



Dual 4MP Starlight Hunter AI Cameras

Instruction Manual








Foreword

General

The manual introduces the application, installation, and configuration of the Dual 4MP Starlight Hunter AI Camera (hereinafter referred to as "the Device").

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
V1.0.0	First release.	March 2020

Privacy Protection Notice

As the device user or data controller, you might collect personal data of others 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 jurisdictions. For detailed information, refer to 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, we reserve the right of 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 occurring when using the device.
- If there is any uncertainty or controversy, we reserve the right of final explanation.

Important Safeguards and Warnings

The manual will help you to use the Device properly. Read the manual carefully before using the product, and keep it well for future reference.

Operating Requirements

- Avoid heavy stress, violent vibration, and water splash during transportation, storage, and installation. Arrange more than one person to move the Device when necessary.
- Complete package is necessary during the transportation. We will assume no responsibility for any damage or problem caused by the incomplete package during the transportation.
- Protect the Device from falling down or heavy vibration.
- Buckle the safety hook before installing the Device if it is included.
- Keep the Device away from devices that generate electromagnetic field like televisions, radio transmitters, electromagnetic devices, electric machine, transformers, and speakers; otherwise image quality will be influenced.
- Keep the Device away from smoke, vapor, heat, and dust.
- Do not install the Device near heating furnace, spotlight, and other heat sources. If it is installed on ceiling, in kitchen or near boiler room, the Device temperature might rise.
- Do not disassemble the Device; otherwise it might cause dangers or device damage. Contact your local retailer or customer service center for internal setup or maintenance requirement.
- Make sure that there is no metal, or inflammable substance in the Device; otherwise it might cause fire, short-circuit, or other damage.
- Power off the Device and disconnect the power cord immediately if there is water or liquid falling into the Device. And contact your local retailer or customer service center.
- Avoid sea water or rain eroding the Device.
- Avoid the lens aiming at intense light source, including sunlight, and incandescent light; otherwise the lens might be damaged.
- Clean the enclosure with soft cloth. To remove the dirt, you can dip the soft cloth in proper detergent, wring the soft cloth out, and then dry the enclosure with soft cloth. Do not use gasoline, paint thinner, or other chemicals to clean the enclosure; otherwise it might result in enclosure transfiguration or paint flake. Read all the manuals included before using chemical cloth.
- Avoid long-time touch between the plastic or rubber material and the enclosure; otherwise it might result in device damage and paint flake.
- It is recommended to use the Device with a lightning-proof device for better lightning-proof effect.

Requirements for Installation and Maintenance Personnel

- Have certificates or experiences related to installation and maintenance of the closed-circuit television (CCTV), and have certificates related to working at height.
- Have basic knowledge and installation skills of CCTV system.
- Basic knowledge and operation skills of low voltage wiring and low voltage electronic circuit wire connection.
- Have the ability to read and understand the manual.

Requirements for Lifting the Device

- Use secure lifting appliances suitable for the installation place and the product installation mode.
- Make sure that the selected tools reach the installation height and have high safety performance.



WARNING

- All installation and operations shall conform to local electrical safety regulations.
- The power source shall conform to the requirement of the Safety Extra Low Voltage (SELV) standard, and supply power with rated voltage which conforms to Limited Power Source requirement according to IEC60950-1. Note that the power supply requirement is subject to the device label.
- Use the power adapter recommended by the manufacturer.
- For the Device that supports laser, do not aim the laser directly at eyes. And keep a proper distance from the flammable to avoid fire.
- Do not connect several cameras to one power adapter; otherwise it might result in overheat or fire if it exceeds the rated load.
- Make sure that the power is off when you connect the cables, install or uninstall the Device.
- Power off the Device and disconnect the power cord immediately if there is any smoke, disgusting smell, or noise from the Device. And contact your local retailer or customer service center.
- Contact your local retailer or customer service center if the Device is abnormal. Do not disassemble or repair the Device by yourself. We will assume no responsibility for any problems caused by unauthorized modifications, disassembly or repair, incorrect installation or use, and overuse of certain components.

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1 Introduction

1.1 Product Features

- Dual PTZ; panorama camera and detail camera can be adjusted remotely to realize flexible deployment.
- Supports multi-scenario and two-channel tour to detect motor vehicles, non-motor vehicles, and people.
- Equipped with neural network processors and supports AI intelligent functions to improve detection rate.
- Supports face detection, face attributes extraction and face recognition, and supports two face cutouts including face and one-inch photo.
- Supports target detection, including detecting and capturing human faces, human bodies, and vehicles, and extracting human body attributes.
- Supports video metadata, including human bodies, human faces, motor vehicles and non-motor vehicles image capture and attributes extraction, and face recognition.
- Supports smart rules including tripwire, intrusion, abandoned object, and missing object.
- Supports smart track, seeing both the panorama (complete) and detail (clear) with one product.
- Supports open API integrated with the software, standard protocols (Onvif, CGI), Dahua SDK and the third party management platform access, and P2P.
- 5x optical zoom and 16x digital zoom for the detail camera.
- Starlight+ low illuminance design.
- Panorama camera: Color: 0.001 Lux@F1.0; B/W: 0.0001Lux @F1.0; 0 Lux (white light on).
- Detail camera: Color: 0.001 Lux@F1.35; B/W: 0.0001 Lux@F1.35; 0 Lux (IR light on).
- Supports H.265 encoding to achieve low-stream transmission.
- Panorama camera: Built-in white light with illumination distance up to 30 m; adopts warm color and softening processing to reduce dazzling effectively.
Detail camera: Built-in IR light with illumination distance up to 100 m; uses the algorithm that matches the zoom rate with IR light power to make the illuminance effect more even.
- Panorama camera: Pan: 0°–360° endless; Tilt: 0°–30°.
- Detail camera: Pan: 0°–250°; Tilt: -10°–90°.
- Up to 300 presets, 8 tours and 5 patterns.
- IP67, 8000V lightning proof; surge protection; voltage transient protection.

1.2 Product Appearance

Figure 1-1 Appearance



- The Device appearance in the figure is for reference only, and the actual product shall prevail.
- The IP address of the Device is 192.168.1.108 by default.

1.3 Technical Advantages and Function Highlights

Figure 1-2 Highlights



- Combines the features and functions of traditional PTZ cameras, bullet cameras, and cameras supporting smart track.
- Captures and detects one or more targets among motor vehicles, non-motor vehicles, and people in the two-channel (panorama camera and detail camera) monitoring screen. Box selects and locks 100 targets in the monitoring screen at the same time, and takes snapshot and analyzes attributes.
- Tours among presets to perform smart functions such as video metadata, IVS, and face recognition.
- Supports auto calibration to reduce the interference of manual operations.
- Quick and easy installation can be finished by one person to save time.

2 Application Scenes

Recommended scenes: The Device can be widely used in complex scenes such as the periphery of residential areas, subway entrances, sidewalks, pedestrian zones, roads, lookout posts, parks, scenic areas, streets, stations, and perimeters.

Figure 2-1 Road



Figure 2-2 People gathering area



Figure 2-3 Subway entrance







Figure 2-4 Square



3 Installation

3.1 Accessories

Table 3-1 Installation accessories

Installation Method	Accessories	
Wall Mounting	Wall mounting bracket Model: DH-PFB306W-S Material No.: 1.0.99.44.10120	
Ceiling Mounting	Ceiling mounting bracket Model: DH-PFB300C-S Material No.: 1.0.99.44.10125	
Pole Mounting	Pole mounting bracket Model: DH-PFA150 Material No.: 1.1.02.08.12148	
	Pole mounting bracket Model: DH-PFB306W-S Material No.: 1.0.99.44.10120	

There are four installation methods: Wall mounting, ceiling mounting, vertical pole mounting, and horizontal pole mounting. The pole mounting is similar to wall mounting, but the wall mounting bracket should be fixed to the pole mounting bracket which shall be fixed to the pole. Horizontal pole mounting is similar too.

3.2 Installation Method in Common Scenes

Scene 1

Scene description: Pedestrian zone. The Device is deployed on the arterial road, and the entrances and exits. It is recommended to avoid obstacles in the scene.

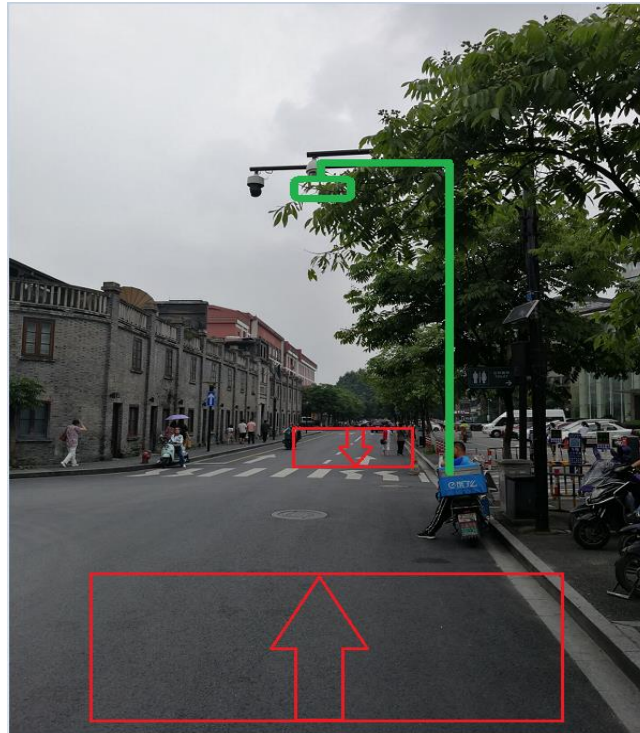
Table 3-2 Scene 1

Location	Light Condition	Surveillance Width	People Flow
Pedestrian street	No backlight	7 m	Large

Table 3-3 Installation suggestion (1)

Model Selection	Installation Method	Installation Height	Capture Distance	Illuminator
Dual 4MP Starlight Hunter AI Camera	Pole mounting (vertical)	4 m to 6 m	6 to 30 m	—

Figure 3-1 Installation scene (1)



Scene 2

Scene description: Crossroad with many people; moving direction is focused. The Device can be used to capture pedestrians on the sidewalk.

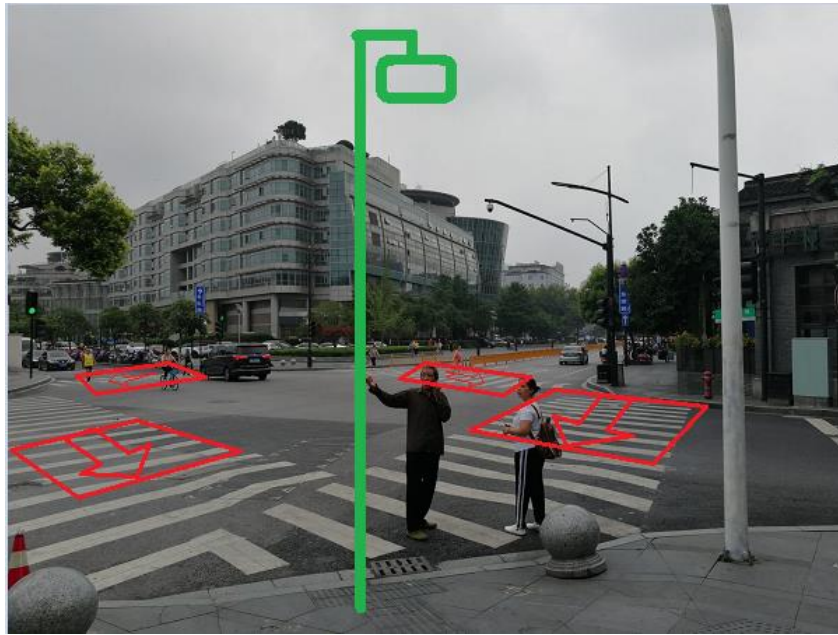
Table 3-4 Scene 2

Location	Light Condition	Surveillance Width	People Flow
Crossroad	No backlight	7 m	Medium

Table 3-5 Installation suggestion (2)

Model Selection	Installation Method	Installation Height	Capture Distance	Illuminator
Dual 4MP Starlight Hunter AI Camera	Pole mounting (vertical)	4 m to 6 m	6 to 30 m	—

Figure 3-2 Installation scene (2)



Scene 3

Scene description: At the entrance of the ascending escalator into the bus station at the railway station. It is convenient to capture the human bodies and faces. The moving direction of the people is opposite the Device, which is easy to take snapshots.

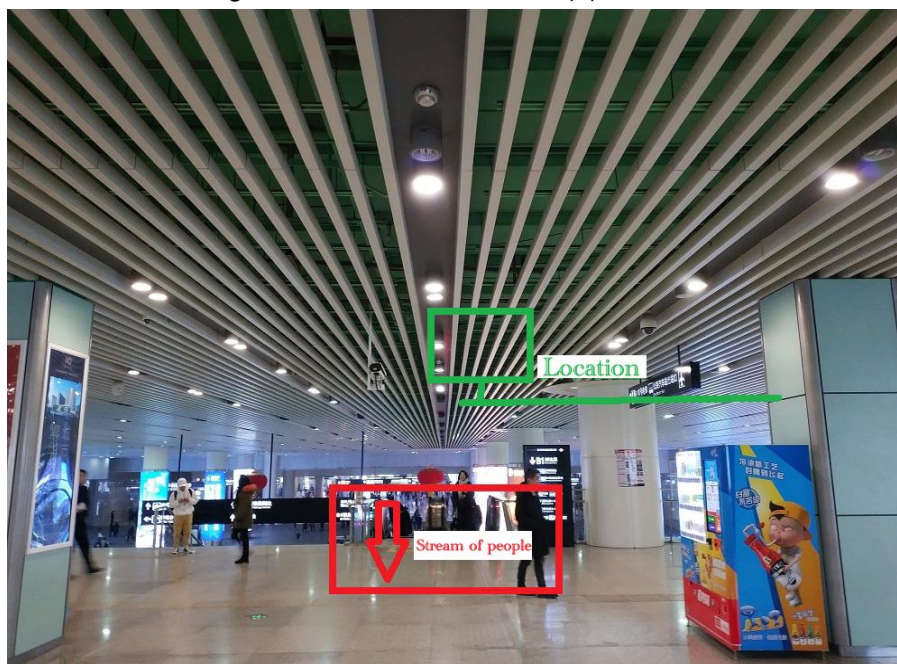
Table 3-6 Scene 3

Location	Light Condition	Surveillance Width	People Flow
Ascending escalator	No backlight	7 m	Medium

Table 3-7 Installation suggestion (3)

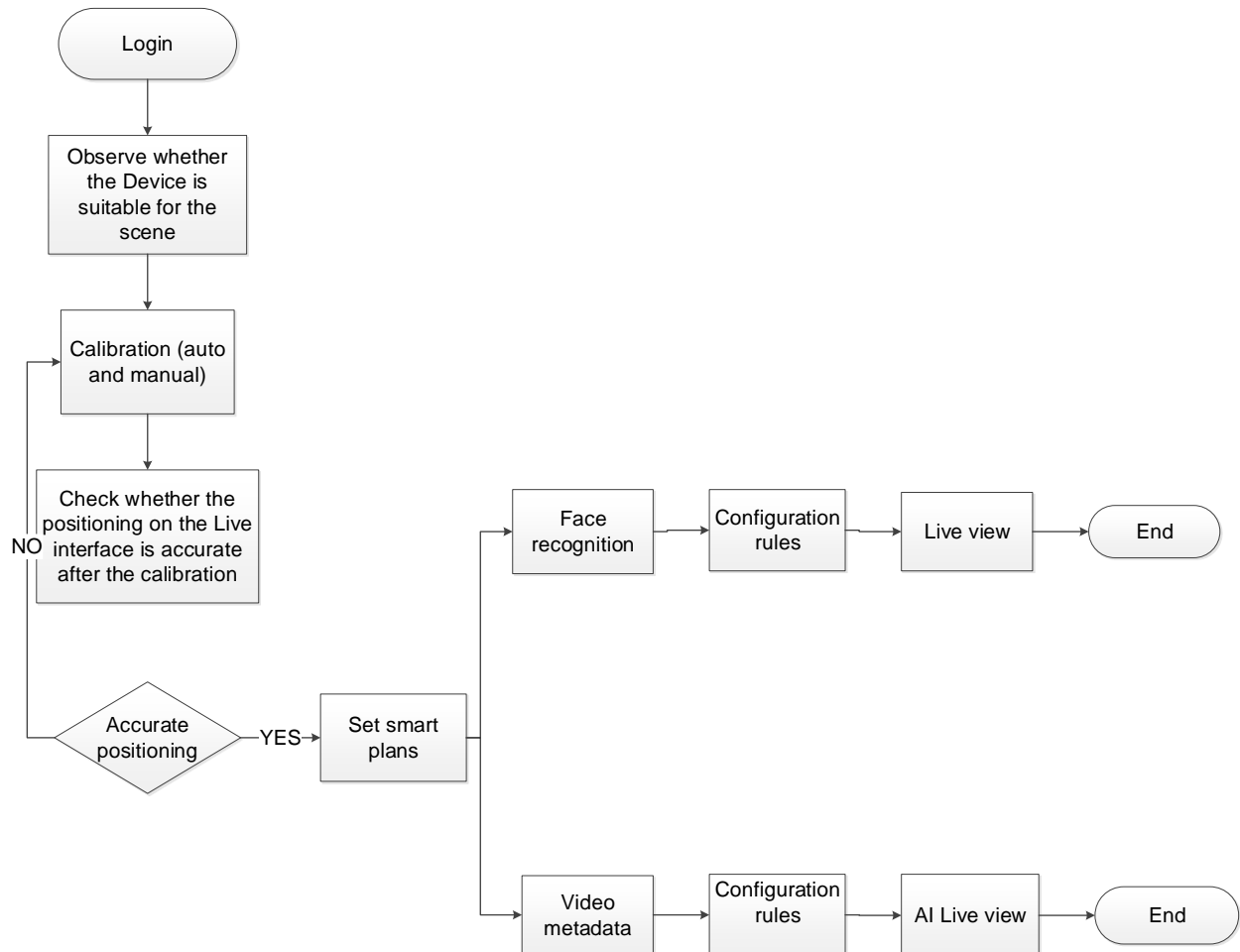
Model Selection	Installation Method	Installation Height	Capture Distance	Illuminator
Dual 4MP Starlight Hunter AI Camera	Pole mounting (vertical)	3 m to 5 m	6 to 30 m	—

Figure 3-3 Installation scene (3)



4 AI Function Configurations

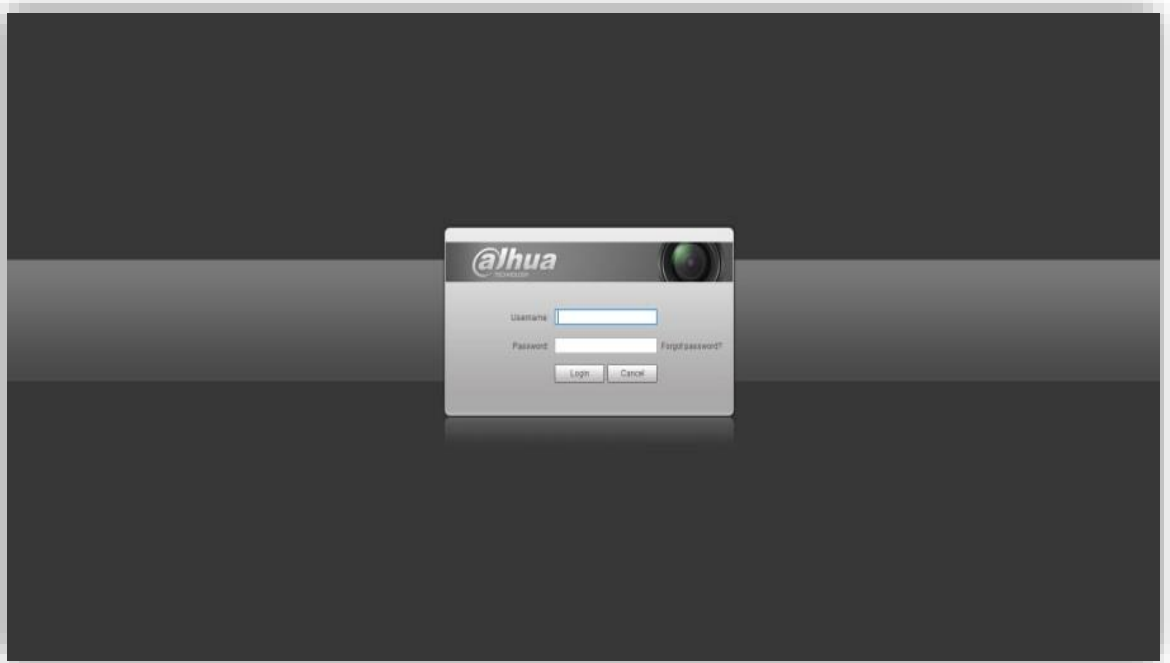
4.1 Configuration Flow Chart



4.2 Login

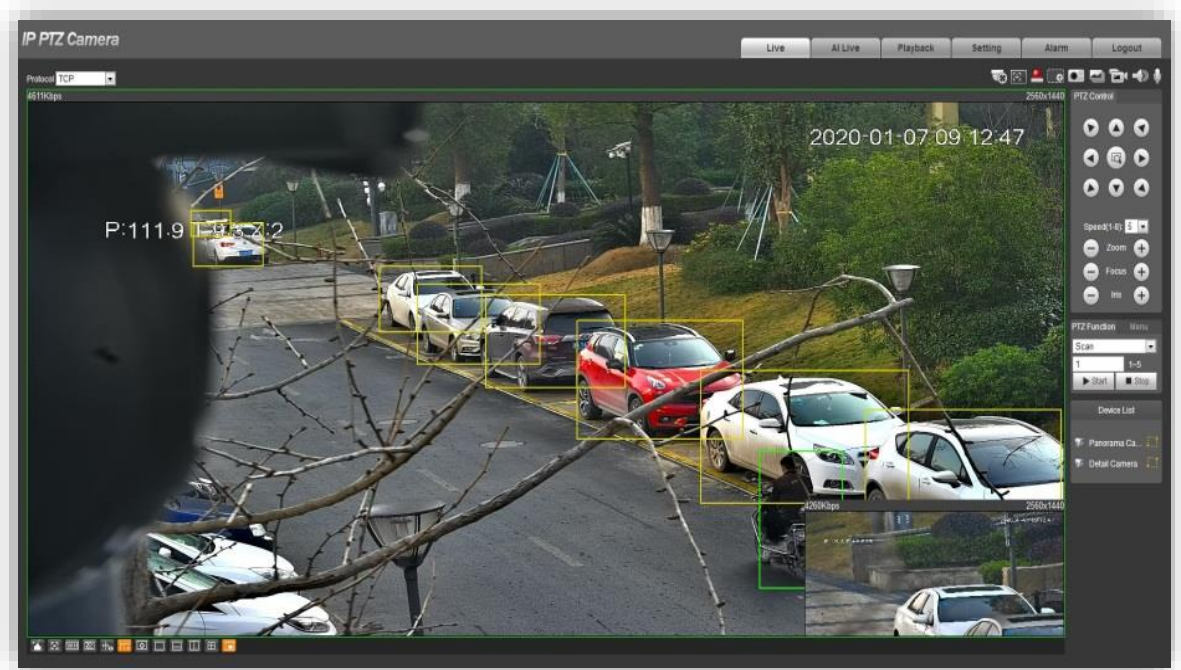
Enter the IP address of the Device, the username, and password, and then press the Enter key to log in to the web interface.

Figure 4-1 Login interface



4.3 PTZ Functions

Figure 4-2 Image of panorama camera and detail camera



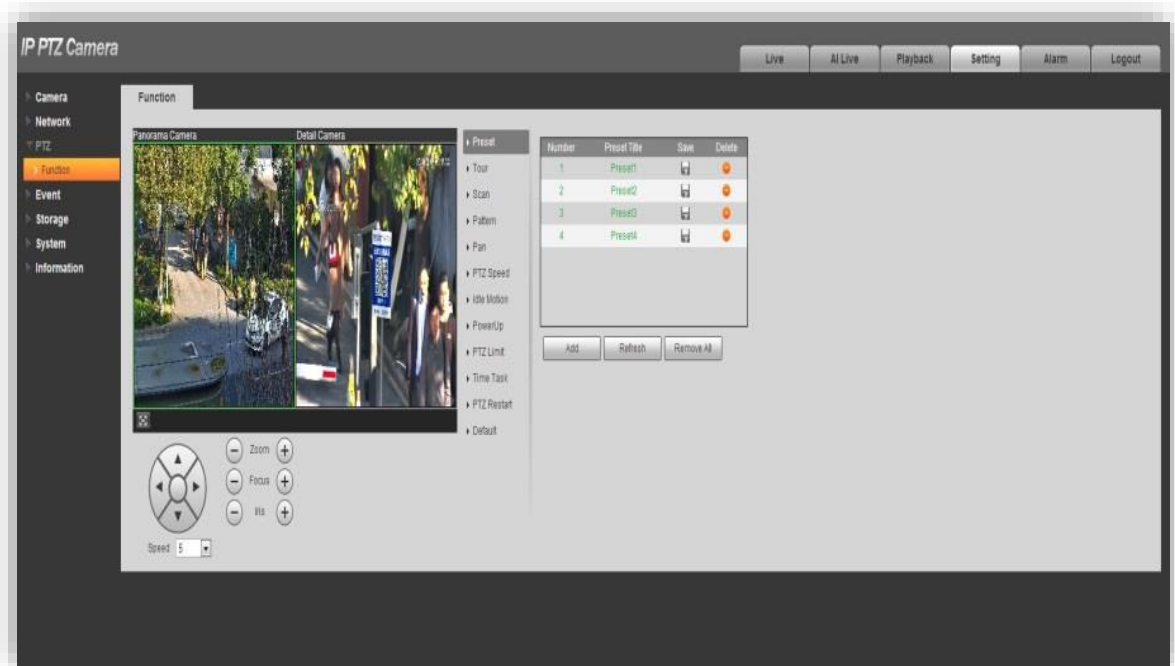
The Device adopts dual PTZ, and one preset has two sets of PTZ, which means the presets of the panorama camera and detail camera are bound. The PTZ is activated with the selected channel.

- Click the image of the panorama camera and adjust the PTZ, the image of the detail camera is rotated horizontally with the panorama camera image.
- Click the image of the detail camera and adjust the PTZ, the image is rotated independently without affecting the image of the panorama camera.
- The two channels are bound horizontally, and they are independently in vertical direction.

Therefore, different scenes can be set according to the PTZ schemes when setting the presets.

- The scenes of panorama camera and detail camera are the same.
- The scenes of panorama camera and detail camera are different.

Figure 4-3 Image of panorama camera and detail camera



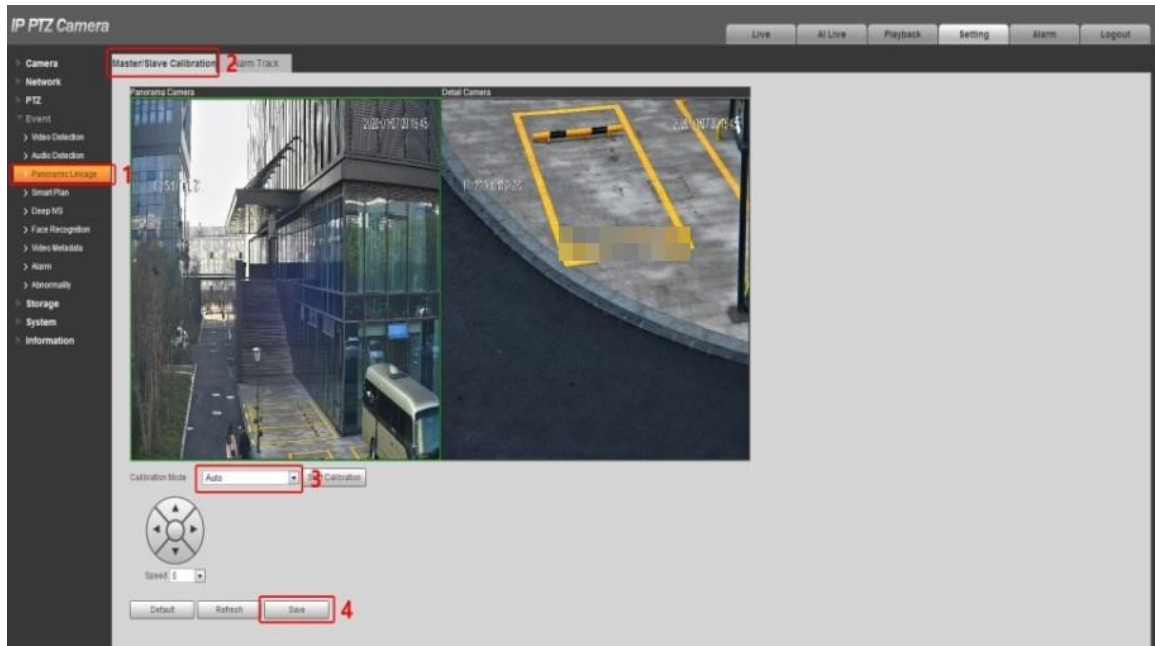
4.4 Panoramic Linkage

4.4.1 Master/Slave Calibration

The Device has two channels (upper and lower), and when smart functions are performed, the channels will be linked. To make the linked positioning more accurate, you need to calibrate the Device.

Auto Calibration

Figure 4-4 Auto calibration



Step 1 Select **Setting > Event > Panoramic Linkage > Master/Slave Calibration**. The panoramic image is on the left, and the detail image is on the right.

Step 2 Click the panoramic image, and then start calibration.



- After adjusting the PTZ of the panorama camera to a proper position, you can start automatic calibration. And the detail image on the right can be adjusted and matched automatically.
- Try to avoid trees when calibrating.

Manual Calibration

Step 1 Select **Manual** for the **Calibration Mode**, and adjust the panoramic image.

Step 2 Select **Scene 1**, adjust the detail image to overlap with part of the panoramic image (refer to the position of the detail image in different scenes when performing auto calibration).

Step 3 Click **Start Calibration**, click the green +, calibrate a position in the panoramic image, and then calibrate the same position in the detail image.



Select an obvious reference in the scene, which is convenient for linked positioning.

Step 4 After calibrating a set of positions, click **Save**.

Step 5 Repeat Step 2 and Step 3 to calibrate 4 to 6 sets. 6 sets are recommended because the more positions are calibrated, the calibration is more accurate.

Step 6 Click **Stop Calibration**.

Step 7 Repeat Step 2, Step 3 and Step 4 until Scene 5 is calibrated.

Step 8 Click **Save**.

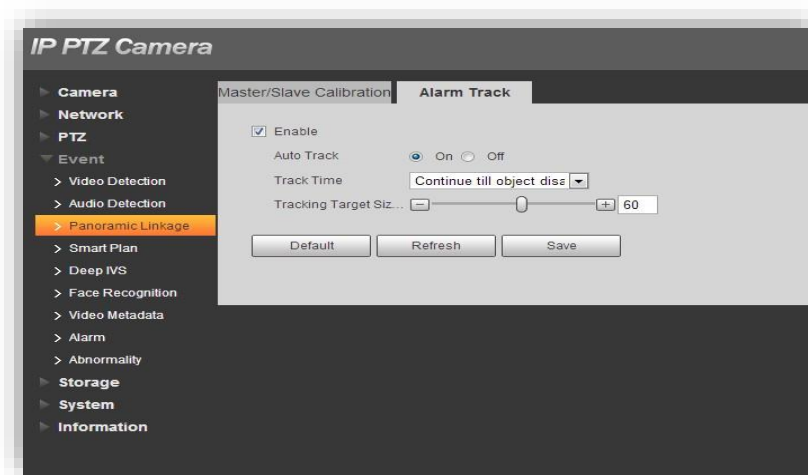
Figure 4-5 Manual calibration



4.4.2 Alarm Track

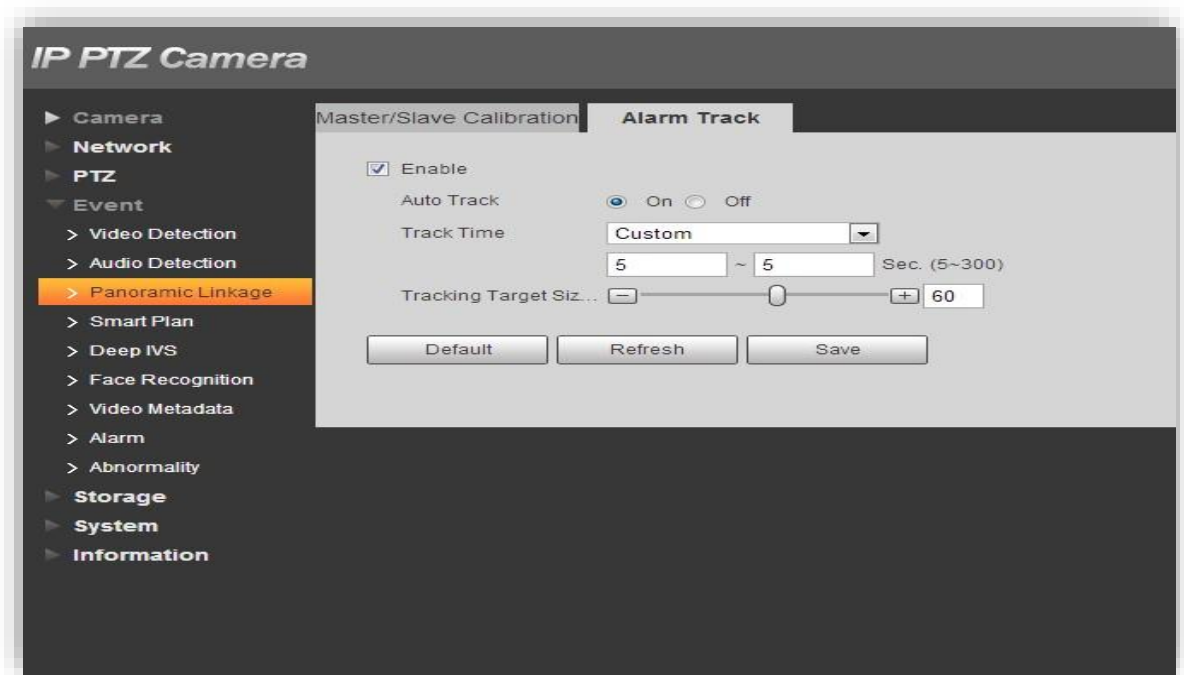
Select **Setting > Event > Panoramic Linkage > Alarm Track**. The function is enabled by default. You can adjust the **Tracking Target Size Ratio** to change the zoom times of the detail camera.

Figure 4-6 Alarm track (1)



You can change the **Track Time** from **Continue till object disappears** to **Custom**, and set the duration.

Figure 4-7 Alarm track (2)



4.4.3 AI Live Interface

The **AI Live** interface is added for the Device to clearly display the capturing results of video metadata function. You can view the data after video metadata has been enabled.

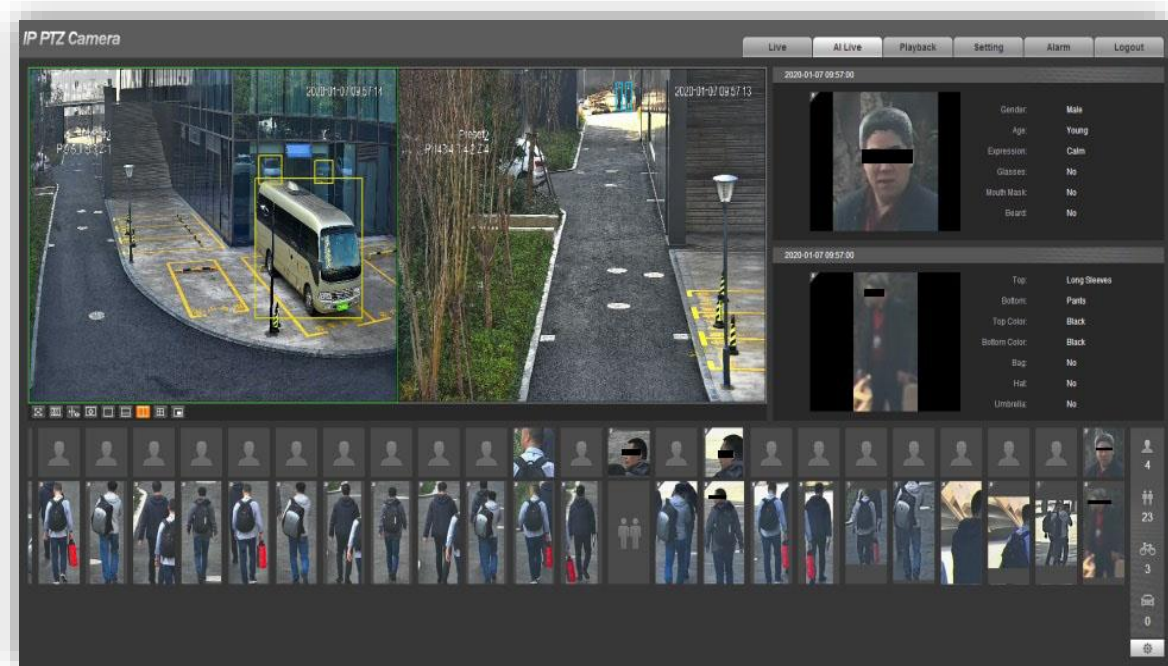
Figure 4-8 Function bar



Example

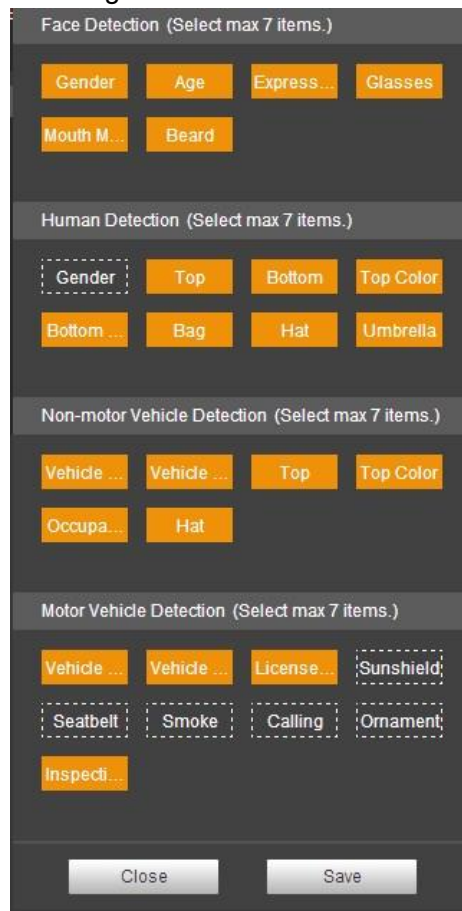
The following two images are from panorama camera and detail camera. The newly captured human body and human face are displayed on the right; the captured human faces, human bodies, non-motor vehicles, and motor vehicles are displayed at the bottom, and will be refreshed from left to right. The capture statistics are at the lower right.

Figure 4-9 AI Live interface



On the capture statistics interface, you can click the setting button to select the attributes displayed on the **AI Live** interface.

Figure 4-10 Set target attributes on the AI Live interface



4.5 Smart Plan

Before using smart plan, you can enable or disable alarm track.

After alarm track is enabled, the images of panorama camera and detail camera can be linked. For the smart plans which can be enabled for the panorama camera and detail camera after enabling alarm track and linking presets, see the following table.



Face recognition is independent and cannot be linked.

Table 4-1 Smart plan

Panorama Camera	Detail Camera
Face recognition	Face recognition
Deep IVS	Video metadata
Video metadata	Video metadata

4.5.2 Alarm Track Enabled (Linkage Mode)

4.5.2.1 Enabling Face Recognition for Panorama Camera + Face Recognition for Detail Camera

Step 1 Enable **Face Recognition** for both panorama camera and detail camera.

Figure 4-11 Enable face recognition for panorama camera

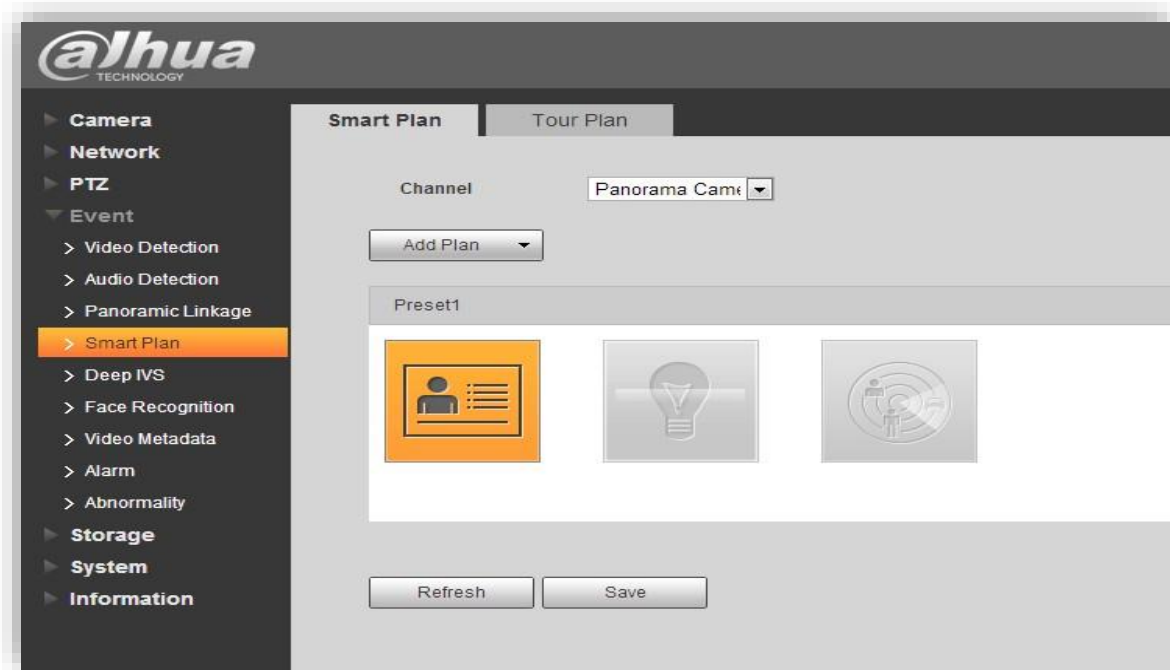
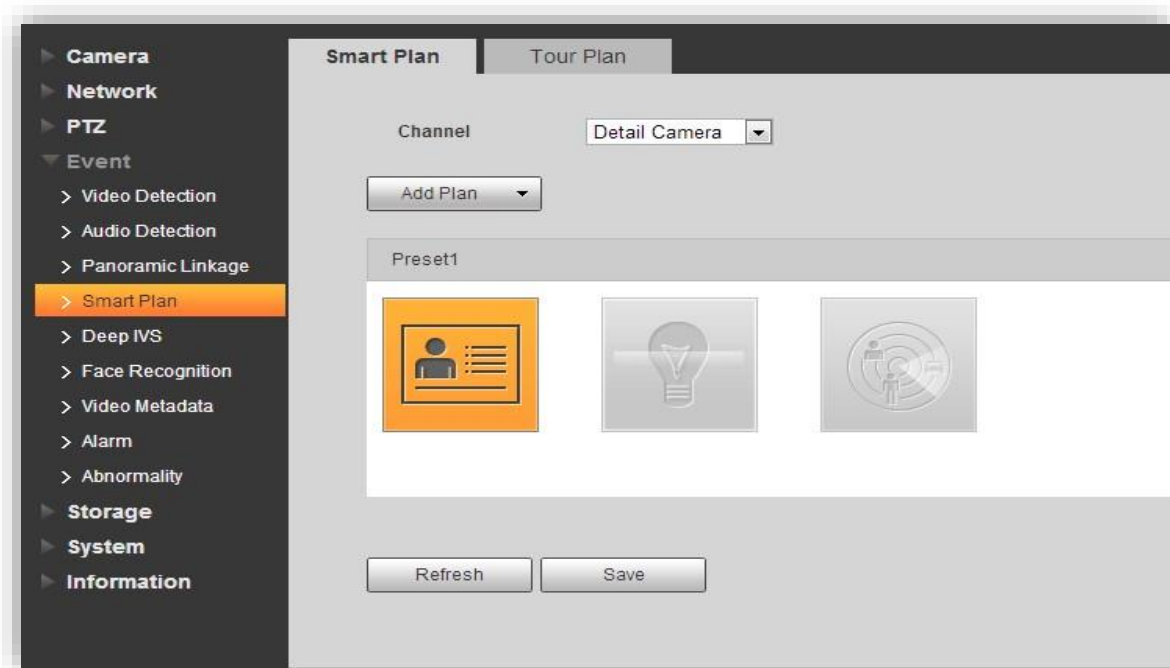


Figure 4-12 Enable face recognition for detail camera



Step 2 On the **Face Detection** interface, select the **Enable** check box for both panorama camera and detail camera, and then select the **Snapshot** check box.

Figure 4-13 Set face recognition for panorama camera

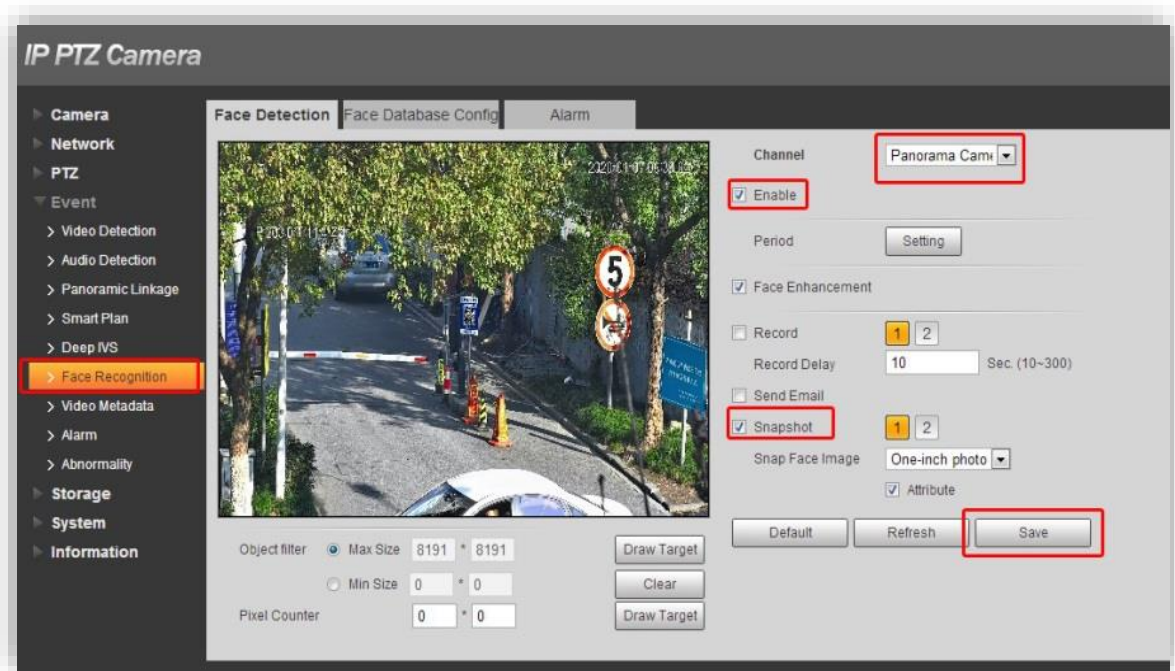
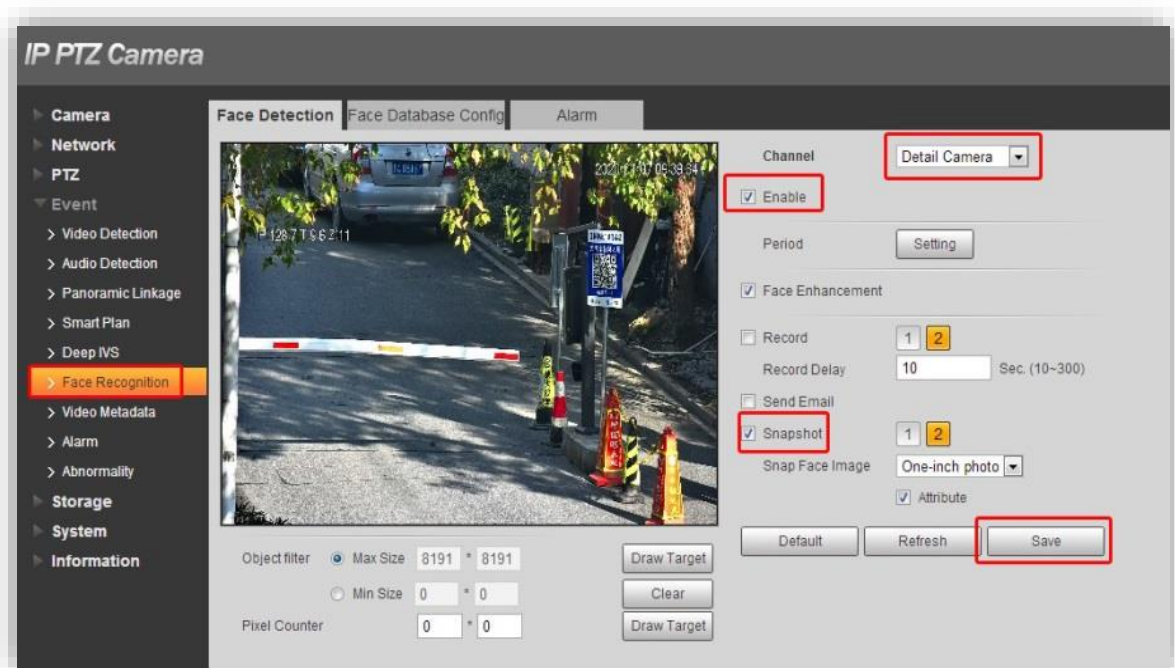


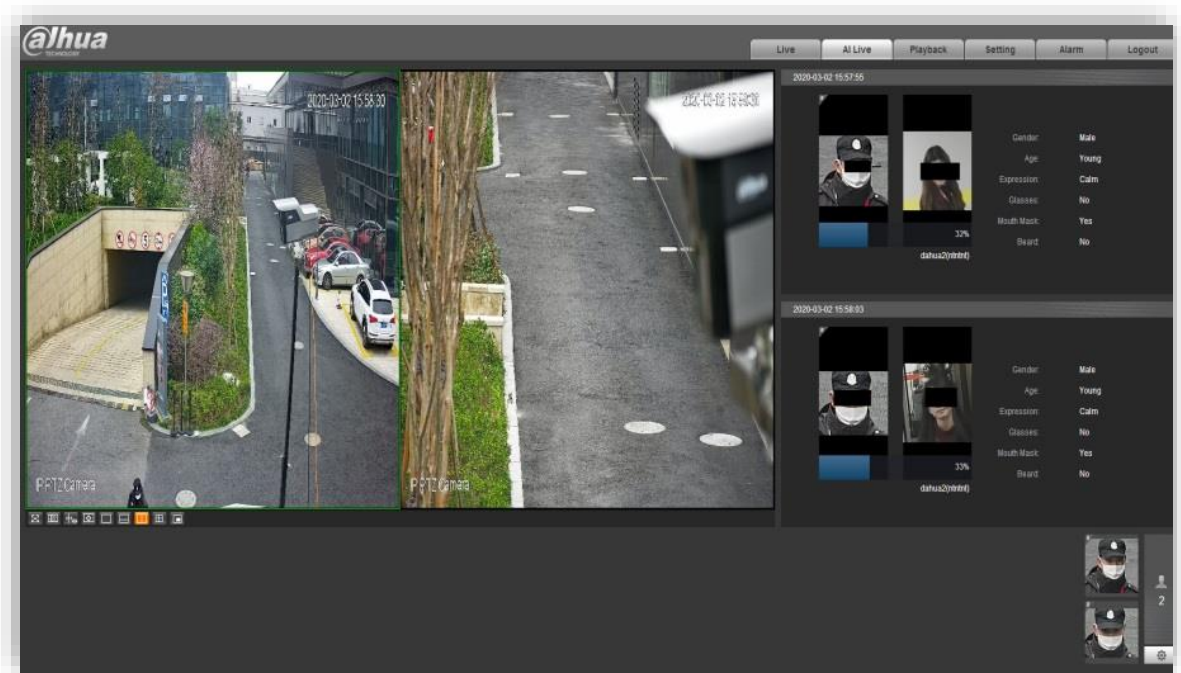
Figure 4-14 Set face recognition for detail camera



- You need to bind the presets with the face recognition function. If you click the panoramic image and adjust the PTZ on the **Live** interface, the function becomes invalid.
- If you click the detail image and adjust the PTZ, the face recognition of both cameras still works properly.

Step 3 The following interface is displayed.

Figure 4-15 Face recognition result of panorama camera



4.5.2.2 Enabling Deep IVS for Panorama Camera + Video Metadata for Detail Camera

Step 1 Enable **Deep IVS** for panorama camera and **Video Metadata** for detail camera.

Figure 4-16 Enable deep IVS for panorama camera

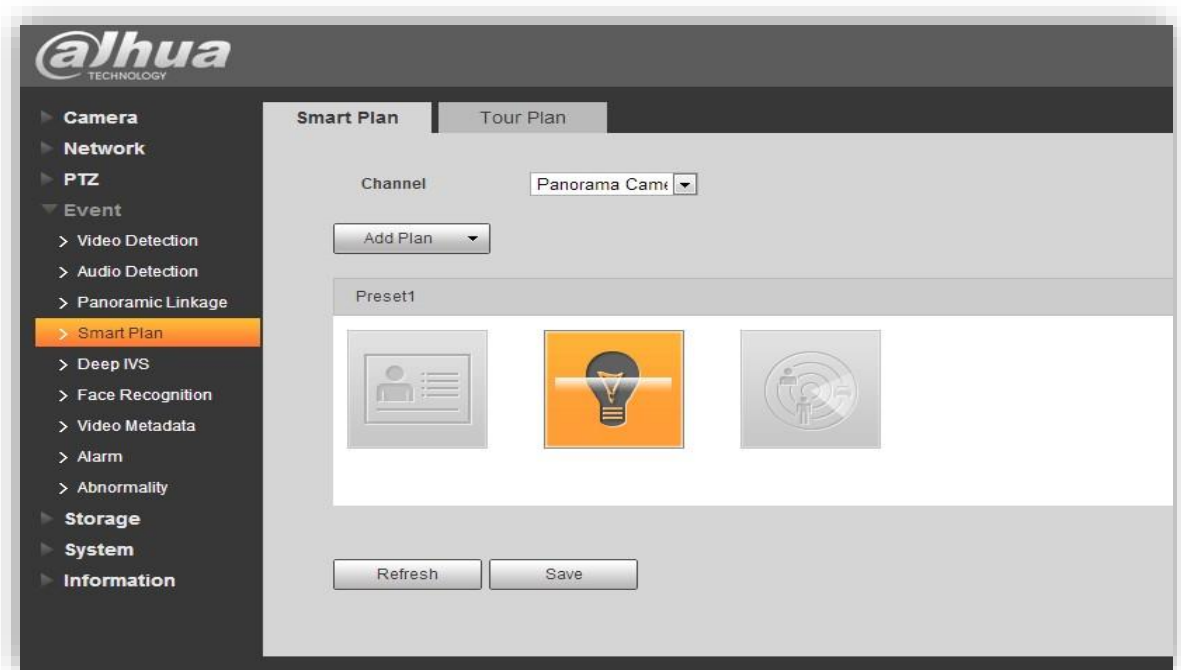
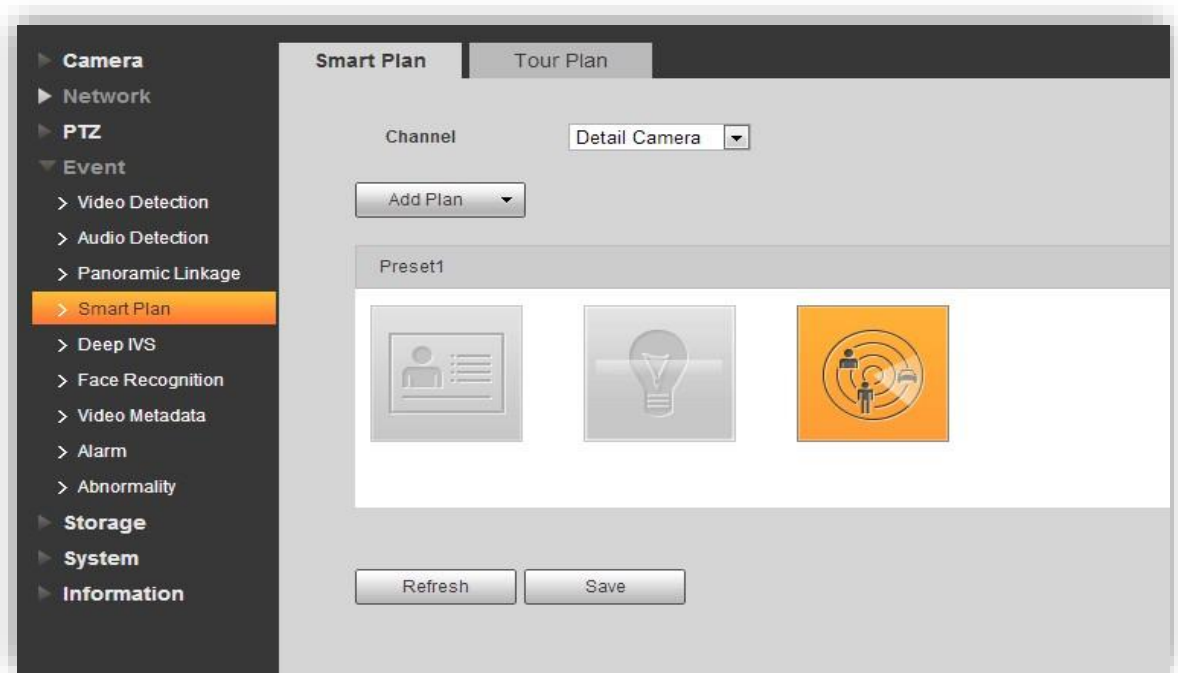


Figure 4-17 Enable video metadata for detail camera



Step 2 On the **Deep IVS** setting interface, add IVS rules for panorama camera.

Step 3 On the **Video Metadata** setting interface, select **Detail Camera**, and then add rule type (motor vehicle, non-motor vehicle, and people). After the setting, all targets appearing in the detail image will be captured.

Figure 4-18 Set video metadata for detail camera

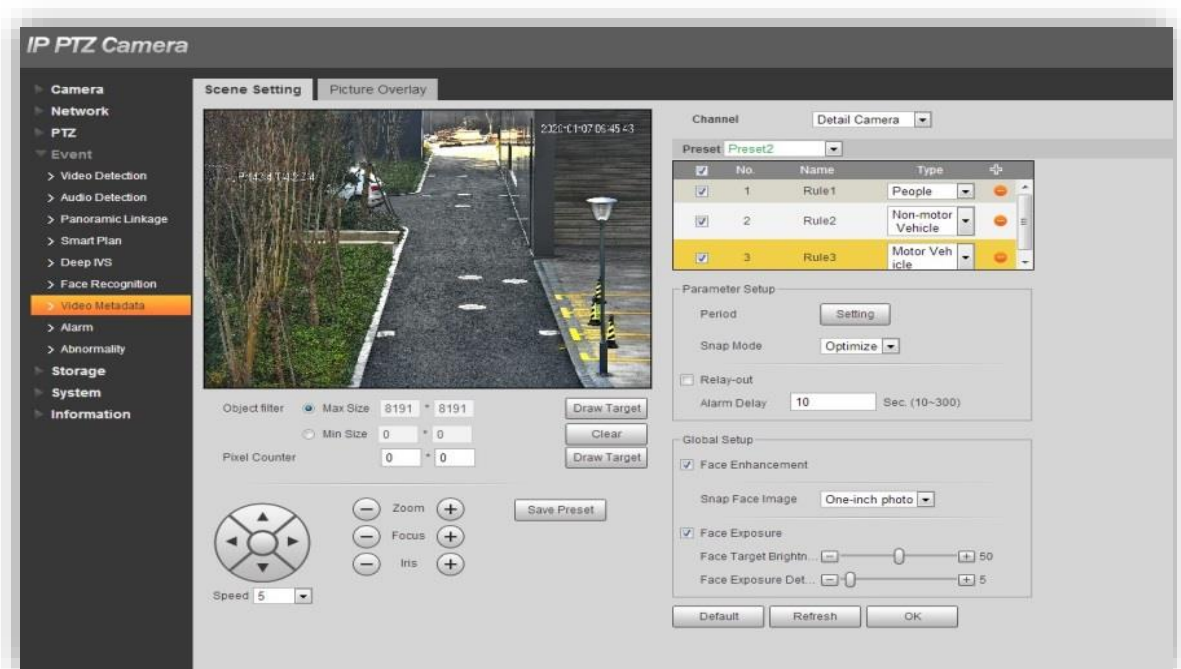
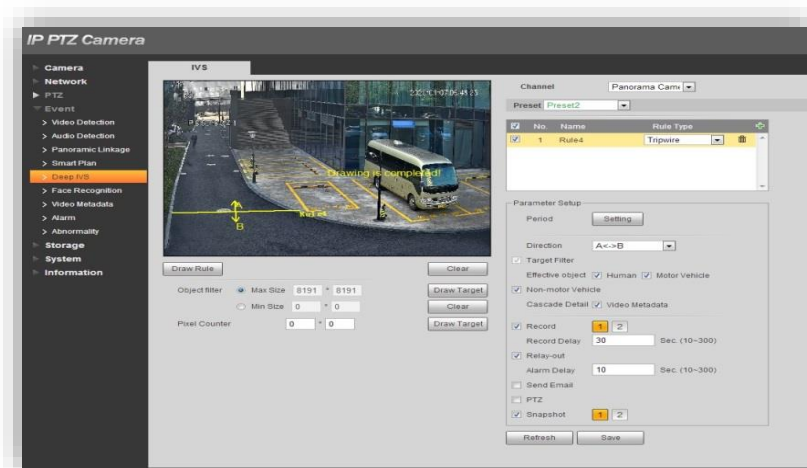


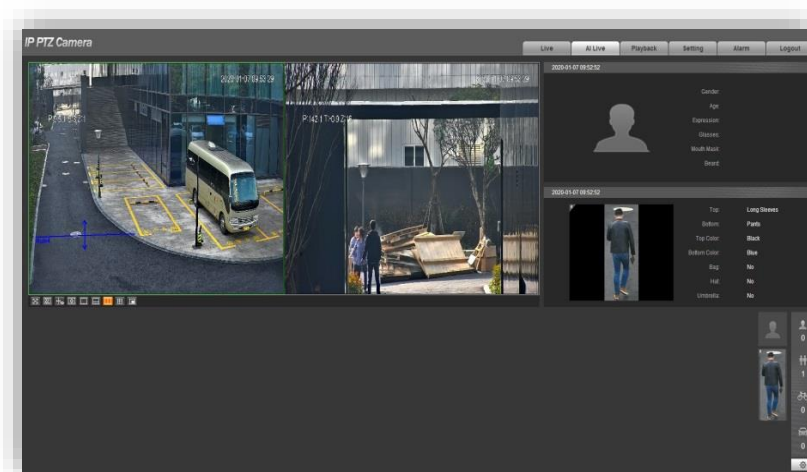
Figure 4-19 Set deep IVS for panorama camera



- Link video metadata of detail camera: After you select **Video Metadata** for the detail camera on the **Smart Plan** interface, and add rules (motor vehicle, non-motor vehicle, and people) for the detail camera on the **Video Metadata** setting interface, the Device will take snapshots and display the details of video metadata when perform positioning and tracking.
- Effective object—People, Motor Vehicle, and Non-motor Vehicle: Select at least one type of targets for deep IVS.
- Panoramic capture: When alarms are triggered by the deep IVS function, the panorama camera captures pictures without zooming.

Step 4 After the setting, the following interface is displayed.

Figure 4-20 Display results



In this case, only video metadata can be selected for the detail camera. If no smart plan has been selected for the detail camera, it only tracks objects, but does not capture pictures.

4.5.2.3 Enabling Video Metadata for Panorama Camera + Video Metadata for Detail Camera

Step 1 Enable **Video Metadata** for both panorama camera and detail camera on the **Smart Plan** interface.

Figure 4-21 Enable video metadata for panorama camera

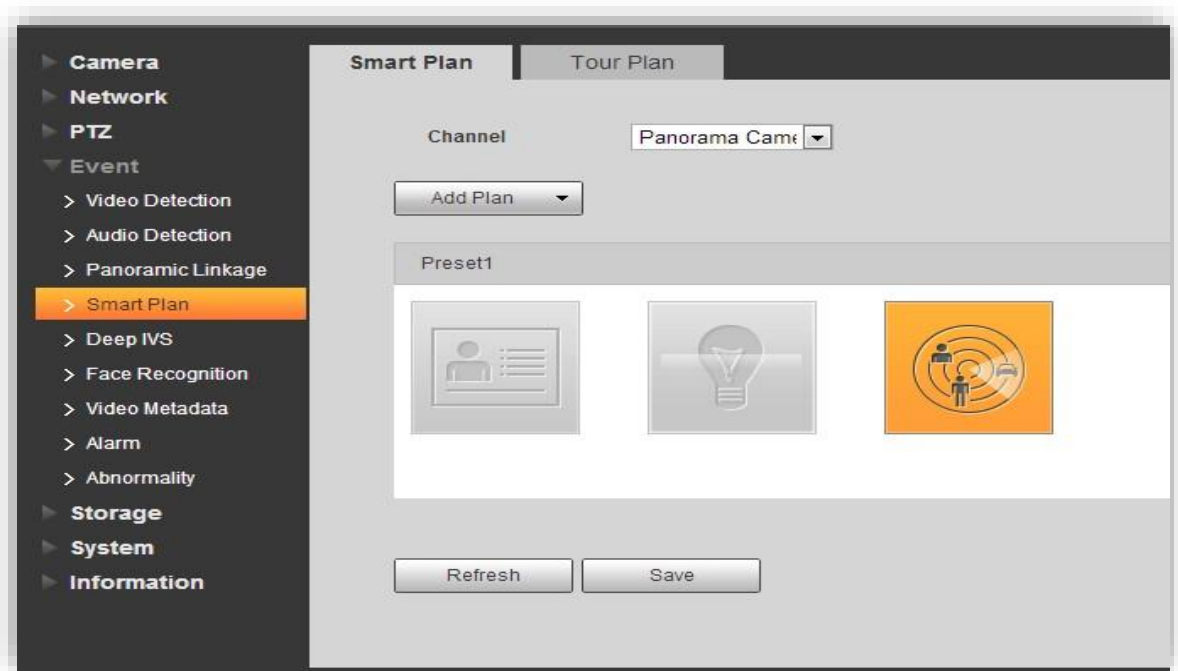
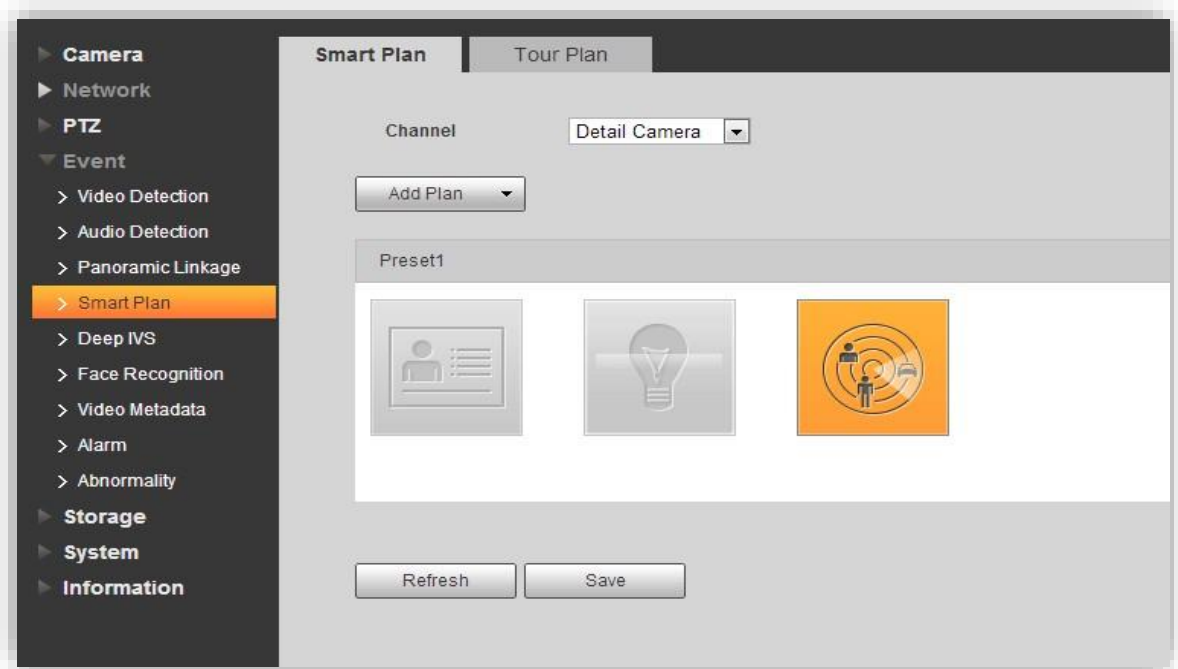
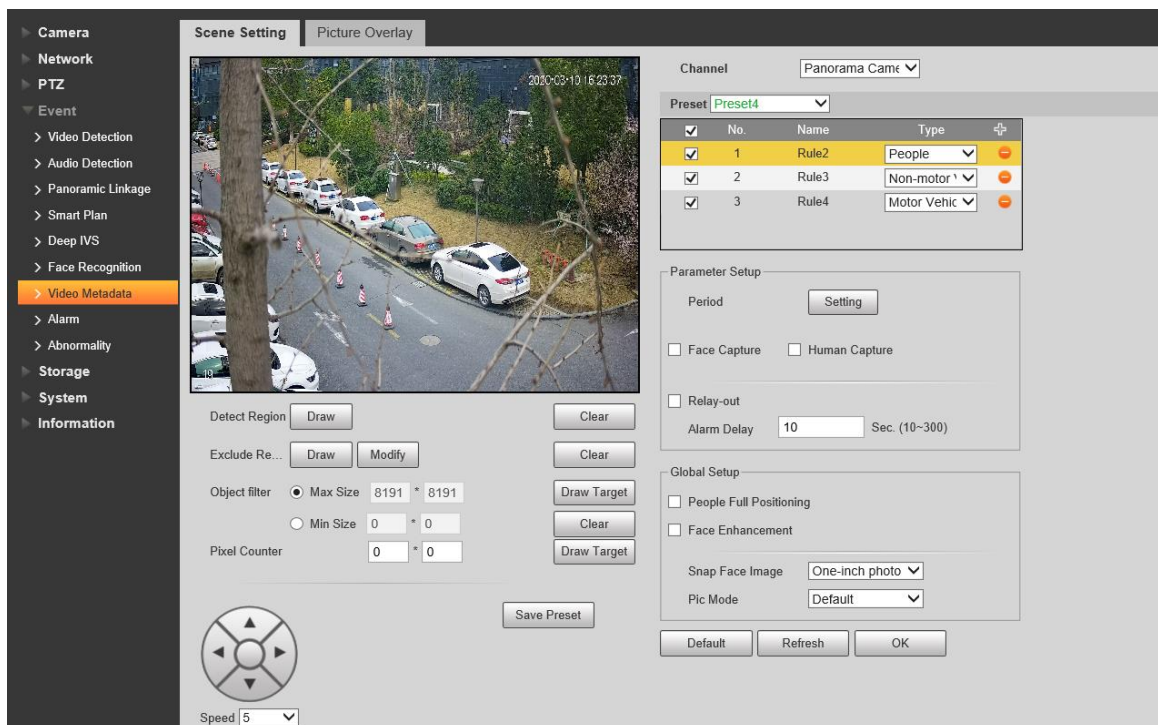


Figure 4-22 Enable video metadata for detail camera



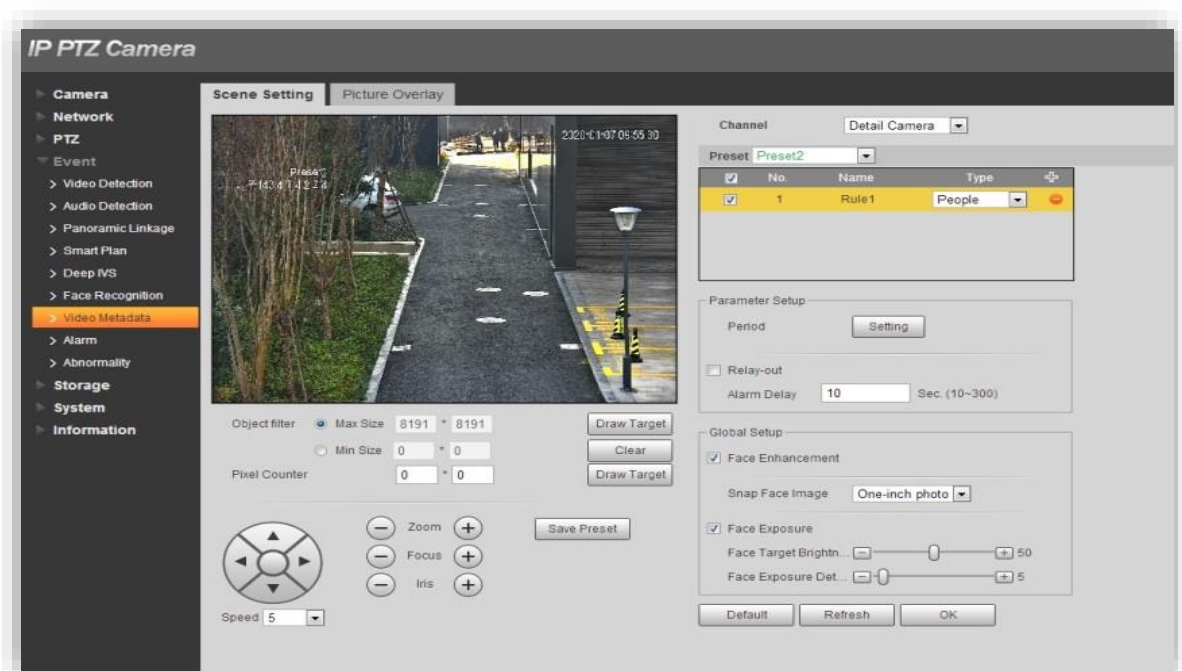
Step 2 On the **Video Metadata** interface, add rules (motor vehicle, non-motor vehicle, and people) for the panorama camera, and then select the **Face Capture** or **Human Capture** check box (optional, detection and capture performed by panorama camera).

Figure 4-23 Set video metadata for panorama camera



Step 3 Switch to detail camera. At this time, only **People** rule can be added.

Figure 4-24 Set video metadata for detail camera

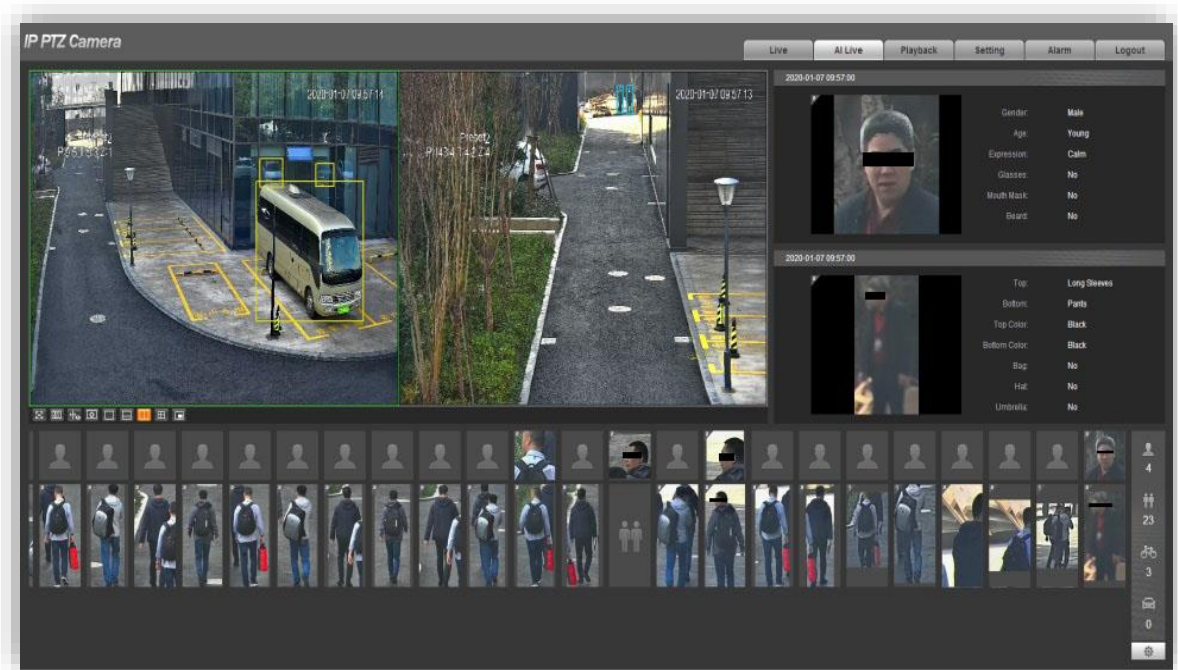


Step 4 The results interface is displayed. The panorama camera will detect motor vehicles, non-motor vehicles, and people, and capture pictures of motor vehicles and non-motor vehicles. If the panorama camera detects people, the detail camera will be linked to detect and capture the people.



If video metadata is only enabled for the detail camera, and no smart plan is enabled for the panorama camera, the detail camera will only capture pictures of people without zooming, and displays video metadata results.

Figure 4-25 Display results on the AI Live interface



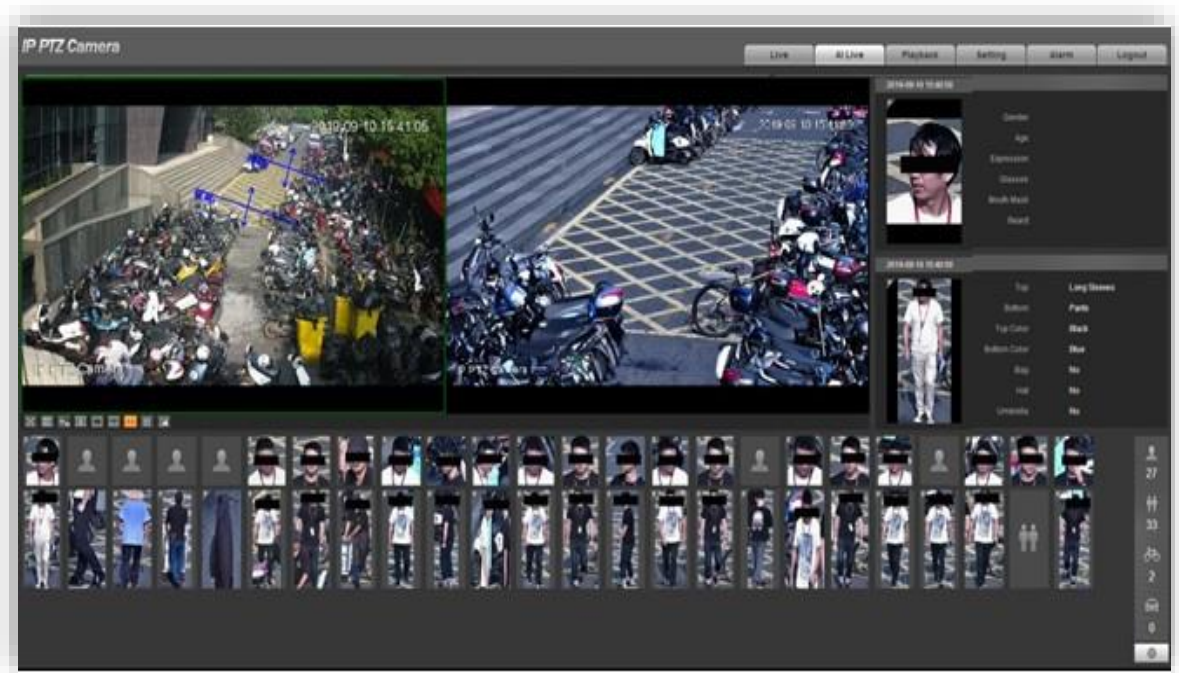
4.5.3 Alarm Track Disabled (Independent Mode)

After the alarm track is disabled, the panorama camera and detail camera are mutually independent. You can configure three functions for both cameras respectively. For example, you can enable deep IVS in Preset 1 for the panorama camera, and set video metadata in Preset 2 for the detail camera.



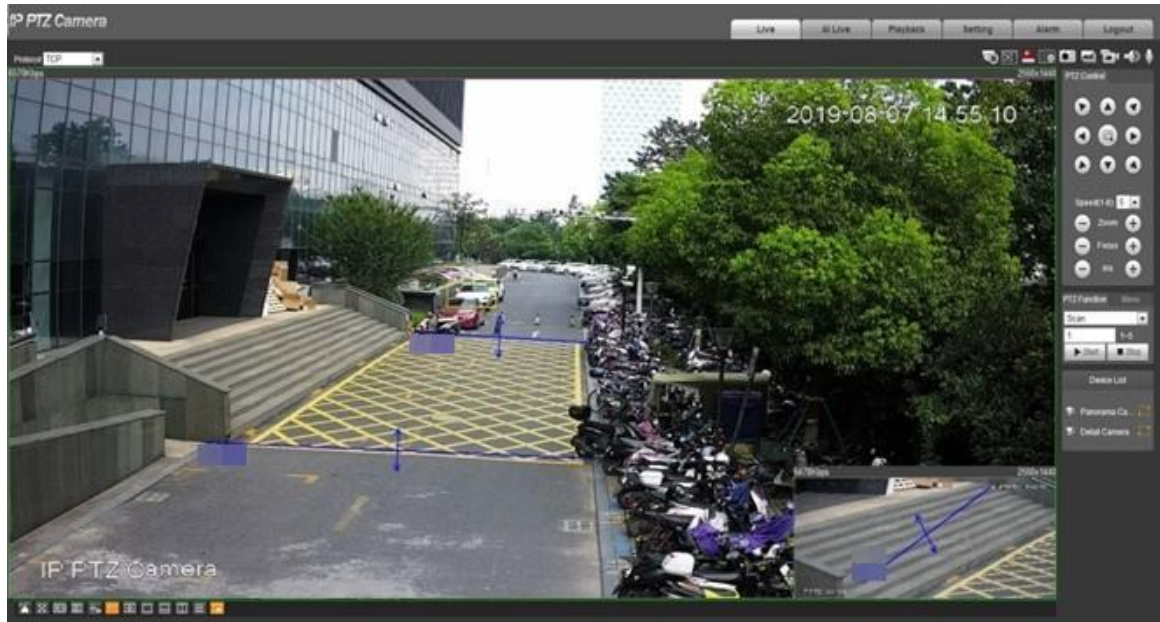
- The smart functions of the two channels are independent of each other.
- The panorama camera captures pictures when alarms are triggered, and the detail camera cannot zoom when performing video metadata function.

Figure 4-26 Deep IVS for panorama camera + video metadata for detail camera



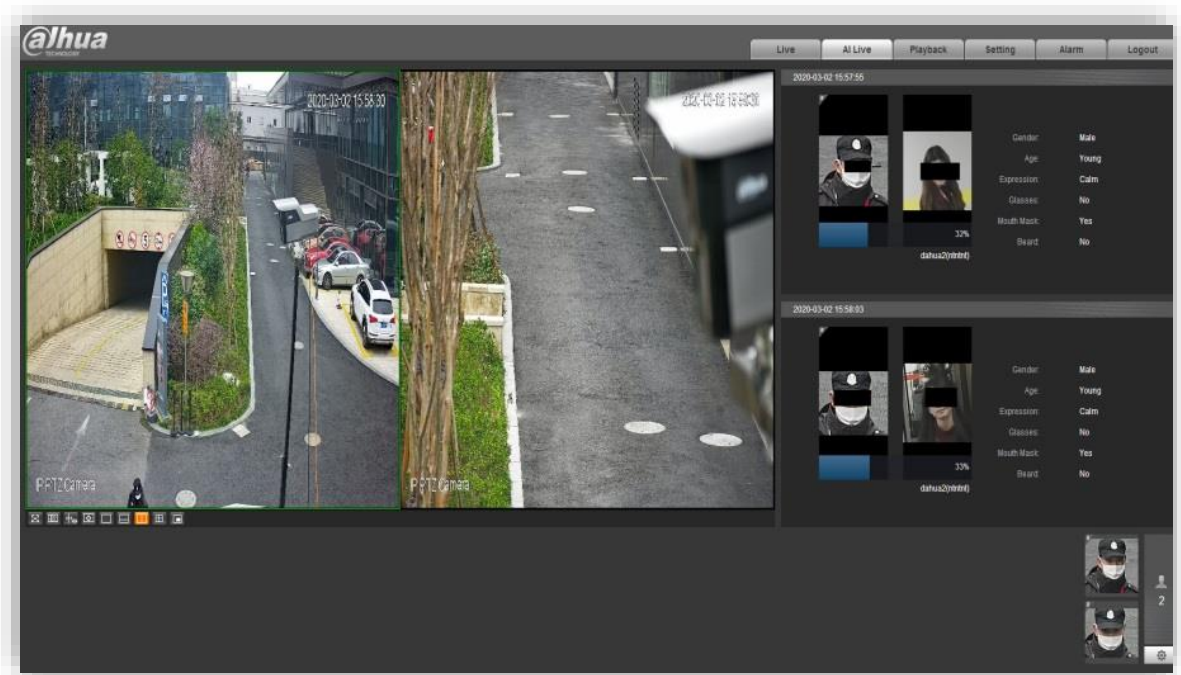
Deep IVS: When alarms are triggered, both cameras can send alarms, but the detail camera cannot zoom or track objects.

Figure 4-27 Deep IVS for panorama camera + deep IVS for detail camera



Both channels can be configured with face recognition and capture pictures. Note that pixel size must meet requirements, which means the detection and capture can only be performed after detection box is displayed.

Figure 4-28 Deep IVS for panorama camera + face recognition for detail camera



4.6 Tour Plan

You can configure the tour plan to capture pictures in multiple scenes. Select **Setting > Event > Smart Plan > Tour Plan**. For the tour mode, only **Scene Priority** is supported currently.

Example: Set several presets, and configure different rules for these presets.

- Preset 1: Configure deep IVS—video metadata according to the manual.

Figure 4-29 Configure Preset 1



- Preset 2: Configure video metadata–video metadata

Figure 4-30 Configure Preset 2

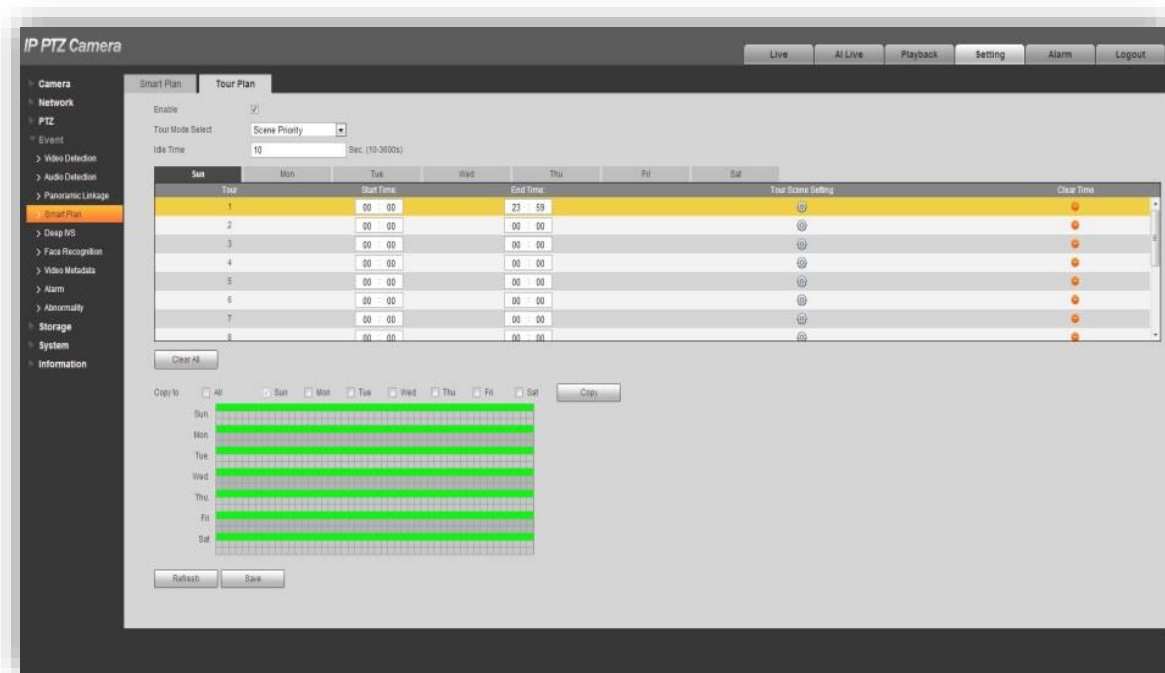


Step 1 Enable the tour plan, and then set the arming period.



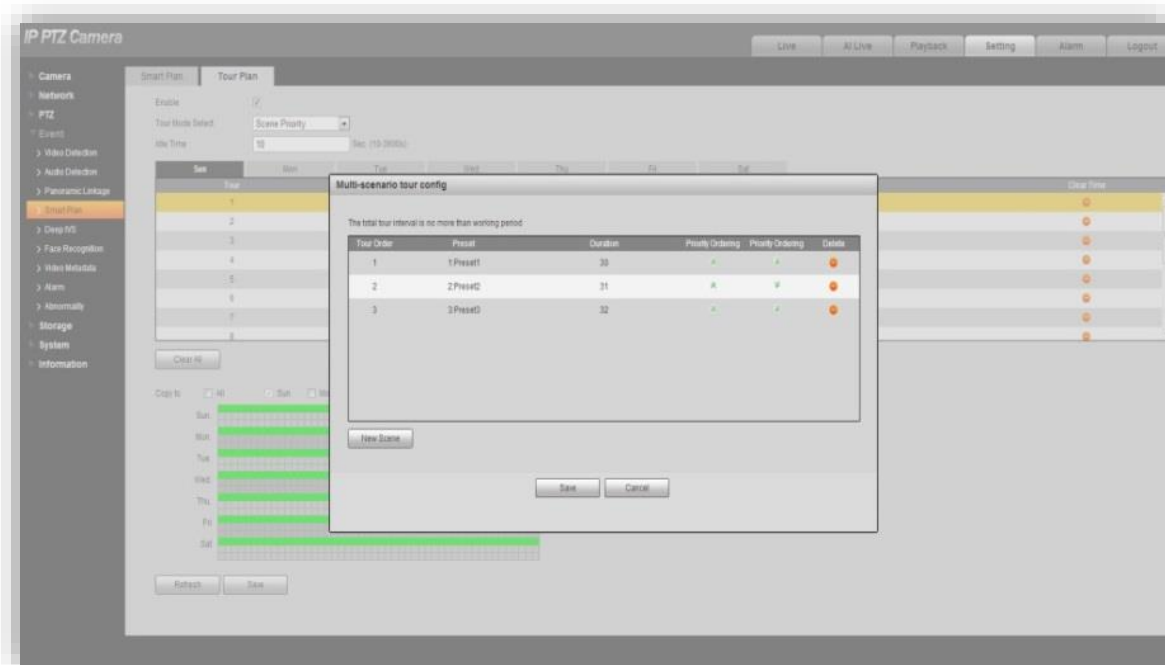
Idle time: The value ranges from 10 s to 3600 s. It is the time from the user adjusting the PTZ to the smart detection resuming.

Figure 4-31 Set tour plan



Step 2 Click **Tour Scene Setting** to add new scene and set the duration of each preset. After the setting, the Device can perform smart detection and capture pictures in different presets with different smart rules based on the duration.

Figure 4-32 Set scene duration of the tour plan



5 Matching List

See the following table for the matching information of the video metadata function.

Table 5-1 Matching information

Matching Product	Model	Function
NVR	DH-NVR5864-I DH-NVR4832-I	Video metadata + perimeter protection + face recognition
IVSS	IVSS708-I	Video metadata + perimeter protection + face recognition
EVS	DH-EVS7024S-R	Only for storage
General Platform	DSS7016-S2	Video metadata (for searching) + perimeter protection
Public Security Platform	DSS-C9100	Video metadata + perimeter protection + face recognition
Traffic Platform	DSST9100	Vehicle metadata
Building Platform	DSS-H8900	Video metadata + perimeter protection + face recognition
Culture, Education and Health Platform	DSS-U8000	Video metadata + perimeter protection + face recognition
Structured Server	VS8000-U	Vehicle metadata + human body (connect through -C9 platform)
Human Face Server	F7500-S2-P	Face recognition + video metadata (connect through -C9 platform)

6 FAQ

6.1 Face Database Config

Configure the face database in face recognition mode according to the following steps:

Step 1 Select **Setting > Event > Face Recognition > Face Detection**, select the check boxes of Enable, Face Enhancement, Snapshot (One-inch photo by default) and Attribute, and then click Save.

Figure 6-1 Enable face recognition for detail camera

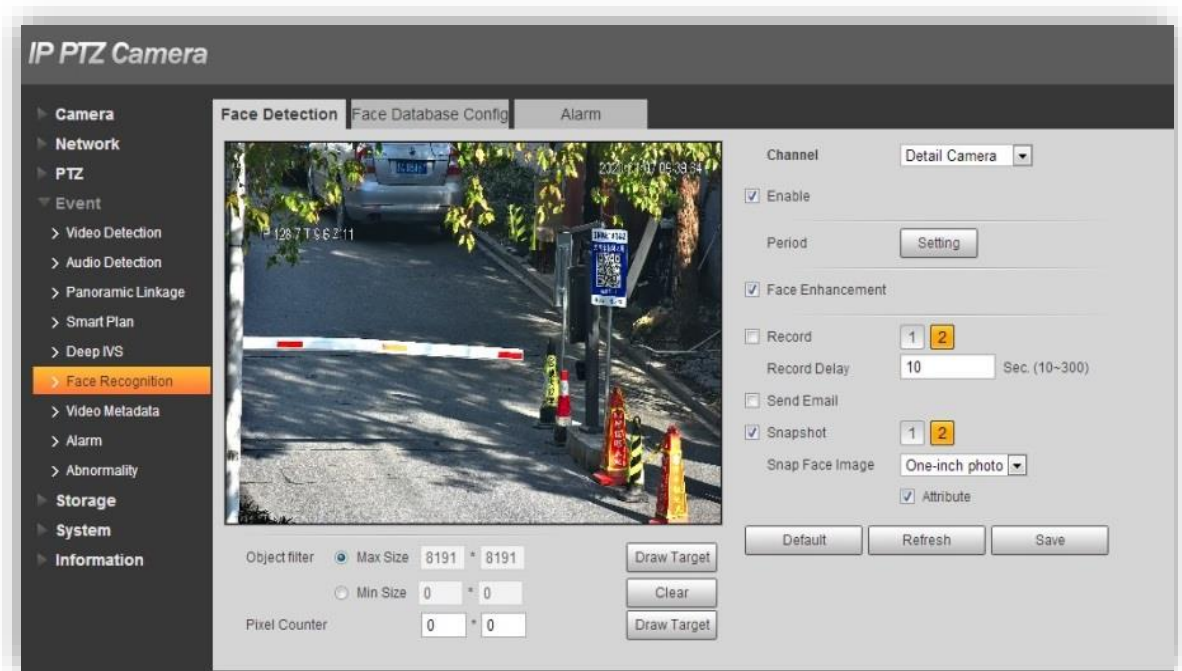
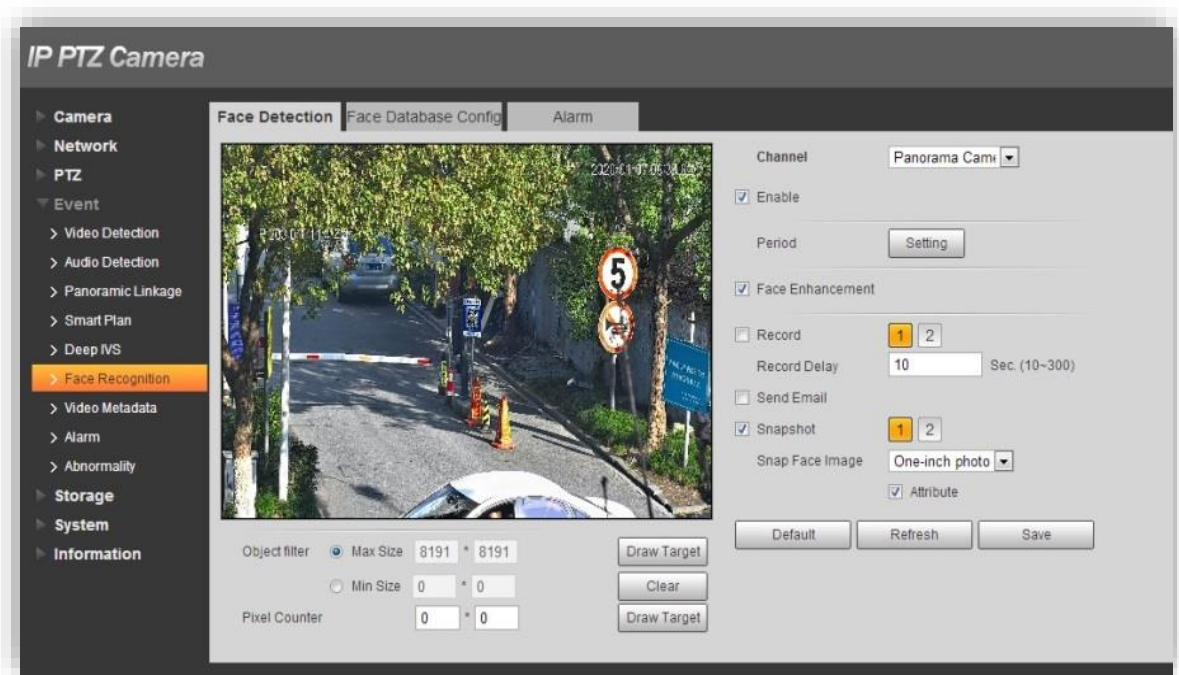
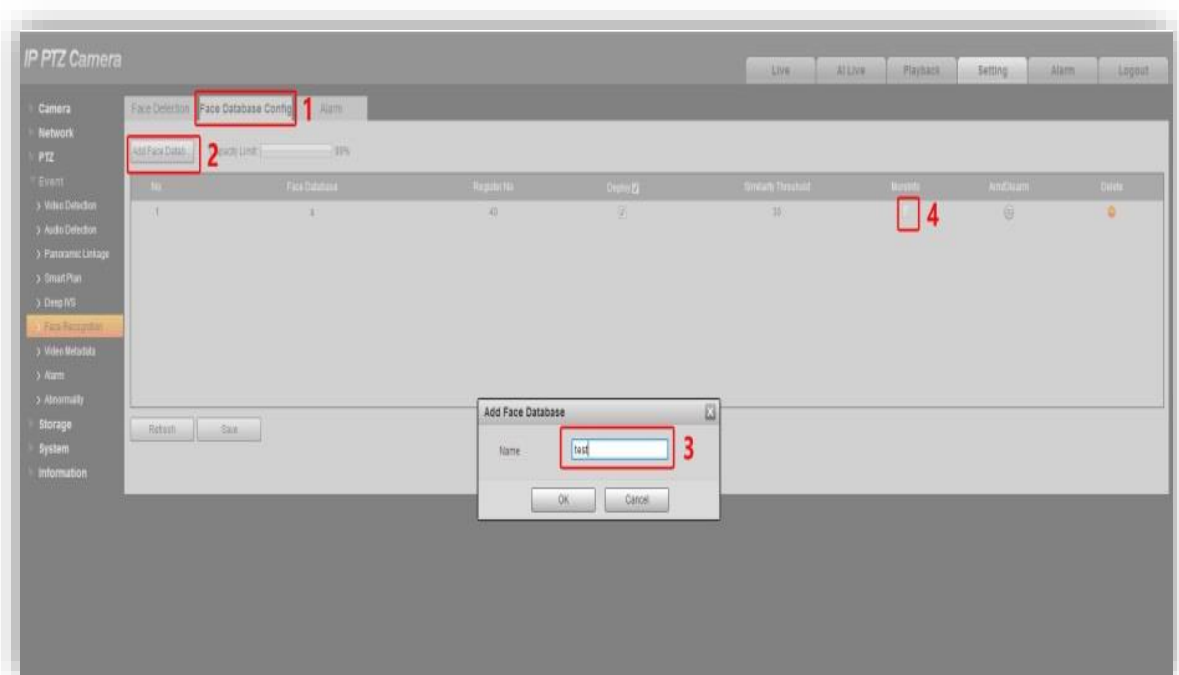


Figure 6-2 Enable face recognition of panorama camera



Step 2 Click the **Face Database Config** tab, click **Add Face Database**, name the database, and then click **OK**.

Figure 6-3 Add face database



Step 3 Click **More Info** (marked with 4 in Figure 6-3), click **Batch Registration**, select the face database folder, and then click **Browse**.

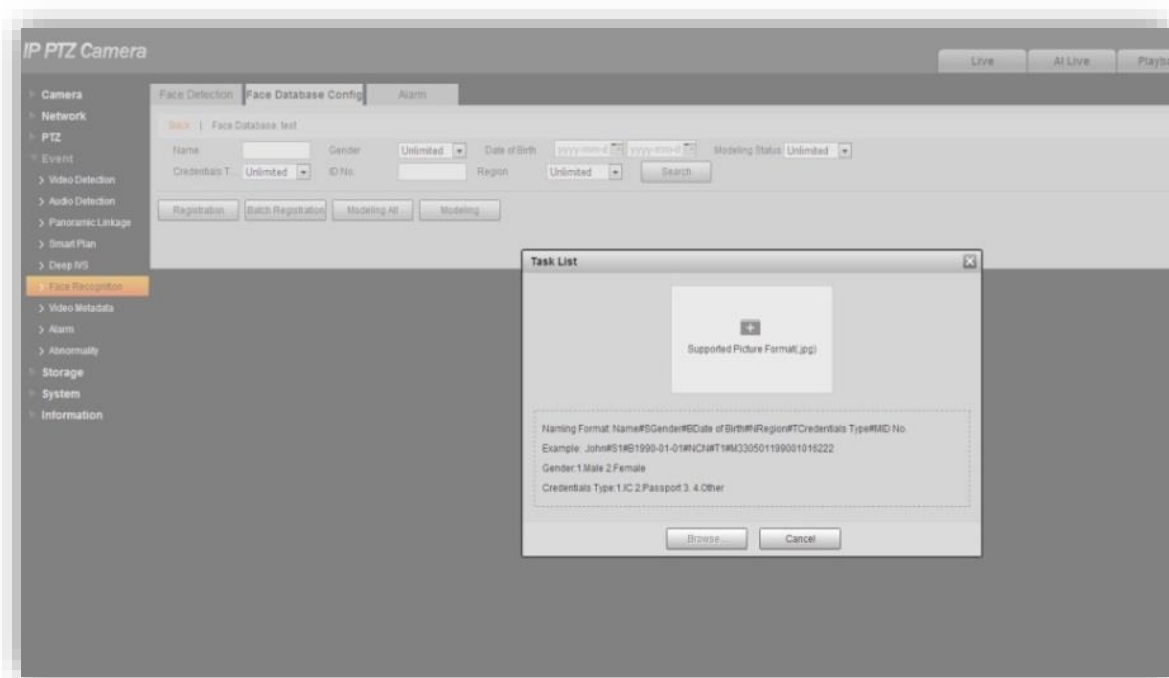


The picture in the database shall meet the following requirements.

- ◇ Picture size < 150k.

- ◇ Resolution < 1080p.
- ◇ Must be in .jpg format. For pictures not imported successfully, you can create a folder to import them again.

Figure 6-4 Upload pictures



Step 4 Click the **Alarm** tab, select the imported database, and then click **Save**.

6.2 Patterning

The following screen is for reference. You need to switch the screen when setting the patterning.

Adjust the image of panorama camera and detail camera to the position you want, and then click **Start Rec**. If you click the panorama image, and then adjust the PTZ, both images can be changed; if you click the detail image, only this image can be changed.

Figure 6-5 Patterning



6.3 Scanning and Panning

These two functions are only available for detail camera.

Figure 6-6 Scanning and panning



6.4 Idle Motion

The function is available for both channels.

Figure 6-7 Idle motion



6.5 Other Instructions

- The centers of panorama image and detail image are at the same level by default.
- The PTZ of the dome can only be rotated $\pm 125^\circ$ horizontally, and cannot be rotated to the back side.
- If the Device is rotated physically by the user, it will go back to the position before it is operated.

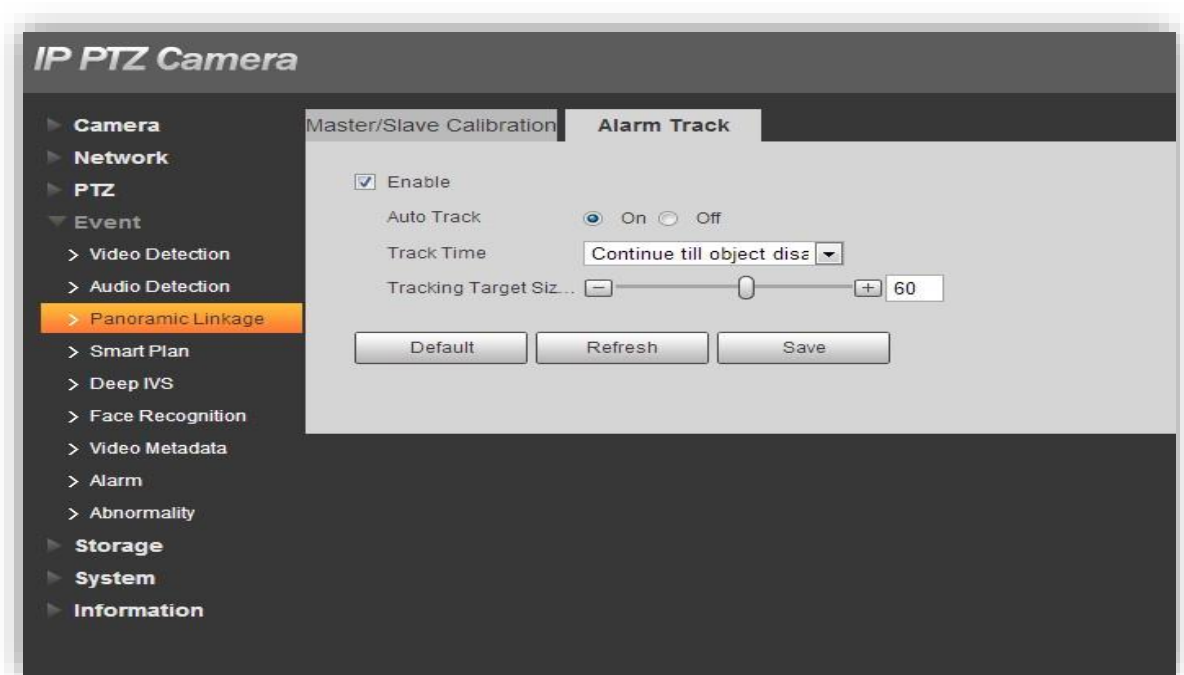
7 Quick Configurations

This chapter introduces some quick configurations, and is mainly focused on video metadata with alarm track enabled.

7.1 Linkage Mode

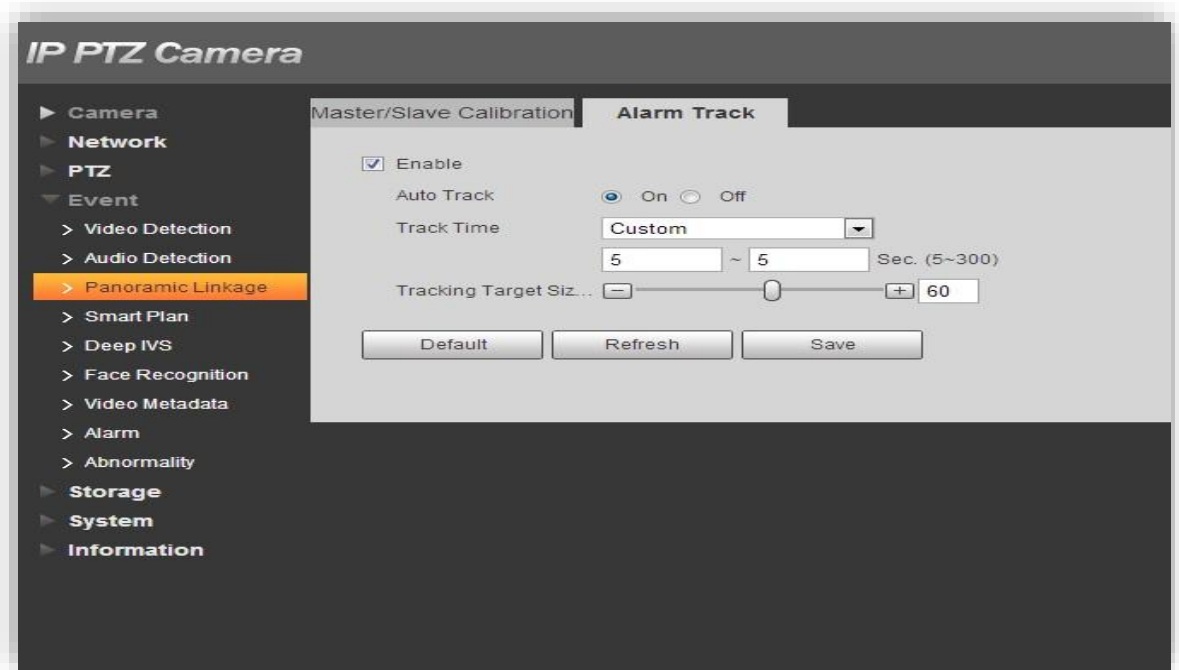
Select **Setting > Event > Panoramic Linkage > Alarm Track** to enable alarm track. You can adjust the **Tracking Target Size Ratio** to change the zoom times of the detail camera.

Figure 7-1 Alarm track (1)



You can change the **Track Time** from **Continue till object disappears** to **Custom**, and set the duration.

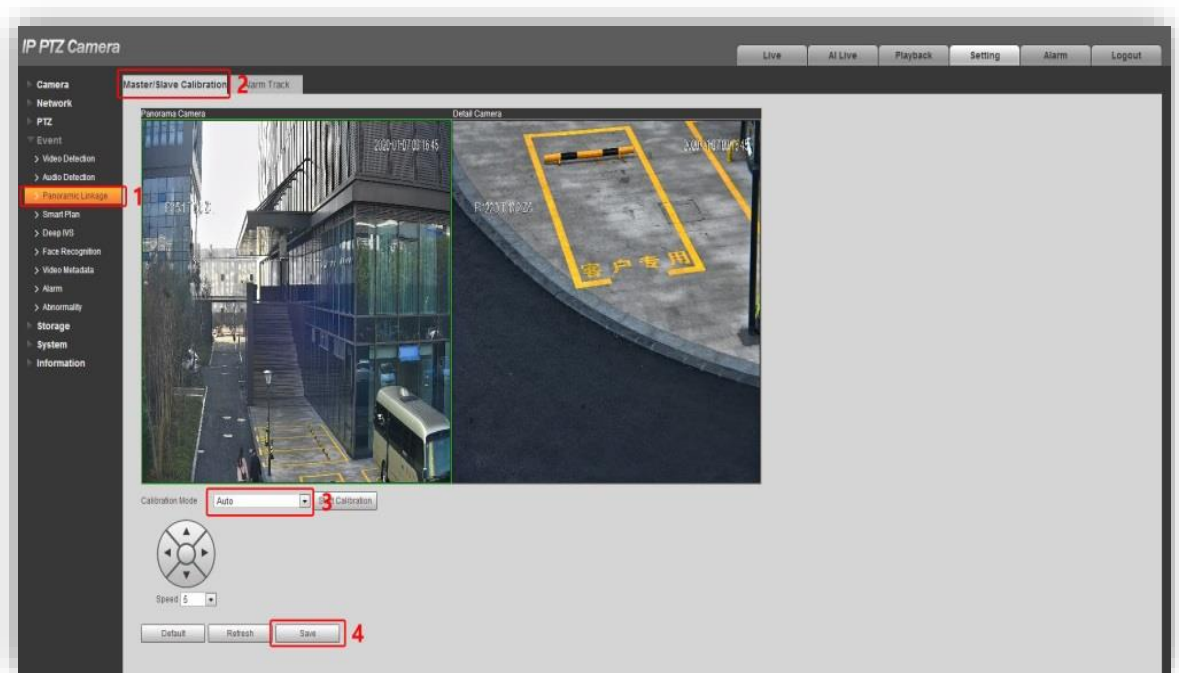
Figure 7-2 Alarm track (2)



7.2 Auto Calibration

The Devices has two channels (upper and lower), and when smart functions are performed, the channels will be linked. To make the linked positioning more accurate, you need to calibrate the Device.

Figure 7-3 Auto calibration



Step 1 Select **Setting > Event > Panoramic Linkage > Master/Slave Calibration**. The panoramic image is on the left, and the detail image is on the right.

Step 2 Click the panoramic image, and then start calibration.



After adjusting the PTZ of the panorama camera to a proper position, you can start automatic calibration. And the detail image on the right can be adjusted and matched automatically.

7.3 Verifying Calibration Accuracy

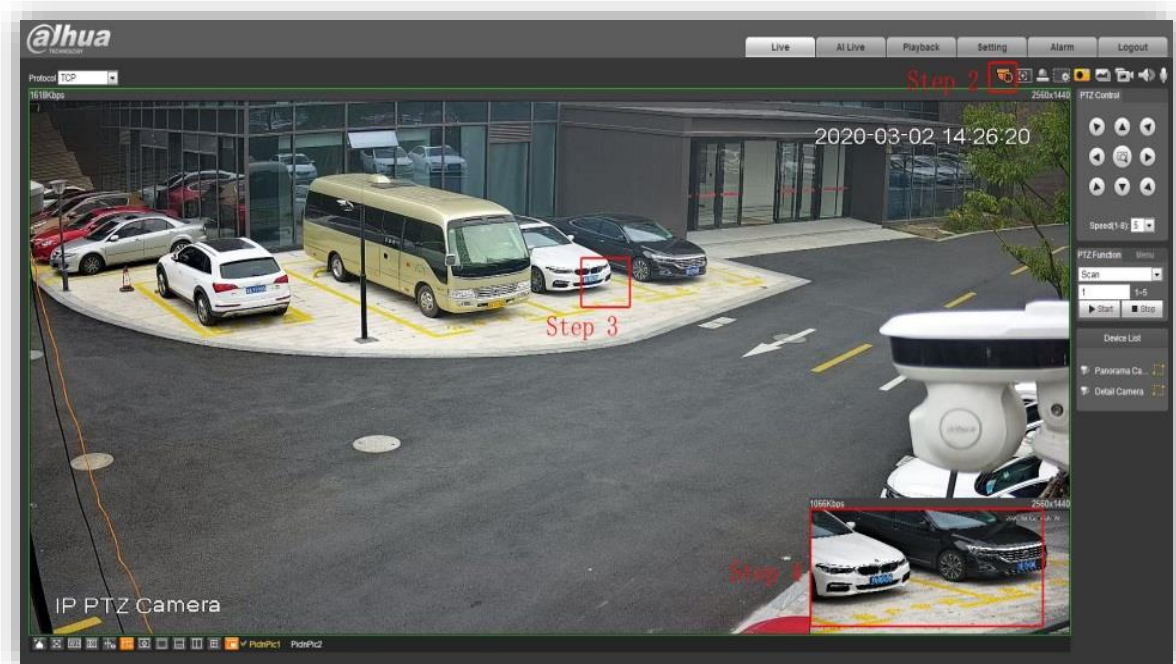
Step 1 After the calibration, go to the **Live** interface.

Step 2 Click the **Manual Position** button.

Step 3 Press and hold the left mouse button and draw an area on the image of the panorama camera.

Step 4 If the positioning of the detail camera is correct, it means the calibration is accurate.

Figure 7-4 Verify calibration accuracy



7.4 Configuring Rules

Step 1 Enable **Video Metadata** for both panorama camera and detail camera on the **Smart Plan** interface.

Figure 7-5 Enable video metadata for panorama camera

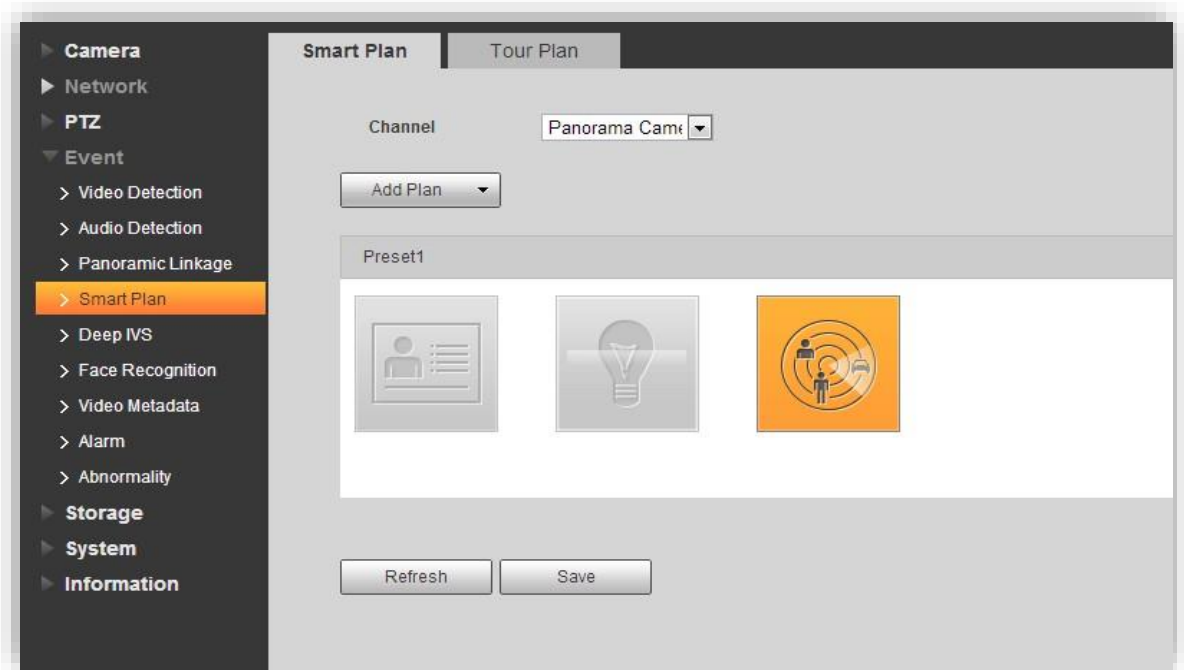
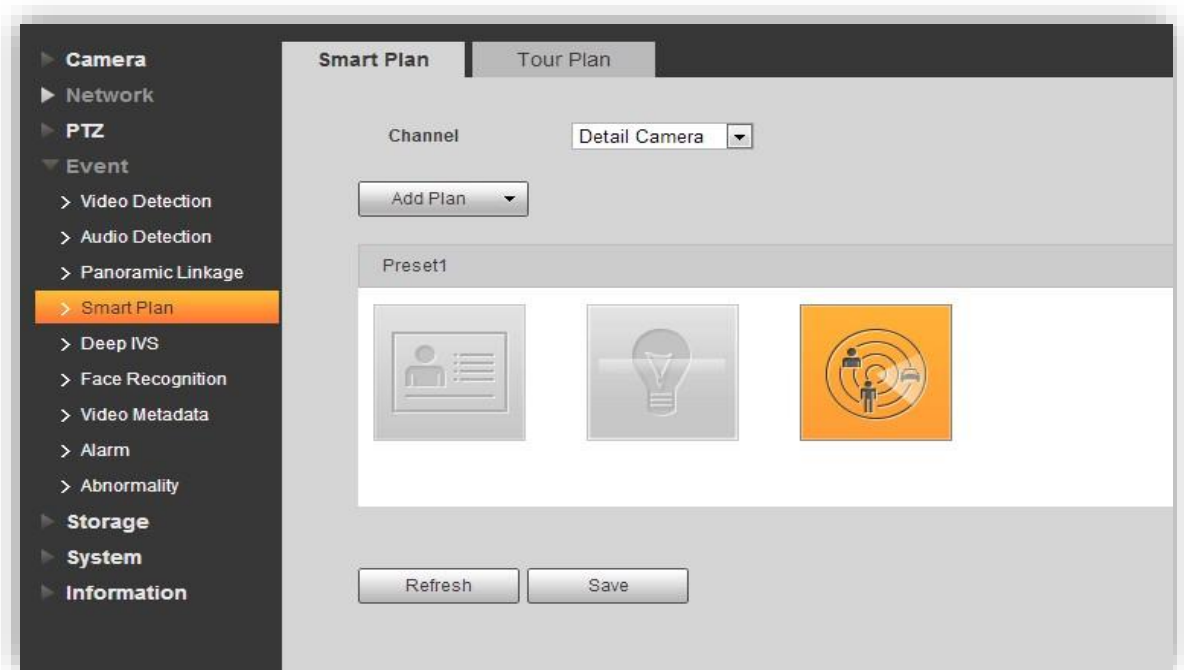
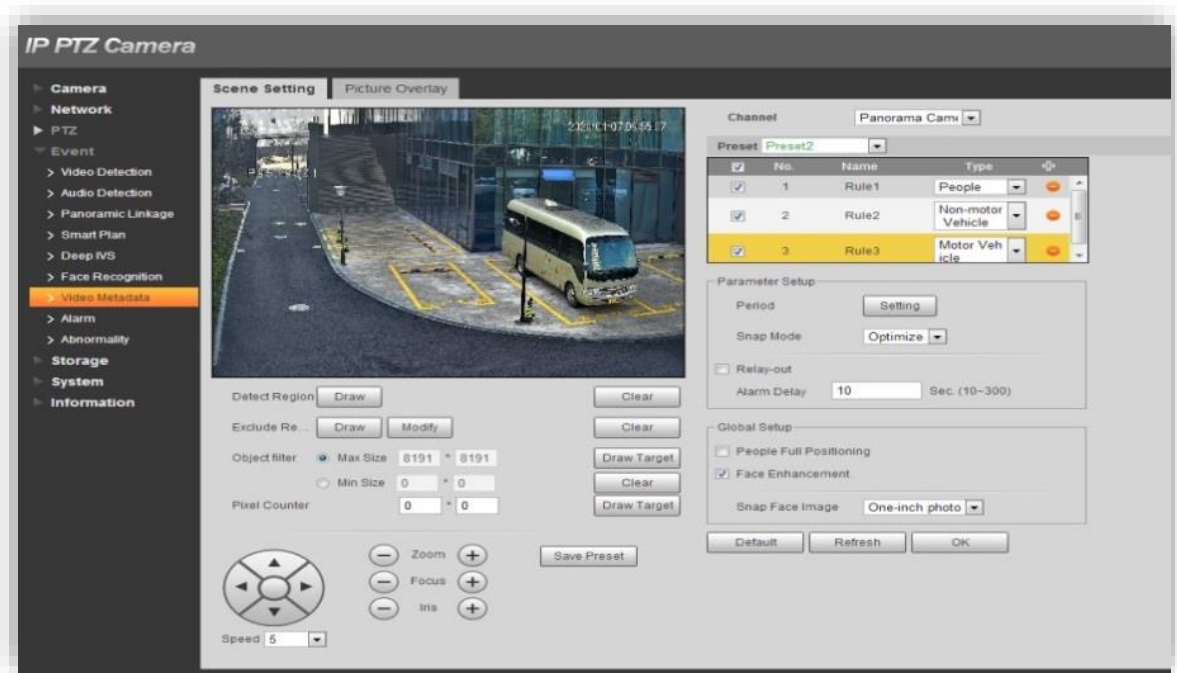


Figure 7-6 Enable video metadata for detail camera



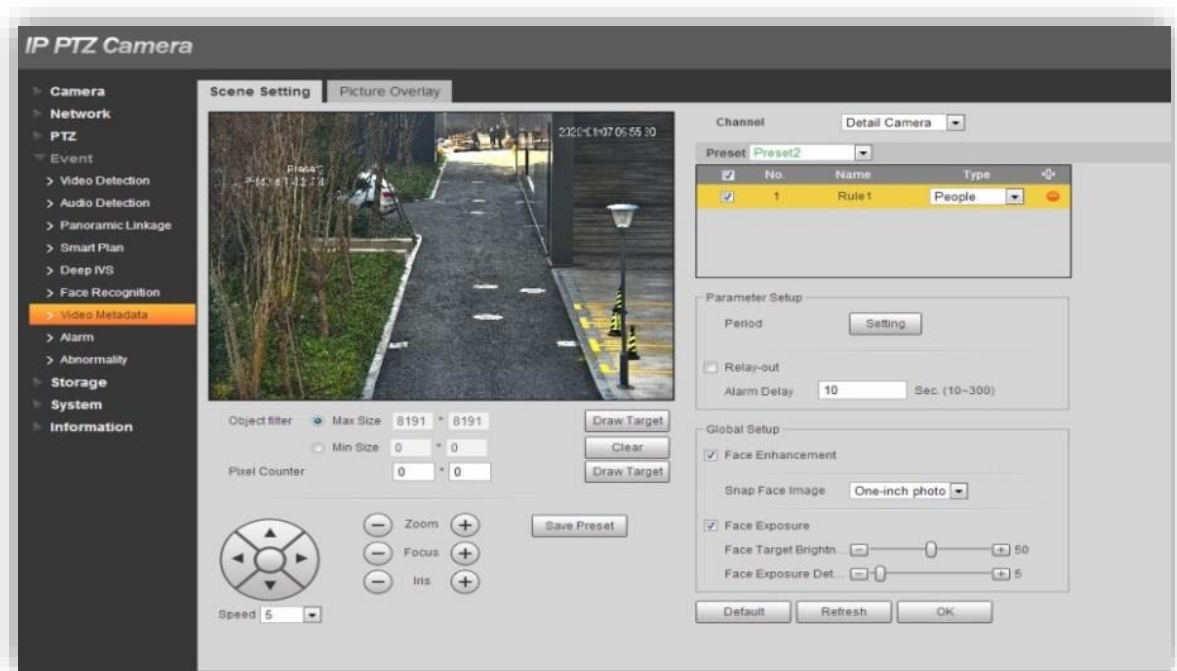
Step 2 On the **Video Metadata** interface, add rules (motor vehicle, non-motor vehicle, and people) for the panorama camera, and then select the **Face Capture** or **Human Capture** check box (optional, detection and capture performed by panorama camera).

Figure 7-7 Set video metadata for panorama camera



Step 3 Switch to detail camera. At this time, only **People** rule can be added.

Figure 7-8 Set video metadata for detail camera

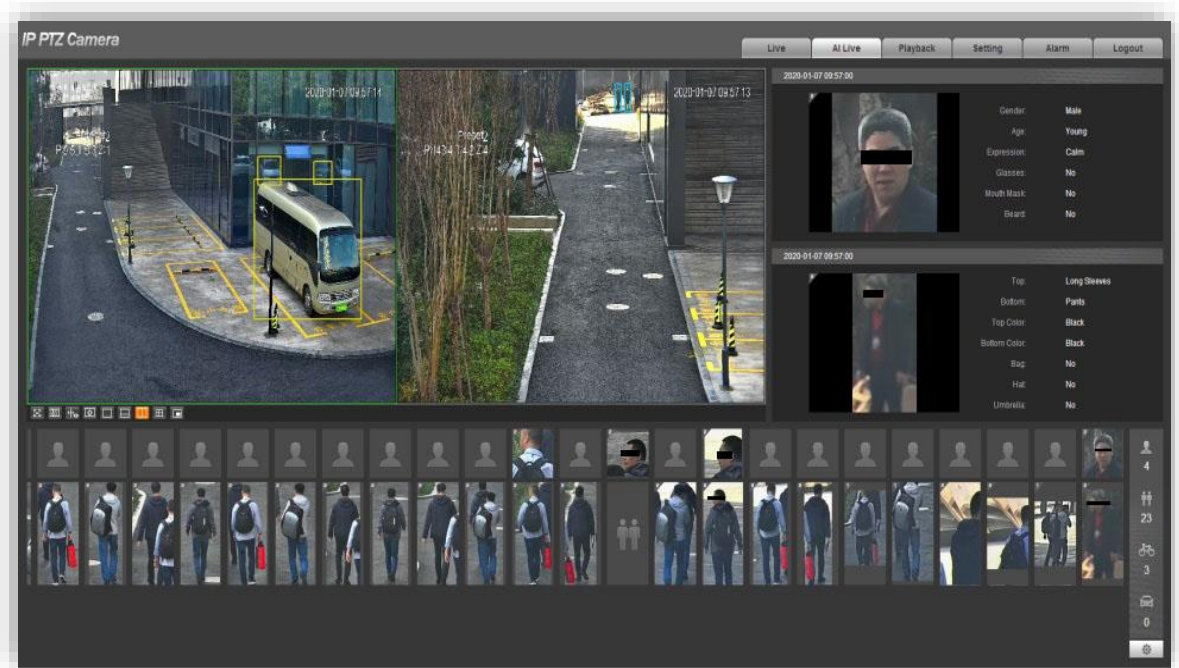


Step 4 The results interface is displayed. The panorama camera will detect motor vehicles, non-motor vehicles, and people, and capture pictures of motor vehicles and non-motor vehicles. If the panorama camera detects people, the detail camera will be linked to detect and capture the people.



If video metadata is only enabled for the detail camera, and no smart plan is enabled for the panorama camera, the detail camera will only capture pictures of people without zooming, and display video metadata results.

Figure 7-9 Display results on the AI Live interface



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.
- It is recommended that you enable your device's firewall or blacklist and whitelist feature to reduce the risk that your device might be attacked.

ENABLING A SAFER SOCIETY AND SMARTER LIVING