Milesight



VS125-LW

AI Stereo Vision People Counter

User Guide

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Contents

Chapter 1. Preface..... 4

Chapter 2. Product Introduction..... 7

Overview..... 7

Packing List..... 8

Hardware Components..... 9

Power Supply..... 11

Chapter 3. Hardware Installation..... 13

Installation Prerequisites..... 13

Install a SIM Card (Cellular Version Only)..... 16

Install the Device..... 17

Troubleshoot an Abnormal Preview after Installation..... 21

Chapter 4. Web Configuration..... 23

Access the Device..... 23

Check the Dashboard..... 28

Configure Rules 31

Configure Basic Counting Functions..... 31

Configure Attribute Recognition Functions..... 48

Configure Digital Output Triggering..... 58

Configure Digital Input..... 60

Configure Heat Map..... 62

Configure Occlusion Alarm..... 63

Stitch Multiple Devices..... 64

Configure Communication Parameters..... 72

Configure Network Parameters..... 72

Add Data Recipients..... 80

Configure MQTT API Parameters (Cellular Version Only)..... 87

Generate Reports..... 89

Configure Image Parameters....92
Configure Occlusion Alarm....94
Configure Depth Sensing Calibration....96
Configure Video Validation....98
Configure System Parameters....101
Configure Device Parameters....101
Configure User Parameters....102
Configure Time Parameters....104
Configure Remote Management Parameters....105
Configure System Maintenance Parameters....106
Chapter 5. Uplink Packets & Downlink Commands....110
Uplink Data....110
Uplink Data Examples for Trigger Reporting....110
Uplink Data Examples for Periodic Reporting....118
Uplink Data Examples for Alarm Reporting....124
MQTT API Commands....127
Chapter 6. Services....137

Chapter 1. Preface

Copyright Statement

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Milesight reserves the right to change this guide and the specifications without prior notice. The latest specifications and user documentation for all Milesight products are available on our official website http://www.milesight.com

Safety Instruction

These instructions are intended to ensure that users can use the product correctly to avoid danger or property loss. Milesight will not take responsibility for any loss or damage resulting from failure to follow the instructions in this operating guide.

Warning:

Serious injury or death may be caused if any of these warnings is neglected.

- This installation must be conducted by a qualified service person and should strictly comply with the electrical safety regulations of the local region.
- To avoid risk of fire and electric shock, do keep the product away from rain and moisture before installation.
- Do not touch components which may be hot.
- Make sure the plug is firmly inserted into the power socket.
- Make sure the device is firmly fixed when installing.

CAUTION:

Injury or equipment damage may be caused if any of these cautions are neglected.

- The device is not intended to be used as a reference sensor, and Milesight will not take responsibility for any damage which may result from inaccurate readings.
- The device must not be disassembled or remodeled in any way.
- Do not place the device close to objects with naked flames.
- Do not place the device where the temperature is below/above the operating range.

- The device must never be subjected to shocks or impacts.
- To prevent heat accumulation, do not block air circulation around the device.
- Do not use volatile solvents such as alcohol, benzene or thinners as they may damage the surface finishes.
- Do not expose the device to where a laser beam equipment is used.
- Use a soft dry cloth to clean the lens. For stubborn stains, dampen the cloth with a mild detergent solution, clean the lens, and immediately dry it thoroughly.
- Do not use volatile solvents such as alcohol, benzene or thinners as they may damage the device surface

Gender Recognition Statement

Milesight respects and embraces all dimensions of diversity, including gender identity anywhere along or beyond the spectrum of gender expression.

For technical reasons, the algorithm embedded in the device recognizes only discernible visual features for gender classification (female/male). A reliable detection of the biological sex of a person is neither possible nor intended. We fully acknowledge and respect that gender is a personal identity, and our technical output is not intended to disregard or invalidate it.

Revision History

Date	Doc Version	Description
Sept. 22, 2025	V1.0	Initial version
May. 12, 2026	V1.1	1. Add Staff Accessories types: badge, epaulet and UWB KIT. 2. Support Digital Input. 3. Support Frame Non-overlapping in multi-device stitching. 4. Add OpenVPN communication. 5. Add Occlusion Detection. 6. Add Depth Sensing Calibration. 7. Add cooldown period for trigger reports. 8. Add Real-time Data Report. 9. Add device display information in Dashboard. 10. Support modify privacy mode in system management. 11. Cellular version is now compatible with the DeviceHub V2 remote management platform.

Date	Doc Version	Description
		12. Support modify PLMN and DNS server manually. (VS125-LW-Cellular Only) 13. Add EAP-TLS authentication type in 802.1x communication. (VS125-LW-P Only) 14. Add the password for the HTTPS direct installation certificate key. (VS125-LW-P Only) 15. Support BACnet protocol. (VS125-LW-P Only)

Chapter 2. Product Introduction

This chapter describes basic product information.

Overview

VS125-LW is a professional people counting sensor that uses deep learning AI and binocular stereo vision technology. It possesses an impressive people counting accuracy of up to 99.8% and maintains reliable performance even in low-light environments and total darkness. Besides, it supports attributes recognition including gender, children and staff. It features a privacy-by-design architecture and complies with the GDPR.

VS125-LW supports cellular and PoE interfaces for network access and RS485, DO and DI interfaces for external device integration. Its simple installation process makes it suitable for multiple applications such as retail stores, malls, offices, and subway stations.

The device has the following features:

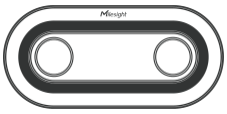
- **Reliable performance:**
  - Up to 99.8% people counting accuracy with AI and stereo vision technology.
  - Maintains stable performance in diverse lighting conditions, even in pitch darkness.
- **Installation flexibility & Auto-Calibration Technology:**
  - Supports a minimum installation height of 1.9 m and achieves a detection area of up to 40 m² at a height of 3.5 m.
  - Supports automatic tilt correction and infrared adjustment to maintain optimal detection performance.
- **Various functions:**
  - Supports line crossing people counting, regional people counting and dwell time detection.
  - Supports attribute recognition including gender, group counting, children, staff identification to provide deeper insights.
  - Supports the heat map function for analyzing foot traffic intensity and distribution.
  - Supports multi-device stitching. Up to 16 device can be stitched to expand the coverage area.
- **Multiple interfaces:**
  - Provide multiple connectivity options (PoE, Cellular).
  - Supports RS485, DI and DO interfaces for external device integration.
  - High compatibility of data transmission with HTTP(s)/MQTT(s) protocol and API, supports customized push content methods.
- **Device management and data security:**

- Quick and simple management through the Milesight Devicehub and Milesight Development Platform.
- Customer-defined preview privacy settings. No personal information is transmitted, ensuring compliance with the GDPR.
- Supports local data storage and data retransmission for secured data collection.

Packing List

This section describes the packing list. After unboxing, please check that the following items are included in the package. If any of the below items are missing or damaged, please contact your sales representative.

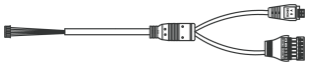
Universal Accessories



1 × VS125-LW Device



4 × Ceiling Mounting Sets



1 × Multi-interface Cable

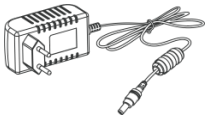


1 × Warranty Card



1 × Quick Guide Card

Accessories Exclusively for Cellular Version

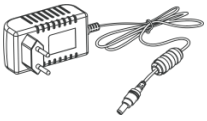


1 × Power Adapter



1 × SIM-eject Tool

Accessories Exclusively for PoE Version



1 × Power Adapter (Optional)

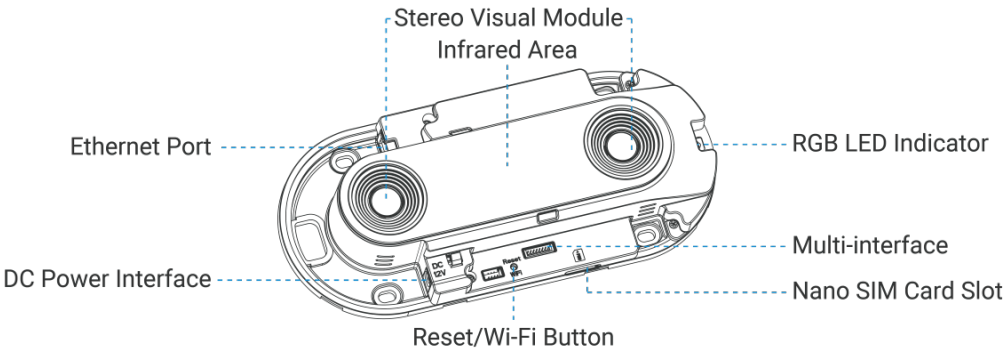
The device is also compatible with multiple mounting kits and accessories that can be purchased independently. For detailed information about them, refer to Accessories for Milesight People Counters.

Hardware Components

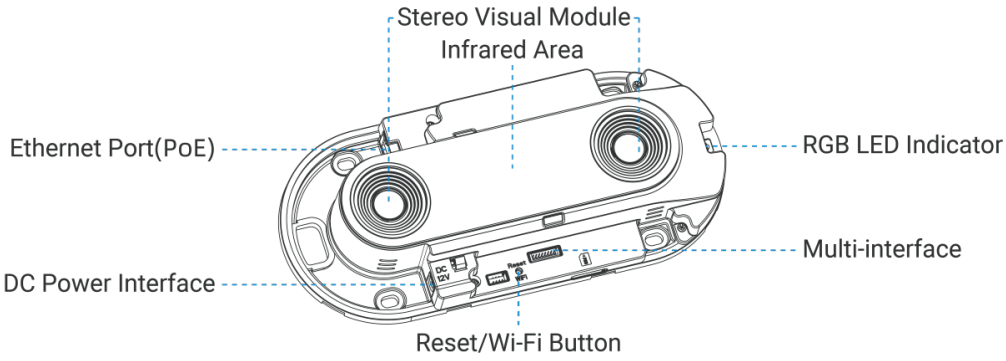
Main Components

The following figure shows the main components of the device.

Cellular Version:



PoE Version:



For the description of each component, refer to the following table:

Name	Description
Ethernet Port	Provides data communication and multi-device stitching capability. When Power over Ethernet (PoE) is supported, this port can also power the device.
DC Power Interface	Provides a power input for the device by connecting to an external DC power adapter.

Name	Description
Stereo Visual Module	It is a dual-camera module that captures and processes stereoscopic images.
Infrared Area	Provides night vision capability by emitting invisible infrared light to illuminate the scene.
RGB LED Indicator	Provides visual status indications through a multi-color LED.
Multi-interface	Equips with Digital Input/Output and RS485 interfaces (under development). For wiring details, refer to Wiring Diagram.
Nano SIM Card Slot	Slot for inserting a Nano-SIM card to establish a cellular network connection.
Reset/Wi-Fi Button	See Button Patterns.

Button and LED Indicators

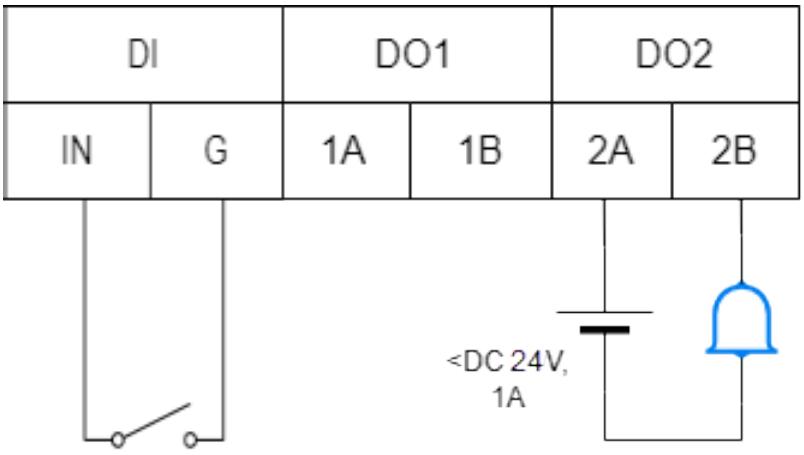
The device has a button and an LED indicator for Wi-Fi enabling/disabling and reset functions. For the functions of the button and the corresponding LED indicator status, refer to the following table.

Function	Action	LED Indicator
Enable/Disable Wi-Fi	Long press the button for 3 seconds.	Enable/Disable: The blue light blinks for 3 seconds. • Wi-Fi enabled: The blue light is on. • Wi-Fi disabled: The green light is on.
Reset the device	Long press the button for 10 seconds.	The green light blinks until the reset process is completed.
Module or algorithm detection error	/	The red light is on.

Wiring Diagram

The following figure shows the wiring diagram.

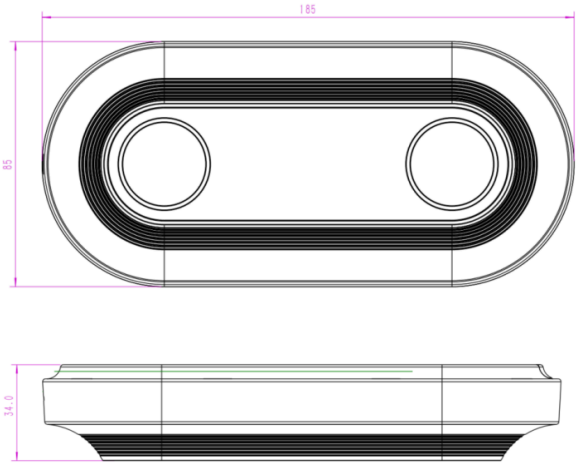
Figure 1. *DI/DO*



- DI: By default, two connected contacts = low level, two disconnected contacts = high level.
- DO: Loads up to 1A@24V DC.

Dimensions

The following figure shows the device dimensions (unit: mm).

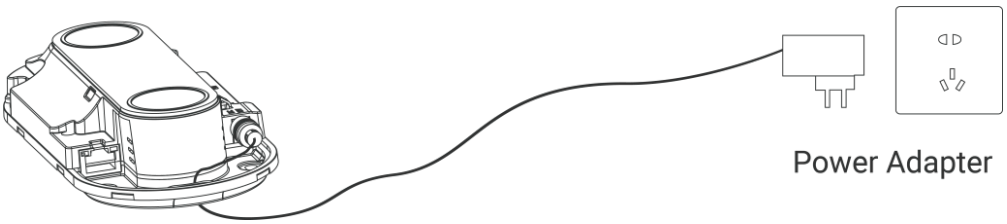


Power Supply

This device supports multiple power supply methods. Please select one of the following options.

Powered by DC Power Interface

The device can be powered by the DC power interface (12V, 1A) with a DC power adapter.

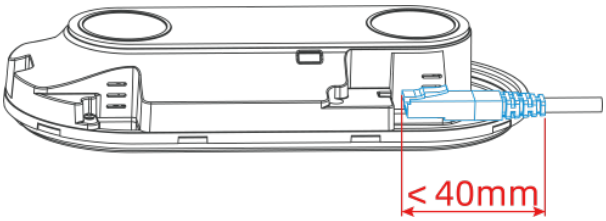


Powered by Active PoE (PoE Version Only)

The Ethernet port can receive power by connecting to an IEEE 802.3af standard PoE switch.



The length of the Ethernet cable crystal head must be less than 40 mm.



Chapter 3. Hardware Installation

This section describes how to perform a complete device installation.

Installation Prerequisites

Recommended Installation Scenarios

The following table lists application scenarios recommended and not recommended for the device. The device applies for many scenarios. The table lists only typical application examples. For scenarios not listed, contact Milesight for details.

Recommendation	Installation Scenario	Example
Recommended	Various public spaces and their entrances/exits	Shopping malls, retail stores
	Areas where space utilization needs to be optimized	Offices, libraries
	Areas requiring personnel scheduling and management	Train stations, airports
Not Recommended	Locations where the device may be exposed to rain	Parks
	Private areas	Bathrooms

Detection Area Reference

The following table describes detection area calculation related parameters.

Single Device Deployment

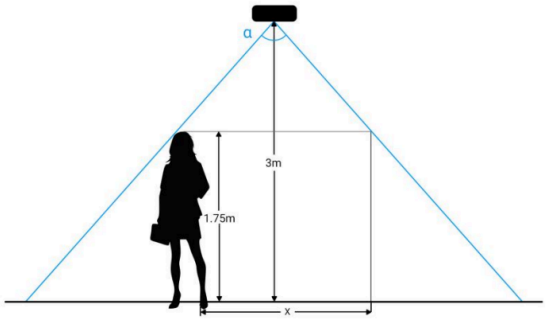
Table 1. Parameter Definition

Parameters	Description	Value
H	Installation height	1.9 -3.5 m If attribute identification is required, refer to the following table for the installation height requirements:

<table>
<tr><th>Parame-ters</th><th>Description</th><th colspan="2">Value</th></tr>
<tr><td></td><td></td><td colspan="2"><table>
<tr><th>Attribute Identification</th><th>Installation height</th></tr>
<tr><td>Children&Adult Differentiation</td><td>1.9 -3.3 m</td></tr>
<tr><td>Gender Recognition</td><td>1.9 -3.3 m</td></tr>
<tr><td>Staff Detection</td><td>1.9 -3.3 m</td></tr>
<tr><td>Group Counting</td><td>1.9 -3.5 m</td></tr>
<tr><td>View Direction Detection</td><td>1.9 -3.3 m</td></tr>
</table></td></tr>
<tr><td>h</td><td>Target height</td><td colspan="2">Example 1.7 m</td></tr>
<tr><td>α</td><td>Horizontal field of view angle</td><td colspan="2">130°</td></tr>
<tr><td>β</td><td>Vertical field of view angle</td><td colspan="2">117°</td></tr>
<tr><td>x</td><td>Detection range length</td><td colspan="2">$2 \times \tan(\alpha/2) \times (H-h+0.05)^*$</td></tr>
<tr><td>y</td><td>Detection range width</td><td colspan="2">$2 \times \tan(\beta/2) \times (H-h+0.05)^*$</td></tr>
</table>

** The "+0.05" in the formula accounts for the device's mounting offset from the ceiling surface.*

The detection area depends on the device's field of view angle, installation height, and target height. The following figure uses the horizontal field of view angle, an installation height of 3 meters, and a target height of 1.75 meters as an example for illustration.



Example: For a 1.75 m target height, the detection area for each installation height is as follows:

Table 2. Detection Area

Installation Height (m)	Detection Area (m^2)
1.9	0.86 × 0.65
2.0	1.28 × 0.98
2.2	2.14 × 1.63
2.5	3.43 × 2.61
3.0	5.57 × 4.24
3.5	7.71 × 5.87

Multi-Device Deployment

Table 3. Parameter Definition

<table>
<tr><th>Parameters</th><th>Description</th><th>Value</th></tr>
<tr><td>H</td><td>Installation height</td><td>1.9 -3.5 m

If attribute identification is required, refer to the following table for the installation height requirements:

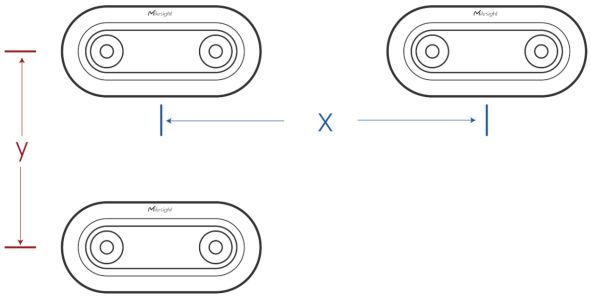
<table><tr><th>Attribute Identification</th><th>Installation height</th></tr><tr><td>Children&Adult Differentiation</td><td>1.9 -3.3 m</td></tr><tr><td>Gender Recognition</td><td>1.9 -3.3 m</td></tr><tr><td>Staff Detection</td><td>1.9 -3.3 m</td></tr><tr><td>Group Counting</td><td>1.9 -3.5 m</td></tr><tr><td>View Direction Detection</td><td>1.9 -3.3 m</td></tr></table></td></tr>
<tr><td>h</td><td>Target height</td><td>Example 1.7 m</td></tr>
<tr><td>α</td><td>Horizontal field of view angle of each device</td><td>130°</td></tr>
</table>

Parameters	Description	Value
β	Vertical field of view angle of each device	117°
x	Detection range length of each device	x = 2 × tan(α/2) × (H-h+0.05) for each device
y	Detection range width of each device	y = 2 × tan(β/2) × (H-h+0.05) for each device
a	Number of devices required along the coverage length	Coverage length ÷ x, Round to the nearest integer based on deployment requirements
b	Number of devices required along the coverage width	Coverage width ÷ y, Round to the nearest integer based on deployment requirements

Example: For a 6 m × 3 m (length × width) coverage area, with the devices installed at a height of **3 m (H)** and a target height of **1.75 m (h)**:

x = 5.57 m, a: Coverage length ÷ x = 6 ÷ 5.57 ≈ 1.08 ≈ 2 devices

y = 4.24 m, b: Coverage width ÷ y = 3 ÷ 4.24 ≈ 0.71 ≈ 1 devices



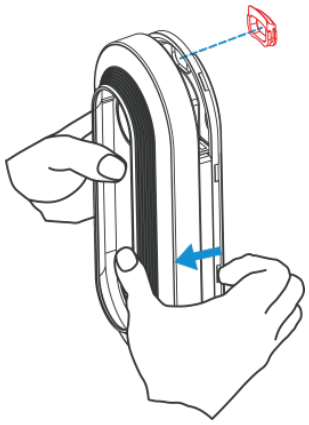
Conclusion: 2 × 1 = 2 devices are required for complete coverage of the 6 m*3 m area.

Install a SIM Card (Cellular Version Only)

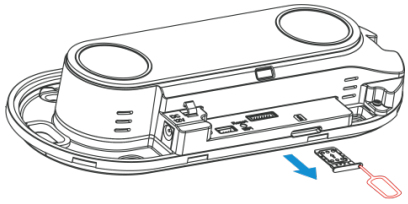
This section describes how to install the SIM card, which is required for the cellular version.

Steps:

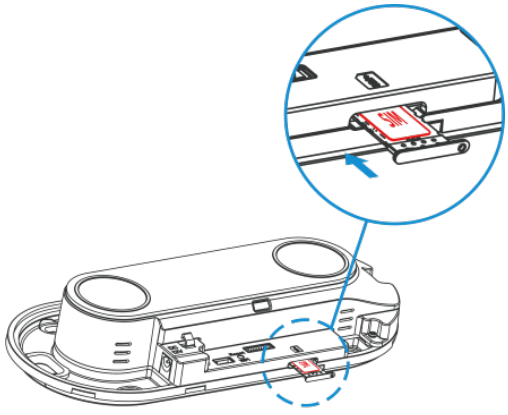
1. Remove the cover:
    a. Place both thumbs on the infrared area.
    b. Rest the other four fingers along the edge of the outer cover to provide support.
    c. Using both hands, push in the direction of the arrows to remove the back cover.



2. Use the SIM-eject tool to eject the SIM tray.



3. Place the Nano SIM card into the tray and re-insert the tray fully into the device.



Install the Device

This section describes how to install the device to the ceiling. You can also install the device by watching the installation video.

Requirements:

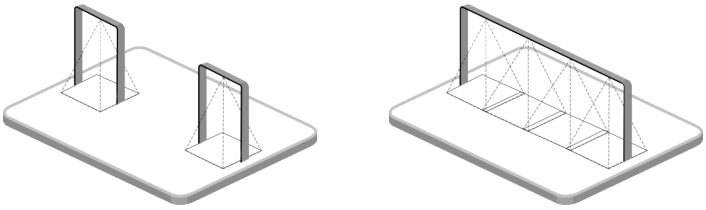
Area requirements:

- Areas with stable lighting and rich environmental textures (such as patterned floors or walls).
- Free from reflective surfaces (such as glass, mirrors).
- Locations with an unobstructed field of view.
- Ceiling installation above a swing door: The device should be mounted on the ceiling section above the stationary (hinge) side of the door.

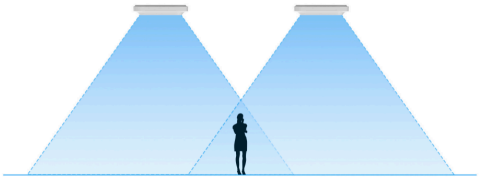
Ceiling requirements: Flat ceiling, minimum thickness: 30 mm, tilt angle: ≤ 10°.

Multi-device Stitching requirements:

- Installation height: All devices must share the same height.
- Software Version: All devices must run the same software version.
- Connectivity: Supports PoE or Cellular connectivity and supports hybrid combinations.
- Stitch Method: Non-overlapping Coverage in Focus Areas or Continuous Coverage via Adjacent Installation.



Note:
For optimal stitching, ensure that targets near the edges of both fields of view can be fully captured and detected simultaneously.

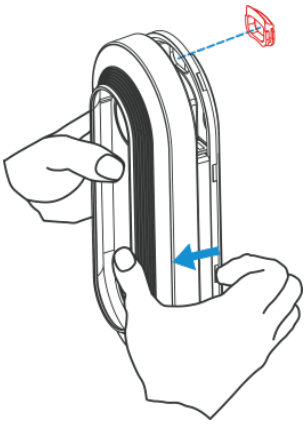


Preparations:

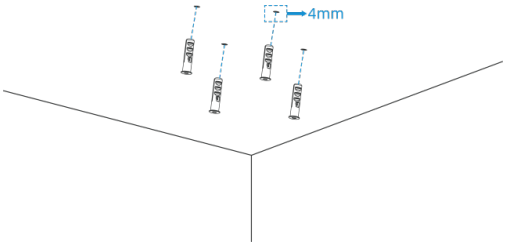
- Verify that the device and accessories are complete according to the Packing List.
- Notify individuals and obtain consent for image collection. Inform them of opt-out rights.
- If you have purchased optional accessories, please refer to ACCESSORIES for the operating steps.

Steps:

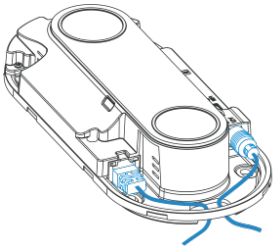
1. Remove the cover:
    a. Place both thumbs on the infrared area.
    b. Rest the other four fingers along the edge of the outer cover to provide support.
    c. Using both hands, push in the direction of the arrows to remove the back cover.



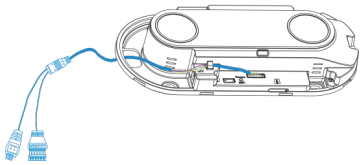
2. (Optional) To route the cables from the side of the device, remove the rubber plug.
3. Install expansion sleeves.
    a. Use a marker pen or another suitable tool to mark the drilling positions on the ceiling according to the mounting holes of the device.
    b. Drill four 4-mm holes in the ceiling according to the marked hole positions.
    c. Insert expansion sleeves into the ceiling holes.



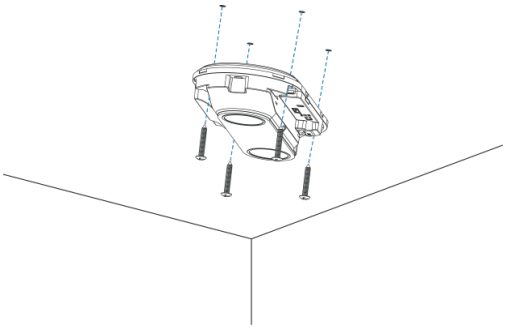
4. (Optional) To route cables through the ceiling, mark and drill a access hole at the desired location.
5. Route the cables and connect them to the device.



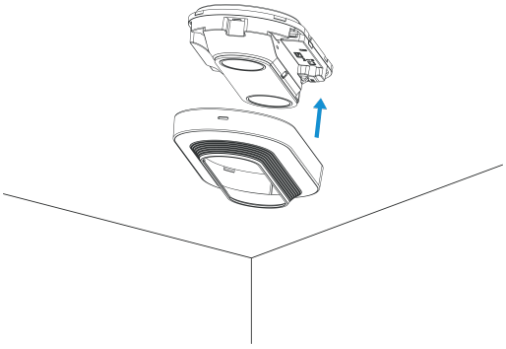
(Optional) To use the alarm I/O, the multi-interface cable must be connected to the device.



6. Secure the device to the ceiling using mounting screws.

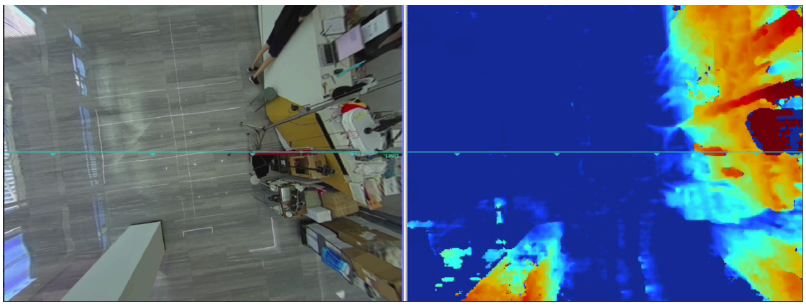


7. Remove the lens protective film.
8. Reattach the cover to the device.

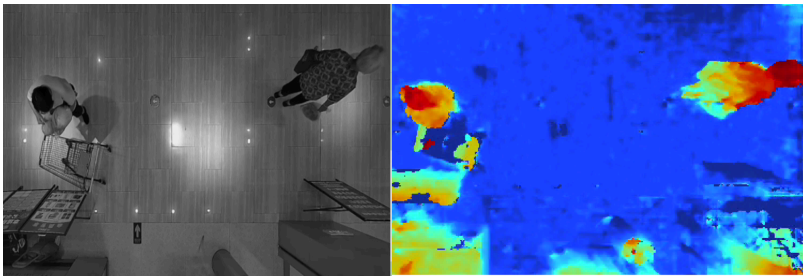


9. (Optional) For multiple device installations, repeat Steps 1 through 8.
10. Log in to the web GUI to check the preview on the **Dashboard** page.

- The display effect for a normal environment is as follows. The ground is rendered with light blue or blue spot patterns. A color gradient is applied to objects based on height, with taller objects assigned increasingly red tones.



- The display effect for normal targets is as follows. The clear color gradient on detected targets indicates effective depth perception.



Troubleshooting:

If the preview on the **Dashboard** page is abnormal, refer to Troubleshoot an Abnormal Preview after Installation for troubleshooting.

11. (Optional) For multiple devices, verify that targets near the edges of both fields of view in adjacent devices are fully captured and detected at the same time.

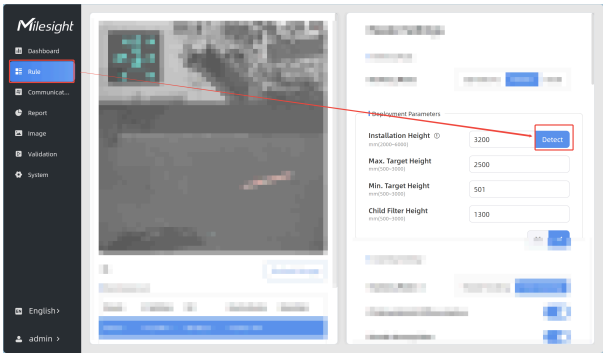
Troubleshoot an Abnormal Preview after Installation

This section describes how to troubleshoot an abnormal dashboard preview after the device is installed.

Steps:

1. Verify that the lens protective film has been removed.
2. Verify that the device is installed horizontally (within ±10°).
3. Identify and remove any objects (such as pendant lights, downlights) that are too close to the device or obstructing its field of view.

4. Adjust the installation height through the web GUI. For how to log in to the web, refer to Access the Device.
    a. On the **Rule** page of the web GUI, click **Detect** to use the automatically detected height value.



    b. Switch to the **Dashboard** page to check the preview and make the following adjustments if necessary:
        - If the depth map is predominantly blue → switch to the **Rule** page → increase the installation height by 50 mm increments (recommended).
        - If the depth map is predominantly red → switch to the **Rule** page → decrease the installation height by 50 mm increments (recommended).
5. Verify that the lens is secure and the housing is not deformed, even if no external damage is visible.
6. If the problem persists, contact your Milesight sales representative.

Chapter 4. Web Configuration

The device can be configured through the web. This section describes web configuration.

Access the Device

The device can be configured through the web GUI, which is accessible over Wi-Fi or Ethernet. This section describes how to access the device using these two methods.

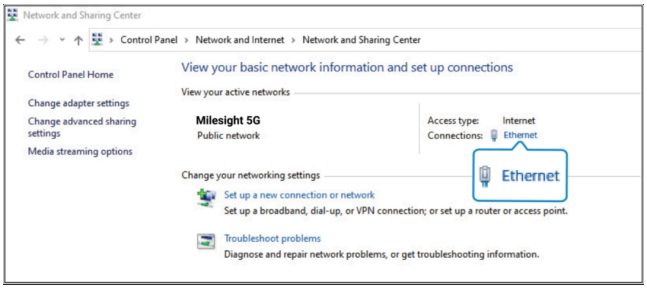
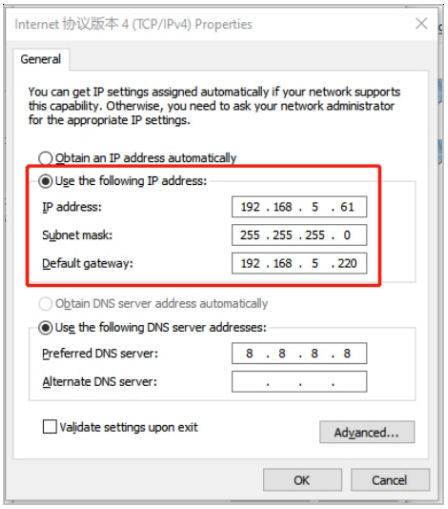
Preparations: Computer and network cable

Steps:

1. Perform the following operations as needed.
    - If you access the device through the wireless network:
        a. Enable wireless network connection on the computer.
        b. Search for the device Wi-Fi SSID and connect it to the computer. The Wi-Fi SSID follows the format of `People Counter_xxxxxx` and is located on the physical label of the device.
        c. Open a browser and enter Wi-Fi IP address `192.168.1.1`.
    - If you access the device through the Ethernet port:

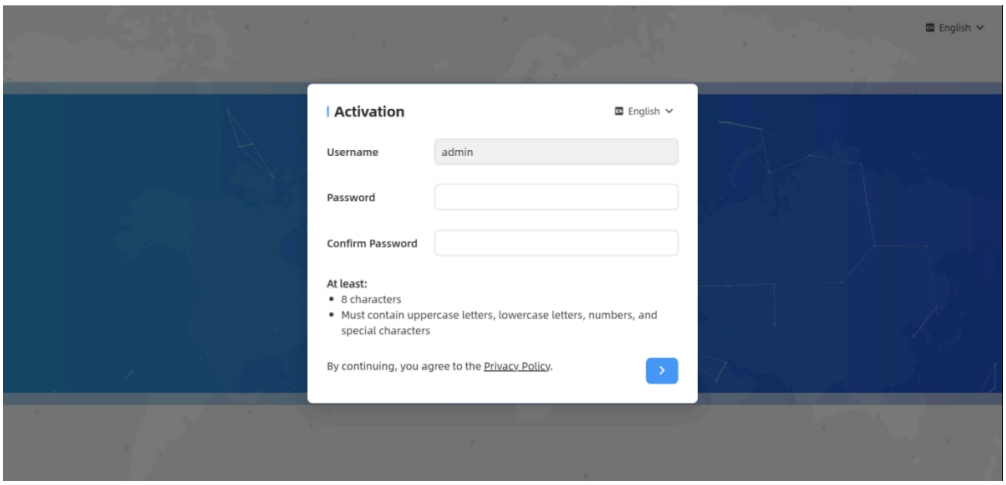
> **Note:**
> For firmware versions 1.0.5 and above, the device's IP assignment method is automatic (DHCP) by default.

IP Assignment Method	Description
Automatic (DHCP)	a. Connect the computer and the device to a DHCP server (such as a router or switch) using the network cable. b. Check the current IP address of the device using any of the following methods: ▪ Log in to your DHCP server and view the DHCP client list. ▪ Use the Milesight VS tool to scan for devices on the local network. c. Open a browser and enter the Ethernet IP address. If the device does not obtain an IP address within **30 seconds** after powering on, it will automatically revert to the static IP ad-

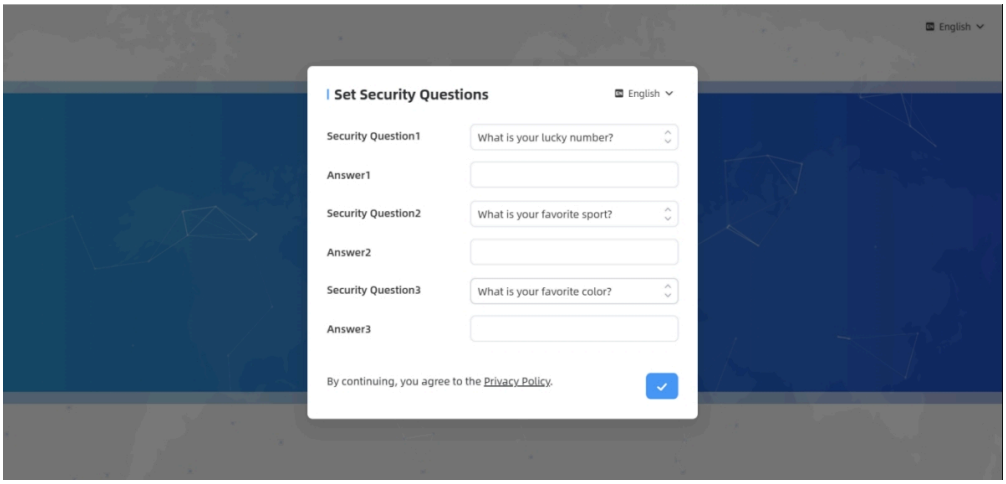
IP Assignment Method	Description
	dress: 192.168.5.220. You can access the device through **Manual (Static IP)**.
Manual (Static IP)	a. Use the network cable to connect the device and the computer. b. Click **Start** → **Control Panel** → **Network and Internet** → **Network and Sharing Center**.  c. Click **Ethernet** → **Properties** and double click **Internet Protocol Version 4 (TCP/IPv4)**. The **Internet Protocol Version 4 (TCP/IPv4) Properties** dialog box is displayed.  d. Click **Use the following IP address**. e. In the **Use the following IP address** area, perform the following operations.

IP Assignment Method	Description
	i. Enter an IP address (such as `192.168.5.61`) that is in the same subnet as the device. **Note:** This IP address must be unique and not used by any other device on the network. ii. Set **Subnet mask** to `255.255.255.0`. iii. Set **Default gateway** to `192.168.5.220`. f. Click **OK**. g. Open a browser and enter Ethernet IP address `192.168.5.220`.

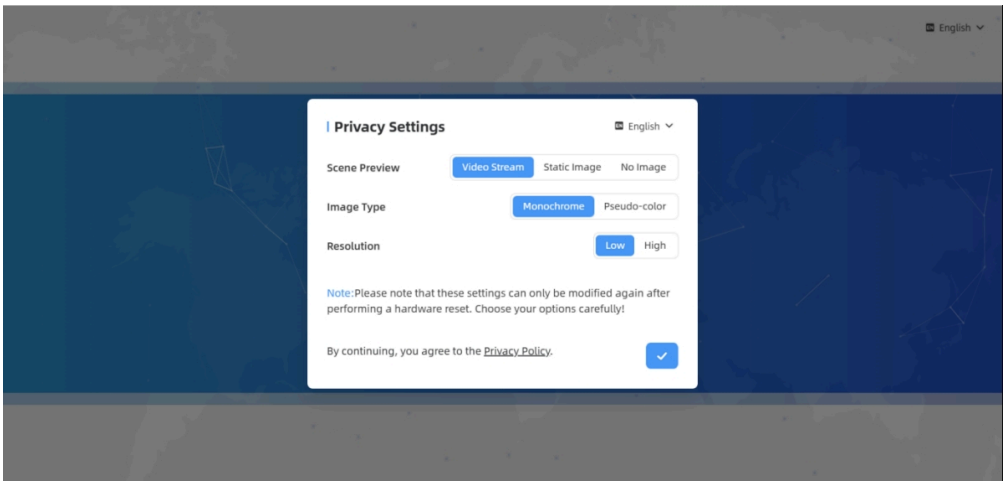
2. The **Activation** dialog box is displayed. Set the login password that is 8 to 63 characters long and contains numbers, lowercase letters, uppercase letters, and special characters, then click .



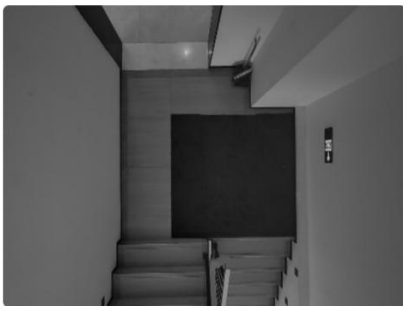
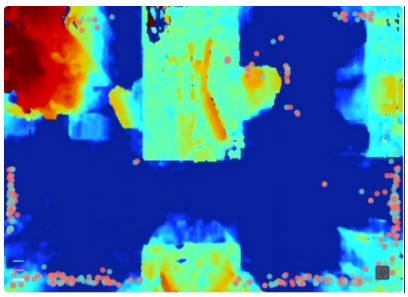
3. The **Set Security Questions** dialog box is displayed. Set the three security questions when using the device for the first time and click .



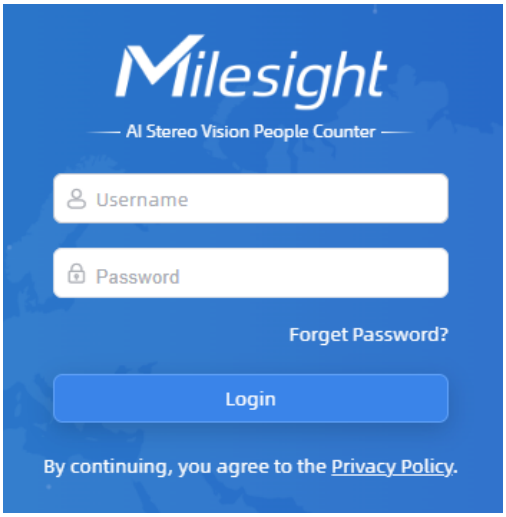
4. The **Privacy Settings** dialog box is displayed. Configure the following parameters as needed to set the preview image on the dashboard. Click  to save the configuration.



Parameters	Description
Scene Preview	Options: **Video Stream**, **Static Image** and **No Image**. ◦ **Video Stream:** Live video preview of the camera's field of view. ◦ **Static Image:** Still snapshot of the scene. ◦ **No Image:** No image displayed.
Image Type	Options: **Monochrome** or **Pseudo-color**.

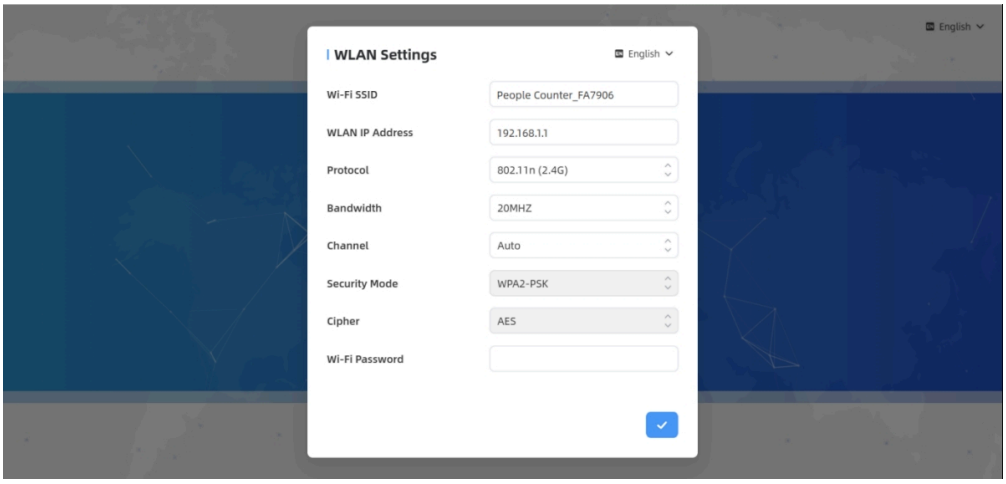
Parameters	Description
	◦ **Monochrome:** Displays the image in grayscale (black, white, and gray).  ◦ **Pseudo-color:** Enhances image details by mapping grayscale intensities to a color spectrum. 
Resolution	**Note:** This parameter selection is only required for the **Monochrome** image type. Options: **Low**, **High**. ◦ **Low:** Provides a lower-quality image that uses less bandwidth, suitable for basic scene monitoring and motion detection. ◦ **High:** Provides a high-quality clear image necessary for identifying details such as facial features.

5. The following page is displayed. Log in with username (admin) and custom password.



Note:
The account will be locked for 10 minutes after five failed login attempts. It is recommended to regularly update the password to enhance device security.

6. (Optional) You can click **Forget Password?** in the login page to reset the password by answering three security questions when you forget the password if you set the security questions in advance.
7. The **WLAN Settings** dialog box is displayed. Set the Wi-Fi password and click to save the configuration.

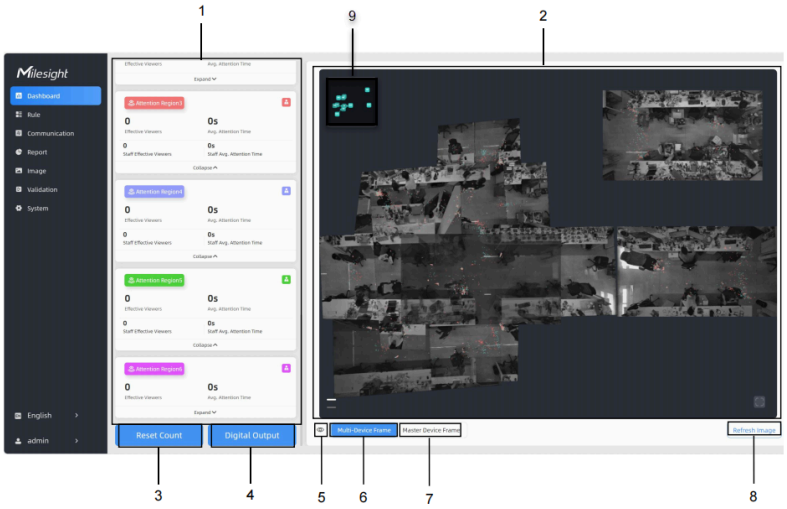


Check the Dashboard

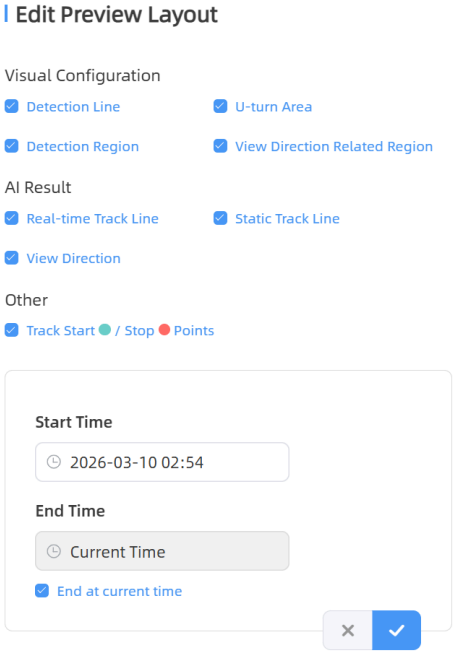
The dashboard visualizes critical data in a centralized real-time layout for at-a-glance monitoring. The master device dashboard is used as an example for description is this section.

Steps:

1. In the main page, click **Dashboard** from the left navigation tree. The **Dashboard** page is displayed.
2. Check the data or perform the operations as needed. For **Dashboard** page description, refer to the following table.



NO.	Item	Description
1	**Line, Region, Attention Region, Digital Input, Device Info data display area**	After functions **Line Cross Counting**, **Region Monitoring** and **View Direction Detection** are configured, the corresponding line, region and attention region data is displayed in this area. ◦ **Hide/Show Capacity:** Hides/shows the total data counting capacity. ◦ **Children Included/Excluded:** Includes/Excludes children data from statistical data. ◦ **Staff Included/Excluded:** Includes/Excludes staff data from statistical data.
		Digital Input: Display the current DI information when Manual DI is enabled.
		Device Info: Display the current running information.
2	**Preview**	Real-time video display area.

NO.	Item	Description
3	**Reset Count**	Clears all accumulated people counting values.
4	**Digital Output**	Click it to output high level signals through the multi-interface when Manual DO is enabled.
5	**Edit Preview Layout**	Click  . The **Edit Preview Layout** dialog box is displayed. ◦ **Visual Configuration:** Select the items to be displayed in the preview as needed. The items displayed here are dependent on the functions enabled. ◦ **AI Result:** Show track line. ▪ **Real-time Track Line:** Show or hide the target's track line in the preview. ▪ **Static Track Line:** Show or hide the history of the target's track line in the preview. Up to 1000 historical track records are supported. They are cleared upon page refresh. ▪ **View Direction:** Show or hide the target's gaze direction. ◦ **Others:** Show or hide the start and end points of the target trajectory and the time period. 

NO.	Item	Description
6	**Multi-Device Frame**	Switches to the multi-device preview. It will only be shown when the device's working mode is Master.
7	**Master Device Frame**	Switches to the master device preview. It will only be shown when the device's working mode is Master.
8	**Refresh Image**	Click it to refresh image. It will only be shown when the device's working mode is Master.
9	**Stitched Devices Preview**	Shows the positions of all the stitched devices. It will only be shown when the device's working mode is Master.

Configure Rules

This section describes how to configure basic counting functions and AI recognition functions and stitch multiple devices on the **Rule** page.

Configure Basic Counting Functions

To ensure proper device operation, the basic counting functions must be configured first, which include configuring deployment parameters, line crossing counting, region monitoring, etc. This section describes how to configure them.

Limitations: Uncontrollable Factors Affecting Accuracy

The following target-related factors may affect people counting accuracy. They are uncontrollable factors, which cannot be predicted or prevented in advance.

- **Target appearance and characteristics:**
  - **Low color contrast**: Recognition challenges when targets and the floor have similar colors.
  - **Shape similarity**: Non-human objects with a human-like silhouette may trigger false detections.
  - **Short target miss**: When installed at a height of 3.3 to 3.5 meters, the device is more likely to miss shorter targets (such as children).
- **Target motion and density:**
  - **High velocity**: Tracking may be inaccurate for individuals walking faster than 2.5 m/s.
  - **Dense crowding**: Accuracy decreases when the distance between targets is less than 30 cm.
- **Specific scenarios:**

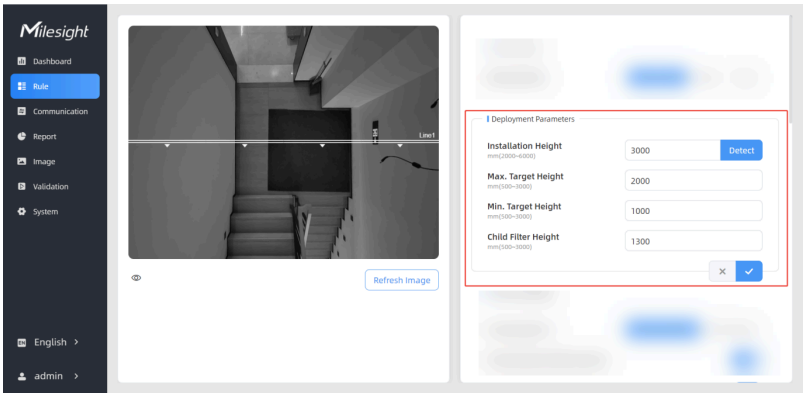
- **Partial occlusion**: The risk of missed detection increases with the proportion of the target obscured by other objects.
- **Simultaneous bidirectional crossing**: When two people pass through the detection line simultaneously in opposite directions and in close proximity, it may result in a missed count for both individuals.
- **ID inheritance at the FOV edge**: At the FOV edge, the simultaneous disappearance of one target and appearance of another may cause a tracking identity inheritance.

Configure Deployment Parameters

This section describes how to configure deployment parameters.

Steps:

1. In the main page, click **Rule** from the left navigation tree.
2. In the **Deployment Parameters** area on the right, configure the following parameters as needed.



Parameters	Description
Installation Height	Set the device installation height manually or automatically. ◦ To set height manually: Enter a value between 1900 and 3500 mm. **Note:** For optimal performance of attribute recognition functions (Gender Recognition, Child & Adult Differentiation, Staff Detection, View Direction Detection), the installation height must not exceed 3.3 meters.

Parameters	Description
	◦ To set height automatically: click **Detect** to detect the current installation height. **Note:** The accuracy of automatic height detection may be compromised under low-texture ground conditions or in low-light environments such as at night.
Max. Target Height	Set the maximum target height. The device ignores the objects detected above this value. Range: 500-3000 mm.
Min. Target Height	Set the minimum target height. The device ignores the objects detected below this value. Range: 500-3000 mm.
Child Filter Height	This parameter is displayed only when the **Children&Adult Differentiation** feature is enabled. It sets the maximum child height. Range: 500-3000 mm. For configuration details, refer to Configure Children & Adult Differentiation.

3. Click to save the configuration.

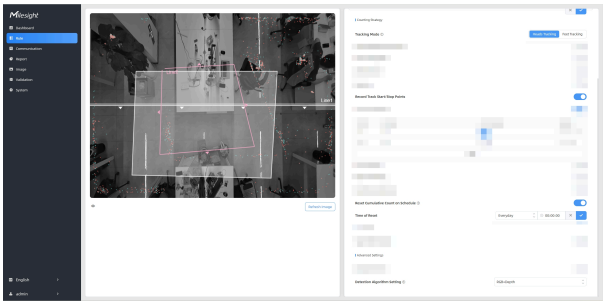
Configure Device Strategies

This section describes how to configure device strategies.

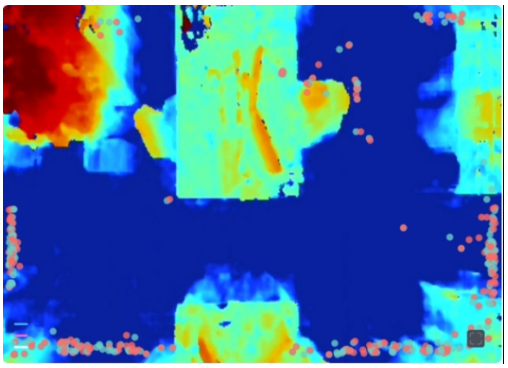
Device strategies include setting Working Mode, recording track start/stop points, resetting the cumulative count on a schedule, and other features.

Steps:

1. In the main page, click **Rule** from the navigation tree on the left.
2. In **Counting Strategy** area, configure the following parameters as needed.



Parameters	Description
Working Mode	Options: **Standalone**, **Master**, **Node**. ◦ **Standalone**: The device operates independently. ◦ **Master**: The master device handles all functional configuration, counting, and data transmission. This configuration is a must to stitch multiple devices. For details, refer to Stitch Multiple Devices. ◦ **Node**: Its primary function is to extend the overall detection coverage. This configuration is a must to stitch multiple devices. For details, refer to Stitch Multiple Devices.
Tracking Mode	Sets the tracking mode of counting. Options: **Heads Tracking** and **Feet Tracking**. ◦ **Heads Tracking**: When detecting the target's head and shoulders within the FOV, the device generates a trajectory line based on the movement path. This mode applies for most detection scenarios. ◦ **Feet Tracking**: When detecting both feet of the target within the FOV, the device generates a trajectory line based on the movement path. It is rarely used in other detection scenarios. **Note:** Only Feet Tracking mode is supported in multi-device stitching working mode.
Detection Algorithm Setting	Set the detection algorithm based on the specific application scenarios.

Parameters	Description
	◦ **RGB+Depth:** Suitable for most scenarios. ◦ **RGB:** Enables advanced attribute analysis. This mode can be used to reduce false detections in environments where many inanimate objects are incorrectly identified as people. For example, warehouse entrances/exits where the carried objects may be incorrectly identified as people. ◦ **Depth:** Ideal for privacy-sensitive environments. This mode can be used to enhance detection accuracy in environments with a high density of human-like static objects. It effectively minimizes false identifications in environments like a doll shop, where mannequins and dolls are present.
Record Track Start/Stop Points	Enable this parameter to record the start and end points of person trajectories in the live view for detection line adjustment. The system can store up to 5,000 track points with green indicating the start point and red indicating the end point. 
Reset Cumulative Count on Schedule	Enable this parameter to reset cumulative counts periodically based on a configured schedule. Cumulative counts include: ◦ **Total In/Out counting of each detection line** ◦ **Max./Avg. Dwell Time of each detection region** ◦ **Total Effective Audience and Avg. Attention Time of each attention region** ◦ **Digital Input Trigger Count**

Parameters	Description
	a. Click to enable reset schedule. b. Click to modify the reset date and time, or click **+Add** to add a new schedule. Up to 5 reset schedules are supported. c. Click to save the configuration.

Configure Line Crossing Counting

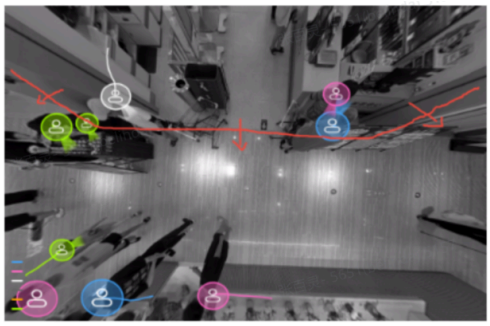
This section describes how to configure the line crossing counting function.

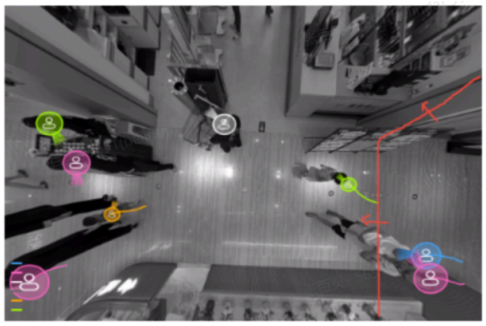
Add a Detection Line

This section describes how to draw a detection line to count the number of people entering or exiting.

Detection line drawing requirements:

- Completely traversed by targets.
- Perpendicular to the movement direction.
- Positioned centrally within the detection area.
- Free of adjacent obstructions.
- As close to the center of the preview as possible.
- Maintain sufficient identification space on both sides.



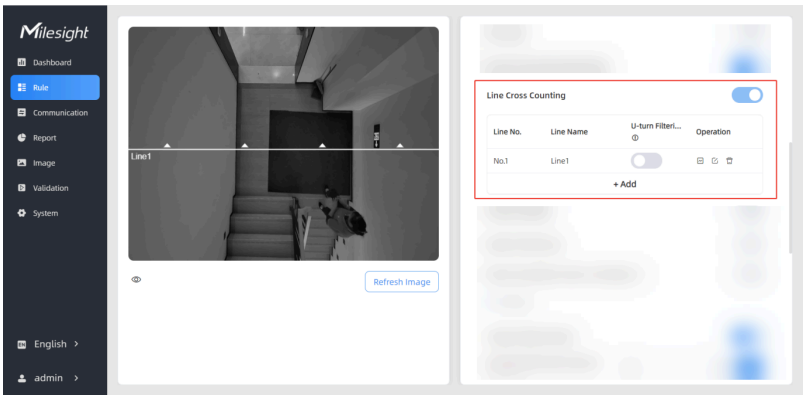


Prerequisite:

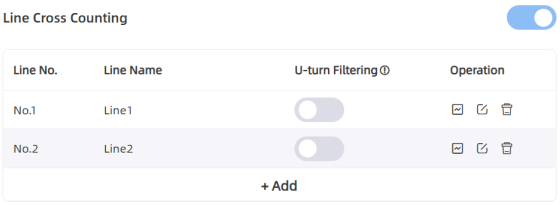
The deployment parameters and device strategies are configured.

Steps:

1. In the main page, click **Rule** from the navigation tree on the left.
2. In the **Line Cross Counting** area on the right, click **+Add**.

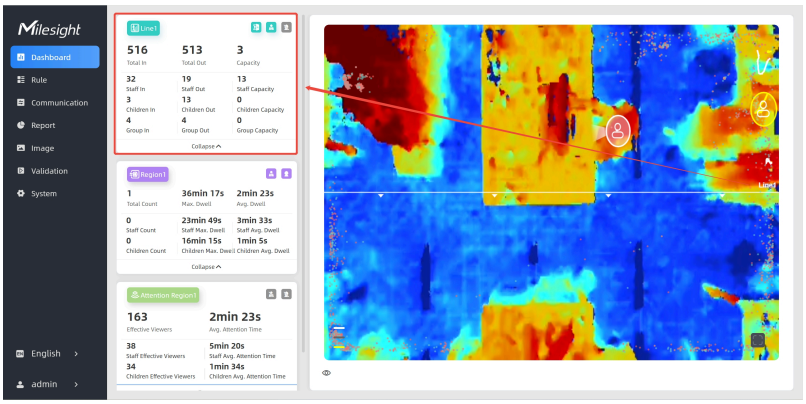


3. Draw a detection line in the preview, you can draw up to 4 polylines with a maximum of 10 points per polyline:
   a. Left-click to start and drag to draw the first line segment. The arrow in the middle of the segment indicates the direction of entry.
   b. Left-click to add vertices and change direction and drag to draw another line segment.
   c. Repeat step b to draw more line segments as needed.
   d. Right-click to finish.
   e. (Optional) Adjust the line location and length by dragging.
   f. (Optional) To redraw a line, click **Clear This Line**.
   g. (Optional) To flip the line direction, click **Flip Direction**.
   h. Click to save the configuration.
4. The line information is listed in the **Line Cross Counting** area.

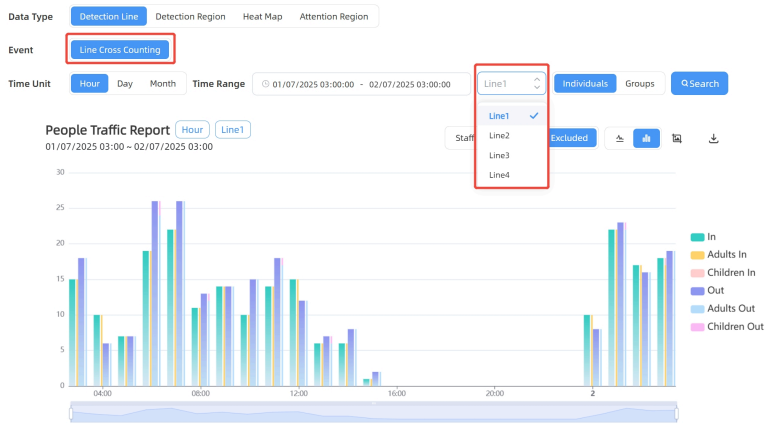


5. (Optional) Click to customize the line name.
6. (Optional) To enable **U-turn Filtering**, click . For detailed configuration, refer toConfigure U-turn Filtering.
7. Check data through any of the following methods:

◦ To check the visual configuration effect, click **Dashboard** from the left navigation tree.



◦ To view the line data for a certain time period and generate report, click **Report** from the navigation tree on the left.



◦ If recipients are added, check data through command line outputs. For "line_periodic_data" and "line_total_data", refer to Uplink Data Examples for Periodic Reporting. For "line_trigger_data", refer to Uplink Data Examples for Trigger Reporting.


```
"line_total_data": [{
        "line": 1,
        "line_name": "Line1111111111111111111111111111",
        "line_uuid": "9a0440de-3188-4f6d-b886-bb20c97bd26b",
        "children": {
            "female_in_counted": 0,
            "female_out_counted": 0,
            "in_counted": 0,
            "male_in_counted": 0,
            "male_out_counted": 0,
            "out_counted": 0
        },
        "total": {
            "female_in_counted": 0,
            "female_out_counted": 0,
            "in_counted": 0,
            "male_in_counted": 0,
            "male_out_counted": 0,
```

```
"line_periodic_data": [{
        "line": 1,
        "line_name": "Line1111111111111111111111111111",
        "line_uuid": "9a0440de-3188-4f6d-b886-bb20c97bd26b",
        "total": {
            "female_in": 0,
            "female_out": 0,
            "in": 0,
            "male_in": 0,
            "male_out": 0,
            "out": 0
        },
```

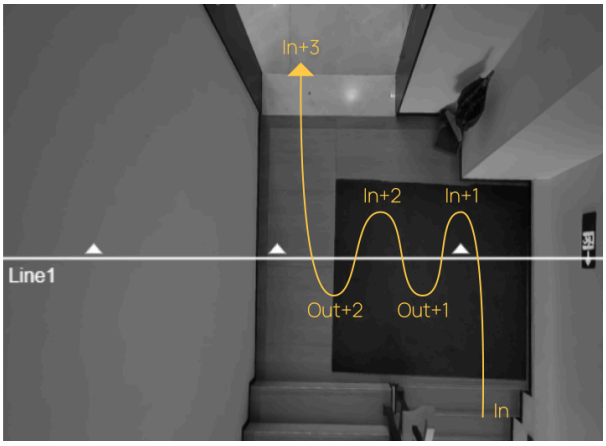
```
"line_trigger_data":
[
{
            "children": {
            "female_in": 8,
            "female_out": 2,
            "in": 14,
            "male_in": 8,
            "male_out": 2,
            "out": 6
        },
        "group": {
            "in": 0,
            "out": 0
        },
```


Configure U-turn Filtering

This section describes how to configure the U-turn Filtering function.

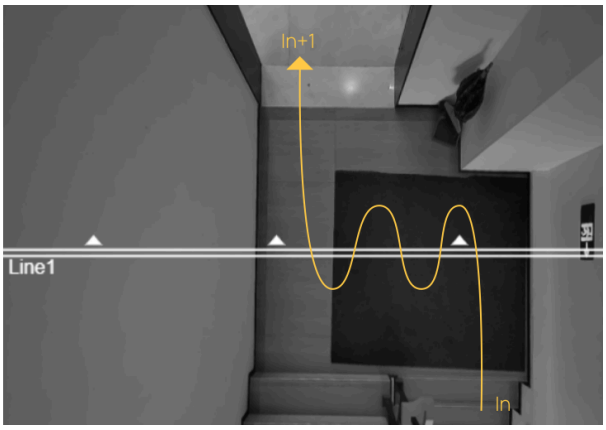
The device supports the U-turn filtering function. It eliminates duplicate counting by identifying individuals who do not complete a full entrance/exit transition. You can draw an area for every detection line and the device will analyze movement patterns within the defined areas and registers counts only when a person fully traverses the area.

- **Counting example when U-turn filtering is disabled:**



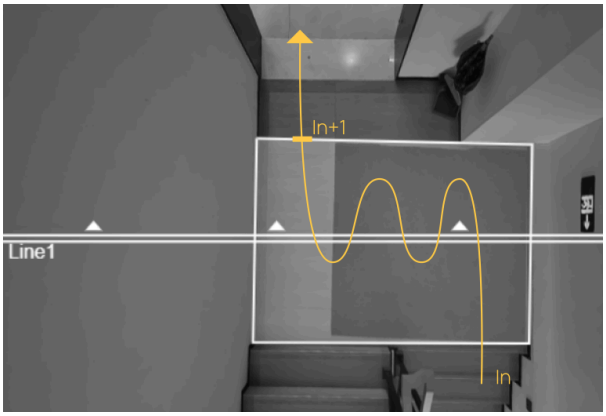
- **Counting example when U-turn filtering is enabled:**

  The device automatically filters out wandering individuals in the preview.



- **Counting example when U-turn filtering is enabled and the U-turn area for the detection line is drawn:**

  When you care about the timeliness of the statistics, you can draw the U-turn area.

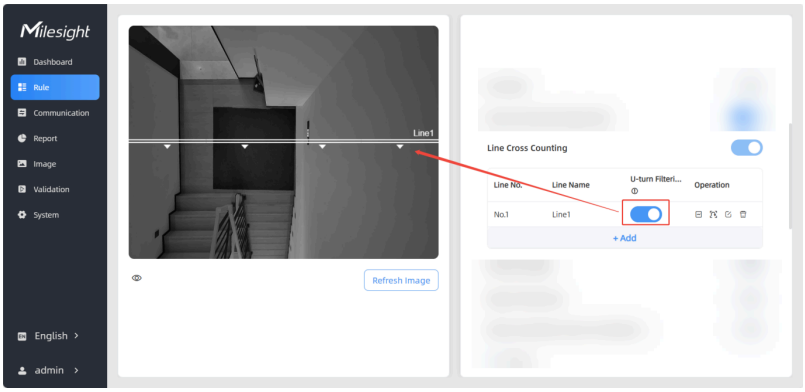


Prerequisite:

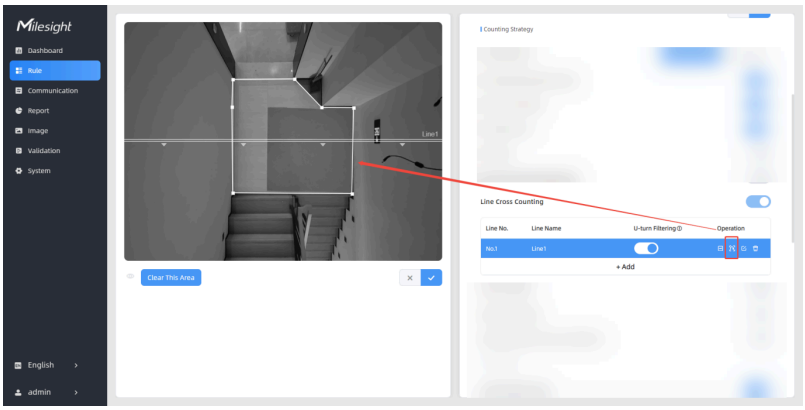
A detection line is added in the Line Cross Counting area on the **Rule** page.

Steps:

1. In the main page, click **Rule** from the navigation tree on the left.
2. In the **Line Cross Counting** area, enable **U-turn Filtering** to filter repeated counting.



3. Click to draw a U-turn area for the detection line in the preview.

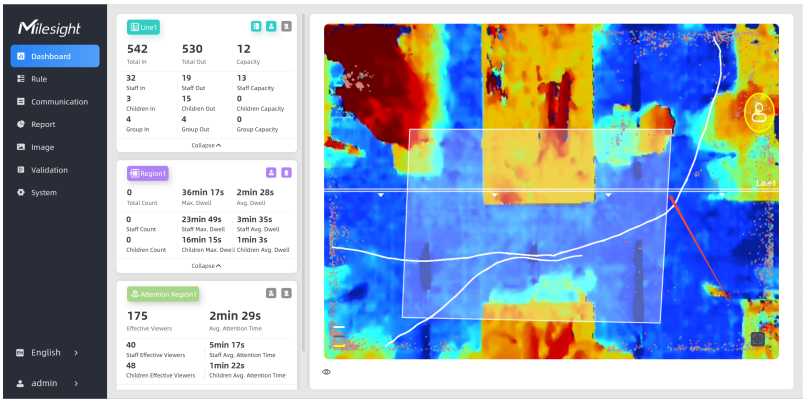


4. (Optional) Draw a U-turn area for the detection line, you can draw up to 4 areas with a maximum of 10 line segments per area:
   a. Left-click to start and drag to draw the first line segment.
   b. Left-click to add vertices and change direction and drag to draw another line segment.
   c. Repeat step b to draw more line segments as needed.
   d. Right-click to finish.
   e. (Optional) Adjust the region by dragging.
   f. (Optional) To redraw an area, click **Clear This Area**.
   g. Click to save the configuration.

> **Note:**
> Ensure the movement trajectory is fully included.

5. (Optional) To delete a U-turn area, click and click **Clear This Area**.

6. To check the visual configuration effect, click **Dashboard** from the left navigation tree.



Configure Region Monitoring

This section describes how to configure region monitoring.

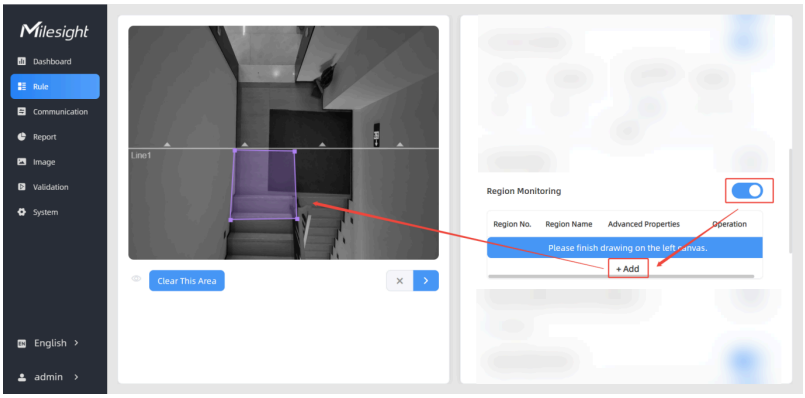
The device supports region monitoring by tracking person count and dwell time within configured regions for generating valuable analytical data.

Prerequisite:

The deployment parameters and device strategies are configured.

Steps:

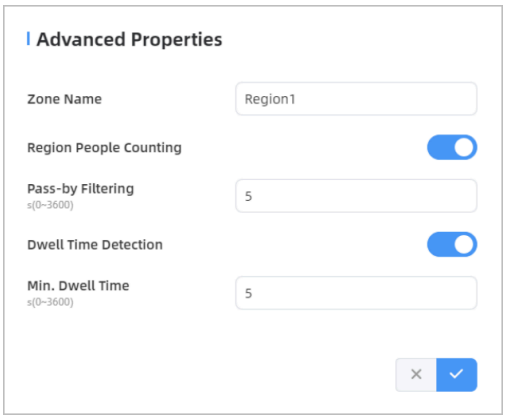
1. In the main page, click **Rule** from the left navigation tree.
2. Enable **Region Monitoring** on the right and click **+Add**.



3. Draw a region for monitoring in the live view, you can draw up to 4 regions with a maximum of 10 points per region:

a. Left-click to start and drag to draw the first line segment.
b. Left-click to add vertices and change direction and drag to draw another line segment.
c. Repeat step b to draw more line segments as needed.
d. Right-click to finish.
e. (Optional) Adjust the region by dragging.
f. (Optional) To redraw a region, click **Clear This Area**.

4. Click ›. The **Advanced Properties** dialog box is displayed. Configure advanced properties parameters.

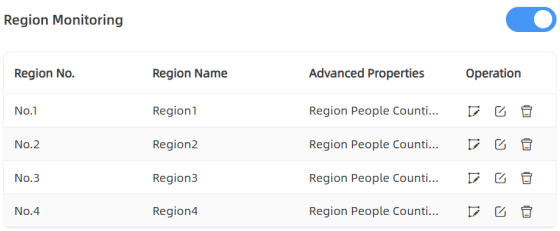


a. In the Zone name area, customize the region name.
b. Enable at least one advanced property. Options: **Region People Counting** and **Dwell Time Detection**.
c. Perform the following operations as needed.

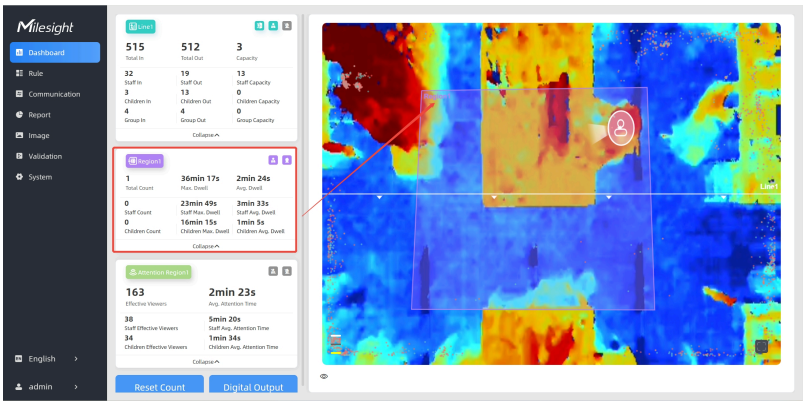
If	Do
If **Region People Counting** is enabled	In the **Pass-by Filtering** text box, enter a value as needed.
If **Dwell Time Detection** is enabled	In the **Min. Dwell Time** text box, enter a value as needed.

d. Click ✓ to save the configuration.

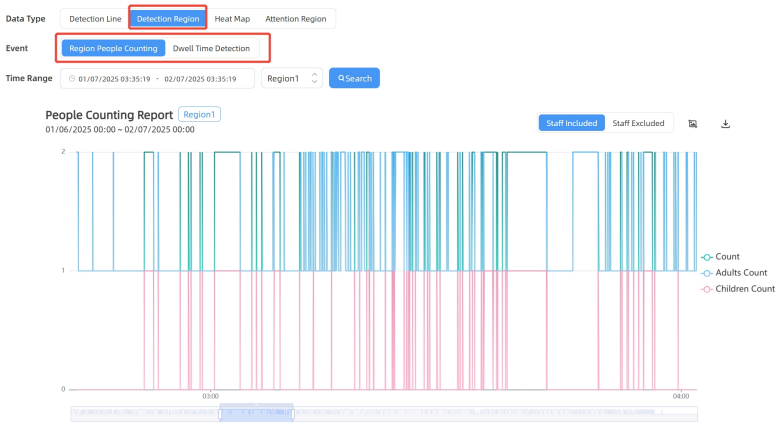
5. The region information is displayed in the list on the right.



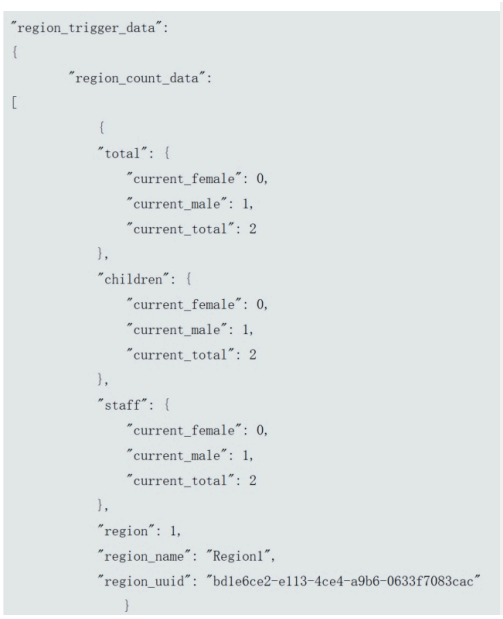
6. (Optional) Perform the following operations as needed.
   - To redraw the region, click .
   - To modify the advanced properties of the region, click .
   - To delete the region, click .
7. Check data through any of the following methods:
   - To check the visual configuration effect, click **Dashboard** from the left navigation tree.



   - To view the region data for a certain time period and generate the corresponding report, click **Report** from the left navigation tree. For details, refer to Generate Reports.



◦ If recipients are added, check data through command line outputs. For "region_data", refer to Uplink Data Examples for Periodic Reporting. For "region_trigger_data", refer to Uplink Data Examples for Trigger Reporting.





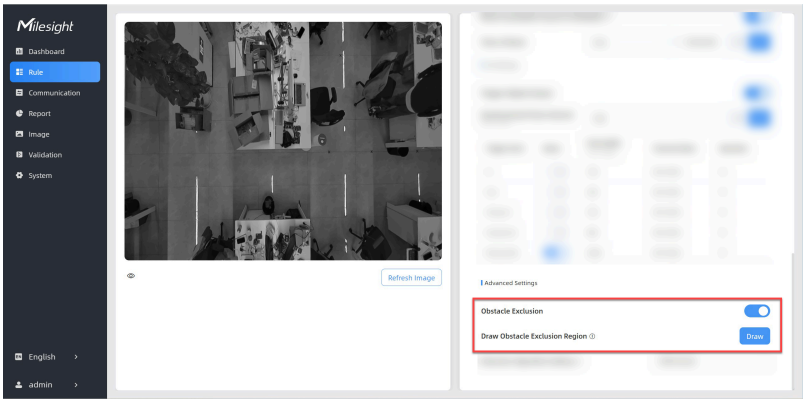
Configure Obstacle Exclusion

This section describes how to configure Obstacle Exclusion function.

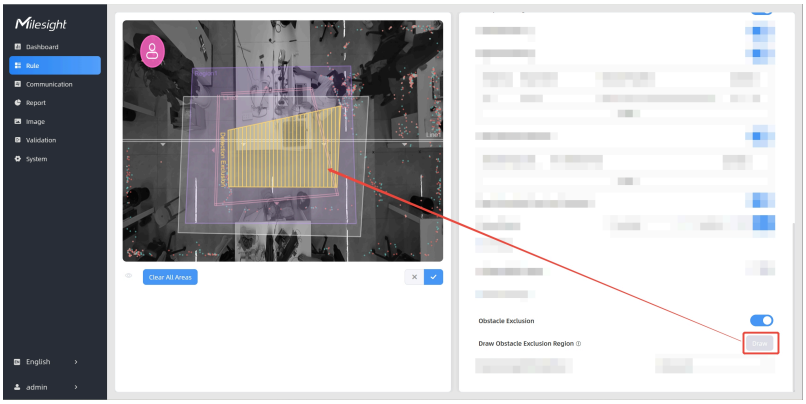
The device supports the **Obstacle Exclusion** function. It can exclude human-like static obstacles from detection when they cannot be avoided through adjustment of detection lines or regions.

Steps:

1. In the main page, click **Rule** from the navigation tree on the left.
2. In the **Advanced Settings** area in the bottom on the right, enable **Obstacle Exclusion** and click **Draw**.



3. Draw an obstacle exclusion area, you can draw up to 4 regions with a maximum of 10 segments per area:



   a. Left-click to start and drag to draw the first line segment.

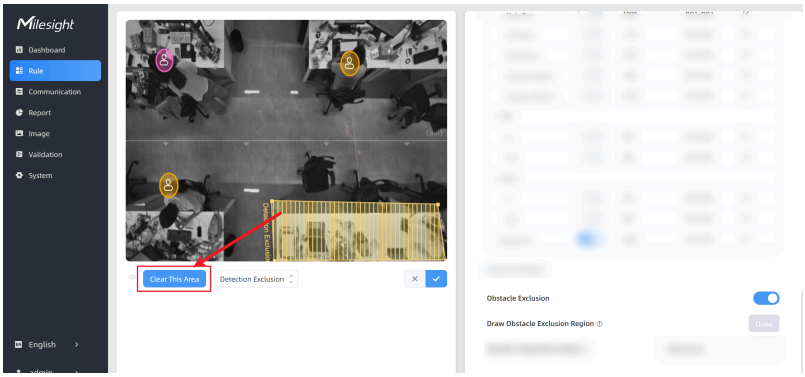
   b. Left-click to add vertices and change direction and drag to draw another line segment.

   c. Repeat step b to draw more line segments as needed.

   d. Right-click to finish.

   e. (Optional) Adjust the region by dragging.

   f. (Optional) To redraw a region, click **Clear This Area**.



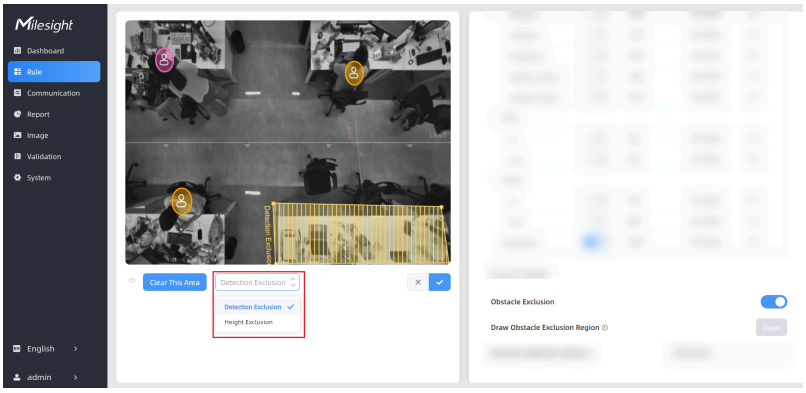
g. Select the exclusion method:

- **Detection Exclusion:** Select it when you don't want to detect anything in this area. You can just draw the highest part of the obstacle. The device uses this highest part as a reference to automatically exclude this specific area.

  For example, in a shelf scenario, you can just frame the upper edge of the shelf, then the shelf won't be mistakenly detected as a person.

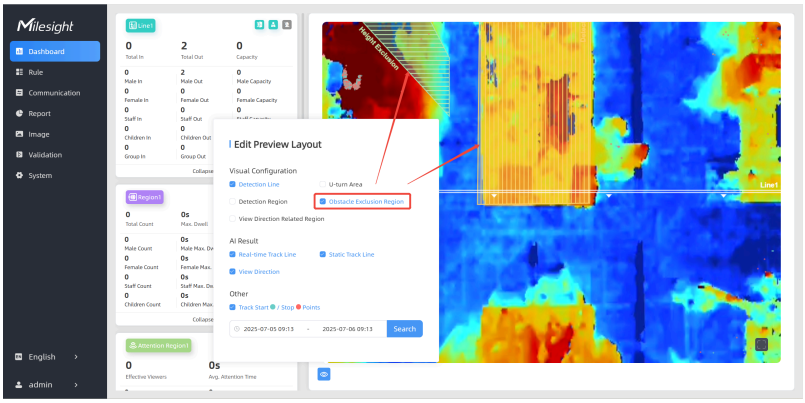
- **Height Exclusion:** Select it when you want to avoid false detection caused by mixing obstacles with targets. You can just box out the parts that are easy to confuse with the targets.

  For example, in a gate passage scenario, you can outline the gate structure to prevent misclassification. This ensures a child passing through is not identified as an adult, even if the child's silhouette blends with the gate structure.



4. Click  to save the configuration.

5. To check the visual configuration effect, click **Dashboard** from the left navigation tree.



Configure Attribute Recognition Functions

The device uses AI recognition to intelligently distinguish various target attributes. Before using these function, basic counting functions must be configured in advance according to the Configure Basic Counting Functions section.

Configure Children & Adult Differentiation

This section describes how to configure the Children&Adult Differentiation function.

The device classifies individuals below the child filter threshold as children.

Limitations: Uncontrollable Factors Affecting Accuracy

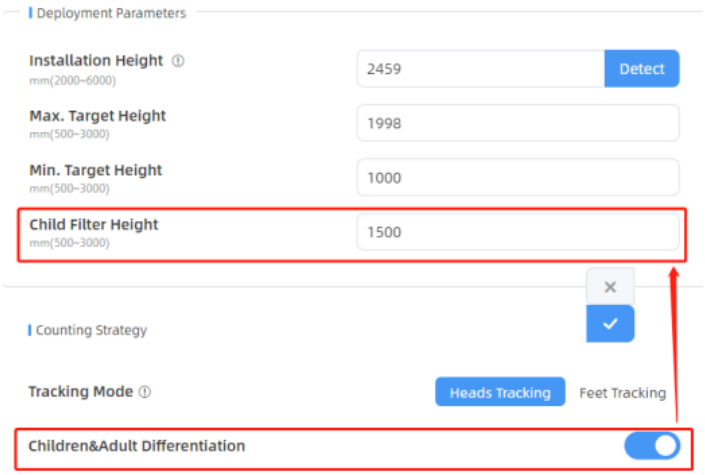
The following child-related scenarios may result in undercounting and affect the detection accuracy of this function:

- Children below 1.1 m
- Children in strollers/shopping carts
- Children being held
- Children obstructed from view by adults

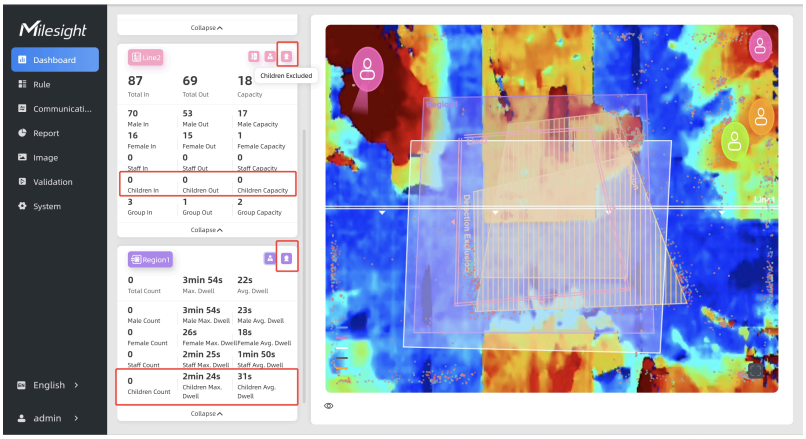
Applicable Installation Height: 1.9 - 3.3 m

Steps:

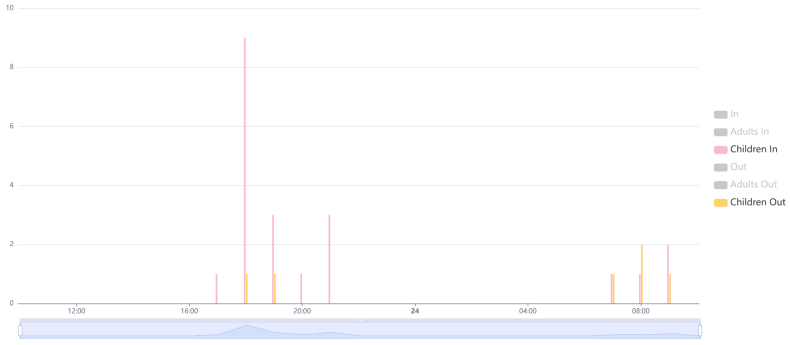
1. In the main page, click **Rule** from the left navigation tree.
2. Enable **Children & Adult Differentiation**. The **Child Filter Height** parameter is displayed in the **Deployment Parameters** area.



3. Enter a threshold value in the **Child Filter Height** text box and click to save the configuration. The device classifies any individual detected below this value as a child.
4. Check data through any of the following methods:
   - To check the visual configuration effect, click **Dashboard** from the left navigation tree.



   - To view the children data for a certain time period and generate the corresponding report, click **Report** from the left navigation tree. For details, refer to Generate Reports.



   - If recipients are added, check data through command line outputs. For details, refer to Uplink Data Examples for Periodic Reporting and Uplink Data Examples for Trigger Reporting.

Configure Gender Recognition

This section describes how to configure the Gender Recognition function.

The device supports gender recognition, allowing it to determine whether a person is male or female based on physical appearance and clothing style.

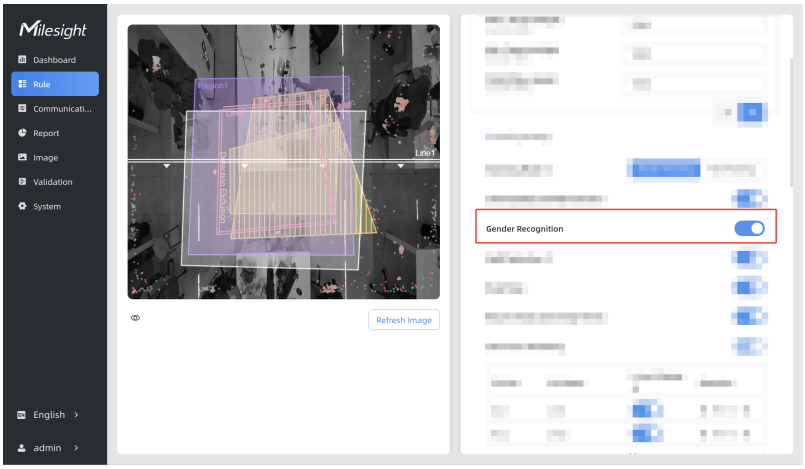
Limitations: Uncontrollable Factors Affecting Accuracy

- Targets have hairstyles that contrast with typical gender presentations (e.g., long hair on males or short hair on females).
- Targets' hair or clothing color is close to the floor color.
- Targets wear large concealing accessories (e.g., head scarves).
- Passing speed exceeding 2.5 m/s may cause missed detection.

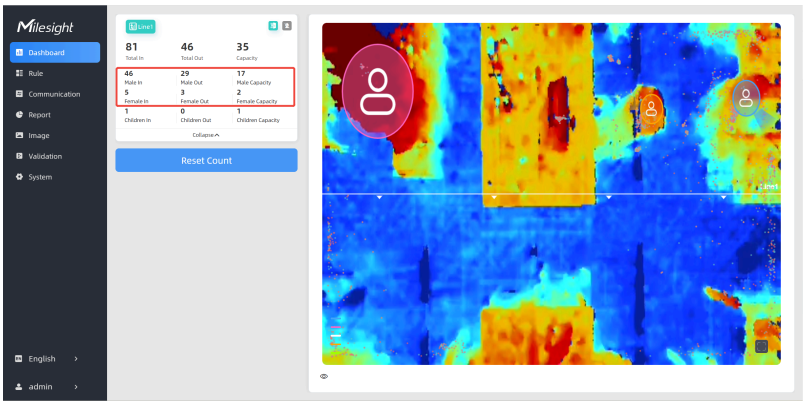
Applicable Installation Height: 1.9 - 3.3 m

Steps:

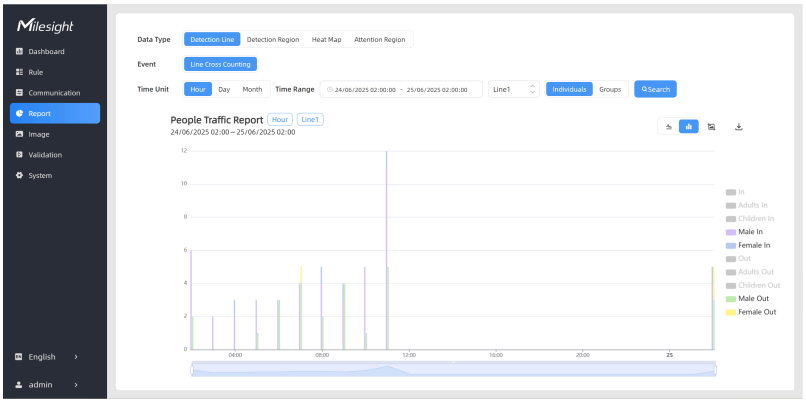
1. In the main page, click **Rule** from the navigation tree on the left.



2. Enable **Gender Recognition**.
3. Check data through any of the following methods:
   - To check the visual configuration effect, click **Dashboard** from the left navigation tree.



   - To view the gender-specific data for a certain time period and generate the corresponding report, click **Report** from the left navigation tree. For details, refer to Generate Reports.



- If recipients are added, check data through command line outputs. For details, refer to Uplink Data Examples for Periodic Reporting and Uplink Data Examples for Trigger Reporting.

Configure Staff Detection

This section describes how to configure the Staff Detection function.

The device supports staff detection by identifying personnel wearing designated accessories.

Limitations: Uncontrollable Factors Affecting Accuracy

- When two individuals walk side by side, the device may incorrectly classify the person without a staff accessory as staff, while failing to recognize the actual staff member wearing the accessory.
- Clothing with patterns resembling staff lanyards (such as striped designs) may cause false staff detection.
- Passing speed exceeding 2.5 m/s may cause missed detection.
- Dark floor/carpet (black, grey, etc.) will affect the device to count staffs.

Staff Accessories Requirements:

For detailed requirements regarding staff accessories, refer to the following table.

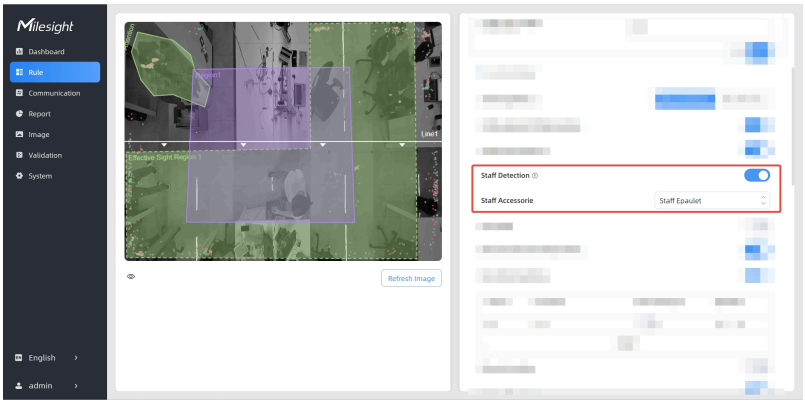
Item	Requirement
Accessory selection	It is recommended to use the staff accessories provided by Milesight. Staff accessories are available in black and red. Red accessories are recommended for optimal detection against dark-colored staff uniforms.
Usage specifications	Staff accessories must be tested independently and must not be used concurrently.

Item	Requirement
	Multiple accessory types are prohibited in the same scene simultaneously.
Wearing requirements	When worn, accessories must remain fully visible and unobstructed by collars, scarves, hair, or any other objects. Staffs must wear these accessories in designated locations. • Staff lanyard: Wear it around the neck. • Staff badge: Wear it on one side of the upper chest area. • Staff epaulet: Wear it on each shoulder. • UWB KIT: Wear the tag, refer to VA05 User Guide for the wearing position.

Applicable Installation Height: 1.9 - 3.3 m

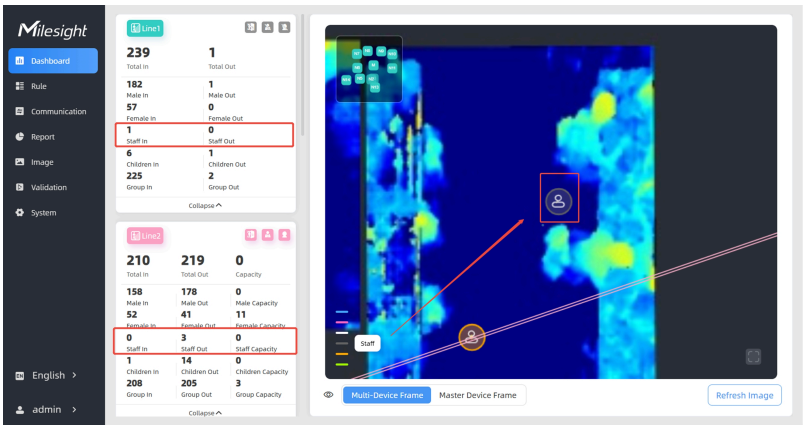
Steps:

1. In the main page, click **Rule** from the navigation tree on the left.
2. Enable **Staff Detection**.

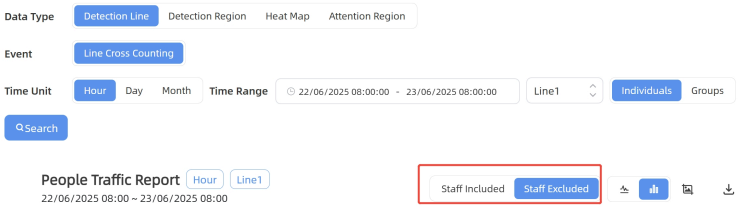


3. From the **Staff Accessories** drop-down list, select an accessory for staff detection.
4. Check data through any of the following methods:

- To check the visual configuration effect, click **Dashboard** from the left navigation tree.



- To view the staff data for a certain time period and generate the corresponding report, click **Report** from the left navigation tree. For details, refer to Generate Reports.



- If recipients are added, check data through command line outputs. For details, refer to Uplink Data Examples for Periodic Reporting and Uplink Data Examples for Trigger Reporting.

Configure Group Counting

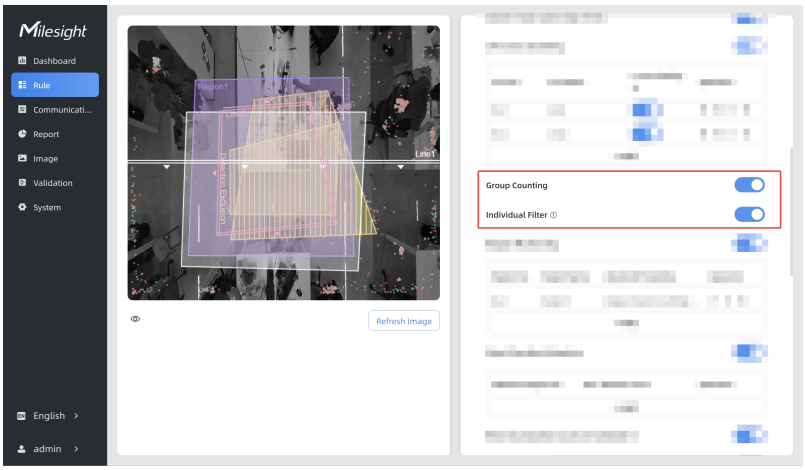
This section describes how to configure the Group Counting function.

The device supports multi-person recognition and counting within the detection area. By analyzing variations in human spacing, movement directions, and speed differences, it provides advanced customer behavior analysis. Group Counting is built upon the Line Crossing Detection functionality.

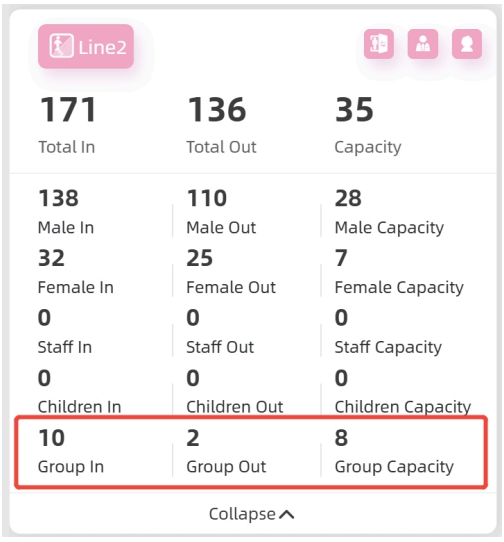
Applicable Installation Height: 1.9 - 3.5 m

Steps:

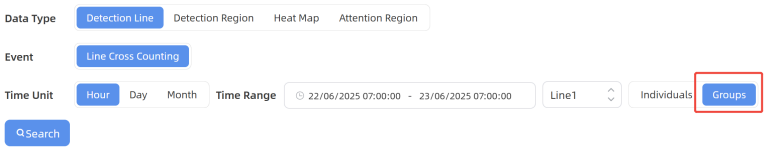
1. In the main page, click **Rule** from the left navigation tree.



2. Enable the **Group Counting** function. The device classifies any individual and any party of two or more individuals as a group.
3. (Optional) To only classify two or more individuals as a group, enable **Individual Filter**. When it is enabled, individuals will not be counted as a group.
4. Check data through any of the following methods:
   - To check the visual configuration effect, click **Dashboard** from the left navigation tree.



   - To view the group data for a certain time period and generate the corresponding report, click **Report** from the left navigation tree. For details, refer to Generate Reports.



- If recipients are added, check data through command line outputs. For details, refer to Uplink Data Examples for Periodic Reporting and Uplink Data Examples for Trigger Reporting.

Configure View Direction Detection

This section describes how to configure View Direction Detection function.

The device supports the **View Direction Detection** function. It tracks targets' view tracks to effectively evaluate advertisement reach-through.

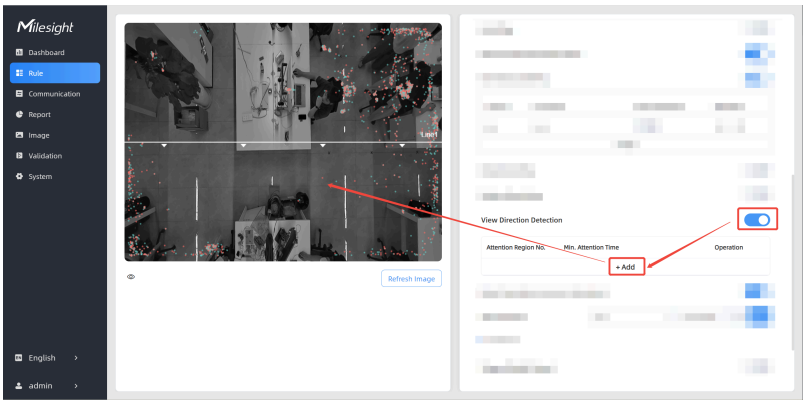
Applicable Installation Height: 1.9 - 3.3 m

Prerequisites:

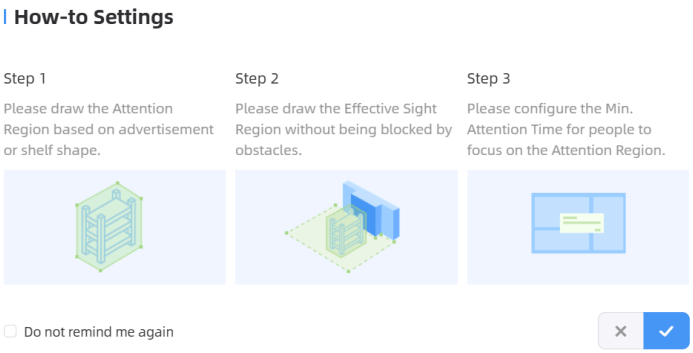
- The tracking mode is set to **Heads Tracking**.
- The working mode is set to **Standalone**.

Steps:

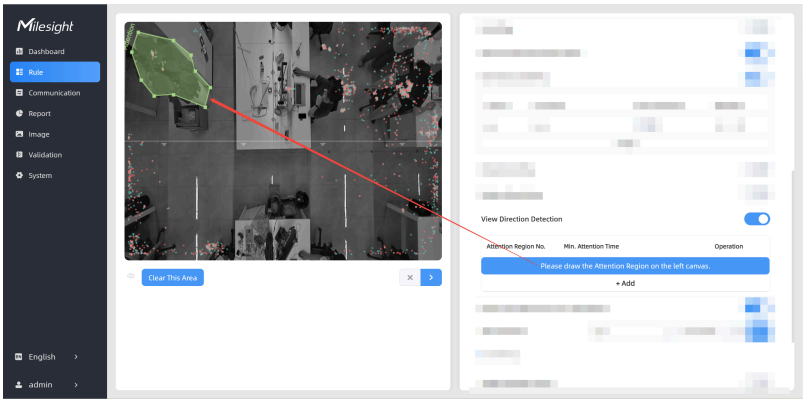
1. In the main page, click **Rule** from the navigation tree on the left.
2. Enable **View Direction Detection** on the right and click **+Add**. The **How-to Settings** information box is displayed.



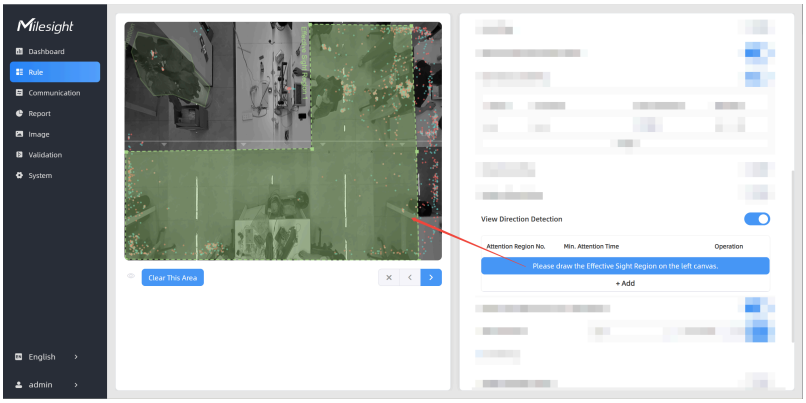
3. Browse the steps and click  .



4. Draw an attention region that requires analysis of customer engagement levels, you can draw up to 6 regions with a maximum of 10 line segments per region:
    a. Left-click to start and drag to draw the first line segment.
    b. Left-click to add vertices and change direction and drag to draw another line segment.
    c. Repeat step b to draw more line segments as needed.
    d. Right-click to finish.
    e. (Optional) Adjust the region by dragging.
    f. (Optional) To redraw a region, click **Clear This Area**.
    g. Click  .



5. Following the same steps in Step 4 to draw an effective sight region, you can draw up to 6 regions with a maximum of 10 line segments per region:

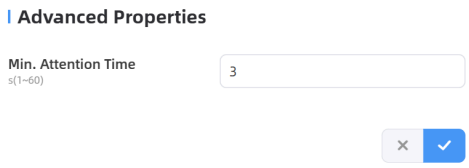


Any individual within this region must have an unobstructed view of the attention region.

Once configured, the device analyzes gaze direction within the effective sight region based on the following logic:

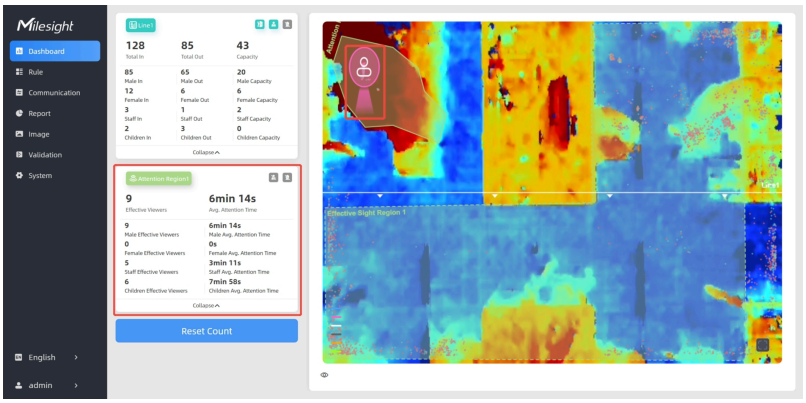
- Effective Viewer: Target who accumulates attention time > Min. Attention Time
- Accumulation Starts: When gaze overlaps with attention region for >1 second
- Accumulation Pauses: When gaze moves outside attention region

6. Click . The **Advanced Properties** dialog box is displayed.

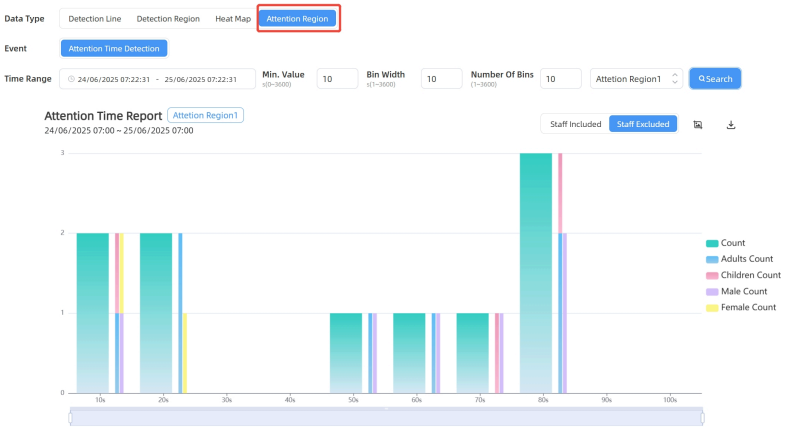


7. Set **Min. Attention Time** and click to save the configuration. Then the device identifies any target as an effective viewer if his gaze remains on the attention region for a duration longer than this specified value.
8. To validate configuration:
   a. Stand in the effective sight region and look toward the attention region.
   b. Observe the real-time tracking on Dashboard.
   c. Verify gaze direction is accurately represented.
   d. Check that attention time accumulates when gazing at the target.
9. Check data through any of the following methods:

◦ To check the visual configuration effect, click **Dashboard** from the left navigation tree.



◦ To view attention region data for a certain time period and generate the corresponding report, click **Report** from the left navigation tree. For details, refer to Generate Reports.



◦ If recipients are added, check data through command line outputs. For "attention_region_total_data", refer to Uplink Data Examples for Periodic Reporting. For "attention_region_trigger_data", refer to Uplink Data Examples for Trigger Reporting.

Configure Digital Output Triggering

This section describes how to configure Digital Output Triggering function.

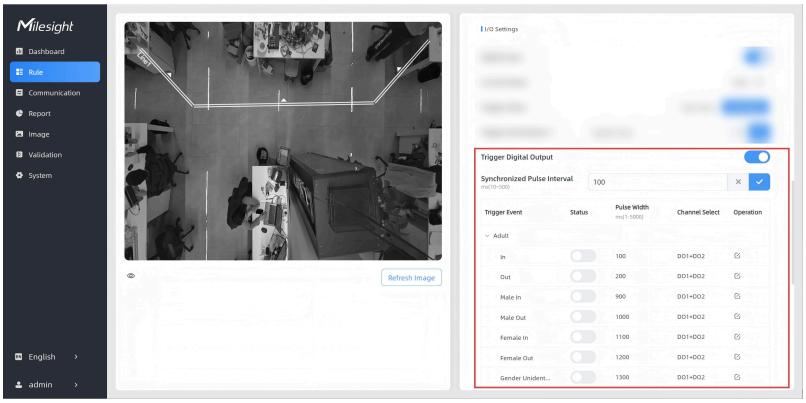
If the **Trigger Digital Output** function is enabled, the device can send pulse signals when the target passes through the detection line.

Prerequisite:

The device is connected to the corresponding external device using the multi-interface cable according to the wiring diagram.

Steps:

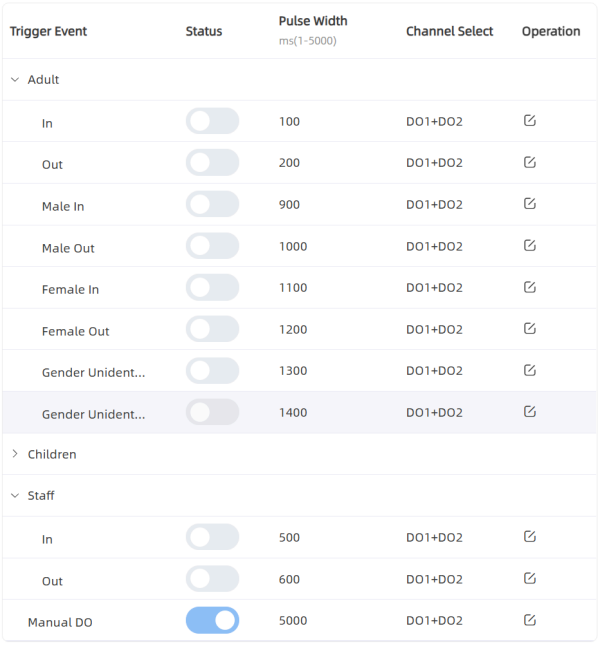
1. In the main page, click **Rule** from the navigation tree on the left.
2. In the **I/O Settings** area on the right , enable **Trigger Digital Output**.



3. Enter a value in the **Synchronized Pulse Interval** text box and click .

Parameters	Description
Synchronized Pulse Interval	The interval between multiple pulses when several people pass through or multiple events trigger simultaneously.

4. Enable a specific trigger event. For a description of each parameter, refer to the following table.
   a. Click .
   b. Click for the events.
   c. Set **Pulse Width**.
   d. Select a channel from the **Channel Select** drop-down list.
   e. Click . The device outputs high-level signals through the multi-interface automatically.



Parameters	Description
Trigger Event	Events to trigger the DOs to send pulse signals. **Note:** When staff events trigger pulse signals, the device does not initiate synchronized outputs for gender or adult detection events.
Status	Enable or disable the event to trigger pulse signal output.
Pulse Width	Pulse signal duration.
Channel Select	Select which DO port to output the pulse signal.
Operation	Click to edit the above-mentioned parameters.

Configure Digital Input

This section describes how to configure Digital Input function.

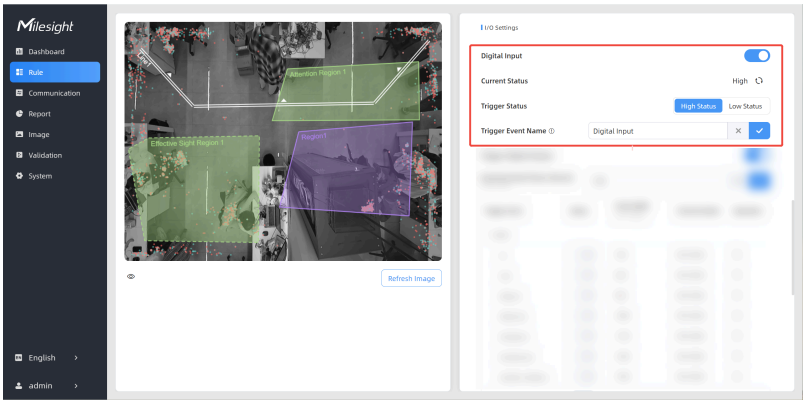
If the **Digital Input** function is enabled, the device can collect high-level and low-level signals from external devices (such as buttons, sensors, etc.) via the DI port. These external physical signals are converted into digital signals, enabling the device to monitor external events.

Prerequisite:

The device is connected to the external device using the multi-interface cable according to the wiring diagram.

Steps:

1. In the main page, click **Rule** from the navigation tree on the left.
2. In the **I/O Settings** area on the right , enable **Digital Input**.

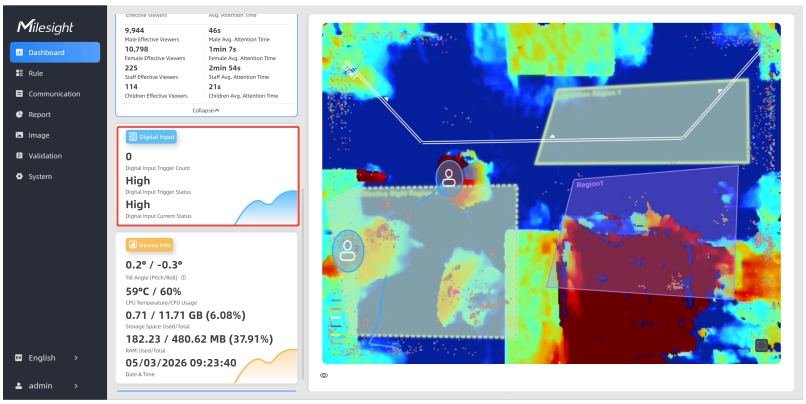


3. Configure the following parameters as needed.

Parameters	Description
Current Status	Display the status of the DI interface.
Trigger Status	Optional: **High Status**, **Low Status**. Only when the trigger status is the same as the current status, will the device count the data. By default, two connected contacts = low level, two disconnected contacts = high level.
Trigger Event Name	Customize the trigger event name.

4. Check data through any of the following methods:

- To check the DI configuration effect, click **Dashboard** from the left navigation tree.



- To view the DI data for a certain time period and generate the corresponding report, click **Report** from the left navigation tree. For details, refer to Generate Reports.
- If recipients are added, check data through command line outputs. For details, refer to Uplink Data Examples for Periodic Reporting and Uplink Data Examples for Trigger Reporting

Example:

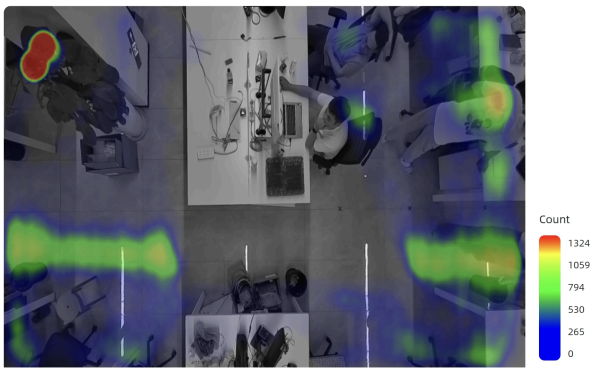
The VS361 acts as an external trigger device connected to the DI interface of the device. When VS361 detects a line-crossing event, it sends a trigger signal to the device, which then performs the corresponding counting.

Configure Heat Map

This section describes how to configure Heat Map function.

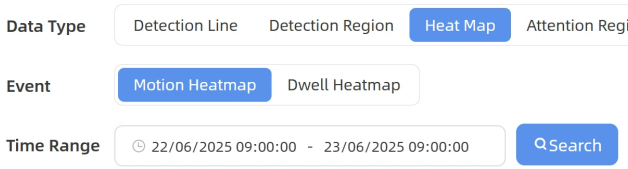
The **Heat Map** function analyzes personnel movement and dwell time data and displays the analytical results through color-coded temporal or spatial visualizations. This provides insights for better business management.

The device supports **Motion Heatmap** and **Dwell Heatmap**. **Motion Heatmap** visualizes areas with the highest pedestrian traffic density, while **Dwell Heatmap** visualizes the areas with the maximum occupant dwell duration.



Steps:

1. Enable the **Heat Map** function.
2. View the heat map data for a certain time period and generate the corresponding report, click **Report** from the left navigation tree. For details, refer to Generate Reports.



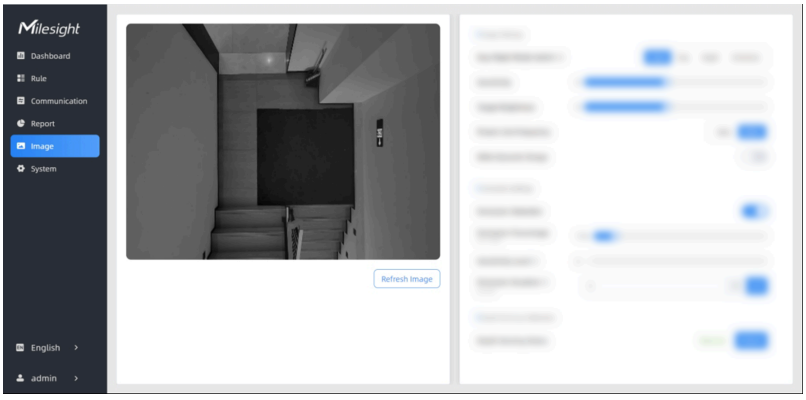
Configure Occlusion Alarm

This section describes how to configure Occlusion Alarm function.

Occlusion Alarm can be enabled to detect when the sensor is occluded. Alarms are issued when occlusion occurs, and notification of deactivation is given when occlusion is lifted.

Steps:

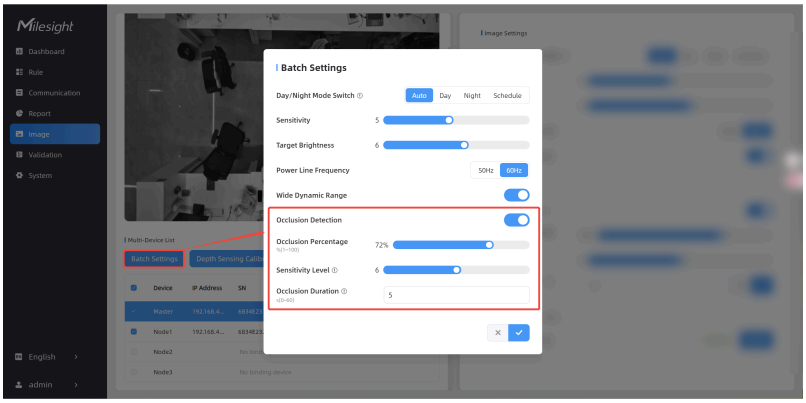
1. In the main page, click **Image** from the left navigation tree.



2. In the **Occlusion Settings** area, enable **Occlusion Detection**.
3. Configure the following parameters as needed. When multi-device stitching mode is enabled, the occlusion setting parameters of the master and node devices are synchronized. Regardless of which device is masked, the master device will trigger the alarm.

Parameters	Description
Occlusion Percentage	Drag the progress bar, adjust the threshold for the percentage of the entire field of view that must be occluded to trigger an alarm. Default: 50%.
Sensitivity Level	Drag Sensitivity Level progress bar, adjust the sensitivity of the occlusion trigger. The higher the level, the easier it is to detect occlusion, but the false alarm rate increases. Default: 2.
Occlusion Duration	Fill in the value to set the duration that the sensor must be obscured.

4. (Optional) When multi-devices are stitched, you can select the devices that need to be configured and perform batch operations.



5. Click  to complete the configuration.
6. Users can also view the data through Alarm Report.

Stitch Multiple Devices

This section describes how to stitch multiple devices.

The device supports multi-device stitching, which extends the monitoring coverage beyond the capability of a single device. A maximum of 16 devices can be stitched.

Device Roles in a Stitched System:

- Master device: One device is set to **Master**. It handles all functional configuration, counting, and data transmission.
- Node device: All other devices are set to **Node**. Their primary function is to extend the overall detection coverage.

Preparations:

- Installation: Multiple devices are installed according to Install the device.
- Network: All devices must be on the same subnet.
- Firmware: All devices must be updated to the latest version.

Configuration Procedure:

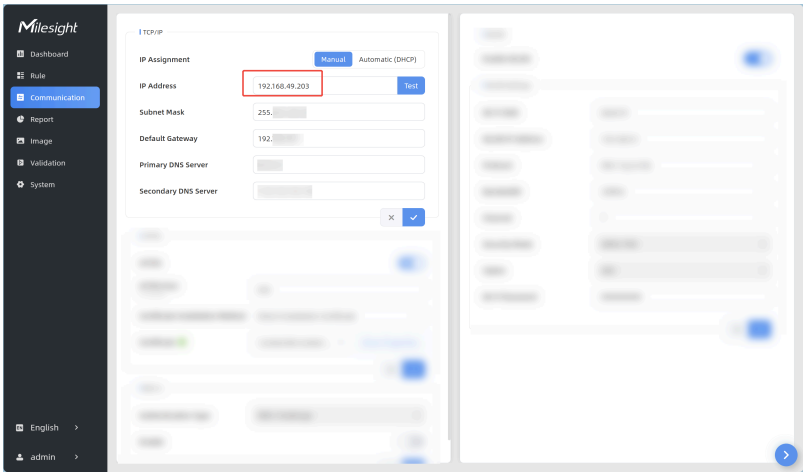
After completing the preparations, designate one device as the master device and the remaining devices as node devices, follow the sequence below sections.

Configure a Node Device

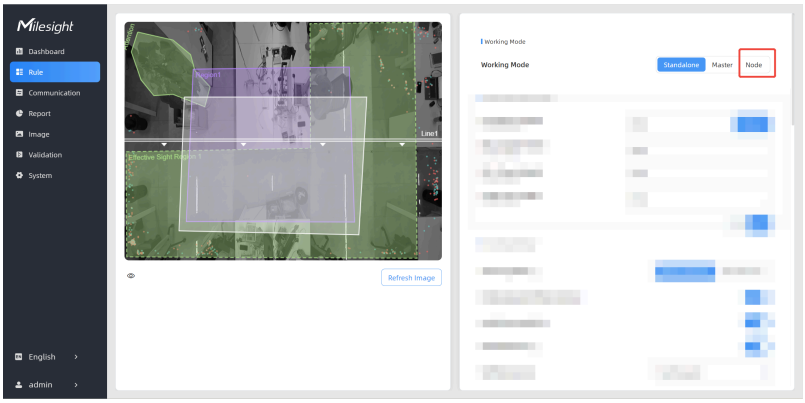
This section describes how to configure node devices.

Steps:

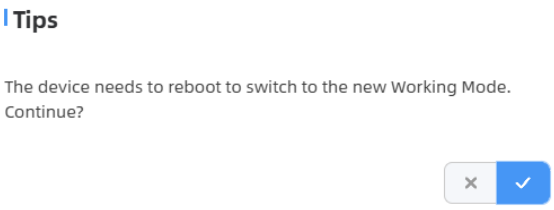
1. Log into the web GUI of the node device, and click **Communication** from the left navigation tree.
2. In the **IP Address** text box in the **TCP/IP** area, enter the IP address of the node device.



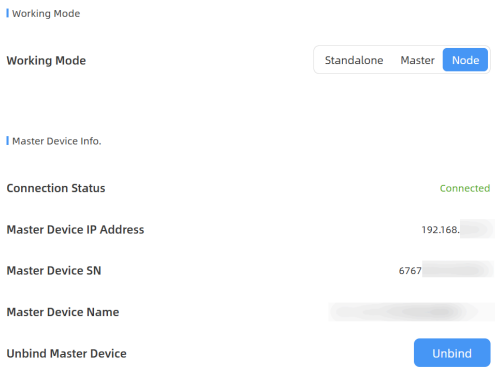
3. Click **Rule** from the left navigation tree. In the **Working Mode** area on the right, click **Node**.



4. The **Tips** information box is displayed. Click to wait for the device to reboot.



5. The following page is displayed after successful stitching. For parameter description in the **Master Device Info.** area, refer to the following table.



Parameters	Description
Connection Status	Connection status between the node device and master device.
Master Device IP Address	Master device IP address. If this IP address is within the same subnet as the node device, the node device can be bound to the master device.
Master Device SN	Master device serial number.

Parameters	Description
Master Device Name	Master device name.
Unbind Master Device	Click **Unbind** to release the connection. This device will be deleted from the list of the master device.

Stitch the Master Device and Node Devices

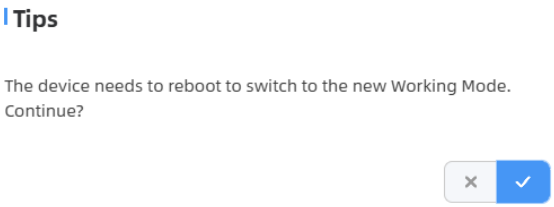
This section describes how to stitch the master device and node devices, which includes the following procedures:

1. Set **Working Mode** to **Master**.
2. Select a node device.
3. Bind the node device to the master device.

After all stitching configurations are completed, users can draw detection lines and even U-turn areas on the stitched preview using the same method as with standalone devices. **Multi-Device Frame** and **Master Device Frame** are displayed on the **Dashboard** page to view the stitched multi-device preview and the master device preview respectively.

Set Working Mode to Master

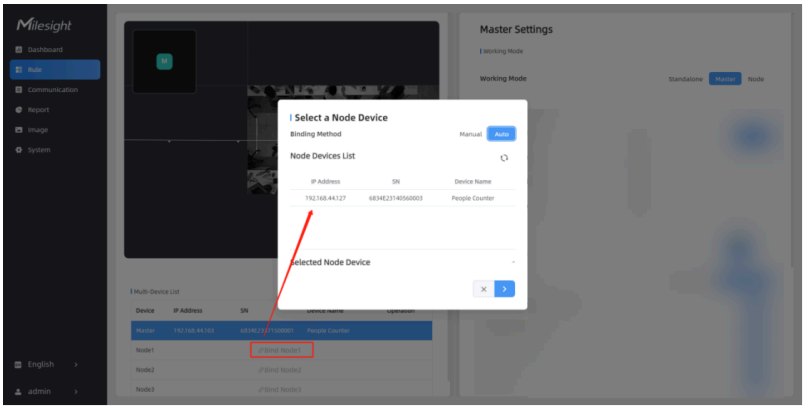
1. Log into the web GUI of the master device, and click **Rule** from the left navigation tree.
2. In the **Working Mode** area on the right, click **Master**. The **Tips** information box is displayed.



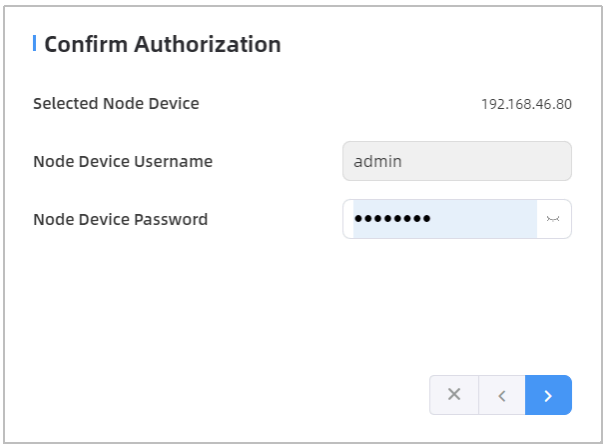
3. Click  to wait for the device to reboot.

Select Bind Node Devices

1. After the reboot is completed, click **Rule** from the left navigation tree.
2. In the **Multi-Device List** area, click **Bind Node1**. The **Select a Node Device** dialog box is displayed.



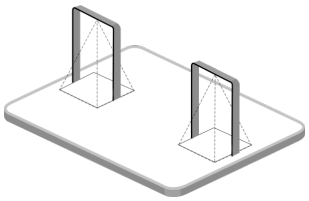
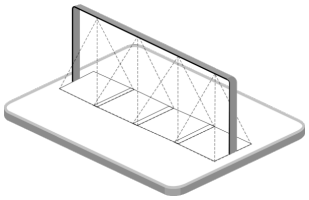
3. Select a node device to be added.
   - To select a node device manually:
     a. Click **Manual**.
     b. Enter an IP address, HTTP port, user name or password in the corresponding text box.
     c. Click  . The **Bind the Node Device** page is displayed.
   - To select a node device automatically:
     a. Click **Auto**. Then the device automatically uses the multicast protocol to discover the unbound node devices within the same local network. The discovered devices are listed in **Node Devices List**.
     b. Select the node device to be added and click  . The **Confirm Authorization** dialog box is displayed.



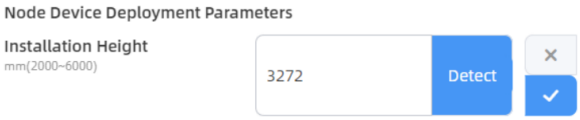
     c. Enter the login password of the node device and click  . The **Bind the Node Device** page is displayed.

Bind Node Devices to Master Device

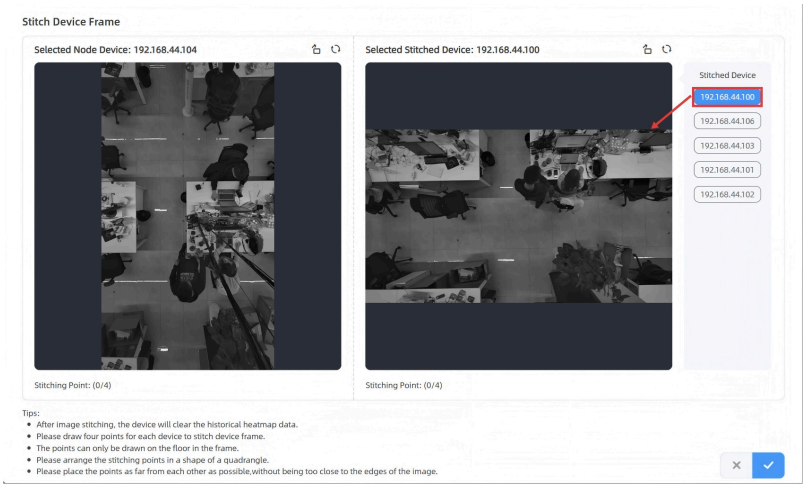
1. Select **Frame Overlapping** or **Frame Non-overlapping** stitching connection as needed.

Stitch Method	Description	Illustration
Frame Non-overlapping	Device coverage does not require overlapping areas; only the areas of interest need to be covered. It is only available for firmware version 1.0.5 or later.	Illustration for frame non-overlapping 
Frame Overlapping	Device coverage requires overlapping areas to ensure complete tracking of targets.	Illustration for frame overlapping 

   - If **Frame Overlapping** is selected, follow the steps below:
     a. In the **Installation Height** area, enter the installation height of the node device or click **Detect** to automatically measure the installation height.

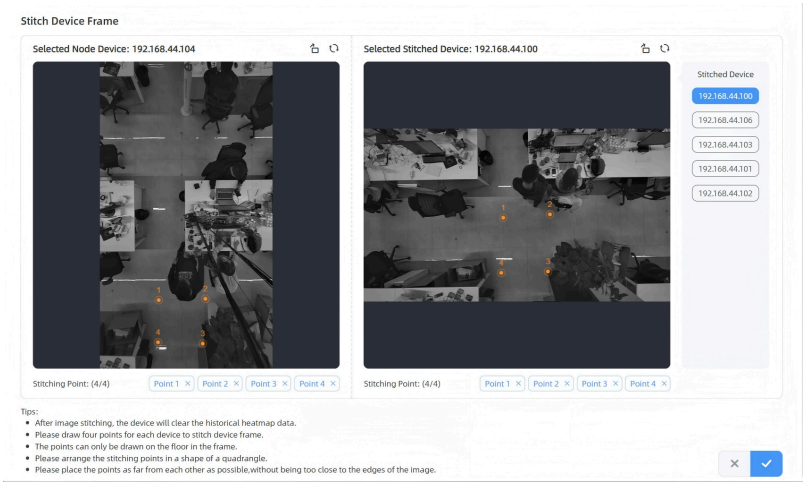


     b. Click IP addresses on the right to access the previews of the stitched devices and select the device sharing overlapping coverage areas with this node device.



c. On both device previews, define the overlapping coverage areas by mark four calibration points to form a quadrilateral. Then the system automatically performs image stitching based on these points.

> **Tip:**
> The overlapping area should be positioned in locations with minimal target traffic. It is recommended to use objects such as tiles, tables, or tape to mark the stitching points on the ground in the overlapping area.

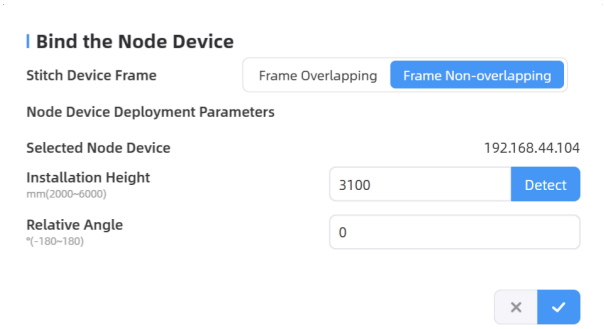


d. (Optional) To modify the calibration points, click to delete the corresponding point Point 1 Point 2 Point 3 Point 4 and mark the point again.

e. Click to save the configuration. The node device is listed in the **Multi-Device List**. The following figure shows the effect after the two devices are stitched.

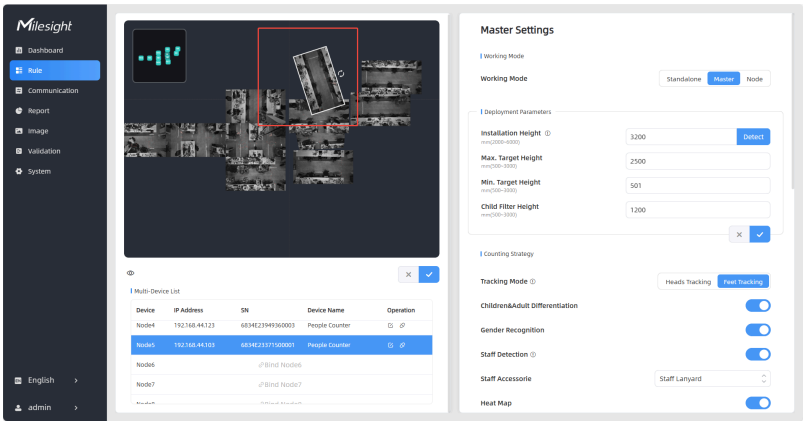
◦ If **Frame Non-overlapping** is selected, follow the steps below:

a. In the **Installation Height** area, enter the installation height of the node device or click **Detect** to automatically measure the installation height. Configure the image rotation angle relative to the master device.

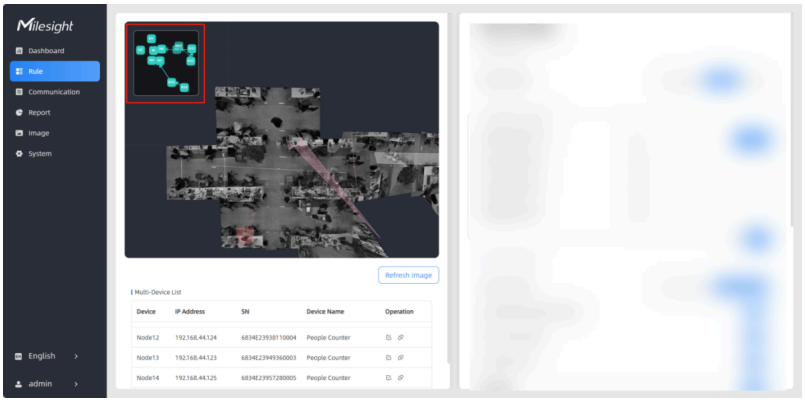


b. Click  to save the configuration. The node device is listed in the **Multi-Device List**. The following figure shows the effect after the two devices are stitched.

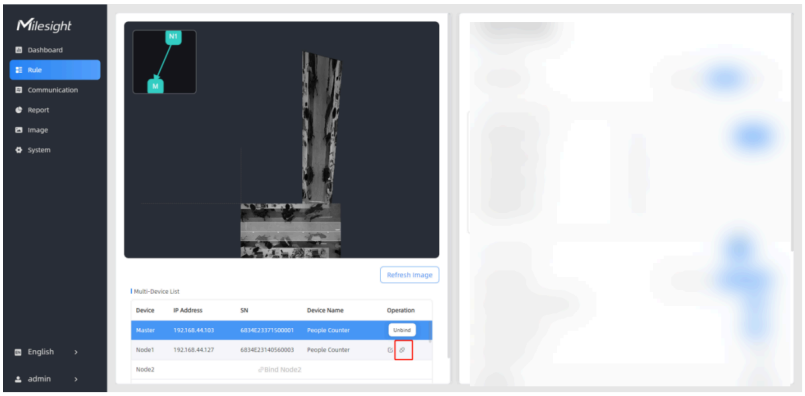
c. (Optional) Users can optionally adjust the position of the node device through the preview screen.



2. To add more devices, follow steps 1 to 5 to stitch them sequentially. A small map in the upper left part of the preview shows the positions of the stitched devices.



3. (Optional) To disconnect a node device, click in the corresponding **Operation** area.



Configure Communication Parameters

This section describes how to configure communication parameters, which includes cellular parameters, TCP/IP parameters, HTTPs parameters, 802.1x protocol parameters, WLAN parameters, recipient and MQTT API parameters.

Configure Network Parameters

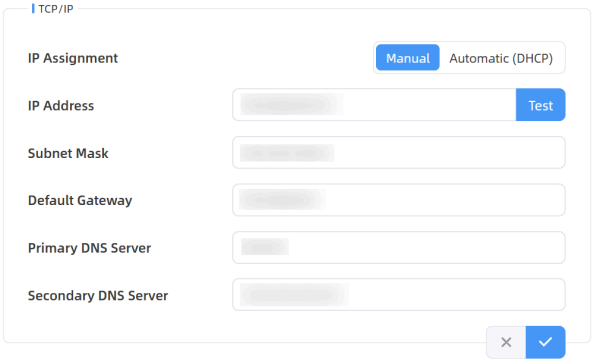
Configure TCP/IP Parameters

The device uses the Ethernet port for data transmission and multi-device stitching. This section describes how to configure TCP/IP parameters.

For the cellular version, data reporting depends on the current network. When both cellular network and Ethernet connections are available, the device prioritizes cellular networks for data reporting.

Steps:

1. In the main page, click **Communication** from the left navigation tree.
2. In the **TCP/IP** area, the page is displayed.



3. Set the IPv4 address assignment method. Options: **Manual** or **Automatic (DHCP)**.
   - If **Automatic (DHCP)** is selected, the device will obtain an IP address and configuration parameters from the DHCP server automatically.

     Note:
     The hostname displayed on the server will be updated to match the device name, with the change taking effect within 20 seconds or upon DHCP lease expiration.

   - If **Manual** is selected, configure the following parameters manually.

Parameters	Description
IP Address	An address that used to identify the sensor on the network. Click **Test** button to test if the IP address is conflicting.
Subnet Mask	It is used to identify the subnet where the sensor is located.
Default Gateway	The default router address.
Primary DNS Server	Preferred DNS server used to resolve domain names into IP addresses.
Secondary DNS Server	Backup DNS server used when the Primary DNS Server is un-available.

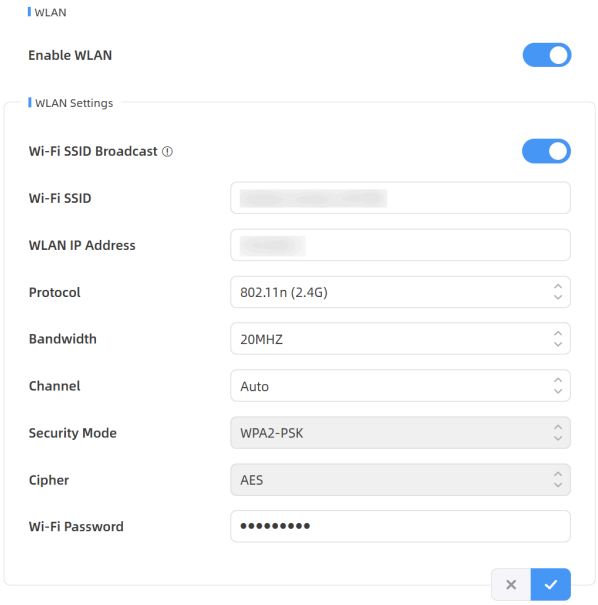
4. Click to save the configuration.

Configure WLAN Parameters

This section describes how to configure WLAN parameters.

Steps:

1. In the main page, click **Communication** from the left navigation tree.
2. In the **WLAN** area, the page is displayed.



3. Click to enable the Wi-Fi function, configure the following parameters as needed.

Parameters	Description
Wi-Fi SSID Broadcast	When disabled, the WiFi SSID will not be automatically discovered, but can still be connected by manually entering the SSID.
Wi-Fi SSID	Unique Wi-Fi access point identifier for this device. Format: `People Counter_xxxxxx`. It can be found on the device label.
WLAN IP Address	WLAN IP address for web access. Default value: **192.168.1.1**.
Protocol	Options: **802.11b (2.4G)**, **802.11g (2.4G)** and **802.11n (2.4G)**.
Bandwidth	Options: **20MHz**, **40MHz**.
Channel	Wireless channel. Range: Auto, 1-11.
Security Mode	Fixed value: **WPA2-PSK**.
Cipher	Fixed value: **AES**.

Parameters	Description
Wi-Fi Password	Customize the password. It must include numbers, lowercase letters, uppercase letters and special characters. Range: 8-63 characters.

4. Click  to save the configuration.

Configure OpenVPN Parameters

This section describes how to configure OpenVPN parameters.

Steps:

1. In the main page, click **Communication** from the left navigation tree.
2. In the **VPN** area, configure VPN parameters as needed. For parameter descriptions, refer to the following table.



Parameters	Description
OpenVPN Configuration File	Import the ".conf" or ".ovpn" format OpenVPN client configuration profile.
Status	Show the connection status of the device and the VPN server: Disconnected, Connecting or Connected.
Device Virtual IP	Show the virtual IP of device.
Server Virtual IP	Show the virtual IP of VPN Server.
Duration	Show the connection duration.

Configure Cellular Parameters (Cellular Version Only)

This section describes how to configure cellular parameters.

Steps:

1. In the main page, click **Communication** from the left navigation tree.
2. In the **Cellular Status** area, click **Detail** to check the cellular status details.
3. In the **Cellular Settings** area, configure cellular parameters as needed. For parameter descriptions, refer to the following table.

Parameters	Description
APN	Access point name for cellular dial-up connection provided by a local ISP. Maximum length: 31 characters.
Username	Username for cellular dial-up connection provided by a local ISP. Maximum length: 31 characters.
Password	Password for cellular dial-up connection provided by a local ISP. Maximum length: 31 characters.
PIN Code	PIN code to unlock the SIM. Length: 4-8 characters.
PLMN Select	Select the way to configure the PLMN.
PLMN ID	Manually fill in the PLMN ID.
Authentication Type	Options: **None**, **PAP**, **CHAP**, **PAP** and **CHAP**.
Roaming	Enables the **Roaming** function.
DNS Configuration Mode	Options: **Auto** and **Manual**. ◦ If **DNS Configuration Mode** is set to **Auto**, the device automatically obtains the DNS assigned by the carrier. ◦ If **DNS Configuration Mode** is set to **Manual**, both Primary and Secondary DNS server addresses must be entered.
Restart When Dial-up Failed	Enables automatic device restart when multiple dial-up failed.
ICMP Server	Configures the IP address of the ICMP detection server.
ICMP Detection Max Retries	Sets the maximum number of retries when ICMP detection failed.
ICMP Detection Timeout	Configure ICMP detection timeout duration.
ICMP Detection Interval	Configures the ICMP detection interval.

4. Click **Refresh** to manually refresh the above status. The following parameters are displayed.

Parameters	Description
Modem Status	Show the corresponding detection status of the module and SIM card. ◦ No SIM Card ◦ SIM Card Error ◦ PN Error ◦ PIN Required ◦ PUK Required ◦ No Signal ◦ Ready ◦ Down SIM
Model	Show the model name of the cellular module
Version	Show the version of the cellular module.
Signal Level	Show the current signal strength of the network.
Register Status	Show the connection status of the network, including “connect” and “dis-connect”.
IMEI	Show the IMEI of the module.
IMSI	Show IMSI of the SIM card.
ICCID	Show ICCID of the SIM card.
ISP	Show the network provider which the SIM card registers on. It will display "-" when the SIM card is not inserted or not recognized.
Network Type	Show the connected network type, such as LTE and 3G. It will display "-" when the device is not connected to network.
PLMN ID	Show the current PLMNID, including MCC, MNC, LAC, and Cell ID.
LAC	Show the location code of the SIM card. It will display "-" when the SIM card is not inserted or not recognized.
Cell ID	Show the Cell ID of the SIM card location. It will display "-" when the SIM card is not inserted or not recognized.
Network Status	Show the information of the current network.

Parameters	Description
IP Address	If the SIM card is not inserted or not recognized, it will display 0.0.0.0.
Netmask	
Gateway	
DNS	
Connection Duration	Show the cellular dial-up connection duration.

5. Click  to save the configuration.

Configure HTTPs Parameters (PoE Version Only)

HTTPs encrypts data transmitted between a web browser and a server. It ensures confidentiality, verifies server authenticity, and protects data integrity against tampering. This section describes how to configure HTTPs parameters to ensure secure communication.

Steps:

1. In the main page, click **Communication** from the left navigation tree.
2. In the **HTTPs** area, enable **HTTPS**.
3. Set **HTTPS Port** to configure the web GUI login port. It is **443** by default.
4. Select **Certificate Installation Method**. Options: **Create Self-Signed Certificate**, **Direct Installation Certificate**.
5. Perform the following operations as needed.

If	Do
If **Certificate Installation Method** is set to **Create Self-Signed Certificate**	a. Click **Update**. The **Update Certificate Information** dialog box is displayed. b. Update certificate information as needed and click  . The certificate is uploaded. c. (Optional) To check certificate properties, click **Show Properties**. The **Certificate Properties** information box is displayed.

If	Do
If **Certificate Installation Method** is set to **Direct Installation Certificate**	a. Click **File** to upload the CA certificate file. b. (Optional) To check certificate properties, click **Show Properties**. The **Certificate Properties** information box is displayed. c. (Optional) Enter the certificate key password to parse the certificate.

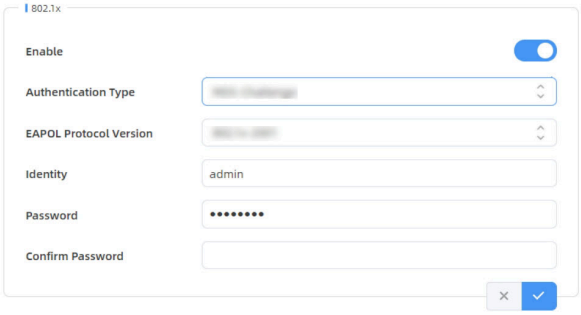
6. Click to save the configuration.

Configure 802.1x Protocol Parameters (PoE Version Only)

The IEEE 802.1x is an authentication protocol to allow access to networks with the use of RADIUS server. This section describes how to configure 802.1x protocol parameters.

Steps:

1. In the main page, click **Communication** from the left navigation tree.
2. In the **802.1x** area, click to enable the 802.1x function.



3. Select Authentication Type, configure the following parameters as needed.
   - If Authentication Type is set to **MD5-Challenge**:

Parameters	Description
EAPOL Protocol Version	Options: **802.1x-2001**, **802.1x-2004**.
Identity	Sets the identity for 802.1x authentication.
Password	Sets the password for 802.1x authentication.
Confirm Password	Enter the password again.

   - If Authentication Type is set to **EAP-TLS**:

Parameters	Description
EAPOL Protocol Version	Options: **802.1x-2001**, **802.1x-2004**.
Identity	Sets the identity for 802.1x authentication.
CA File	Upload the CA file.
Client Certificate File	Upload the certificate file.
Client Key File	Upload the client keys.
Key Password	Sets the password for the client key.

4. Click to save the configuration.

Add Data Recipients

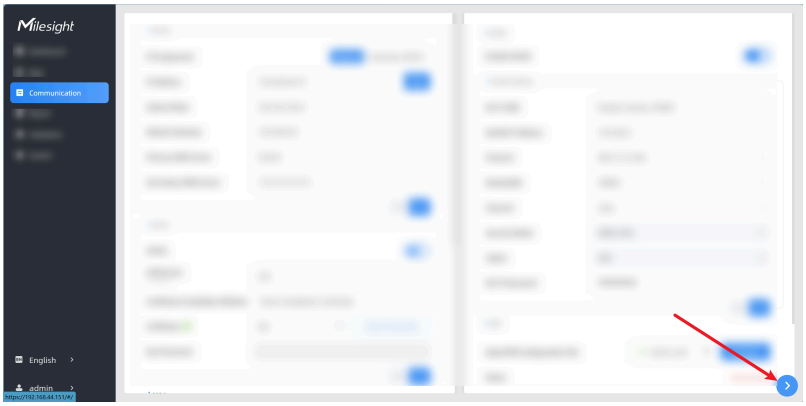
This section describes how to add data recipients.

Configure HTTP(s) or MQTT(s) Parameters

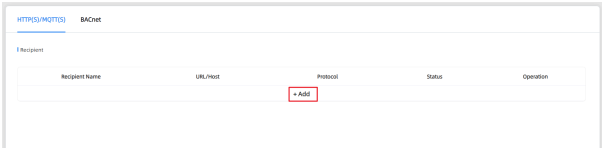
The device supports the addition of data recipients using HTTP(s) or MQTT(s) protocols. It proactively pushes data to configured recipients according to the specified reporting scheme. For detailed data format specifications, refer to Uplink Data. Additionally, device configuration and people counting data retrieval are available through CGI interfaces. For details, refer to Milesight AI Stereo Vision People Counting Sensor API Specification.

Steps:

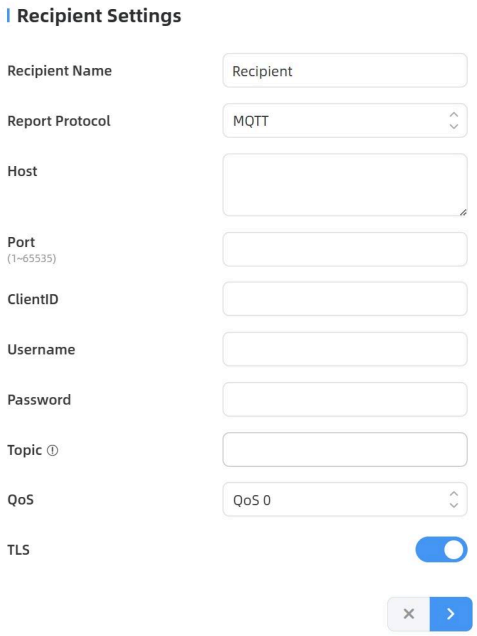
1. In the main page, click **Communication** from the left navigation tree, then click in the lower right corner.



2. In the **HTTP(S)/MQTT(S)**area, click **+Add** to add a recipient. You can add up to 8 recipients.



3. The **Recipient Settings** dialog box is displayed. Configure the recipient parameters as needed.



a. In the **Recipient Name** text box, enter a recipient name.

b. Set **Report Protocol** to **HTTP(s)** or **MQTT** as needed.

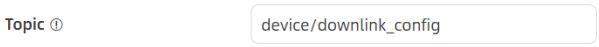
c. Perform the following operations as needed.

- If **Report Protocol** is set to **HTTP(s)**, configure the following parameters.

Parameters	Description
URL	Data Recipient URL. It configures the target URL to receive people counting data in JSON format. This device supports multiple third-party platforms. For the supported platforms, refer to Milesight official website.
Connection Test	Click **Test** to send test message to a URL to check connectivity.

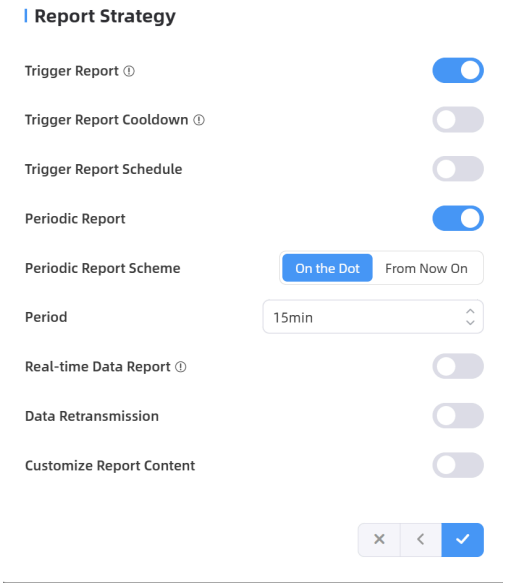
Parameters	Description
Username	User name used for authentication.
Password	Password used for authentication.

- If **Report Protocol** is set to **MQTT**, configure the following parameters.

Parameters	Description
Host	Address of the MQTT broker to receive data. This device supports multiple third-party platforms. For the supported platforms, refer to Milesight official website.
Port	Port of the MQTT broker used to receive data.
Client ID	Unique client identifier for the MQTT server. It must be unique across all connections to the same server and is essential for managing message delivery at QoS levels 1 and 2.
Username	User name for MQTT broker authentication.
Password	Password for MQTT broker authentication.
Topic	Topic name used for publishing messages. An example topic name is as follows:  The following placeholders are dynamically replaced with device information upon subscription. ▪ - $devsn: Device SN ▪ - $prdmd: Product model ▪ - $devid: Customized device ID ▪ - $siteid: Customized site ID
QoS	Options: **QoS 0**, **QoS 1**, and **QoS 2**.
TLS	Enables TLS encryption for MQTT communication.
Certificate Type	Options: **CA Signed Server** or **Self Signed**.

Parameters	Description
	▪ If **Certificate Type** is set to **CA Signed Server**, server verification is performed using a CA certificate that is pre-installed on the device. ▪ If **Certificate Type** is set to **Self Signed**, click in the **CA File**, **Client Certificate File**, and **Client Key File** areas to upload the corresponding files for identity verification.

4. Click to save the configuration. The **Report Strategy** dialog box is displayed.

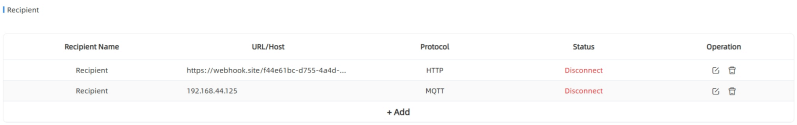


5. Configure the report strategy parameters as needed. For parameter descriptions, refer to the following table.

Parameter	Description
Trigger Report	Enables reporting statistical data or event information to the platform when configured trigger events occur.
Trigger Report Cooldown	Enable this option to prevent frequent trigger reports when foot traffic is high. The cumulative data will be reported after the cooldown period. **Cooldown Period:** During the cooldown period, trigger events are not reported. Once the cooldown period ends, reporting will resume.

Parameter	Description
Trigger Report Schedule	Events are reported only if they occur within up to five configurable time periods. If a cooldown is enabled, reporting occurs only if the cooldown ends within a work period. No reporting occurs outside the defined periods.
Periodic Report	Enables periodic reporting of line crossing and region counting data.
Periodic Report Scheme	Options: **On the Dot** or **From Now On**. ◦ If **Periodic Report Scheme** is set to **On the Dot**, select the interval from the **Period** drop-down list as needed. Then the device reports at the top of each hour. For example: ▪ 1-hour interval: Reports occur on the hour (00:00, 01:00, 02:00...) ▪ 10-minute interval: Reports occur at 10-minute marks (00:10, 00:20, 00:30...) ◦ If **Periodic Report Scheme** is set to **From Now On**, enter an interval value in the **Period** text box as needed. Then the device initiates periodic reporting immediately upon activation and regularly report at the configured interval.
Real-time Data Report	When real-time reporting is required, enable this feature. Once enabled, the device reports data at a fixed interval of 500 ms. High-frequency reporting may increase network traffic and server load.
Data Retransmission	If enabled, the device automatically transmits all buffered data packets from the offline period once the network connection is restored. Each recipient endpoint supports a maximum capacity of 50,000 data records.
Customize Report Content	Enables report content customization. Select the required content to avoid data redundancy. 

6. Click  to save the configuration. The added recipient is displayed in the **Recipient** page.



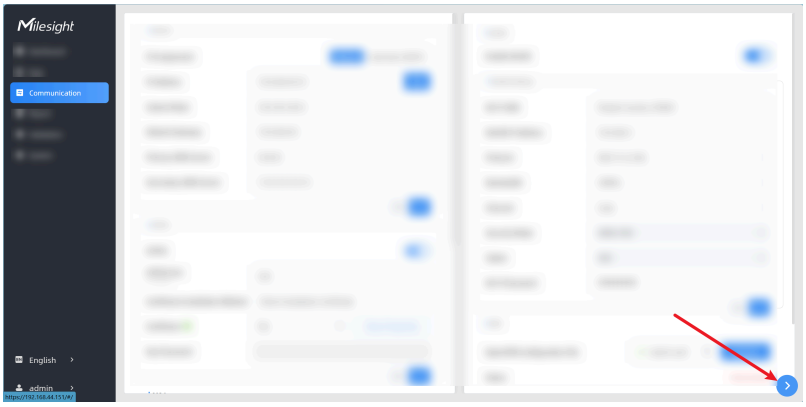
7. (Optional) To edit or delete the recipient, click  or  .

Configure BACnet Parameters

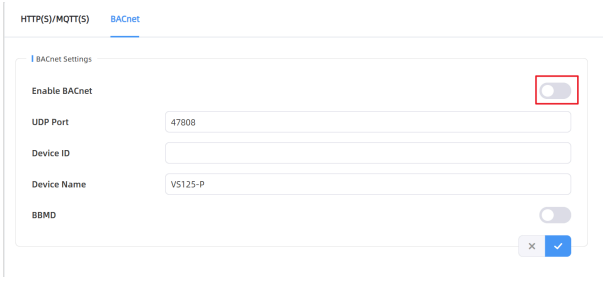
The device provides a BACnet/IP protocol connection to the BMS system, enabling data exchange and communication between devices within building automation systems as BACnet Server.

Steps:

1. In the main page, click **Communication** from the left navigation tree, then click  in the lower right corner.



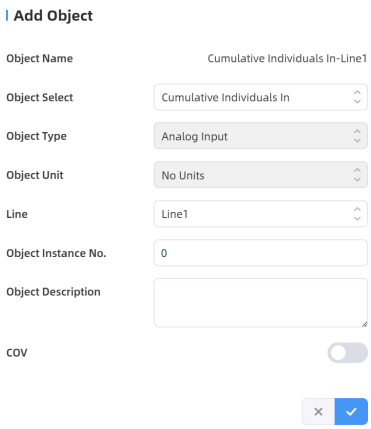
2. In the **BACnet**area, click to enable BACnet.



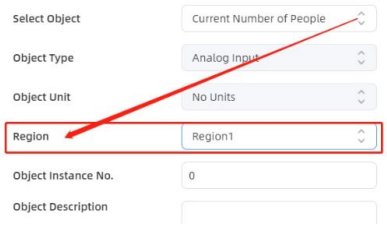
3. Configure the following parameters as needed.

Parameters	Description
UDP Port	Set the communication port for BACnet/IP. Range: 1-65535. The default port is 47808.
Device ID	The unique BACnet device identifier that must not conflict with other devices. The default value is the 6th to 11th characters of SN.
Device Name	The name to represent the device.
BBMD	Enable BBMD (BACnet/IP Broadcast Management Device) if BACnet devices of different network subnets should work together. ◦ **IP Address:** Fill in the IP address of BBMD device or external device registrar. ◦ **IP Port:** Fill in the UDP/IP port for external device registration. ◦ **Time To Live:** Number of seconds used on external device registration.

4. Click  to save the configuration. The **BACnet Object Settings** dialog box is displayed.
5. Click **+ Add**. The Add BACnet Object Settings dialog box is displayed.



Parameters	Description
Object Name	Show the name of the BACnet object.
Object Select	Select the variable data for the device as an object.
Line/Region	Select one of the detection line or region which object you select.

Parameters	Description
	
Object Instance No.	Set the object instance number.
Object Description	Set the object description.
COV	When enabled, a notification is sent when the object value changes of new value to BACnet client.
COV Increment	Set the minimum change value for the current object.

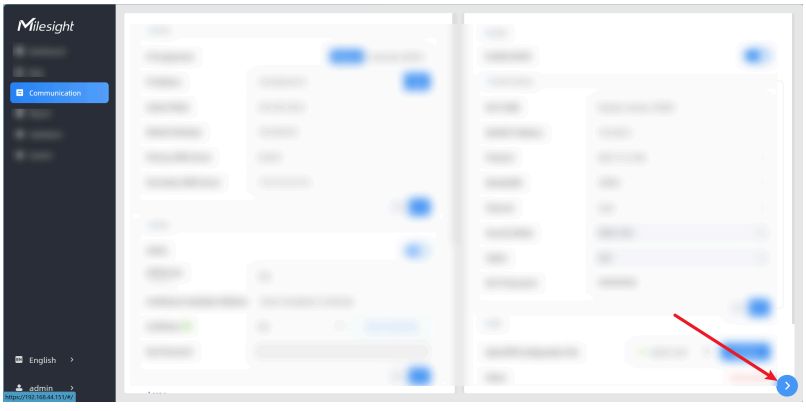
6. Click to save the configuration.

Configure MQTT API Parameters (Cellular Version Only)

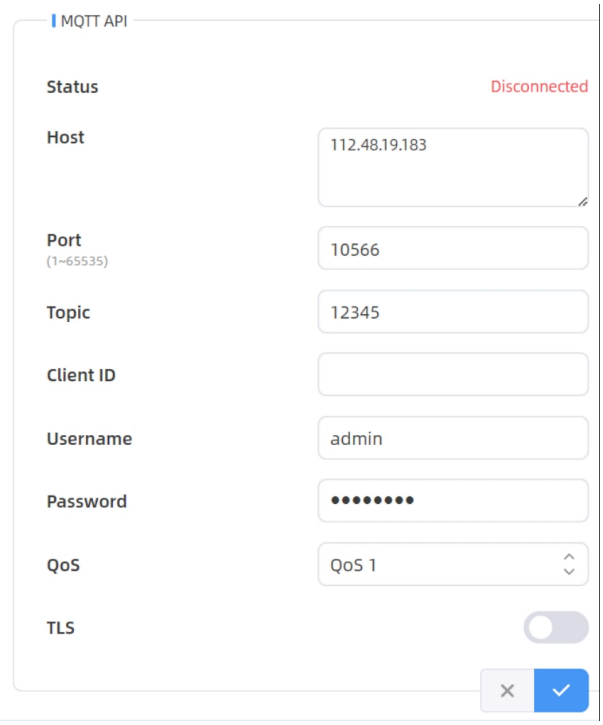
The device provides an MQTT API that receives downlink commands for retrieving people counting data. This section describes how to configure MQTT API parameters. It applies for the cellular version only.

Steps:

1. In the main page, click **Communication** from the left navigation tree, then click in the lower right corner.



2. Click in the lower right corner. The **MQTT API** page is displayed.



3. Configure the following parameters as needed. For parameter descriptions, refer to the following table.

Parameters	Description
Status	Connection status between the device and the MQTT broker.
Host	Address of the MQTT broker to receive data. This device supports multiple third-party platforms. For the supported platforms, refer to Milesight official website.
Port	Port of the MQTT broker used to receive data.
Topic	Topic name used for publishing messages. An example topic name is as follows: Topic ⓘ device/downlink_config The following placeholders are dynamically replaced with device information upon subscription. ◦ - $devsn: Device SN ◦ - $prdmd: Product model

Parameters	Description
	◦ - $devid: Customized device ID ◦ - $siteid: Customized site ID
Client ID	Unique client identifier for the MQTT server. It must be unique across all connections to the same server and is essential for managing message delivery at QoS levels 1 and 2.
Username	User name for MQTT broker authentication.
Password	Password for MQTT broker authentication.
QoS	Options: **QoS 0**, **QoS 1**, and **QoS 2**.
TLS	Enables TLS encryption for MQTT communication.
Certificate Type	Options: **CA Signed Server** or **Self Signed**. ◦ If **Certificate Type** is set to **CA Signed Server**, server verification is performed using a CA certificate that is pre-installed on the device. ◦ If **Certificate Type** is set to **Self Signed**, click in the **CA File**, **Client Certificate File**, and **Client Key File** areas to upload the corresponding files for identity verification.

4. Click to save the configuration.

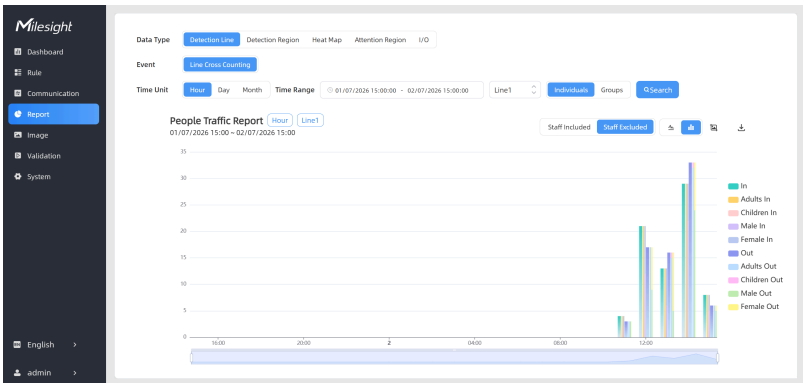
Generate Reports

Upon configuration of both basic counting and advanced AI recognition functions, the device provides multiple data presentation options such as the dashboard, reports and command line outputs.

The device supports visual line chart or bar chart generation to display people traffic and supports report exporting. Before using this feature, do ensure that the device time is correct on **System** page. This function is available only in Master Mode and Standalone Mode.

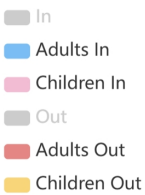
Steps:

1. In the main page, click **Report** from the left navigation tree.



2. Select the data type for report generation. Options: **Detection Line**, **Detection Region**, **Heat Map**, **Attention Region**, **I/O**.

3.

If	Do
If **Data Type** is set to **Detection Line**	a. Set **Time Unit** and **Time Range**. b. Select a line from the drop-down list. c. Select **Individuals** or **Groups** as needed. d. Click **Search**. The **People Traffic Report** is displayed correspondingly. e. Click **Staff Included** or **Staff Excluded** to include/exclude staff counting values in the report. f. Click  or  to display the report in the corresponding form. g. Click  to download the chart screenshot. h. Click  to export the historical traffic data to a CSV file. The system supports exporting up to 1,000,000 data records per CSV file. i. Click on any category on the following figure to hide it from the chart. 

If	Do
If **Data Type** is set to **Detection Region**	a. Select an event. Options: **Region People Counting**, **Dwell Time Detection** b. Perform any of the operations as needed. ▪ If **Event** is set to **Region People Counting**: set **Time Range** and select a region from the drop-down list. ▪ If **Event** is set to **Dwell Time Detection**: set **Time Range**, **Min. Value**, **Bin Width** and **Number Of Bins** and select a region from the drop-down list. c. Click **Search**. The **People Counting Report** or **Total Dwell Time Report** is displayed correspondingly. d. Click **Staff Included** or **Staff Excluded** to include/exclude staff counting values in the report. e. Click to download the chart screenshot. f. Click to export the historical traffic data to a CSV file. The system supports exporting up to 1,000,000 data records per CSV file. g. Click on any category on the following figure to hide it from the chart. 
If **Data Type** is set to **Heat Map**	a. Select an event. Options: **Motion Heatmap**, **Dwell Heatmap**. b. Set **Time Range**. c. Click **Search**. The **Motion Heatmap Report** or **Dwell Heatmap Report** is displayed correspondingly. d. Click to download the chart screenshot. e. Click to refresh image.
If **Data Type** is set to **Attention Region**	a. Set **Time Range**, **Min. Value**, **Bin Width**, and **Number Of Bins** and select an attention region. b. Click **Search**. The **Attention Time Report** is displayed correspondingly.

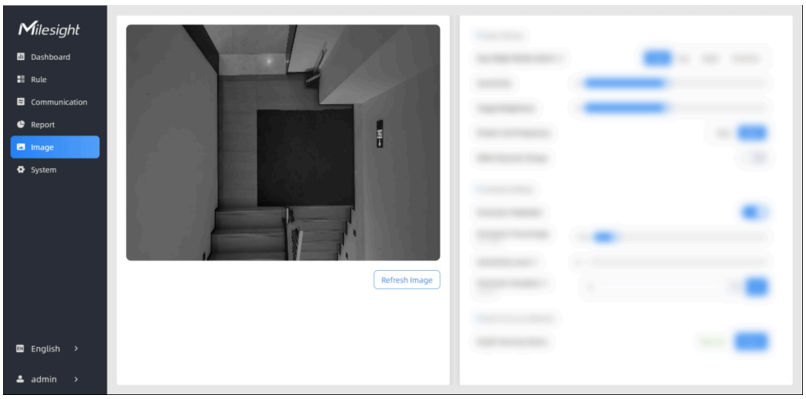
If	Do
	c. Click **Staff Included** or **Staff Excluded** to include/exclude staff counting values in the report. d. Click or  to display the report in the corresponding form. e. Click  to download the chart screenshot. f. Click  to export the historical traffic data to a CSV file. The system supports exporting up to 1,000,000 data records per CSV file. g. Click on any category on the following figure to hide it from the chart. 
If **Data Type** is set to **I/O**	a. Set **Time Unit** and **Time Range**. b. Click **Search**. The **Digital Input Trigger Count Report** is displayed correspondingly. c. Click  or  to display the report in the corresponding form. d. Click  to download the chart screenshot. e. Click  to export the historical traffic data to a CSV file. The system supports exporting up to 1,000,000 data records per CSV file.

Configure Image Parameters

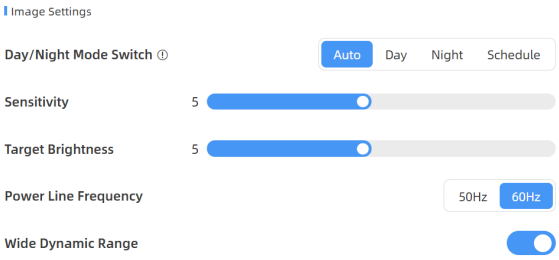
The device has great lighting adaptability that allows it to operate properly in low light and even complete darkness. It supports day and night mode switching based on the no-photosensitive scheme. This section describes how to configure image parameters.

Steps:

1. In the main page, click **Image** from the left navigation tree.



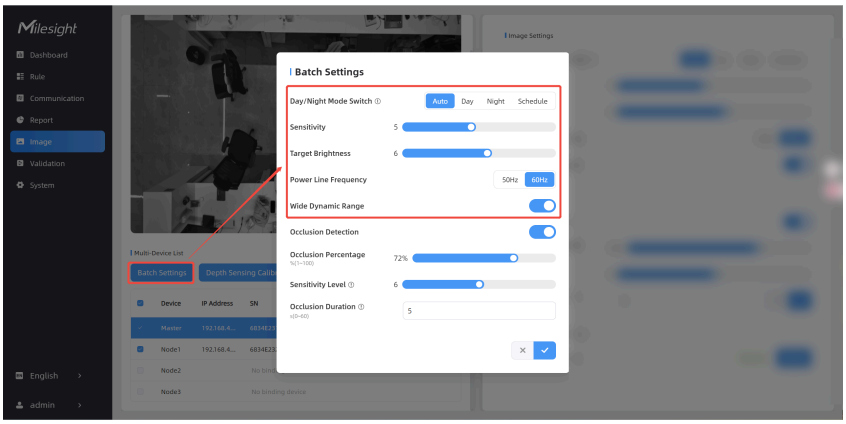
2. In the **Image Settings** area on the right, configure the following parameters as needed.



Parameters	Description
Day/Night Mode Switch	Set image mode. Options: **Auto**, **Day**, **Night** and **Schedule**. ◦ **Auto:** Automatic switch between day and night modes according to image brightness. ◦ **Day:** Black and white mode. ◦ **Night:** Infrared based black and white mode. ◦ **Schedule:** Switches between day and night modes based on the configured schedule.
Sensitivity	Set the sensitivity of the automatic day and night mode switching. The higher the sensitivity is, the easier to switch between day and night modes.
Night Mode Duration	Set the night mode duration.
Target Brightness	Set the brightness of the target to make image clearer. The higher brightness is, the brighter the target brightness is.

Parameters	Description
Power Line Frequency	Select the frequency to avoid the image flashing. Options: **50Hz**, **60Hz**.
Wide Dynamic Range	Enable or disable **Wide Dynamic Range**. Enabling it can capture more detail in scenes where light conditions vary greatly.

3. (Optional) When multi-devices are stitched, you can select the devices that need to be configured and perform batch operations.



4. Click **Refresh Image** to check image changes.

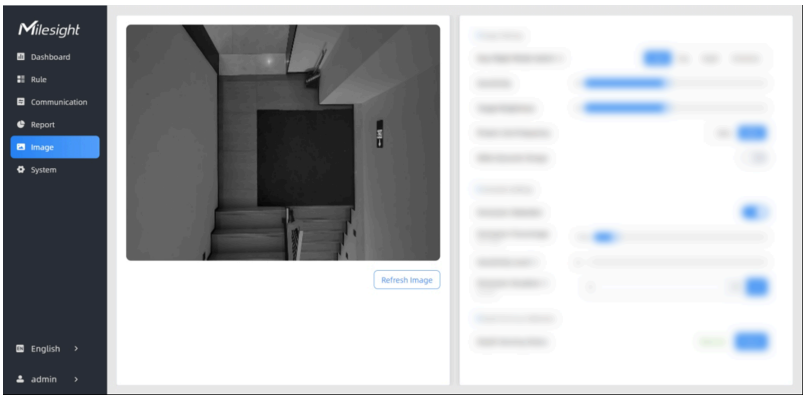
Configure Occlusion Alarm

This section describes how to configure Occlusion Alarm function.

Occlusion Alarm can be enabled to detect when the sensor is occluded. Alarms are issued when occlusion occurs, and notification of deactivation is given when occlusion is lifted.

Steps:

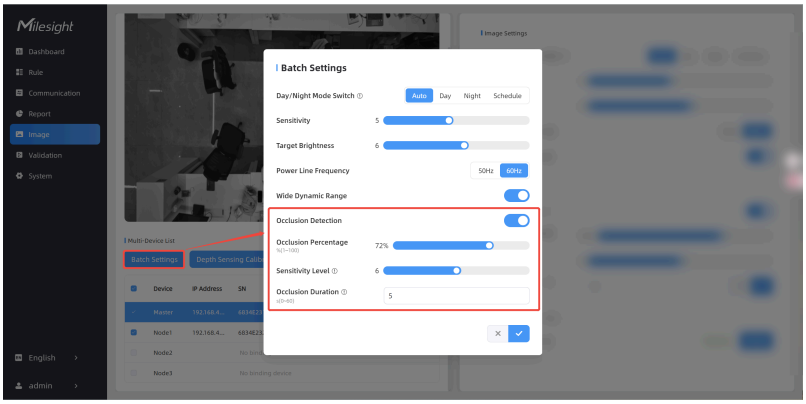
1. In the main page, click **Image** from the left navigation tree.



2. In the **Occlusion Settings** area, enable **Occlusion Detection**.
3. Configure the following parameters as needed. When multi-device stitching mode is enabled, the occlusion setting parameters of the master and node devices are synchronized. Regardless of which device is masked, the master device will trigger the alarm.

Parameters	Description
Occlusion Percentage	Drag the progress bar, adjust the threshold for the percentage of the entire field of view that must be occluded to trigger an alarm. Default: 50%.
Sensitivity Level	Drag Sensitivity Level progress bar, adjust the sensitivity of the occlusion trigger. The higher the level, the easier it is to detect occlusion, but the false alarm rate increases. Default: 2.
Occlusion Duration	Fill in the value to set the duration that the sensor must be obscured.

4. (Optional) When multi-devices are stitched, you can select the devices that need to be configured and perform batch operations.



5. Click  to complete the configuration.
6. Users can also view the data through Alarm Report.

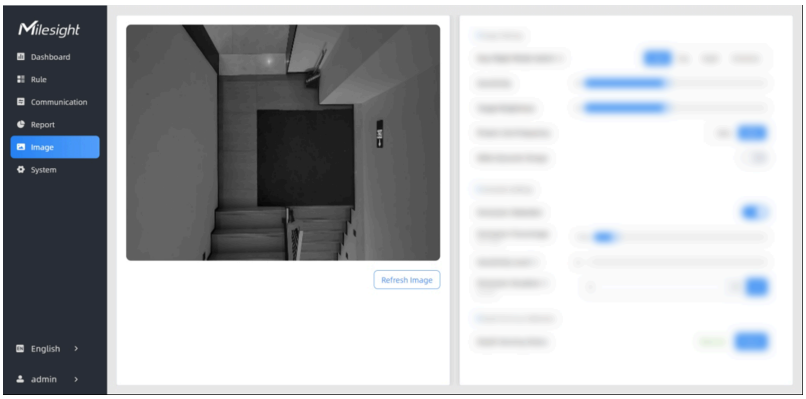
Configure Depth Sensing Calibration

The device's performance may degrade due to installation stress or physical impact, affecting depth map quality and people counting accuracy. If the depth map is displayed abnormally or the counting accuracy decreases after proper installation, the user can check and restore the device's depth sensing capability.

Prerequisite: Install the device in an environment with sufficient lighting.

Steps:

1. In the main page, click **Image** from the left navigation tree.



2. In the **Depth Sensing Calibration** area on the right, click **Check** to check the current depth sensing capability.



3. "Normal" indicates that depth sensing is functioning properly.

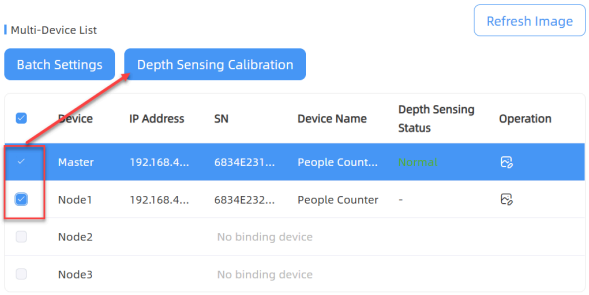


"Abnormal" means depth sensing is not working correctly. If "Abnormal" appears after two consecutive checks, click **Repair**.

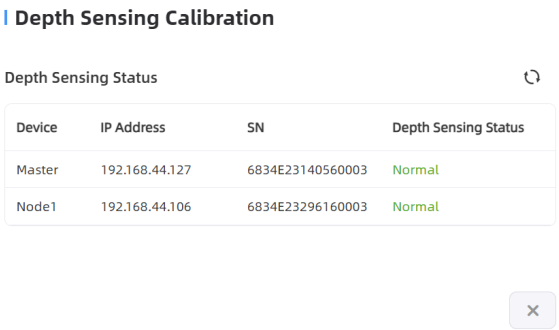


If the issue persists, follow the provided instructions to place multiple stationary objects, or contact technical support.

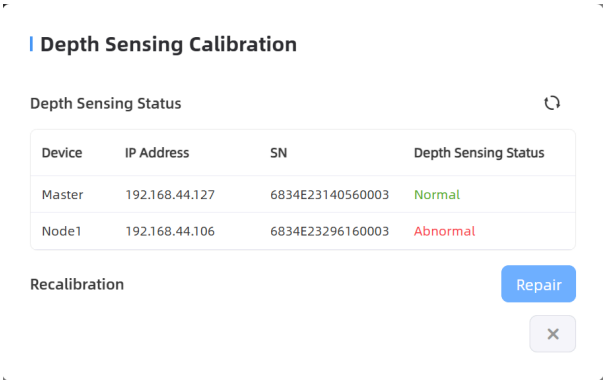
4. (Optional) If multiple devices are stitched, you can select the devices to be detected in the depth sensing interface of the master device and perform batch detection.



"Normal" indicates that depth sensing is functioning properly.



"Abnormal" means depth sensing is not working correctly. If "Abnormal" appears after two consecutive checks, click **Repair**.



If the issue persists, follow the provided instructions to place multiple stationary objects, or contact technical support.

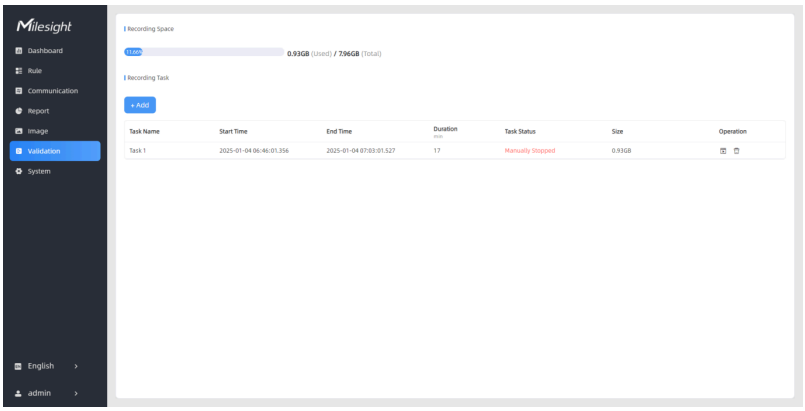
Configure Video Validation

This section describes how to configure Video Validation function.

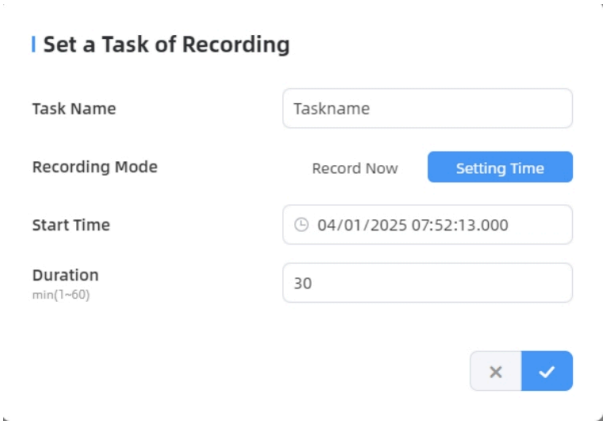
The video validation function can be used to verify people counting accuracy by comparing results against a recorded video.

Steps:

1. In the main page, click **Validation** from the left navigation tree.



2. In the **Recording Task** area on the right, click **+ Add**. The **Set a Task of Recording** dialog box is displayed. The device can add up to 50 tasks.



3. Configure the following parameters as needed.

Parameters	Description
Task Name	Customize a task name.
Recording Mode	Options: **Record Now** or **Setting Time**.

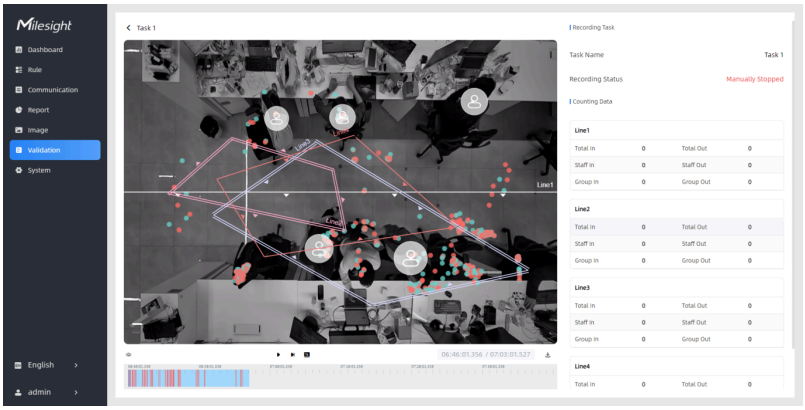
Parameters	Description
Start Time	This parameter is displayed only when **Recording Mode** is set to **Setting Time**. It sets the recording start time.
Duration	Set the recording duration. Range: ≤ 60 minutes.

Note:
The configured time ranges for different tasks must not overlap.

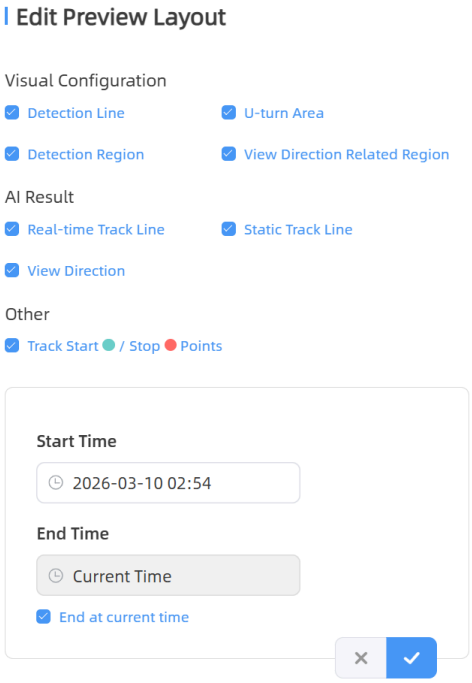
4. Click . The task is listed in the **Recording Task** area.

Restriction:
Detection rules cannot be modified during the recording process.

5. After recording completed, click in the **Operation** area of the task. The following page is displayed.



6. Click to edit the preview layout. For details, refer to the following table.



Parameters	Description
Visual Configuration	Select the items to be displayed in the preview as needed. The items displayed here are dependent on the functions enabled.
AI Result	Click the corresponding lines to show/hide them in the video. ◦ **Real-time Track Line:** Show or hide the target's track line in the preview. ◦ **Static Track Line:** Show or hide the history of the target's track line in the preview. Up to 1000 historical track records are supported. They are cleared upon page refresh. ◦ **View Direction:** Show or hide the target's gaze direction.
Other	Click to show/hide track points in the video.

7. Click to play the video to verify people counting accuracy, supports switching between 0.5x, 1x, 2x, and 4x playback speed.

> **Note:**
> The playback progress bar in the bottom highlights video frames where data changes occur.

8. (Optional) Click to download the video and use the dedicated Milesight VS Player for local playback.

Configure System Parameters

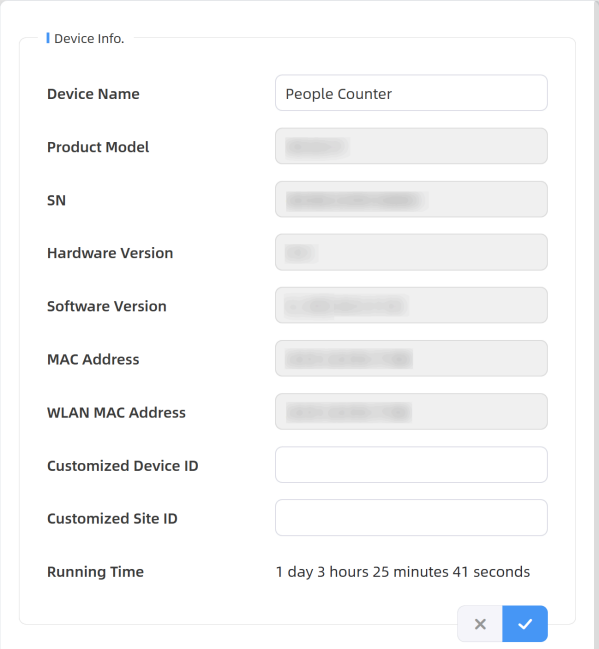
This section describes how to configure system parameters.

Configure Device Parameters

The device hardware and software information can be checked on the **System** page. Besides, users can customize the device name, the device ID and the site ID for multi-device management.

Steps:

1. In the main page, click **System** from the left navigation tree.



2. In the **Device Info.** area, check device information and configure the device name, the device ID and the site ID as needed.
3. Click to save the configuration.

Configure User Parameters

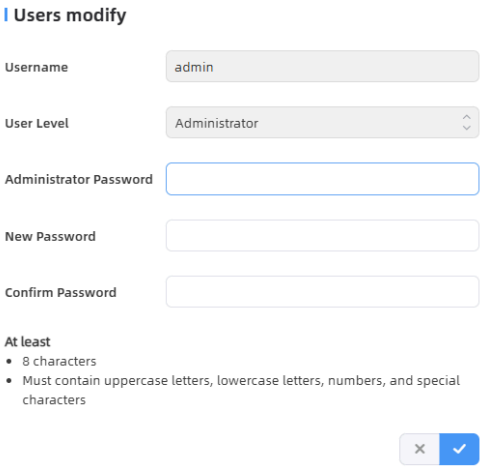
This section describes how to configure user parameters.

User Roles:

- Administrator: Has full system privileges with access to all webpage settings
- Viewer: Has access only to the **Dashboard** and **Report** pages

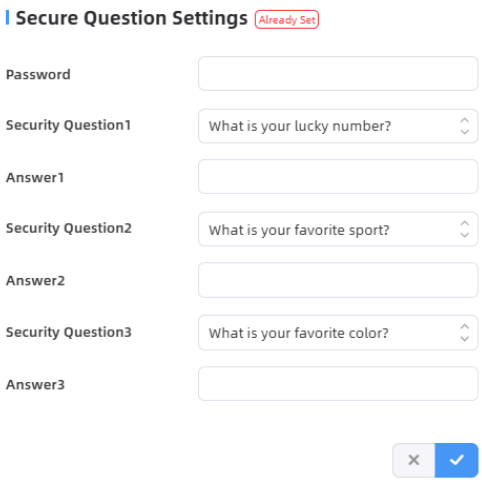
Modify Administrator's Parameters

1. In the main page, click **System** from the left navigation tree.
2. To change the login password of the device:
    a. In the **User** area, click  in the **Operation** column. The **Users modify** dialog box is displayed.



    b. In the **Administrator Password** area, enter the login password of the device.
    c. In the **New Password** area, enter a new password.
    d. In the **Confirm Password** area, enter the new password again.
    e. Click  to save the configuration.
3. To configure the security questions:

a. Click . The **Secure Question Settings** dialog box is displayed.



b. Enter the login password and provide answers to the three security questions.

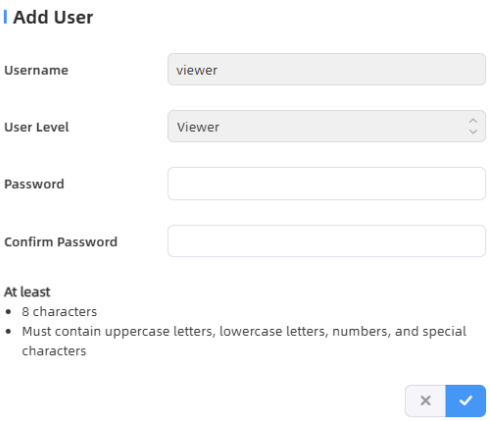
c. Click to save the configuration.

Troubleshooting:

In case that you forget the password, you can click **Forget Password** on the login page to reset the password by answering the three security questions.

Add a Viewer

1. Click **+ Add User**. The **Add User** dialog box is displayed.



2. In the **Password** area, enter a new password.
3. In the **Confirm Password** area, enter the new password again.

4. Click  to save the configuration. The user is listed in the **Users** area.
5. (Optional) Click  to change the password of the viewer.

Configure Time Parameters

This section describes how to configure time parameters.

Steps:

1. In the main page, click **System** from the left navigation tree.
2. In the **Set the System Time** area, configure the following parameters as needed.

Parameters	Description
Time Zone	Select the time zone for system synchronization.
Daylight Saving Time	Enable or disable Daylight Saving Time (DST). **Start Time:** Start time of the DST time range. **End Time:** End time of the DST time range. **DST Bias:** Specifies the offset value for advancing clock time during Daylight Saving Time periods.

3. In the **Synchronize Time** area, perform the following operations as needed.
    a. Set **Synchronize Mode** to **NTP Timing** or **Manual Timing** as needed.
    b. Perform the following operations as needed.

If	Do
If **Synchronize Mode** is set to **NTP Timing**	i. In the **Server Address** area, enter the NTP server address and click  . ii. In the **Time Interval** area, enter the time synchronization interval between the device and the NTP server and click  .

If	Do
If **Synchronize Mode** is set to **Manual Timing**	i. In the **Setting Time** area, set the device time and click  . ii. In the **Synchronize with your computer time** area, click **Synchronize** to synchronize the device time with the computer system time.

Configure Remote Management Parameters

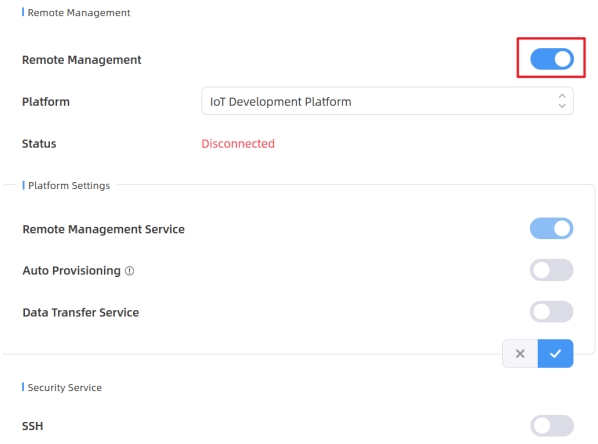
This section describes how to configure remote management.

Milesight provides remote management service for this device via Milesight DeviceHub platform or Development Platform.

Note:
Before connecting, do ensure that the device has been connected to the network via Ethernet port, and there is seamless Internet connection.

Steps:

1. In the main page, click **System** from the left navigation tree.
2. Click  in the lower right corner to go to **Remote Management** page.
3. In the **Remote Management** area, enable **Remote Management**.



4. Set **Platform** to **DeviceHub2.0** or **IoT Development Platform** as needed. For detailed platform information, refer to DeviceHub2.0 and Milesight Development Platform respectively.
5. Perform the following operations as needed.

If	Do
If **Platform** is to **DeviceHub2.0**	a. In the **Platform Settings** area, enter the IP address or the host name for the DeviceHub 2.0 management server. b. Enable **Synchronize Device Name** to synchronize the device name with DeviceHub 2.0. c. Enable **Synchronize Customized ID** to synchronize the device ID and site ID with Devicehub 2.0. d. Click **Connect** to apply the settings.
If **Platform** is set to **IoT Development Platform**	a. Enable **Remote Management Service** to modify device configuration through the Milesight Development platform. b. Enable **Auto Provisioning** to receive and deploy the configurations from Milesight Development Platform after the device is connected to Internet. c. Configure data transfer parameters to report people counting data to the Milesight Development platform at the specified interval. i. Enable **Data Transfer Service**. **Periodic Report** is enabled automatically. ii. Set **Periodic Report Scheme** to **On the Dot** or **From Now On** as needed. iii. Select **Period**. iv. Enable **Trigger Report** as needed. d. Click  to apply the settings.

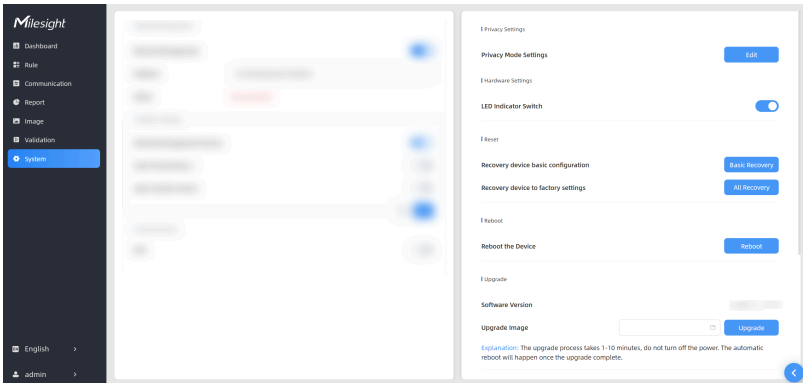
6. In the **Security Service** area, enable **SSH** to enable SSH access. The SSH port is fixed as 22.

Configure System Maintenance Parameters

This section describes how to configure system maintenance parameters.

Steps:

1. In the main page, click **System** from the left navigation tree.
2. Click  in the lower right corner to go to the **System Management** page.



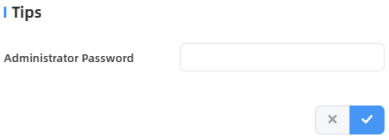
3. In the **Privacy Settings** area, configure the following parameters as needed:

Parameters	Description
Privacy Mode Settings	Click **Edit** to switch the preview mode when they want to change the Dashboard display. For parameter definitions, please refer to First Login.

4. In the **Hardware Settings** area, configure the following parameters as needed:

Parameters	Description
LED Indicator Switch	Enable or disable the LED indicator when the device is in normal operation.

5. In the **Reset** area, configure the following parameters as needed:

Parameters	Description
Recovery device basic configuration	Click **Basic Recovery** to reset the device while keeping the IP settings and user information.
Recovery device to factory settings	a. Click **All Recovery** to reset the device to default factory settings. The **Tips** dialog box is displayed.  b. Enter the login password of the device.

6. In the **Reboot** area, click **Reboot** button to restart the device immediately.

7. In the **Upgrade** area, configure the following parameters as needed:

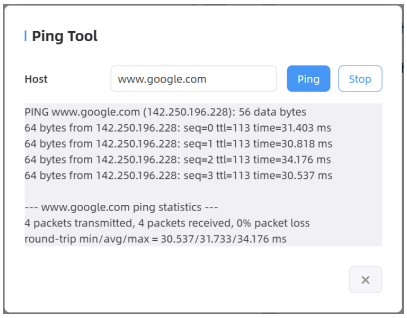
Parameters	Description
Software Version	The software version of the sensor.
Upgrade Image	**Important:** Once upgraded to **version 1.0.5 or later**, the device cannot be downgraded to an earlier version. a. Click to upload the upgrade file. b. Click **Upgrade**. The upgrade takes 1-10 minutes , and the device will restart automatically upon completion. **Note:** Do not disconnect the power of the device during the upgrade process.

8. In the **Backup and Restore** area, configure the following parameters as needed:

Parameters	Description
Export Config File	Export configuration file.
Import Config File	Click the button and select the configuration file, click **Import** button to import configuration file.

9. In the **Diagnostics** area, configure the following parameters as needed:

Parameters	Description
System Log	Click **Download** to download log files for troubleshooting.
Logging Level Settings	System logs do not include debug information by default. To obtain more detailed debug logs for troubleshooting, please switch to **Include Debug**.
IP Ping	a. Click **Open Ping Tool**. The **Ping Tool** dialog box is displayed. b. In the **Host** area, enter an IP address or a URL to test network connection.

Parameters	Description
	c. Click **Ping**. 

Chapter 5. Uplink Packets & Downlink Commands

This chapter describes the uplink data packets and downlink commands supported by the device.

Uplink Data

The device can transmit people counting data in JSON format to a HTTP URL or an MQTT broker. For configuration details, refer to Configure Recipient Parameters. This section provides uplink data examples for real-time, periodic and alarm reporting.

Uplink Data Examples for Trigger Reporting

If the report strategy is set to **Trigger Report** (real-time reporting is enabled), the device reports the uplink data upon data change. This section provides uplink data examples for trigger reporting.

Data Example for Line Crossing People Counting

```
{
"device_info":
{
      "cus_device_id": "123456",
      "cus_site_id": "789123",
      "device_mac": "24:E1:24:FA:0C:6C",  //PoE version only
      "device_name": "People Counter",
      "device_sn": "6384E16179950009",
      "firmware_version": "V_125-LW.1.0.1",
      "hardware_version": "V1.0",
      "ip_address": "192.168.60.183",
      "running_time": 58,
      "wlan mac": 24:E1:24:54:23:0A
   },
"network_info": //Cellular version only
{
      "network_status": "1",   //1 is connected, 0 is disconnected
      "iccid": "89860117838009934120",
      "imei": "860425047368939",
      "cell_id": "340db80",
      "lac": "5299"
   },
```

```
"line_trigger_data":
[
{
        "children": {
        "female_in": 8,
        "female_out": 2,
        "in": 14,
        "male_in": 8,
        "male_out": 2,
        "out": 6
    },
    "group": {
        "in": 0,
        "out": 0
    },
    "staff": {
        "female_in": 0,
        "female_out": 0,
        "in": 0,
        "male_in": 0,
        "male_out": 0,
        "out": 0
    },
    "total": {
        "female_in": 20,
        "female_out": 22,
        "in": 27,
        "male_in": 20,
        "male_out": 22,
        "out": 27
    },
    "line": 1,
    "line_name": "Line11111111111111111111111111",
    "line_uuid": "9a0440de-3188-4f6d-b886-bb20c97bd26b"
},
    {
    "children": {
```

```
        "female_in": 8,
        "female_out": 2,
        "in": 14,
        "male_in": 8,
        "male_out": 2,
        "out": 6
      },
      "group": {
        "in": 0,
        "out": 0
      },
      "staff": {
        "female_in": 0,
        "female_out": 0,
        "in": 0,
        "male_in": 0,
        "male_out": 0,
        "out": 0
      },
      "total": {
        "female_in": 20,
        "female_out": 22,
        "in": 27,
        "male_in": 20,
        "male_out": 22,
        "out": 27
      },
      "line": 3,
      "line_name": "Line33333333333333333333333333",
      "line_uuid": "82ffe54d-0191-484b-a2fc-495628a8f2a1"
      }
   ],
"time_info":
{
      "dst_status": false,
      "enable_dst": true,
      "time": "2024-05-30T20:11:32+08:00",
```

```
    "time_zone": "UTC+8:00 China Standard Time (CT/CST)"
  }
}
```

Data Example for Region People Counting

```
{
"device_info":
{
    "cus_device_id": "123456",
    "cus_site_id": "789123",
    "device_mac": "24:E1:24:FA:0C:6C",  //PoE version only
    "device_name": "People Counter",
    "device_sn": "6384E16179950009",
    "firmware_version": "V_125-LW.1.0.1",
    "hardware_version": "V1.0",
    "ip_address": "192.168.60.183",
    "running_time": 105,
"wlan mac": 24:E1:24:54:23:0A
  },
"network_info": //Cellular version only
{
    "network_status": "1",   //1 is connected, 0 is disconnected
    "iccid": "89860117838009934120",
    "imei": "860425047368939",
    "cell_id": "340db80",
    "lac": "5299"
  },

"region_trigger_data":
{
    "region_count_data":
[
      {
       "total": {
          "current_female": 0,
          "current_male": 1,
          "current_total": 2
```

```
        },
        "children": {
            "current_female": 0,
            "current_male": 1,
            "current_total": 2
        },
        "staff": {
            "current_female": 0,
            "current_male": 1,
            "current_total": 2
        },
        "region": 1,
        "region_name": "Region1",
        "region_uuid": "bd1e6ce2-e113-4ce4-a9b6-0633f7083cac"
    }
]
  },
"time_info":
{
    "dst_status": false,
    "enable_dst": true,
    "time": "2024-05-30T20:12:20+08:00",
    "time_zone": "UTC+8:00 China Standard Time (CT/CST)"
  }
}
```


Data Example for Dwell Time Detection


```
{
"device_info":
{
    "cus_device_id": "123456",
    "cus_site_id": "789123",
    "device_mac": "24:E1:24:FA:0C:6C",  //PoE version only
    "device_name": "People Counter",
    "device_sn": "6384E16179950009",
    "firmware_version": "V_125-LW.1.0.1",
    "hardware_version": "V1.0",
```

```
      "ip_address": "192.168.60.183",
      "running_time": 106,
"wlan mac": 24:E1:24:54:23:0A
   },
"network_info": //Cellular version only
{
      "network_status": "1",  //1 is connected, 0 is disconnected
      "iccid": "89860117838009934120",
      "imei": "860425047368939",
      "cell_id": "340db80",
      "lac": "5299"
   },

"region_trigger_data":
{
      "dwell_time_data":
[
{
         "children": false,
         "duration": 96799,
         "dwell_end_time": "2024-05-30T20:12:20+08:00",
         "dwell_start_time": "2024-05-30T20:10:43+08:00",
         "people_id": 5,
         "region": 1,
         "region_name": "Region1",
         "region_uuid": "bd1e6ce2-e113-4ce4-a9b6-0633f7083cac",
         "gender": "male",
         "staff": true
      }
]
   },
"time_info":
{
      "dst_status": false,
      "enable_dst": true,
      "time": "2024-05-30T20:12:20+08:00",
      "time_zone": "UTC+8:00 China Standard Time (CT/CST)"
```

```
  }
}
```

Data Example in Case that an Effective Viewer Track Disappears


```
{
  "device_info": {
    "cus_device_id": "123456",
    "cus_site_id": "789123",
    "device_mac": "24:E1:24:FA:0C:6C",
    "device_name": "People Counter11",
    "device_sn": "6384E16179950009",
    "firmware_version": "V_125-LW.1.0.1",
    "hardware_version": "V1.0",
    "ip_address": "192.168.60.183",
    "running_time": 58
  },
  "network_info": {
    "network_status": "1",
    "iccid": "89860117838009934120",
    "imei": "860425047368939",
    "cell_id": "340db80",
    "lac": "5299"
  },
  "attention_region_trigger_data":{
   "region_attention_time_data": [
    {
      "region": 1,
      "region_uuid": "c2cff789-8311-4a73-8ff3-9348cf4fa0d9",
      "children": false,
      "attention_time_ms": 96799,
      "people_id": 5,
      "gender": "male",
      "staff": true
    },
    {
      "region": 2,
      "region_uuid": "c2cff789-8311-4a73-8ff3-9348cf4fa0d9",
```

```
        "children": false,
        "attention_time_ms": 96799,
        "people_id": 5,
        "gender": "male",
        "staff": true
      }
      ]
  },
    "time_info": {
     "dst_status": false,
     "enable_dst": true,
     "time": "2024-05-30T20:11:32+08:00",
     "time_zone": "UTC+8:00 China Standard Time (CT/CST)"
  }
}
```


Data Example for Digital Input


```
{
  "device_info": {
    "cpu": {
      "cpu_temperature": 50,
      "cpu_usage": 62
    },
    "device_mac": "24:E1:24:FA:77:49",
    "device_name": "66",
    "device_sn": "6834E23009150005",
    "device_tilt_pitch_roll": {
      "pitch": 161.8,
      "roll": 147.6
    },
    "firmware_version": "V_125-LW.1.0.5",
    "hardware_version": "V1.1",
    "ip_address": "192.168.49.152",
    "ram": {
      "memory_usage": 52.97,
      "total_memory_mb": 480.62,
      "used_memory_mb": 254.56
```

```
    },
    "running_time": 496781,
    "storage": {
      "storage_usage": 26.83,
      "total_space_gb": 11.71,
      "used_space_gb": 3.14
    },
    "wlan_mac": "24:E1:24:FA:77:4A"
  },
  "network_info": {
    "network_status": "1",
    "iccid": "89860117838009934120",
    "imei": "860425047368939",
    "cell_id": "340db80",
    "lac": "5299"
  },
  "di_trigger_data": {
    "di_trigger_count": 69390,
    "di_trigger_event_name": "test"
  },
  "isRetransmission": false,
  "time_info": {
    "dst_status": false,
    "enable_dst": true,
    "time": "2024-05-30T20:11:32+08:00",
    "time_zone": "UTC+8:00 China Standard Time (CT/CST)"
  }
}
```


Uplink Data Examples for Periodic Reporting

If the report strategy is set to **Periodic Report**, the device reports the uplink data upon data change at the configured interval. This section provides a uplink data example for periodic reporting.


```
{
  "device_info": {
    "cus_device_id": "123456",
    "cus_site_id": "789123",
```

```
    "device_mac": "24:E1:24:FA:0C:6C",   //PoE version only
    "device_name": "People Counter11",
    "device_sn": "6384E16179950009",
    "firmware_version": "V_125-LW.1.0.1",
    "hardware_version": "V1.0",
    "ip_address": "192.168.60.183",
    "running_time": 141,
    "wlan_mac": "24:E1:24:54:23:0A"
},
"network_info": {//Cellular version only
"network_status": "1", //1 is connected, 0 is disconnected.
    "iccid": "89860117838009934120",
    "imei": "860425047368939",
    "cell_id": "340db80",
    "lac": "5299"
},
"line_periodic_data": [{
        "line": 1,
        "line_name": "Line11111111111111111111111111111",
        "line_uuid": "9a0440de-3188-4f6d-b886-bb20c97bd26b",
        "total": {
            "female_in": 0,
            "female_out": 0,
            "in": 0,
            "male_in": 0,
            "male_out": 0,
            "out": 0
        },
        "children": {
            "female_in": 0,
            "female_out": 0,
            "in": 0,
            "male_in": 0,
            "male_out": 0,
            "out": 0
        },
        "staff": {
```

```
        "female_in": 0,
        "female_out": 0,
        "in": 0,
        "male_in": 0,
        "male_out": 0,
        "out": 0
      },
      "group": {
        "in": 0,
        "out": 0
      }
    },
    {
      "line": 2,
      "line_name": "Line22222222222222222222222222",
      "line_uuid": "b138b9a1-ce58-40bd-98f4-c401dfc118c8",
      "total": {
        "female_in": 0,
        "female_out": 0,
        "in": 0,
        "male_in": 0,
        "male_out": 0,
        "out": 0
      },
      "children": {
        "female_in": 0,
        "female_out": 0,
        "in": 0,
        "male_in": 0,
        "male_out": 0,
        "out": 0
      },
      "staff": {
        "female_in": 0,
        "female_out": 0,
        "in": 0,
        "male_in": 0,
```

```
            "male_out": 0,
            "out": 0
        },
        "group": {
            "in": 0,
            "out": 0
        }
    }
],
"line_total_data": [{
        "line": 1,
        "line_name": "Line11111111111111111111111111111",
        "line_uuid": "9a0440de-3188-4f6d-b886-bb20c97bd26b",
        "children": {
            "female_in_counted": 0,
            "female_out_counted": 0,
            "in_counted": 0,
            "male_in_counted": 0,
            "male_out_counted": 0,
            "out_counted": 0
        },
        "total": {
            "female_in_counted": 0,
            "female_out_counted": 0,
            "in_counted": 0,
            "male_in_counted": 0,
            "male_out_counted": 0,
            "out_counted": 0,
            "capacity_counted": 0
        },
        "staff": {
            "female_in_counted": 0,
            "female_out_counted": 0,
            "in_counted": 0,
            "male_in_counted": 0,
            "male_out_counted": 0,
            "out_counted": 0
```

```
        },
        "group" {
            "in_counted": 0,
            "out_counted": 0
        }

    },
"region_data": {
    "dwell_time_data": [{
            "avg_dwell_time": 308367,
            "children_avg_dwell_time": 0,
            "children_max_dwell_time": 0,
            "female_avg_dwell_time": 0,
            "female_max_dwell_time": 519934,
            "male_avg_dwell_time": 0,
            "male_max_dwell_time": 96799,
            "max_dwell_time": 519934,
            "staff_max_dwell_time": 1522,
            "staff_avg_dwell_time": 1522,
            "region": 1,
            "region_name": "Region1",
            "region_uuid": "bd1e6ce2-e113-4ce4-a9b6-0633f7083cac"
        }
    ],
    "region_count_data": [{
            "total": {
            "current_female": 0,
            "current_male": 1,
            "current_total": 2
        },
        "children": {
            "current_female": 0,
            "current_male": 1,
            "current_total": 2
        },
        "staff": {
            "current_female": 0,
```

```
            "current_male": 1,
            "current_total": 2
        },
        "region": 1,
        "region_name": "Region1",
        "region_uuid": "bd1e6ce2-e113-4ce4-a9b6-0633f7083cac"
    }]
},
 "attention_region_total_data": {
    "region_effective_audience_data": [
        {
            "region": 1,
            "region_uuid": "c2cff789-8311-4a73-8ff3-9348cf4fa0d9",
            "total": {
            "effective_audience": 1,//Including staffs and children
            "male_effective_audience": 1,///Including male staffs and boys
            "female_effective_audience": 1////Including female staffs and girls
            },
            "children": {
                "effective_audience": 1,
                "male_effective_audience": 1,
                "female_effective_audience": 1
            },
            "staff": {
                "effective_audience": 1,
                "male_effective_audience": 1,
                "female_effective_audience": 1
            }
        }
    ],
    "region_avg_attention_time_data": [//Excluding staffs and children
        {
            "region": 1,
            "region_uuid": "c2cff789-8311-4a73-8ff3-9348cf4fa0d9",
            "avg_time_s": 10,
            "children_avg_time_s": 10,
            "staff_avg_time_s": 10,
```

```
            "male_avg_time_s": 10,
            "female_avg_time_s": 10
          },
          {
            "region": 2,
            "region_uuid": "c2cff789-8311-4a73-8ff3-9348cf4fa0d8",
            "avg_time_s": 10,
            "children_avg_time_s": 10,
            "staff_avg_time_s": 10,

            "male_avg_time_s": 10,
            "female_avg_time_s": 10
          }
        ]
    },
    "di_period_data": {
      "di_trigger_count": 119,
      "di_trigger_event_name": "test"
    },
    "di_total_data": {
      "di_trigger_count": 69390,
      "di_trigger_event_name": "test"
    },
     "time_info": {
      "dst_status": false,
      "enable_dst": true,
      "end_time": "2024-05-30T20:21:49+08:00",
      "start_time": "2024-05-30T20:20:49+08:00",
      "time_zone": "UTC+8:00 China Standard Time (CT/CST)"
    }
}
```


Uplink Data Examples for Alarm Reporting

When the device encounters an abnormal situation, it will report an alarm. This section provides uplink data examples for alarm reporting.

Data Example for Device Abnormal Tilt


```
{
  "device_abnormal_tilt_alarm": [
    {
      "alarm_status": "alarm",
      "device_sn": "6834E23009150005"
    }
  ],
  "device_info": {
    "cpu": {
      "cpu_temperature": 60,
      "cpu_usage": 54
    },
    "device_mac": "24:E1:24:FA:77:49",
    "device_name": "66",
    "device_sn": "6834E23009150005",
    "device_tilt_pitch_roll": {
      "pitch": 105,
      "roll": -153
    },
    "firmware_version": "V_125-LW.1.0.5",
    "hardware_version": "V1.1",
    "ip_address": "192.168.49.152",
    "ram": {
      "memory_usage": 36.01,
      "total_memory_mb": 480.62,
      "used_memory_mb": 173.05
    },
    "running_time": 7362,
    "storage": {
      "storage_usage": 0.04,
      "total_space_gb": 11.71,
      "used_space_gb": 0
    },
    "wlan_mac": "24:E1:24:FA:77:4A"
  },
  "isRetransmission": false,
```

```
  "time_info": {
    "dst_status": false,
    "enable_dst": false,
    "time": "2026-01-13T19:49:58+08:00",
    "time_zone": "UTC+8:00 China Standard Time (CT/CST)"
  }
}
```


Data Example for Device Occlusion


```
{
  "device_info": {
    "cpu": {
      "cpu_temperature": 60,
      "cpu_usage": 76
    },
    "device_mac": "24:E1:24:FA:77:49",
    "device_name": "66",
    "device_sn": "6834E23009150005",
    "device_tilt_pitch_roll": {
      "pitch": 129.5,
      "roll": 142.1
    },
    "firmware_version": "V_125-LW.1.0.5",
    "hardware_version": "V1.1",
    "ip_address": "192.168.49.152",
    "ram": {
      "memory_usage": 36.89,
      "total_memory_mb": 480.62,
      "used_memory_mb": 177.28
    },
    "running_time": 2682,
    "storage": {
      "storage_usage": 21.59,
      "total_space_gb": 11.71,
      "used_space_gb": 2.53
    },
    "wlan_mac": "24:E1:24:FA:77:4A"
```

```
  },
  "device_occlusion_alarm": [
    {
      "alarm_status": "alarm",
      "device_sn": "6834E23009150005"
    }
  ],
  "isRetransmission": false,
  "time_info": {
    "dst_status": false,
    "enable_dst": false,
    "time": "2026-01-27T16:09:03+08:00",
    "time_zone": "UTC+8:00 China Standard Time (CT/CST)"
  }
}
```


MQTT API Commands

This section provides examples of the MQTT API commands supported by the device. For how to configure MQTT API parameters, refer to Configure MQTT API Parameters (Cellular Version Only).

Search Report Commands

Request example:


```
{
  "dst": "all",
  "type":0,
  "command":"/api/v1/system/searchReport",
  "msgId":"1",
  "requestData":{
      "event":0,
      "startTime":"2025-01-22T08:00:00.000",
      "endTime":"2025-01-23T08:00:00.000",
      "lineParam":{
          "lineId":0,
          "timeUnit":0,
          "mode":0
          },
```

```
    "regionCount":{
        "regionId":0
        },
    "dwellDetect":{
        "regionId":0,
        "timeMin":10,
        "timeBinWidth":10,
        "numOfBins":10
        },
    "heatMap":{
        "type":0
        },
    "uuid":"1d4f62b5-37f0-4bda-80f8-a5625613fc6e"
}
}
```


For request example parameter descriptions, refer to the following table.

Parameter	Type	Description
dst	string	**all**: Send to all recipients that subscribe the MQTT API topic. **SN**: Send to a certain recipient.
type	number	**0**: Request, **1**: Response.
msgId	number	Request identifier.
requestData	object	
event	number	**0**: Line crossing counting **1**: Region people counting **2**: Dwell time detection **3**: Heat map **4**: History Point
startTime		

Parameter	Type	Description
endTime		
lineParam		
regionCount		
dwellDetect		
heatMap		
uuid	string	Random unique ID defined by the user

Response example: Success


```
{
"code":0,
"message":"ok",
"msgId":"1",
"src":"6834E16184430017",
"transmitTime":2,
"type":1
}
```


For response example parameter descriptions, refer to the following table.

Parameter	Type	Description
code	integer	
message	string	
msgId	number	Response identifier
src	string	Response SN
type	number	**0**: Request, **1**: Response

Get Report Result Commands

Request example:


```
{
 "dst": "all",
 "type":0,
```

```
"command":"/api/v1/system/getReportResult",
"msgId":"1",
  "requestData":{
      "uuid":"1d4f62b5-37f0-4bda-80f8-a5625613fc6e",
      "event":0
      }
}
```

For request example parameter descriptions, refer to the following table.

Parameter	Type	Description
dst	string	**all**: Send to all recipients that subscribe the MQTT API topic. **SN**: Send to a certain recipient.
type	number	**0**: request, **1**: response.
msgId	number	Request identifier.
requestData	object	
uuid	string	Random unique ID defined by the user.
event	number	**0**: Line crossing counting. **1**: Region people counting. **2**: Dwell time detection. **3**: Heat map.

Response example:

```
{
  "code": 0,
  "data": {
    "event": 0,
    "isReady": true,
    "line": [
      {
        "children": {
```

```
            "femaleIn": 0,
            "femaleOut": 1,
            "in": 6,
            "maleIn": 6,
            "maleOut": 0,
            "out": 1
          },
          "group": {
            "in": 9,
            "out": 3
          },
          "staff": {
            "femaleIn": 0,
            "femaleOut": 0,
            "in": 0,
            "maleIn": 0,
            "maleOut": 0,
            "out": 0
          },
          "time": "2024-08-15T09:00:00.000",
          "total": {
            "femaleIn": 0,
            "femaleOut": 1,
            "in": 9,
            "maleIn": 9,
            "maleOut": 2,
            "out": 3
          }
        }
      ]
  },
  "message": "ok",
  "transmitTime": 1
}
```


For response example parameter descriptions, refer to the following table.

Parameter	Type	Description
code	integer	
data	object []	Return data
event	number	**0**: Line crossing counting **1**: Region people counting **2**: Dwell time detection **3**: Heat map
isReady	boolean	
line,**region**	object	Including children, staff, group, total
children, **staff**,**group** ,**d-well** , **total**	object	Including in, out, femaleIn, femaleOut, maleIn, maleOut
heatmap	object	
height	number	Height of the heatmap data grid
width	number	Width of the heatmap data grid
max	number	Maximum value of heat map
min	number	Minimum value of heat map
values	object[]	
X	number	
Y	number	
value	number	
historyPoints		
values	object[]	Trajectory point types: **0**: Start trajectory point **1**: Stop trajectory point

Parameter	Type	Description
X	number	
Y	number	
message	string	Return information
transmitTime	number	Processing time

Search Log Commands

Request example:

```
{
 "dst":"all",
 "type":0,
 "command": "/api/v1/system/searchLog",
  "msgId":12345678,
 "requestData":{
     "startTime": "0",
     "endTime": "1800211081920",
     "logType": 0,
     "admin": true
}
}
```

For request example parameter descriptions, refer to the following table.

Parameter	Type	Description
dst	string	**all**: Send to all recipients that subscribe the MQTT API topic. **SN**: Send to a certain recipient.
type	number	**0**: Request, **1**: Response.
msgId	number	Request identifier.
requestData	object	
startTime	string	Start timestamp. Unit: ms.

Parameter	Type	Description
endTime	string	End timestamp. Unit: ms.
logType	number	**0**: Starting up log.
admin	boolean	**true**: Display response parameter **rebootCode**. **false**: Hide response parameter **rebootCode**.

Response example:


```
{
 "code": 0,
  "data": {
    "log": [
     {
       "PowerOnTime": "2024-07-22T09:34:27+08:00",
       "ShutdownTime": "2024-07-22T09:41:59+08:00",
       "rebootCode": 1,
       "rebootMessage": "normal",
       "runningTime": 451
     },
     {
       "PowerOnTime": "2024-07-22T09:42:05+08:00",
       "ShutdownTime": "2024-07-22T09:54:47+08:00",
       "rebootCode": 3,
       "rebootMessage": "upgrade success",
       "runningTime": 761
     }
   ],
    "recordCount": 5
 },
 "message": "ok",
 "transmitTime": 3
}
```


For response example parameter descriptions, refer to the following table.

Parameter	Type	Description
code	integer	
data	object	
log	object[]	Item type: object
PowerOnTime	string	Boot time
ShutdownTime	string	Power outage time
rebootCode	string	**-1**: Running **0**: Unknown reason reboot **1**: Manual reboot **2**: Network modification reboot **3**: Web upgrade reboot **4**: Software reset reboot **5**: Hardware reset reboot **6**: Configuration import reboot **7**: Remote management configuration import **8**: Remote management upgrade **9**: Upgrade failure reboot **10**: Multicast network configuration modification reboot **11**: mssserver crash **12**: avserver crash **13**: lighttpd crash **14**: Multi-device stitching mode change **15**: Multiple 4G dial-up failures
runningTime	integer	

Parameter	Type	Description
runningTime	string	
recordCount	integer	Number of restarts. Maximum display 1000.
message	string	
transmitTime	number	Processing time

Chapter 6. Services

Milesight provides customers with timely and comprehensive technical support services. End-users can contact their local dealer to obtain technical support. Distributors and resellers can contact Milesight directly for technical support.

Technical Support Mailbox: iot.support@milesight.com

Online Support Portal: https://support.milesight-iot.com

Resource Download Center: https://www.milesight.com/iot/resources/download-center/

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