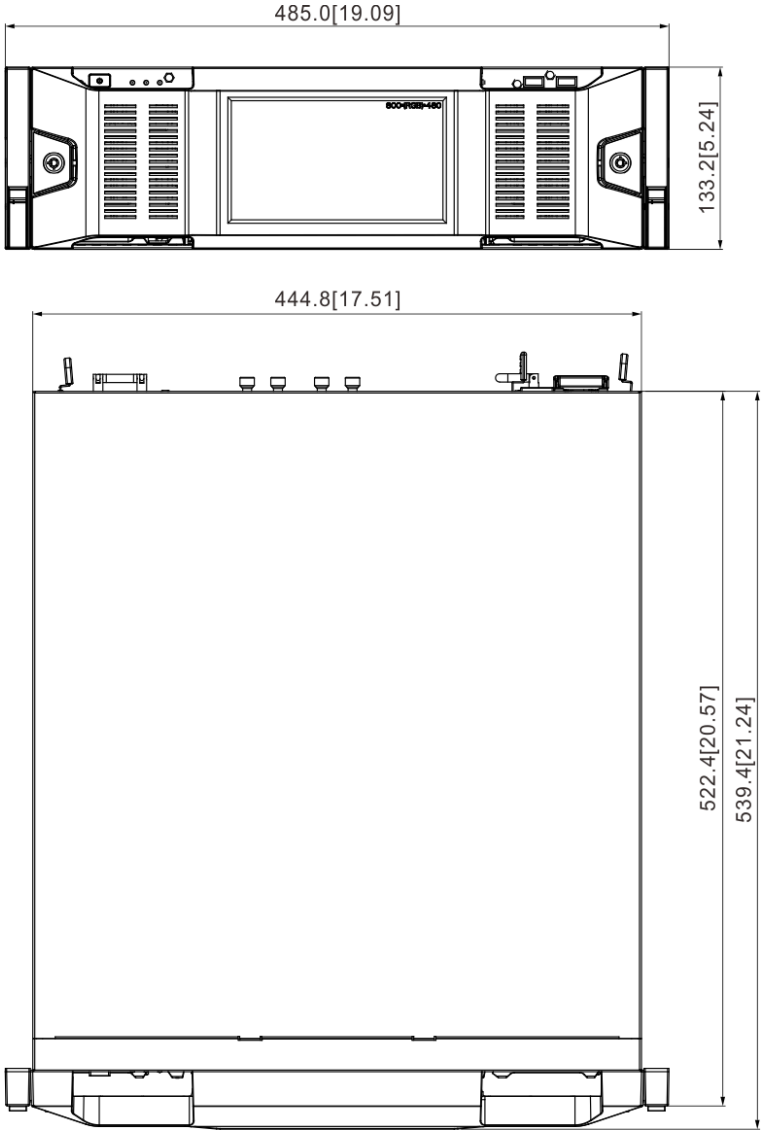
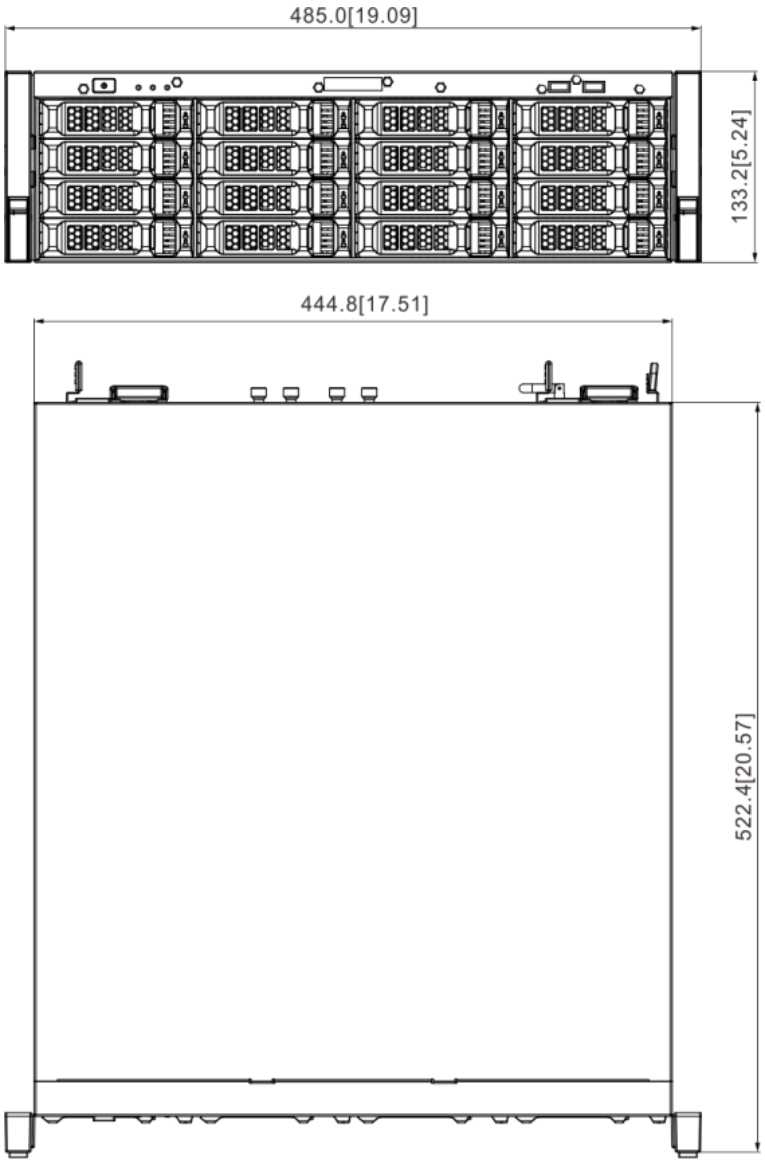


Figure 2-5 Dimensions without LCD (mm[inch])



3 Hardware Installation

This section introduces HDD installation, cable connection, and so on.

WARNING

Some series product is heavy. It needs several people to carry or move jointly to prevent person injury.

3.1 Installation Flow

Refer to Figure 3-1 for installation flows. Please follow the steps to install.

Figure 3-1 Installation flows

3.2 Unpacking the Box

When you receive the Device, check against the following checking list. If any of the items are missing or damaged, contact the local retailer or after-sales engineer immediately.

No.	Name		Contents
1	Whole package	Appearance	There is any visible damage or not.
		Package	There is any accidental clash during transportation or not.
		Accessories (list of accessories on the warranty card)	They are complete or not.
2	Device	Appearance	There is any visible damage or not.
		Device model	The model is the same as ordering contract or not.
		The label on the device	It is torn or not. Do not tear off, or discard the label. Usually you need to show the serial number when requiring after-sales service.

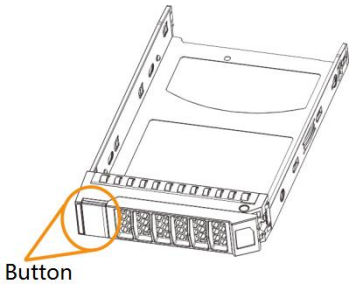
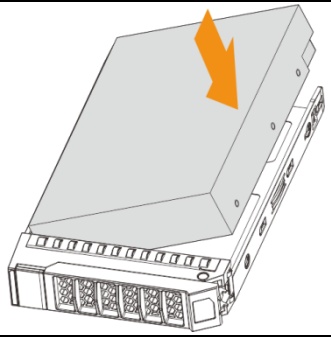
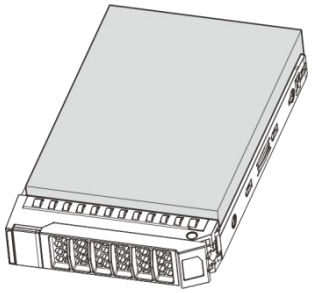
3.3 HDD Installation

The section introduces the detailed operations to install HDD.

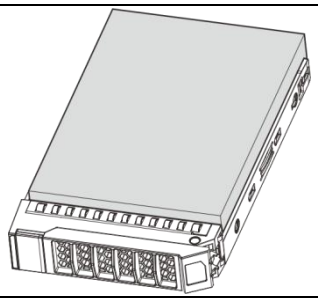
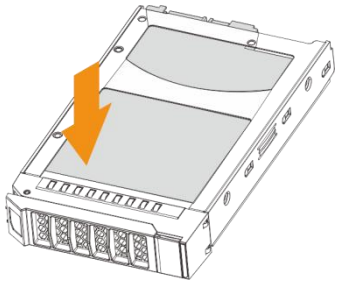
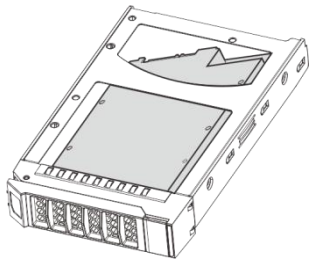
- If you have not pushed the HDD box to the bottom, do not close the handle to avoid any damage to the HDD slot.
- Different models support different HDD numbers. See the actual situation.

3.3.1 12-HDD Series

Installing HDD

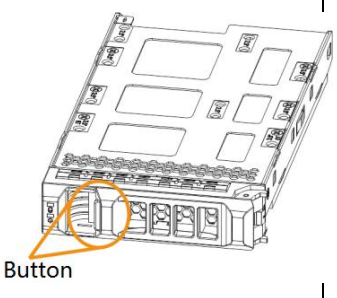
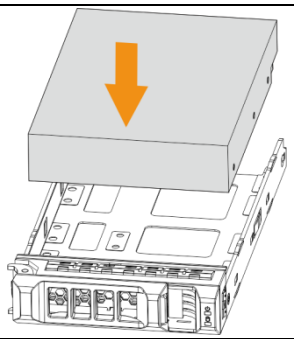
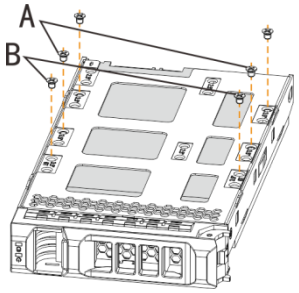
		
①Press the button on the front panel of IVSS device, open the handle, and then pull out the HDD box.	② Place one side of the HDD closely along the upper side of the box and press down to push the HDD down to the lower side of the mounting surface.	③ Insert the HDD box into the HDD slot, press it to the bottom, and then close the box handle.

Removing HDD

		
①Press the button on the front panel of IVSS device, open the handle, and then pull out the HDD box.	② On the back of the HDD box, press hard on the position indicated by the arrow.	③ Take out the HDD and reinsert the box to the slot. Push it to the bottom and close the box handle.

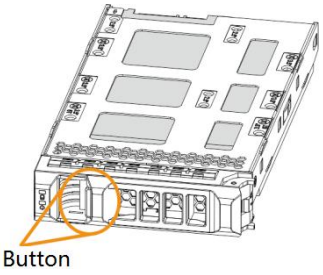
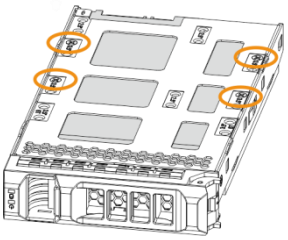
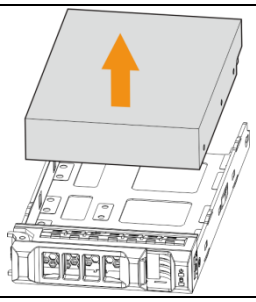
3.3.2 16/24-HDD Series

Installing HDD

①Press the button on the front panel of IVSS device, open the handle, and then pull out the HDD box.	② Put the HDD into the box along the direction shown in the figure.	③ Lock the screws on the back of the HDD box. Insert the box into the HDD slot, push it to the bottom, and then close the handle. In the figure, you only need to lock one set of the screws (Group A or Group B). See the actual situation.

Removing HDD

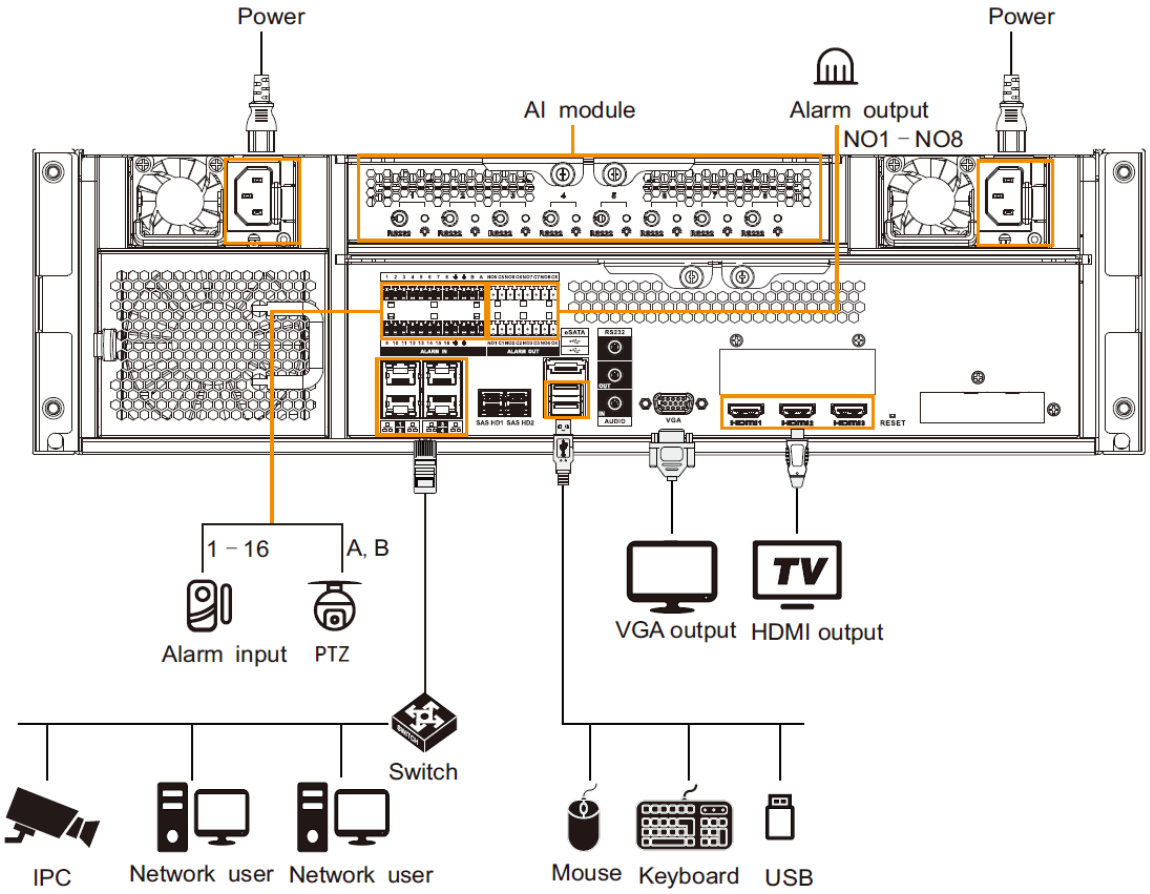
		
①Press the button on the front panel of IVSS device, open the handle, and then pull out the HDD box.	②Unlock the screws on the back of the HDD box. The screws are at different positions for different HDDs. See the actual situation.	③ Take out the HDD and reinsert the box to the slot. Push it to the bottom and close the box handle.

3.4 Connection Diagram

This section takes connecting 16-HDD series device for example. See Figure 3-2. The connection steps may vary depending on the device, and the actual device shall prevail.

- Display, mouse and keyboard are needed for local operation.
- Before using the smart detection functions such as face detection and face recognition, you shall install the AI module first.

Figure 3-2 Connection diagram



4 Turning on the Device

CAUTION

- Before the boot up, make sure the input voltage matches the device power requirement.
- To ensure stable operation of the device and prolong service life of HDD, provide stable voltage with less ripple interference by reference to international standard.
- For device security, connect other cables of the device first, and then connect the device to the power socket.

Boot-up might vary depending on the model you purchased.

- 8-HDD series product: Press the power button on the rear panel to boot up device.
- For other series products:
  - ◇ Connect to the power socket to boot up device.
  - ◇ After clicking shutdown button on the GUI to turn off the device, press the power button for a short period of time to boot up device.

5 Initial Settings

For first-time use, you need to initialize the device, set basic information and functions, and so on.

5.1 Initializing Device

If it is your first time to use the device after purchase or after restoring factory defaults, set a login password of admin (system default user). At the same time, you can set proper password protection method.

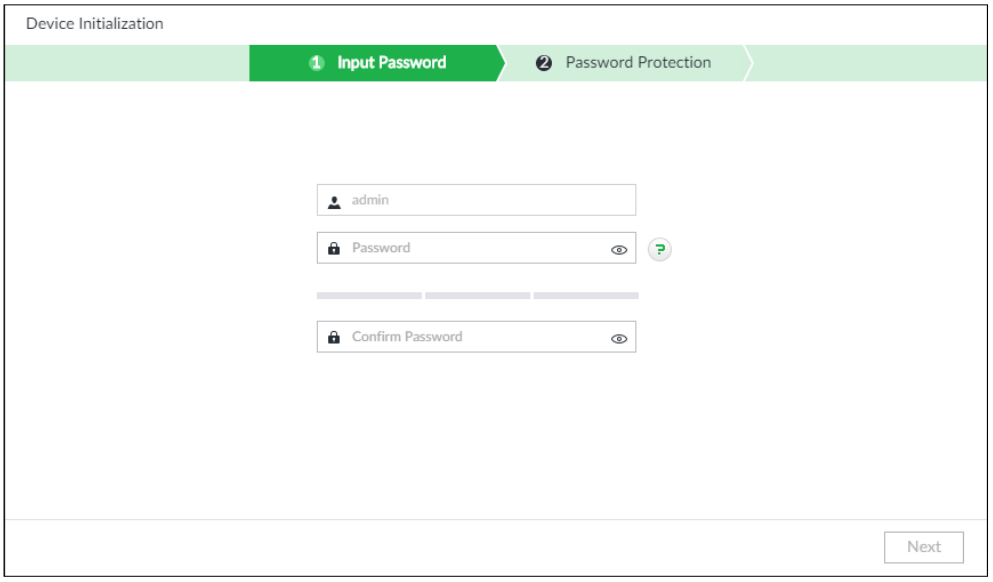
This section takes web remote initialization for example.

Step 1 Open the browser, input IP address, and click **Enter**.

The **Device initialization** interface is displayed. See Figure 5-1.

Default IP address of network port 1 to network port 4 are 192.168.1.108 to 192.168.4.108. Enter the corresponding IP address of the actually connected network port.

Figure 5-1 Initializing the device



Step 2 Set admin login password. Refer to Table 5-1 for details.

Table 5-1 Description of password parameters

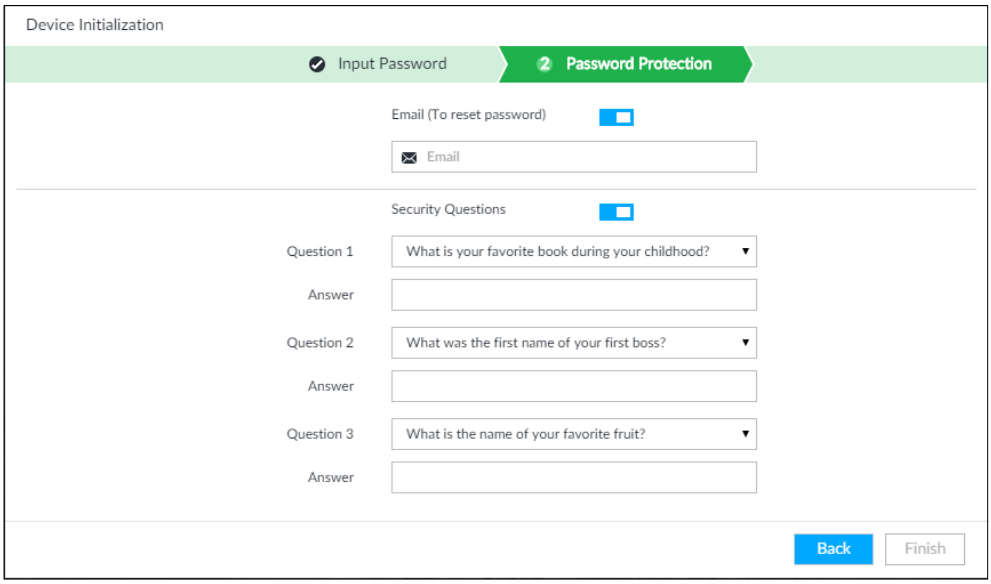
Parameter	Description
User	The default user name is admin.
Password	Set admin login password, and confirm the password. The new password can be set from 8 characters through 32 characters and contains at least two types from number, letter and special characters (excluding “'”, “"”, “;”, “:” and “&”). Enter a strong password according to the password strength indication.
Confirm Password	

Parameter	Description
Prompt question	After setting the prompt, when you move the mouse to on the login interface, the system pops up a prompt to help you remember the password. The prompt question function is for local login interface only. Refer to the actual interface for detailed information.

Step 3 Click **Next**.

The password setting interface is displayed. See Figure 5-2.

Figure 5-2 Password protection



Step 4 Set password protection information. For details, see Table 5-2.

Setting the security questions here, you can use the email you input here or answer the security questions to reset admin password.

- Click to cancel the email or security questions box.
- If the email or security questions box is not set, the password can be reset at local interface only.

Table 5-2 Password protection

Password protection mode	Description
Email	Set email address. Reset the password through the reserved email address.
Security question	Set security questions and corresponding answers. Reset the password through the security question.

Step 5 Click **Finish** to complete device initialization.

The device initialization success interface is displayed.

Click **Enter quick settings** to go to the quick setting interface. It is to set device basic information.

5.2 Quick Settings

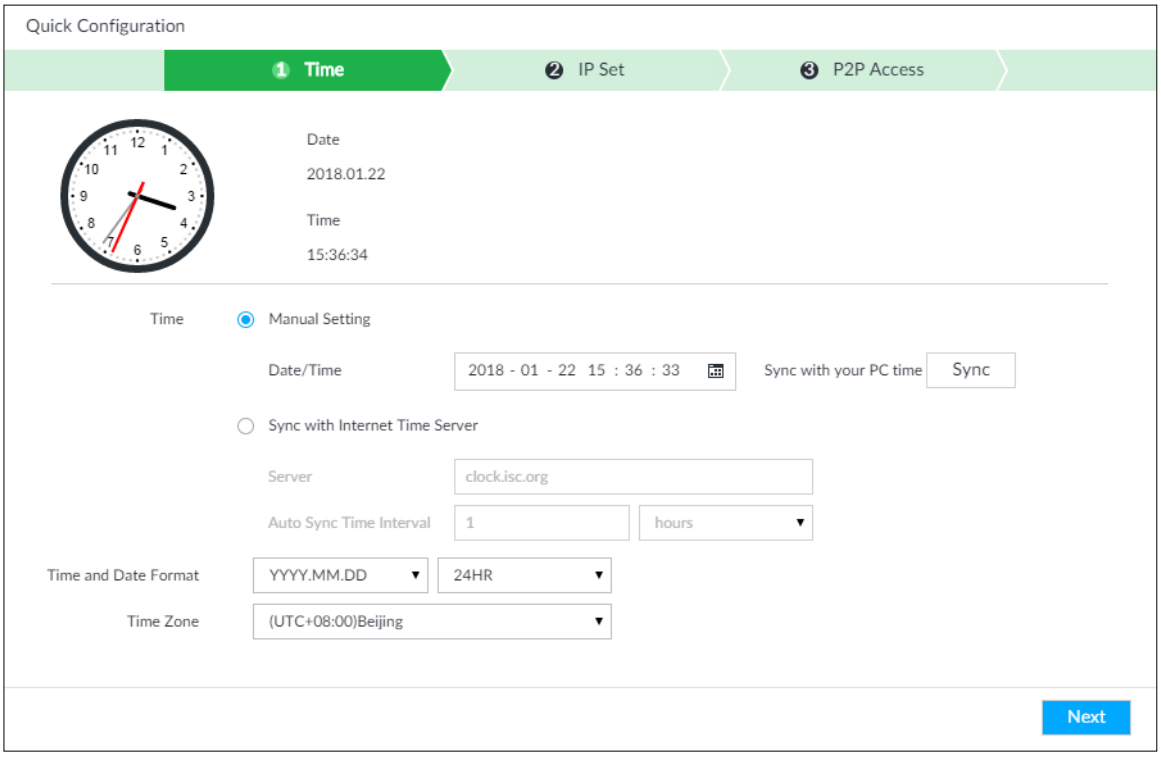
It is to set system time, and enable NTP function according to your need. After enabling NTP function, device can automatically synchronize time with the NTP server.

Step 1 Set system time.

1) On initialization interface, click **Enter quick settings**.

The **Time** interface is displayed. See Figure 5-3.

Figure 5-3 Time



2) Set system time, date and time zone.

You can set manually or set device to synchronize time with the NTP server.

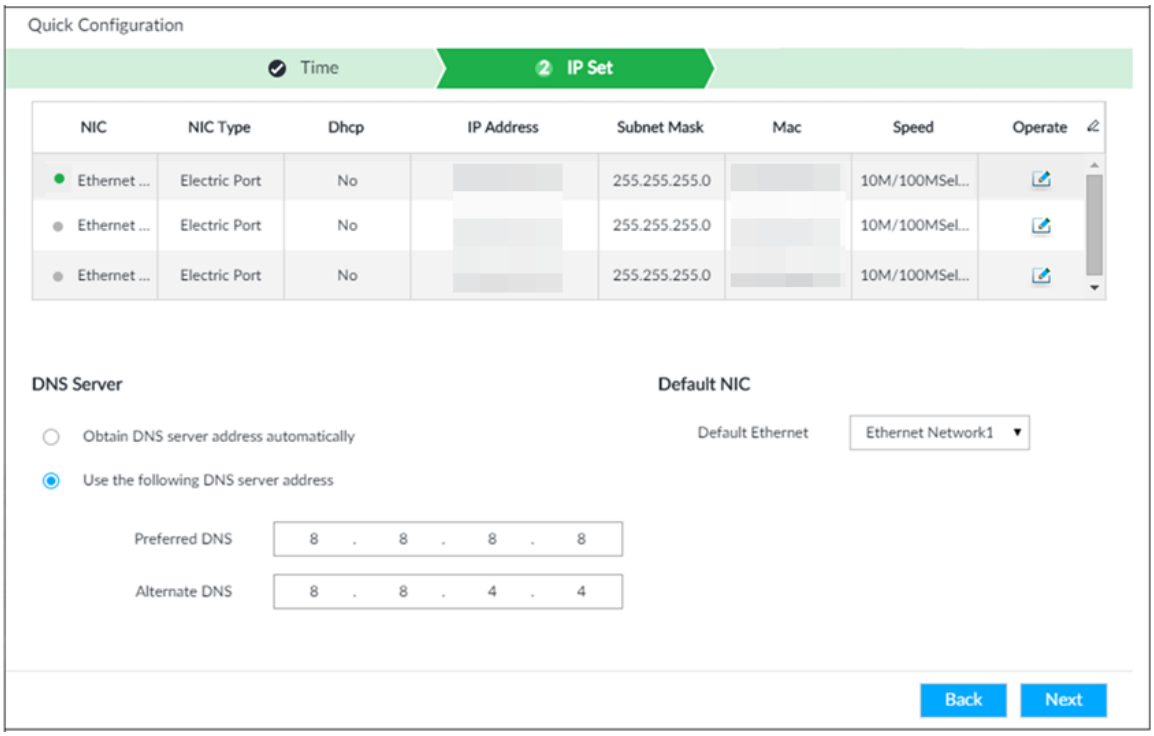
Step 2 Configure IP address.

Device has 4 Ethernet ports by default. Make sure at least one Ethernet port is connected to the network before you set IP address.

1) On the **Time** setting interface, click **Next**.

The **IP Set** interface is displayed. See Figure 5-4.

Figure 5-4 Set

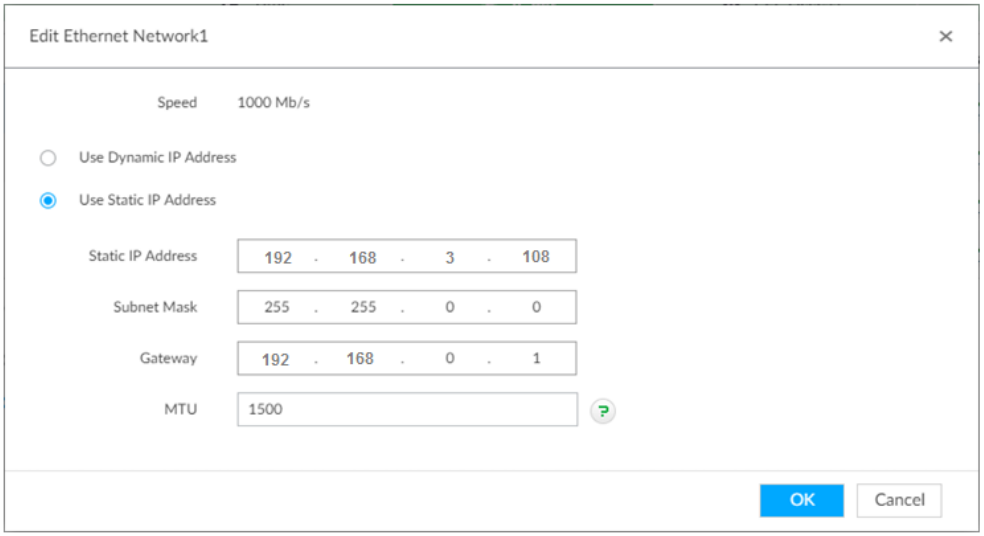


2) Click of the corresponding NIC.

The **Edit Ethernet Network 1** interface is displayed. See Figure 5-5.

- When there is a DHCP server on the network, check **Use Dynamic IP Address**, system can allocate a dynamic IP address to the device. There is no need to set IP address manually.
- Check **Use Static IP Address**. Set static IP address, subnet mask and gateway. It is to set a static IP address for the device.

Figure 5-5 Edit Ethernet network 1



3) Click **OK**.

Device goes back to **IP Set** interface.

4) Set DNS server information and default NIC.

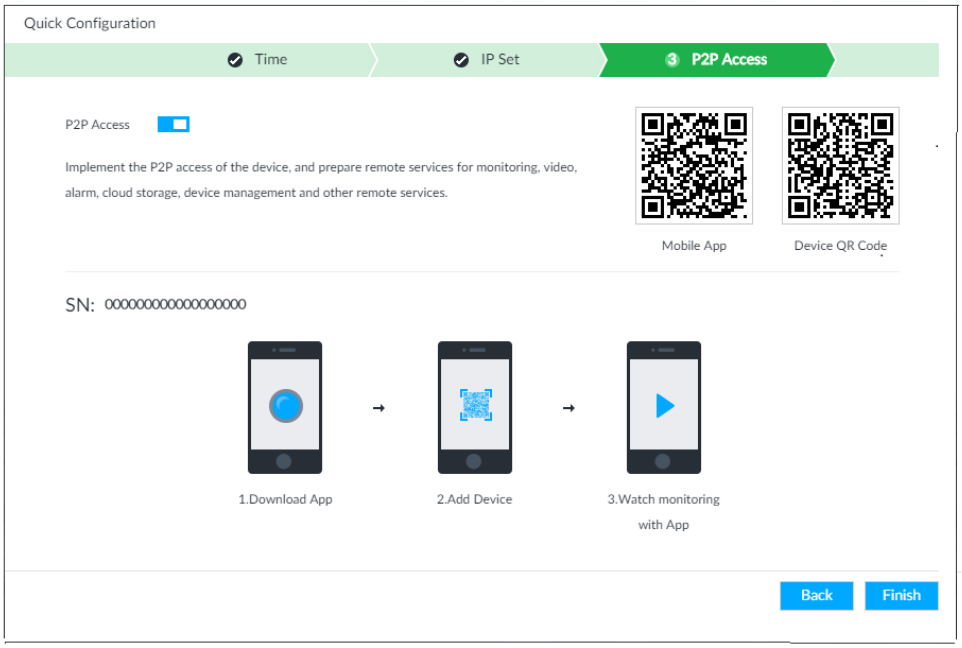
Make sure the default NIC is online.

Step 3 Configure P2P settings.

Make sure the system has connected to the network. Otherwise, the P2P function is null.

1) On the **IP Set** interface, click **Next**.
The **P2P Access** interface is displayed. See Figure 5-6. Scan the QR code on the actual interface.

Figure 5-6 P2P access



2) Click  to enable P2P function.

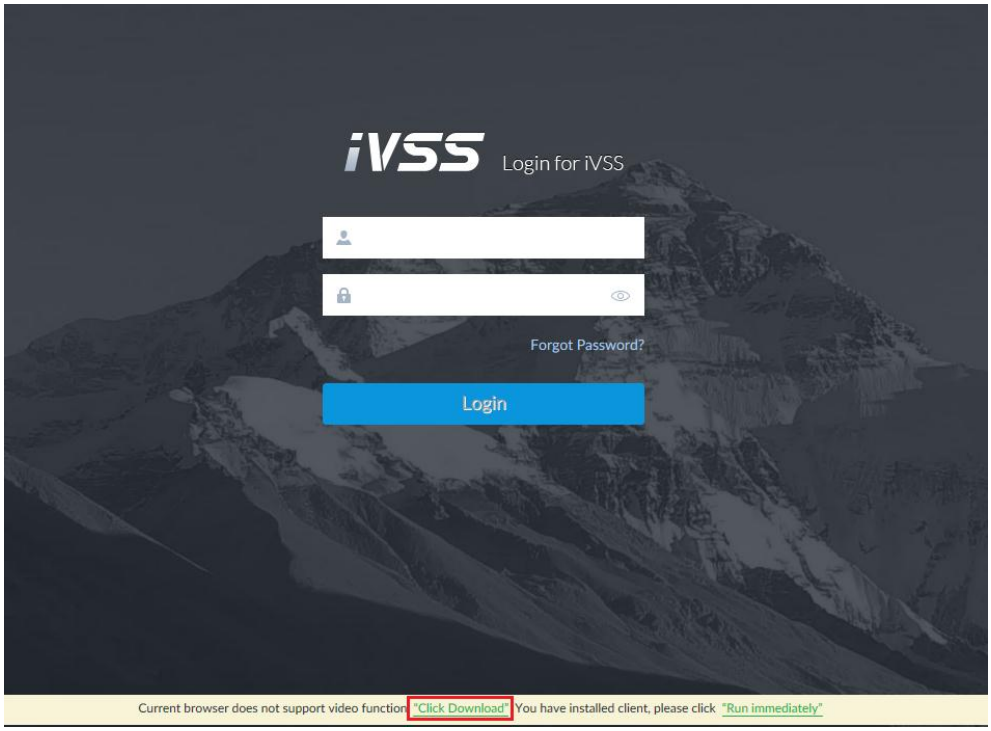
Step 4 Click **Finish** to save settings.

5.3 Logging in Device

- The system is logged in by default after you initialize the device. Now you can set system settings and operate.
- This section takes logging in IVSS client for example.

Step 1 Download the IVSS installation package.
Open the browser, enter IP address, and click **Enter**. Click the **Click Download** to download IVSS Client installation package. See Figure 5-7.

Figure 5-7 Web login interface



Step 2 Double-click the IVSS installation package, and install it according to interface notice. On completion, the completion interface is displayed. See Figure 5-8.

Figure 5-8 Installation completed

Step 3 Click **Run**.

The login interface in Step 1is displayed. See Figure 5-9.

- System display IVSS Client at full-screen by default. Click to display the task column. Enter device IP address, and then press **Enter** or click → to login.

Figure 5-9 Login

Step 4 Enter device user name and password.

Step 5 Click **Login**.

5.4 Adding Remote Devices

After you initialize remote device, you can view the live video from the remote device, change remote device settings, and so on.

- Uninitialized device cannot be added. For details, refer to the user's manual.
- This section takes smart add for example.

Step 1 Click , or click on **Setting** interface, and then select **Device**.

The **Device** interface is displayed.

Step 2 Click or **Add**, and then select **Smart Add**.

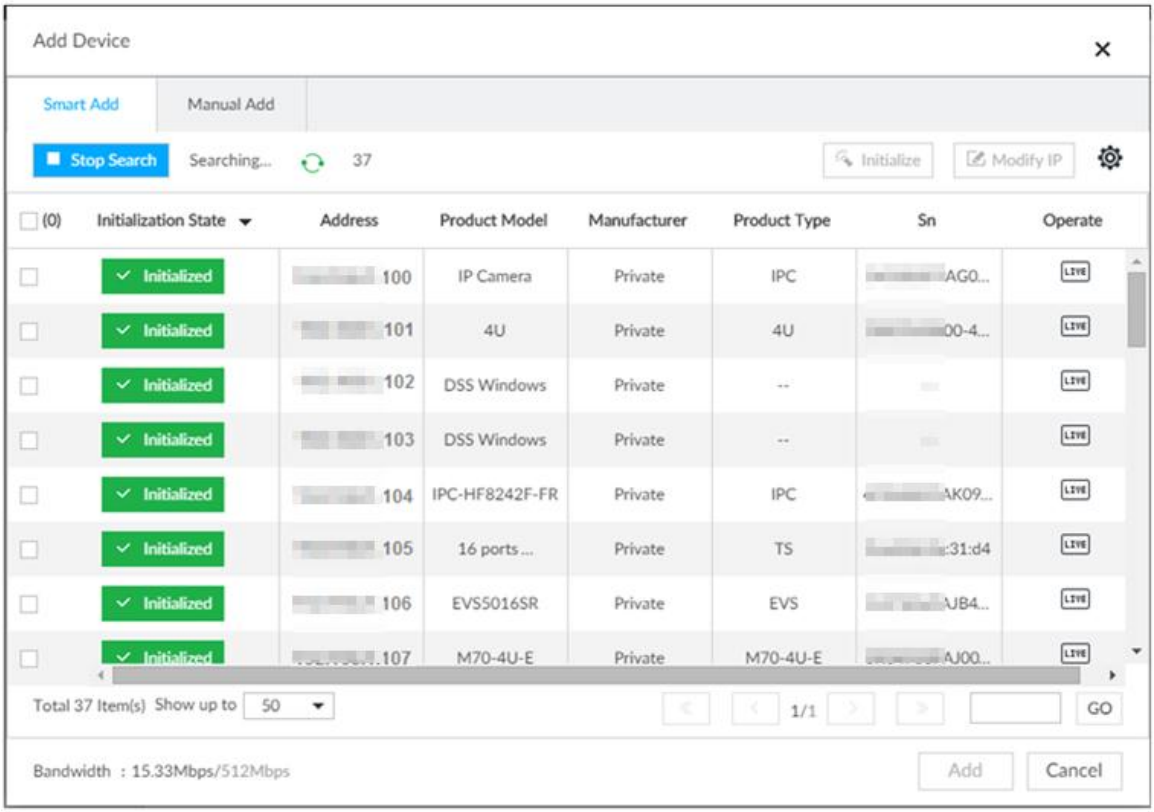
The **Smart Add** interface is displayed.

Step 3 Click **Start Search**.

System starts to search and displays result. See Figure 5-10.

Click to set search criteria.

Figure 5-10 Remote device



Step 4 Select a remote device and then click **Add**.

To add multiple-channel remote device, select the channel that you want to add.

Step 5 Click **Continue to add** or **Finish**.

6 Intelligent Operation

AI detection is to process and analyze the video and take the key information, compare the key information with the preset detection rule and trigger an alarm once the detected behavior matches the detection rule.

The device supports AI by camera and AI by device.

- AI by camera: the camera supports smart detection, such as Smart IPC. The IVSS device needs to detect and display the intelligent alarm information from the remote device and use the remote device to set smart detection and record playback.
- AI by device: The camera only provides videos and snapshots, but IVSS device supports smart detection.

When AI by camera is enabled, complete smart detection configuration at remote device. See remote device user's manual.

6.1 Enabling AI Plan

- AI plan is available on select models.
- The interface might vary in respect of AI function, and the actual interface shall prevail.

Step 1 Click , or click on Setting interface, and then select **Event**.

The **Event** interface is displayed.

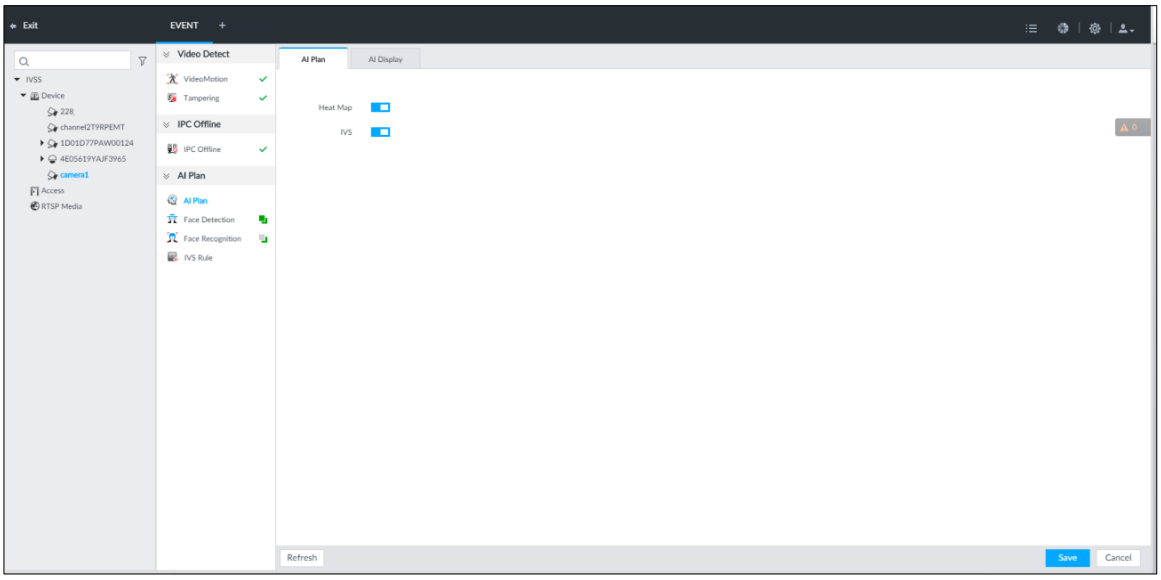
Step 2 Select camera in the device tree in the left.

Step 3 Select **AI Plan > AI Plan > AI Plan**.

The **AI Plan** interface is displayed.

When the remote device is PTZ and a preset point has been added, the system configures AI detection function for every preset point. See Figure 6-1.

Figure 6-1 AI plan (1)



Step 4 Click  to enable AI detection plan. The icon turns into  .

Step 5 Click **Save**.

6.2 Face Detection

After you configure face detection and face comparison function, the device processes and analyzes video image, extract face information from the video, and compare it with face images in the face database.

The device activates an alarm if similarity reaches or exceeds the designated similarity.

The device supports real-time preview of face detection and face comparison information; searches and plays back video according to face feature.

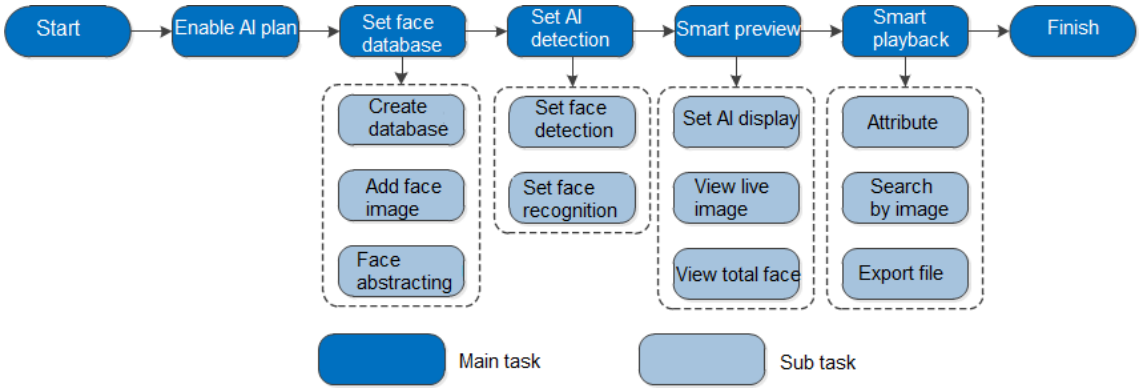
IVS and face detection function cannot be enabled at the same time.

6.2.1 Setting Face Comparison

Face comparison operation is displayed in Figure 6-2.

- Enable AI plan when AI by camera is used.
- You cannot search by image when you are using AI by camera and face comparison.

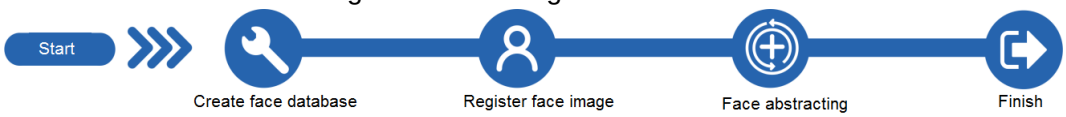
Figure 6-2 Face comparison flow



6.2.2 Configuring Face Database

You can create the face database to save face image, and the intelligent detection function can trigger the face database to carry out human face comparison, human face search, and so on. For face database configuration flow, see Figure 6-3.

Figure 6-3 Deleting face database



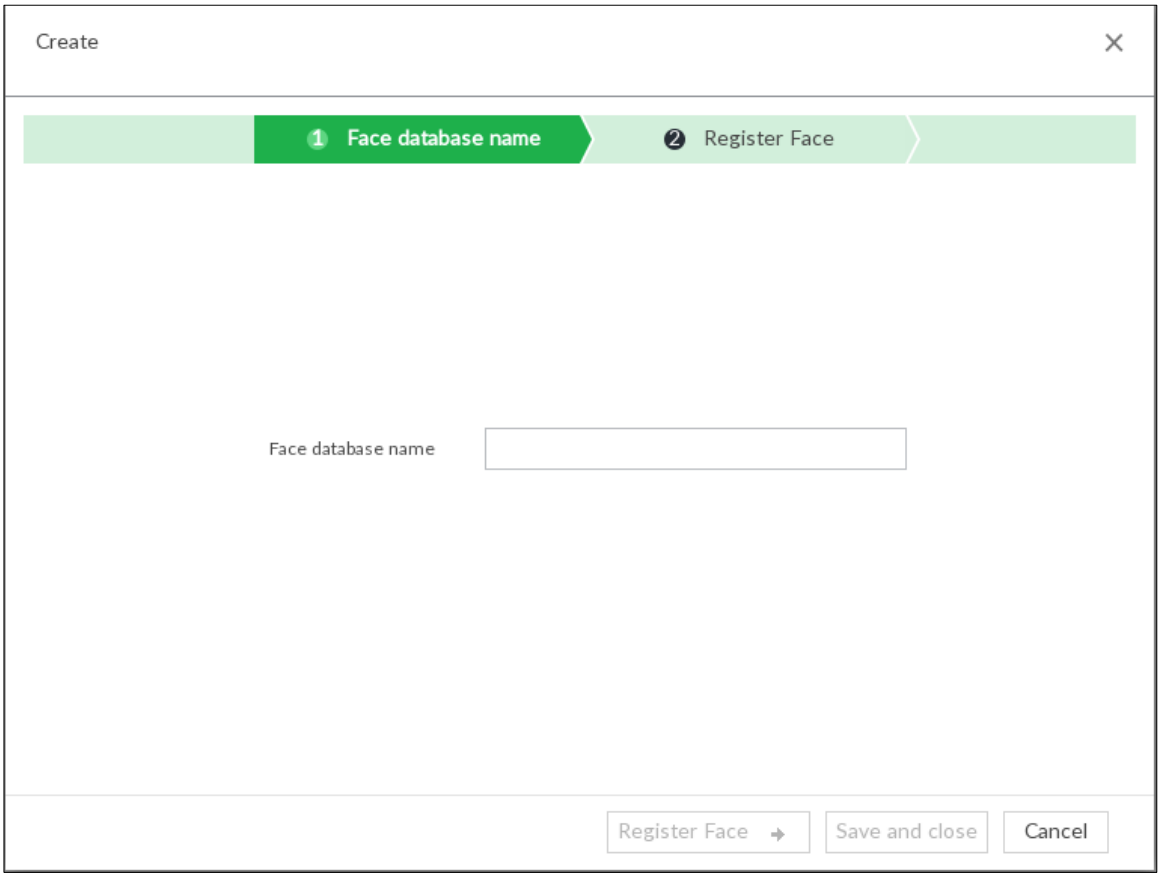
6.2.2.1 Creating Face Database

Create human face database to sort out and manage the face images uploaded to the device.

Step 1 On the **Live** interface, click , select **File** > **Face database**, then click **Create**.

The **Create** interface is displayed. See Figure 6-4.

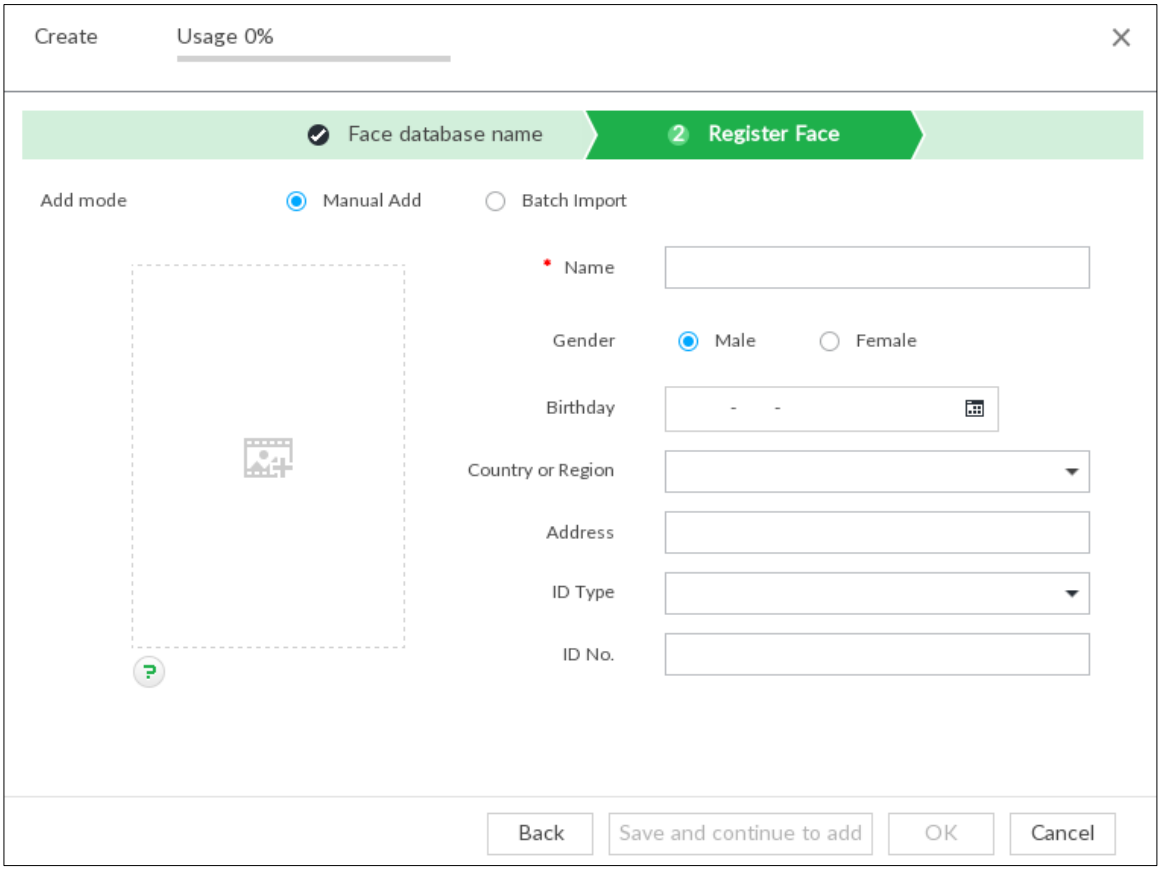
Figure 6-4 Create face database



Step 2 Set **Face database name**, then click **Register face** or **Save and close**.

- Click **Register face**, and then add human face on the newly created human database. See Figure 6-5. Refer to “6.2.2.2 Adding Face Image” for detailed information.

Figure 6-5 Register face



- Click **Save and close** to create a human face database with no data.

  After creating face database, you can go to the **Face Database** interface to view the newly created face database information. See Figure 6-6 and 0.

Figure 6-6 Face database

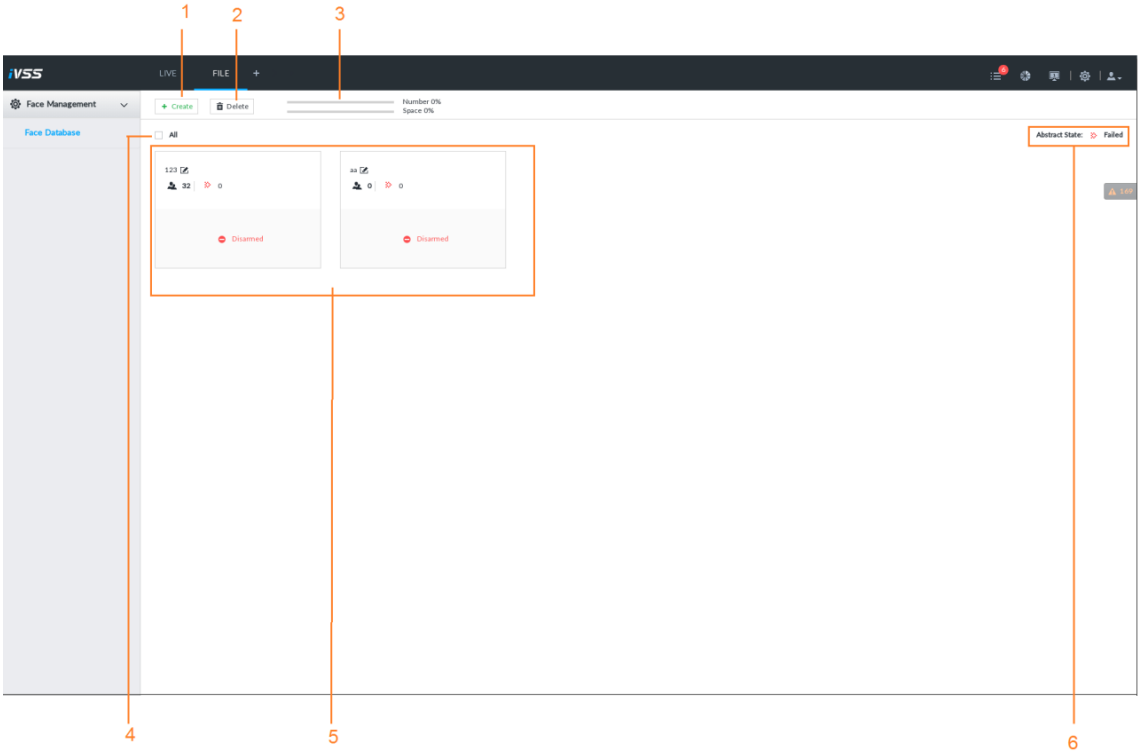


Table 6-1 Description

No.	Description
1	Click **Create** to create a face database. For details, refer to “6.2.2.1 Creating Face Database”.
2	Select a face databases, and then click **Delete**.
3	Display number and space information of face database. ● Number: The percentage ratio of the added face image quantity to the allowable total quantity of face image. Note Device supports maximum 300,000 face images. ● Space: The percentage ratio of the created face database quantity to the allowable total quantity of face database. Human face database creation. Maximum 50 databases.
4	Check **All**, it is to select all face databases.
5	Display the list of created databases.
6	Display abstract state.  displays face image of current database that failed to abstract.

6.2.2.2 Adding Face Image

Add face images to the created face database in the way of manual add, batch import and detection.

Preparation

- A face image has been obtained, and it meets the following requirements:
  - ◇ The image format is .jpg.
  - ◇ The image size shall be less than or equal to 4MB.
  - ◇ The resolution ranges from 100×100 to 6000×5000.
- You have obtained the face image and saved it in the proper path.
  - ◇ When operating on the local interface, save the image in the USB storage device and then connect the USB storage device to the IVSS device.
  - ◇ When operating on the Web or IVSS interface, save the image on the PC in which the Web or IVSS client is located.
- Before the batch import, name the face image according to the following rule: “Name#SGender#BBirthday#NNation#PProvince#TIDtype#MIDnumber#AAddress.jpg” (such as“Tim#S1#B20000101#NCN#PZheJiang#T1#M0000#AAddress”).
  Name the face image according to the rule. After successful import, the system will identify the face image automatically. For details about naming rule, see the user’s manual.

Operation Steps

Step 1 On the **Live** interface, click  , select **File > Face Database**.

Face Database interface is displayed.

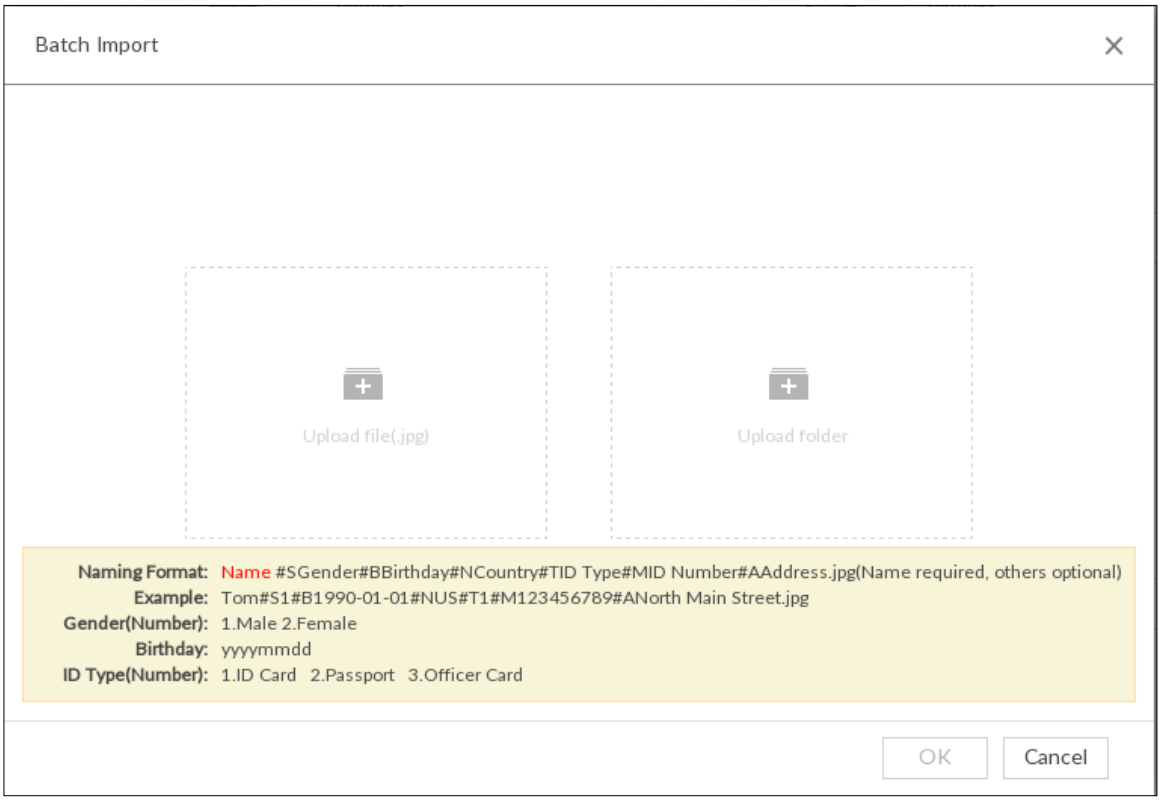
Step 2 Double-click face database.

The face database interface is displayed.

Step 3 Click **Batch Import**.

The **Batch Import** interface is displayed. See Figure 6-7.

Figure 6-7 Batch import



Step 4 Import face image.

The system supports uploading file and folder. Select according to your actual need.

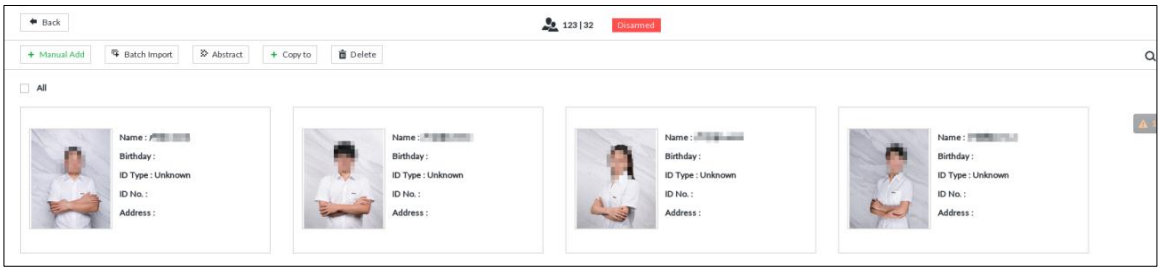
Step 5 Click **OK**.

The batch import result interface is displayed.

Step 6 Click **Continue to add** or **OK**.

After adding the image, at the bottom left corner of the face image, there is an icon  . It means device is creating module. Refer to “6.2.2.3 Human Face for detailed information.

Figure 6-8 Face database



6.2.2.3 Human Face Abstract

The human face abstracting is to abstract the corresponding information of the face image and import to the database, and then create the human face features module. In this way, device can compare human face, and search human face.

- The greater the face image quantity is, the longer the face abstracting time it takes.

- During the abstracting creation process, some intelligent functions (such as human face comparison, search human face and so on.) are null. These functions become normal after the abstracting process is completed.
- When the uploaded image is half-length photo or full-body photo, the system automatically selects the frame of the uploaded image and only the face area will be retained.

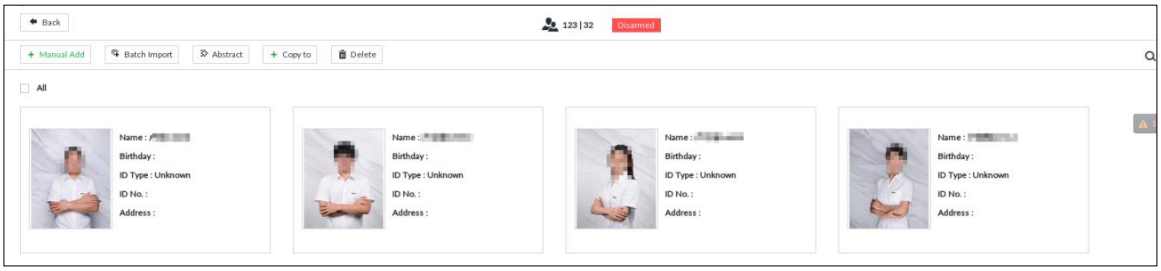
Step 1 On the **Live** interface, click , select **File > Face Database**.

Face Database interface is displayed.

Step 2 Double-click face database.

Face database interface is displayed. See Figure 6-9.

Figure 6-9 Face database interface



Step 3 Select face images and then click **Abstract**.

System pops up a confirmation box.

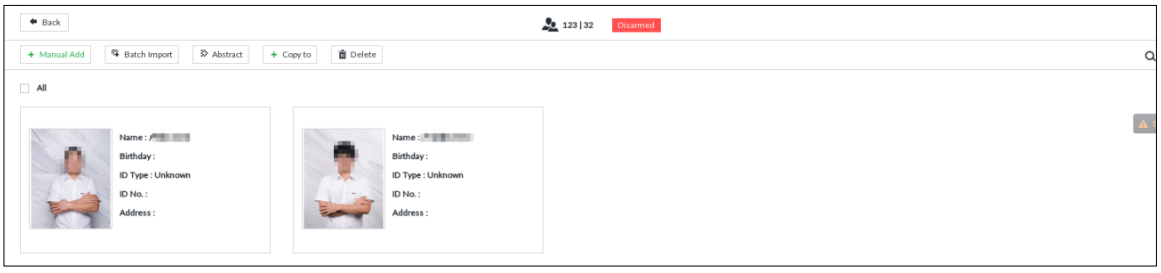
- Click the **All** check box, and you can select all face images in the current human face database.
- If there are too many human face images in the human face database, click to set search conditions (such as name, gender, birthday, country, province, ID type, ID number or abstracting status) to quickly find the human face images.

Step 4 Click **Start Abstract**.

Device begins creating module. See Figure 6-10.

- The abstracting is successful if is no longer at the bottom left corner of the face image. The abstracting may fail if the face image is not clear or does not contain complete information, and appears at the bottom left corner of the face image.
- When the uploaded image is half-length photo or full-body photo, the system automatically selects the frame of the uploaded image and only the face area will be retained.

Figure 6-10 Abstract result



6.2.3 Configuring Face Detection

Configure alarm rule of face detection.

Step 1 Click  or click  in the **Setting** interface, and then select **Event**.

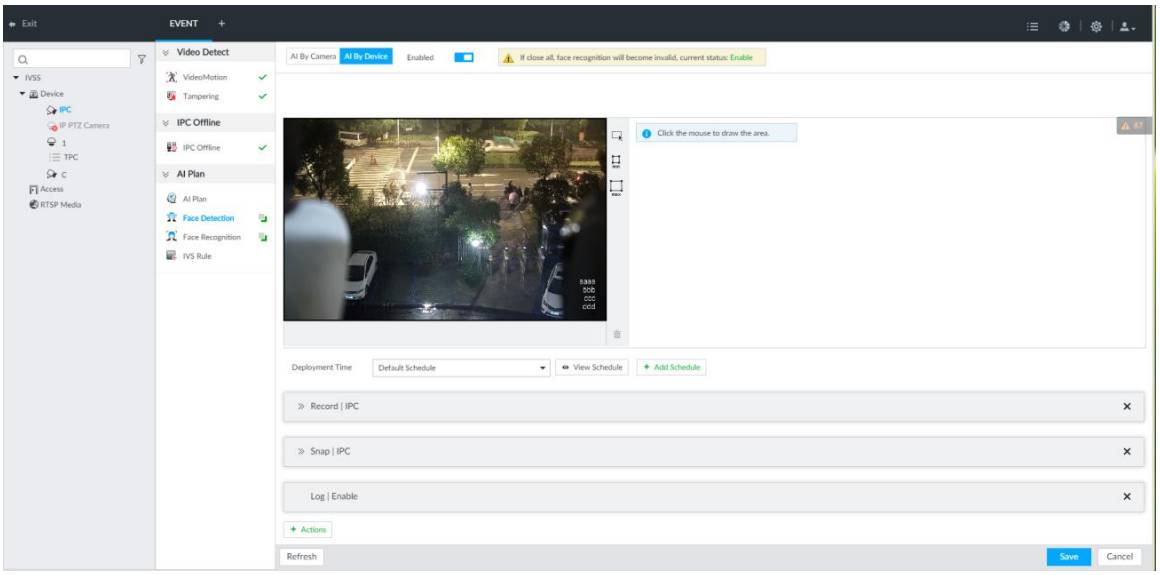
The **Event** interface is displayed.

Step 2 Select remote device in the device tree in the left.

Step 3 Select **AI Plan** > **Face Detection**.

Face Detection interface is displayed. See Figure 6-11.

Figure 6-11 Face detection



Step 4 Click AI by camera or AI by device, and then click  to enable intelligent function.

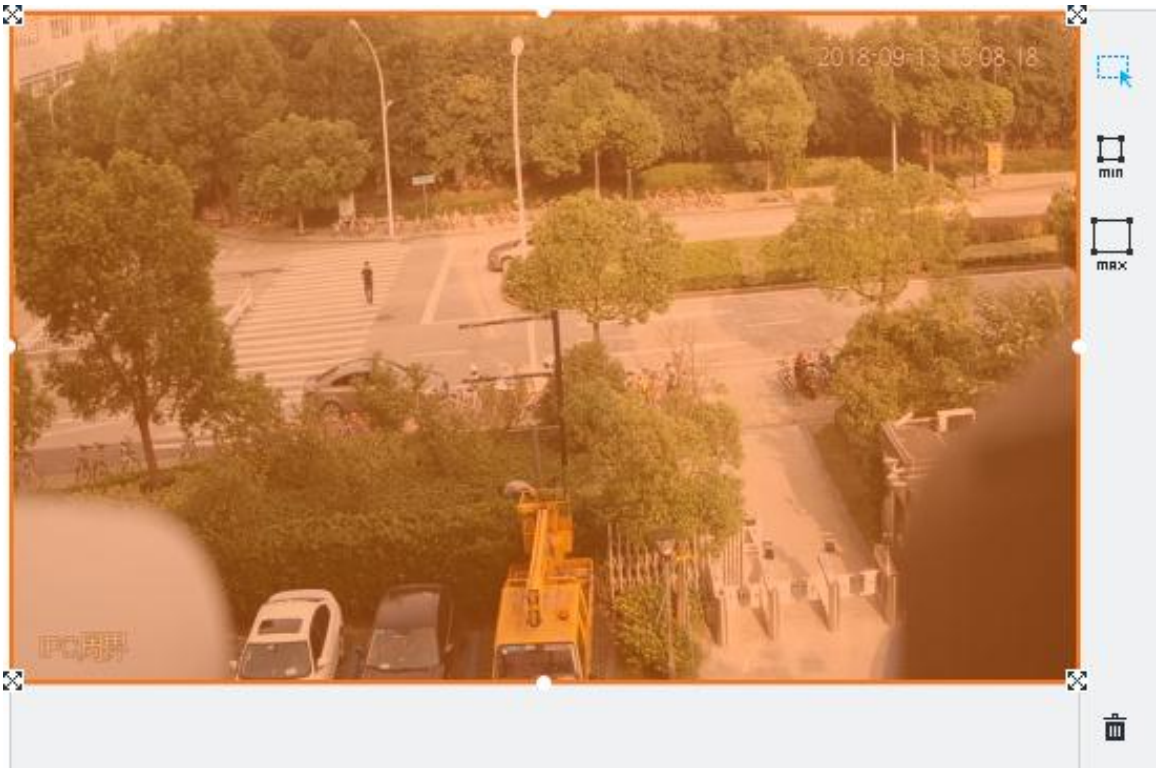
AI by camera supports Face RoI function. After enabling Face RoI function, system displays enhanced human face zone on the surveillance window.

Step 5 Set detection region.

It only supports to set minimum size and maximum size.

1) Click  , and set detection region in surveillance window. See Figure 6-12.

Figure 6-12 Area



- Press and hold or white dot on detect region frame, and drag to adjust its range.
- Click min or max to set human face detection minimum size or maximum size. System triggers an alarm once the detected human size is not larger than the maximum size or smaller than the minimum size.
- Select the motion detect zone you drew. Click to delete the zone.

2) Click to complete the settings.

Step 6 Click **Deployment Time** to select schedule from the drop-down list.

After setting arm period, system triggers corresponding operations when there is a motion detection alarm in the specified period.

Step 7 Click **Action** to set alarm action. Refer to user's manual for detailed information.

Step 8 Click **Save**.

6.2.4 Configuring Face Recognition

You can configure face comparison rule. The system compares the detected face image with face image in the face database, and triggers an alarm when the result conforms to the comparison rule.

Face detection shall be enabled when AI by device is used. For details, refer to "6.2.3 Configuring Face Detection".

Step 1 Click , or click on Setting interface, and then select **Event**.

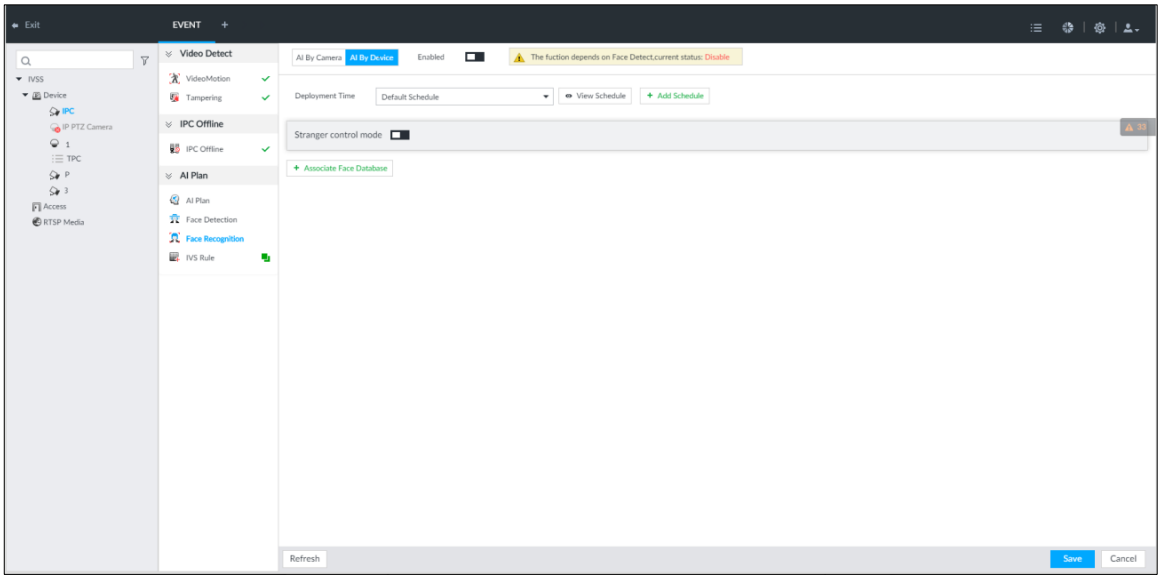
The **Event** interface is displayed.

Step 2 Select remote device in the device tree in the left.

Step 3 Select **AI Plan** > **Face Recognition**.

Face Recognition interface is displayed. See Figure 6-13.

Figure 6-13 Face recognition



Step 4 Click **AI by Camera** or **AI by Device**, and then click to enable intelligent function.

Step 5 Click **Deployment Time** to select schedule from the drop-down list.

After setting deployment period, system triggers actions when there is a motion detection alarm in the specified period.

Step 6 Set stranger mode.

It is to enable stranger mode. Once the face comparison similarity is lower than the specified value, system triggers an alarm.

1) Click to enable stranger mode.

The **Stranger control mode** interface is displayed. See Figure 6-14.

Figure 6-14 Stranger control mode

2) Set parameters. For details, refer to Table 6-2.

Table 6-2 Stranger control mode description

Parameter	Description
AI alarm rule	Click to set alarm rule box color.
Show feature panel	Check to enable features panel function. System displays stranger panel once there is an alarm.

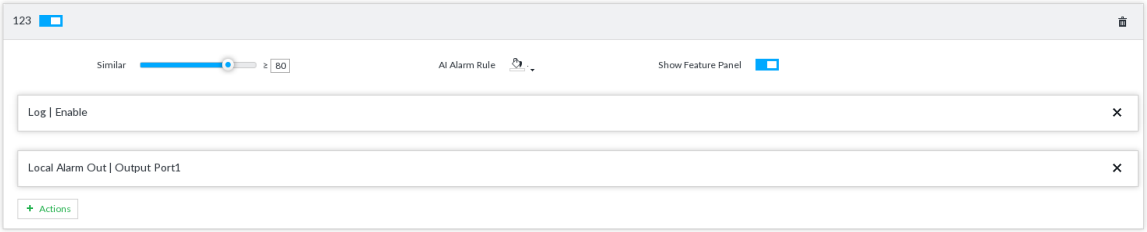
3) Click **Actions** to set alarm actions. Refer to user's manual for detailed information.

Step 7 Set triggered face database.

- Before you use AI by camera function, go to the remote device to set face database. At IVSS interface, set alarm event.
- Repeat the step to trigger several human databases at the same time.

1) Click **Associate Face Database**, and then select the triggered human face database.
   Face database configuration interface is displayed. See Figure 6-15.

Figure 6-15 Face database configuration



2) Set parameters. For details, refer to Table 6-3.

Table 6-3 Configuration description

Parameter	Description
Similar	It is to set human face similarity. System compares the human face with the image on the face database, system triggers an alarm once the similarity reaches threshold you set here.
AI alarm rule	Click to set alarm rule box color.
Show feature panel	Click to enable features panel function. System displays features panel once there is an alarm.

3) Click **Actions** to set alarm actions. Refer to user's manual for detailed information.

Step 8 Click **Save**.

6.2.5 Real-time View

You can view real-time face detection and human face comparison images.

6.2.5.1 Setting AI Display

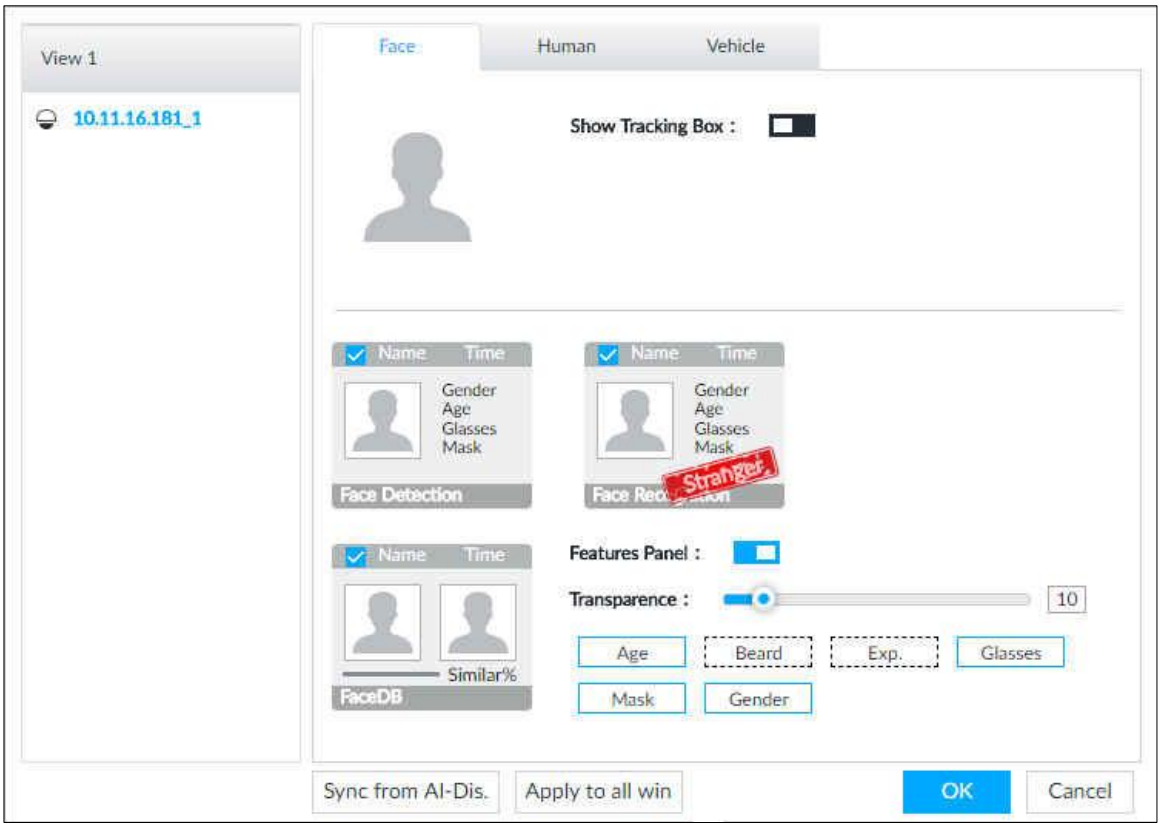
You can configure display rule of AI detection results.

Before using this function, make ensure that view has been created. Refer to user's manual for detailed information.

Step 1 On the **Live** interface, click and select **Face** tab.

The **Face** interface is displayed. See Figure 6-16.

Figure 6-16 Face



Step 2 Enable **Show Tracking Box** and **Features Panel**, and select feature(s) you want to display.

Step 3 Click **OK** to save the configuration.

6.2.5.2 Live

Go to the **Live** interface, enable view, device displays view video. See Figure 6-17.

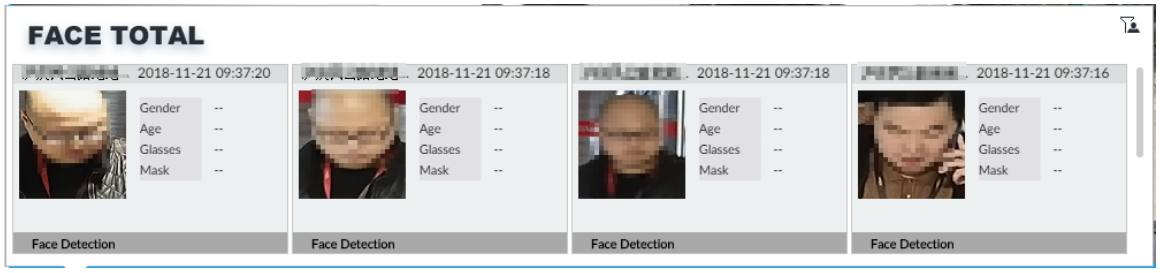
- The view window displays currently detected face rule box.
- The right side displays features panel.
  - ◇ During face detection, features panel displays detection time, the detected face image and feature.
  - ◇ During face comparison, features panel displays detection time, the detected face image, face image in the database, comparison result and database name. After setting stranger mode, when the detected face image mismatches face image in the database, features panel will have **Stranger** tag.

Figure 6-17 Live

6.2.5.3 Face Total

On the **Live** interface, click . Face detection panel is displayed. On this interface, you can view face detection and comparison image, add face image to face database, play back recorded videos and export them. See Figure 6-18.

Figure 6-18 Detection image



6.2.6 Face Search

Search face detection information, including face detection image, record and features. Search according to record and image.

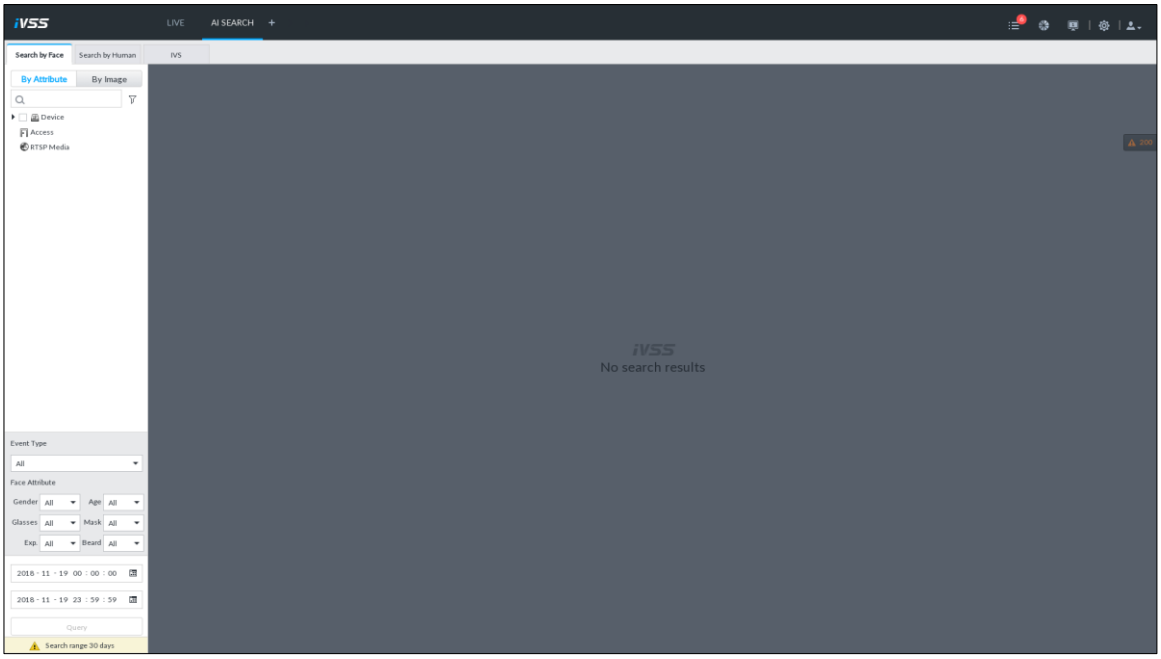
6.2.6.1 Search by Attribute

Set event type and attribute, to search qualified face information.

Step 1 On the **LIVE** interface, click , select **AI Search > Search by Face > By Attribute**.

By Attribute interface is displayed. See Figure 6-19.

Figure 6-19 Search by attribute

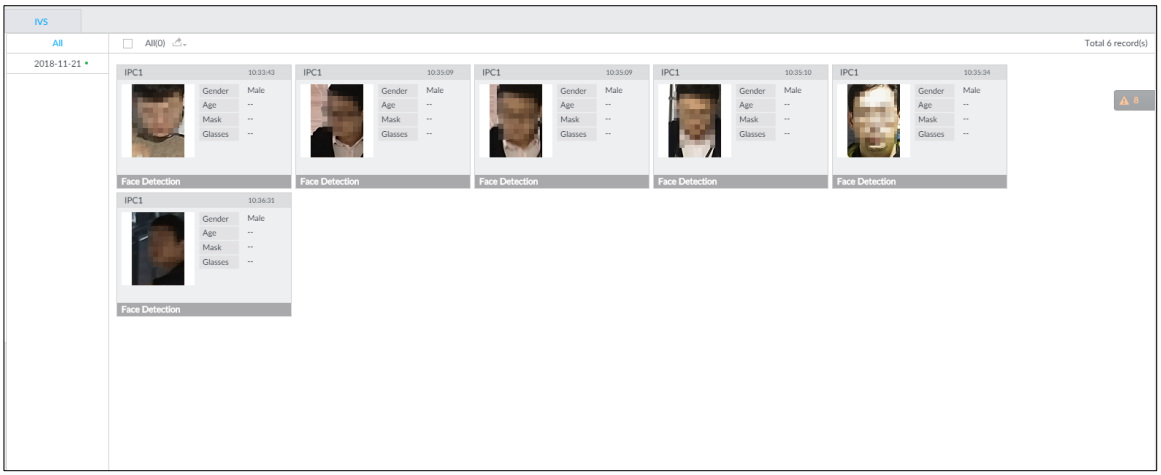


Step 2 Select the remote device, and set event type, face attribute and time.

Step 3 Click **Query**.

The search results are displayed in the panel. See Figure 6-20.

Figure 6-20 Search result



Click the panel. The operation icons are displayed. See Figure 6-21. For operations of the icons, see Table 6-4.

Figure 6-21 Icon

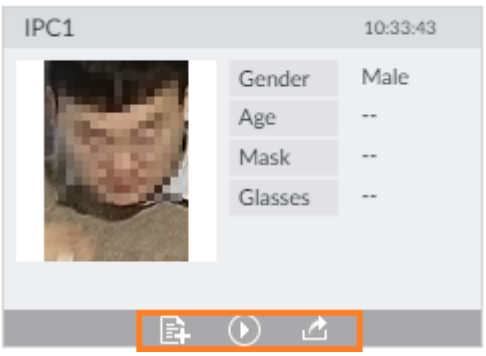


Table 6-4 Search by image

Icon	Operation
	● Select one by one: Click the panel or move the cursor onto the panel, and then click to select the panel. means it is selected. ● Batch select: Check **All** to select all panels on the interface.
	Click to add the image to the face database.
	Click or double-click the panel, the system starts to play back the recorded videos (about 20s).
	Click or select the panel and click to export images, videos and Excel to designated storage path. After setting alarm linkage snapshot, during exporting images, the system exports detected images and panoramic images at the time of snapshot.

6.2.6.2 Search by Image

It is to upload face image and then compare with the human face in the record file. Device can filter the record file in which the human face similarity has reached the threshold.

Device supports to use the face image on the face database or the local face.

- When you use face database images to search, ensure face database has been configured. Refer to "6.2.2 Configuring Face Database" for detailed information.
- If you want to use the local images, you need to obtain the face image and saved it in the corresponding path.
  - ◇ When operating on the local interface, save the image in the USB storage device and then connect the USB storage device to the IVSS.
  - ◇ When operating on the Web or IVSS interface, save the image on the PC in which the Web or IVSS client is located.

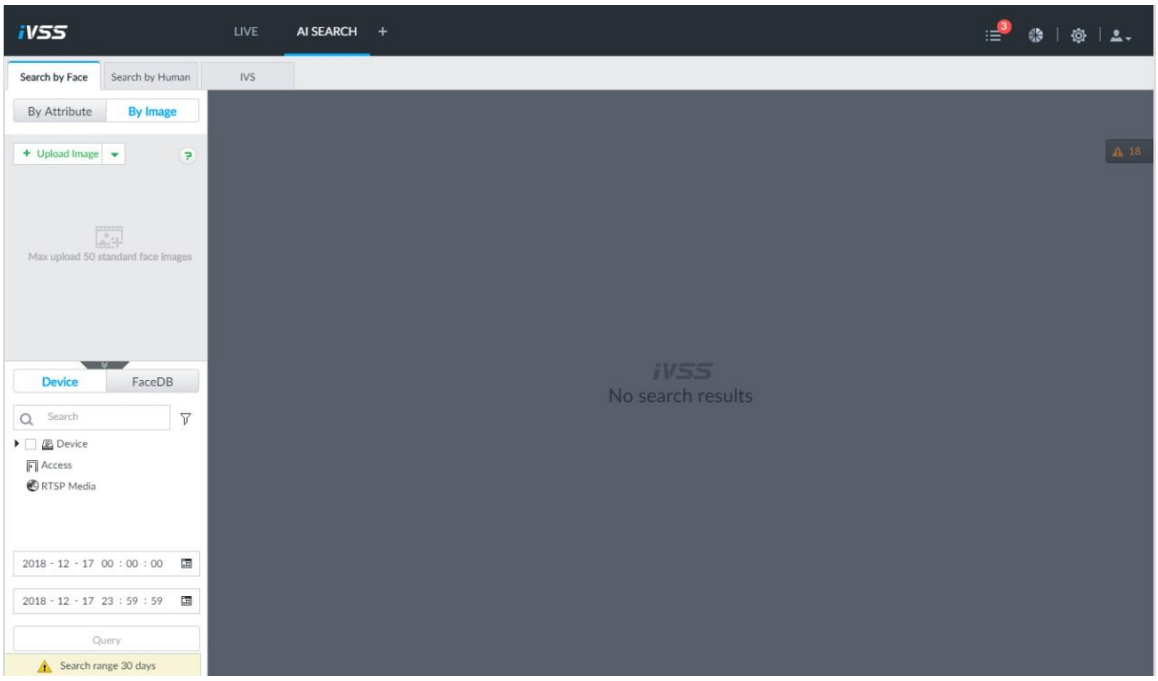
6.2.6.2.1 Device Search

Upload face image, compare it with face detection result of remote device, and find face detection information that meets the set similarity.

Step 1 On the **LIVE** interface, click , select **AI Search** > **Search by Face** > **By Image**.

The **By Image** interface is displayed. See Figure 6-22.

Figure 6-22 Search by image



Step 2 Click **Device** tab.

Step 3 Upload face image.

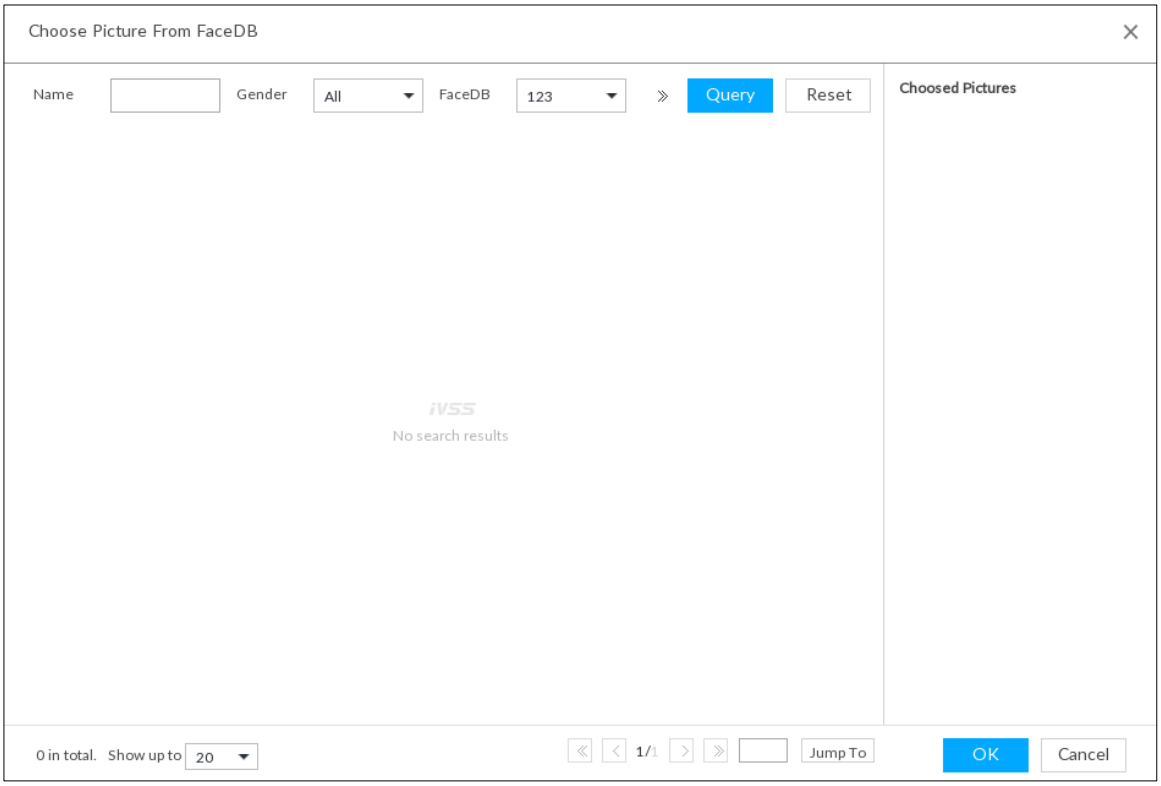
Device supports to upload maximum 50 face images. Device supports to select maximum 10 face images at one time.

- Upload the image from the face image database to search corresponding face.

1) Move the mouse to + Upload Image and select **Face DB**.

The **Choose Picture From Face DB** interface is displayed. See Figure 6-23.

Figure 6-23 Choose picture from face DB



2) Select face database and then set search criteria.
   - ◇ If there are too many face images on the database, set name, gender to filter.
   - ◇ Click » to set the search ID number.
3) Click **Query**.
   Device displays the searched face images.
4) Select face image.
   The selected face image is displayed on the **Chosen Pictures** on the right side.
5) Click **OK** to upload face image.

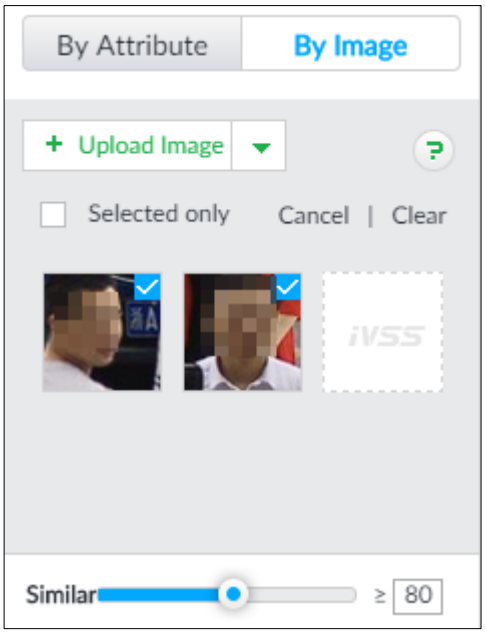
- Local image: Upload images from local PC or USB storage device.

1) Move the mouse to + Upload Image and select **Local**.
2) Select face image you want to upload.

   You can select several face images at the same time.
3) Click **OK** to upload face image.

After uploading the images, device displays the face images on the top left corner. The latest 10 images are selected. See Figure 6-24.

Figure 6-24 By image



- When the uploaded image is half-length photo or full-body photo, the system automatically selects the frame of the uploaded image and only the face area will be retained.
- When there are multiple faces in the uploaded images, the system automatically identifies the faces in the images and uploads multiple face images according to the number of faces recognized.
- Device supports to select maximum 10 face images.
- Click **Cancel** to cancel all checked face images.
- Select **Selected only**, device displays checked human face images only.
- Click **Clear** to clear all uploaded face images.

Step 4 Hold on and drag to set human face similarity. It is 80% by default.

Step 5 Select remote device on the device list and then set record file time period.

Step 6 Click **Query**.

The Result is displayed. See Figure 6-25 and Table 6-5.

Figure 6-25 Query

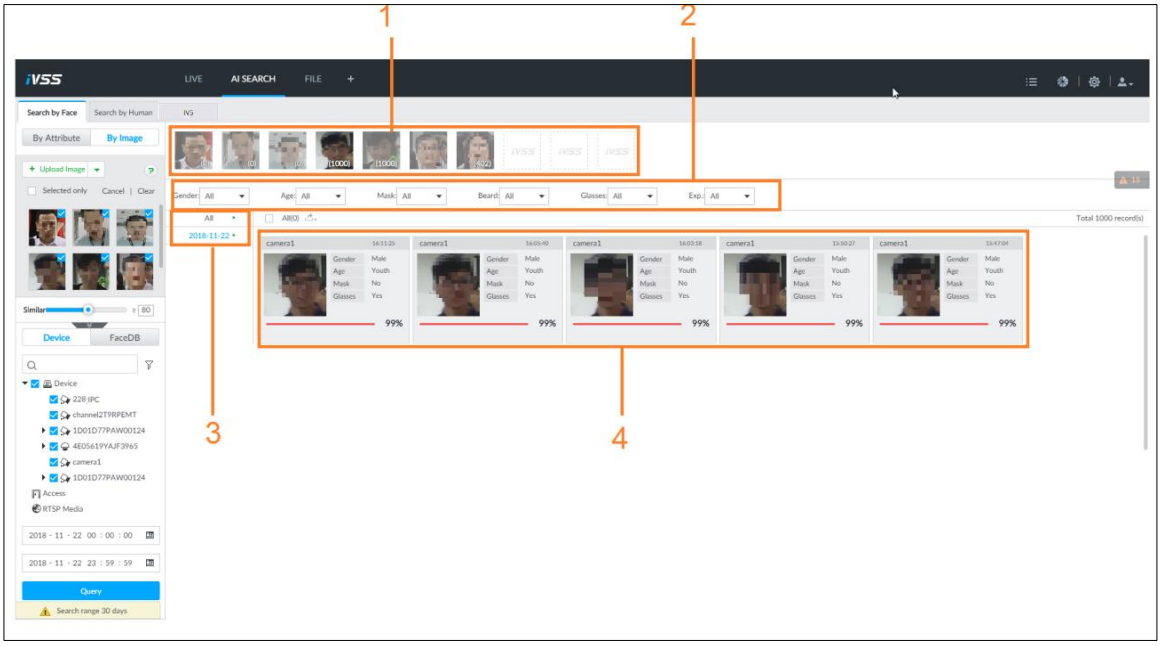


Table 6-5 Device search description

No.	Description
1	Displays selected face images. The number at the bottom right of the face image is to display the searched image amount. Click one image to view its query result.
2	It is to set filter criteria. It can quickly search the required image according to the face features.
3	Displays searched schedule list. Click a date, you can view the image list on current date on the right panel.
4	Displays the searched face panel, including face image, feature attribute and similarity.

Operation

After query, you can play back video file and export. Refer to Table 6-6 for detailed information.

Table 6-6 Device search operation

Icon	Operation
Select panel	● Select one by one: Click the panel or move the mouse onto the panel. Click to select the panel. means it is selected. ● Batch select: Click **All** to select all panels on this page.
Playing back recorded video	Double-click the panel to play back recorded video (about 20s).

Icon	Operation
Export file	Move the mouse to panel and click , or click the panel and click to export images, videos and Excel to designated storage path. Refer to "6.4 IVS" for detailed information. After setting alarm linkage snapshot, during exporting images, the system exports detected images and panoramic images at the time of snapshot.

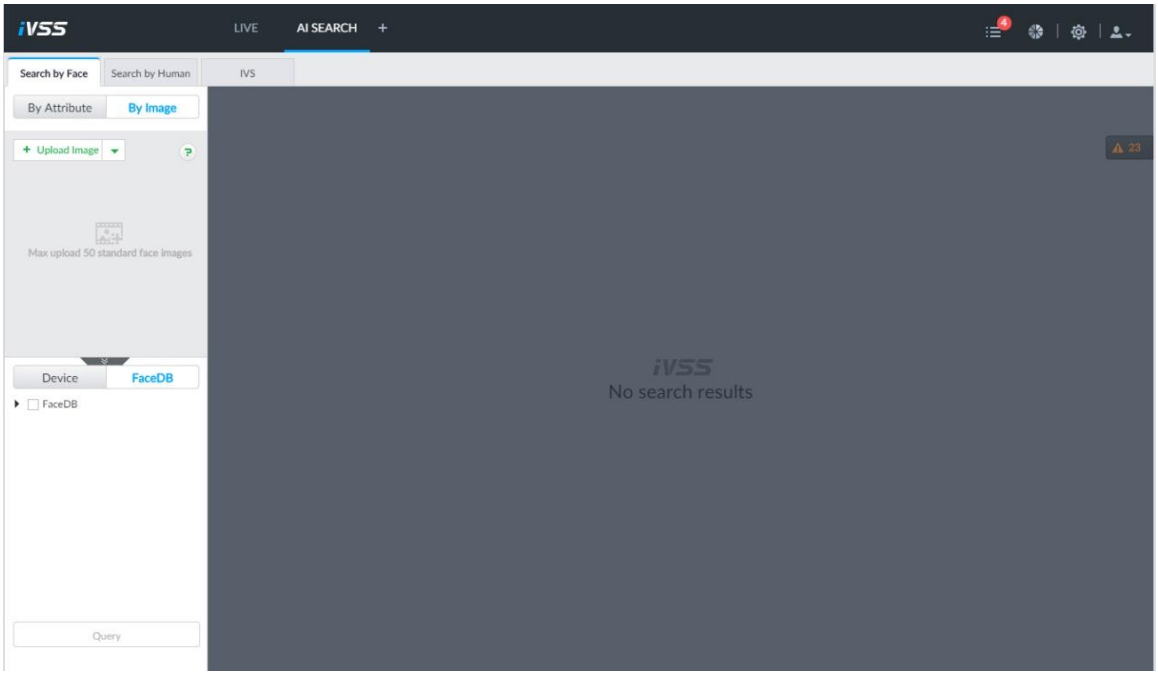
6.2.6.2.2 Searching Face Database

Upload face image, compare it with face image in face database, and find face image that meets the set similarity.

Step 1 On **Live** interface, click , select **AI Search** > **Search by Face** > **By Image** > **FaceDB**.

The **FaceDB** interface is displayed. See Figure 6-26.

Figure 6-26 Face database



Step 2 Upload face image. Refer to "6.2.6.2.1 Device Search Step 3" for detailed information.

Step 3 Hold on and drag to set human face similarity. It is 80% by default.

Step 4 Select the face database.

Step 5 Click **Query**.

The Result is displayed. See Figure 6-27 and Table 6-7.

Figure 6-27 Result

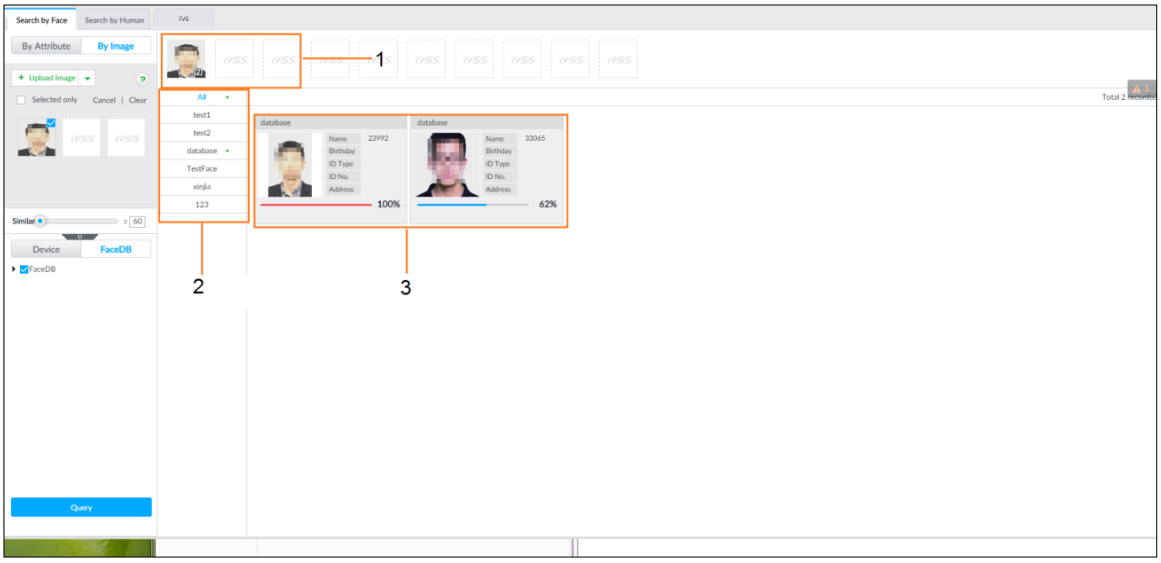


Table 6-7 Description

No.	Description
1	Displays selected face images. The number at the bottom right of the face image is to display the searched image amount. Click one image to view its query result.
2	Displays searched schedule list. Click a date, you can view the image list on current date on the right panel.
3	Displays the searched face panel, including face image, information and similarity.

Operation

Operations include select the panel, and export file. See Table 6-8.

Table 6-8 Face database operation

Name	Operation
Select a panel	• Select one by one: Click the panel or move the mouse onto the panel. Click to select the panel. means it is selected. • Batch select: Select the **All** check box to select all panels on this page.
Export file	Click the panel and click to export images to designated storage path. Refer to "6.4 IVS" for detailed information.

6.3 Video Structuring

With video structuring, IVSS can detect, recognize, and extract features from human body, face, motor vehicle, and non-motor vehicle. For example, features such as gender, age, and top color can be extracted from human, and you can then search a certain human face or configure alarm with these features.

6.3.1 Enabling AI Plan

You need to enable AI plan when AI by camera is used. Refer to "6.1 Enabling AI Plan" to enable AI detect function.

6.3.2 Configuring Video Structuring

After enabling and then configuring video structuring, IVSS can only link the current remote device for taking snapshots when alarm is triggered.

This section takes AI by device for example. AI by camera only supports enabling detection function and setting deployment time.

Step 1 Click or , and then select **EVENT**.

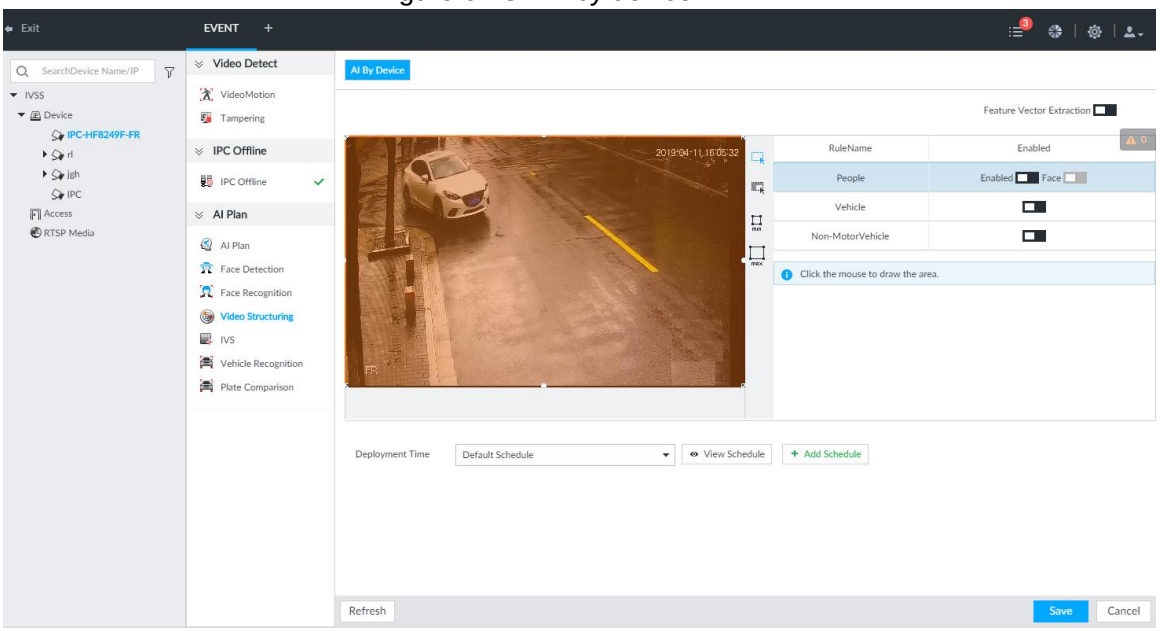
The **EVENT** interface is displayed.

Step 2 Select a device from the device tree at the left side.

Step 3 Select **AI Plan > Video Structuring > AI By Device**.

The **AI By Device** interface is displayed. See Figure 6-28.

Figure 6-28 AI by device



Step 4 Click next to **Feature Vector Extraction** to enable feature extraction, then IVSS can extract features of face and human, such as gender, age, and top color.

Feature vector extraction is available only after **Human** detection is enabled.

Step 5 Select the detection target.

- People: Click next to **Enabled** to enable people detection. Face detection can also be enabled at the same time.
- Vehicle: Click corresponding to enable vehicle detection.

- Non-Motor Vehicle: Click corresponding to enable non-motor vehicle detection.

Step 6 Click (the icon changes to), then you can configure detection area (orange) in the video image. See Figure 6-29.

- Click any white dot on the frame, and the dot changes to . Drag to adjust the detection area.

  Click to draw an excluded area which will not be detected. IVSS does not detect target within the excluded area.

  ◇ Up to 4 excluded areas can be drawn.

  ◇ To delete an excluded area, select the area, and then click .

- Click or to set the minimum size or maximum size of detection target. Alarm will be triggered when the size of detection target is within the minimum and maximum sizes.

Figure 6-29 Detection area

Step 7 Click **Deployment Time** dropdown list to select schedule.
IVSS links alarm event when an alarm is triggered within the schedule configured.

- Click **Add Schedule** to add new schedule if no schedule is added or the existing schedule does not meet requirements.
- Click **View Schedule** to view details of schedule.

Step 8 Click **Save**.

6.3.3 Live

You can view the detected features and properties of face, people, motor vehicle and non-motor vehicle on the **LIVE** interface.

6.3.3.1 Setting AI Display

You can set the features and properties that you want to display in the real-time video image of the **LIVE** interface.

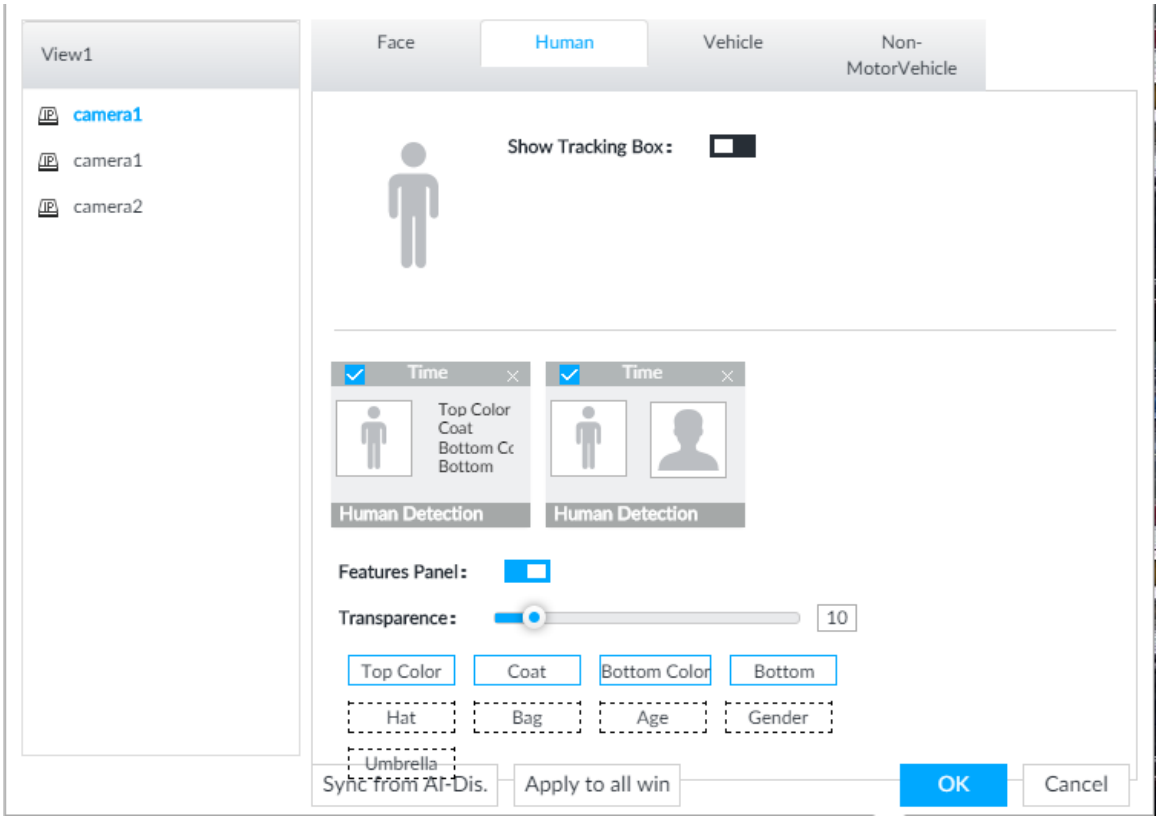
Before setting the features and properties, you need to create a view by adding cameras to the view so you can check video and pictures captured by the cameras.

Step 1 Select a view from **Live > View > View Group**.

Step 2 Click at the lower side of the **LIVE** interface, and then select **Human**, **Vehicle** or **Non-Motor Vehicle**. See Figure 6-30.

The figure takes **Human** for example. The interface is for reference only, and the actual interface shall prevail.

Figure 6-30 Human



Step 3 Click next to **Show Tracking Box**, then a tracking box is displayed in the video when target that meets the filtering conditions is detected.

Step 4 Configure feature panel.

4) Click next to **Features Panel** to enable feature panel.

A features panel is displayed on the right side of the video when target that meets filtering conditions is detected.

5) Select the target you want to detect. You can select from Face, Human, Vehicle, and Non-Vehicle Motor.

6) (Optional) Drag to adjust the transparency of panel. The higher the value, the more transparent the panel.

7) (Optional) Select the features to be displayed in the panel.
   - Up to 4 features can be displayed.
   - 4 features are selected by default. To select another feature, click the selected feature to cancel it, and then click the feature to be displayed.

Step 5 Click **OK**.

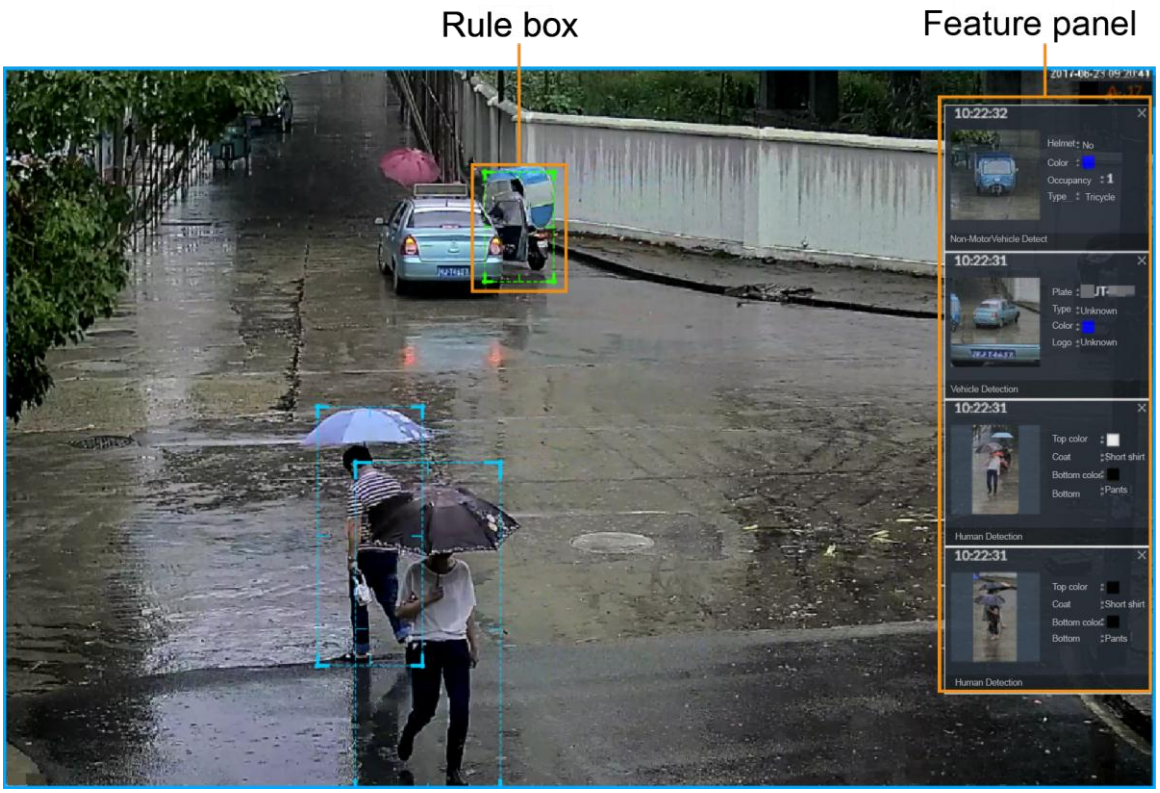
6.3.3.2 Real-time View

You can view the detected features and properties of face, people, motor vehicle and non-motor vehicle in the real-time video image.

On the **LIVE** interface, select a view from View Group, and the video image of the view will be displayed. See Figure 6-31.

- Rule box is displayed in real-time in the video image. Different detection targets correspond to different colors of rule box, and the actual interface shall prevail.
- Features panels are displayed on the right side of the video image.

Figure 6-31 Live



Move the cursor to the features panel, and the icons are displayed. See Figure 6-32 or Figure 6-33.

Figure 6-32 Icons (vehicle detection)

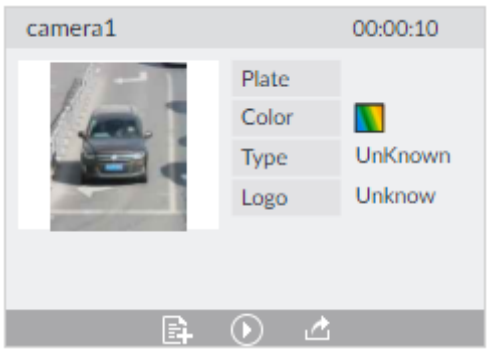
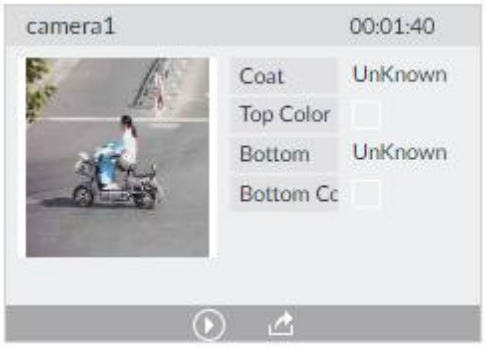


Figure 6-33 Icons (other detection)



- Click  to add plate information to plate database.
- Click  , or double-click the detected image to play back the video record (10 s before and after the time of snapshot).
- Click  to export images, videos and Excel to designated storage path.

6.3.3.3 Detection statistics

You can view the features and properties of detected human body, face, motor vehicle and non-motor vehicle.

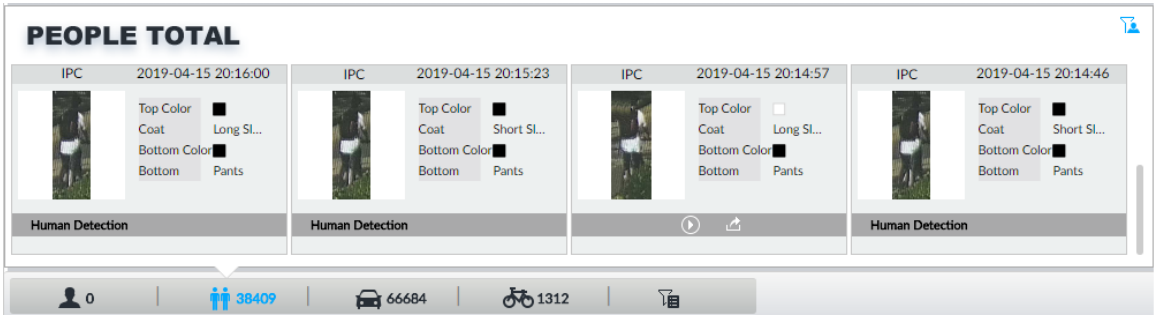
6.3.3.3.1 Human

You can view the features and properties of detected human body and face.

On the **Live** interface, click  , the **PEOPLE TOTAL** interface is displayed.

Click  , and then select **Snap With Face** and **Snap Without Face**. The information of detected human and face is displayed. See Figure 6-34.

Figure 6-34 Human detection



Move the cursor to a panel, and the following icons are displayed:

- : Click it to add the face image to face database.

  This function is available when face image is captured.

- : Click it, or double-click detected picture to play back the video record (10 s before and after the time of snapshot).

- : Click it to export the video record to specified save path (PC or USB storage device).

  If store the video record to USB storage device, make sure the device is connected.

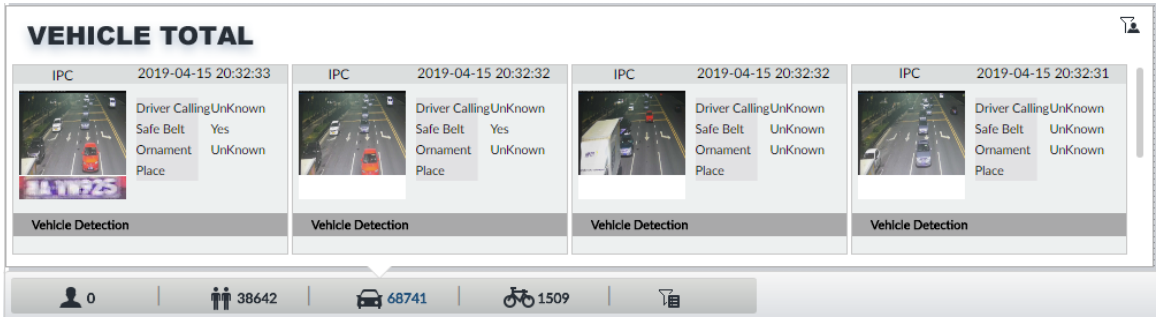
6.3.3.3.2 Motor Vehicle

You can view the features and properties of detected motor vehicles.

On the **Live** interface, click , the **VEHICLE TOTAL** interface is displayed.

Click , and then select **Vehicle Recognition**, the information of detected vehicles is displayed. See Figure 6-35.

Figure 6-35 Motor vehicle detection



Move the cursor to a panel, and the following icons are displayed: , , and . Refer to “6.3.3.3.1 Human” for detailed operation.

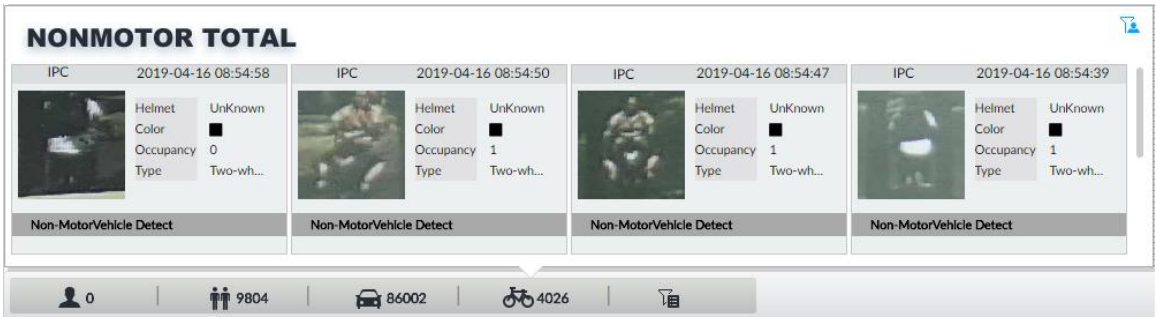
6.3.3.3.3 Non-motor Vehicle

You can view the features and properties of detected non-motor vehicles.

On the **Live** interface, click , the **NONMOTOR TOTAL** interface is displayed.

Click , and then select **Snap With Face** and **Snap Without Face**. The detected non-motor vehicle features and properties are displayed. See Figure 6-36.

Figure 6-36 Non-motor vehicle detection



Move the cursor to a panel, and the following icons are displayed: and . Refer to "6.3.3.3.1 Human" for detailed operation.

6.3.4 AI Search

Select device and set properties to search detection results. For example, you can set human properties such as gender, age, top, pants, and search human with these properties.

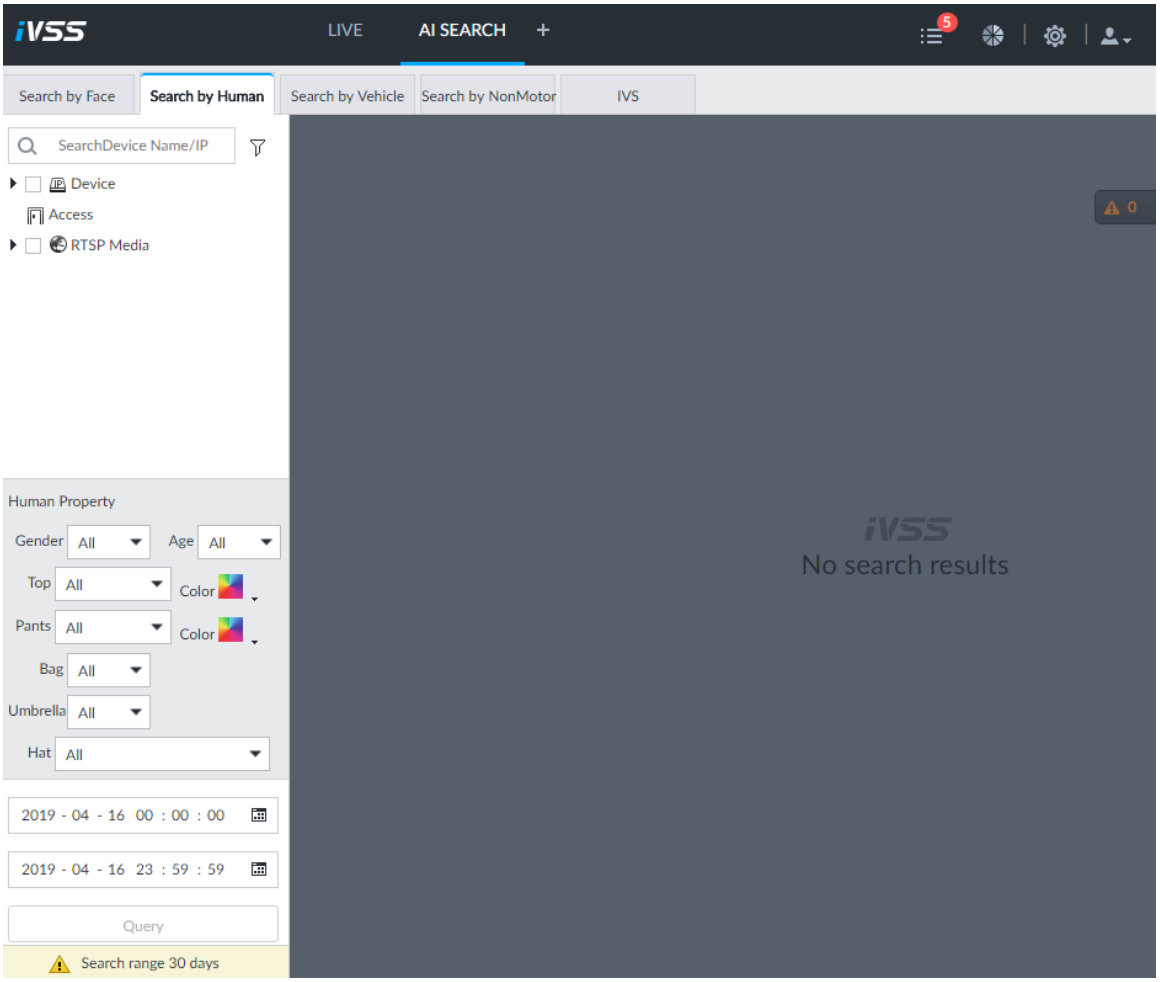
6.3.4.1 Search by Human

Select device, and set human properties and features, so you can search human with the defined properties and features.

Step 1 On the **LIVE** interface, click , and then select **AI SEARCH > Search by Human**.

The **Search by Human** interface is displayed. See Figure 6-37.

Figure 6-37 Search by human



Step 2 Select device, and set human properties and time period.

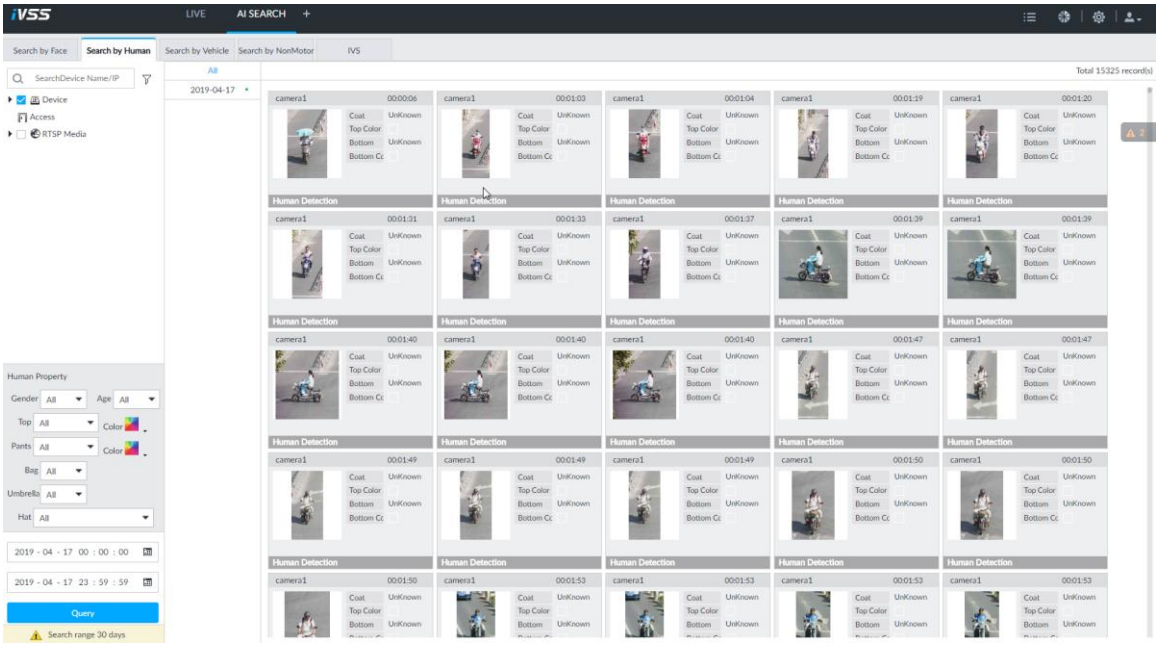
Click or to set the color. means more than one color.

Step 3 Click **Query**.

The search result is displayed. See Figure 6-38.

- If face is captured, the human and face snapshots are displayed.
- If no face is captured, the human snapshot and human properties are displayed.

Figure 6-38 Search result



Other Operations

Click on one displayed panel, and the icons are displayed. See Figure 6-39 or Figure 6-40. For details, see Table 6-9.

Figure 6-39 Icons (1)

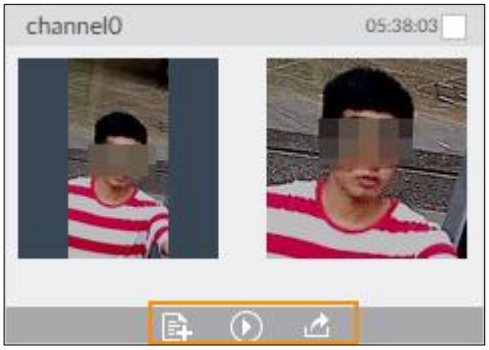


Figure 6-40 Icons (2)

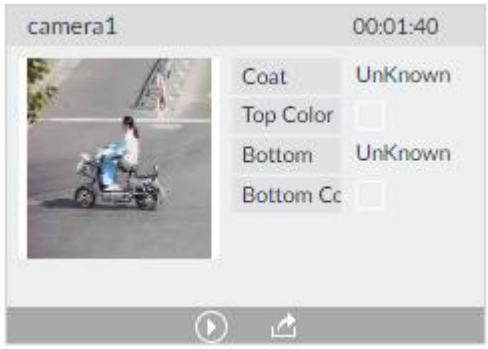


Table 6-9 Operation

Icon	Operation

Icon	Operation
	• Select one by one: Click  to select the panel.  means the panel is selected. • Select in batches: Select **All** to select all the panels on the interface.
	Click  or double-click the panel to play back the video record (10 s before and after the time of taking the snapshot).
	Click  to add picture to database.
	Click  , or select the panel and then click  to export picture, video, and Excel file to specified save path.

6.3.4.2 Search by Vehicle

Set event type and vehicle properties to search vehicle detection results. For example, you can set vehicle properties such as type, logo, plate, and search vehicles with these properties.

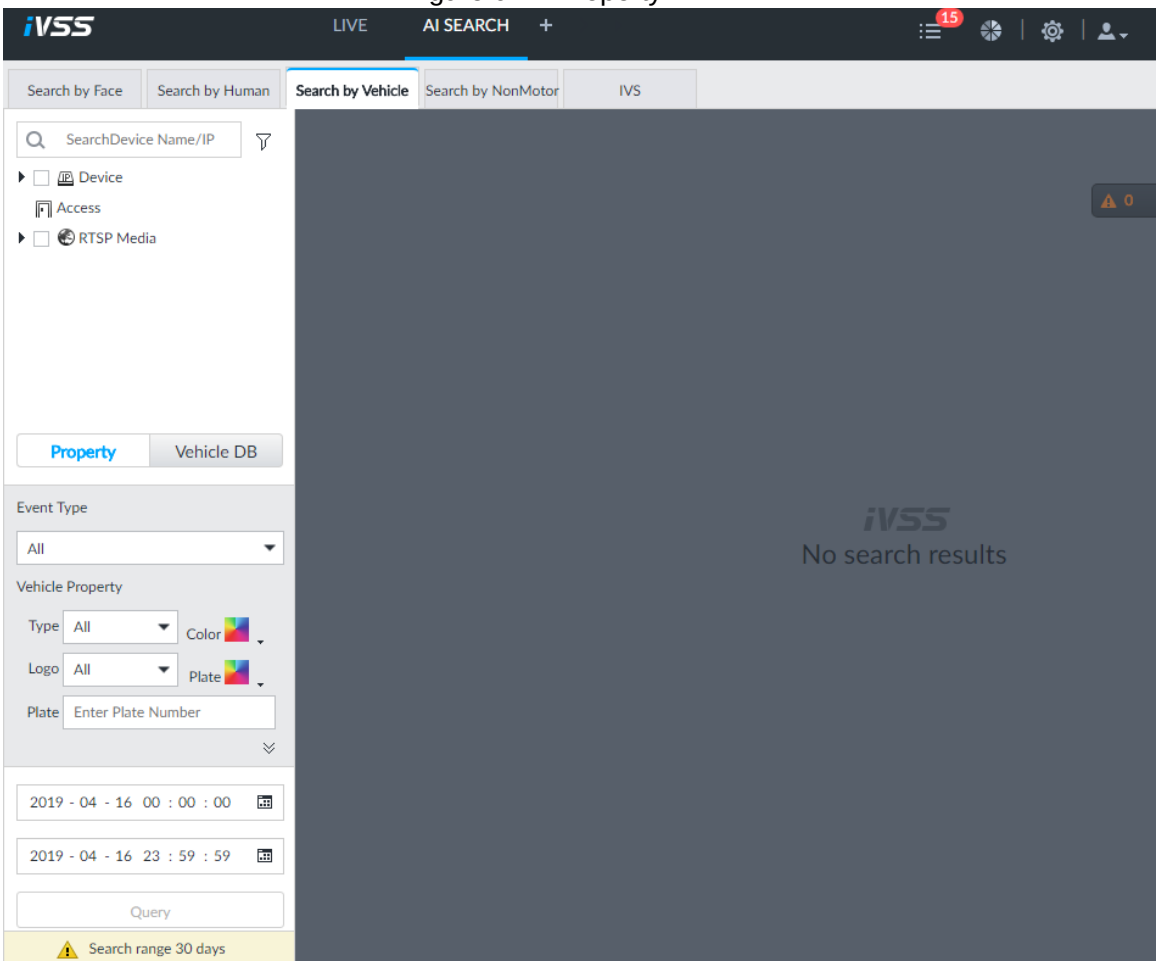
Step 1 On the **LIVE** interface, click  , and then select **AI SEARCH > Search by Vehicle**.

The **Search by Vehicle** interface is displayed.

Step 2 Select device, and then click **Property** tab.

The **Property** interface is displayed. See Figure 6-41.

Figure 6-41 Property



Step 3 Select **Vehicle Detection** as **Event Type**.

Step 4 Set vehicle properties and time period.

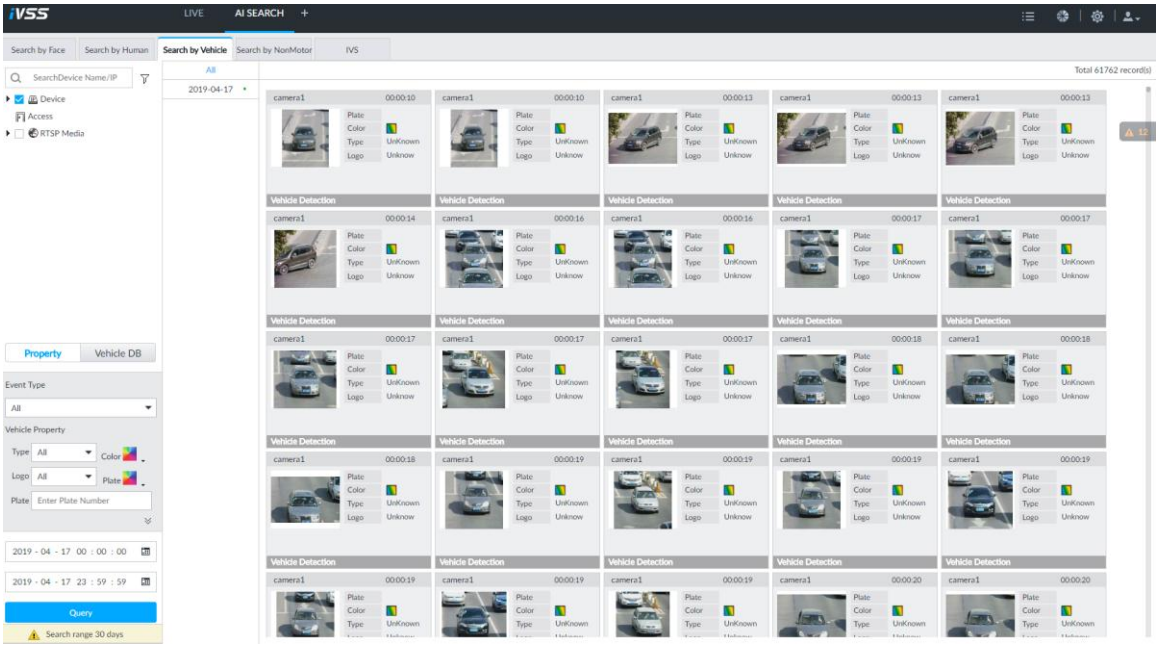
Click or to set the color. means more than one color.

Step 5 Click **Query**.

The search result is displayed. See Figure 6-42.

If license plate is detected, both the scenario and the license plate will be displayed.

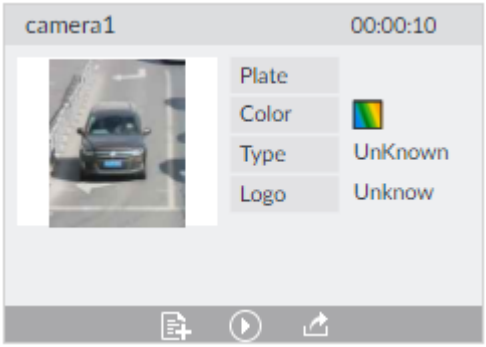
Figure 6-42 Search result



Other Operations

Click on one displayed panel, and the icons are displayed. See Figure 6-43. For detailed operations of icons, see “6.3.4.1 Search by Human.”

Figure 6-43 Icons



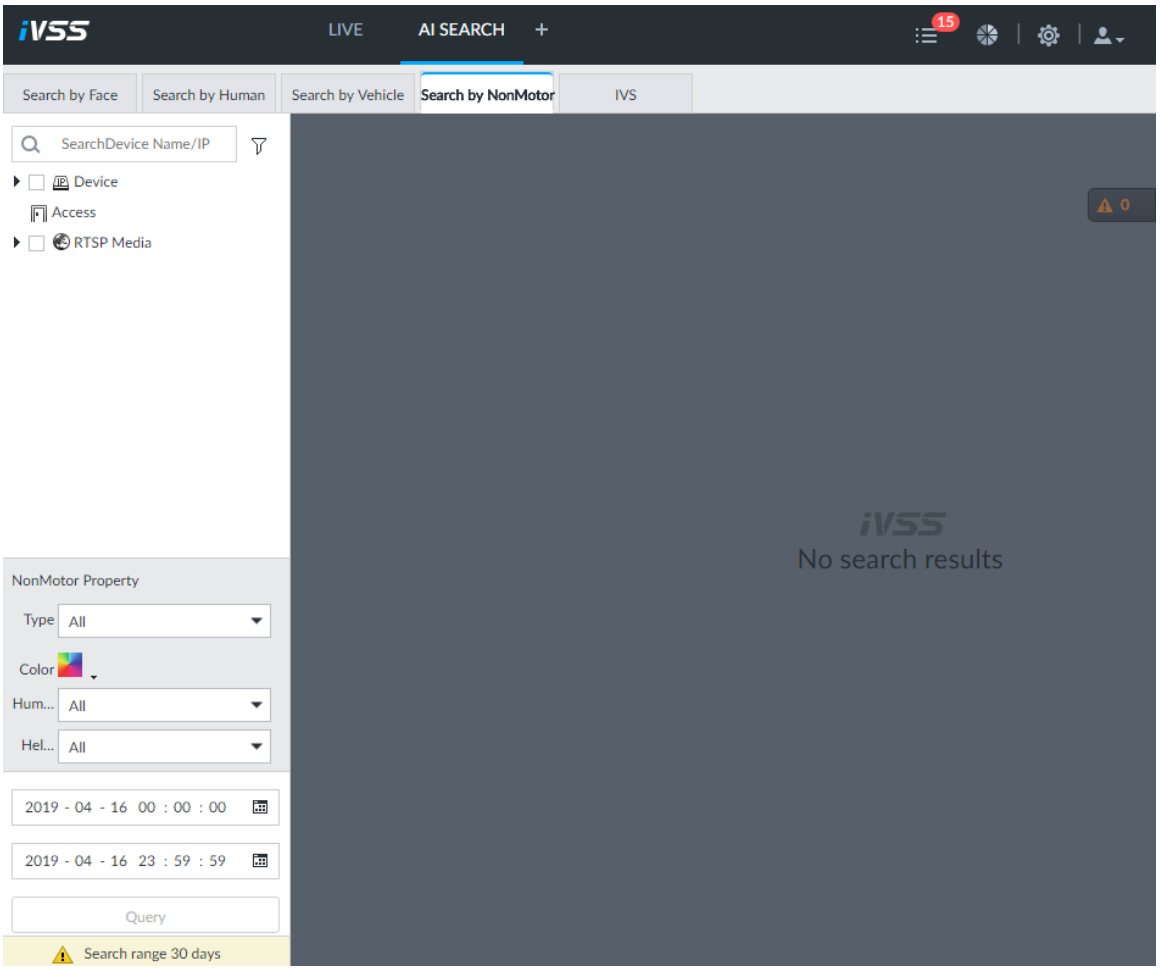
6.3.4.3 Search by Non-motor Vehicle

Set event type and non-motor vehicle properties to search non-motor vehicle detection results. For example, you can set non-motor vehicle properties such as type, color, helmet, and search non-motor vehicles with these properties.

Step 1 On the **LIVE** interface, click +, and then select **AI SEARCH > Search by NonMotor**.

The **Search by NonMotor** interface is displayed. See Figure 6-44.

Figure 6-44 Search by non-motor vehicle



Step 2 Select the device you want to search.

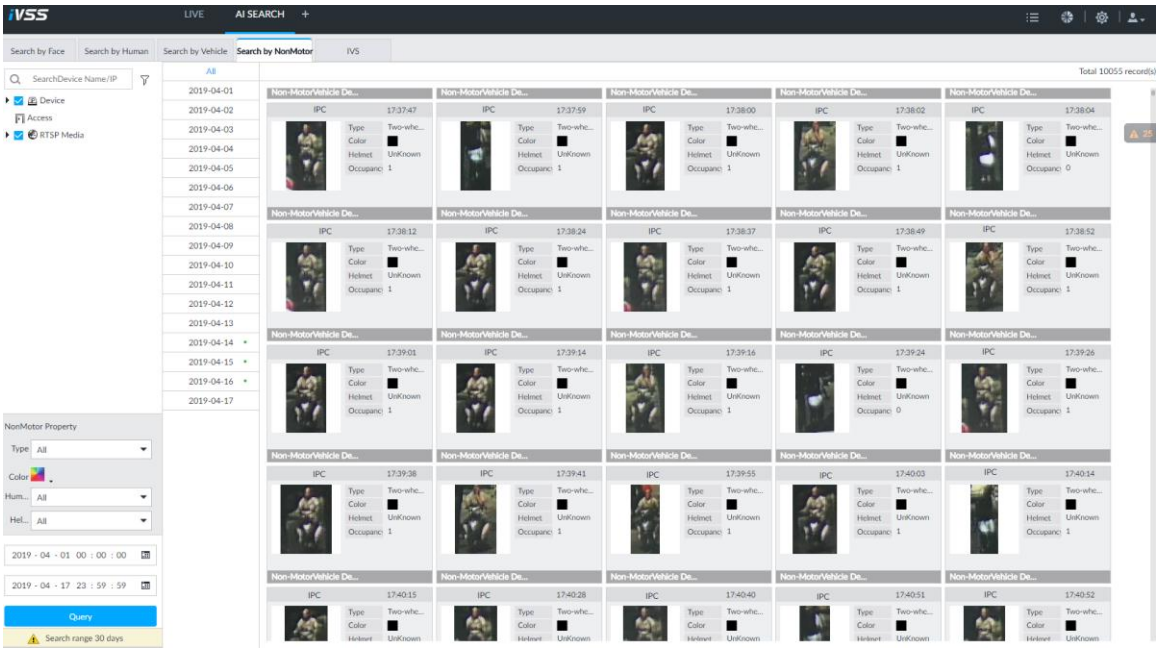
Step 3 Set non-motor vehicle properties and time period.

Click or to set the color. means more than one color.

Step 4 Click **Query**.

The search result is displayed. See Figure 6-45.

Figure 6-45 Search result



Other Operations

Click on one displayed panel, and the icons are displayed. See Figure 6-46. For detailed operations, see “6.3.4.1 Search by Human.”

Figure 6-46 Icons

6.4 IVS

IVS is to process and analyze the image, take the key information from the video, compare the key information with the preset detection rule and trigger an alarm once the detected behavior matches the detection rule.

IVS type includes cross line detection and cross region detection.

IVS and face detection function of the same remote device cannot co-exist.

IVS scene requirement is as follows:

- Total area of the target does not exceed 10% of the image.
- Target size in the image shall not be less than 10 pixels × 10 pixels, and leftover target size shall not be less than 15 pixels × 15 pixels (CIF image). Target height and width

shall not exceed 1/3 height and width of the image. It is suggested that target height should be 10% of image height.

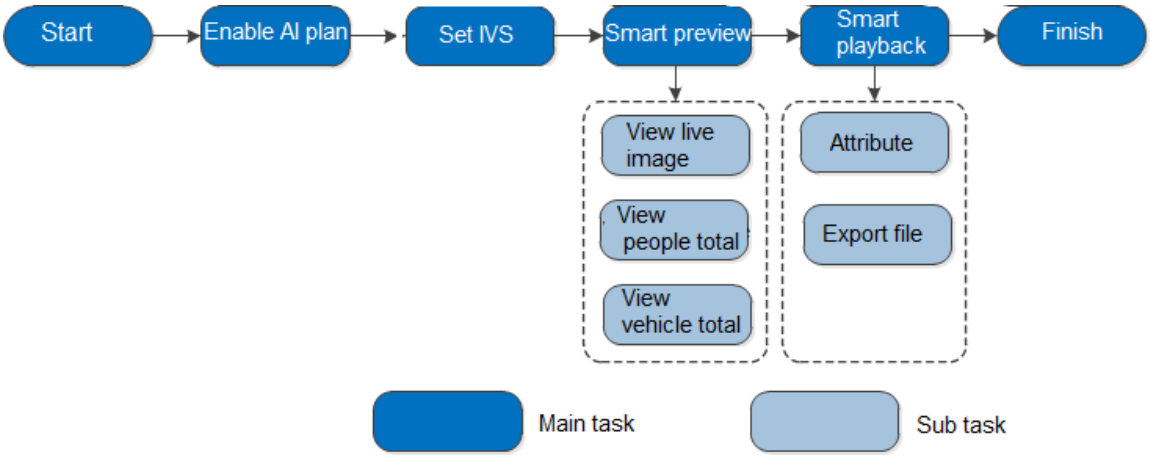
- Brightness difference of target and background shall not be less than 10 gray levels.
- Ensure that the target appears in the field of view for over 2s, movement distance exceeds target width and shall not be less than 15 pixels (CIF image).
- When conditions allow, try to reduce complexity of surveillance analysis scene. It is not recommended to use IVS in the scene with gathered targets and frequent changes of light.
- Try to avoid glass, reflection of light on the ground and water; try to avoid tree branches, shadows and areas with mosquito; try to avoid backlight and direct light.

6.4.1 Setting

Set IVS. See Figure 6-47.

Enable AI plan when AI by camera is used.

Figure 6-47 IVS flow



6.4.2 IVS

Set alarm rule of IVS.

- The system supports AI by camera and AI by device. When both are enabled, the system selects AI by device first.
- For example, set AI by device.

Step 1 Click , or click on Setting interface, and then select **Event**.

The **Event** interface is displayed.

Step 2 Select remote device in the device tree in the left.

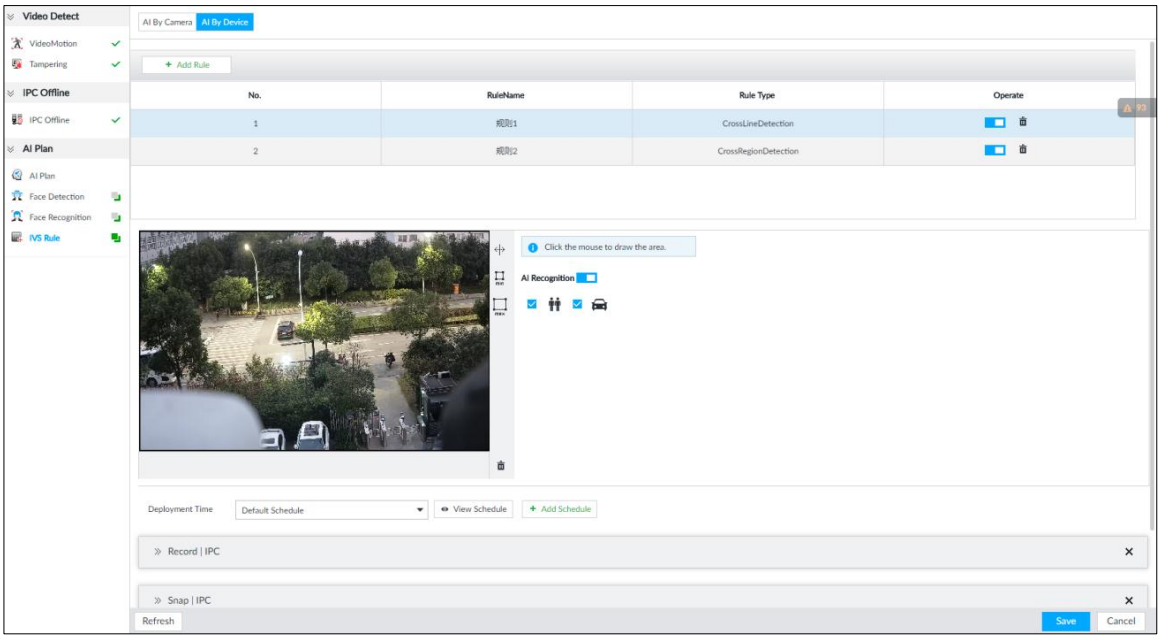
Step 3 Select **AI Plan** > **IVS Rule**.

The **IVS Rule** interface is displayed.

Step 4 Click **AI by device**.

The **AI by device** interface is displayed. See Figure 6-48.

Figure 6-48 AI by device



Step 5 Set cross line detection and cross region detection rule.

1) Click **Add Rule**, and select **Cross Line Detection** or **Cross Region Detection**. The rule information is displayed. See Figure 6-49 or Figure 6-50.

Figure 6-49 Configuring cross line detection rules

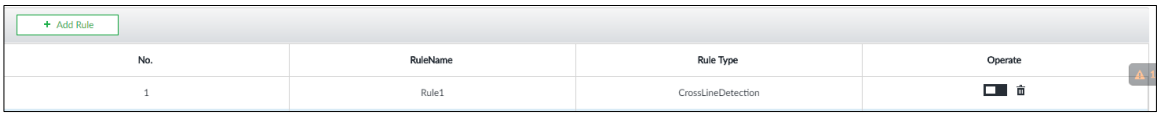
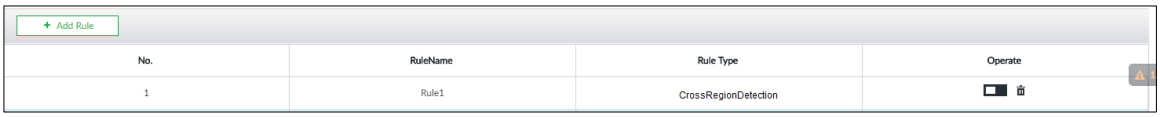


Figure 6-50 Configuring cross region detection rules



2) Click  to enable detection rule.

Click  to delete detection rule.

3) Click  to edit cross line. See Figure 6-51. Click  to edit cross region. See Figure 6-52.

- Hold on  and drag it to adjust position or length of the line and region.
- Click or  on cross line direction to set the direction. An alarm will be triggered only when the target crosses the line in the designated direction.
- Click white dot on the line or region frame to add a turning point. Hold on on the turning point and drag it to adjust position or length of the line and region.
- Select a line and then click  to delete.

Figure 6-51 Configuring cross line

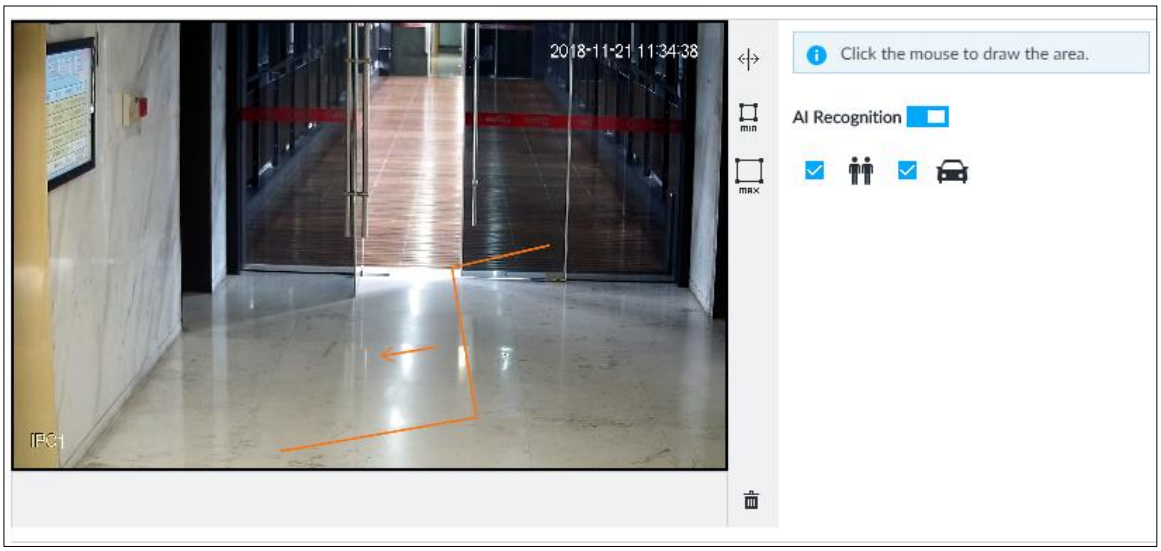
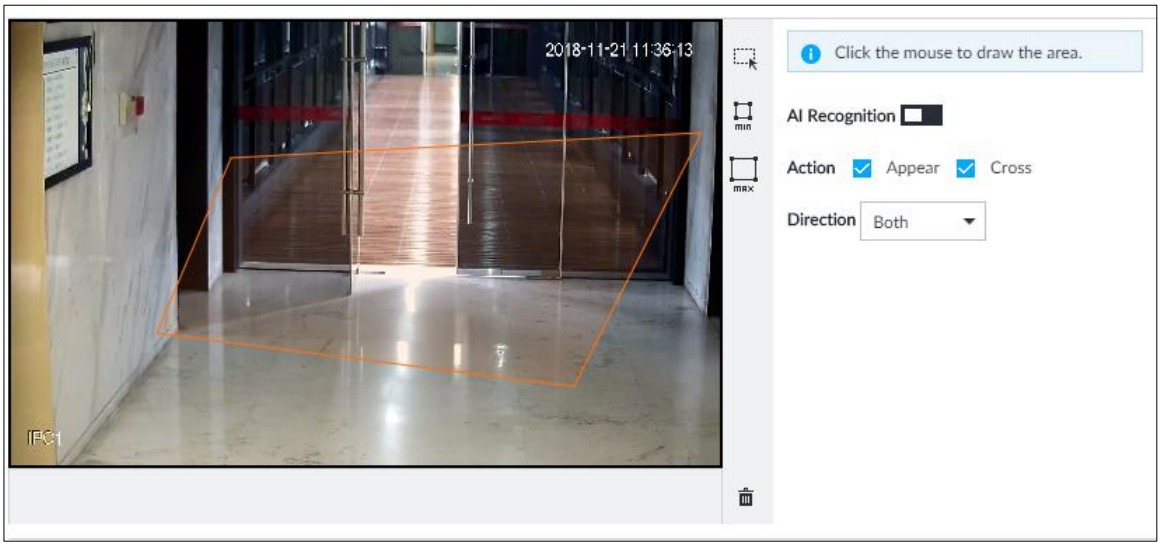


Figure 6-52 Configuring cross region



4) Set cross region action and direction.

Go to this step only when you set cross region.

5) Click min or max to set minimum size or maximum size of detection target.

System triggers an alarm once the detected target size is not larger than the maximum size or smaller than the minimum size.

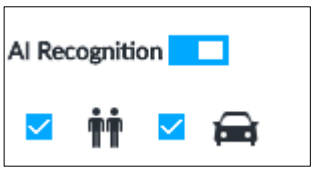
Step 6 AI Recognition

After setting AI recognition, when the system detects a person or vehicle, a rule box will appear beside the person and vehicle in the surveillance image.

1) Click to enable AI recognition function.

The recognition type option displayed. See Figure 6-53.

Figure 6-53 Type



2) Select a recognition type.

- is to recognize person, and is to recognize vehicle.
- After enabling AI recognition function, at least one recognition type shall be selected.

Step 7 Click **Deployment Time** to select schedule from the drop-down list.

After setting deployment period, system triggers corresponding operations when there is a motion detection alarm in the specified period.

- Click **View Schedule** to view detailed schedule settings.
- If the schedule is not added or the added schedule does not meet actual needs, click **Add Schedule**.

Step 8 Click **Actions** to set alarm action. Refer to user's manual for detailed information.

Repeat Step 5-Step 8 to add multiple detection rules. Support to add max. 10 detection rules at the same time.

Step 9 Click **Save**.

6.4.3 Real-time View

On the **Live** interface, view real-time IVS results.

6.4.3.1 Live

Go to the **Live** interface, enable view, device displays view video. See Figure 6-54.

- When a target triggers cross line or cross region rule, the line or region frame in the view flickers in red.
- After setting AI recognition, when the system detects a person or vehicle, a rule frame will appear beside the person and vehicle in the view.
- There is a feature panel on the right side of the video window.

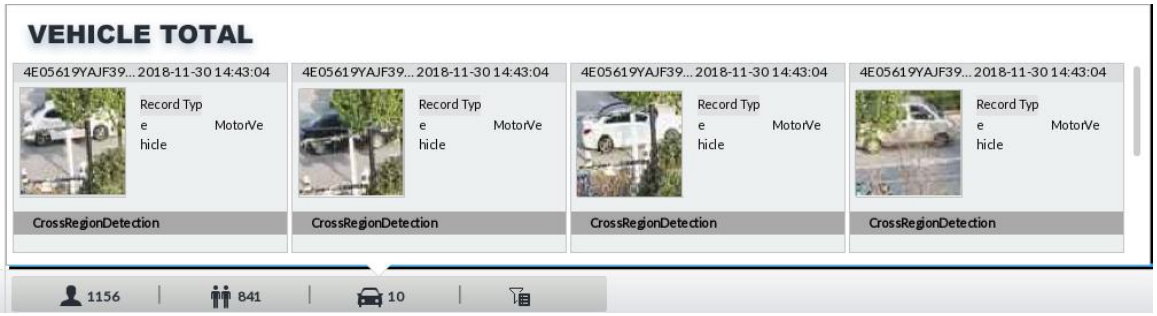
Figure 6-54 Live

6.4.3.2 Detection Statistics

On the **Live** interface, click  . Person detection panel is displayed. See Figure 6-55. Click  . The vehicle detection panel is displayed. See Figure 6-56.

Figure 6-55 People total

Figure 6-56 Vehicle total



On this interface, you can view IVS detection image, play back recorded videos and export them.

6.4.4 Search Interface

After query of AI detection information, export the results to designated storage path. The exported detection result can include image, record and feature attribute.

- Connect USB device to the system if you are on the local menu to operate.
- Take exporting human detection information for example.
- After setting alarm linkage snapshot, during exporting images, the system exports detected images and panoramic images at the time of snapshot.

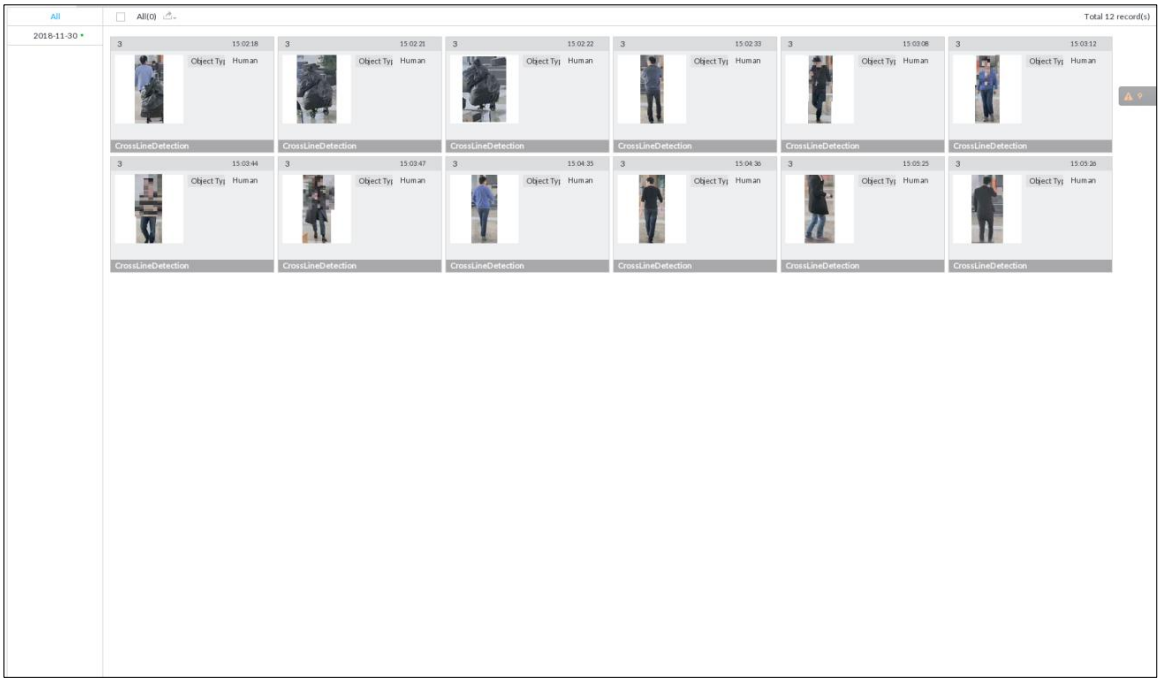
Step 1 On the **Live** interface, click + and then select **AI Search** > **IVS**.

Step 2 Select the remote device, and set event type, effective target and time.

Step 3 Click **Query**.

The search results are displayed in the panel. See Figure 6-57.

Figure 6-57 Search result

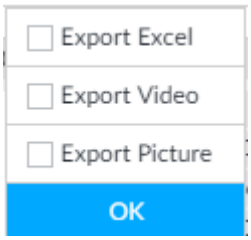


Step 4 Select multiple panels.

Check **All** to select all panels on this page.

Step 5 Click and select file format. See Figure 6-58.

Figure 6-58 File format



Step 6 Click **OK**.

The **Export** interface is displayed. See Figure 6-59.

Figure 6-59 Export

Step 7 Click **Browser** to select save path.

Step 8 Click **OK**.

The system exports files to designated path and displays **Export Progress** interface.

Step 9 Click **OK** to complete the settings.

6.5 Vehicle Comparison

IVSS compares the detected vehicle properties with plate pictures of linked plate database, and then triggers alarm when the matched similarity reaches or exceeds the defined similarity.

6.5.1 Procedure

The procedures of setting vehicle comparison are shown in Figure 6-60 and Figure 6-61.

Figure 6-60 Vehicle comparison procedure (AI by camera)

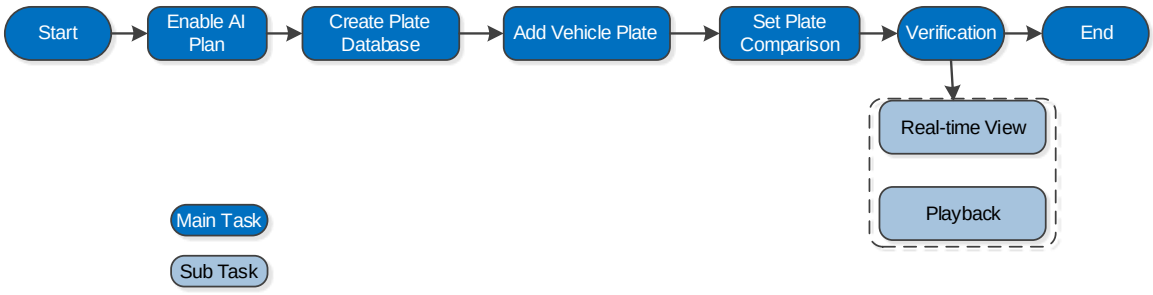
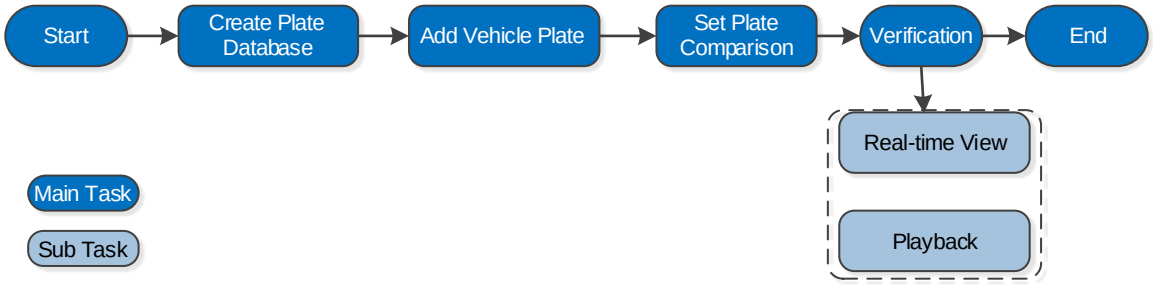


Figure 6-61 Vehicle comparison procedure (AI by IVSS)



6.5.2 Enabling AI Plan

Before using AI by camera, AI plan needs to be enabled first. For details, see "6.1 Enabling AI Plan."

6.5.3 Setting Vehicle Database

Set vehicle database, and then IVSS can analyze and compare vehicle plates with information in the database.

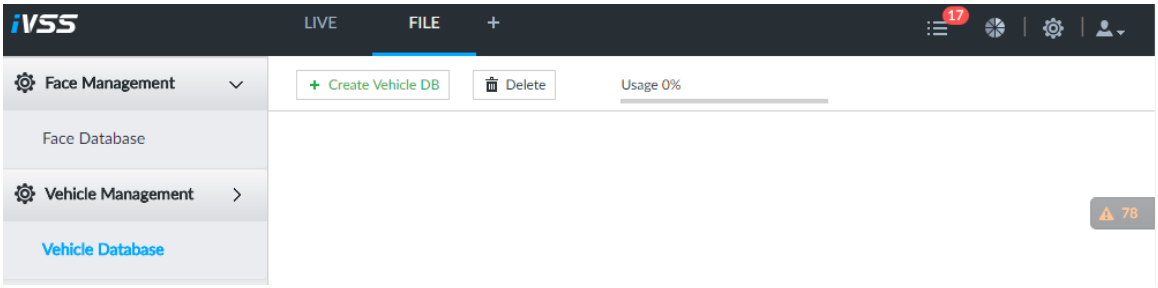
6.5.3.1 Creating Vehicle Database

You can create vehicle database, and then classify and manage the database. Database of trusted vehicle list and blocked vehicle list can be created. Alarm will be triggered when vehicle in the blocked list is detected.

Step 10 On the **LIVE** interface, click  , and then select **FILE > Vehicle Management > Vehicle Database**.

The **Vehicle Database** interface is displayed. See Figure 6-62.

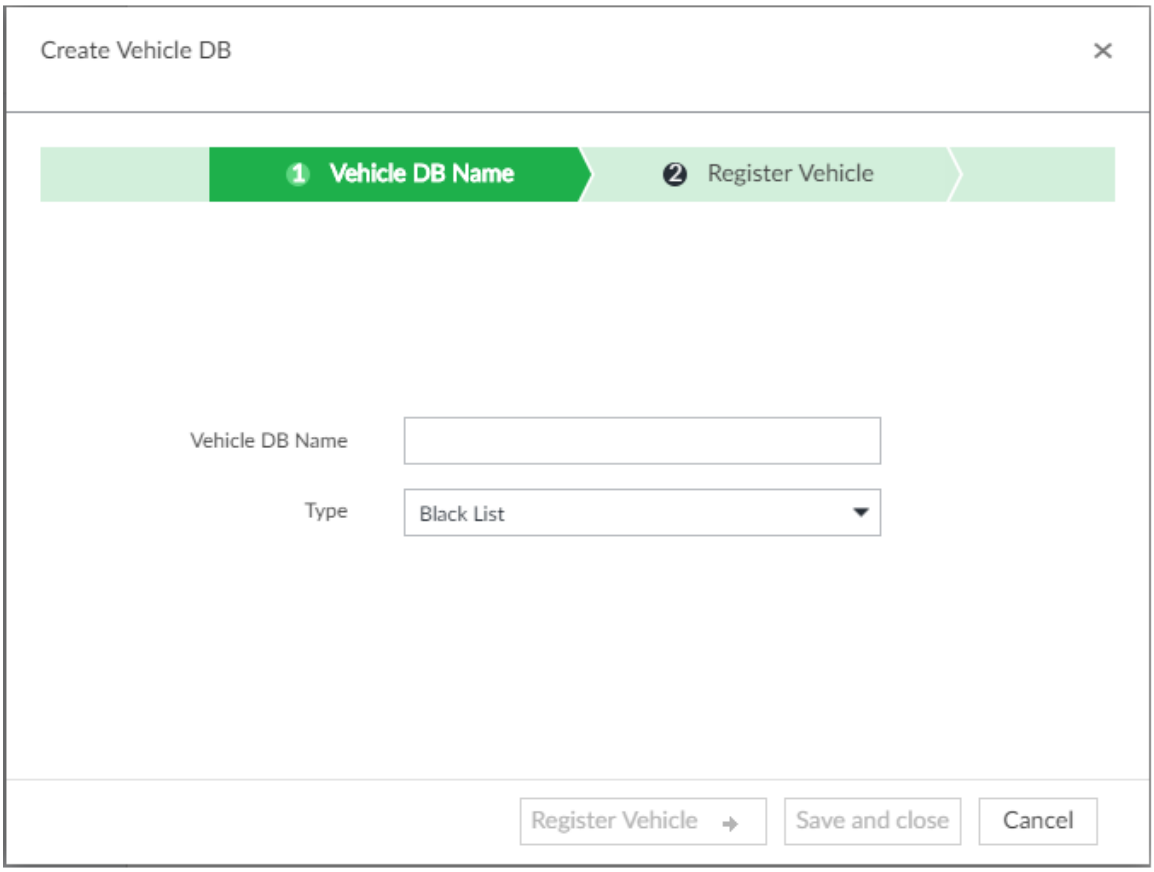
Figure 6-62 Vehicle database



Step 11 Click **Create Vehicle DB**.

The **Create Vehicle DB** interface is displayed. See Figure 6-63.

Figure 6-63 Create vehicle database

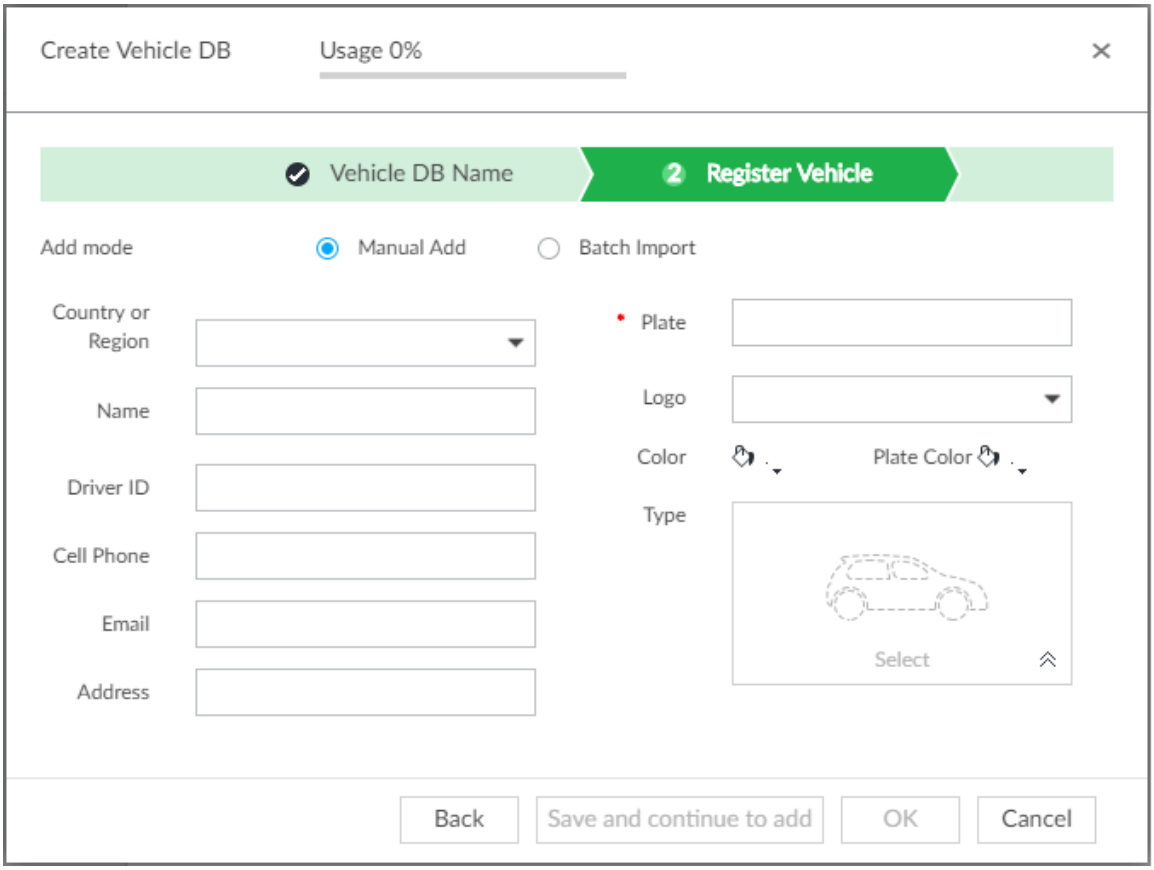


Step 12 Set **Vehicle DB Name**, and select **Type** of vehicle database.

Step 13 Click **Register Vehicle** or **Save and close**.

- Click **Register Vehicle**, and add the vehicle information to the database. See Figure 6-64. For details, see "6.5.3.2 Registering Vehicle Information."

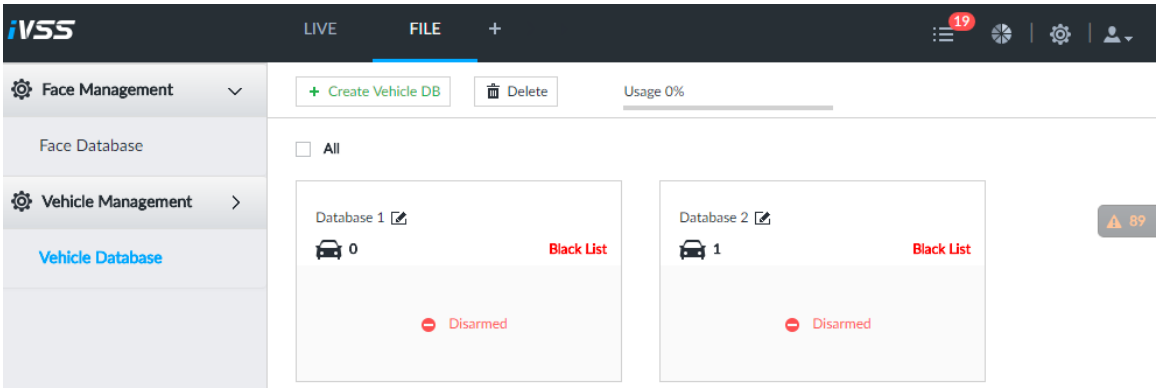
Figure 6-64 Register vehicle plate



- Click **Save and close** to create a database without editing its information.

The newly-created database can be viewed on the **Vehicle Database** interface. See Figure 6-65.

Figure 6-65 Vehicle database



Other Operations

Operations after a database is created include modifying the database name, registering plate information, arming the database, and deleting the database. See Table 6-10.

Table 6-10 Other operations

Operation	Description

Operation	Description
View database information and status	• Database 2 : Database name. • 1: Number of vehicle plate in the database. • Black List / White List : The database is in the blocked/trusted list. • Disarmed : The database is not linked to channel for vehicle plate comparison. If armed, the linked device channel will be displayed.
Modify database name	Click next the database name to modify its name.
Manage database	Double-click the database, and you can manage the vehicle plate information in the database. For details, see "6.5.3.3 Managing Vehicle Information."
Arm database	Link the database to camera channel for vehicle plate comparison. For details, see "6.5.4 Setting Plate Comparison."
Delete database	• Delete one by one: Move the cursor to the database, and click at the upper right corner to delete it. • Delete in batch: Move the cursor to a database, and check to select the database. Select multiple databases in this way, and then click Delete to delete the selected databases. • Delete all: Select **All**, and then click Delete to delete all databases.

6.5.3.2 Registering Vehicle Information

Add vehicle information in the created databases. Supports manual add, batch import, and add by searching.

This section takes batch add for example. Batch add allows you to import vehicle information to the database in batches.

Step 1 On the **LIVE** interface, click , and then select **FILE > Vehicle Management > Vehicle Database**.

The **Vehicle Database** interface is displayed.

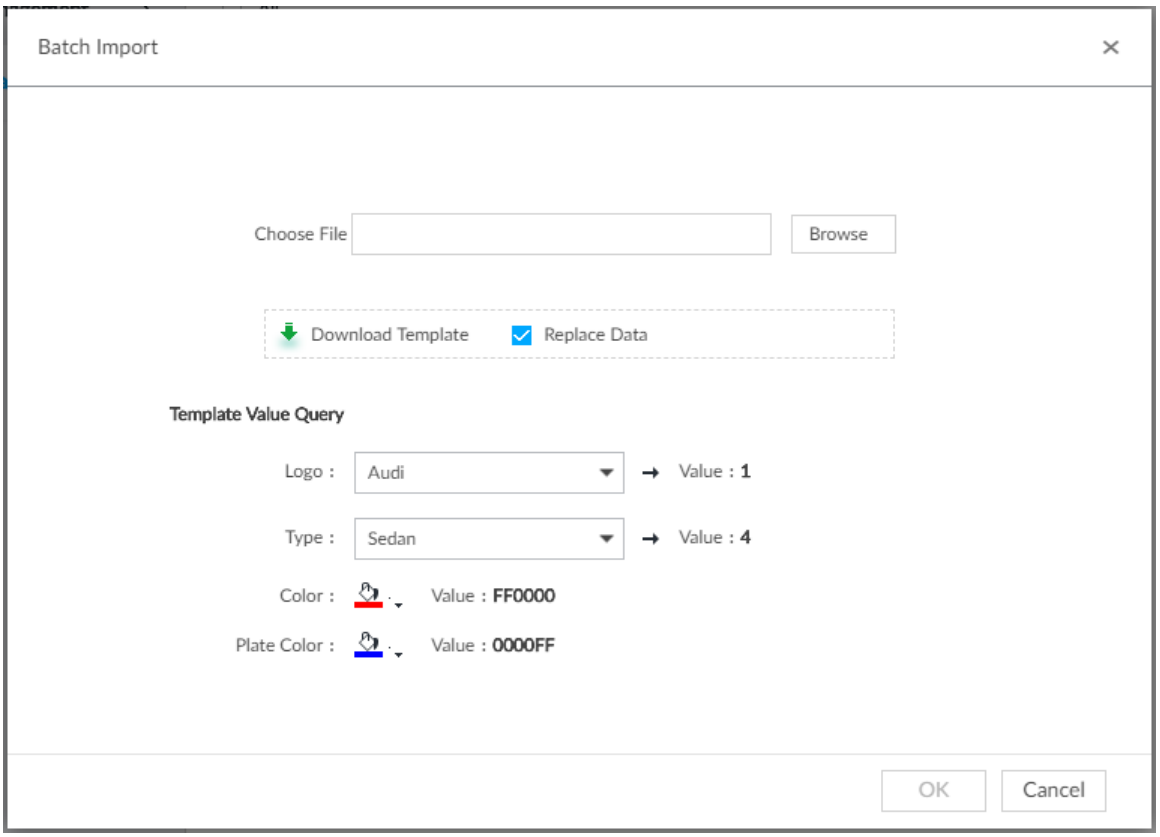
Step 2 Double-click the database.

The database interface is displayed.

Step 3 Click **Batch Import**.

The **Batch Import** interface is displayed. See Figure 6-66.

Figure 6-66 Batch import



Step 4 Acquire and fill in the template file.

1) Click **Download Template** to download the template to PC or USB storage device.

The save path may vary when operating on client or local interface, and the actual interface shall prevail.

- On client: Click on the upper right side, and then select Download to view the save path of template file.
- On local interface: Select the save path of template file.

  Make sure USB storage device is connected during local operation.
- On web interface: Template file is saved in the default download path of browser.

2) Fill in the template fill according to your actual needs. See Figure 6-67.

Fill in the vehicle information according to the instructions. For logo, type, color, and plate color, fill in the corresponding code or value. Search the code or value on the **Batch Import** interface (See Figure 6-66).

Figure 6-67 Template file

Serial No	*Plate No	Country	Logo	Type	Color	Plate Col	Owner	License	Tel	Email	Address
1	BD51SMR	GB	1	2	FFFFFF	FFFFFF	Peter	L-PETER12	T-0712345	123@gmail	Birmingham

&&Explain:
1. With * is required
2. Country: Conform to ISO3166 specification. 2 bytes uppercase format. Example Great Britain GB Chinese CN.
3. Logo: Please input code number of vehicle logo. Example Bentley 54. The code number can be querying on the page of downloaded this.
4. Type: Please input code number of vehicle type. Example SaloonCar 4. The code number can be querying on the page of downloaded this.
5. Vehicle Color: Please input RGB color. Example Red FF0000. The code number can be querying on the page of downloaded this.
6. Plate Color: Please input RGB color. Example Red FF0000. The code number can be querying on the page of downloaded this.
7. License: Please add prefix 'L-'.
8. Tel: Please add prefix 'T-'.

3) Save template file.

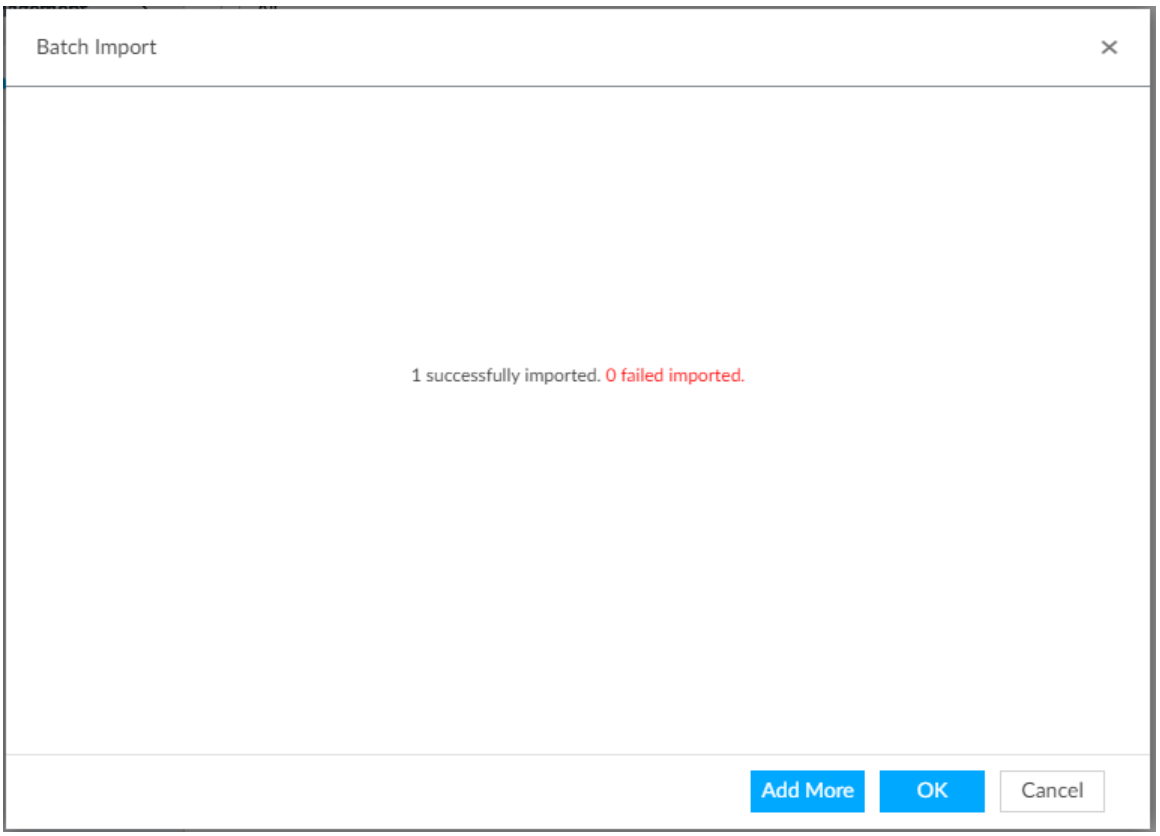
Step 5 On the **Batch Import** interface, click **Browse** to import template file.

If the plate number in the template is the same as the number in the database, select **Replace Data** to overlap the information in the database.

Step 6 Click **OK**.

The batch import result is displayed. See Figure 6-68.

Figure 6-68 Batch import result

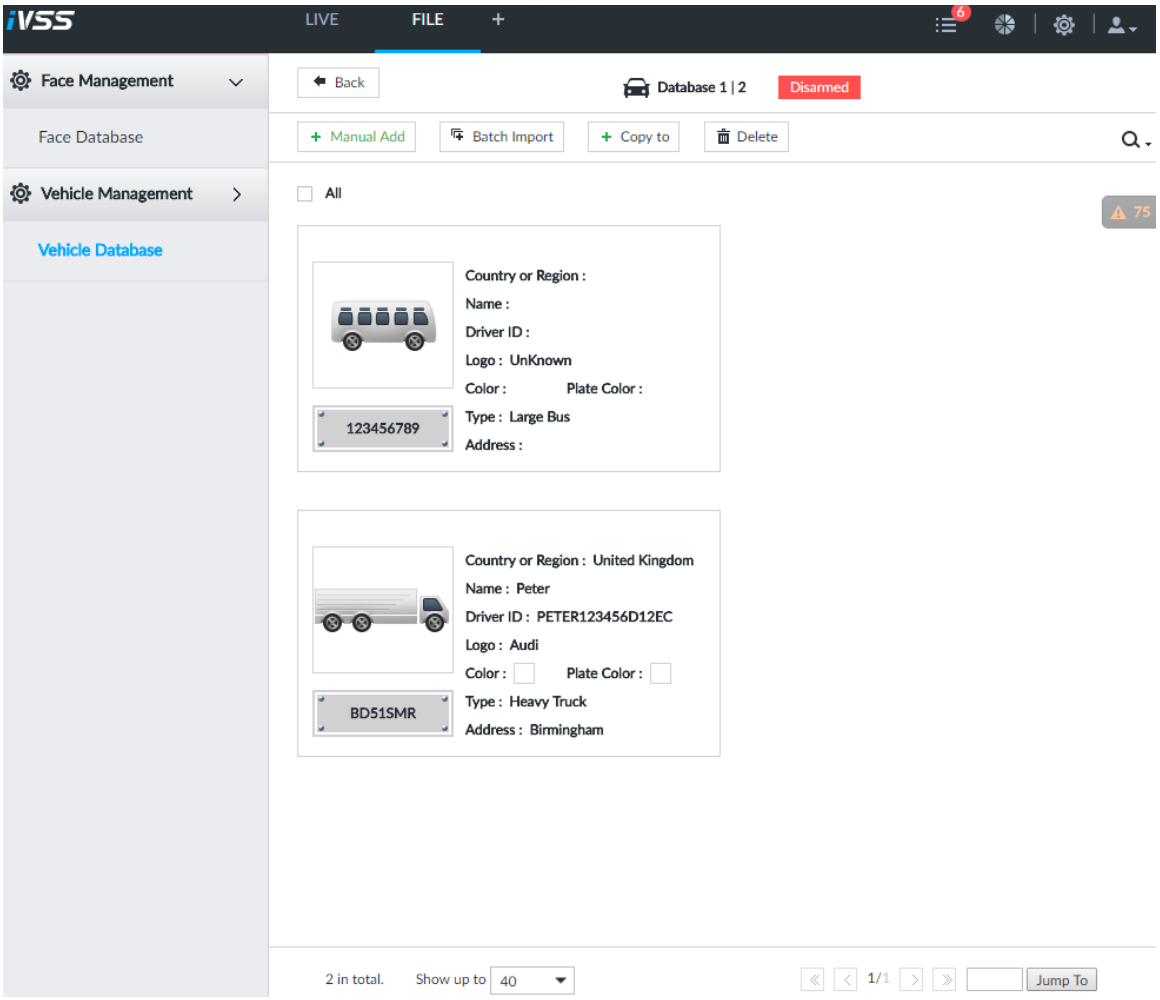


Step 7 Click **Add More** or **OK**.

- Click **Add More**: Import vehicle information, and continue to add vehicle information.
- Click **OK**: Import vehicle information.

The added vehicle information can be viewed on the **Vehicle Database** interface. See Figure 6-69.

Figure 6-69 Vehicle information



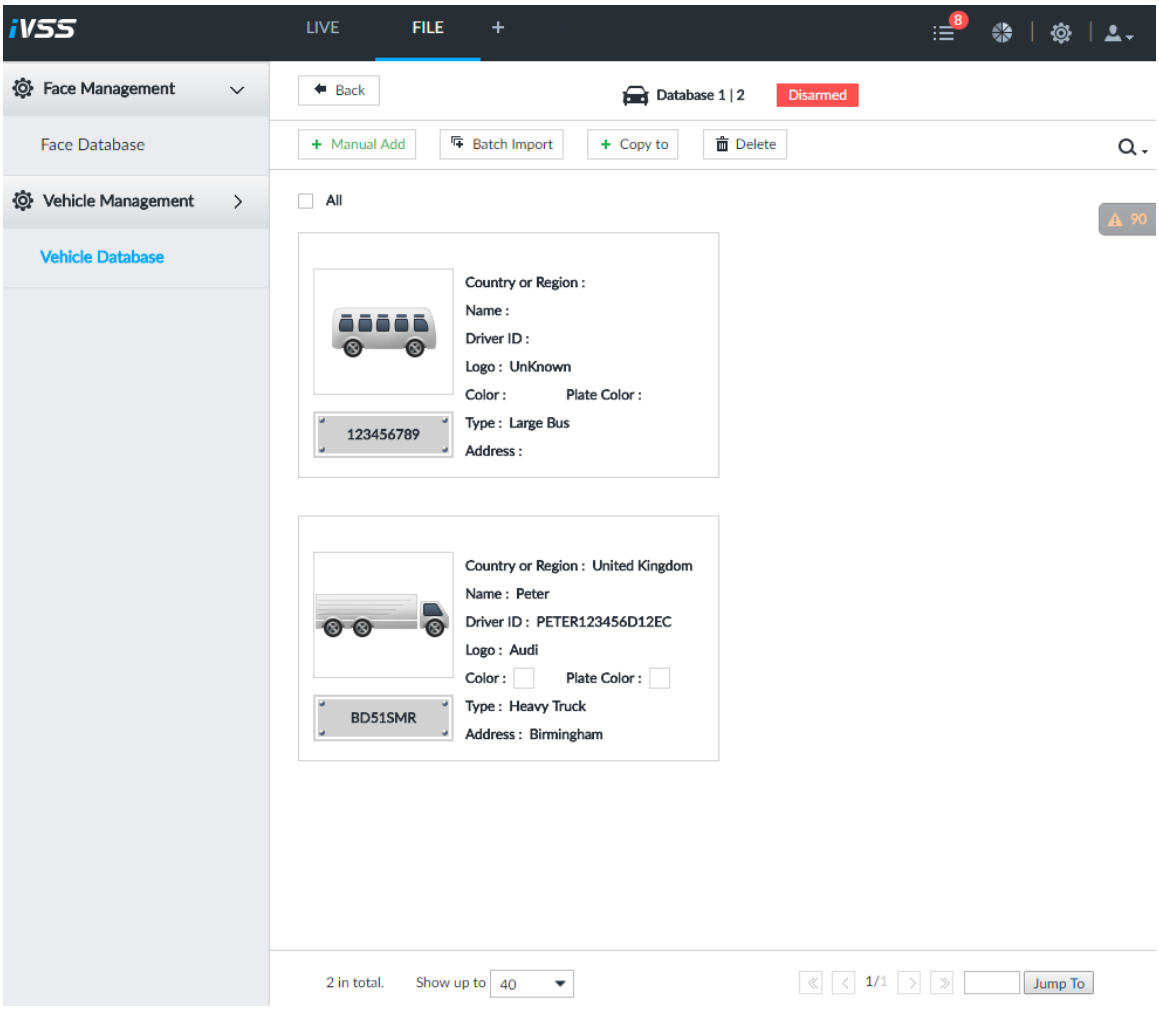
6.5.3.3 Managing Vehicle Information

After adding the vehicle information, such as plate, vehicle type, vehicle color, plate color, logo, to the database, the information needs to be properly managed and maintained to keep it accurate and complete.

On the **LIVE** interface, click , and then select **FILE > Vehicle Management > Vehicle Database**. The database interface is displayed. See Figure 6-70.

Move the cursor to the database, and then , , or to edit, copy/cut, or delete the vehicle information.

Figure 6-70 Database



6.5.4 Setting Plate Comparison

IVSS compares detected plate with plate information in the database, and trigger alarms when plate in the vehicle blacklist is detected.

The section takes AI by device for example, and the actual interface shall prevail.

Step 1 Click or on the setting interface, then select **EVENT**.

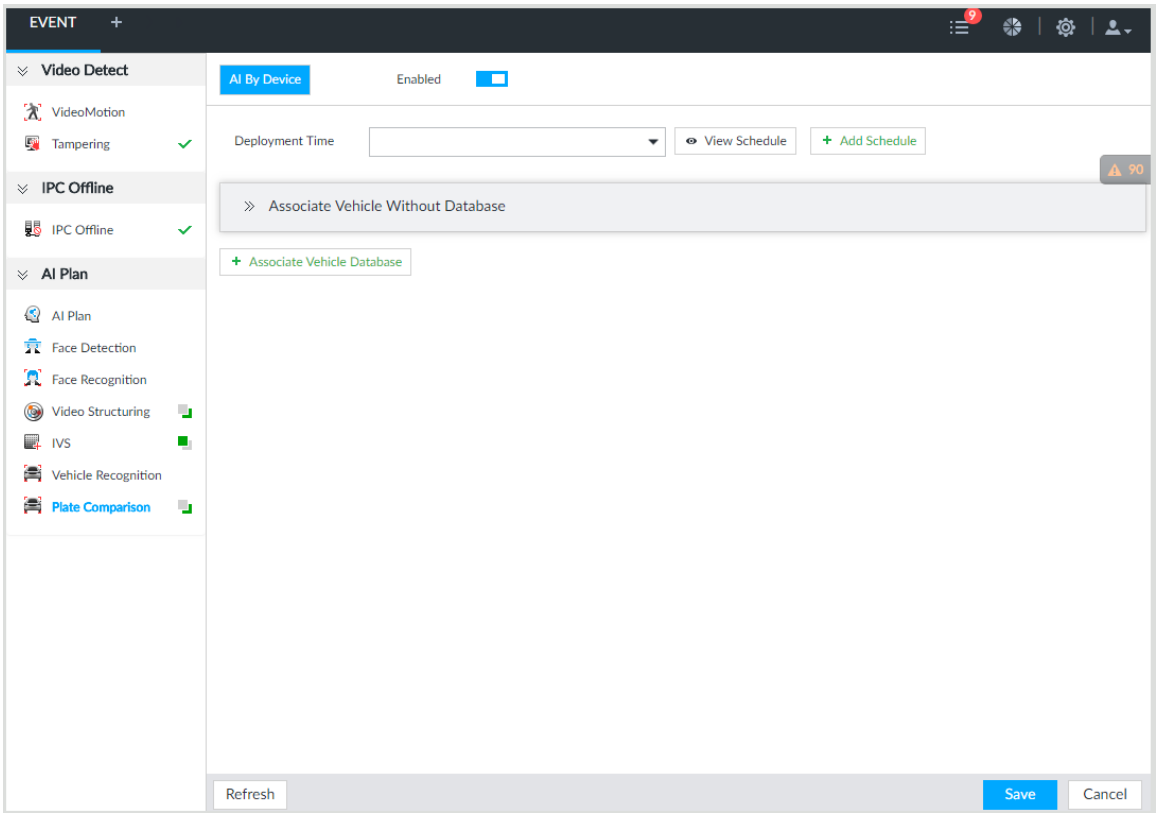
The **EVENT** interface is displayed.

Step 2 Select device from the device tree on the left side.

Step 3 Select **AI Plan > Plate Comparison**.

The **Plate Comparison** interface is displayed. See Figure 6-71.

Figure 6-71 Plate comparison



Step 4 Click  to enable plate comparison. The icon changes to  .

Step 5 Click **Deployment Time** dropdown list to select schedule.

IVSS links alarm event when an alarm is triggered within the schedule configured.

- Click **Add Schedule** to add new schedule if no schedule is added or the existing schedule does not meet requirements.
- Click **View Schedule** to view details of schedule.

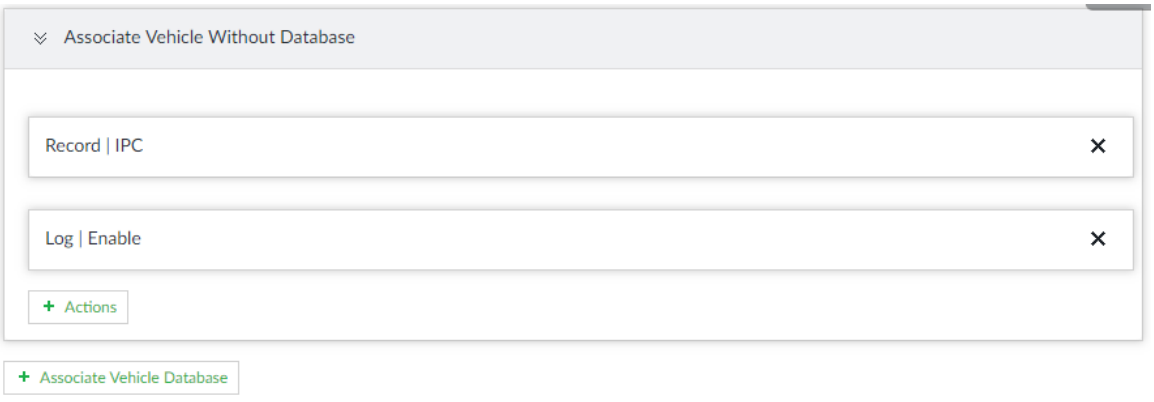
Step 6 Link vehicle without database.

Enable linkage of vehicle without database. Alarm is triggered when vehicle not in the database is detected.

1) Click  .

The **Associate Vehicle Without Database** interface is displayed. See Figure 6-72.

Figure 6-72 Associate vehicle without database



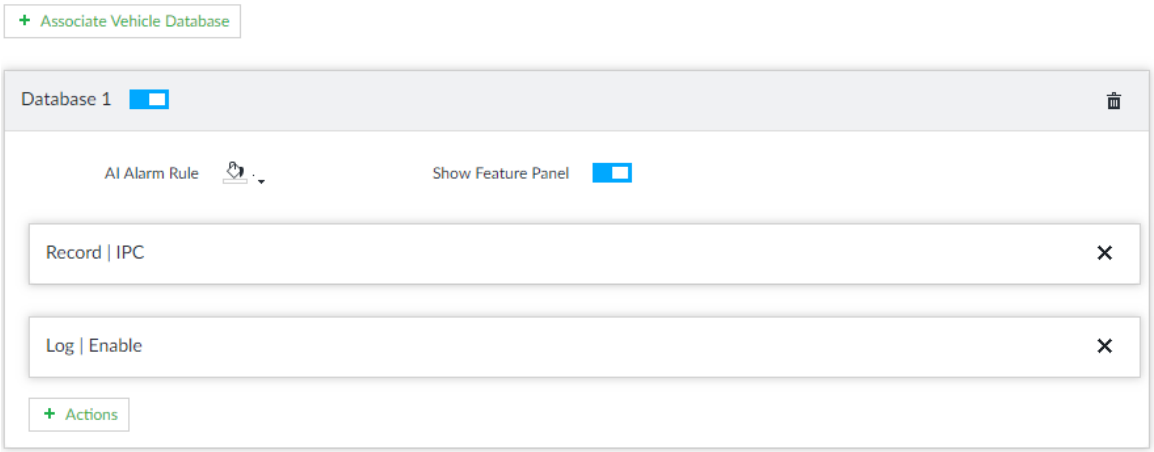
2) Click **Actions** to set alarm linkage event.

Step 7 Link database.

Repeat the following steps to link multiple databases.

1) Click **Associate Vehicle Database**, and select the database to be linked.
The database linkage interface is displayed. See Figure 6-73.

Figure 6-73 Database linkage



2) Set the parameters. See Table 6-11.

Table 6-11 Database linkage parameters

Parameter	Description
AI Alarm Rule	Click to set the color of alarm rule box.
Show Feature Panel	Click , and when alarm is triggered, the plate comparison information is displayed in the feature panel of video image.

3) Click **Actions** to set alarm linkage event.

Step 8 Click **Save**.

6.5.5 Real-time View

View vehicle comparison results on the **LIVE** interface.

You can view real-time vehicle comparison results on the **LIVE** interface. If vehicle in the database is detected, properties of the vehicle, such as plate, type, color, and logo, are displayed on the right side of the real-time video image.

6.5.5.1 Setting AI Display

You can set the vehicle properties that you want to display on the real-time video image.

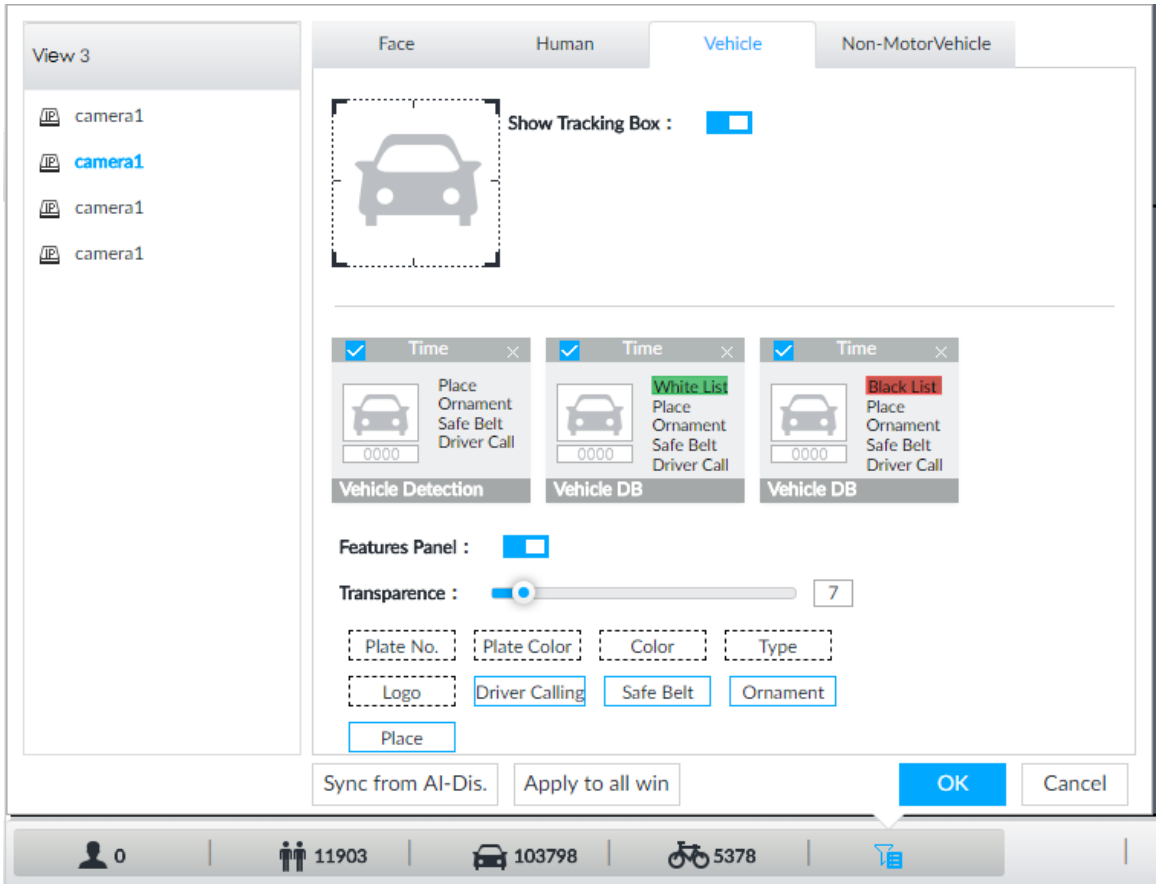
Before setting the features and properties, you need to create a view by adding cameras to the view so you can check video and pictures captured by the cameras.

Step 1 Select a view from **LIVE > View > View Group**.

Step 2 Click , and then select **Vehicle** tab.

The **Vehicle** interface is displayed. SeeFigure 6-74.

Figure 6-74 Vehicle



Step 3 Click next to **Show Tracking Box** to enable tracking box function.

A tracking box is displayed in the video image when target meeting detection rule is detected.

Step 4 Set features panel.

1) Click next to Features Panel to enable features panel function.

Features panel will be displayed at the right side of video image when target with selected features is detected.

2) Select a vehicle information panel. means the panel is selected.

3) (Optional) Drag to adjust the transparency of panel. The higher the value, the more transparent the panel.

4) (Optional) Select the features to be displayed in the panel.

- Up to 4 features can be displayed.
- 4 features are selected by default. To select another feature, click the selected feature to cancel it, and then click the feature to be displayed.

Step 5 Click **OK**.

6.5.5.2 Live

On the **LIVE** interface, select a view, and the video image of the view is displayed. See Figure 6-75.

- Tracking box is displayed in the video image.
- Features panel is displayed at the right side of the video image.

Figure 6-75 Live

Move the cursor to the features panel, and the operation icons are displayed. See Figure 6-76.

Figure 6-76 Icons

- Click to add license plate information to the plate database.
- Click or double-click the vehicle image to play back the video image (10 s before and after the time of taking the snapshot).

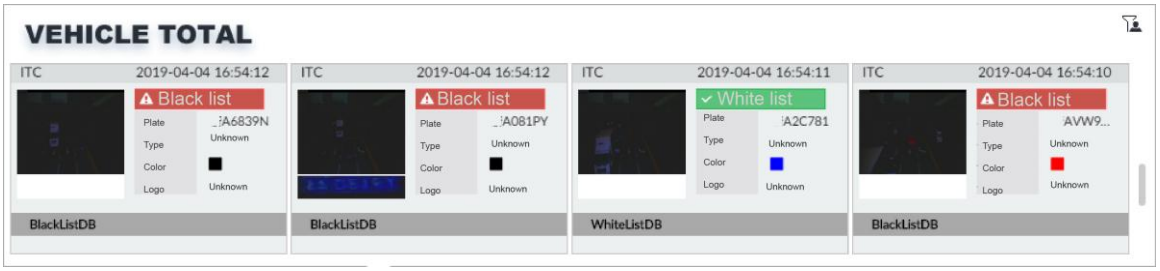
6.5.5.3 Detection Statistics

You can view the vehicle comparison results. For example, you can view whether a vehicle is in the blacklist database or whitelist database.

On the **LIVE** interface, select a view and then click . The **VEHICLE TOTAL** interface is displayed.

Click , and then select **Vehicle Comparison (Black List)** and **Vehicle Comparison (White List)**. The vehicle comparison result is displayed. See Figure 6-77.

Figure 6-77 Vehicle comparison



Move the cursor to the information panel, and the following icons are displayed:

- : Click it to add license plate information to plate database.
- : Click it or double-click the picture to play back the video image (10 s before and after the time of taking the snapshot).
- : Click it to export the video to specified save path (PC or USB storage device).

  Make sure USB storage device is connected if you want to store the file to such storage device.

6.5.6 AI Search

Set search conditions such as device and properties, and then search information that meets the conditions. IVSS supports search by property and search by database.

6.5.6.1 Search by Property

Set search conditions such as device and properties, and then search vehicle recognition information that meets the conditions.

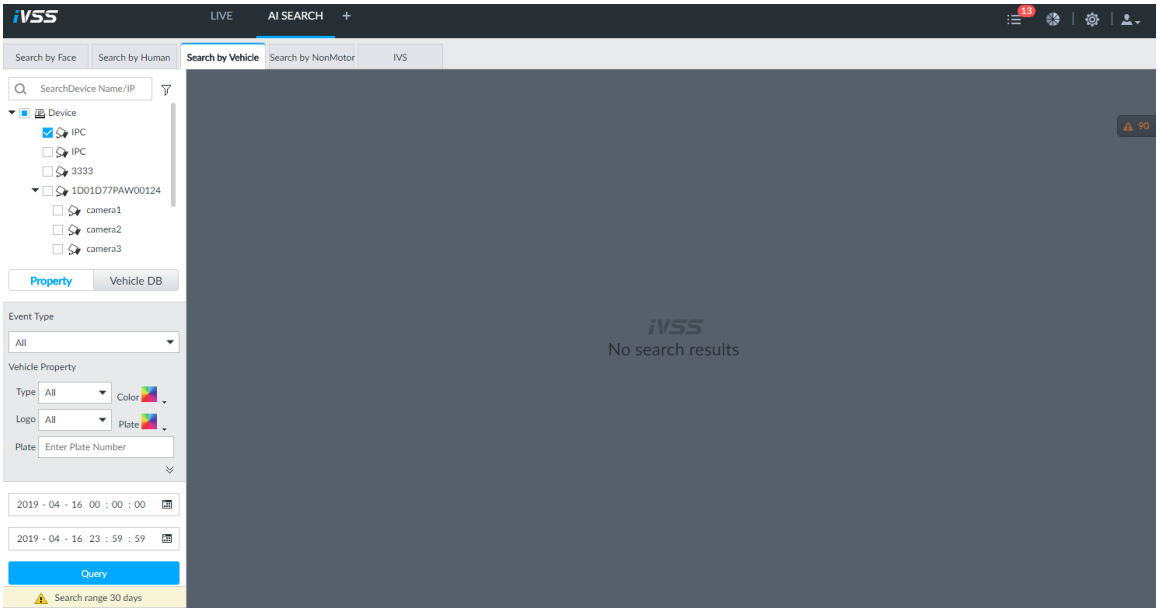
Step 1 On the **LIVE** interface, click , and then select **AI Search > Search by Vehicle**.

The **Search by Vehicle** interface is displayed.

Step 2 Select device, and then click **Property** tab.

The search by property interface is displayed. See Figure 6-78.

Figure 6-78 Search by property



Step 3 Select **Plate Comparison** as the **Event Type**.

Step 4 Set vehicle properties and time period.

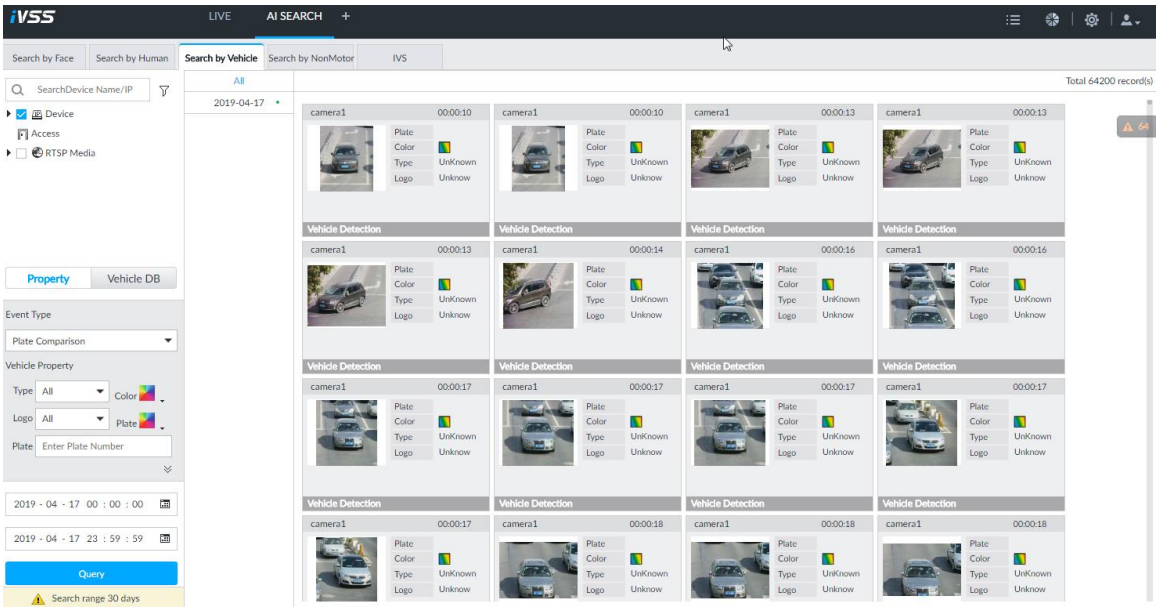
Click  or to set the color.  means more than one color.

Step 5 Click **Query**.

The search result is displayed. See Figure 6-79.

If license plate is detected, both the scenario and the license plate will be displayed.

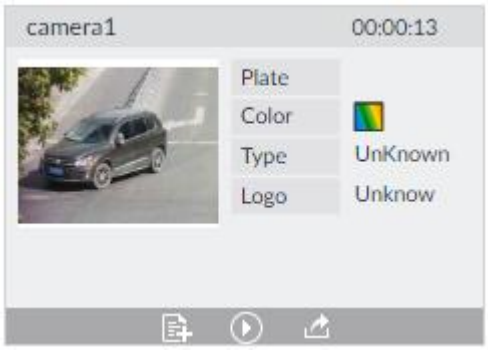
Figure 6-79 Search result



Other Operations

Click on one displayed panel, and the icons are displayed. See Figure 6-80. For operation details of icons, refer to “6.5.5.3 Detection Statistics.”

Figure 6-80 Icons



6.5.6.2 Search by Database

Search vehicle recognition information according to database.

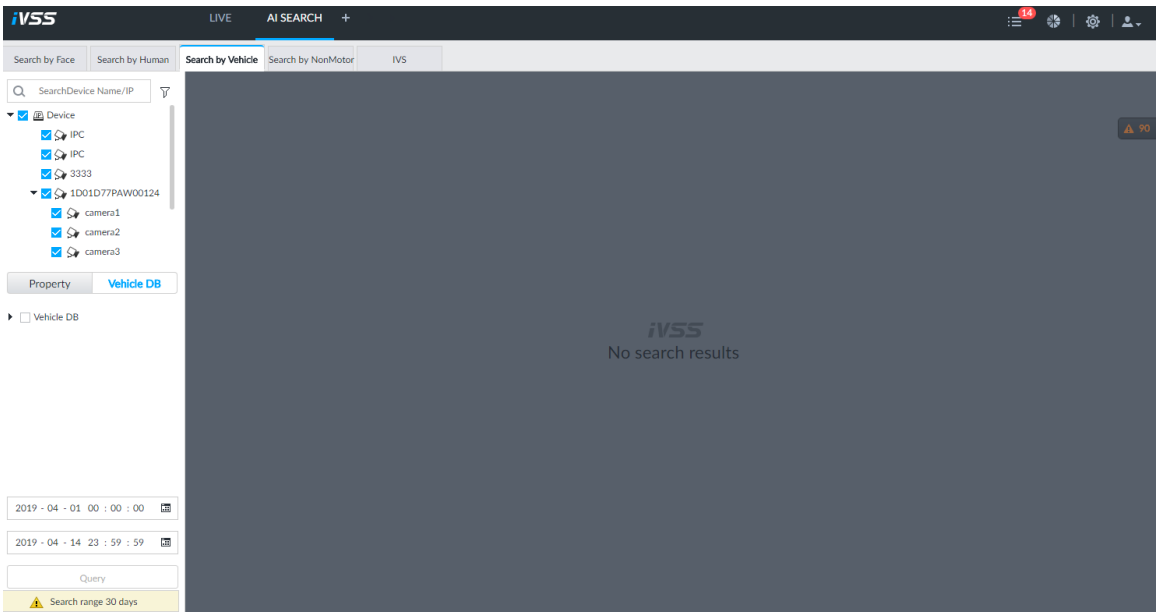
Step 1 On the **LIVE** interface, click +, and then select **AI Search > Search by Vehicle**.

The **Search by Vehicle** interface is displayed.

Step 2 Select device from the device tree, and then click **Vehicle DB** tab.

The search by database interface is displayed. See Figure 6-81.

Figure 6-81 Search by vehicle database



Step 3 Select the database to be searched.

Step 4 Click **Query**.

The search result is displayed. If license plate is detected, both the scenario and the license plate will be displayed.

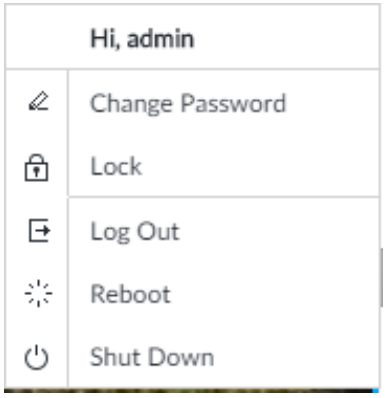
Other Operations

Click on one displayed panel, and the icons are displayed. For operation details of icons, refer to “6.5.5.3 Detection Statistics.”

7 Logout/Reboot/Shut Down

You can log out, reboot and shutdown the device. See Figure 7-1.

Figure 7-1 User operation



Log Out

Click , and then select **Log Out**.

Reboot

Click , and then select **Reboot**. System pops up confirm dialogue box. Click **OK** to reboot.

Shut Down

CAUTION

To unplug the power cable may result in data (record, image) loss. We recommend Mode 1.

- Mode 1 (recommended): Click , and then select **Shut Down**. System pops up confirm dialogue box, and then click **OK** to shut down.
- Mode 2: Use power on/off button on the device.
  - ◇ 8-HDD series product: Press power on/off button on rear panel.
  - ◇ Other series products: Press the power on/off button on the device for at least 4 seconds.
- Mode 3: Unplug the power cable.

Appendix 1 Cybersecurity Recommendations

Cybersecurity is more than just a buzzword: it's something that pertains to every device that is connected to the internet. IP video surveillance is not immune to cyber risks, but taking basic steps toward protecting and strengthening networks and networked appliances will make them less susceptible to attacks. Below are some tips and recommendations on how to create a more secured security system.

Mandatory actions to be taken for basic equipment network security:

1. **Use Strong Passwords**

   Please refer to the following suggestions to set passwords:

   - The length should not be less than 8 characters;
   - Include at least two types of characters; character types include upper and lower case letters, numbers and symbols;
   - Do not contain the account name or the account name in reverse order;
   - Do not use continuous characters, such as 123, abc, etc.;
   - Do not use overlapped characters, such as 111, aaa, etc.;

2. **Update Firmware and Client Software in Time**

   - According to the standard procedure in Tech-industry, we recommend to keep your equipment (such as NVR, DVR, IP camera, etc.) firmware up-to-date to ensure the system is equipped with the latest security patches and fixes. When the equipment is connected to the public network, it is recommended to enable the "auto-check for updates" function to obtain timely information of firmware updates released by the manufacturer.
   - We suggest that you download and use the latest version of client software.

"Nice to have" recommendations to improve your equipment network security:

1. **Physical Protection**

   We suggest that you perform physical protection to equipment, especially storage devices. For example, place the equipment in a special computer room and cabinet, and implement well-done access control permission and key management to prevent unauthorized personnel from carrying out physical contacts such as damaging hardware, unauthorized connection of removable equipment (such as USB flash disk, serial port), etc.

2. **Change Passwords Regularly**

   We suggest that you change passwords regularly to reduce the risk of being guessed or cracked.

3. **Set and Update Passwords Reset Information Timely**

   The equipment supports password reset function. Please set up related information for password reset in time, including the end user's mailbox and password protection questions. If the information changes, please modify it in time. When setting password protection questions, it is suggested not to use those that can be easily guessed.

4. **Enable Account Lock**

The account lock feature is enabled by default, and we recommend you to keep it on to guarantee the account security. If an attacker attempts to log in with the wrong password several times, the corresponding account and the source IP address will be locked.

5. **Change Default HTTP and Other Service Ports**

   We suggest you to change default HTTP and other service ports into any set of numbers between 1024~65535, reducing the risk of outsiders being able to guess which ports you are using.

6. **Enable HTTPS**

   We suggest you to enable HTTPS, so that you visit Web service through a secure communication channel.

7. **Enable Whitelist**

   We suggest you to enable whitelist function to prevent everyone, except those with specified IP addresses, from accessing the system. Therefore, please be sure to add your computer's IP address and the accompanying equipment's IP address to the whitelist.

8. **MAC Address Binding**

   We recommend you to bind the IP and MAC address of the gateway to the equipment, thus reducing the risk of ARP spoofing.

9. **Assign Accounts and Privileges Reasonably**

   According to business and management requirements, reasonably add users and assign a minimum set of permissions to them.

10. **Disable Unnecessary Services and Choose Secure Modes**

    If not needed, it is recommended to turn off some services such as SNMP, SMTP, UPnP, etc., to reduce risks.

    If necessary, it is highly recommended that you use safe modes, including but not limited to the following services:

    - SNMP: Choose SNMP v3, and set up strong encryption passwords and authentication passwords.
    - SMTP: Choose TLS to access mailbox server.
    - FTP: Choose SFTP, and set up strong passwords.
    - AP hotspot: Choose WPA2-PSK encryption mode, and set up strong passwords.

11. **Audio and Video Encrypted Transmission**

    If your audio and video data contents are very important or sensitive, we recommend that you use encrypted transmission function, to reduce the risk of audio and video data being stolen during transmission.

    Reminder: encrypted transmission will cause some loss in transmission efficiency.

12. **Secure Auditing**

    - Check online users: we suggest that you check online users regularly to see if the device is logged in without authorization.
    - Check equipment log: By viewing the logs, you can know the IP addresses that were used to log in to your devices and their key operations.

13. **Network Log**

    Due to the limited storage capacity of the equipment, the stored log is limited. If you need to save the log for a long time, it is recommended that you enable the network log function to ensure that the critical logs are synchronized to the network log server for tracing.

14. **Construct a Safe Network Environment**

In order to better ensure the safety of equipment and reduce potential cyber risks, we recommend:

- Disable the port mapping function of the router to avoid direct access to the intranet devices from external network.
- The network should be partitioned and isolated according to the actual network needs. If there are no communication requirements between two sub networks, it is suggested to use VLAN, network GAP and other technologies to partition the network, so as to achieve the network isolation effect.
- Establish the 802.1x access authentication system to reduce the risk of unauthorized access to private networks.