



Analytics+

Deployment Guide

V1.1.0

Dahua Technology Co., Ltd

Foreword

General

This manual offers reference material and general information about the basic operation, maintenance, and troubleshooting for a Dahua Network Camera. Read, follow, and retain the following safety instructions. Heed all warning on the unit and in the operating instructions before operating the unit. Keep this guide for future reference.

Safety Instructions

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

| Signal Words | Meaning |
|---|--|
|  WARNING | Indicates a medium or low potential hazard that, if not avoided, could result in slight or moderate injury. |
|  CAUTION | Indicates a potential risk that, if not avoided, could result in property damage, data loss, lower performance, or unpredictable result. |
|  NOTE | Provides additional information as the emphasis and supplement to the text. |

Revision History

| No. | Version | Revision Content | Release Time |
|-----|---------|---------------------------|--------------|
| 1 | V1.0.0 | First Release. | January 2019 |
| 2 | V1.0.1 | Revised for North America | July 2019 |
| 3 | V1.1.0 | Smart Motion Detection | May 2020 |

Privacy Protection Notice

As the device user or data controller, you may collect personal data such as face images, fingerprints, license plate number, email address, phone number, GPS location and other sensitive or private information. You must ensure that your organization complies with 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 Guide

- This user guide has been compiled with great care and the information it contains has been thoroughly reviewed and verified.
- The text was complete and correct at the time of printing. This guide may be periodically updated to reflect changes to the product or to correct previous information and the content of this guide can change without notice.
- If you encounter an error or have any questions regarding the contents of this guide, contact customer service for the latest documentation and supplementary information.
- Dahua accepts no liability for damage resulting directly or indirectly from faults, incompleteness, or discrepancies between this guide and the product described. Dahua is not liable for any loss caused by installation, operation, or maintenance inconsistent with the information in this guide.
- All the designs and software are subject to change without prior written notice. The product updates may cause some differences between the actual product and the Guide. Please contact the customer service for the latest program and supplementary documentation.
- Video loss is inherent to all digital surveillance and recording devices; therefore Dahua cannot be held liable for any damage that results from missing video information. To minimize the occurrence of lost digital information, Dahua recommends multiple, redundant recording systems, and adoption of backup procedure for all data.
- All trademarks, registered trademarks and the company names in the Guide 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.
- Contact the supplier or customer service if you encounter any issue while using this unit.

Important Safeguards and Warnings

This chapter describes the contents covering proper handling of the device, hazard prevention, and prevention of property damage. Read these contents carefully before using the device, comply with them when using, and keep it well for future reference.

Installation and Maintenance Professionals Requirements

- All installation and maintenance professionals must have adequate qualifications or experiences to install and maintain CCTV systems and electric apparatus, and to work above the ground. The professionals must have the following knowledge and operation skills:
- Basic knowledge and installation of CCTV systems.
- Basic knowledge and operation skills of low voltage wiring and low voltage electronic circuit wire connection.
- Basic knowledge and operation skills of electric apparatus installation and maintenance in hazardous sites.

Power Requirements

- Install the unit in accordance with the manufacturer's instructions and in accordance with applicable local codes.
- All installation and operation must conform to your local electrical safety codes.
- Do not overload outlets and extension cords, which may cause fire or electrical shock.
- Do not place the camera near or in a place where the camera may contact overhead power lines, power circuits, or electrical lights.
- Ensure power conforms to SELV (Safety Extra Low Voltage) and that the limited power source is rated AC 24V as specified in IEC60950-1. (Power supply requirement is subject to the device label).
- All input/output ports are SELV circuits. Ensure that SELV circuits are connected only to other SELV circuits.
- Ground the unit using the ground connection of the power supply to protect the unit from damage, especially in damp environments.
- Please install easy-to-use device for power off before installing wiring, which is for emergent power off when necessary.
- Protect the plug and power cord from foot traffic, being pinched, and its exit from the unit.
- Do not attempt to service the unit. Opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified personnel.

- If the unit is damaged and requires service, unplug the unit from the main AC power supply and from the PoE supply and refer to qualified service personnel. Damage may include, but is not limited to:
 - The power supply cord or plug is damaged.
 - Liquid has spilled in or on the unit.
 - An object has fallen on the unit.
 - The unit has been dropped and the housing is damaged.
 - The unit displays a marked change in performance.
 - The unit does not operate in the expected manner when the user correctly follows the proper operating procedures.
- Ensure a service technician uses replacement parts specified by the manufacturer, or that have the same characteristics as the original parts. Unauthorized parts may cause fire, electrical shock, or other hazards. Dahua is not liable for any damage or harm caused by unauthorized modifications or repairs.
- Perform safety checks after completion of service or repairs to the unit.
- Use attachments and accessories only specified by the manufacturer. Any change or modification of the equipment, not expressly approved by Dahua, could void the warranty.
- Incorporate a readily accessible disconnect device in the building installation wiring for quick power disconnect to the camera.
- Dahua assumes no liability or responsibility for any fire or electrical shock caused by improper handling or installation.

Application Environment Requirements

- Please use the device within the allowed humidity (<95%RH) and altitude (<3000m).
- Transport, use, and store the unit within the specified temperature and humidity range.
- Do not place the unit in a wet, dusty, extremely hot or an extremely cold environment; and avoid environments with strong electromagnetic radiation or unstable lighting.
- Do not use the device in the corrosive environment such as high salt fog area (sea, beach and coastal area), acid gas environment and chemical plants.
- Do not use the device in applications with strong vibrations such as in boats and vehicles.
- Never push objects of any kind into this unit through openings as they may touch dangerous voltage points or cause a short circuit that may result in fire or electrical shock. Take care to not spill any liquid on the unit.
- If your installation environment is subjected to one of the conditions above, contact our sales staff to purchase cameras intended for the particular environment.
- Please don't install the device near the place with heat source, such as radiator, heater, stove or other heating equipment, which is to avoid fire.
- Do not aim the lens at an intense radiation source (such as the sun, a laser, and molten steel for example) to avoid damage to the thermal detector.
- Use the factory default package or material with equal quality to pack the device when transporting.

Operation and Maintenance Requirements

- Do not touch the heat dissipation component of the unit. This part of the unit is hot and may cause a burn.
- Do not open or dismantle the device; there are no components that a user can fix or replace. Opening the unit may cause water leakage or expose components to direct light. Contact the manufacturer or a qualified service representative to service the camera or to replace a component, including the desiccant.
- Dahua recommends the use of a thunder-proof device in concert with the unit.
- Do not touch the CCD or the CMOS optic sensor. Use a blower to clean dust or dirt on the lens surface. Use a dry cloth dampened with alcohol and gently wipe away any dust on the lens.
- Use a dry soft cloth to clean the unit's housing. If the unit is particularly dusty, use water to dilute a mild detergent, apply the diluted detergent to a soft cloth, then gently clean the device. Finally, use a dry cloth to wipe the unit dry. Do not use a volatile solvent like alcohol, benzene, or thinner; or use a strong detergent with abrasives, which may damage the surface coating or reduce the working performance of the unit.
- Do not touch or wipe a dome cover during installation, this cover is an optical device. Refer to the following methods clean the dome cover:
 - Stained with dirt: Use an oil-free soft brush or blower to gently remove the dirt.
 - Stained with grease or fingerprints: Use a soft cloth to wipe gently the water droplet or the oil from the dome cover. Then, use an oil-free cotton cloth or paper soaked with alcohol or detergent to clean the lens from the center of the dome to outside. Change the cloth several times to ensure the dome cover is clean.



WARNING

- Modify the default password after login.
- Use attachments and accessories only specified by the manufacturer. Any change or modification of the equipment, not expressly approved by Dahua, could void the warranty.
- Internal and external ground connection should be stable.
- Do not supply power via the Ethernet connection (PoE) when power is already supplied via the power connector.
- Disconnect power before device maintenance and overhaul. It is prohibited to open the cover with power on in an explosive environment.
- Please contact the local dealer or the nearest service center if the device fails to work normally, please don't dismantle or modify the device.

Cybersecurity Recommendations

Mandatory actions to be taken towards cybersecurity

- **Change Passwords and Use Strong Passwords**
 - The number one reason systems get “hacked” is due to having weak or default passwords. It is recommended to change default passwords immediately and choose a strong password whenever possible. A strong password should be made up of at least 8 characters and a combination of special characters, numbers, and upper and lower case letters.
- **Update Firmware**
 - As is standard procedure in the tech-industry, we recommend keeping NVR, DVR, and IP camera firmware up-to-date to ensure the system is current with the latest security patches and fixes.

Recommendations to improve your network security

- **Change Passwords Regularly**
 - The length should be greater than 8 characters;
 - Include at least two types of characters; character types include upper and lower case letters, numbers, and symbols;
 - Do not use an account name or the account name in reverse order;
 - Do not use sequential characters, such as 123, abc, etc.;
 - Do not use repeated characters, such as 111, aaa, etc.;
- **Change Default HTTP and TCP Ports**
 - Change default HTTP and TCP ports for systems. These are the two ports used to communicate and to view video feeds remotely.
 - These ports can be changed to any set of numbers between 1025 and 65535. Avoiding the default ports reduces the risk of outsiders being able to guess which ports you are using.
- **Update Firmware and Client Software**
 - Keep your network-enabled equipment (such as NVRs, DVRs, IP cameras, 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.
 - Download and use the latest version of client software.
- **Enable HTTPS/SSL**
 - Set up an SSL Certificate and enable HTTPS to encrypt all communication between your devices and recorder.
- **Enable IP Filter**
 - Enable the IP filter to prevent unauthorized access to the system.

- **Change ONVIF Password**
 - Older IP camera firmware does not automatically change the ONVIF password when the system credentials are changed. Update the camera's firmware to the latest revision or manually change the ONVIF password.
- **Forward Only Ports You Need**
 - Forward only the HTTP and TCP ports that are required. Do not forward a wide range of numbers to the device. Do not DMZ the device's IP address.
 - Do not forward any ports for individual cameras if they are all connected to a recorder on site. Simply forward the NVR port.
- **Disable Auto-Login on SmartPSS**
 - Disable the Auto-Login feature on SmartPSS installed on a computer that is used by multiple people. Disabling auto-login prevents users without the appropriate credentials from accessing the system.
- **Use a Different Username and Password for SmartPSS**
 - Do not use a username/password combination that you have in use for other accounts, including social media, bank account, or email in case the account is compromised. Use a different username and password for your security system to make it difficult for an unauthorized user to gain access to the IP system.
- **Limit Features of Guest Accounts**
 - Ensure that each user has rights to features and functions they need to perform their job.
- **Disable Unnecessary Services and Choose Secure Modes**
 - Turn off specific services, such as SNMP, SMTP, and UPnP, to reduce network compromise from unused services.
 - It is recommended to 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 a mailbox server.
 - FTP: Choose SFTP and use strong passwords.
 - AP hotspot: Choose WPA2-PSK encryption mode and use strong passwords.
- **Multicast**
 - Multicast is used to share video streams between two recorders. Currently there are no known issues involving Multicast. Deactivate this feature if not in use to enhance network security.
- **Check the Log**
 - The information stored in the network log file is limited due to the equipment's limited storage capacity. Enable the network log function to ensure that the critical logs are synchronized to the network log server if saving log files is required.
 - Check the system log if you suspect that someone has gained unauthorized access to the system. The system log shows the IP addresses used to login to the system and the devices accessed.
- **Physically Lock Down the Device**
 - Perform physical protection to equipment, especially storage devices. For example, place the equipment in a special computer room and cabinet, and implement access control permission and key management to prevent unauthorized personnel from accessing the equipment.

- **Connect IP Cameras to the PoE Ports on the Back of an NVR**
 - Cameras connected to the PoE ports on the back of an NVR are isolated from the outside world and cannot be accessed directly.
- **Isolate NVR and IP Camera Network**
 - Ensure that the network for the NVR and IP cameras should not be the same network as a public computer network. Separate networks prevent unauthorized users accessing the same network the security system.
- **Secure Auditing**
 - Check online users regularly to ensure unauthorized accounts are not logged in to a device.
 - Check the equipment log to access the IP addresses used to login to devices and their key operations.

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1 Overview

Video Analytics is the most fundamental system in public security, and the most important defense against illegal invasion and other events. This solution covers user's demands of monitoring perimeter areas and key areas and provides detections against area invasion, tripwire and other events. It can also classify and detect humans and vehicles with high accuracy and perform further filter to reduce false alarm. With video surveillance and behavior analysis, users can realize visual management easily.

The key feature of this solution is Dahua's Analytics+ functions that offers the following advanced analytical features:

Face Capture

Dahua AI Face Capture technology automatically captures faces from a digital image or from a video frame. The camera employs advanced algorithms to locate faces quickly and accurately from the source video and then captures the facial image.

Metadata Extraction

Once the camera captures a facial image, it analyzes the face and extracts six attributes — age, gender, expression, and whether the target face wears glasses, wears a mask, or sports facial hair.

People Counting

The camera uses complex real-time people counting algorithms to deliver accurate flow statistics from two distinct people counting functions, Line Crossing and Regional. The line crossing function counts the number of people crossing a defined line, and the regional function counts the number of people in a distinct, user-defined area. People counting is ideal for measuring the number of customers entering or exiting a location and to monitor groups of people in a distinct location.

Perimeter Protection

Dahua Analytics+ includes Tripwire and Intrusion functions that offer custom tripwires based on object type for automation in limited access areas. Perimeter Protection requires less pixels to detect an object to deliver improved accuracy and decreased false alarms due to lights, weather, trees, or animals.

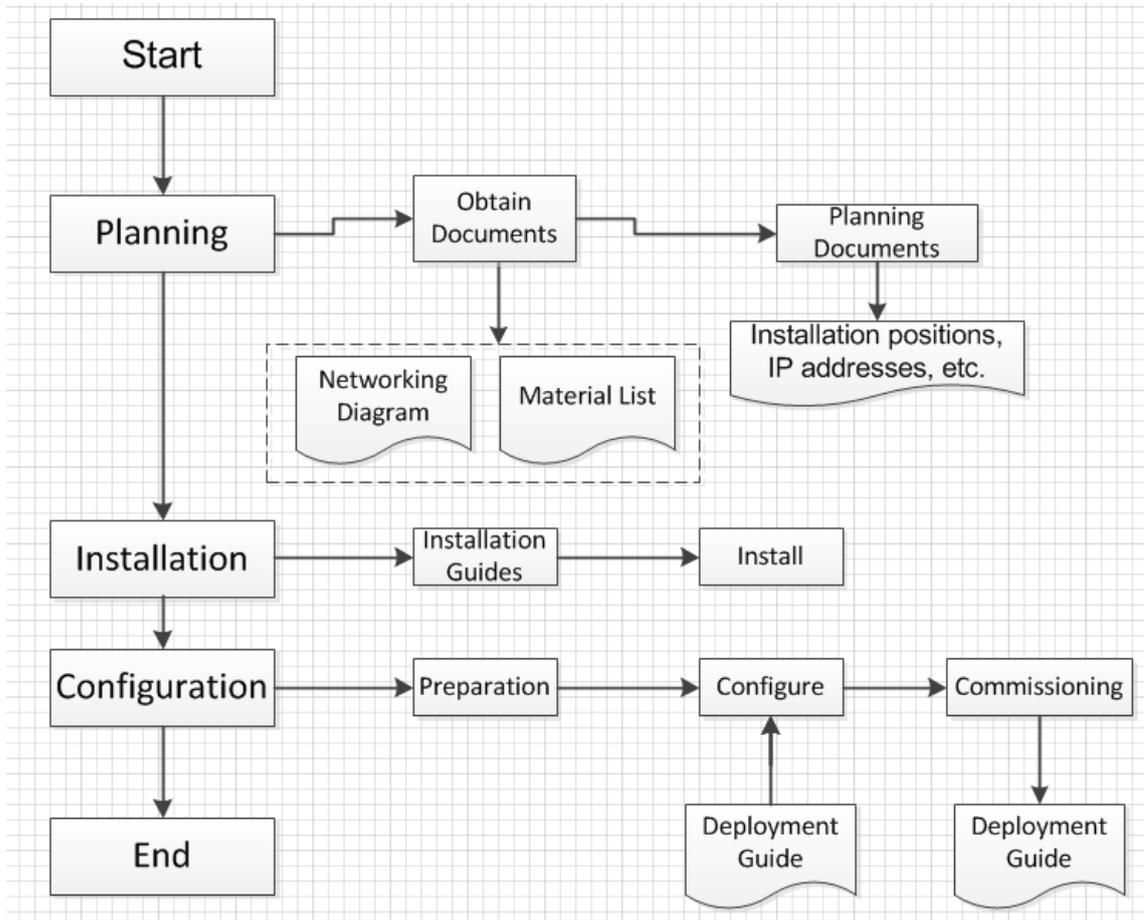
Smart Motion Detection

Smart Motion Detection, a component of Dahua's Analytics+ technology, improves alarm accuracy and decreases the number of false alarms. The advanced SMD algorithm analyzes a scene for human or vehicle motion, while filtering out other motion due to trees, leaves, animals, weather, and triggers an alarm when detected. SMD also saves time when searching recorded video by filtering false alarms and allowing quick retrieval of an alarm due to a person or vehicle.

Note that Dahua devices with Analytics+ functions may include all or a subset of the functions listed above.

2 Deployment Process

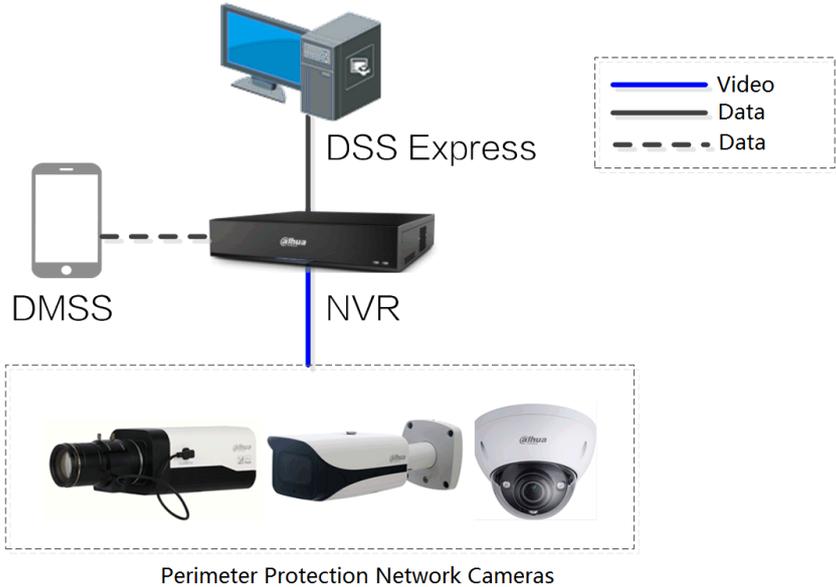
Use this process to plan, install, and configure the security network and the IP devices.



3 Planning

3.1 Networking Diagram

This diagram shows how all devices connect to each other in this solution.



4 Installation

Confirm that all devices are complete and that they work properly prior to installation and configuration.

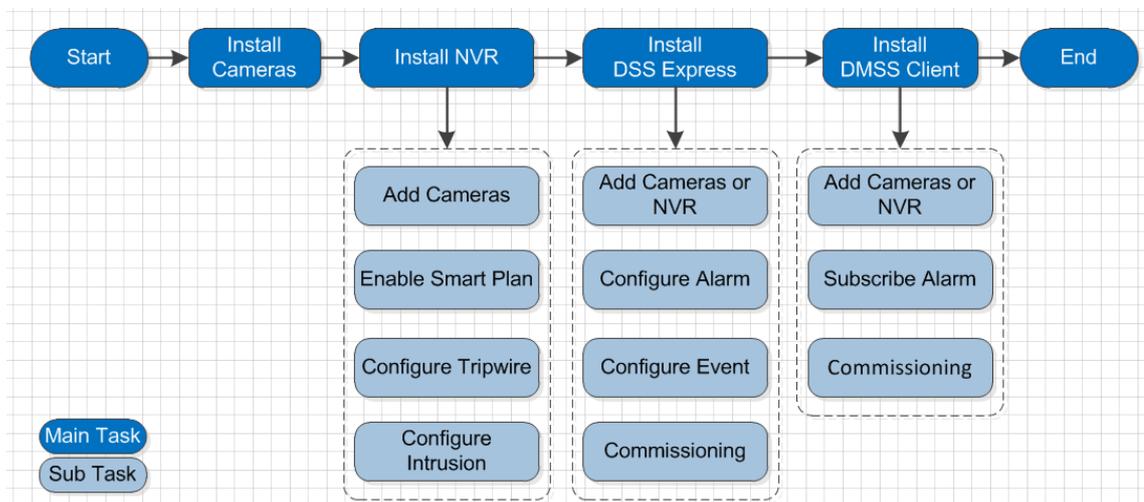
4.1 Installation Guides

The following devices are included in this solution. Refer to the installation and user manuals included with each device.

| No. | Device | Installation guide name | Guide location |
|-----|-------------|---------------------------------------|-------------------------------------|
| 1 | Camera | Network Camera Quick Start Guide | Document kit |
| 2 | NVR | NVR User's Manual | Document kit |
| 3 | DSS Express | DSS Express User's Manual | Document kit or the provided manual |
| 4 | DMSS | DMSS Mobile Application User's Manual | Document kit or the provided manual |

4.2 Installation Process

Install the devices using the following process:



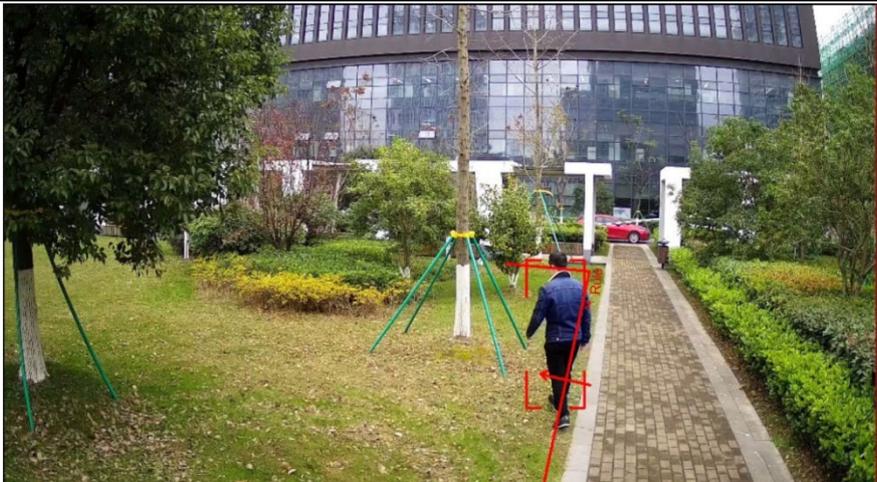
4.3 Installing Cameras

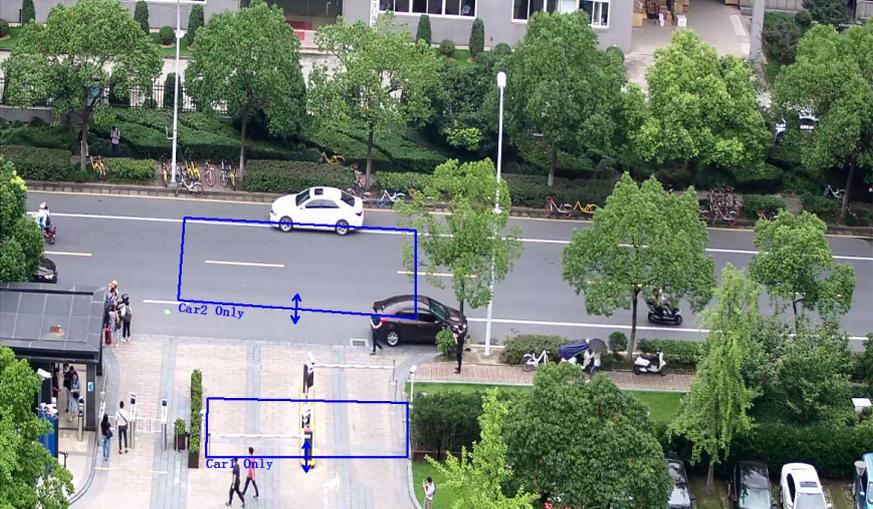
Installation site and installation type are essential to the final performance. This section explains the proper installation site, mounting scheme, and configuration parameters.

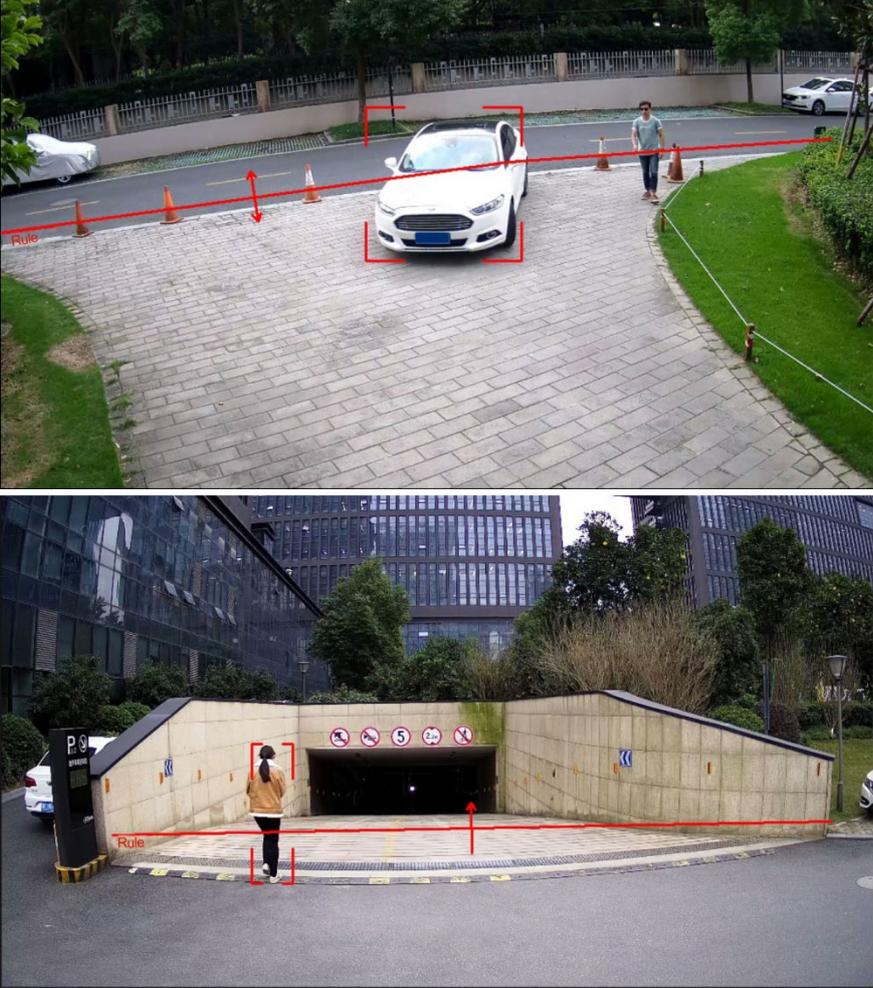
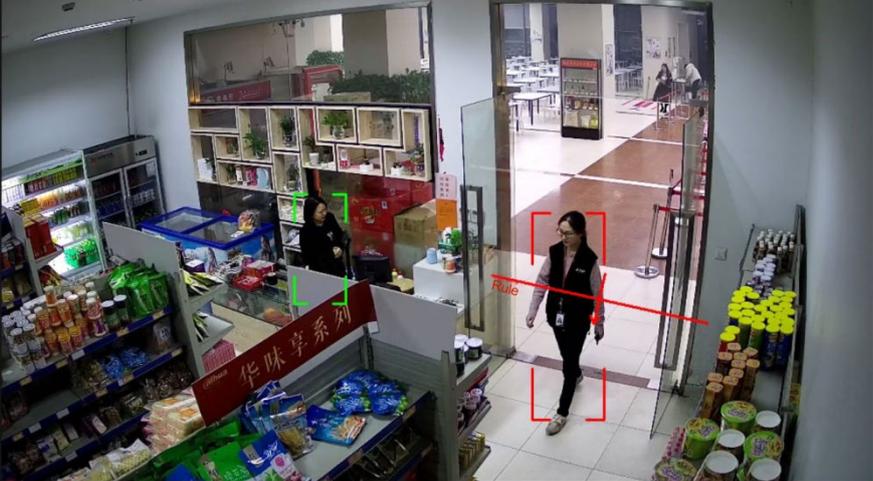
See the corresponding quick start guide for the installation details.

4.3.1 Recommended Installation Sites

The sites must provide a wide visual field, be open, and display a mostly static scene with few moving objects or drastic changes in lighting condition. The best sites are suitable for cross detection at borders, communities, lawns, railways, highways, underground parking access, pedestrian walkways, and access detection at rooftops and private properties.

| Examples | Site picture |
|--|--|
| <p>Configure intrusion rule along obvious perimeters, such as unusual places for cars or people.</p> |  <p>The top photograph shows an aerial view of a parking lot with several cars parked. A blue line is drawn along the perimeter of the parking area, with a small blue arrow pointing to it. The bottom photograph shows a modern building with a green fence in the foreground. A camera is mounted on the roof, highlighted with a green box. Red lines radiate from the camera, indicating the detection zones for the intrusion rule.</p> |
| <p>Configure intrusion rule along obvious perimeters, such as lawns, lakes and restricted zones.</p> |  <p>The photograph shows a paved walkway leading towards a modern building with a glass facade. A person in a blue jacket is walking away from the camera. Red lines are drawn on the ground along the edges of the walkway, indicating an intrusion detection perimeter.</p> |

| Examples | Site picture |
|--|--|
| |  |
| <p>Install cameras at a high position perpendicular to the road to monitor humans and vehicles.</p> |  |
| <p>Install cameras at park or garage entrances to detect humans entering a roadway or vehicles entering a pedestrian area.</p> |  |

| Examples | Site picture |
|---|--|
| |  |
| <p>Configure the tripwire rule at retail entrances.</p> |  |

| Examples | Site picture |
|----------|--|
| |  |

4.3.2 Unsuitable Sites

| Examples | Site picture |
|---|--|
| <p>Large obstacles around the target area that block target objects.</p> |  |
| <p>Vehicle headlights cause drastic lighting condition changed and can influence detection performance.</p> |  |

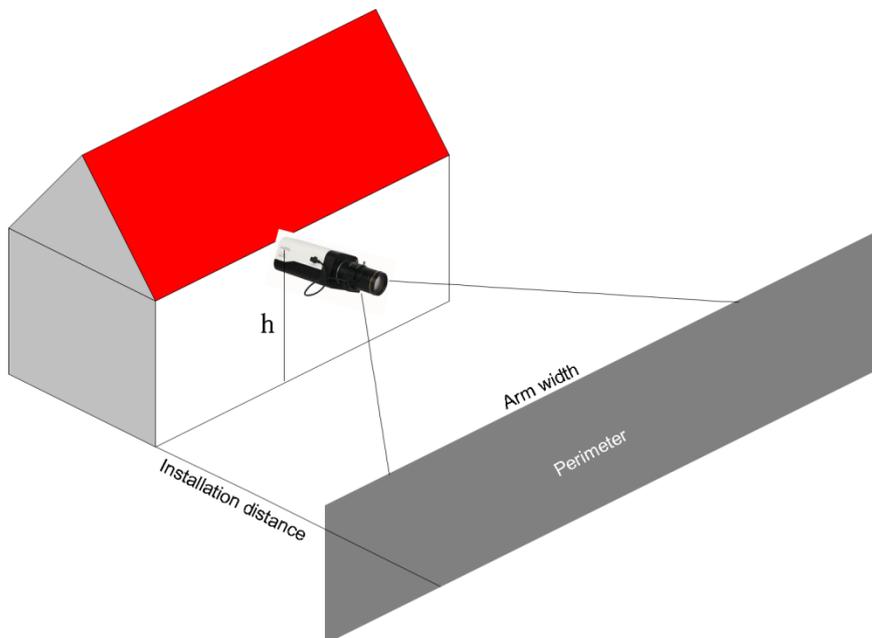
| Examples | Site picture |
|--|--|
| <p>The ambient light is too dark. Black and White images may cause poor performance.</p> |  |

4.4 Installation Requirements

This section details the pixel size requirement for target recognition with different installation types.

4.4.1 Install Cameras Perpendicular to the Perimeter

Install cameras on a nearby building or pole that is perpendicular to the perimeter to ensure the widest possible monitoring area.



Install cameras using the following suggestions. Note that a shorter installation distance translates to a smaller monitoring area.

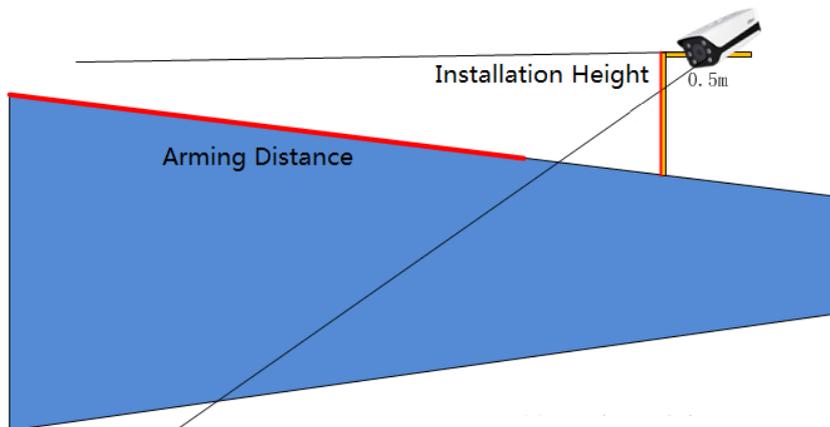
- The maximum monitoring width for a human target is approximately 12 m (39 ft).
- The following table lists the relationship between focal lengths and installation distances:

| Focal Length (mm) | 2.8 | 3.6 | 6.0 | 8.0 | 12 | 30 |
|---------------------|----------------|----------------|-----------------|-----------------|-----------------|------------------|
| Installing distance | 6 m (20 ft) | 8 m (26 ft) | 13 m (43 ft) | 17 m (56 ft) | 26 m (85 ft) | 65 m (213 ft) |

- The maximum monitoring width for human targets is 12 m (39 ft).
 - Select a camera with a focal length between 2.7 mm to 13.5 mm when the installation distance is between 5 m to 22 m (16 ft to 72 ft).
 - Select a camera with a focal length between 7 mm to 35 mm when the installation distance is between 13 m to 55 m (43 ft to 180 ft).
- Recommended installation parameters:
 - Camera installation height: > 3 m (10 ft).
Note that the maximum height varies with different lens options.
 - Installation angle: 0° to 45° (elevation angle).
 - Lens: short focal length with a large angle of view.

4.4.2 Installing Cameras along the Perimeter

Install cameras along the perimeter of the monitoring area.



When installing cameras on the perimeter, there might be blind area, and you can install two cameras face to face to realize monitoring without blind area.

- The following table lists the relationship between focal lengths and installation distances:

| Focal Length (mm) | 2.8 | 12 | 8 | 30 |
|---------------------|-----------------------------|-------------------------------|-------------------------------|---------------------------------|
| Monitoring Distance | 1 m – 6 m (3 ft – 20 ft) | 4 m – 25 m (13 ft – 82 ft) | 3 m – 17 m (10 ft – 56 ft) | 12 m – 60 m (39 ft – 197 ft) |

- Refer to the following table for the matching relationship between different lenses and installation distances:

| Focal Length (mm) | 2.8 | 12 | 8 | 30 |
|---------------------|-----------------------------|-------------------------------|-------------------------------|---------------------------------|
| Monitoring Distance | 1 m – 5 m (3 ft – 16 ft) | 4 m – 22 m (13 ft – 72 ft) | 3 m – 14 m (10 ft – 46 ft) | 12 m – 50 m (39 ft – 164 ft) |

4.4.3 Configuring Images

After installing cameras, you can login the web interface and configure the image as needed. See more details in the web operation manual.

Normally you can keep the default parameters, and you need to ensure that the target edge is clear at night.

When the image is over exposed or too dark, you might need to enable WDR.

The followings are scenarios that require WDR and the comparisons before and after WDR.

- Scenario 1: Back light is too strong



- After enabling WDR:



- Scene 2: Over exposed



- After enabling WDR:



5 Configuration

5.1 Configuration Process

After installation, you need to configure and connect all the devices to make the whole solution work.

| Device | Description | Target section |
|-------------|---|-----------------------------|
| Camera | Initialize cameras and modify IP addresses. | 5.3 Configuring Cameras |
| NVR | Add Cameras Enable Smart Plan Configure IVS Rules | 5.4 Configuring NVR |
| DSS Express | Add device Configure Alarm Configure Alarm Events | 5.5 Configuring DSS Express |
| DMSS client | Add device Subscribe Alarm | 5.6 Configuring DMSS Client |

5.2 Preparation

Using a laptop with the Windows operating system and Internet Explorer version 8 or later, install the ConfigTool from the Dahua tool kit.

5.3 Configuring Cameras

- For new cameras, see the quick start guide and web operation manual to initialize cameras and modify IP addresses.
- For cameras that are properly configured, be sure to update the system to the latest version.

5.4 Configuring NVR

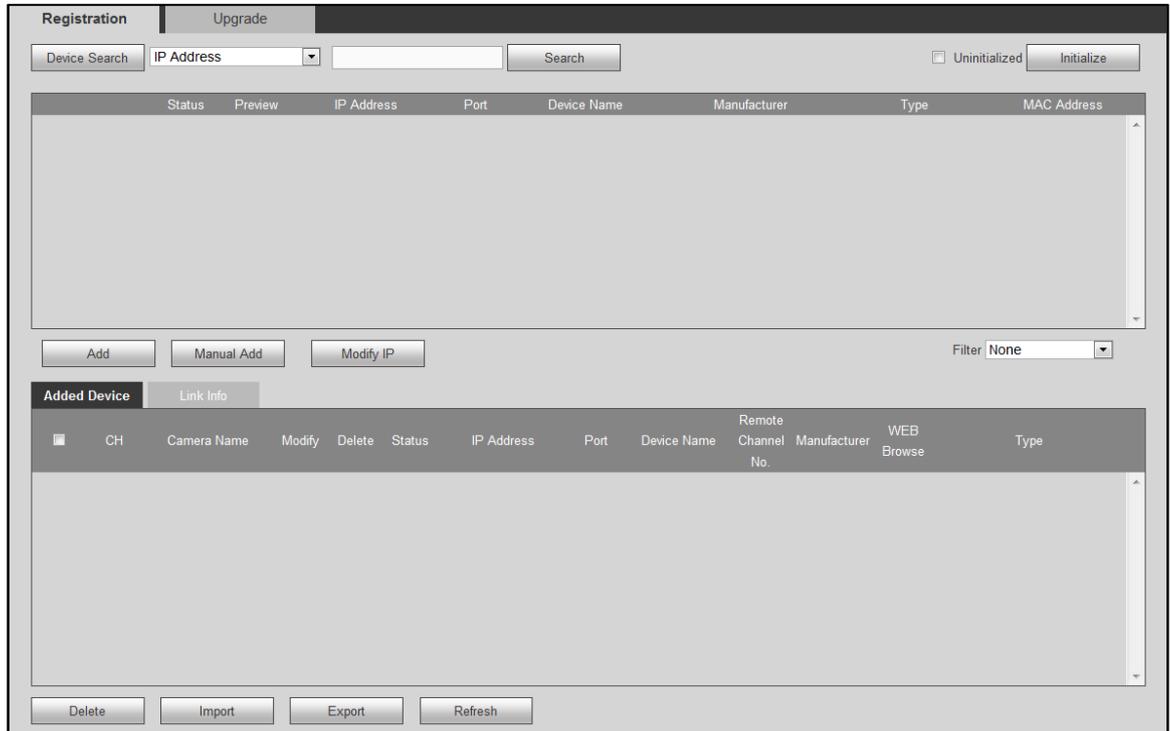
5.4.1 Preparation

- For brand new NVR, see the quick start guide and web operation manual to initialize them and modify IP addresses.
- For NVR that are properly configured, be sure to update the system to the latest version.

5.4.2 Adding Cameras

You can add cameras to the NVR and manage them remotely.

1. Log in the NVR web interface, and then select **SETUP > IMAGE > REGISTRATION**.
The **REGISTRATION** interface is displayed.



2. Add devices

You can add cameras with auto scan, manual search or template.

The target camera cannot have the same IP address or TCP port with any existing camera.

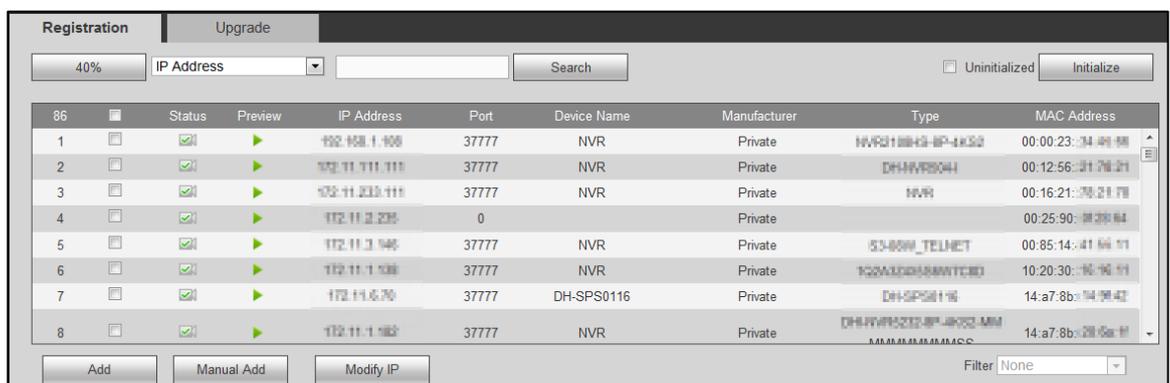
3. Auto scan

Click Device Search.

The system will start scanning all the available devices, after the searching progress goes to 100%, all the devices are displayed, including cameras, NVR, and other devices, and you can select IPC from the Filter. See Figure 5-2. Refer to Table 5-2 for more details.

4. Double click the device information or select the check box in front of it, and then click Add.

 You can refresh the **Added Device** list to avoid adding the same camera repeatedly.



| Icon/Parameter | Description |
|----------------|--|
| IP Address | Select IP Address or MAC Address from the list, and then input the IP address or MAC address of the device you need, and then click Search to find it. |
| Uninitialized | Select the Uninitialized check box to list those devices not initialized. Select the devices you need, and then click Initialize to configure user name and password for them. See more details in their user's manuals. |
| Status | Shows whether a device is initialized. |
| IP Address | Shows the IP address, port number, name, manufacturer, type, and MAC address of a device. |
| Port | |
| Device Name | |
| Manufacturer | |
| Type | |
| MAC Address | |
| Modify IP | Select one or multiple devices, and then click Modify IP to change their IP addresses. See more details in their user's manuals. |
| Filter | Select the device type or model you need to display them. |

5. Manual search

6. Click Manual Add.

The **Manual Add** interface is displayed.

7. Configure parameters.

| Parameter | Description |
|--------------------|---|
| Manufacturer | Select Private . Supported protocol might vary with different models. |
| IP Address | Input the IP address of the target camera. |
| RTSP Port | Input the RTSP port of the target device, and it is 554 by default. Not required when the Manufacturer is configured to Private or Customized . |
| HTTP Port | Input the HTTP port of the target device, and it is 80 by default. Not required when the Manufacturer is configured to Private or Customized . |
| TCP Port | Value is 37777 by default. |
| Username/Password | Input the user name/password of the camera you need. |
| Channel No. | Click Connect , and then the video stream quantity of the target camera is displayed at Channel No., and this is not editable. The system adds all video streams to the NVR. It is recommended to click Connect to obtain the number. If the channel number is wrong, the operation will fail. If the target device is human body recognition camera, you must click Connect to obtain the number. |
| Remote channel No. | If the target camera has already connected to another NVR, then its channel No. on that NVR is displayed here. |
| Channel | Displays the channel No. on your NVR to which you connect the target camera. |
| Decode Buffer | You can select from Default , Real time , and Fluent . Real time provides best live video quality, but also requires network with fast speed to respond to IVS detection, Default is medium, and Fluent is the safest choice. |

8. Click **OK**.
9. Import from Template
10. You can export the template from other NVR, and then import to your NVR.
 - Templates with different languages as your NVR are not compatible.
 - You cannot open and view encrypted templates.
11. Click **Import** to select the template you need.
If there are cameras in the template which IP addresses are already existed, there will be a notice, and you can select whether to overwrite or to add new IP address.
12. You can view the camera connection status at **Added Device**.

| Parameter | Description |
|-----------|--|
| CH | The channel No. on your NVR to which you connected the video stream.. |
| Modify | Click  to modify device information. See Table 5-3. |
| Delete | Select one or multiple devices, and then click  to delete them from your NVR. |

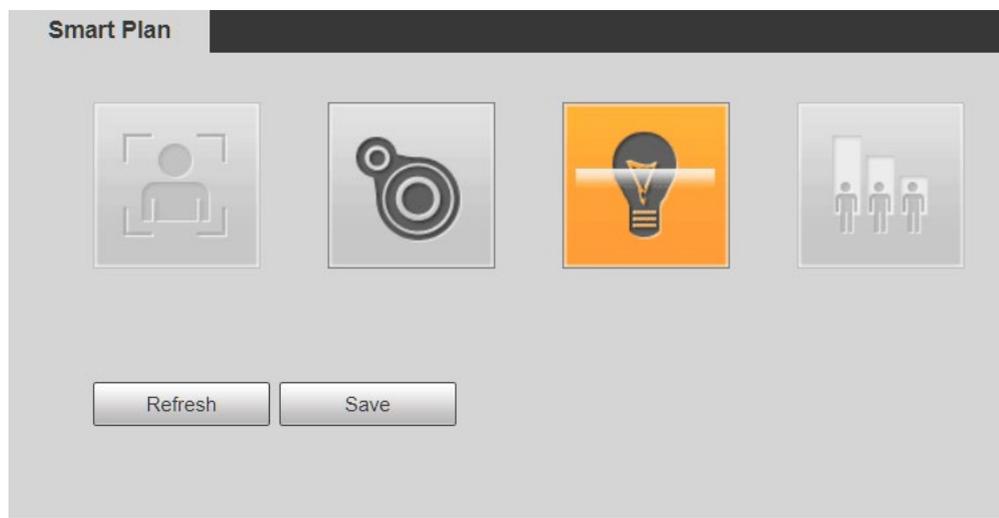
| Parameter | Description |
|--------------------|--|
| Status | Shows the device connection status.  Means online;  means offline. |
| IP Address | Displays the IP address, port number, name, manufacturer, type, and MAC address of a device. |
| Port | |
| Device Name | |
| Remote Channel No. | |
| Manufacturer | |
| WEB Browse | Click the icon to navigate to the web interface of the device to configure. |
| Type | Shows the device type or model. |

6 Configuring Analytics+

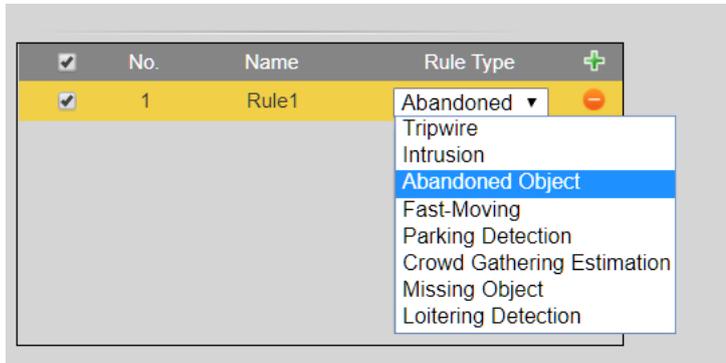
Analytics+ functions at the edge perform complex real-time perimeter protection surveillance and people counting. The Dahua Analytics+ algorithms significantly improve accuracy and reliability as compared to standard intelligent features. The camera is ideal for a host of diverse applications.

6.1 Configuring Analytics+

1. Log into the camera's web interface and select the **SETTING** tab.
2. Click Event menu item, at the left side of the screen. Then, click SMART PLAN. The **SMART PLAN** interface is displayed.



3. Select the Smart Plan option that corresponds with the analytic needs (note that not all cameras offer all of analytic functions):
 - Face Detection
 - Heat Map
 - IVS (Perimeter Protection)
 - People Counting
4. Click Save to choose the plan.
5. Click IVS.
6. Click  to add a rule. Then, select one of the following IVS functions from the drop-down list:



- Tripwire
 - Intrusion
 - Abandoned Object
 - Fast-Moving
 - Parking Detection
 - Crowd Gathering Estimation
 - Missing Object
 - Loitering Detection
7. Double click "Rule1" and type a descriptive name for this rule.
 8. Click **Draw Rule** and move the cursor in the scene cameo window. Press the left mouse and release then move the cursor to draw the rule line in the scene. Double-click the left mouse button to indicate the end of the rule line, and finally click the right mouse button to indicate the line is complete. Be careful to leave some space on either side of the line and not draw the line near obstacles.
 9. Click **Clear** to delete the existing rulers.
 10. Select **Max Size** or **Min Size** at **Target Filter**, and then click **Draw Target** to draw the box.
 - Only the targets with the size between **Max Size** and **Min Size** are valid.
 - Select **Max Size** or **Min Size** at **Target Filter**, and then click the **Clear** at the right side of **Draw Target** to delete the box.
 11. Configure tripwire parameters.
 12. Click **Save** to accept the tripwire parameters and to activate the trigger.
 13. Click **Default** to erase all IVS rules and to start with a clean scene cameo window.

6.2 Perimeter Protection

Perimeter Protection Dahua Analytics+ includes Tripwire and Intrusion functions that offer custom tripwires based on object type for automation in limited access areas. Perimeter Protection requires less pixels to detect an object to deliver improved accuracy and decreased false alarms due to lights, weather, trees, or animals.

6.2.1 Perimeter Protection Guidelines

- Video resolution should be 1080p or higher.
- The target height should be smaller than 2/3 of the image height.
- The brightness difference of the target and the background should be no less than 10 gray levels.
- Draw the tripwire line vertical to the direction the target is moving as much as possible. Avoid drawing curved lines; these lines may cause detection failure.

- Keep the lines as close to the center of the image as possible, and make sure the target is visible for longer than 0.5 seconds before reaching the line. The target should be present in the image for no less than two (2) consecutive seconds, and the moving distance should be larger than its width and no less than 15 pixels (CIF image) at the same time. If the target has already crossed the rulers even before they appear in the image completely, the detection will fail.
- Try to avoid scenes with:
 - obstacles, such as trees and buildings that might obscure the target as it moves through the scene.
 - reflective surfaces, such as glass, bright ground cover or water.
 - shadows and direct light exposure or with drastic changes in lighting.
 - multiple targets moving through the scene at a given time.

6.2.2 Tripwire

The Tripwire function issues an alarm when a target crosses a defined line. Use the following information to create a tripwire rule:

The screenshot shows the 'Rule Config' window with the 'Global Setup' tab selected. The main area displays a video feed of a street scene with a green tripwire line drawn across it. Below the video are controls for 'Draw Rule', 'Clear', 'Draw Target', and 'Pixel Counter'.

The 'Rule List' table shows one rule:

| No. | Name | Rule Type |
|-----|-------|-----------|
| 1 | Rule1 | Tripwire |

The 'Parameter Setup' section includes the following options:

- Period: Setting
- Direction: A<->B
- Object filter: Object filter
 - Effective object: Human Motor Vehicle
- Record: Record
 - Record Delay: 10 s (10-300)
- Relay-out: Relay-out
 - Alarm Delay: 10 s (10-300)
- Send Email: Send Email
- Snapshot: Snapshot

At the bottom, there are buttons for 'Default', 'Refresh', and 'Save'.

| Parameter | Description |
|---------------|--|
| Period | <p>Configure working period, and the rule takes effect only within this period.</p> <ol style="list-style-type: none"> 1. Click Setting to open the Period setting window. 2. Configure each period. <ul style="list-style-type: none"> A: Press and hold the left mouse button, and then drag at the periods you need. B: Click the Setting behind the week day you need, and then the week day in the period setting box shows red color, select and configure the periods you need, and you can configure 6 periods in one week day at most. 3. Click OK. |
| Direction | Set the tripwire direction, you can select A->B , B->A , or A<->B . |
| Object Filter | <p>Select the Object Filter check box to enable the function, and then select the alarm object.</p> <p>Select Human or Motor Vehicle (both options can be used at the same time) to set the alarm trigger to a particular target.</p> <p>If you disable this function, any moving object (such as human, vehicle, cat, or dog) triggers an alarm.</p> <p> This function is only available on devices with perimeter protection function.</p> |
| Record | <p>Select Record to send video data to the camera's onboard storage when a tripwire alarm is triggered. Then, set a record delay period, in seconds.</p> <p> The camera must have an on-board storage mechanism, specifically a MicroSD card slot with a MicroSD card installed.</p> |
| Relay Out | <p>Select Relay-out to send an alarm transmission signal from the camera to an alarm relay. Then, set an Alarm Delay period, in seconds.</p> <p> The camera must have an active alarm relay connection.</p> |
| Send Email | Select Send Email to issue an email when an alarm is triggered. Set email addresses in the Network -> SMTP (email) setting box. |
| Snapshot | Select Snapshot to record a snapshot of the scene that shows the tripwire violation. |

6.2.3 Intrusion

The Intrusion function issues an alarm when a target crosses a defined line. Use the following information to create an intrusion rule:

The screenshot shows the 'Rule Config' window for an 'Intrusion' rule. It includes a video feed, a table of rules, and a 'Parameter Setup' section.

| No. | Name | Rule Type |
|-----|-------|-----------|
| 1 | Rule2 | Intrusion |

Parameter Setup

- Period:
- Action: Appears Cross
- Direction:
- Object filter:
 - Effective object: Human Motor Vehicle
- Record:
 - Record Delay: s (10~300)
- Relay-out:
 - Alarm Delay: s (10~300)
- Send Email:
- Snapshot:

Buttons: Default, Refresh, Save

| Parameter | Description |
|-----------|---|
| Period | <p>Configure working period, and the rule takes effect only within this period.</p> <ol style="list-style-type: none"> Click Setting to open the Period setting window. Configure each period. <ul style="list-style-type: none"> A: Press and hold the left mouse button, and then drag at the periods you need. B: Click the Setting behind the week day you need, and then the week day in the period setting box shows red color, select and configure the periods you need, and you can configure 6 periods in one week day at most. Click OK. |

| Parameter | Description |
|---------------|---|
| Action | <p>Set the intrusion action: Appear or Cross.</p> <p>Appear: Triggers an alarm once a target appears in the defined area.</p> <p>Cross: Triggers an alarm once a target enters or exits the defined area.</p> <p>Set the Direction for the Cross action:</p> <p>Enter: Triggers an alarm once a target enters the intrusion area.</p> <p>Exit: Triggers an alarm once a target exits the intrusion area.</p> <p>Enter&Exit: Target must enter and exit the intrusion area to trigger and alarm.</p> |
| Object Filter | <p>Select the Object Filter check box to enable the function, and then select the alarm object.</p> <p>Select Human or Motor Vehicle (both options can be used at the same time) to set the alarm trigger to a particular target.</p> <p>If you disable this function, any moving object (such as human, vehicle, cat, or dog) triggers an alarm.</p> <p> This function is only available on devices with perimeter protection function.</p> |
| Record | <p>Select Record to send video data to the camera's onboard storage when a tripwire alarm is triggered. Then, set a record delay period, in seconds.</p> <p> The camera must have an on-board storage mechanism, specifically a MicroSD card slot with a MicroSD card installed.</p> |
| Relay Out | <p>Select Relay-out to send an alarm transmission signal from the camera to an alarm relay. Then, set an Alarm Delay period, in seconds.</p> <p> The camera must have an active alarm relay connection.</p> |
| Send Email | <p>Select Send Email to issue an email when an alarm is triggered. Set email addresses in the Network -> SMTP (email) setting box.</p> |
| Snapshot | <p>Select Snapshot to record a snapshot of the scene that shows the tripwire violation.</p> |

6.2.4 Abandoned Object

The abandoned object function issues an alarm when a target leaves an object in a designated area and the object remains in the area for a specified amount of time.

The screenshot shows the 'Rule Config' window for the 'Abandoned' rule. It features a video feed on the left, a table of rules on the top right, and a 'Parameter Setup' section on the bottom right. The 'Parameter Setup' section includes fields for 'Duration' (10 s), 'Record Delay' (10 s), and 'Alarm Delay' (10 s), along with checkboxes for 'Record', 'Relay-out', 'Send Email', and 'Snapshot'.

| No. | Name | Rule Type |
|-----|-------|-----------|
| 1 | Rule1 | Abandoned |

Parameter Setup

Period

Duration s (6~3600)

Record
Record Delay s (10~300)

Relay-out
Alarm Delay s (10~300)

Send Email

Snapshot

| Parameter | Description |
|-----------|---|
| Period | <p>Configure working period, and the rule takes effect only within this period.</p> <ol style="list-style-type: none"> Click Setting to open the Period setting window. Configure each period. <ul style="list-style-type: none"> A: Press and hold the left mouse button, and then drag at the periods you need. B: Click the Setting behind the week day you need, and then the week day in the period setting box shows red color, select and configure the periods you need, and you can configure 6 periods in one week day at most. Click OK. |
| Duration | <p>Set the amount of time, in seconds, that an object must remain in the defined area before the function triggers the alarm.</p> <p>Set the time between 6 seconds and 3600 seconds (default: 10 seconds).</p> |
| Record | <p>Select Record to send video data to the camera's onboard storage when a tripwire alarm is triggered. Then, set a record delay period, in seconds.</p> <p> The camera must have an on-board storage mechanism, specifically a MicroSD card slot with a MicroSD card installed.</p> |
| Relay Out | <p>Select Relay-out to send an alarm transmission signal from the camera to an alarm relay. Then, set an Alarm Delay period, in seconds.</p> <p> The camera must have an active alarm relay connection.</p> |

| Parameter | Description |
|------------|--|
| Send Email | Select Send Email to issue an email when an alarm is triggered. Set email addresses in the Network -> SMTP (email) setting box. |
| Snapshot | Select Snapshot to record a snapshot of the scene that shows the tripwire violation. |

6.2.5 Fast-Moving

The Fast-Moving function triggers an alarm when the measured speed of an object as it exits the defined monitoring area exceeds a specified sensitivity setting, from 1 m/s to 10 m/s (2.23 mph to 22.37 mph). Use this function in sparse areas where there is little motion, except for the monitored target. The function is best suited for applications where fast speeds, relative to other objects, is not expected, for example people running in a shopping mall or cars speeding in a parking lot.

For best results, install the camera above the monitoring area and align the horizontal field view perpendicular to the object's motion in the monitoring area.

The screenshot displays the 'Rule Config' interface for a 'Fast-Moving' rule. The interface includes a video preview window showing a night street scene with a timestamp '2019-07-25 05:16:02' and 'IPC' label. Below the video are 'Draw Rule' and 'Clear' buttons. The 'Target filter' section has two radio buttons: 'Max Size' (selected) with input fields for '8191 * 8191', and 'Min Size' with input fields for '0 * 0'. Below this is a 'Pixel Counter' section with input fields for '0 * 0'. To the right, a table lists the rule configuration:

| No. | Name | Rule Type |
|-----|-------|-------------|
| 1 | Rule1 | Fast-Moving |

Below the table is the 'Parameter Setup' section with the following settings:

- Period: Setting
- Sensitivity: Slider set to 5
- Object filter:
- Record:
- Record Delay: 10 s (10~300)
- Relay-out:
- Alarm Delay: 10 s (10~300)
- Send Email:
- Snapshot:

At the bottom of the interface are 'Default', 'Refresh', and 'Save' buttons.

| Parameter | Description |
|---------------|---|
| Period | <p>Configure working period, and the rule takes effect only within this period.</p> <ol style="list-style-type: none"> 4. Click Setting to open the Period setting window. 5. Configure each period. <p>A: Press and hold the left mouse button, and then drag at the periods you need.</p> <p>B: Click the Setting behind the week day you need, and then the week day in the period setting box shows red color, select and configure the periods you need, and you can configure 6 periods in one week day at most.</p> <ol style="list-style-type: none"> 6. Click OK. |
| Sensitivity | <p>Set the sensitivity level for the speed of the object exiting the designated monitoring area.</p> <p>Set the sensitivity between 1 m/s and 10 m/s (default: 5 m/s).</p> |
| Object Filter | <p>Select the Object Filter check box to enable the function, and then select the alarm object.</p> <p>Select Human or Motor Vehicle (both options can be used at the same time) to set the alarm trigger to a particular target.</p> <p>If you disable this function, any moving object (such as human, vehicle, cat, or dog) triggers an alarm.</p> <p> This function is only available on devices with perimeter protection function.</p> |
| Record | <p>Select Record to send video data to the camera's onboard storage when a tripwire alarm is triggered. Then, set a record delay period, in seconds.</p> <p> The camera must have an on-board storage mechanism, specifically a MicroSD card slot with a MicroSD card installed.</p> |
| Relay Out | <p>Select Relay-out to send an alarm transmission signal from the camera to an alarm relay. Then, set an Alarm Delay period, in seconds.</p> <p> The camera must have an active alarm relay connection.</p> |
| Send Email | <p>Select Send Email to issue an email when an alarm is triggered. Set email addresses in the Network -> SMTP (email) setting box.</p> |
| Snapshot | <p>Select Snapshot to record a snapshot of the scene that shows the tripwire violation.</p> |

6.2.6 Parking Detection

The Parking Detection function monitors a defined area for the presence of a vehicle that remains in the area without motion for longer than a specified amount of time. The object must remain static during the surveillance duration for the function to trigger an alarm.

For best results, ensure the length of the vehicle in the monitoring area does not exceed 1/5 the size of the scene and install the camera at least 6 m (20 ft) above the scene

The screenshot displays the 'Rule Config' window for 'Global Setup'. It features a live video feed of a street scene at night with a red bounding box around a car. Below the feed are controls for 'Draw Rule' and 'Clear'. To the right is a table with one rule entry: 'Rule1' of type 'Parking Det'. Below the table is the 'Parameter Setup' section with fields for 'Duration' (6s), 'Record Delay' (10s), and 'Alarm Delay' (10s). There are also checkboxes for 'Record', 'Relay-out', 'Send Email', and 'Snapshot', and buttons for 'Default', 'Refresh', and 'Save'.

| Parameter | Description |
|-----------|--|
| Period | <p>Configure working period, and the rule takes effect only within this period.</p> <ol style="list-style-type: none"> Click Setting to open the Period setting window. Configure each period. <p>A: Press and hold the left mouse button, and then drag at the periods you need.</p> <p>B: Click the Setting behind the week day you need, and then the week day in the period setting box shows red color, select and configure the periods you need, and you can configure 6 periods in one week day at most.</p> Click OK. |
| Duration | <p>Set the amount of time, in seconds, that a vehicle must remain in the defined area before the function triggers the alarm.</p> <p>Set the time between 6 seconds and 300 seconds (default: 6 seconds).</p> |
| Record | <p>Select Record to send video data to the camera's onboard storage when a tripwire alarm is triggered. Then, set a record delay period, in seconds.</p> <p> The camera must have an on-board storage mechanism, specifically a MicroSD card slot with a MicroSD card installed.</p> |

| Parameter | Description |
|------------|--|
| Relay Out | Select Relay-out to send an alarm transmission signal from the camera to an alarm relay. Then, set an Alarm Delay period, in seconds.  The camera must have an active alarm relay connection. |
| Send Email | Select Send Email to issue an email when an alarm is triggered. Set email addresses in the Network -> SMTP (email) setting box. |
| Snapshot | Select Snapshot to record a snapshot of the scene that shows the tripwire violation. |

6.2.7 Crowd Gathering Estimation

The crowd gathering function monitors a defined area, typically in outdoor scenes, for a set number of people gathering and remaining inside the defined area. The size of the defined area determines the minimum number of people that have to be present in the area before the function triggers an alarm. Draw the defined area based on the relative height and width of a person in the scene. For example, if the function should trigger an alarm if ten people gather in a specified location, then estimate the relative height and width of a person in the scene and draw the area that is ten times the height and ten times the width of a person.

Note that this function is susceptible to false alarms from continuously moving objects, such as leaves and shadows, vehicle traffic, and people flow. Draw the monitoring area away from these objects. Use this function for large outdoor areas, it is not recommended for close-range analysis.

Rule Config
Global Setup



Draw Rule
Clear

Min Gatheri...

Pixel Counter 568 * 469

Draw Target
Clear

Draw Target

| <input checked="" type="checkbox"/> | No. | Name | Rule Type | |
|-------------------------------------|-----|-------|------------|------------------------------------|
| <input checked="" type="checkbox"/> | 1 | Rule1 | Crowd Gath | - |

Parameter Setup

Period Setting

Duration 10 s (10-300)

Sensitivity
-
+
0
 5

Record

Record Delay 10 s (10-300)

Relay-out

Alarm Delay 10 s (10-300)

Send Email

Snapshot

Default
Refresh
Save

| Parameter | Description |
|-------------|---|
| Period | <p>Configure working period, and the rule takes effect only within this period.</p> <ol style="list-style-type: none"> 1. Click Setting to open the Period setting window. 2. Configure each period. <p>A: Press and hold the left mouse button, and then drag at the periods you need.</p> <p>B: Click the Setting behind the week day you need, and then the week day in the period setting box shows red color, select and configure the periods you need, and you can configure 6 periods in one week day at most.</p> 3. Click OK. |
| Duration | <p>Set the amount of time, in seconds, that targets must remain in the defined area before the function triggers the alarm.</p> <p>Set the time between 10 seconds and 300 seconds (default: 10 seconds).</p> |
| Sensitivity | <p>Set the sensitivity level for the speed of the object entering and exiting the designated area.</p> <p>Set the sensitivity between 1 and 10 (default: 5).</p> |
| Record | <p>Select Record to send video data to the camera's onboard storage when a tripwire alarm is triggered. Then, set a record delay period, in seconds.</p> <p> The camera must have an on-board storage mechanism, specifically a MicroSD card slot with a MicroSD card installed.</p> |
| Relay Out | <p>Select Relay-out to send an alarm transmission signal from the camera to an alarm relay. Then, set an Alarm Delay period, in seconds.</p> <p> The camera must have an active alarm relay connection.</p> |
| Send Email | <p>Select Send Email to issue an email when an alarm is triggered. Set email addresses in the Network -> SMTP (email) setting box.</p> |
| Snapshot | <p>Select Snapshot to record a snapshot of the scene that shows the tripwire violation.</p> |

6.2.8 Missing Object

The missing object function issues an alarm when a target removes an object from a designated area and the object remains out of the area for a specified amount of time.

The screenshot displays the 'Rule Config' window for a 'Missing Object' rule. On the left, a video feed shows a street scene with a red bounding box around a tree. Below the video are controls for 'Draw Rule', 'Clear', 'Target filter' (Max Size: 8191 x 8191, Min Size: 0 x 0), and 'Pixel Counter' (568 x 469). On the right, the 'Parameter Setup' section includes a 'Period' setting (with a 'Setting' button), 'Duration' (10 s, range 6-3600), 'Record' (unchecked), 'Record Delay' (10 s, range 10-300), 'Relay-out' (unchecked), 'Alarm Delay' (10 s, range 10-300), 'Send Email' (unchecked), and 'Snapshot' (checked). At the bottom are 'Default', 'Refresh', and 'Save' buttons. A table at the top right shows the rule configuration:

| No. | Name | Rule Type |
|-----|-------|-------------|
| 1 | Rule1 | Missing Obj |

| Parameter | Description |
|-----------|--|
| Period | <p>Configure working period, and the rule takes effect only within this period.</p> <ol style="list-style-type: none"> Click Setting to open the Period setting window. Configure each period. <p>A: Press and hold the left mouse button, and then drag at the periods you need.</p> <p>B: Click the Setting behind the week day you need, and then the week day in the period setting box shows red color, select and configure the periods you need, and you can configure 6 periods in one week day at most.</p> <ol style="list-style-type: none"> Click OK. |
| Duration | <p>Set the amount of time, in seconds, that an object must remain outside of the defined area before the function triggers the alarm.</p> <p>Set the time between 6 seconds and 3600 seconds (default: 10 seconds).</p> |
| Record | <p>Select Record to send video data to the camera's onboard storage when a tripwire alarm is triggered. Then, set a record delay period, in seconds.</p> <p> The camera must have an on-board storage mechanism, specifically a MicroSD card slot with a MicroSD card installed.</p> |
| Relay Out | <p>Select Relay-out to send an alarm transmission signal from the camera to an alarm relay. Then, set an Alarm Delay period, in seconds.</p> <p> The camera must have an active alarm relay connection.</p> |

| Parameter | Description |
|------------|--|
| Send Email | Select Send Email to issue an email when an alarm is triggered. Set email addresses in the Network -> SMTP (email) setting box. |
| Snapshot | Select Snapshot to record a snapshot of the scene that shows the tripwire violation. |

6.2.9 Loitering Detection

The loitering detection function monitors a defined area for the presence of an object that remains in the area longer than a specified amount of time. The object must be in motion during the surveillance period, the function will not trigger an alarm for a stationary object. The object must move by at least its own width at least every two seconds during the surveillance duration for the function to trigger an alarm.

| Parameter | Description |
|-----------|---|
| Period | <p>Configure working period, and the rule takes effect only within this period.</p> <ol style="list-style-type: none"> Click Setting to open the Period setting window. Configure each period. <ol style="list-style-type: none"> Press and hold the left mouse button, and then drag at the periods you need. Click the Setting behind the week day you need, and then the week day in the period setting box shows red color, select and configure the periods you need, and you can configure 6 periods in one week day at most. Click OK. |

| Parameter | Description |
|------------|---|
| Duration | Set the amount of time, in seconds, that the target must remain in the defined area before the function triggers the alarm. Set the time between 1 second and 600 seconds (default: 5 seconds). |
| Record | Select Record to send video data to the camera's onboard storage when a tripwire alarm is triggered. Then, set a record delay period, in seconds.  The camera must have an on-board storage mechanism, specifically a MicroSD card slot with a MicroSD card installed. |
| Relay Out | Select Relay-out to send an alarm transmission signal from the camera to an alarm relay. Then, set an Alarm Delay period, in seconds.  The camera must have an active alarm relay connection. |
| Send Email | Select Send Email to issue an email when an alarm is triggered. Set email addresses in the Network -> SMTP (email) setting box. |
| Snapshot | Select Snapshot to record a snapshot of the scene that shows the tripwire violation. |

6.3 People Counting

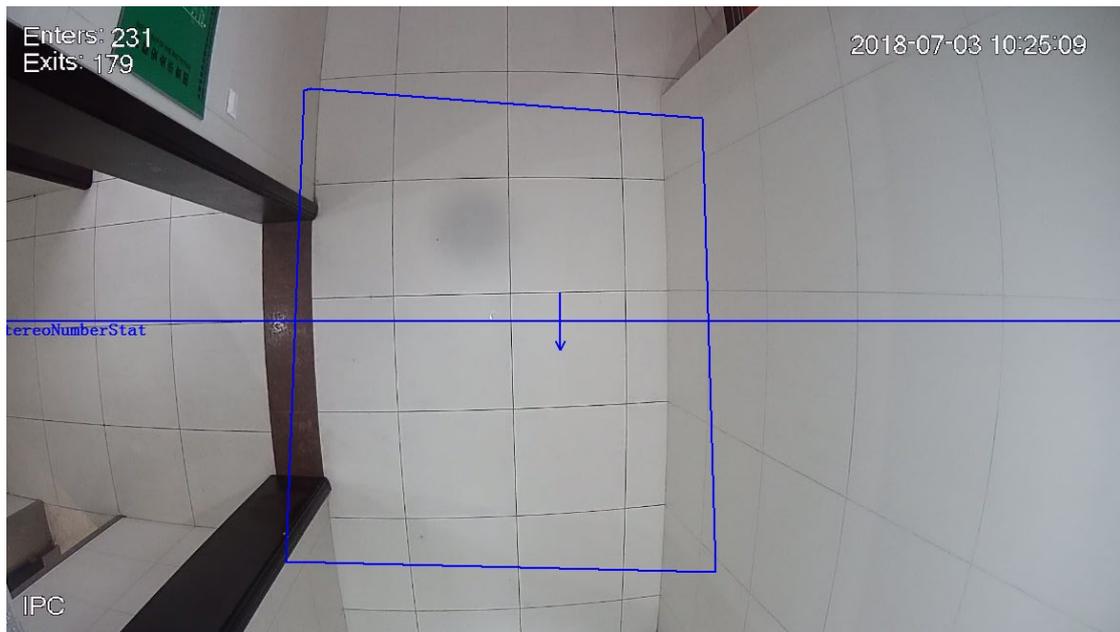
The People Counting function uses complex real-time algorithms to deliver accurate flow statistics from two distinct people counting functions, Line Crossing and Regional. The line crossing function counts the number of people crossing a defined line, and the regional function counts the number of people in a distinct, user-defined area. People counting is ideal for measuring the number of customers entering or exiting a location and to monitor groups of people in a distinct location.

6.3.1 Camera Installation and Adjustment

- Ensure the installation site is adequately illuminated so that the head and shoulder contour of a person in the detection area is clear. Typically, for a camera with 1080p resolution, the recommended pixel size is 40 pixels for the head and 100 pixels for the shoulders.
- Avoid complex scenes with frequently changing lighting conditions, backlight conditions, and direct light exposure.
- Monitor an area where the people flow is largely in one direction. The people count statistics are more accurate where people flow mainly in one direction and where the camera faces against the mainstream flow of people.

6.3.2 Top-mounted Camera Installation

A camera mounted above the monitoring area is the most effective installation option:



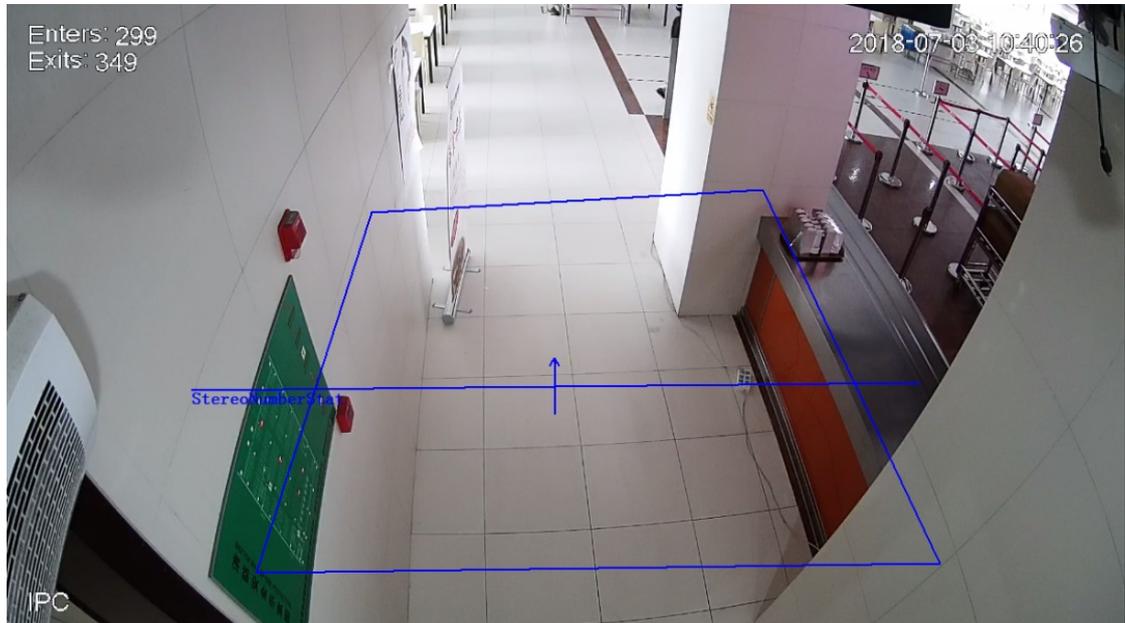
Use the following data to install the camera in the optimal position:

| Camera Resolution | Focal length (mm) | Max Installation Height (m) | Max Channel Width (m) | Max Channel Thickness (m) |
|-------------------|-------------------|-----------------------------|-----------------------|---------------------------|
| 200W | 2.8 | 4 | 8.2 | 3.5 |
| | 3.6 | 6 | 8 | 3.7 |
| | 6 | 9 | 7.4 | 3.7 |
| | 8 | 12 | 7 | 4 |
| | 12 | 17 | 6.5 | 3.5 |
| 400W | 2.8 | 4 | 6.5 | 2.8 |
| | 3.6 | 5 | 6.2 | 2.9 |
| | 6 | 7 | 5 | 2.9 |
| 500W | 2.8 | 4 | 6.5 | 4 |
| | 3.6 | 5 | 6 | 4 |
| | 6 | 7 | 5.5 | 4 |
| | 8 | 10 | 5.5 | 4 |
| | 12 | 14 | 5.5 | 4 |

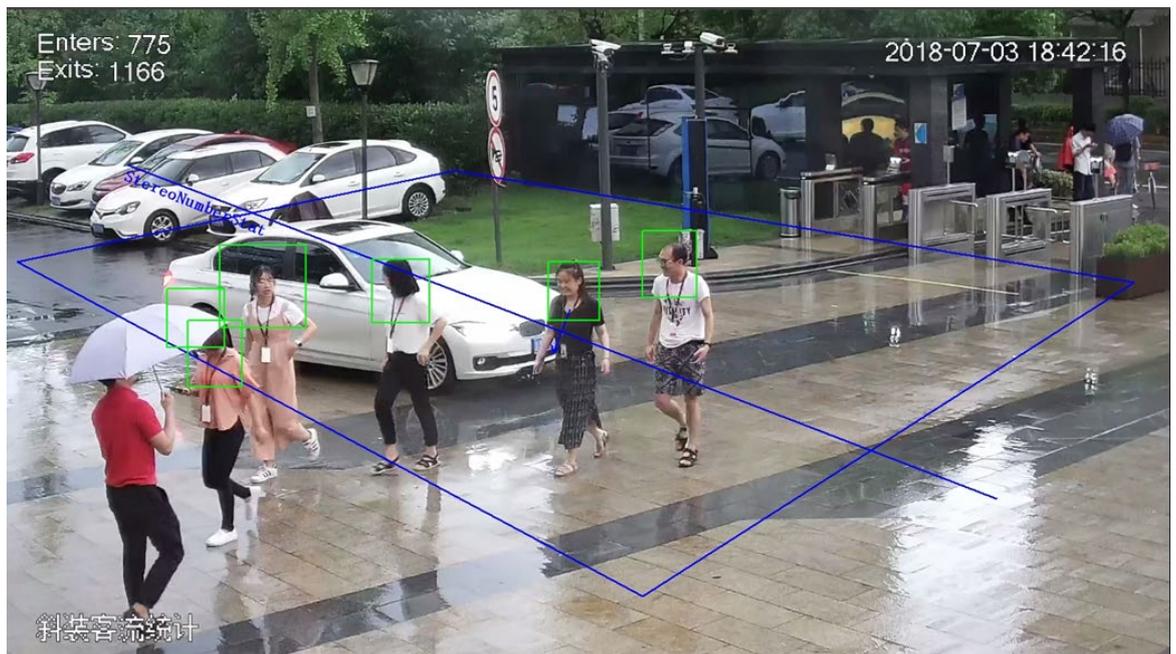
6.3.3 Angle- or Side-mounted Installation

If a top-mounted installation is not possible, then an angle-mount or a side-mount installation may be used, but the flow statistics may be compromised.

- The following image is an illustration of an angle-mounted installation:



- This image is an illustration of a side-mounted installation:



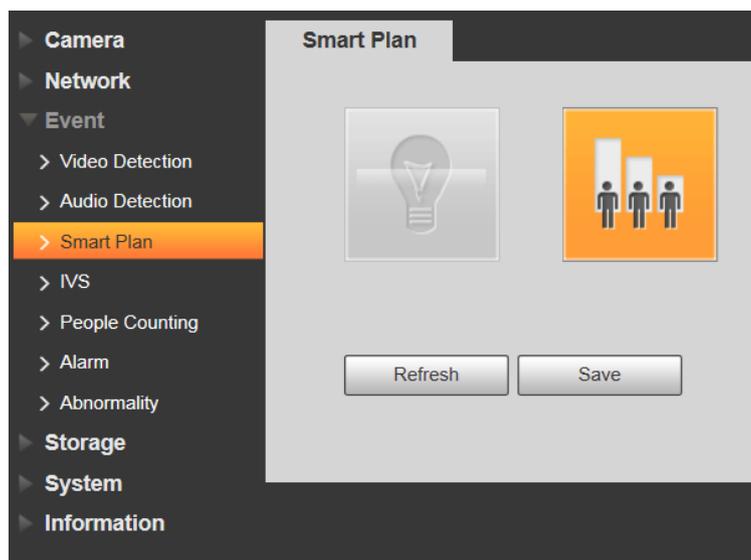
Use the following data to install the camera in the optimal position:

| Camera Resolution | Focal Length (mm) | Installation Depression Angle | Max Installation Height (m) | Max Monitoring Distance (m) |
|-------------------|-------------------|-------------------------------|-----------------------------|-----------------------------|
| 200W | 2.8 | 45° | 4.5 | 4 |
| | 3.6 | 45° | 4.5 | 4.5 |
| | 6 | 45° | 5 | 6.5 |
| | 8 | 45° | 5.5 | 8.5 |
| | 12 | 45° | 5.5 | 12 |
| 400W | 2.8 | 45° | 3.8 | 2.7 |
| | 3.6 | 45° | 4 | 3.3 |
| | 6 | 45° | 4.4 | 4.9 |
| 500W | 2.8 | 45° | 4.4 | 3.5 |
| | 3.6 | 45° | 4.8 | 4 |
| | 6 | 45° | 5.4 | 5.8 |
| | 8 | 45° | 5.6 | 7 |
| | 12 | 45° | 5.5 | 10 |

6.3.4 Configuring the People Counting Function

1. Log into the camera's web interface and select the **SETTING** tab.
2. Click Event menu item, at the left side of the screen. Then, click SMART PLAN.

The **SMART PLAN** interface is displayed.



3. Select the People Counting option (note that not all cameras offer all of analytic functions):
4. Click Save to choose the plan.
5. Click People Counting to access the People Counting function settings.
6. Select **In Area No.** or **People Counting** from the Rule Type drop-down menu.
7. Refer to the following sections for specific instructions for each People Counting function.

6.3.5 Configuring the In Area No. Function

The In Area No. function counts the number of people in a distinct, user-defined area and can trigger an alarm if the number of people exceed or fall below a defined threshold number.

The screenshot shows the 'People Counting' configuration interface. The main window displays a scene with a central circular icon and a green border. Below the scene are 'Draw Area' and 'Clear' buttons. The right-hand panel contains a table of rules and a 'Parameter Setup' section.

| No. | Name | Rule Type |
|-----|------------------|-------------|
| 1 | StereoNumberStat | In Area No. |

Parameter Setup

OSD

Inside Number

Period

Sensitivity 7

Flip

Regional Number Statistics Al...

Inside Number (0~30)

Type

Stranding Alarm

Stranding Time s (1~1800)

Record

Record Delay s (10~300)

Relay-out

Alarm Delay s (10~300)

Send Email

Snapshot

1. Click **Draw Area** and move the cursor in the scene cameo window. Press the left mouse and release then move the cursor to draw the rule line in the scene. Double-click the left mouse button to indicate the end of the rule line, and finally click the right mouse button to indicate the line is complete. Be careful to leave some space on either side of the line and not draw the line near obstacles.

2. Set the functional parameters using the table below:

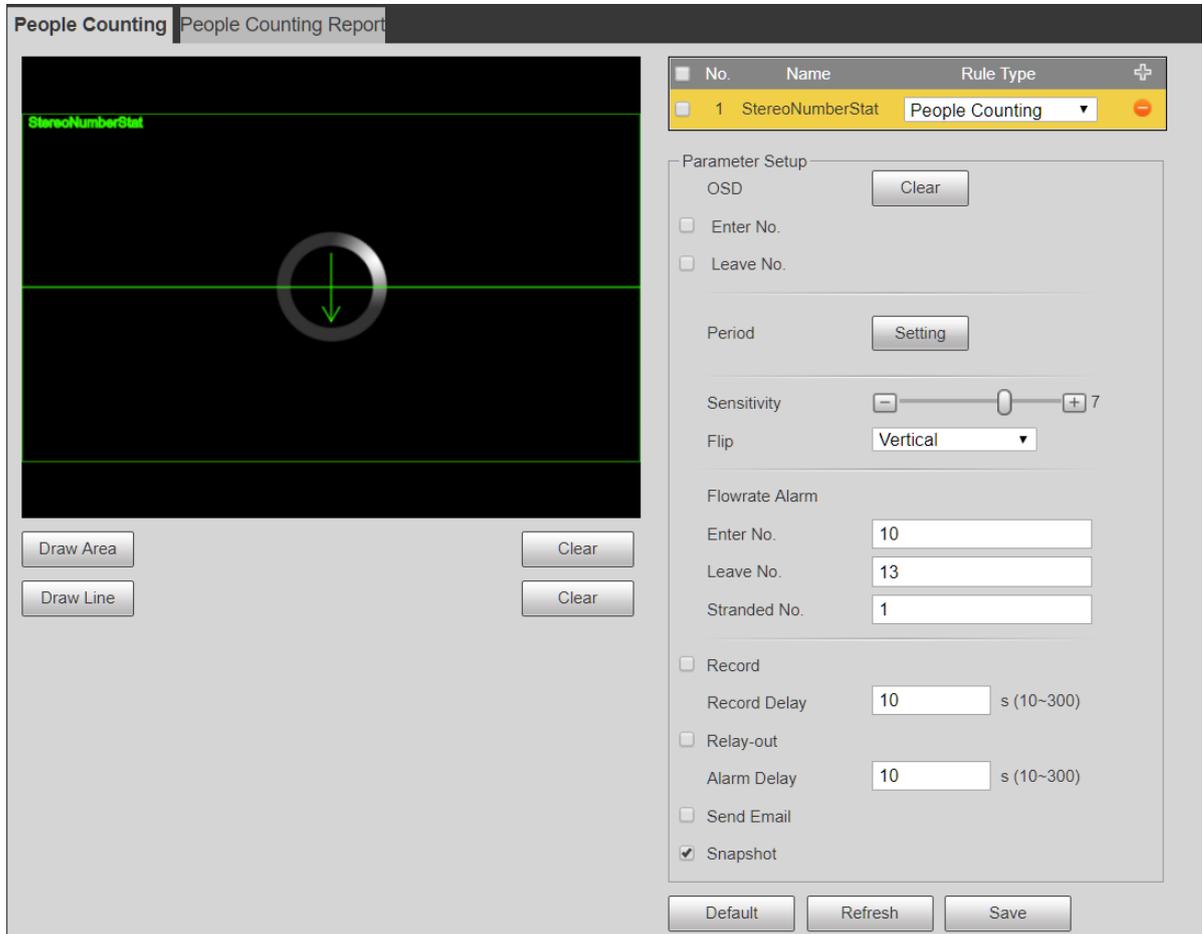
| Parameter | Description |
|------------------------------|---|
| Inside Number | Click the check box to display the number of people inside the monitoring area on the camera's live view. |
| Period | Configure working period, and the rule takes effect only within this period. <ol style="list-style-type: none"> Click Setting to open the Period setting window. Configure each period. <p>A: Press and hold the left mouse button, and then drag at the periods you need.</p> <p>B: Click the Setting behind the week day you need, and then the week day in the period setting box shows red color, select and configure the periods you need, and you can configure 6 periods in one week day at most.</p> Click OK. |
| Sensitivity | Set the sensitivity level for the number of people in the monitoring area. Set the sensitivity between 1 and 10 (default: 7). |
| Flip | Select the camera installation option: Inclined: camera is installed above the monitoring area. Vertical: camera is installed at an angle or on the side of the monitoring area. |
| Regional Number Statistic AI | Click the checkbox to set a threshold value for the number of people in the monitoring area. Leave this checkbox blank to keep only a count of the number of people in an area. Inside Number: The threshold value for the number of people in the area. Type a number between 0 and 30 (default: 30) Type: Select a threshold function: <ul style="list-style-type: none"> \geq Threshold: the function triggers an alarm if the number of people within the area is greater than or equal to the Threshold value. \leq Threshold: the function triggers an alarm if the number of people within the area is less than or equal to the Threshold value. |
| Stranding Alarm | Click the check box to enable the function to trigger an alarm if an individual target inside the monitoring area must remain in the defined area before the function triggers the alarm. Set the time between 1 second and 1800 seconds (default: 30 seconds). |
| Record | Select Record to send video data to the camera's onboard storage when a tripwire alarm is triggered. Then, set a record delay period, in seconds.  The camera must have an on-board storage mechanism, specifically a MicroSD card slot with a MicroSD card installed. |
| Relay Out | Select Relay-out to send an alarm transmission signal from the camera to an alarm relay. Then, set an Alarm Delay period, in seconds. |
| Send Email | Select Send Email to issue an email when an alarm is triggered. Set email addresses in the Network -> SMTP (email) setting box. |
| Snapshot | Select Snapshot to record a snapshot of the scene that shows the tripwire violation. |

3. Click **Save** to accept the parameters and to activate the trigger.

4. Click **Default** to erase all rules and to start with a clean scene cameo window.

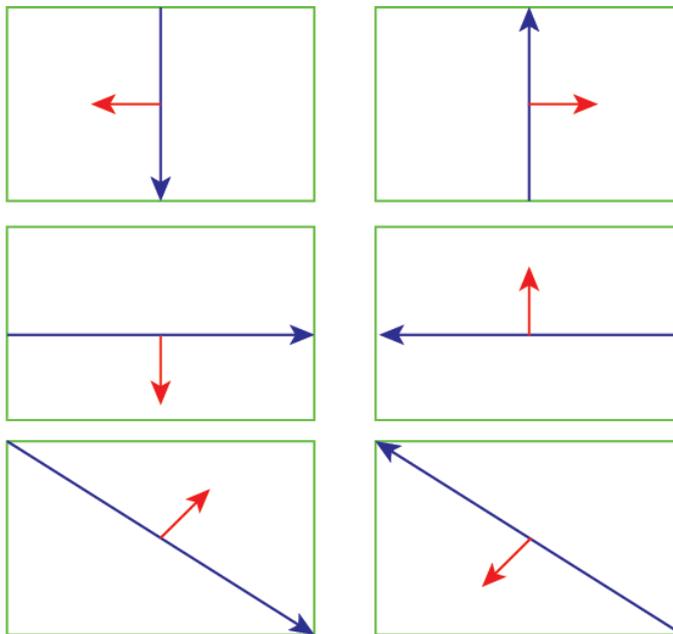
6.3.6 Configuring the People Counting Function

The People Counting function counts the number of people crossing a defined line in a distinct, user-defined area. This function is able to count people entering and leaving an area simultaneously. People counting is ideal for measuring the number of customers entering or exiting a location, or to monitor groups of people in a distinct location.



1. Click **Draw Area** and move the cursor in the scene cameo window. Press the left mouse and release then move the cursor to draw the rule line in the scene. Double-click the left mouse button to indicate the end of the rule line, and finally click the right mouse button to indicate the line is complete. Be careful to leave some space on either side of the line and not draw the line near obstacles.

2. Click **Draw Line** and move the cursor into the scene cameo window to indicate the direction of people flow, this direction determines if a person is entering or leaving the area. The function determines the direction of flow by the angle of the line in relation to the monitoring area. Use the following illustrations as a guide to help determine the people flow direction.



| Line Color | Description |
|------------|---|
| Green Box | Monitoring area |
| Blue Arrow | Direction of the DRAW LINE operation |
| Red Arrow | Direction of people flow. The entrance to the monitoring area is opposite the direction of the arrow. |

3. Set the functional parameters using the table below:

| Parameter | Description |
|---------------|---|
| Inside Number | Click the check box to display the number of people inside the monitoring area on the camera's live view. |
| Period | <p>Configure working period, and the rule takes effect only within this period.</p> <ol style="list-style-type: none"> Click Setting to open the Period setting window. Configure each period. <ul style="list-style-type: none"> A: Press and hold the left mouse button, and then drag at the periods you need. B: Click the Setting behind the week day you need, and then the week day in the period setting box shows red color, select and configure the periods you need, and you can configure 6 periods in one week day at most. Click OK. |
| Sensitivity | <p>Set the sensitivity level for the number of people in the monitoring area.</p> <p>Set the sensitivity between 1 and 10 (default: 7).</p> |

| Parameter | Description |
|------------------------------|---|
| Flip | Select the camera installation option: Inclined: camera is installed above the monitoring area. Vertical: camera is installed at an angle or on the side of the monitoring area. |
| Regional Number Statistic AI | Click the checkbox to set a threshold value for the number of people in the monitoring area. Leave this checkbox blank to just keep a count of the number of people in an area. Inside Number: The threshold value for the number of people in the area. Type a number between 0 and 30 (default: 30) Type: Select a threshold function: \geq Threshold: the function triggers an alarm if the number of people within the area is greater than or equal to the Threshold value. \leq Threshold: the function triggers an alarm if the number of people within the area is less than or equal to the Threshold value. |
| Stranding Alarm | Click the check box to enable the function to trigger an alarm if an individual target inside the monitoring area must remain in the defined area before the function triggers the alarm. Set the time between 1 second and 1800 seconds (default: 30 seconds). |
| Record | Select Record to send video data to the camera's onboard storage when a tripwire alarm is triggered. Then, set a record delay period, in seconds. The camera must have an on-board storage mechanism, specifically a MicroSD card slot with a MicroSD card installed. |
| Relay Out | Select Relay-out to send an alarm transmission signal from the camera to an alarm relay. Then, set an Alarm Delay period, in seconds. The camera must have an active alarm relay connection. |
| Send Email | Select Send Email to issue an email when an alarm is triggered. Set email addresses in the Network -> SMTP (email) setting box. |
| Snapshot | Select Snapshot to record a snapshot of the scene that shows the tripwire violation. |

4. Click **Save** to accept the parameters and to activate the trigger.
5. Click **Default** to erase all rules and to start with a clean scene cameo window.

6.3.7 Configuring the People Counting Report

The People Counting function has a built-in reporting tool that generates a daily, monthly, or yearly report.

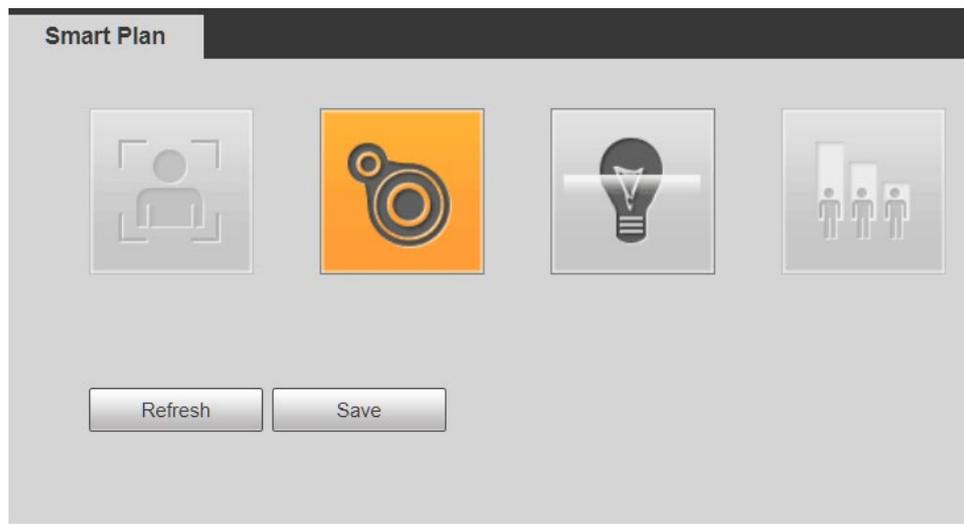
| Parameter | Description |
|----------------|--|
| Report Type | Select Daily, Monthly, or Yearly from the drop-down menu. The function generates the report after the selected interval based on the specified time and date range. |
| Begin Time | Type the beginning date or click the calendar icon and select the desired beginning date for the report. Type the hour (using a 24-hour clock) of the begin date (the minute and seconds fields are not operational). |
| End Time | Type the ending date or click the calendar icon and select the desired end date for the report. Type the hour (using a 24-hour clock) of the end date (the minute and seconds fields are not operational). |
| Flow Direction | Select one or multiple directions for the report: Enters: report shows the number of people entering the defined area during the given date/time range. Exits: report shows the number of people exiting the defined area during the given date/time range. Display No.: report shows the actual number of people of entering or exiting. |
| Report Type | Select either a Bar Chart or a Line Chart. |

6.4 Heat Map

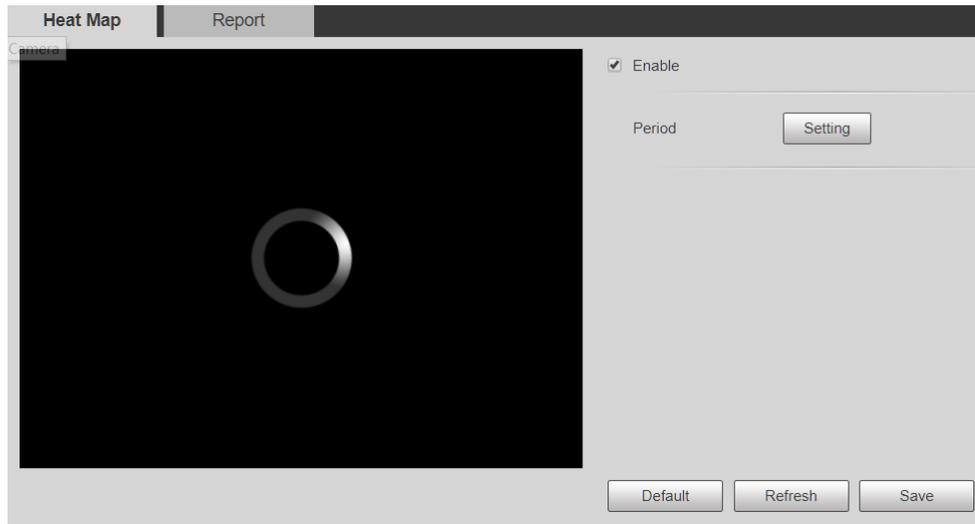
A heat map is a representation of people flow data in the form of a map or diagram in which data values are represented as colors. The heat map example below shows a retail environment, with red indicating areas of increased people flow and blue areas representing areas of decreased people flow.



1. Log into the camera's web interface and select the **SETTING** tab.
2. Click Event menu item, at the left side of the screen. Then, click SMART PLAN. The **SMART PLAN** interface is displayed.



3. Select the Heat Map option (note that not all cameras offer all of analytic functions):
4. Click Save to choose the plan.
5. Click **Heat Map** to access the People Counting function settings.
6. Click **Enable** to activate the heat map function.



7. Configure the working period, and the rule takes effect only within this period.
 - a) Click **Setting** to open the Period setting window.
 - b) Configure each period.
 - c) Press and hold the left mouse button, and then drag at the periods you need.
 - d) Click the **Setting** behind the week day you need, and then the week day in the period setting box shows red color, select and configure the periods you need, and you can configure 6 periods in one week day at most.
 - e) Click OK.
8. Click Save to activate the heat map.

6.4.1 Configuring the Heat Map Report

The Heat Map function has a built-in reporting tool that generates a report based on the specified date/time range.



Heat Map | Report

Start Time: 2019-07-26 00 : 00 : 00 End Time: 2019-07-26 08 : 00 : 00 *Report max range is 1 week.

Search Export

| Parameter | Description |
|------------|--|
| Start Time | Type the beginning date or click the calendar icon and select the desired beginning date for the report. Type the hour (using a 24-hour clock) of the begin date (the minute and seconds fields are not operational). |
| End Time | Type the ending date or click the calendar icon and select the desired end date for the report. Type the hour (using a 24-hour clock) of the end date (the minute and seconds fields are not operational). |

6.5 Smart Motion Detection

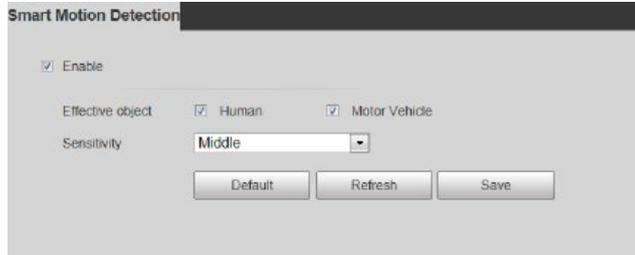
Smart Motion Detection (SMD), a component of Dahua's Analytics+ technology, improves alarm accuracy and decreases the number of false alarms. The advanced SMD algorithm analyzes a scene for human or vehicle motion, while filtering out other motion due to trees, leaves, animals, weather, and triggers an alarm when detected. In addition, the Quick Target Search function classifies and extracts people and vehicles from the video database, letting users find and analyze historical information quickly and easily, while displaying a more accurate tracking box around a moving subject.

Pair a Smart Motion Detection camera with a Dahua recording device that also offers SMD functionality to take advantage of SMD alarm filtering and object classification when searching and playing back recorded video.

- Differentiates between and classifies human and vehicle objects.
- Filters false alarms due to leaves, lights, animals, and other inconsequential objects.
- Extracts human or vehicle objects from recorded video for quick target search and retrieval.

6.5.1 Setting SMD in a Network Camera

1. Log into the camera's web interface and select the SETTING tab.
2. Click Event menu item, at the left side of the screen. Then, click Video Detection and select the Motion Detection tab.
3. Enable Motion Detection on the camera and click OK.
4. Click the Event menu again. Then select Smart Motion Detection.



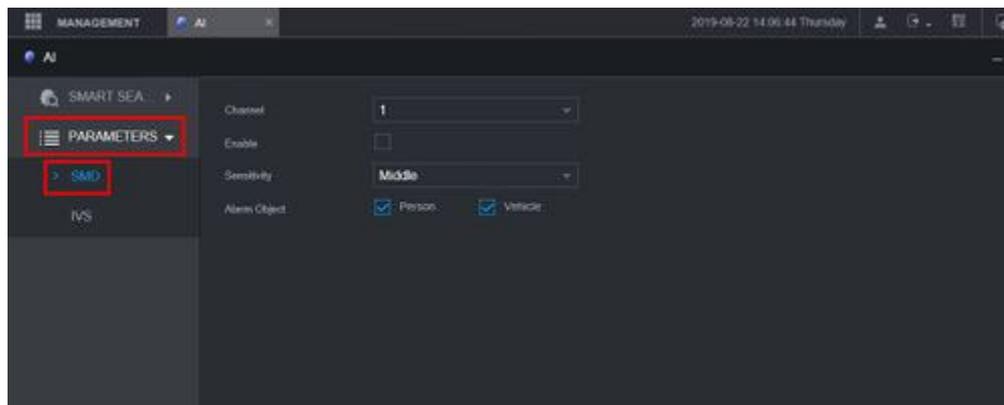
5. Click the Enable check box to activate Smart Motion Detection.
6. Click the check box to activate Smart Motion Detection for Human Objects, Vehicular Objects, or both.
7. Select the detection sensitivity.
8. Click Save to apply the Smart Motion Detection options.

6.5.2 Setting SMD in a Network Video Recorder

1. Log into the network video recorder.



2. Click the AI menu.
3. Click the Parameters menu, and then select SMD.



4. Select the channel for the camera that supports Smart Motion Detection.

5. Click the Enable check box to activate Smart Motion Detection.
6. Click the check box to activate Smart Motion Detection for Human Objects, Vehicular Objects, or both.
7. Select the detection sensitivity.
8. Click Save to apply the Smart Motion Detection options.

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