HIKVISION

Smart ATM Protection System

Quick Start Guide

User Manual

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Chapter 1 Camera Installation

The installation of the camera is an important preliminary for the good operation of the smart ATM protection system, and directly influences the video analysis. The details for installation are as below.

Panel Mode refers to the smart analysis of the operation panel of ATM. The applicable operation panel should not be covered by any obstruction of big size (such as the protective board of ATM), and it should be installed indoors. If the operation panel is installed outdoors, the direct radiation of sunlight and poor light at night may have a negative effect on the monitoring effect.

Human Face Mode refers to the smart analysis of the facial characteristics of the operators of ATM. The human face mode is used independently by default. You can select the camera in human face mode linked with panel mode via configuring linked cameras and advanced human face parameters.

1.1 Camera Installation for Panel Mode

It is recommended to adopt pinhole installation. The camera is installed above the ATM panel, and the image should be clear. The installation requirements are as below.

- The panel image should cover at least 1⁄4 of the whole image.

- The target should be at least 40 × 40 pixels in 4CIF image.

- The monitoring image should cover the important regions including the card reader region, cash out region, keyboard, etc.

- The monitoring image should cover two regions: human operation region (ET region) and ATM operation panel detection region.

The ideal scene is shown as below.

Figure 1-1 Camera Installation for Panel Mode

⚠️ **NOTE**

- The human operation region (ET region) should occupy 1/5 or above of the whole image. The principle is that when a person is withdrawing cash, you can see the feet or body of the person from the camera.
- The operation panel detection region (DT region) should cover the important regions including the card reader region, cash out region, keyboard, etc.

1.2 Typical Incorrect Installation of Panel Mode

Table 1-1   Typical Incorrect Installation of Panel Mode

No.	Image	Problems	Suggestions
1		The operation panel detection region (DT region) is too small in the image. The camera cannot monitor the events such as sticking scrip and installing scanner effectively.	Reinstall the camera to enlarge the monitoring region of the operation panel.
2		The human operation region (ET region) is too small.	Reinstall the camera to enlarge the monitoring region of human operation.
3		The camera for monitoring the cash out region is installed on the side of the region, which does not conform to the panel detection conditions.	The video of cash out does not fit for the sticking scrip detection. It is recommended to install a camera above the ATM panel to monitor the panel for sticking scrip detection.

1.3 Camera Installation for Human Face Mode

In human face mode, the camera is used to monitor the facial characteristics of the ATM operator. The installation requirements are as below.

- The camera should monitor the front of the human face clearly for 24 hours, and the human face should be in the center of the monitoring filed.

- The proportion of the human face width and height in the image should be in the range of 0.15 × 0.15 to 0.55 × 0.55. The optimum human face size in CIF resolution should be in the

range of 49 × 49 pixels to 192 × 192 pixels. The other resolution can be calculated according to the proportion. The maximum face size should be within 4 times of the minimum face size.

● The camera should monitor the front of the human face.

● Avoid installing the camera to face the light or back the light. The human face image cannot be too dark or too bright. It is recommended to use WDR camera in backlight.

● The camera should display the complete faces of human with heights from 1.40 m to 2.0 m.

The typical human face image is shown as below.

Figure 1-2 Camera Installation for Human Face Mode

1.4 Typical Incorrect Installation of Human Face Mode

Table 1-2   Typical Incorrect Installation of Human Face Mode

No.	Image	Problems	Suggestions
1		The installation does not confirm to any requirement of the camera installation for human face mode.	Reinstall the camera or disable smart ATM analysis.
2		The camera is in backlight, so the human face image is not clear.	Use the WDR camera. If the human face image is still not clear after using WDR camera, it is recommended to disable smart ATM analysis.

3		The installation position of the pinhole camera on the ATM is too high. It can only monitor the head top or forehead of the operator without monitoring the whole face.	Adjust the camera installation position.

Chapter 2 Smart ATM Configuration via iVMS-4200 Client

2.1 Smart ATM Resources Allocation

Purpose

The smart ATM resources include 1-ch panel mode and 1-ch human face mode for analog channel(s). You shall allocate smart ATM mode(s) to analog camera(s) before smart ATM configuration.

Before you start

Add the ATM DVR to iVMS-4200 Client. Click ✚ Add on **Device Management** page of iVMS-4200 Client to add the ATM DVR to the client.
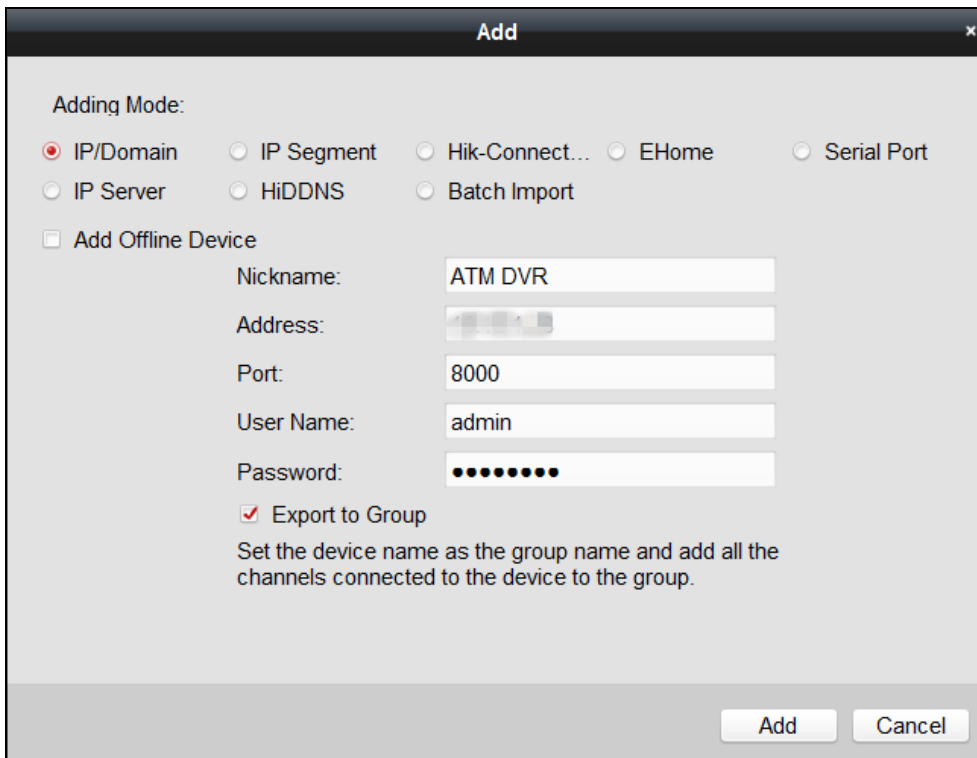
Figure 2-1 Add Device

Steps

Step 1 Click **Device Management**.

Step 2 Select the added ATM DVR and click **Remote Configuration**.

Step 3 Click **Advanced**.

Step 4 Click **VCA Config**.

Step 5 Select **VCA Resource Allocation**.

Step 6 Check **VCA**.

NOTE

Enable **VCA** would reduce the number of connectable IP cameras.
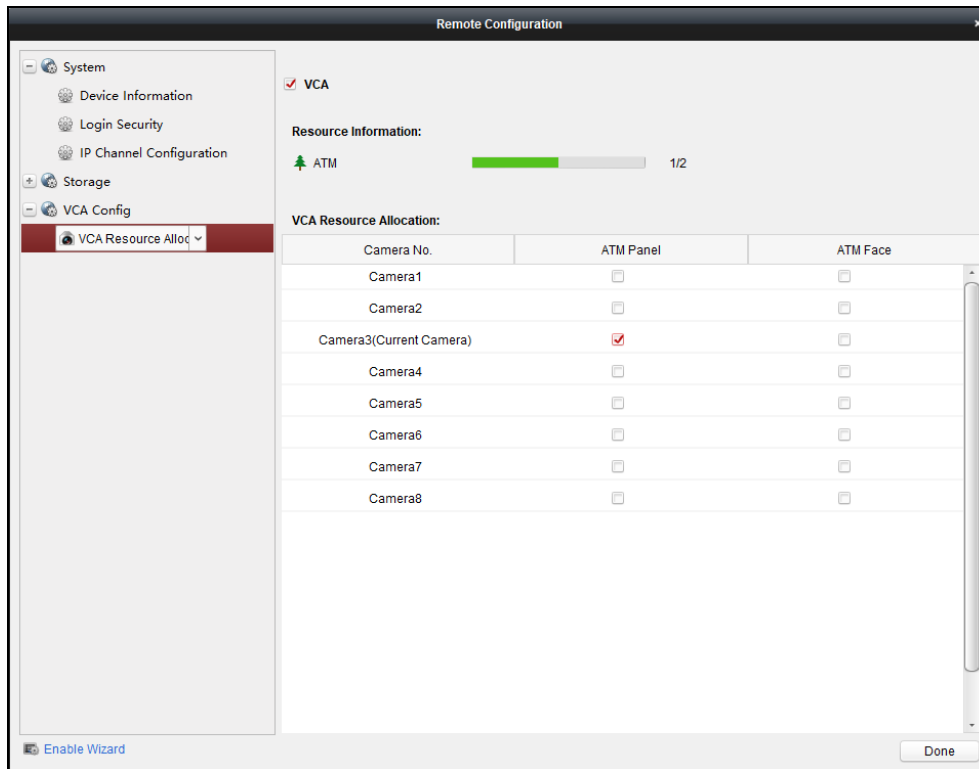

Figure 2-2 VCA Resource Allocation

Step 7 Select camera(s) for panel mode or face mode as your desire. You can view the available ATM resource information in **Resource Information**.

Step 8 (Optional) Check or uncheck the modes to enable or disable the smart ATM modes.

Step 9 Click **Done** to save the settings.

2.2 Smart ATM Configuration

2.2.1 Panel Mode

Purpose

Panel mode detects the ATM panel situation, if abnormal event happens such as sticking scrip on the panel, it will trigger alarm.

Before you start

Allocate a camera for panel mode. Refer to *2.1 Smart ATM Resources Allocation* for details.

Step 1 Click **VCA Config**.

Step 2 Select the camera you have allocated for panel mode. The basic device information and VCA type will be displayed on the right.
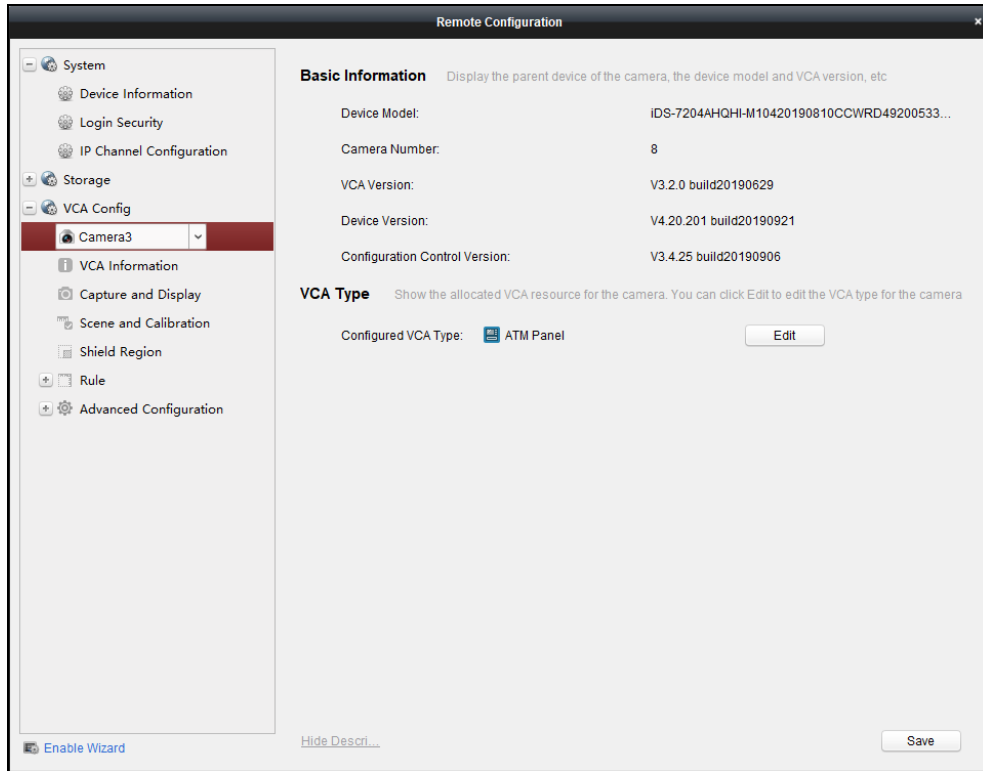

Figure 2-3 Panel Mode

Step 3 Configure capture and display.

1) Click **Capture and Display**.

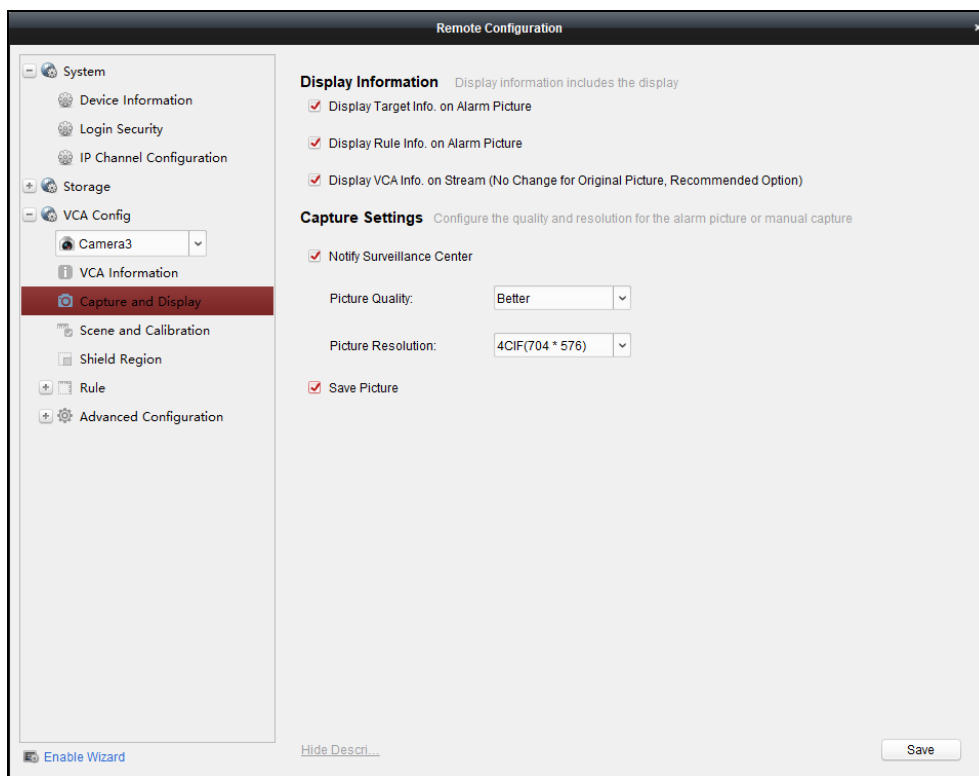2) Set **Display Information** and **Capture Settings** according to your requirement.

3) Click **Save**.

Figure 2-4 Capture and Display Configuration

Step 4 Configure scene.

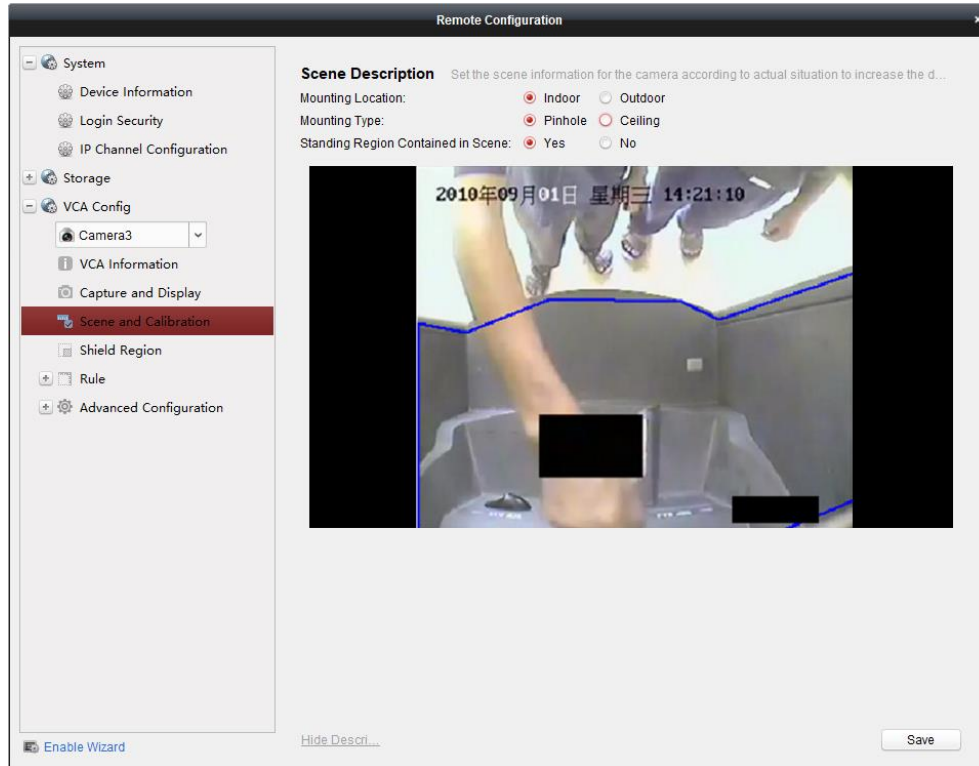1) Click **Scene and Calibration**.

2) Configure the scene parameters.

Figure 2-5 Scene Configuration

● **Mounting Location**: The mounting location of the camera. If the ATM is installed indoors, select **Indoor.** If the ATM is installed outdoors, such as the through-the-wall ATM on the street, select **Outdoor**.
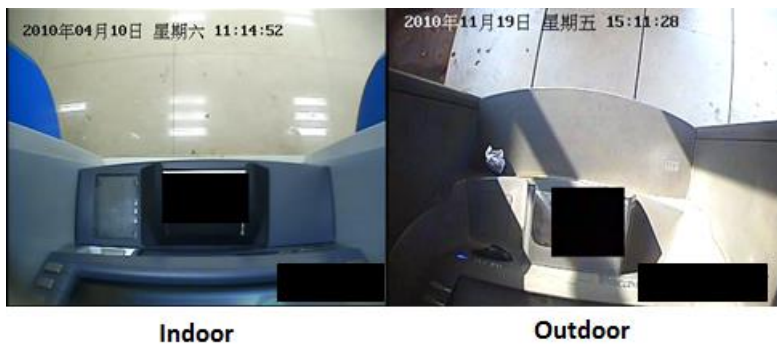

Figure 2-6 Mounting Location

● **Mounting Type**: The mounting type of the camera. **Pinhole** and **Ceiling** are selectable. The pinhole type is applicable to the camera installed on the ATM to cover the whole panel image. The ceiling type is applicable to a speed dome or a box camera installed on the ceiling outside the ATM to cover the ATM panel image from outside. The scenes are shown as below.
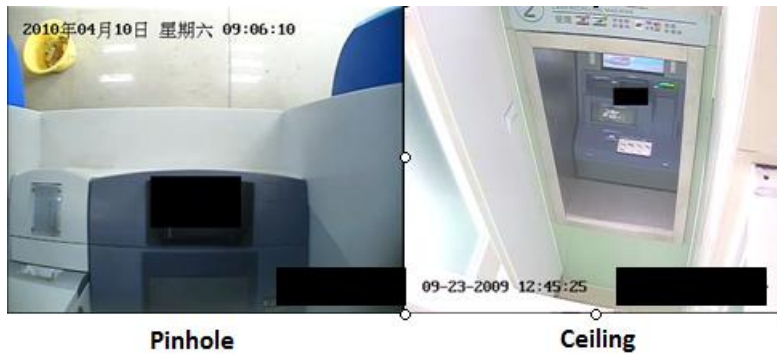
Figure 2-7 Mounting Type

- **Standing Region Contained in Scene**: Whether the scene contains the human standing region. If "Yes", the scene contains the standing region of the operator, and the proportion of entrance region in the rule configuration can reach at least 1/5 of the whole image. If "No", the panel occupies 90% or above of the whole image, and the entrance region in the rule configuration is small. The scenes are shown as below.

Figure 2-8 Standing Region Contained in Scene

3) Click **Save** to save the settings.

Step 5 (Optional) Configure the shield region.

You can configure shield regions to avoid the influences of LCD or sunlight shining on the ground to the detection regions. The shield regions can shield the influences of the configured rules. The region easily influenced by light interference can be configured as the shield region to avoid false alarm. Up to four shield regions can be configured.

1) Click **Shield Region**.

2) Click [⊞+].

3) Click the mouse to draw a closed region on the live view image.

4) (Optional) Select a drawn region and click [✕] to delete it.

5) Click **Save** to save the settings.

Figure 2-9 Shield Region Configuration

Step 6 Configure rules.

1) Go to **Rule** > **Rule Settings**.

2) Click **Add** to add a rule.

3) Set **Rule Name** and **Event Type** as your desire.

4) Set other related parameters, such as **Duration** and **Sensitivity**.

5) Click ⬚ to draw the entrance region, which is the standing region of the operator.

6) For **Operation Timeout**, **Sticking Scrip**, and **Installing Scanner**, click ○ or □ to draw a polygon or rectangle as the detection region. You can also click ▦ to set full screen as the detection region.

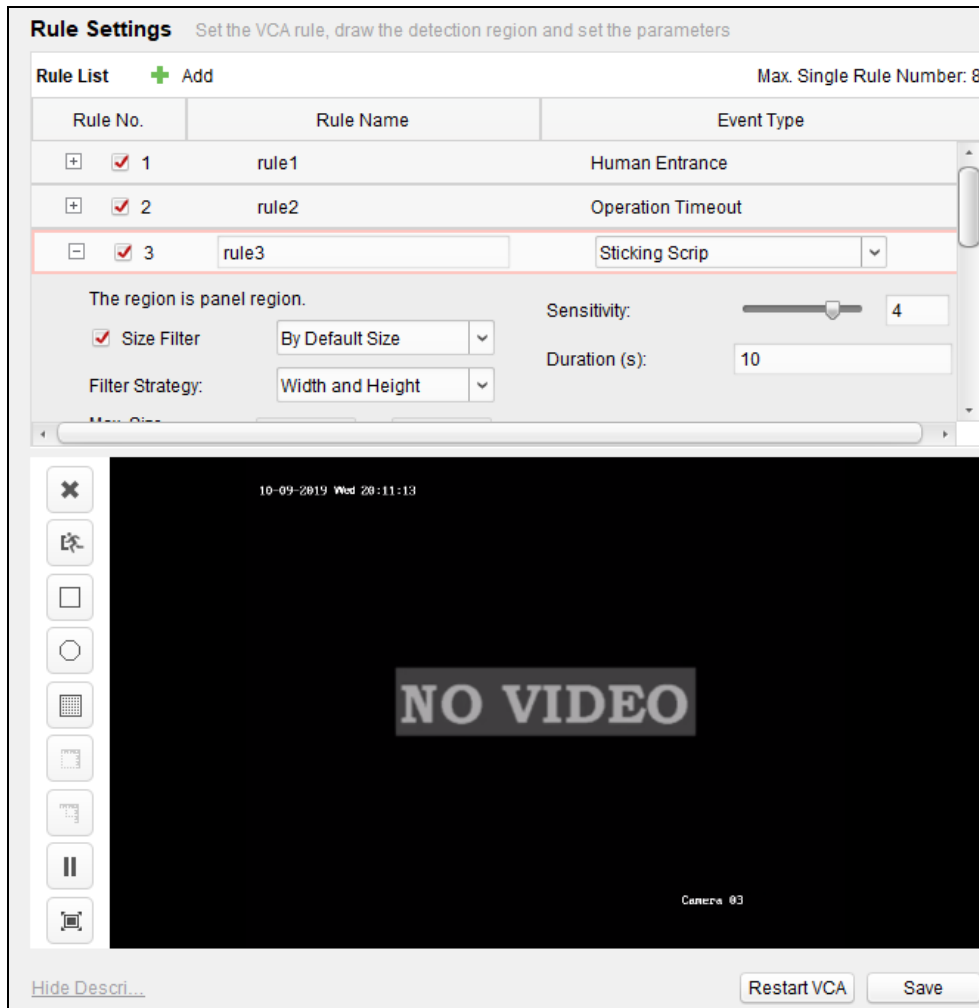7) Click **Save** to save the settings.

Figure 2-10 Rule Configuration

Step 7 Configure arming schedule.

1) Click **Arming Schedule**.

2) Select a rule from **Arming Schedule**.

3) Draw the arming schedule for each day in the week.

Table 2-1 Icon Description

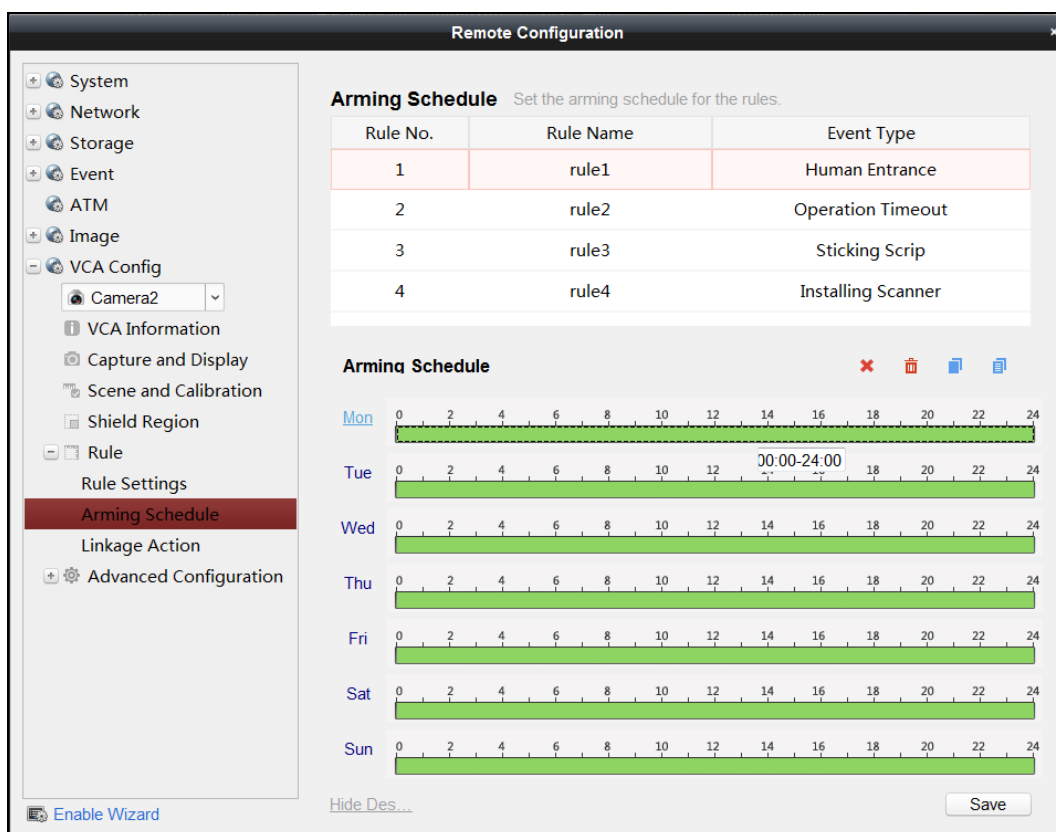| Icon	Description
	Copy the schedule to other days.
	Copy the schedule of one rule to other rules.
	Delete the schedule of the selected day.
	Clear all schedules.

4) Click **Save** to save the settings.

Figure 2-11 Arming Schedule Configuration

Step 8 Configure the linkage action.

1) Click **Linkage Action**.

2) Select a rule from **Rule List**.

3) Set **Linage Action**, **Alarm Duration, Alarm Output Linkage** and **Recording Linkage**.

4) Click **Save** to save the settings.

Figure 2-12 Linkage Action Configuration

Step 9 (Optional) Configure advanced parameters.

1) Click **Advanced Configuration**.

2) Click **Parameters**.

3) Set the advanced parameters of panel mode.

- **False Alarm Filter of Sticking Scrip**: It is enabled by default. You can uncheck it to disable the function.

4) Click **Save**.
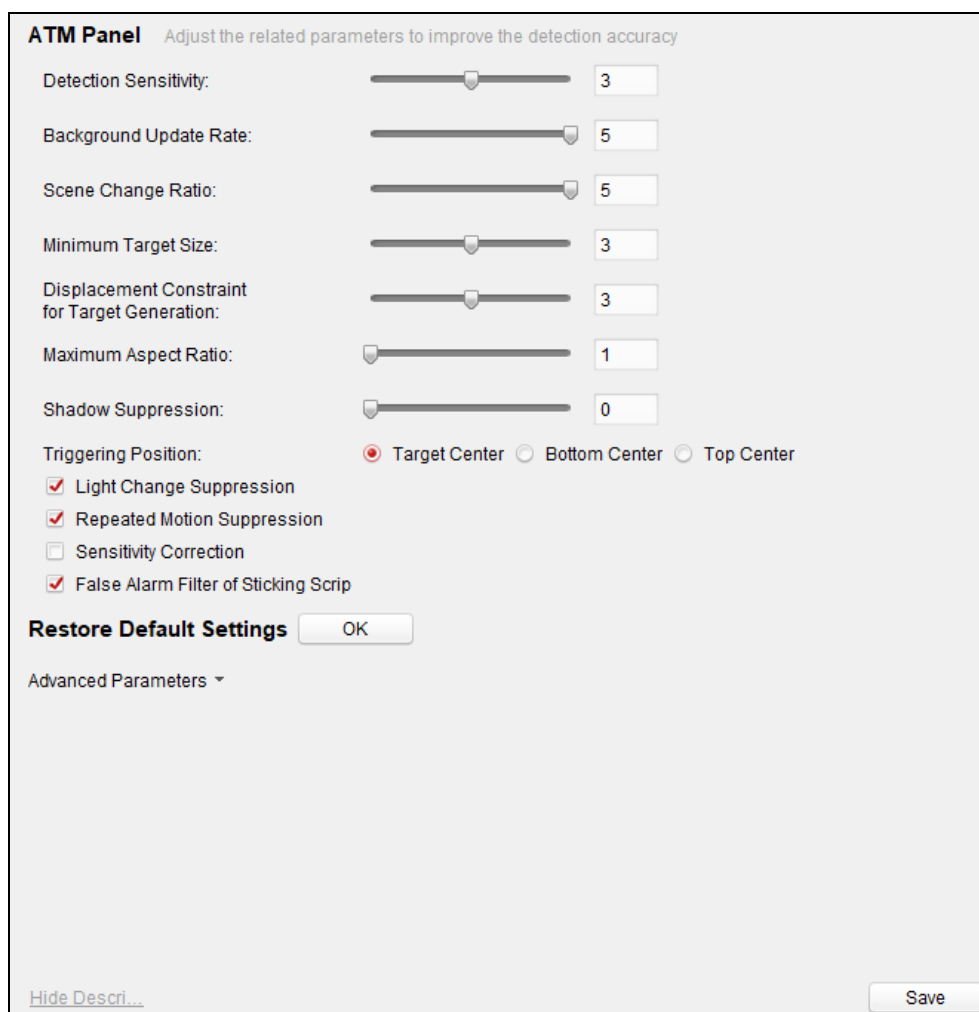
Figure 2-13 Advanced Parameters of Panel Mode

2.2.2 Human Face Mode

Purpose

Human face mode detects the human face(s) in front of ATM machine, the detection can be classified as normal human face detection, abnormal human face detection, multiple human faces detection, and wearing sunglasses detection.

● Normal human face detection: When a person is operating before the ATM, the camera will capture the detected normal human face.

● Abnormal human face detection: If a person is operating before the ATM while covering most part of the face such as wearing a hat, wearing a helmet, wearing a mask, covering face with hands or clothes on purpose, the DVR will alarm.

● Multiple human faces detection: When a person is operating before the ATM, and the camera detects more than one face, the DVR will alarm.

● Wearing sunglasses detection: When a person is operating before the ATM, and the camera detects the person is wearing sunglasses or glasses with dark color lens, the DVR will alarm.

● Using mobile phone detection: When a person is operating before the ATM, and the camera detects the person is using mobile phone near the ear, the DVR will alarm.

Before you start

Allocate a camera for human face mode. Refer to *2.1 Smart ATM Resources Allocation* for details.

Step 1 Click **VCA Config**.

Step 2 Select the camera you have allocated for human face mode. The basic device information and VCA type will be displayed on the right.

Step 3 Configure capture and display. Refer to *2.2.1 Panel Mode* for details.

Step 4 (Optional) Configure the shield region. Refer to *2.2.1 Panel Mode* for details.

Step 5 Configure rules.

1) Go to **Rule** > **Rule Settings**.

2) Set **Rule Type**.

3) Click ☐ , ○ , or ▦ to draw the human face detection region. It is recommeded to click ▣ to the draw detection region as full-screen.

4) (Optional) Click ⬚/⬚ to draw the maximum/minimum filtering size of the human face. It is recommended to use 0 for size filtering**,** which the device will automatically calculate and set the filtering size.

5) Click **Save** to save the settings.
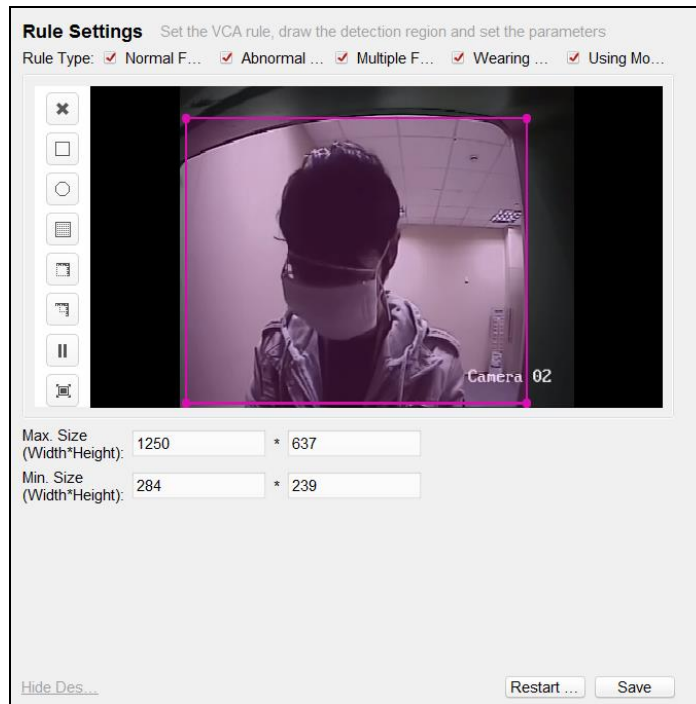
Figure 2-14 Human Face Mode Rules Configuration

Step 6 Configure arming schedule. Refer to *2.2.1 Panel Mode* for details.

Step 7 Configure linkage action. Refer to *2.2.1 Panel Mode* for details.

NOTE

The alarm events are analyzed independently by target.

- If there are two persons before the ATM, and one person's face is normal and the other person's face is abnormal, and one person is using the mobile phone, the normal face alarm, abnormal face alarm, multiple faces alarm, and using mobile phone alarm will be triggered respectively.

- The normal face alarm, abnormal face alarm, and wearing sunglasses alarm of one target will be triggered once. For example, if one person with normal face is operating the ATM, the DVR will trigger normal face capture. Then even if he or she wears mask or sunglasses during the process before leaving the ATM, other alarms will not be triggered.

2.2.3 Detailed Configuration of Smart ATM Rules

Smart ATM Rule	Drawing Detection Area Suggestions	Parameters Configuration Suggestions	Arming Schedule
Human Entrance (Panel Mode)	• Draw the standing region of the operator. Please place OSD outside the region, and avoid drawing the person who is not	Default parameters.	24 hours

	operating ATM but standing on the side of the ATM inside the region. ● If you cannot see the standing region of the operator due to the camera installation, draw the human entrance region including the panel.		
Sticking Scrip (Panel Mode)	● The region should cover important monitoring regions including card in, cash out, keyboard, etc. ● Avoid LCD, reflective mirror, and the edge of the panel when drawing the detection region.	Default parameters.	24 hours
Installing Scanner (Panel Mode)	The detectio region should just include the card in region, not the whole panel.	Default parameters.	24 hours
Operation Timeout (Panel Mode)	Same with Sticking Scrip.	Default parameters.	It is suggested to arm at night.
Normal Human Face (Human Face Mode)	You can set full screen as the detection region.	Sensitivity: 1-5; The default value is 3, and the larger the value is, the more sensitive the detection will be.	24 hours
Abnormal Human Face (Human Face Mode)	You can set full screen as the detection region.	Sensitivity: 1-5; The default value is 3, and the larger the value is, the more sensitive the detection will be.	24 hours
Wearing Sunglasses (Human Face Mode)	You can set full screen as the detection region.	Sensitivity: 1-5; The default value is 3, and the larger the value is, the more sensitive the detection will be.	24 hours
Multiple Human	You can set full screen as the	Sensitivity: 1-5;	24 hours

Faces (Human Face Mode)	detection region.	The default value is 3, and the larger the value is, the more sensitive the detection will be.	
Using Mobile Phone (Human Face Mode)	You can set full screen as the detection region.	Sensitivity: 1-5; The default value is 3, and the larger the value is, the more sensitive the detection will be.	24 hours

Chapter 3 FAQ

3.1 Panel Mode

1. Whether there is a person operating the ATM is confused to judge, which results in the inaccurate smart ATM alarm.

    - Go to **Device Management > Remote Configuration > VCA Config > Rule Settings**, and click **Restart VCA**. Or wait for about 2 minutes. The background will be updated automatically, and the problem will be solved.

    - Check if the inaccuracy is caused by shadow or reflection of the person, or illumination change in the entrance region. If yes, avoid these factors.

    - Check if the inaccuracy is caused by the camera noise. If yes, change the camera.

    - If the methods above cannot solve the problem, go to **Device Management > Remote Configuration > VCA Config > Advanced Configuration > Parameters**, and modify **Threshold of Regional Gray Change** and **Threshold of Regional Texture Change**.

    - Go to **Device Management > Remote Configuration > VCA Config > Advanced Configuration > Alarm Input** to check if the triggered cameras of Alarm Input 1 to 4 are enabled. If the camera is enabled, it means the camera will connect human body detection sensor to judge if there is a person or not. If the camera does not connect the sensor, it should be closed.

2. The DVR does not alarm when sticking scrip or installing scanner, or alarms abnormally.

    - Check if size filter is enabled. If it is enabled, check if the min. and max. sizes are set unreasonably.

    - Add a human entrance rule to the camera enabled panel mode. Then whether there is a person sticking scrip or installing scanner can be judged by whether there is a person operating the ATM. Only after the person leaves the ATM, it can be judged whether the person sticks scrip. If whether there is a person operating the ATM is confused to judge, refer to question 1 for help.

3. Problems always exist when judging from the image that whether there is a person operating the ATM, which influences the judgement of other functions. Are there other ways to judge?

    - You can use microwave sensor to analyze whether there is a person operating the ATM.

4. The smart ATM rules cannot be saved in panel mode.

    - Check if the human entrance region is drawn. For smart ATM monitoring algorithm, the human entrance region must be drawn in panel mode.

5. If the scrip is removed after sticking scrip, will it trigger sticking scrip alarm?

- If sticking scrip alarm has been triggered, and you remove the scrip immediately, and the size, position, and texture of the target frame generated when removing the scrip are exactly the same with those of the target frame generated when sticking the scrip, alarm will not be triggered.

- When you remove the scrip, if the position has been changed, or the target size has been changed, or the light condition is different, which result in that the target frame generated when removing the scrip is different from the target frame generated when sticking the scrip, alarm will be triggered.

- If you want the DVR to trigger alarm when the scrip is removed no matter in what kinds of conditions, you can enable the installing scanner rule which will trigger alarm no matter the scrip is stuck or removed.

6. Sticking scrip triggers many false alarms. How to solve the problems?

- Lower the detection sensitivity value to 2 or 3.

- Set the min. size filter to filter the small targets.

- Set shield regions to filter the interference regions.

7. If the camera is mounted in ceiling type, when it monitors the panel as shown below, the false alarms of sticking scrip will always be triggered when there is a person operating the ATM. How to solve the problems?

Figure 3-1 Monitoring Panel

- Go to **Device Management > Remote Configuration > VCA Config > Scene and Calibration** to check if the **Mounting Type** is set as **Ceiling**.

- Adjust the human entrance region as shown below. The region should just include the straight line edges of the ATM.

Figure 3-2 Human Entrance Region

3.2 Human Face Mode

1. There are many false alarms of abnormal human faces. How to solve the problem?

    - Check the human face image quality. If the quality is low, or the human face image is vague, dark, or in the backlight, adjust the image quality.

    - Check if the whole face can be seen from the video. If not, adjust the camera position.

    - If false alarms still exist, adjust the abnormal human face detection sensitivity value to 1 to 2.

    - Increase the time threshold (**Index Value**) of enhanced mode. Enhanced mode is enabled by default, it detects abnormal faces such as wearing mask, wearing head socks, etc.

      Go to **Device Management > Remote Configuration > VCA Config**, select the camera you have allocated for human face mode, and then go to **Advanced Configuration > Parameters.** Set **Index No.** to 65538, and its default **Index Value** is 30. You can increase **Index Value** according to different scenes.

    - If false alarms frequently appear, and the situation is extremely serious, you can disable enhanced mode.

      Go to **Device Management > Remote Configuration > VCA Config**, select the camera you have allocated for human face mode, and then go to **Advanced Configuration > Parameters.** Set **Index No.** to 65537, and you can get its default **Index Value** as 1. Set **Index Value** to 0 to disable the enhanced mode.

2. The abnormal human faces do not trigger alarms.

    - Check whether the video of human face detection camera conforms to the requirements, and whether the head and face are complete and clear in the video. If not, adjust the camera position.

- Only when the person enters the detection region with covered face, can the alarm be triggered. If a normal face is detected when a person enters the detection region, the abnormal face appearing after that will not trigger alarm.

- The detected abnormal human face just triggers alarm once when there is person operating the ATM. If you want to trigger alarms repeatedly, the person has to exit the detection area and enters again.

- Check if the duration of the person operating the ATM has lasted for a certain time. The duration from entering the detection region to exiting the region should exceed 20 s.

- If you want to simulate different kinds of events quickly, the time interval of simulating different events should exceed 1 minute. Or go to **Device Management > Remote Configuration > VCA Config**. Select the camera you have allocated for human face mode. Then go to **Advanced Configuration > Parameters** to reduce **Alarm Interval** of corresponding event to 10 s.

- Go to **Device Management > Remote Configuration > VCA Config**. Select the camera you have allocated for human face mode. Then go to **Advanced Configuration > Parameters** to configure **Advanced Parameters** as below.

  1) Enter 65537 in **Index No.** text filed to enable the enhanced mode which can detect the human face covered completely.

  2) Enter 1 in **Index Value** text filed.

  3) Click **Set** to save the settings.

Figure 3-3 Set Advanced Parameters (1)

4) Enter 65538 in **Index No.** text filed to set the alarm time threshold.

5) Enter **Index Value** according to the actual conditions. The default value is 30 s, and you can set it in the range of 5 to 300 s.

6) Click **Set** to save the settings.

Figure 3-4 Set Advanced Parameters (2)

● Go to **Device Management > Remote Configuration > VCA Config > Advanced Configuration > Parameters** to adjust **Sensitivity (Abnormal)** to 4 or 5. 5 means enabling the enhanced mode.

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See Far, Go Further