



# AI Stereo Vision People Counter

## VS125

### User Guide



## Safety Precautions

Milesight will not shoulder responsibility for any loss or damage resulting from not following the instructions of this operating guide.

- ❖ The device must not be disassembled or remodeled in any way.
- ❖ To avoid risk of fire and electric shock, do keep the product away from rain and moisture before installation.
- ❖ Do not place the device where the temperature is below/above the operating range.
- ❖ **Do not touch the device directly to avoid the scalds when the device is running.**
- ❖ The device must never be subjected to shocks or impacts.
- ❖ Make sure the device is firmly fixed when installing.
- ❖ Do not expose the device to where laser beam equipment is used.
- ❖ Use a soft, dry cloth to clean the lens of the device.

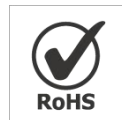
## Gender Recognition Statement

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 people counter recognizes only easily discernible, visual indications when determining whether a person is more likely to be female or male. A reliable detection of the biological sex of a person is neither possible nor intended. We intend no disrespect to the gender with which a person identifies. The counts are merely a statistical measurement of a large number of people.

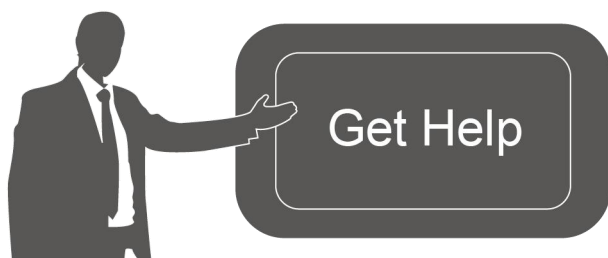
## Declaration of Conformity

VS125 is in conformity with the essential requirements and other relevant provisions of the CE, FCC, and RoHS.



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For assistance, please contact

Milesight technical support:

Email: [iot.support@milesight.com](mailto:iot.support@milesight.com)

Support Portal: [support.milesight-iot.com](https://support.milesight-iot.com)

Tel: 86-592-5085280

Fax: 86-592-5023065

Address: Building C09, Software Park  
Phase III, Xiamen 361024,  
China

## Revision History

| Date          | Doc Version | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Jul. 17, 2024 | V1.0        | Initial version                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Sep.30, 2024  | V1.1        | 1. Add Multi-Device Stitching;<br>2. Add Staff Detection;<br>3. Add Group Counting;<br>4. Add Heatmap;<br>5. Support TCP/IP Communication for cellular version.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Jan.4, 2025   | V1.2        | 1. Add configuration of Wi-Fi passwords at login, user passwords are required to contain 4 styles.<br>2. Add Validation.<br>3. Add U-turn automatic filtering.<br>4. Add Record Track Start/Stop Points and show Static Track Line.<br>5. Add I/O Settings.<br>6. Add Obstacle Exclusion and Detection Mode Select.<br>7. Support Individual Filter of Group Counting.<br>8. Supports automatic replacement of device information when subscribing to a topic.<br>9. Add LED indicator switch and diagnostic function.<br>10. Modify the display style of real-time track line and preview layout.<br>11. Modify field of view angle.<br>12. Remove the HTTP access feature. |

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# 1. Product Introduction

## 1.1 Overview

VS125 is a professional people counting sensor that is based on deep learning AI and Binocular Stereo Vision technology. This sensor possesses an impressive accuracy of up to 99.8% in people counting, and it delivers exceptional performance even in low light environment and total darkness. Besides that, it can achieve rich attributes recognition including gender, children and staff. It is designed with privacy protection that complies with GDPR.

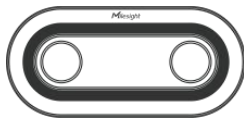
VS125 offers various connectivity options (Cellular and PoE) for seamless connectivity and efficient space management across applications. Additionally, it provides rich interfaces for versatile connection options (RS485/DO/DI), expanding the possibilities for integration and customization. The VS125 can be easily installed, making it ideal in retail stores, malls, offices, subways, and other locations.

## 1.2 Key Features

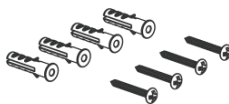
- Up to 99.8% people counting accuracy with AI and stereo vision technology
- Great lighting adaptability that allows it to work well in low light environments and complete darkness
- With high ceiling mounting of up to 6m, support automatic tilt correction and automatic infrared light adjustment
- Customer-defined preview privacy settings, no data with personal information is transmitted, complies with GDPR
- Support line crossing people counting, regional people counting and dwell time detection
- Rich attribute recognition abilities including gender, group counting, children, staff identification etc, provide deeper insights
- Support Heat Map function for foot traffic intensity and distribution analysis
- Support Multi-Device Stitching which enables the linking of multiple devices, allowing for up to 16 device stitching to expand coverage
- Support local data storage and data retransmission function for secured data collection
- Supports RS485/DI/DO multiple interfaces and has strong scalability
- Quick and easy management with Milesight Devicehub and Milesight Development Platform
- High compatibility of data transmission with HTTP(s)/MQTT(s) protocol and API, supports customized push content and push method

## 2. Hardware Introduction

### 2.1 Packing List



1 × VS125 Device



4 × Ceiling Mounting Kits



1 × Multi-interface Cable



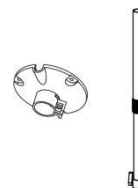
1 × Warranty Card



1 × Quick Guide

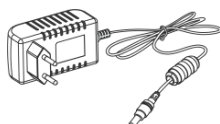


8 × Staff Lanyards  
(Optional)



1 × Multifunctional  
Bracket Kit (Optional)

#### Cellular Version Only Accessories

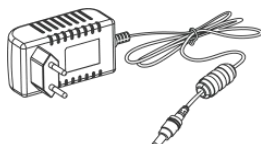


1 x Power Adapter



1 x SIM-eject Tool

#### PoE Version Only Accessories



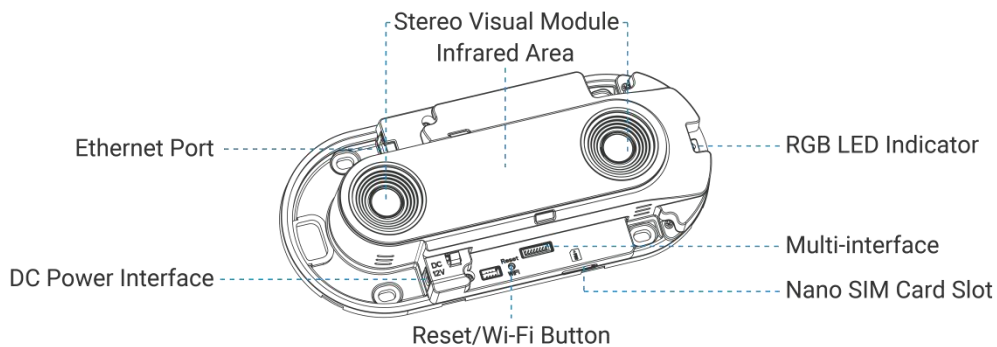
1 x Power Adapter (Optional)



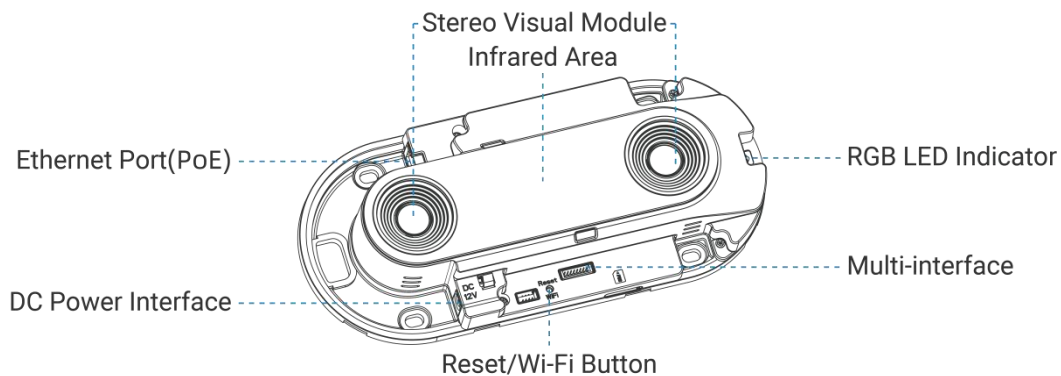
If any of the above items is missing or damaged, please contact your sales representative.

## 2.2 Hardware Overview

- **Cellular Version:**



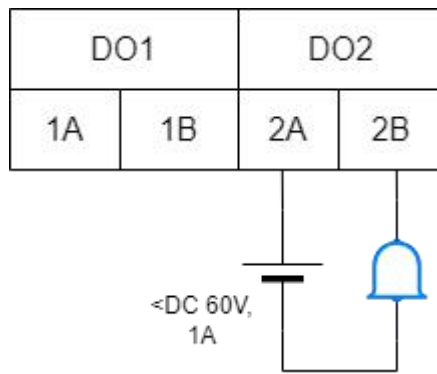
- **PoE Version:**



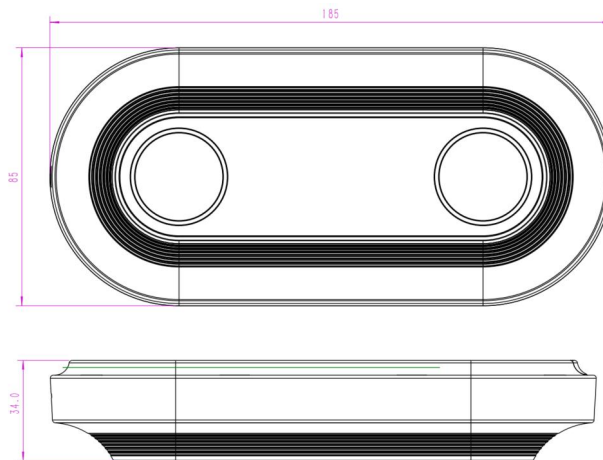
## 2.3 Button Descriptions

| Function                 | Action                                                    | LED Indication                                                                                          |
|--------------------------|-----------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| Turn On/Off Wi-Fi        | Press and hold the power button for more than 3 seconds.  | Turn On/Off: Blue light blinks for 3 seconds.<br>Wi-Fi On: Blue light on.<br>Wi-Fi Off: Green light on. |
| Reset to Factory Default | Press and hold the power button for more than 10 seconds. | Green light blinks until the reset process is completed.                                                |

## 2.4 Wirings

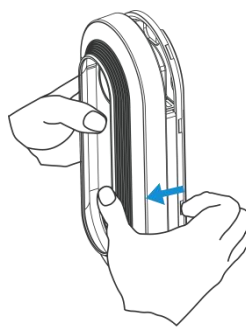


## 2.5 Dimensions (mm)



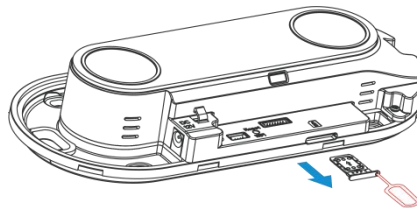
## 2.6 SIM Card Installation (Cellular Version Only)

**Step 1:** Remove the cover plate.



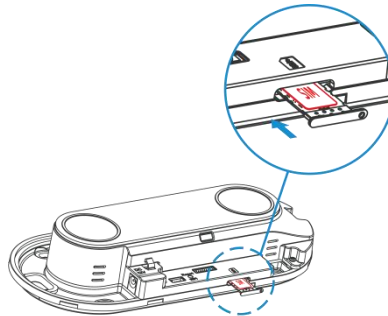
①

**Step 2:** Use the SIM-eject tool to pop open the SIM tray.



②

**Step 3:** Place the Nano SIM card into the sim card slot and insert it back to device.



③

### 3. Power Supply

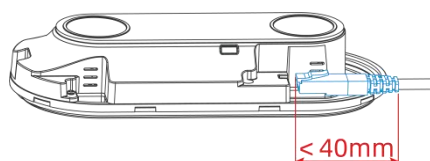
- **Powered by DC Power Adapter (12V, 1A)**



- **Powered by PoE Switch (PoE Version Only, 802.3af standard)**



**Note:** Ensure the length of the Ethernet Cable crystal head is less than 40mm.



## 4. Access the Sensor

VS125 provides user-friendly web GUI for configuration access via Wi-Fi or Ethernet port. Users need to customize the password when using the device for the first time. The default settings are as below:

Wi-Fi SSID: **People Counter\_xxxxxx** (can be found on the device label)

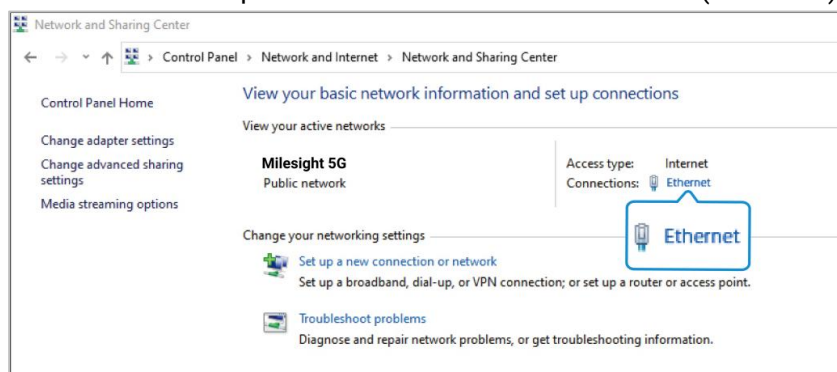
Wi-Fi IP: **192.168.1.1**

Ethernet IP: **192.168.5.220**

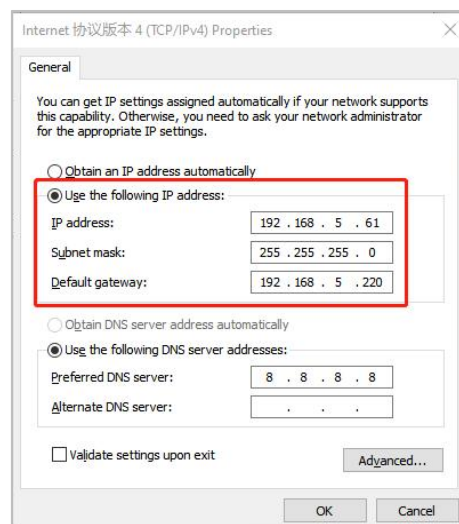
### Step 1:

- **Wireless Method:** Enable the Wireless Network Connection on your computer, search for corresponding for Wi-Fi SSID to connect it, then type 192.168.1.1 to access the web GUI.
- **Wired Method (PoE Version Only):** Connect the device to computer via Ethernet port, change the IP address of computer to 192.168.5.0 segment as below:

- a. Go to Start→ Control Panel→ Network and Internet → Network and Sharing Center→ Ethernet→ Properties→ Internet Protocol Version 4 (TCP/IPv4).



- b. Enter an IP address that in the same segment with sensor ( e.g. 192.168.5.61, but please note that this IP address shall not conflict with the IP address on the existed network).



Then open the Browser and type 192.168.5.220 to access the web GUI.

**Step 2:** Users need to set the password and three security questions when using the sensor for the first time.

The first screenshot shows the 'Activation' form. It has a title bar with 'English' and a dropdown arrow. The form contains the following fields and text:

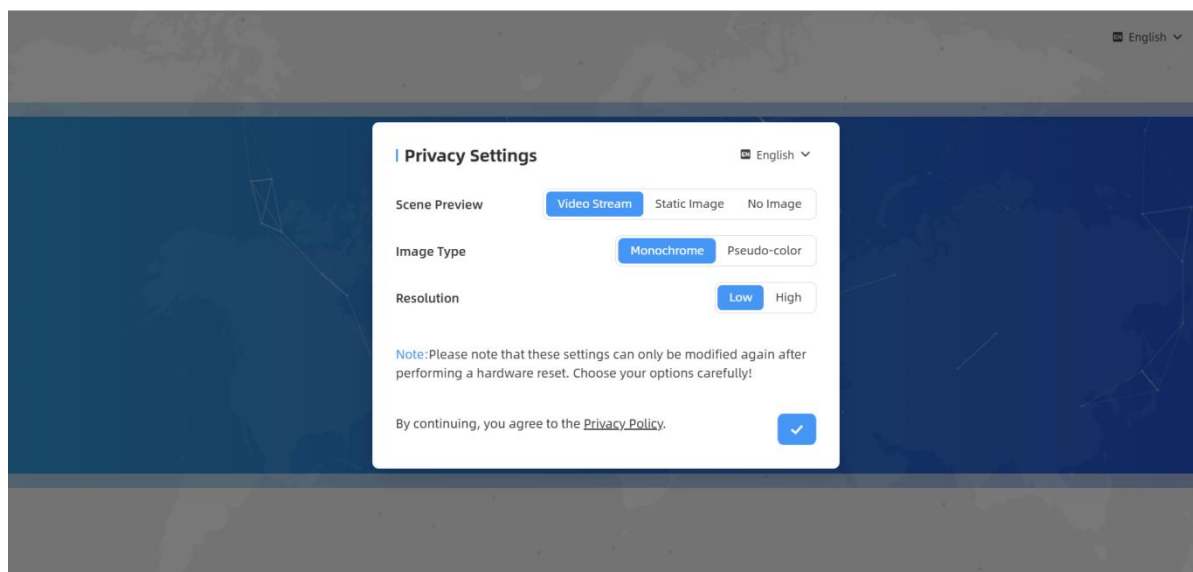
- Username:** A text input field with 'admin' entered.
- Password:** A text input field.
- Confirm Password:** A text input field.
- At least:**
  - 8 characters
  - Must contain uppercase letters, lowercase letters, numbers, and special characters
- By continuing, you agree to the [Privacy Policy](#).
- A blue button with a right arrow.

The second screenshot shows the 'Set Security Questions' form. It also has a title bar with 'English' and a dropdown arrow. The form contains the following fields and text:

- Security Question1:** A dropdown menu with 'What is your lucky number?' selected.
- Answer1:** A text input field.
- Security Question2:** A dropdown menu with 'What is your favorite sport?' selected.
- Answer2:** A text input field.
- Security Question3:** A dropdown menu with 'What is your favorite color?' selected.
- Answer3:** A text input field.
- By continuing, you agree to the [Privacy Policy](#).
- A blue button with a checkmark.

**Step 3:** Configure the privacy settings to select preview image modes on the dashboard.

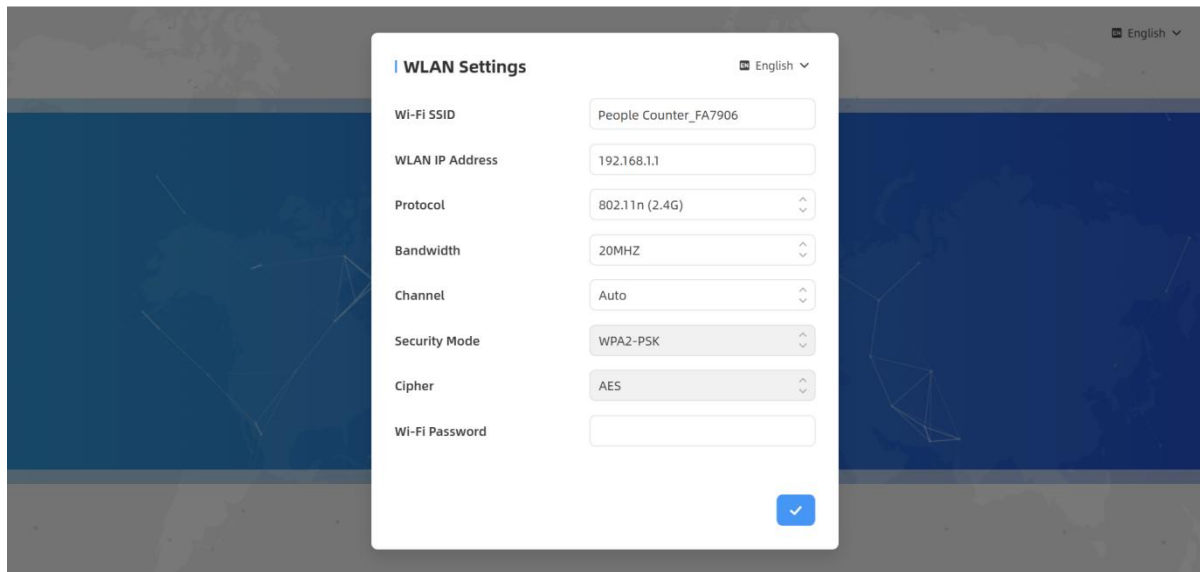
**Note:** If you need to reset the privacy settings, hold on reset button for 10s to reset device to factory default.



| Parameters    | Description                                                                                                                                                                                                                                                                                   |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Scene Preview | <p>Select video stream preview, static image preview or no image preview as needed.</p> <p><b>Video Stream:</b> Live preview of the video, displaying dynamic scenes and people.</p> <p><b>Static Image:</b> A still image to view the scene.</p> <p><b>No Image:</b> No image displayed.</p> |
| Image Type    | <p>Select Monochrome or Pseudo-color image type.</p> <p><b>Monochrome:</b> Black, white and gray image.</p> <p><b>Pseudo-color:</b> Color-enhanced image.</p>                                                                                                                                 |
| Resolution    | <p>Select Low or High.</p> <p><b>Low:</b> Display blurred images, but still allow viewing of scenes and moving people</p> <p><b>High:</b> Display clear scenes and people faces</p>                                                                                                           |

**Step 4:** After configuration, log in with username (admin) and custom password.

**Step 5:** Set the Wi-Fi password.



**Step 6:** Completed.

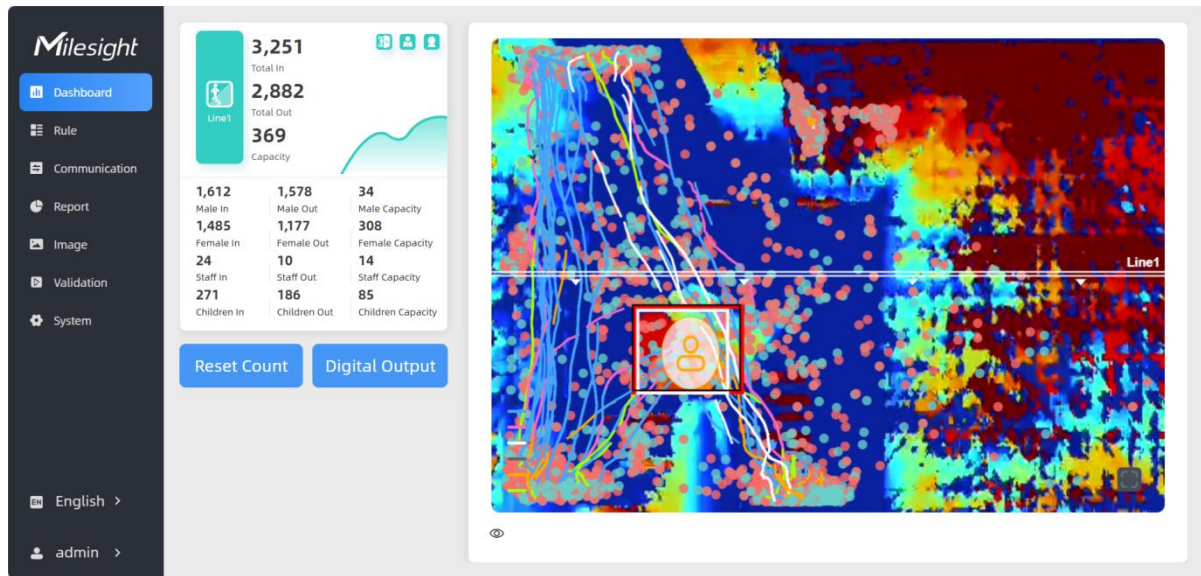
**Note:**

- 1) Password and Wi-Fi password must be 8 to 63 characters long and contain numbers, lowercase letters, uppercase letters and special characters. If the password is entered incorrectly five times, the account will be locked for 10 minutes.
- 2) It is recommended that users regularly update their passwords to enhance device security and prevent unauthorized access.
- 3) You can click the “forgot password” in login page to reset the password by answering three security questions when you forget the password if you set the security questions in advance.

## 5. Operation Guide

### 5.1 Dashboard

After logging on to the device web GUI successfully, user is allowed to view live video as following.



| Parameters     | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                | <p><b>Hide Capacity:</b> Hide the total count data capacity;</p> <p><b>Children Excluded:</b> Exclude children data from statistical data.</p> <p><b>Staff Excluded:</b> Exclude staff data from statistical data.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Reset Count    | Clear all accumulated entrance and exit people counting values.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Digital Output | <p>Click to output high level signal from alarm out interface when <a href="#">Manual DO</a> event is enabled.</p> <p><b>Alarm Output:</b> dry contact, output=two contacts closure</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                | <p>Click to edit preview layout to show or hide the lines, areas and track points as needed.</p> <p><b>Real-time Track Line:</b> Show or hide the target's track line through the live view.</p> <p><b>Static Track Line:</b> Show or hide the history of the target's track line in the live view. Supports up to 1000 historical tracks, which will disappear when you refresh the page.</p> <p>Visual Configuration</p> <p> <input checked="" type="checkbox"/> Detection Line      <input checked="" type="checkbox"/> U-turn Area<br/> <input checked="" type="checkbox"/> Detection Region      <input checked="" type="checkbox"/> Obstacle Exclusion Region         </p> <p>AI Result</p> <p> <input checked="" type="checkbox"/> Real-time Track Line      <input checked="" type="checkbox"/> Static Track Line         </p> <p>Other</p> <p> <input checked="" type="checkbox"/> Track Start ● / Stop ● Points         </p> <p> <input type="text" value="2025-01-16 02:46"/> - <input type="text" value="2025-01-17 02:46"/> <input type="button" value="Search"/> </p> <p><b>Note:</b> If some of the options are not shown, please check if the corresponding function of the rule is enabled.</p> |

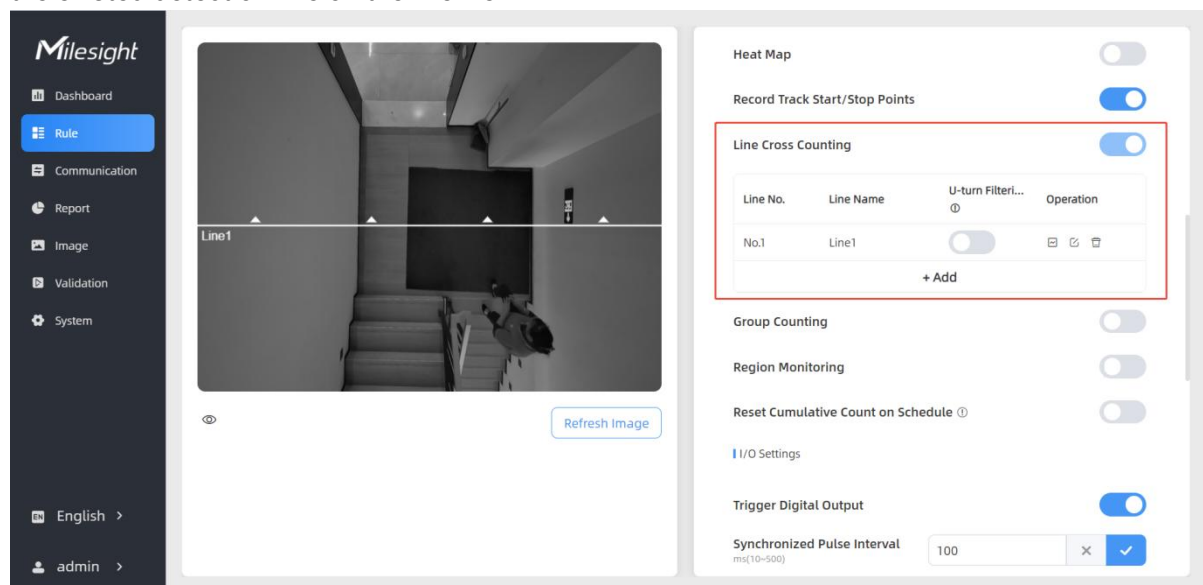
## 5.2 Rule

### 5.2.1 Basic Counting Settings

#### Draw Detection Lines

Users can draw detection lines to record the people count values which indicate the number of people enter or exit.

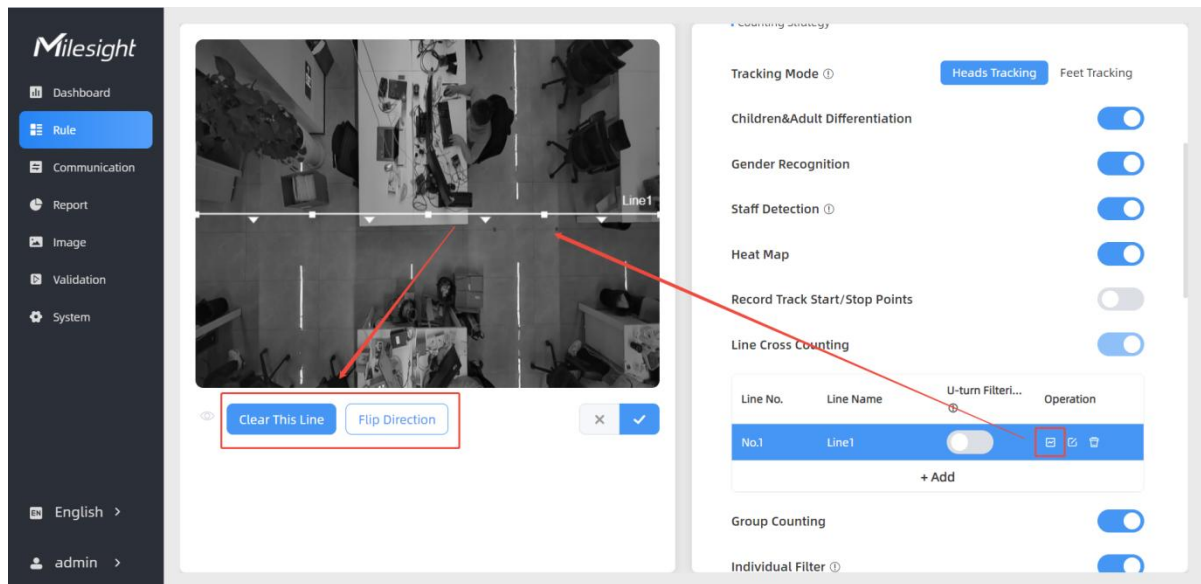
**Step 1:** Find the list of detection lines. Click **+Add** to draw a new detection line or click  to edit the existed detection line on the live view.



**Step 2:** Left-click to start drawing and drag the mouse to draw a line, left-click again to continue drawing a different direction edge, and right-click the mouse to complete the drawing. The line can be dragged to adjust the location and length. One device supports at most 4 broken lines with maximum 4 segments each.

**Step 3:** If users want to redraw this line, click **Clear This Line** or drag the vertices of the broken line to adjust. The arrow direction of the detection line depends on your drawing direction. If

users need to flip the line, click **Flip Direction**. Then click  to finish drawing.



**Step 4:** Users can click  to customize the name of line. If users need to delete a certain line, click .

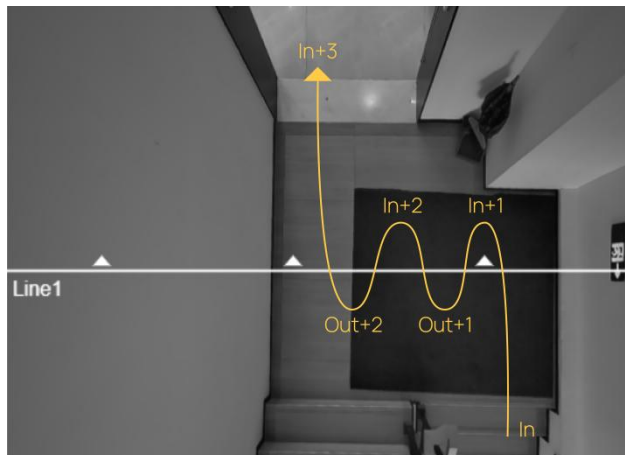
**Note:**

- 1) Ensure that the detected target can pass through the detection line completely. It's recommended that the detection line is perpendicular to the In/Out direction and on the center of the detection area without other objects around.
- 2) Redundant identification spaces are needed on both sides of the detection line for the target detection. It ensures the stable recognition and tracking of the target before passing the detection line, which will make the detection and count more accurate.

## Draw U-turn Area

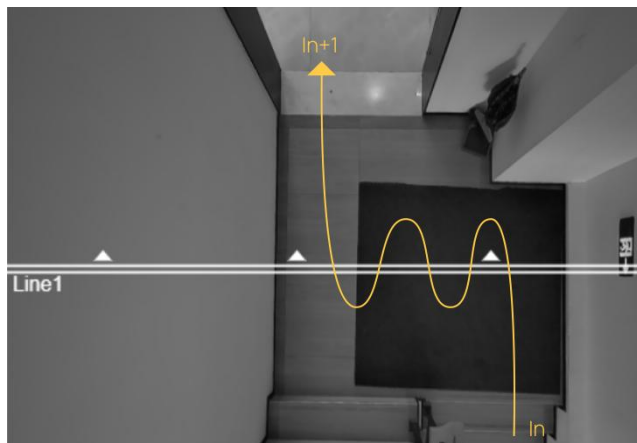
VS125 supports the U-turn filtering function, filtering out the people who are actually not in / out of the entrance, to avoid repeated counting. Users can draw an area for every line and the device will count the In and Out values only when people pass this area.

**Disable U-turn filtering:**

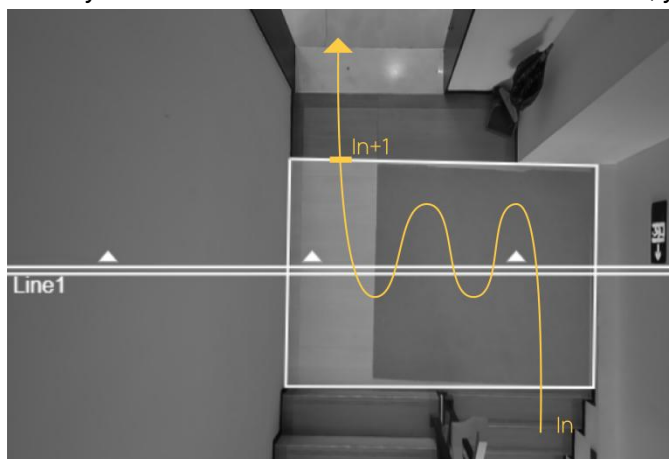


**Enable U-turn filtering:**

The device automatically filters out the wandering crowd in the live view.

**Enable U-turn filtering & Draw areas:**

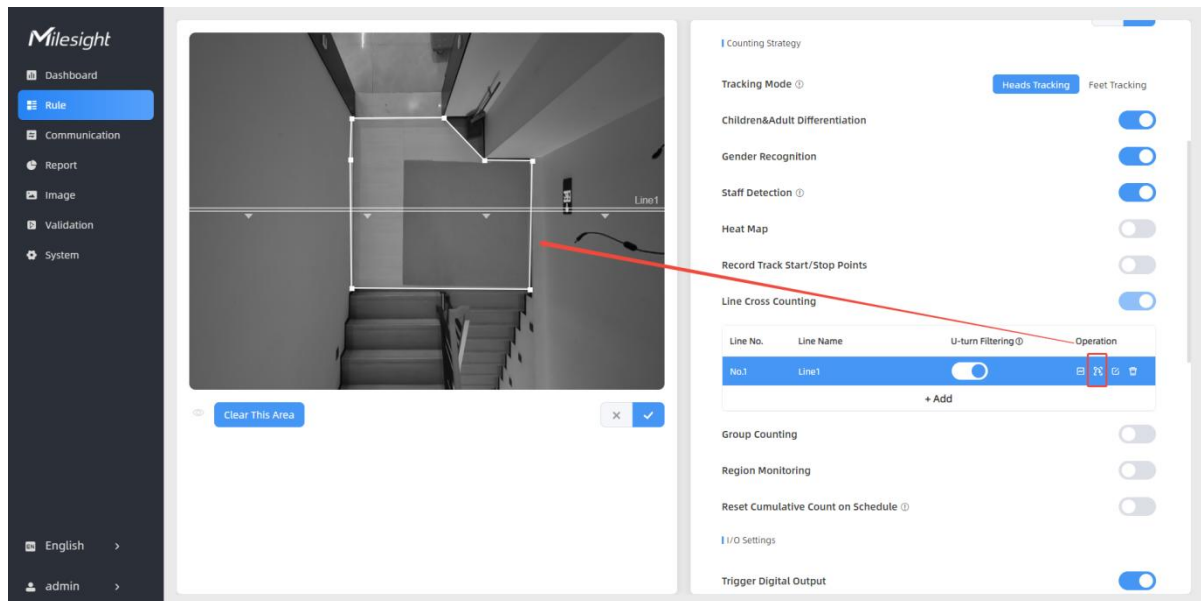
When you care about the timeliness of the statistics, you can choose to draw the U-turn area.

**Step 1:** Enable U-turn Filtering to filtering repeated counting.

A screenshot of the Milesight web interface. On the left is a sidebar with navigation links: Dashboard, Rule, Communication, Report, Image, Validation, and System. The main area shows a live view of a staircase with a horizontal line labeled 'Line1'. A red arrow points from the 'U-turn Filter...' toggle in the settings panel to the 'Line1' label in the live view. The settings panel on the right has several toggles: Gender Recognition, Staff Detection, Heat Map, Record Track Start/Stop Points, Line Cross Counting, Group Counting, Region Monitoring, and Reset Cumulative Count on Schedule. The 'U-turn Filter...' toggle is currently turned on. Below the toggles is a table with columns: Line No., Line Name, U-turn Filter..., and Operation. The table has one row for 'No.1' and 'Line1', with the 'U-turn Filter...' toggle turned on. There is a '+ Add' button below the table. At the bottom of the settings panel is a link for 'I/O Settings'.

If you requires to use U-turn area filtering, please continue below steps:

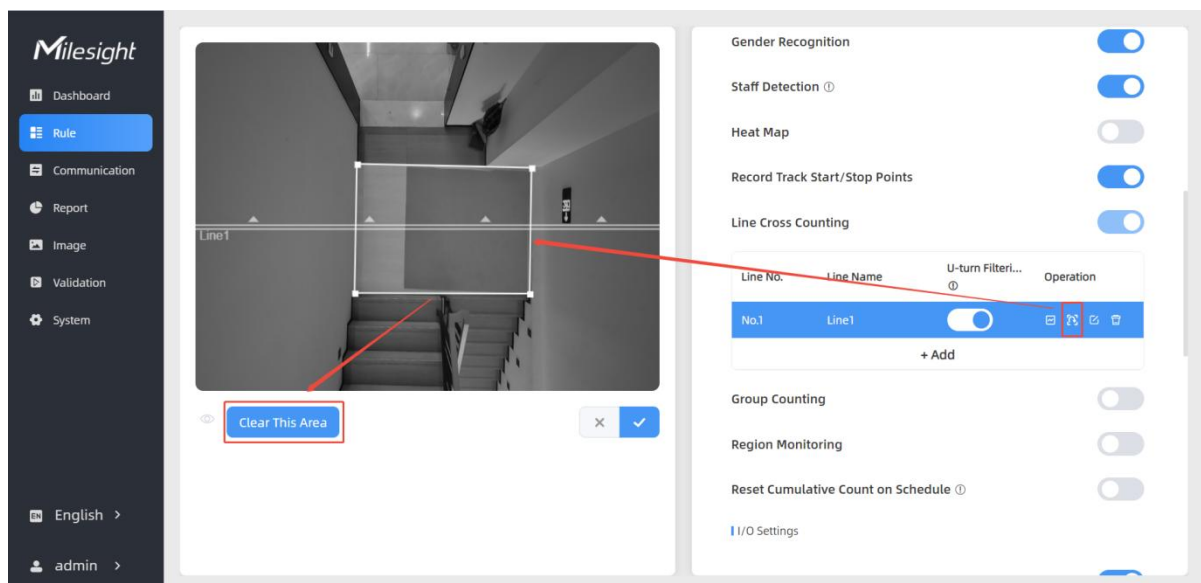
**Step 2:** Click  to edit U-turn areas for existed detection line on the live view.



**Step 3:** Left-click to start drawing and drag the mouse to draw an edge. Then left-click again to continue drawing a different direction edge. Right-click the mouse to complete the drawing. The area can be dragged to adjust the location and length. One device supports up to 4 areas with maximum 10 segments each.

**Step4:** If users want to redraw the area, click **Clear This Area** or drag the vertices of the area to adjust. Then click  to finish drawing.

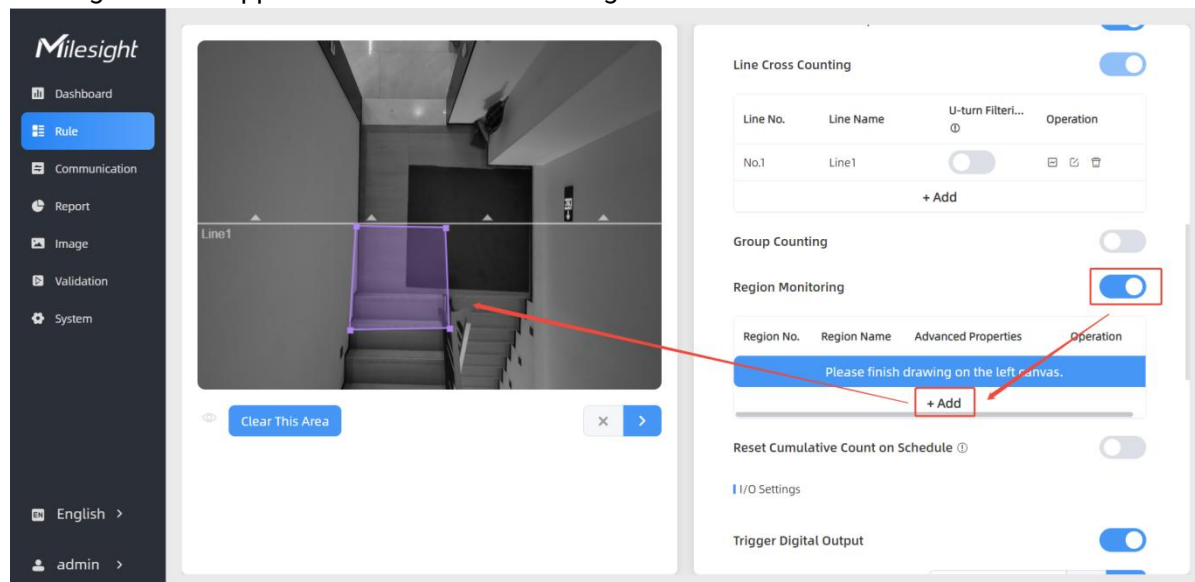
**Step 5:** If users need to delete a certain U-turn area, click , then click **Clear This Area**.



## Draw Monitoring Region

VS125 supports monitoring the number and the dwell time of people in the region, providing more valuable analysis data.

**Step 1:** Enable Region Monitoring. Click **+Add** to add the region monitoring on the live view. Up to 4 regions are supported with maximum 10 segments each.



**Step 2:** Customize the zone name and enable Region People Counting or Dwell Time Detection as needed.

### Advanced Properties

Zone Name

Region1

Region People Counting

☒

Pass-by Filtering  
s(0~3600)

5

Dwell Time Detection

☒

Min. Dwell Time  
s(0~3600)

5

✕

✓

**Step 3:** The configuration is displayed in the list after the configuration is complete. You can redraw the areas by clicking the redraw button in the list. Click the edit button to modify the advanced settings of the areas or click delete button to delete the areas separately.

| Region Monitoring <input checked="" type="checkbox"/> |             |                            |                                                       |
|-------------------------------------------------------|-------------|----------------------------|-------------------------------------------------------|
| No.                                                   | Region Name | Advanced Properties        | Operation                                             |
| No.1                                                  | Region1     | Region People Counting(5s) | <a href="#">✎</a> <a href="#">✎</a> <a href="#">✎</a> |
| + Add                                                 |             |                            |                                                       |

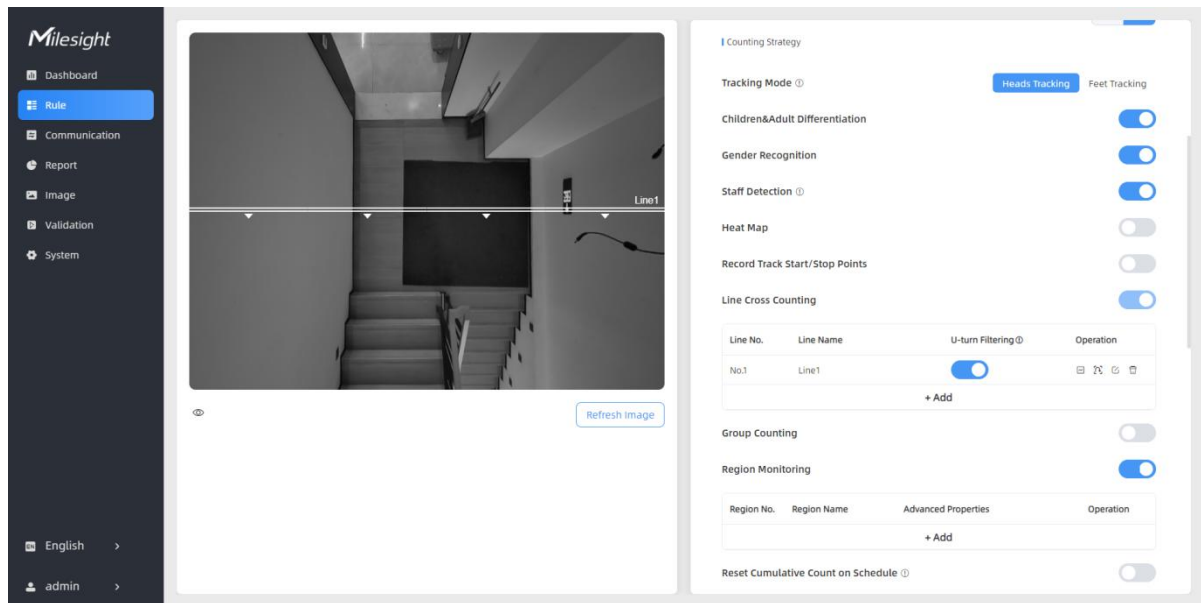
## Deployment Parameters

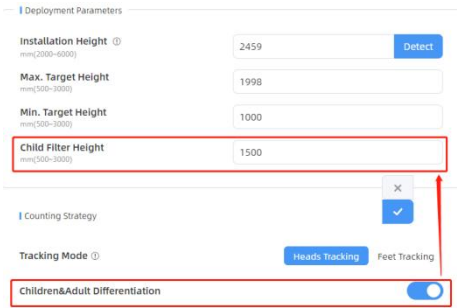
The screenshot displays the Milesight web interface. On the left is a sidebar menu with options: Dashboard, Rule, Communication, Report, Image, Validation, and System. The main area is divided into two sections. The top section shows a live camera feed of a staircase with a 'Refresh Image' button below it. The bottom section contains configuration options: 'Working Mode' (Standalone, Master, Node), 'Deployment Parameters' (Installation Height: 3000, Max. Target Height: 2000, Min. Target Height: 1000, Child Filter Height: 1300), 'Counting Strategy' (Tracking Mode: Heads Tracking, Feet Tracking), and 'Children&Adult Differentiation' (toggle switch).

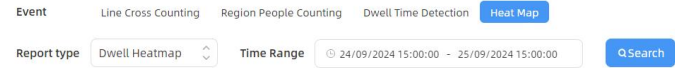
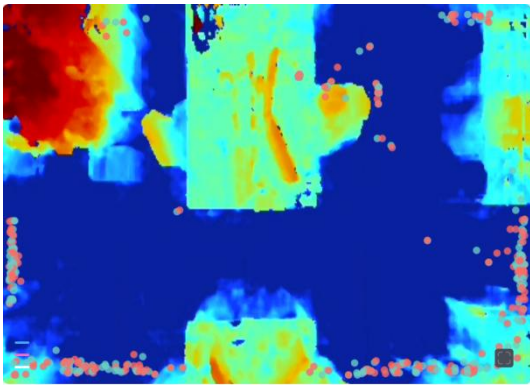
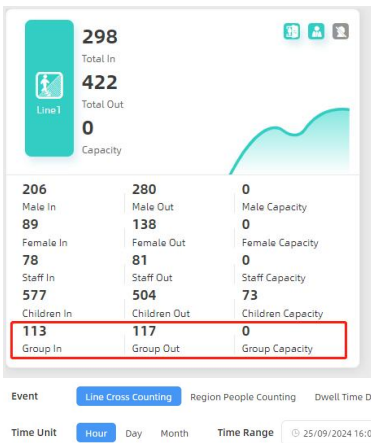
| Parameters          | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Installation Height | <p>Set the device installation height. Click <b>Detect</b> to detect the current installation height automatically.</p> <p><b>Note:</b></p> <ol style="list-style-type: none"> <li>1) It is suggested to use attribute recognition functions as Gender Recognition, Child &amp; Adult Differentiation, and Staff Detection at a height below 4m for optimal performance.</li> <li>2) When the ground lacks patterns or textures or during low-light conditions at night, the automatic height detection may be inaccurate.</li> </ol> |
| Max. Target Height  | Set the maximum target height, then the device will ignore the objects higher than this setting value.                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Min. Target Height  | Set the minimum target height, then the device will ignore the object shorter than this setting value.                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Child Filter Height | Set the max child height when children distinction feature is enabled.                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

## Counting Strategy

Users can set the rules to ensure accurate counting.



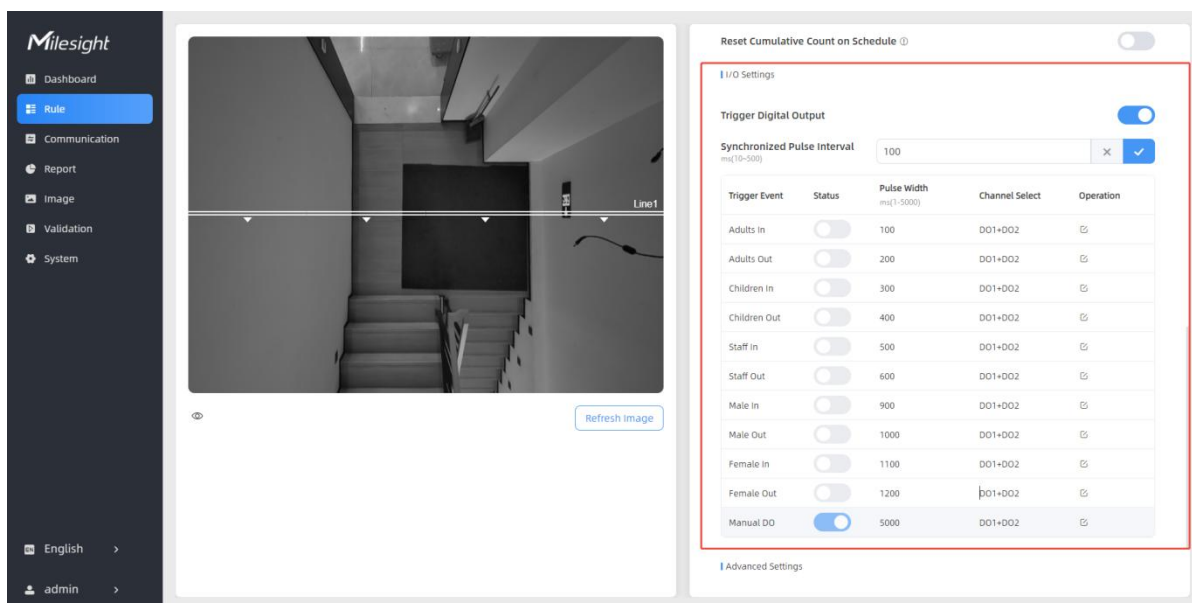
| Parameters                       | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Tracking Mode                    | Select the tracking mode of counting, including Heads Tracking and Feet Tracking.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Children & Adult Differentiation | <p>The device will detect the people shorter than child filter height as children.</p>  <p><b>Note:</b> The operating installation height of this function is 2.2 ~ 4m.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Gender Recognition               | <p>The device will detect the people who are male or female.</p> <p><b>Note:</b> The operating installation height of this function is 2.2 ~ 4m.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Staff Detection                  | <p>The device will detect staff members who wear a dedicated Milesight Staff Lanyard around their necks.</p> <p>Staff Lanyard has two color options: black and red. If staff's clothes are more dark, it is recommended to use red staff lanyards, to improve detection accuracy.</p> <p><b>Note:</b></p> <ol style="list-style-type: none"> <li>1) For optimal detection, it is suggested to use the Staff Lanyards provided by Milesight.</li> <li>2) Please ensure that the lanyard is not obstructed by collars, scarves, hair, or other objects when worn, and try to keep it fully visible.</li> <li>3) Wearing clothing with patterns similar to the staff lanyard (such as striped clothing) may result in false detection.</li> <li>4) If the staffs' passing speed exceeds 2.5 m/s, there may be missed</li> </ol> |

|                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                | <p>detections.</p> <p>5) The operating installation height of this function is 2.2 ~ 4m.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Heat Map                       | <p>Enable or disable Heat Map. Heat Map function can analyze person movement to reveal insights for better business management with the intuitive and accurate statistical analysis results in time or space pattern as needed.</p> <p>Support Motion Heat Map and Dwell Heat Map. The motion heat map shows where the most people flow. And the dwell heat map shows the areas where people stay for the longest time. You can see the effect through choose Time Range in <b>Heat Map</b> of <b>Report</b>.</p>  |
| Record Track Start/Stop Points | <p>Enable to record the start track points and end track points of people in the live view for the position adjustment of the detection line. It can store 5000 track points at most, with green as the starting point and red as the stop point.</p>                                                                                                                                                                                                                                                             |
| Line Cross Counting            | <p>Enable to <a href="#">draw Detection Lines</a> or select whether to enable <a href="#">U-turn Filtering</a>.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Group Counting                 | <p>Click to enable the group counting function that based on the distance, moving direction and speed difference to gain deeper insights into customer' behaviors.</p> <p>You can see the effect in Dashboard and generate report through choose Time Range in <b>Report</b>.</p>                                                                                                                                                                                                                                 |

|                                    |                                                                                                                                                                                             |
|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                    | <b>Individual Filter:</b> When enabled, device will only count two or more individuals as a group.                                                                                          |
| <b>Region Monitoring</b>           | Enable or disable Region Monitoring.                                                                                                                                                        |
| Reset Cumulative Count on Schedule | Enable to periodically reset cumulative count on schedule.<br>Cumulative Count includes:<br>Total In/Out counting of each detection line.<br>Max./Avg. Dwell Time of each detection region. |

## I/O Settings

The device supports to send pulse signals when the target passes through the detection line.



| Parameters             | Description                                                                                                                                                                                                                                               |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Trigger Digital Output | When trigger event is enabled, the digital output will send a preset width of high level.<br><b>Synchronized Pulse Interval:</b> the interval between multiple pulses when several people pass through or multiple events trigger at the same time.       |
| Trigger Event          | The events to trigger the DOs to send pulse signals.<br><b>Note:</b><br>1) If staff event triggers, sending staff pulse signals, does not synchronize gender or adult pulse signals.<br>2) When Manual DO event is enable, it will show in the dashboard. |

|                |                                                                                   |
|----------------|-----------------------------------------------------------------------------------|
|                |  |
| Status         | Enable or disable the event to trigger the output of a pulse signal.              |
| Pulse Width    | The duration of the pulse signal.                                                 |
| Channel Select | Select which DO port to output the pulse signal.                                  |
| Operation      | Click to edit the information.                                                    |

## Advanced Setting

### Advanced Settings

Obstacle Exclusion



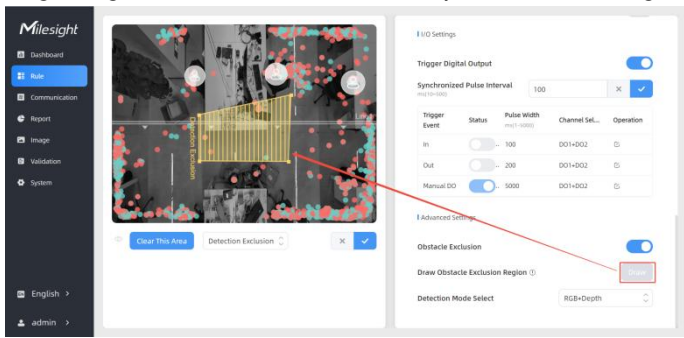
Draw Obstacle Exclusion Region ⓘ

Draw

Detection Mode Select

RGB+Depth

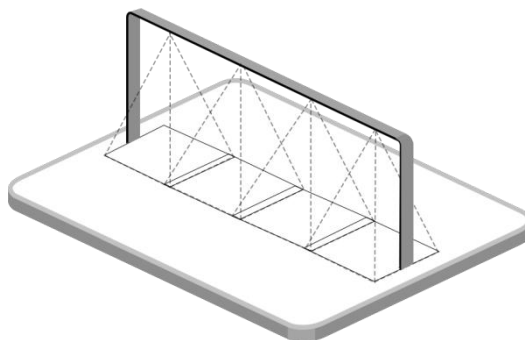


| Parameters                     | Description                                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Obstacle Exclusion             | When there is an immovable static obstacle within the detection range of the device, and the detection line or region cannot be adjusted to avoid the obstacle, this function can be activated to filter out obstacles similar to humans.                                                                                                                                                                                    |
| Draw Obstacle Exclusion Region | <p><b>Step 1:</b> Click <b>Draw</b> button.</p> <p><b>Step 2:</b> Left-click the live view to start drawing and drag the mouse to draw an edge. Left-click again to continue drawing a different direction edge. Right-click the mouse to complete the drawing.</p>  <p>The region can be dragged to adjust the location and length.</p> |

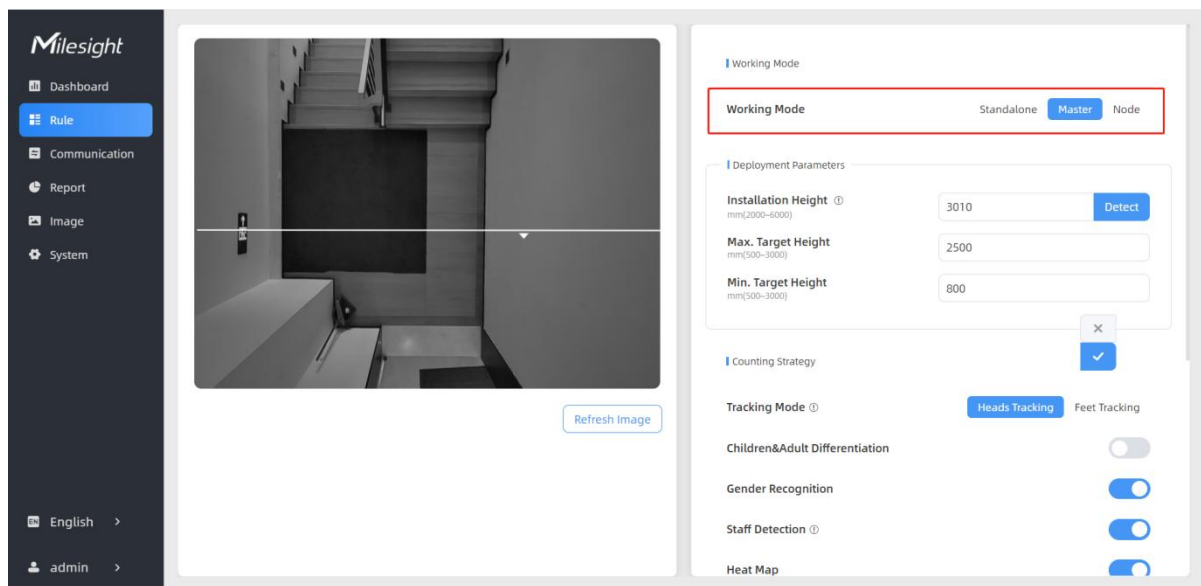
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                       | <p>One device supports up to 4 regions with maximum 10 segments each.</p> <p><b>Step 3:</b> Choose the method of exclusion.</p> <p><b>Detection Exclusion:</b> 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 will use this highest part as a reference to automatically exclude this specific area.</p> <p>(For example, in a shelf scene, you can just frame the top end of the shelf, then the shelf won't be mistakenly detected as a person.)</p> <p><b>Height Exclusion:</b> Select it when you want to avoid mixing obstacles with targets and creating false detections. You can just box out the parts that are easy to confuse with the targets.</p> <p>(For example, in the scene of a gate passage, you can draw the shape of the gate to avoid the device misjudging a child passing through as an adult, as the child may blend into the shape of the gate.)</p> <p><b>Step 4:</b> Click  to complete drawing.</p> |
| Detection Mode Select | <p>Select the detection algorithm according to the real applications.</p> <p><b>RGB+Depth:</b> Suitable for most scenarios.</p> <p><b>RGB:</b> Switch this mode when there are many false detections. Suitable for scenes with a large number of non-human objects mistakenly detected as people. For instance, the entrances and exits of a warehouse.</p> <p><b>Depth:</b> Switch this mode when there are many false detections. Suitable for scenes with a large number of human-like objects. For example, a doll shop.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

## 5.2.2 Multi-Device Stitching

Multi-device stitching is mainly used to monitor a larger detection area than just the area covered by a single device. When using this feature, devices should be installed next to each other and ensure the **detection areas** are tangent or overlapping. VS125 supports stitching up to 16 devices, with both the cellular and PoE versions being compatible for seamless integration, regardless of the version.

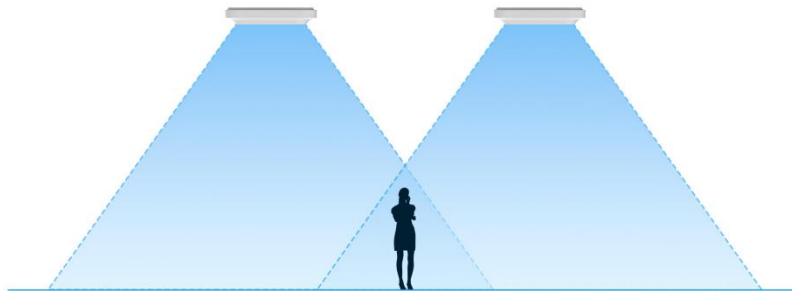


Before using this feature, set one device as **Master Mode** and other devices as **Node Mode**.



- **Master Mode:** Receive target tracks and view from the device, responsible for all counts, rule setting, data push and other functions.
- **Node Mode:** Only extends the view of the master device.

**Note:** Ensure the head of one person can be seen on both live views at the same time.



## Node Device Setting

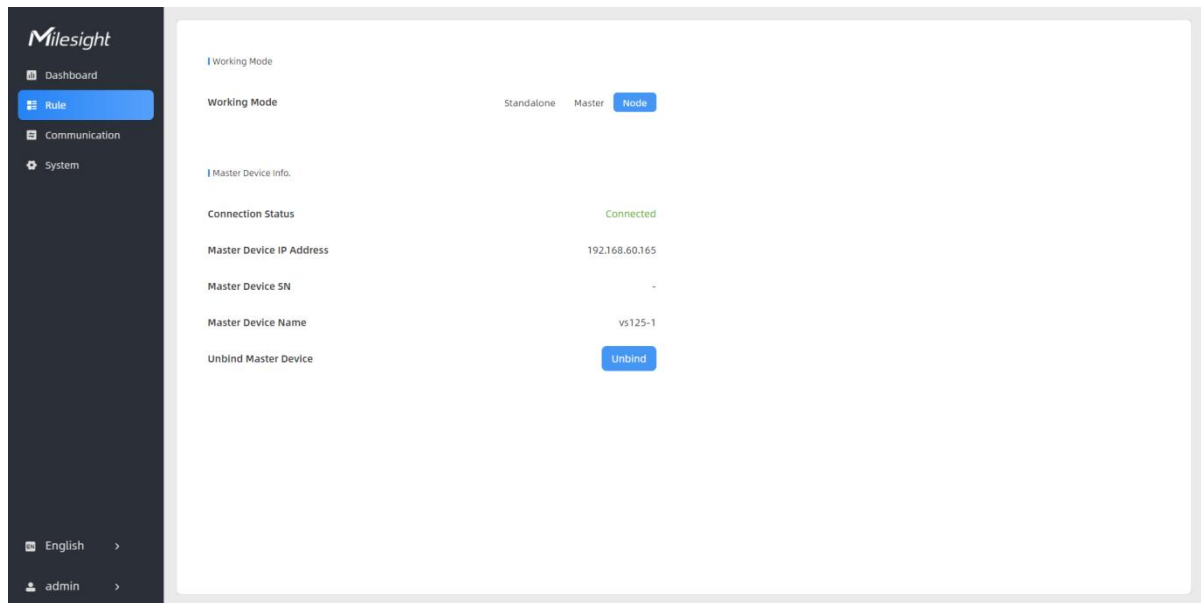
**Step 1:** Access the web GUI of the node device, ensure the IP address is on the same network as the master device, so that the master device can detect the node device.

The screenshot displays the Milesight web interface with the 'Communication' tab selected. The left sidebar contains navigation options: Dashboard, Rule, Communication, Report, Image, and System. The main content area is divided into two panels. The left panel, titled 'TCP/IP', shows 'IP Assignment' set to 'Manual' with the IP address '192.168.44.127' highlighted in a red box. Other fields include Subnet Mask (255.255.255.0), Default Gateway (192.168.44.1), Primary DNS Server (8.8.8.8), and Secondary DNS Server (114.114.114.114). Below this, the 'HTTP/HTTPS' section has 'HTTP' and 'HTTPS' toggles both turned on, with ports 80 and 443 respectively. The 'Certificate Installation Method' is set to 'Create Self-Signed Certificate'. The right panel, titled 'WLAN', shows 'Enable WLAN' turned on. The 'WLAN Settings' section includes 'Wi-Fi SSID' (People Counter\_FA7918), 'WLAN IP Address' (192.168.1.1), 'Protocol' (802.11n (2.4G)), 'Bandwidth' (20MHZ), 'Channel' (Auto), and 'Security Mode' (No Encryption).

**Step 2:** Select work mode as Node and wait for the device to reboot.

The screenshot displays the Milesight web interface with the 'Rule' tab selected. The left sidebar contains navigation options: Dashboard, Rule, Communication, Report, Validation, and System. The main content area is divided into two panels. The left panel shows a thermal image of a person walking, with a 'Refresh Image' button below it. The right panel, titled 'Working Mode', shows 'Working Mode' set to 'Node' (highlighted in a red box). Below this, the 'Deployment Parameters' section includes 'Installation Height' (4000 mm), 'Max. Target Height' (2000 mm), and 'Min. Target Height' (1000 mm). The 'Counting Strategy' section shows 'Tracking Mode' set to 'Heads Tracking' and several other detection modes (Enhanced Detection Mode, Children Distinction, Staff Detection, Shopping Cart Fill Level Detection) all turned off.

Below is an explanation of the page and parameters for the node devices after successful stitching:



| Parameters               | Description                                                                                                                                             |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| Connection Status        | Show the connection status between the node device and master device.                                                                                   |
| Master Device IP Address | Show master device's IP address. When this IP address is under the same network with the node device, the node device can be bind to the master device. |
| Master Device SN         | Show the master device's serial number.                                                                                                                 |
| Master Device Name       | Show master device name.                                                                                                                                |
| Unbind Master Device     | Click <b>Unbind</b> to release the connection status, this device will be deleted from the list of the master device.                                   |

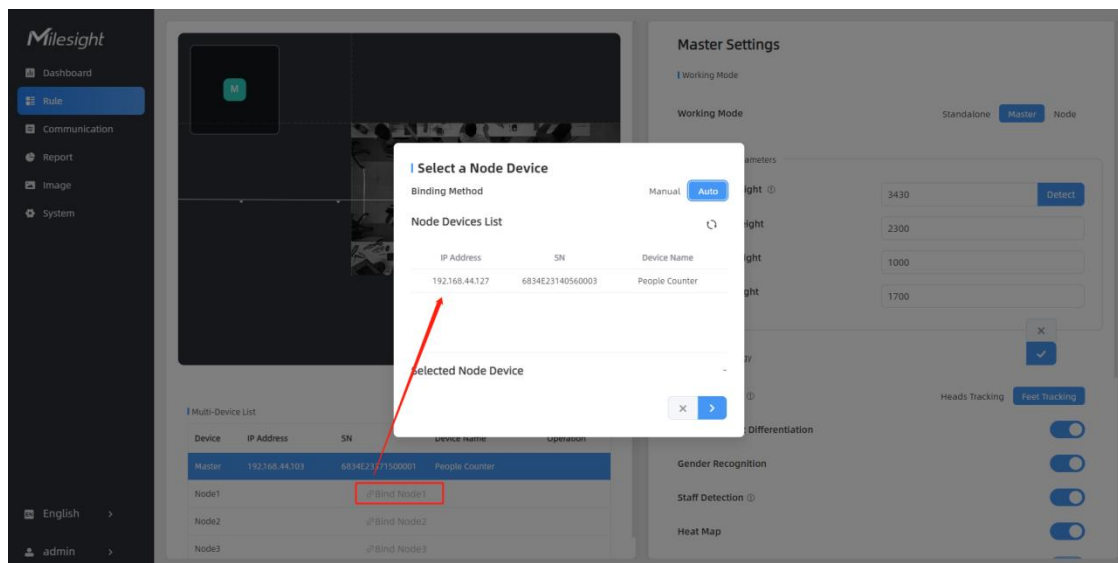
## Master Device Setting

**Step 1:** Go to the master device web GUI, then click **Bind Node** in the Multi-Device List.

**Manual:** You can add a node device by the IP address, HTTP Port, Username or Password.

**Note:** Please ensure that the device you want to add is on the same local network as the master device and has low latency.

**Auto:** The device will use multicast protocol to search for the unbound node devices under the same local network.



**Step 2:** Select the node device and type the login password of the node device.

### Confirm Authorization

Selected Node Device 192.168.44.127

Node Device Username admin

Node Device Password



**Step 3:** Fill in the **Installation Height** of the node device and relative position information if these parameters are already measured. If not, save the default settings.

### Node Device Deployment Parameters

Installation Height  
mm(2000~6000)

3272

Detect



Click the IP address on the right to access the preview of the stitched device.

**Bind the Node Device**

## Node Device Deployment Parameters

Installation Height  
mm(2000-6000)

3272

Detect

X

✓

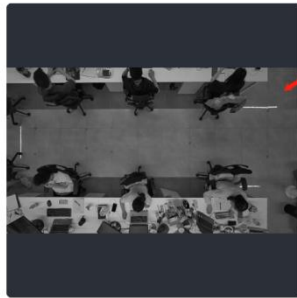
## Stitch Device Frame

Selected Node Device: 192.168.44.127



Stitching Point: (0/4)

Selected Stitched Device: 192.168.44.103



Stitching Point: (0/4)

Stitched Device  
192.168.44.103

✕ < ✓

**Tips:**

- After image stitching, the device will clear the historical heatmap data.
- Please draw four points for each device to stitch device frame.
- The points can only be drawn on the floor in the frame.
- Please arrange the stitching points in a shape of a quadrangle.
- Please place the points as far from each other as possible, without being too close to the edges of the image.

Click on the parts that need to be overlapped on both frames to form a quadrilateral. If modifications are needed, please delete the corresponding points **Point 3** ✕. Click **✓** to complete the configuration.

**Bind the Node Device**

## Node Device Deployment Parameters

Installation Height  
mm(2000-6000)

3272

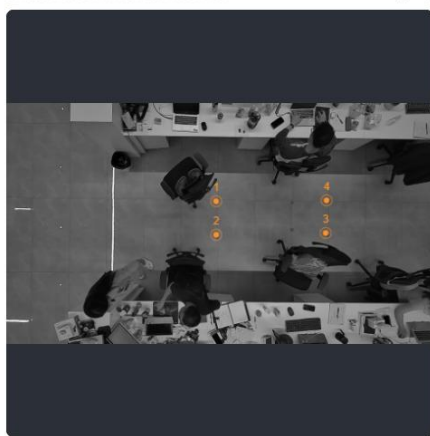
Detect

X

✓

## Stitch Device Frame

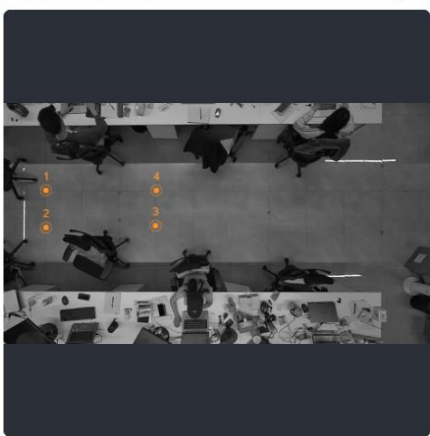
Selected Node Device: 192.168.44.127



Stitching Point: (4/4)

Point 1 ✕ Point 2 ✕ Point 3 ✕ Point 4 ✕

Selected Stitched Device: 192.168.44.103



Stitching Point: (4/4)

Point 1 ✕ Point 2 ✕ Point 3 ✕ Point 4 ✕

Stitched Device  
192.168.44.103

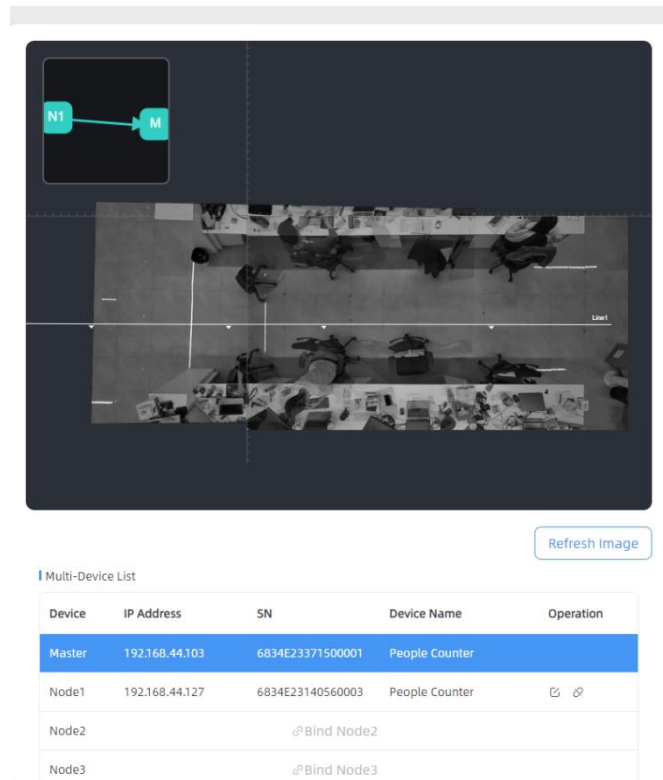
✕ ✓

**Tips:**

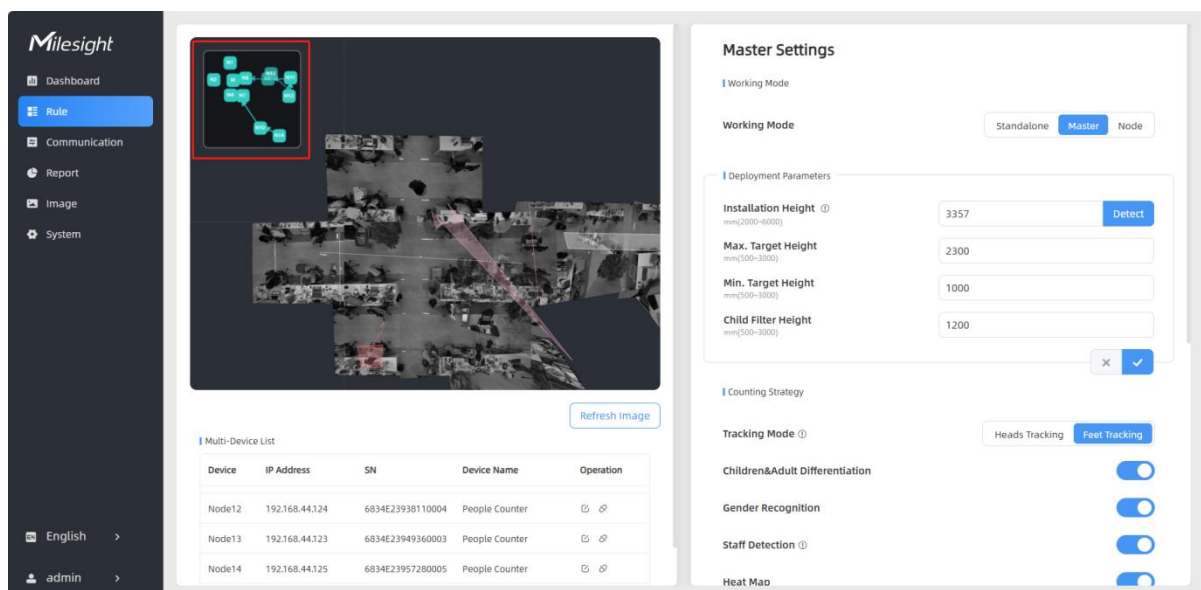
- After image stitching, the device will clear the historical heatmap data.
- Please draw four points for each device to stitch device frame.
- The points can only be drawn on the floor in the frame.
- Please arrange the stitching points in a shape of a quadrangle.
- Please place the points as far from each other as possible, without being too close to the edges of the image.

**Tips:** You can use objects such as tiles, tables, or tape to mark the stitching points on the ground in overlapping areas. This makes devices stitching easier and aesthetically pleasing.

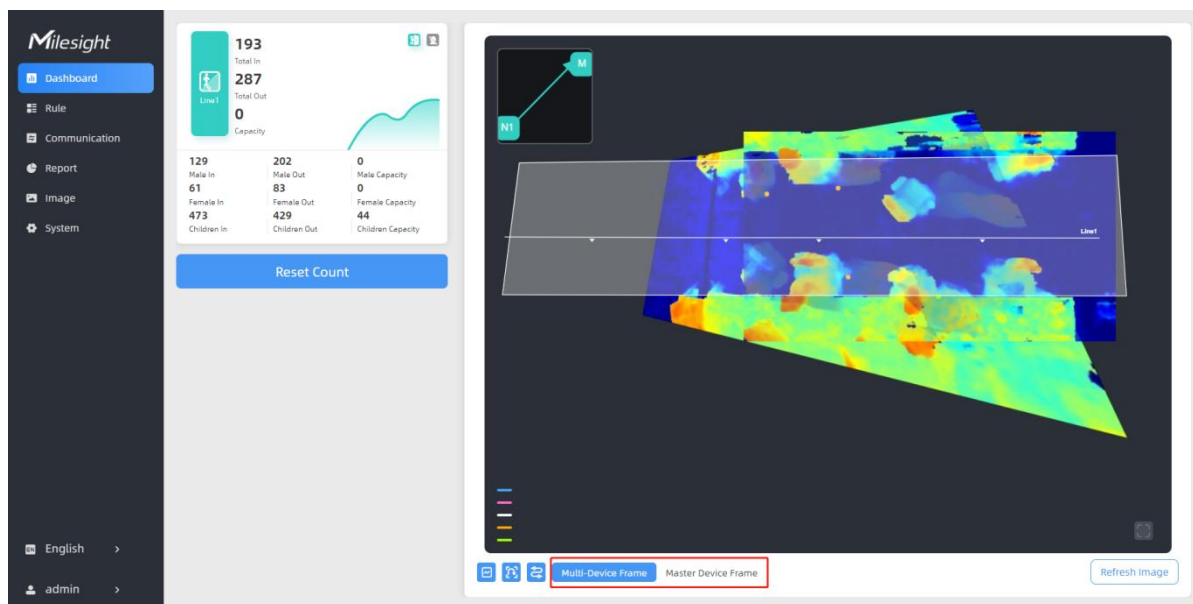
Below is the effect after stitching the two devices:



**Step 4:** For multiple devices, please follow step3 to stitch them sequentially. A small map in the upper left corner of the preview image shows the positions of the stitched devices.



**Step 5:** When all settings are completed, users can draw detection lines and even U-turn areas on the new stitching live view the same as standalone mode devices. The dashboard will automatically add two frames for viewing the stitching devices and the master device.



**Step 6:** Click **Unbind** to disconnect the node device if necessary.

The screenshot shows the Milesight dashboard with the 'Rule' configuration page selected in the sidebar. The main content area is divided into two sections. The left section shows a 'Multi-Device List' table with columns: Device, IP Address, SN, Device Name, and Operation. The table lists three devices: Master, Node1, and Node2. The 'Operation' column for Node1 has an 'Unbind' button highlighted with a red box. The right section shows the 'Master Settings' page with various configuration options.

| Device | IP Address     | SN               | Device Name    | Operation |
|--------|----------------|------------------|----------------|-----------|
| Master | 192.168.44.103 | 6834E23371500001 | People Counter | Unbind    |
| Node1  | 192.168.44.127 | 6834E23140560003 | People Counter | Unbind    |
| Node2  |                |                  | @Bind Node2    |           |

**Master Settings**

Working Mode: Standalone **Master** Node

Deployment Parameters:

- Installation Height: 3272 (Detect)
- Max. Target Height: 2300
- Min. Target Height: 1000
- Child Filter Height: 1700

Counting Strategy: ☒

Tracking Mode: Heads Tracking **Face Tracking**

Children&Adult Differentiation: ☒

Gender Recognition: ☒

Staff Detection: ☐

Heat Map: ☐

## 5.3 Communication

### 5.3.1 Network Configuration

#### Cellular (Cellular Version Only)

The screenshot displays the Milesight web interface. On the left is a sidebar with navigation options: Dashboard, Rule, Communication (highlighted), Report, Image, and System. The main content area is divided into two panels. The left panel is titled 'Cellular' and shows 'Cellular Status' as 'Disconnected' with a 'Detail' button. Below this is the 'Cellular Settings' section with input fields for APN, Username, Password, PIN Code, Authentication Type (set to 'None'), a toggle for 'Restart When Dial-up failed', and numeric fields for ICMP Server (8.8.8.8), ICMP Detection Max Retries (3), ICMP Detection Timeout (5), and ICMP Detection Interval (15). The right panel is titled 'WLAN' and shows 'Enable WLAN' as a toggle switch. Below this is the 'WLAN Settings' section with input fields for Wi-Fi SSID (People Counter\_343537), WLAN IP Address (192.168.1.1), Protocol (802.11n (2.4G)), Bandwidth (20MHZ), Channel (Auto), and Security Mode (No Encryption). Both settings panels have confirmation buttons (X and checkmark) at the bottom right.

| Parameters        |                             | Description                                                                                                                                            |
|-------------------|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cellular          | Cellular Status             | Display the connection status of the network, including “connect” and “disconnect”.<br>You can also click “Detail” button to view the cellular status. |
| Cellular Settings | APN                         | Enter the Access Point Name for cellular dial-up connection provided by local ISP. The max length is 31 characters.                                    |
|                   | Username                    | Enter the username for cellular dial-up connection provided by local ISP. The max length is 31 characters.                                             |
|                   | Password                    | Enter the password for cellular dial-up connection provided by local ISP. The max length is 31 characters.                                             |
|                   | PIN Code                    | Enter a 4-8 characters PIN code to unlock the SIM.                                                                                                     |
|                   | Authentication Type         | Select the Authentication Type. None, PAP, CHAP, PAP and CHAP are optional.                                                                            |
|                   | Roaming                     | Click to enable the Roaming.                                                                                                                           |
|                   | Restart When Dial-up Failed | Enable automatic device restart when multiple dial-up failed.                                                                                          |
|                   | ICMP Server                 | Configure the IP address of the ICMP detection server.                                                                                                 |
|                   | ICMP Detection Max Retries  | Set the maximum number of retries when ICMP detection failed.                                                                                          |
|                   | ICMP Detection Timeout      | Configure ICMP detection timeout.                                                                                                                      |
|                   | ICMP Detection Interval     | Configure ICMP detection interval.                                                                                                                     |

#### Cellular Status

| Parameters      |              | Description                                                                                                                          |
|-----------------|--------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Cellular Status | Refresh      | Click this button to manually refresh the above status.                                                                              |
|                 | Modem Status | Show the corresponding detection status of the module and SIM card.<br><ul style="list-style-type: none"> <li>No SIM Card</li> </ul> |

|  |                     |                                                                                                                                                                                                  |
|--|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |                     | <ul style="list-style-type: none"> <li>● SIM Card Error</li> <li>● PN Error</li> <li>● PIN Required</li> <li>● PUK Required</li> <li>● No Signal</li> <li>● Ready</li> <li>● Down SIM</li> </ul> |
|  | 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 "disconnect".                                                                                                                 |
|  | 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.<br><b>Note:</b> 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.<br><b>Note:</b> 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.<br><b>Note:</b> It will display "-" when the SIM card is not inserted or not recognized.                                                                 |
|  | Cell ID             | Show the Cell ID of the SIM card location.<br><b>Note:</b> It will display "-" when the SIM card is not inserted or not recognized.                                                              |
|  | Network Status      | Show the Network Status, IP Address, Netmask, Gateway and DNS Address of the current network. If the SIM card is not inserted or not recognized, it will display 0.0.0.0.                        |
|  | IP Address          |                                                                                                                                                                                                  |
|  | Netmask             |                                                                                                                                                                                                  |
|  | Gateway             |                                                                                                                                                                                                  |
|  | DNS                 |                                                                                                                                                                                                  |
|  | Connection Duration | Show the cellular dial-up connection duration.                                                                                                                                                   |

## TCP/IP

VS125 use Ethernet for data transmission and multi-device stitching.

For cellular version, data reporting is depended on the current network. When cellular network and Ethernet are all available, data reporting prioritizes the cellular network.

The screenshot displays the Milesight web interface. On the left is a sidebar with navigation options: Dashboard, Rule, Communication (selected), Report, Image, and System. The main content area is divided into two panels. The left panel, titled 'TCP/IP', has a red border around its settings. It includes a toggle for 'Manual' (selected) and 'Automatic (DHCP)', a 'Test' button, and input fields for IP Address (192.168.44.103), Subnet Mask (255.255.255.0), Default Gateway (192.168.44.1), Primary DNS Server (8.8.8.8), and Secondary DNS Server (114.114.114.114). Below this is the 'HTTP/HTTPS' section, which is not highlighted. The right panel, titled 'WLAN', shows 'Enable WLAN' as a toggle switch. Below it are 'WLAN Settings' including Wi-Fi SSID (People Counter\_FA7984), WLAN IP Address (192.168.1.1), Protocol (802.11n (2.4G)), Bandwidth (20MHZ), Channel (Auto), and Security Mode (No Encryption).

| Parameters           | Description                                                                         |
|----------------------|-------------------------------------------------------------------------------------|
| IP Assignment        | Manual or Automatic (DHCP) is optional.                                             |
| IP Address           | Set the IPv4 address of the Ethernet port, the default IP is <b>192.168.5.220</b> . |
| Test                 | Click to test if the IP is conflicting.                                             |
| Subnet Mask          | Set the Netmask for the Ethernet port.                                              |
| Default Gateway      | Set the gateway for the Ethernet port's IPv4 address.                               |
| Primary DNS Server   | Set the primary IPv4 DNS server.                                                    |
| Secondary DNS Server | Set the secondary IPv4 DNS server.                                                  |

## HTTPs (PoE Version Only)

The screenshot displays the Milesight web interface. On the left is a sidebar with navigation options: Dashboard, Rule, Communication (selected), Report, Image, Validation, and System. The main content area is divided into two panels. The left panel, titled 'TCP/IP', is not highlighted. Below it is the 'HTTPs' section, which is highlighted with a red box. It includes a toggle for 'HTTPs' (selected), a 'Test' button, and input fields for HTTPs Port (443), Certificate Installation Method (Create Self-Signed Certificate), and Certificate. Below this is the '802.1x' section, which is not highlighted. The right panel, titled 'WLAN', shows 'Enable WLAN' as a toggle switch. Below it are 'WLAN Settings' including Wi-Fi SSID (People Counter\_FA7918), WLAN IP Address (192.168.1.1), Protocol (802.11n (2.4G)), Bandwidth (20MHZ), Channel (Auto), Security Mode (WPA2-PSK), Cipher (AES), and Wi-Fi Password (\*\*\*\*\*).

| Parameters | Description |
|------------|-------------|
|------------|-------------|

|                                 |                                                                                                                                                                                                                                                                            |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| HTTPS                           | Start or stop using HTTPS.                                                                                                                                                                                                                                                 |
| HTTPS Port                      | Web GUI login port via HTTPS, the default is 443.                                                                                                                                                                                                                          |
| Certificate Installation Method | <b>Create Self-signed Certificate:</b> upload the custom CA certificate, client certificate and secret key for verification.<br><b>Direct Installation Certificate:</b> upload the “.pem/.crt/.cer” format certificates issued by awarding organizations for verification. |
| Certificate                     | Create the SSL certificate.                                                                                                                                                                                                                                                |

## 802.1x Protocol (PoE Version Only)

The IEEE 802.1x is an authentication protocol to allow access to networks with the use of RADIUS server.

802.1x

Authentication Type

MD5-Challenge

Enable

☒

EAPOL Protocol Version

802.1x-2001

Username

Password

Confirm Password

×

✓

| Parameters             | Description                                 |
|------------------------|---------------------------------------------|
| Authentication Type    | It's fixed as MD5-Challenge.                |
| Enable                 | Enable or disable 802.1x authentication.    |
| EAPOL Protocol Version | 802.1x-2001 or 802.1x-2004 is optional.     |
| Username               | Set the username for 802.1x authentication. |
| Password               | Set the password for 802.1x authentication. |
| Confirm Password       | Enter the password again.                   |

## WLAN

WLAN

Enable WLAN ☒

WLAN Settings

|                 |                       |
|-----------------|-----------------------|
| Wi-Fi SSID      | People Counter_FA7918 |
| WLAN IP Address | 192.168.1.1           |
| Protocol        | 802.11n (2.4G) ^      |
| Bandwidth       | 20MHZ ^               |
| Channel         | Auto ^                |
| Security Mode   | WPA2-PSK ^            |
| Cipher          | AES ^                 |
| Wi-Fi Password  | ••••••••              |

| Parameters      | Description                                                                                                              |
|-----------------|--------------------------------------------------------------------------------------------------------------------------|
| Enable WLAN     | Enable or disable Wi-Fi feature. If disabled, users can use button to enable it.                                         |
| Wi-Fi SSID      | The unique name for this device Wi-Fi access point, defined as People Counter_xxxxxx (can be found on the device label). |
| WLAN IP Address | Configure WLAN IP address for web access, the default IP address is 192.168.1.1.                                         |
| Protocol        | 802.11g (2.4 GHz) and 802.11n (2.4 GHz) are optional.                                                                    |
| Bandwidth       | 20 MHz or 40 MHz are optional.                                                                                           |
| Channel         | Select the wireless channel. Auto, 1,...11 are optional.                                                                 |
| Security Mode   | Fixed is WPA2-PSK.                                                                                                       |
| Cipher          | Fixed is AES .                                                                                                           |
| Wi-Fi Password  | Customize the password, 8-63 characters, including numbers, lowercase letters, uppercase letters and special characters. |

## 5.3.2 Recipient & API

### Recipient

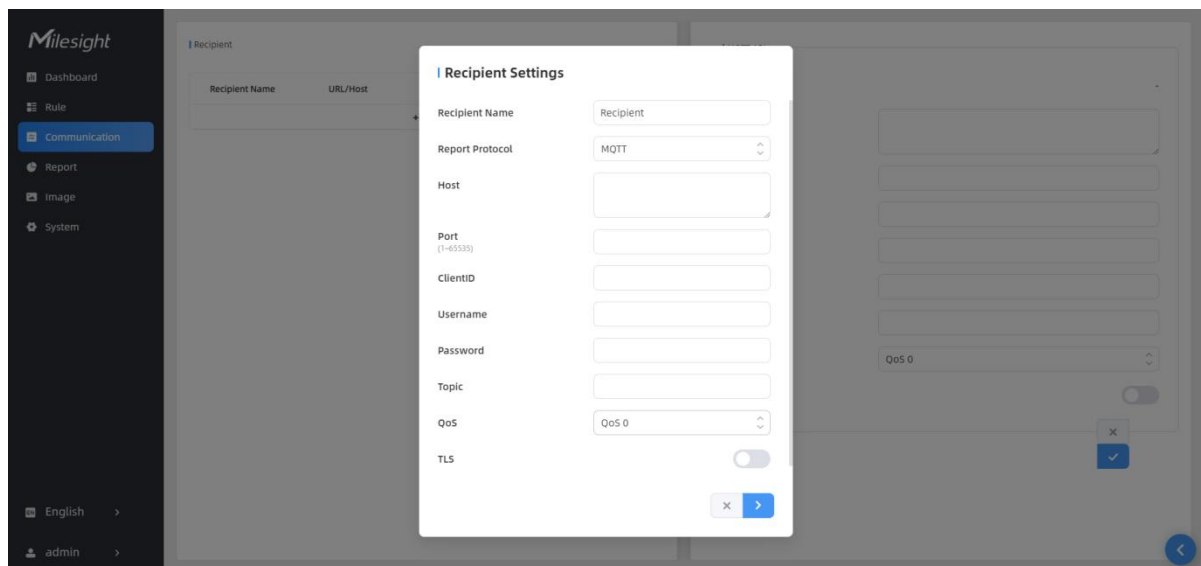
VS125 supports to add data receivers (supports HTTP(s)/MQTT(s)). The device will proactively push data to the receivers according to the configured reporting scheme. Besides, users can get the people counting data or configure the device via CGI.

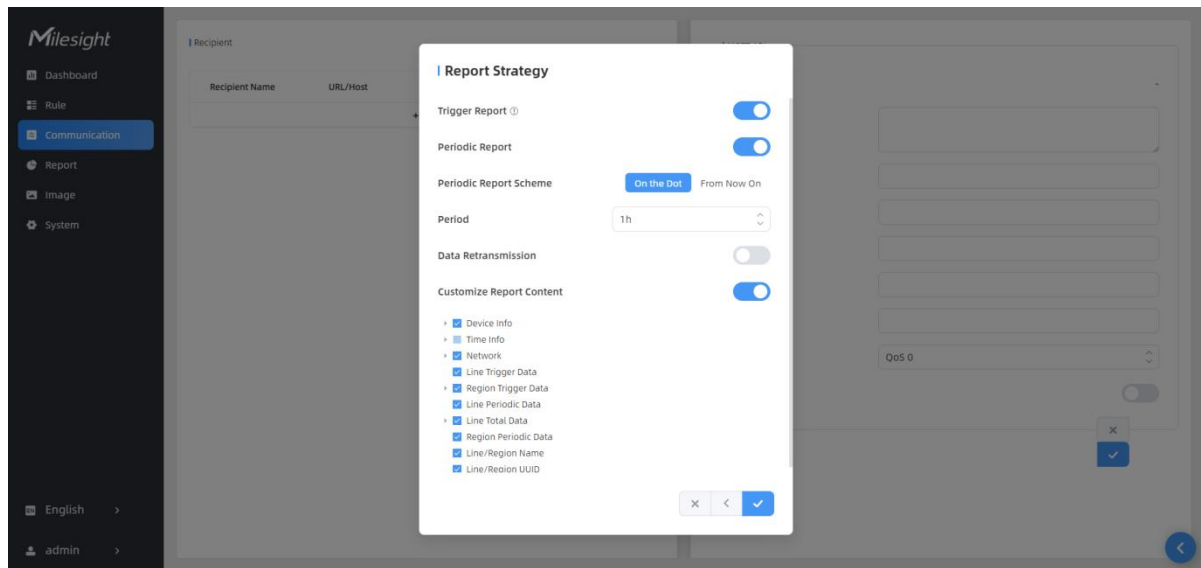
#### Recipient

| Recipient Name | URL/Host         | Protocol | Status    | Operation                                                                                                                                                               |
|----------------|------------------|----------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recipient      | https://data.... | HTTP(S)  | Connected |   |
| + Add          |                  |          |           |                                                                                                                                                                         |

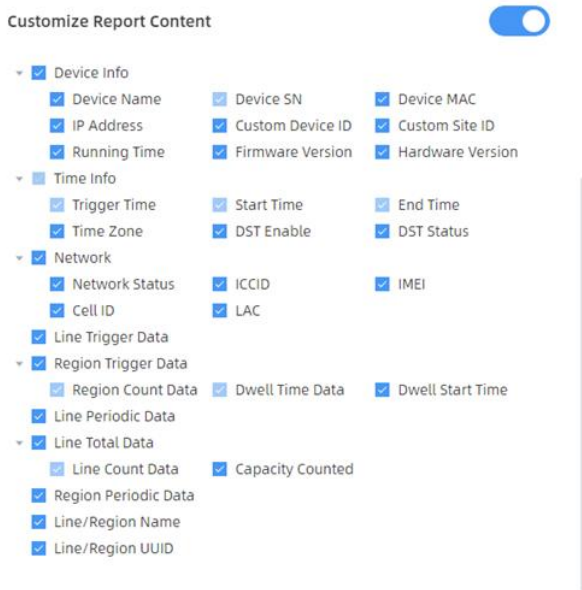
| Parameters     | Description                                                          |
|----------------|----------------------------------------------------------------------|
| Recipient Name | Show the recipient name.                                             |
| URL/Host       | Show the URL/host of HTTP(s) server or MQTT broker.                  |
| Protocol       | Show the report protocol.                                            |
| Status         | Show connection status from device to HTTP(s) server or MQTT broker. |
| Operation      | Click to edit the information or delete the recipient.               |

**Note:** Up to 8 receivers can be added.





| Parameters       | Description                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recipient Name   | Customize the recipient name.                                                                                                                                                                                                                                                                                                                                                                                     |
| Report Protocol  | HTTP(s) or MQTT is optional.                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>HTTP(s)</b>   |                                                                                                                                                                                                                                                                                                                                                                                                                   |
| URL              | The device will post the people counting data in json format to this URL.                                                                                                                                                                                                                                                                                                                                         |
| Connection Test  | Click <b>Test</b> to send test message to URL to check connectivity.                                                                                                                                                                                                                                                                                                                                              |
| Username         | The username used for authentication.                                                                                                                                                                                                                                                                                                                                                                             |
| Password         | The password used for authentication.                                                                                                                                                                                                                                                                                                                                                                             |
| <b>MQTT</b>      |                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Host             | MQTT broker address to receive data.                                                                                                                                                                                                                                                                                                                                                                              |
| Port             | MQTT broker port to receive data.                                                                                                                                                                                                                                                                                                                                                                                 |
| Client ID        | Client ID is the unique identity of the client to the server.<br>It must be unique when all clients are connected to the same server, and it is the key to handle messages at QoS 1 and 2.                                                                                                                                                                                                                        |
| Username         | The username used for connecting to the MQTT broker.                                                                                                                                                                                                                                                                                                                                                              |
| Password         | The password used for connecting to the MQTT broker.                                                                                                                                                                                                                                                                                                                                                              |
| Topic            | <p>Topic name used for publishing.<br/>These strings will be replaced with device info when subscribing to a topic:<br/>\$devsn: Device SN<br/>\$prdm: Product Model<br/>\$devid: Customized Device ID<br/>\$siteid: Customized Site ID</p> <p> <input type="text" value="device/report/\$devsn"/> </p> <p><b>Note:</b> Please replace the specific information when subscribing the topics to test if works.</p> |
| QoS              | QoS0, QoS1, and QoS2 are optional.                                                                                                                                                                                                                                                                                                                                                                                |
| TLS              | Enable the TLS encryption in MQTT communication.                                                                                                                                                                                                                                                                                                                                                                  |
| Certificate Type | CA Signed Server or Self Signed is optional.                                                                                                                                                                                                                                                                                                                                                                      |

|                          |                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                          | <p><b>CA signed server certificate:</b> verifying with the certificate issued by Certificate Authority (CA) that is pre-loaded on the device.</p> <p><b>Self signed certificates:</b> upload the custom CA certificates, client certificates and secret key for verification.</p>                                                                                                     |
| <b>Report Strategy</b>   |                                                                                                                                                                                                                                                                                                                                                                                       |
| Trigger Report           | Report immediately when there is a change of the line crossing people counting number or region people counting number.                                                                                                                                                                                                                                                               |
| Periodic Report          | Select the periodic report of "On the Dot" or "From Now On".                                                                                                                                                                                                                                                                                                                          |
| Periodic Report Scheme   | <p><b>On the Dot:</b> The device will report at the top of each hour. For example, When the interval is set to 1 hour, it will report at 0:00, 1:00, 2:00 and so on; when the interval is set to 10 minutes, it will report at 0:10, 0:20, 0:30, and so on.</p> <p><b>From Now On:</b> Begin reporting from this moment onwards and regularly report based on the interval cycle.</p> |
| Period                   |                                                                                                                                                                                                                                                                                                                                                                                       |
| Data Retransmission      | Enable to resend stored data packets from the disconnected period when the device's network connection is restored. Every recipient supports to receive 50,000 pieces of data at most.                                                                                                                                                                                                |
| Customize Report Content | <p>Customizable selection of content to be reported, avoiding data redundancy.</p>                                                                                                                                                                                                                |

## MQTT API (Cellular Version Only)

VS125 provides MQTT API to support to receive downlink commands from MQTT broker to get people counting data and achieve the configuration.

MQTT API

Status

Disconnected

Host

112.48.19.183

Port

(1~65535)

10566

Topic

12345

Client ID

Username

admin

Password

●●●●●●●●

QoS

QoS 1

TLS

☐

✕

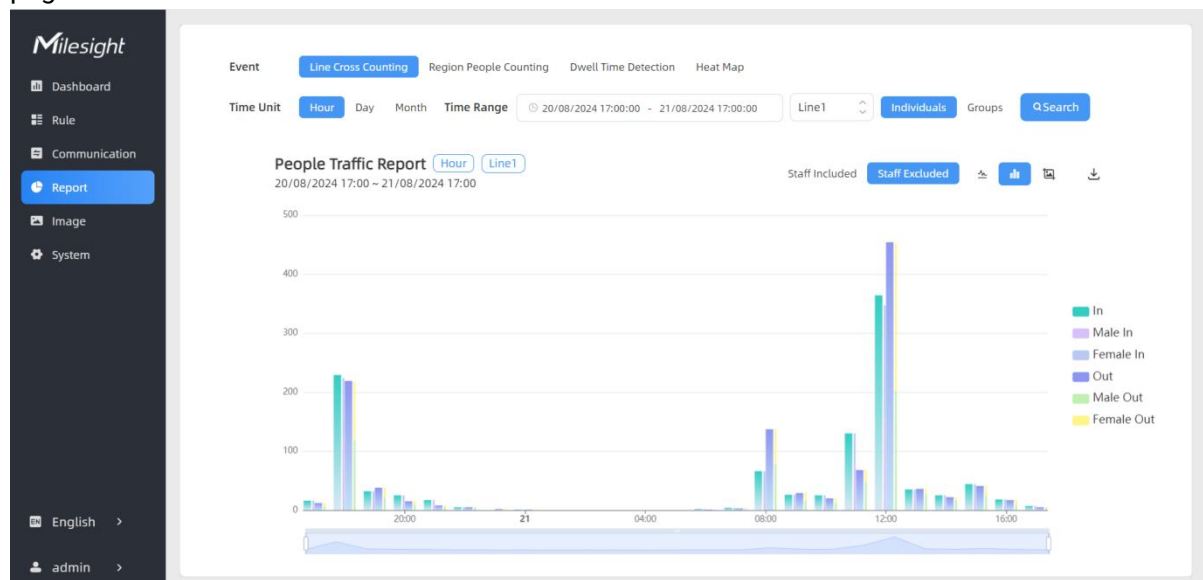
✓

| Parameters | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Status     | Show connection status between device and MQTT broker.                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Host       | MQTT address to receive data.                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Port       | MQTT port to receive data.                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Topic      | <p>Topic name used for publishing.</p> <p>These strings will be replaced with device info when subscribing to a topic:</p> <p>\$devsn: Device SN</p> <p>\$prdmd: Product Model</p> <p>\$devid: Customized Device ID</p> <p>\$siteid: Customized Site ID</p> <div><div>Topic</div><div>device/report/\$devsn</div></div> <p><b>Note:</b> Before batch replacement, please use one device to test that the Topic can be used normally after replacing the corresponding device information.</p> |
| Client ID  | <p>Client ID is the unique identity of the client to the server.</p> <p>It must be unique when all clients are connected to the same server, and it is the key to handle messages at QoS 1 and 2.</p>                                                                                                                                                                                                                                                                                         |

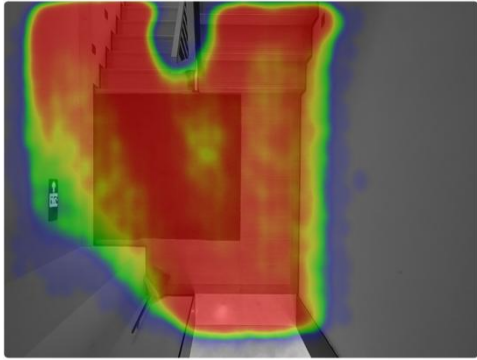
|                  |                                                                                                                                                                                                                                                                                                                                       |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Username         | The username used for connecting to the MQTT.                                                                                                                                                                                                                                                                                         |
| Password         | The password used for connecting to the MQTT.                                                                                                                                                                                                                                                                                         |
| QoS              | QoS0, QoS1, QoS2 are optional.                                                                                                                                                                                                                                                                                                        |
| TLS              | Enable the TLS encryption in MQTT communication.                                                                                                                                                                                                                                                                                      |
| Certificate Type | <p>CA Signed Server or Self Signed is optional.</p> <p><b>CA signed server certificate:</b> verifying with the certificate issued by Certificate Authority (CA) that is pre-loaded on the device.</p> <p><b>Self signed certificates:</b> upload the custom CA certificates, client certificates and secret key for verification.</p> |

## 5.4 Report

VS125 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.



| Parameters  | Description                                                                                                                                          |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Event       | Select the event which you want to query the report. Line crossing counting, region people counting, dwell time detection and heat map are optional. |
| Time Unit   | Select the unit to generate the graph or export the data.                                                                                            |
| Time Range  | Select the time range to generate the graph.                                                                                                         |
| Line1       | Select the line to display the graph.                                                                                                                |
| Region1     | Select the region to display the graph.                                                                                                              |
| Report Type | For the heat map report, both the Motion Heatmap and the Dwell Heatmap are optional.                                                                 |

|                                                                                                                                                                     |                                                                                                                                                         |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                     | <p>Motion Heatmap Report<br/>26/09/2024 17:00 - 27/09/2024 17:00</p>  |
|  Search                                                                            | Click to generate the graph according to the time range and line option.                                                                                |
| Staff Included <input type="button" value="Staff Excluded"/>                                                                                                        | Select whether to include staff counting values on the graph.                                                                                           |
|   | Select the display type as line or bar.                                                                                                                 |
|                                                                                    | Click to download the chart screenshot.                                                                                                                 |
|                                                                                   | Export the historical traffic data as CSV file according to the selected time unit. The device can store up to one million data records to CSV file.    |

## 5.5 Image

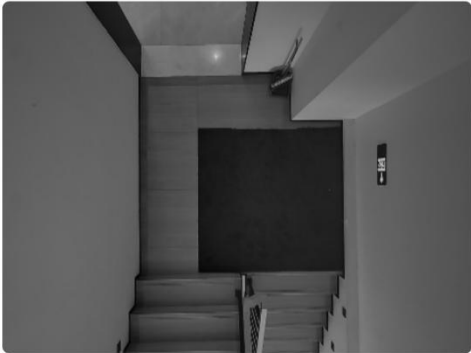
VS125 has great lighting adaptability that allows it to work well in low light or even complete dark environments. It supports day and night mode switching based on the no-photosensitive scheme.



- Dashboard
- Rule
- Communication
- Report
- Image**
- System

English >

admin >



Refresh Image

Image Settings

Day/Night Mode Switch ① Auto Day Night Schedule

Target Brightness 5

Power Line Frequency 50Hz 60Hz

Wide Dynamic Range ☐

| Parameters            | Description                                                                                      |
|-----------------------|--------------------------------------------------------------------------------------------------|
| Day/Night Mode Switch | Set image mode. Auto, Day, Night and Schedule are optional.<br><b>Day:</b> black and white mode; |

|                      |                                                                                                                                                                                                                 |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                      | <b>Night:</b> infrared based black and white mode;<br><b>Auto:</b> automatic switch day and night according to image brightness;<br><b>Schedule:</b> switch day and night according to the configured schedule. |
| Sensitivity          | Set the sensitivity of the automatic day and night switching. The higher sensitivity, the easier to switch day and night.                                                                                       |
| Night Mode Duration  | Set the schedule of the night mode.                                                                                                                                                                             |
| Target Brightness    | Set the brightness of the target to make image clearer. The higher brightness is, the brighter the target brightness is.                                                                                        |
| Power Line Frequency | Choose the frequency to avoid the image flashing.                                                                                                                                                               |
| Wide Dynamic Range   | Enable or disable WDR. Enabling WDR can capture more detail in scenes where light conditions vary greatly.                                                                                                      |

## 5.6 Validation

Video validation function can assist users in verifying the accuracy of people counting by setting up a video task of recording.

| Task Name | Start Time              | End Time                | Duration<br>min | Task Status      | Size   | Operation |
|-----------|-------------------------|-------------------------|-----------------|------------------|--------|-----------|
| Task 1    | 2025-01-04 06:46:01.356 | 2025-01-04 07:03:01.527 | 17              | Manually Stopped | 0.93GB |           |

| Parameters     | Description                                                          |
|----------------|----------------------------------------------------------------------|
| Task Name      | Show the task name.                                                  |
| Start/End Time | Show the start time and end time of this video.                      |
| Duration       | Show the length of the video.                                        |
| Task Status    | Show the video task status.                                          |
| Size           | Show the video size.                                                 |
| Operation      | Click to check the video details, stop recording or delete the task. |
|                | Click to add a video task. One device can add up to 50 tasks.        |

### Set a Task of Recording

Task Name

Recording Mode Record Now Setting Time

Start Time

Duration   
min(1~60)

✕ ✓

| Parameters     | Description                                                                                      |
|----------------|--------------------------------------------------------------------------------------------------|
| Task Name      | Customize a name for this task.                                                                  |
| Recording Mode | Record Now or Setting Time is optional.                                                          |
| Start Time     | Set the start recording time.                                                                    |
| Duration       | Set the duration of the recording, the duration of all tasks should not be more than 60 minutes. |

#### Note:

- The setting time range of different tasks can not be overlap.
- Detection rules cannot be modified during the recording process.
- If the validation videos need to be played locally, please contact Milesight IoT support for a specialized player.

Milesight
Dashboard
Rule
Communication
Report
Image
Validation
System
English
admin

Task 1

Recording Task

Task Name Task 1

Recording Status Manually Stopped

Counting Data

Line1

|          |   |           |   |
|----------|---|-----------|---|
| Total In | 0 | Total Out | 0 |
| Staff In | 0 | Staff Out | 0 |
| Group In | 0 | Group Out | 0 |

Line2

|          |   |           |   |
|----------|---|-----------|---|
| Total In | 0 | Total Out | 0 |
| Staff In | 0 | Staff Out | 0 |
| Group In | 0 | Group Out | 0 |

Line3

|          |   |           |   |
|----------|---|-----------|---|
| Total In | 0 | Total Out | 0 |
| Staff In | 0 | Staff Out | 0 |
| Group In | 0 | Group Out | 0 |

Line4

|          |   |           |   |
|----------|---|-----------|---|
| Total In | 0 | Total Out | 0 |
|----------|---|-----------|---|

| Parameters | Description                                                                             |
|------------|-----------------------------------------------------------------------------------------|
| Edit       | Visual Configuration Show/Hide relevant <a href="#">rules</a> in the recording footage. |

45

|                 |                             |                                                                                                                                                                                                               |
|-----------------|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Preview Layout  |                             | <input type="checkbox"/> Detection Line <input checked="" type="checkbox"/> U-turn Area<br><input checked="" type="checkbox"/> Detection Region <input checked="" type="checkbox"/> Obstacle Exclusion Region |
|                 | AI Result                   | Show/Hide track line in the recording footage.<br><b>Real-time Track Line:</b> real-time trajectory line of the targets<br><b>Static Track Line:</b> historical trajectory line of the targets                |
|                 | Other                       | Show/Hide track points in the recording footage.                                                                                                                                                              |
| Playback Button |                             | Rewind/Pause/Play/Forward(supports switching between 0.5x, 1x, 2x, and 4x playback speed).                                                                                                                    |
|                 | 15:20:50.035 / 15:21:04.000 | Start time and end time of the recording.                                                                                                                                                                     |
|                 |                             | Download video stream footage to check problem.                                                                                                                                                               |

**Note:** The playback progress bar of video stream footage highlights the video frame where the data changes.

## 5.7 System

### 5.7.1 Device Info

All information about the hardware and software can be checked on this page. Besides, users can modify the device name, customize device ID and site ID for large amounts of devices management.

### 5.7.2 User

The screenshot displays the Milesight web interface. On the left is a dark sidebar with navigation links: Dashboard, Rule, Communication, Report, Image, and System (highlighted in blue). Below these are language and user options: English and admin. The main content area is divided into two panels. The left panel, titled 'Device Name' (People Counter), lists various device identifiers: Product Model (VS125-LOBEU), SN (6834E27852640016), Hardware Version (V1.0), Software Version (V\_125.1.0.1-hard-test5), MAC Address (1C:C3:16:34:35:36), WLAN MAC Address (1C:C3:16:34:35:37), Customized Device ID, Customized Site ID, and Running Time (18 minutes 14 seconds). A red box highlights the 'Users' section, which contains a table with columns for Username, User Level, and Operation. The table lists an 'admin' user with 'Administrator' level and edit/delete icons, followed by a '+ Add User' button. The right panel shows system settings: 'Current System Time' (Date: 03/07/2024, Time: 09:52:00), 'Set the System Time' (Time Zone: UTC-0:00 Western European Time (WET), Greenwich Mean ...), 'Synchronize Time' (Synchronize Mode: NTP Timing, Manual Timing), 'Server Address' (pool.ntp.org), and 'Time interval' (1440 min(-10000)).

| Parameters | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|            | <p>You can change the login password of this device.</p> <div> <p><b>Users modify</b></p> <p>Username: <input type="text" value="admin"/></p> <p>User Level: <input type="text" value="Administrator"/></p> <p>Administrator Password: <input type="password"/></p> <p>New Password: <input type="password"/></p> <p>Confirm: <input type="password"/></p> <p>At least:</p> <ul style="list-style-type: none"> <li>8 characters</li> <li>2 types of characters: Number, letter and symbol</li> </ul> <p><input type="button" value="X"/> <input type="button" value="✓"/></p> </div> |
|            | <p>Click to set three security questions for your device. In case that you forget the password, you can click <b>Forget Password</b> button on login page to reset the password by answering three security questions correctly.</p>                                                                                                                                                                                                                                                                                                                                                 |

Secure Question Settings Already Set

Password

Security Question1

What is your lucky number?

Answer1

Security Question2

What is your favorite sport?

Answer2

Security Question3

What is your favorite game?

Answer3

✕

✓

Click to add a viewer, who will only have access to the "Dashboard" and "Report" interfaces.

+ Add User

Add User

Username

viewer

User Level

Viewer

Password

Confirm

At least:

- 8 characters
- 2 types of characters: Number, letter and symbol.

✕

✓

### 5.7.3 Time Configuration

Milesight

Dashboard

Rule

Communication

Report

Image

System

English

admin

Device Info.

Device Name

People Counter

Product Model

VS125-L0BEU

SN

6834E27B52640016

Hardware Version

V1.0

Software Version

V\_125.1.0.1-hard-test5

MAC Address

1C:C3:16:34:35:36

WLAN MAC Address

1C:C3:16:34:35:37

Customized Device ID

Customized Site ID

Running Time

18 minutes 14 seconds

✕

✓

Users

| Username | User Level    | Operation                 |
|----------|---------------|---------------------------|
| admin    | Administrator | <div>✕</div> <div>✓</div> |

Current System Time

Date

03/07/2024

Time

10:02:43

Set the System Time

Time Zone

UTC-0:00 Western European Time (WET), Greenwich Mean ...

Daylight Saving Time

✕

✓

Synchronize Time

Synchronize Mode

NTP Timing

Manual Timing

Server Address

pool.ntp.org

Time Interval

1440

✕

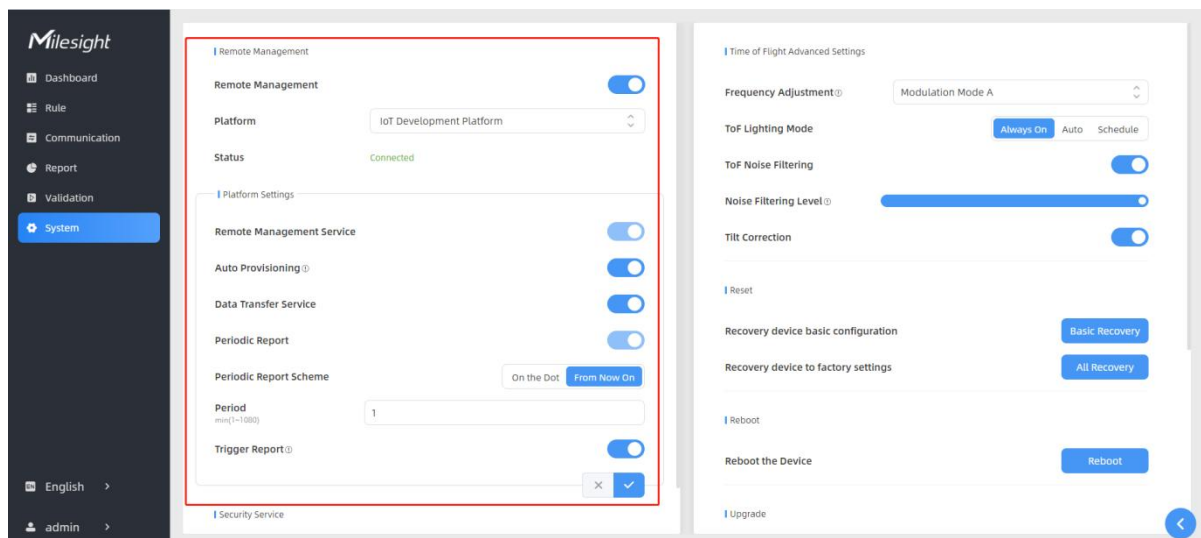
✓

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| Parameters                     | Description                                                                                                                                                                                                                               |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Time Zone                      | Choose the time zone for your location.                                                                                                                                                                                                   |
| Daylight Saving Time           | Enable or disable Daylight Saving Time (DST).<br><b>Start Time:</b> the start time of DST time range.<br><b>End Time:</b> the end time of DST time range.<br><b>DST Bias:</b> the DST time will be faster according to this bias setting. |
| Synchronize Mode               | NTP Timing or Manual Timing is optional.                                                                                                                                                                                                  |
| Server Address                 | NTP server address to sync the time.                                                                                                                                                                                                      |
| Time Interval                  | Set the interval to sync time with NTP server.                                                                                                                                                                                            |
| Setting Time                   | Set the device time manually.                                                                                                                                                                                                             |
| Synchronize with computer time | Synchronize the time with your computer.                                                                                                                                                                                                  |

### 5.7.4 Remote Management

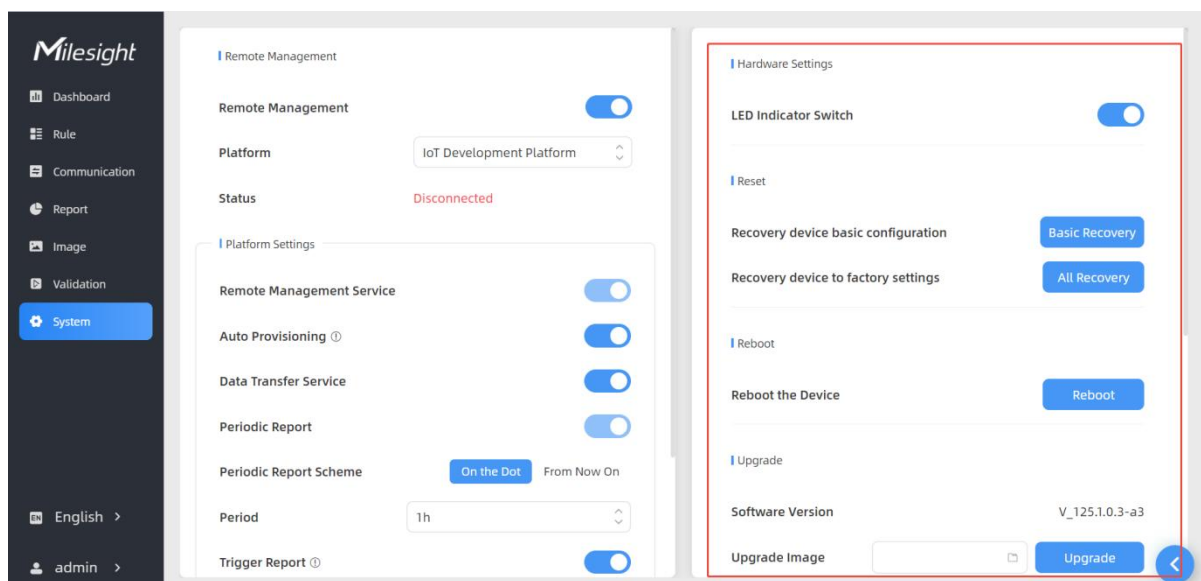
Milesight provides remote management service for this device via Milesight DeviceHub platform or Milesight Development Platform. **Before connecting, do ensure the device is connected to the network and Internet connection is stable.**



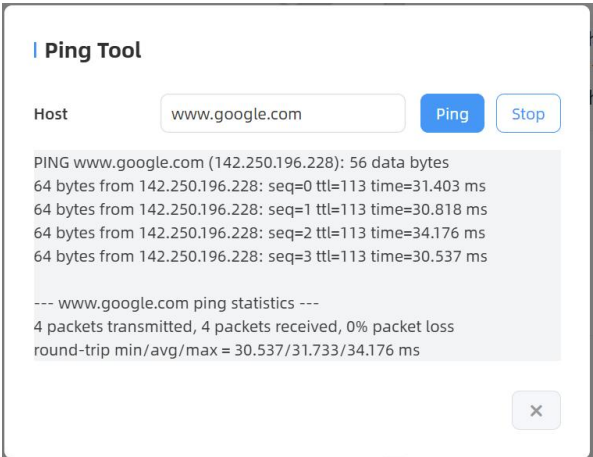
| Parameters                      | Description                                                         |
|---------------------------------|---------------------------------------------------------------------|
| <b>Remote Management</b>        |                                                                     |
| Remote Management               | Enable or disable to manage the device through Milesight platforms. |
| Platform                        | DeviceHub or IoT Development Platform is optional.                  |
| Status                          | Show the connection status between the device and the DeviceHub.    |
| <b>IoT Development Platform</b> |                                                                     |
| Remote                          | Enable to change the device settings via Milesight Development      |

|                                         |                                                                                                                                |
|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| Management Service                      | platform.                                                                                                                      |
| Auto Provisioning                       | Enable to receive and deploy the configurations from Milesight Development Platform after the device is connected to Internet. |
| Data Transfer Service                   | Report people counting data to Milesight Development platform.                                                                 |
| <b>DeviceHub 2.0 (PoE Version Only)</b> |                                                                                                                                |
| Server Address                          | IP address or domain of the DeviceHub 2.0 management server.                                                                   |
| Synchronize Device Name                 | Enable or disable to synchronize device name on devicehub 2.0.                                                                 |
| Synchronize Customized ID               | Customize the device ID and site ID.                                                                                           |
| <b>Security Service</b>                 |                                                                                                                                |
| SSH                                     | Enable or disable SSH access. The SSH port is fixed as 22.                                                                     |

## 5.7.5 System Maintenance



| Parameters        | Description                                                                                                                                                                                                                                           |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Hardware Settings | <b>LED Indicator Switch:</b> Enable or disable LED indicator when device is in normal operation.                                                                                                                                                      |
| Reset             | <b>Recovery device basic configuration:</b> keep the IP settings and user information when resetting.<br><b>Recovery device to factory settings:</b> reset device to factory default, which needs to verify admin password.                           |
| Reboot            | Restart the device immediately.                                                                                                                                                                                                                       |
| Upgrade           | Click the folder icon and select the upgrading file, then click the <b>Upgrade</b> button to upgrade. The update will be done when the system reboots successfully.<br><b>Note:</b> The upgrade process takes about 1-10 minutes. Do not turn off the |

|                    |                                                                                                                                                             |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                    | power and complete automatic restart after the upgrade.                                                                                                     |
| Backup and Restore | <b>Export Config File:</b> Export configuration file.                                                                                                       |
|                    | <b>Import Config File:</b> Click the file icon and select the configuration file, click <b>Import</b> button to import configuration file.                  |
| Diagnostics        | <b>System Log:</b> Download log files that can be used for troubleshooting.                                                                                 |
|                    | <b>IP Ping:</b> Type the IP address or URL to test network connection.<br> |

## 6. Installation Instruction

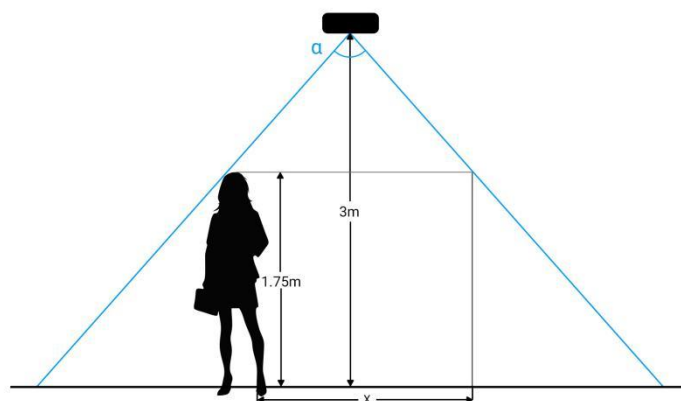
Parameter definition:

| Parameters | Explanation                    | Value         |
|------------|--------------------------------|---------------|
| H          | Installation height            | 2.2 ~ 6 m     |
| h          | Target height                  | Example 1.7 m |
| $\alpha$   | Horizontal field of view angle | 101°          |
| $\beta$    | Vertical field of view angle   | 70°           |
| x          | Length of detection range      |               |
| y          | Width of detection range       |               |

### 6.1 Covered Detection Area

The detection area covered by the device is related to the field of view angle of the device, the installation height and the target height.

The length of the detection area is approximately  $x = 2 \times \tan(\alpha/2) \times (H - h - 0.05)$  and the width of the detection area is approximately  $y = 2 \times \tan(\beta/2) \times (H - h - 0.05)$ .



For example, if the pedestrians' height is 1.75 m, the detection area corresponding to each installation height is as follows:

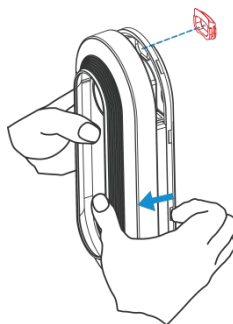
| Installation Height (m) | Detection Area (m) |
|-------------------------|--------------------|
| 2.2                     | 1.21 × 0.7         |
| 2.5                     | 1.94 × 1.12        |
| 3.0                     | 3.16 × 1.82        |
| 3.5                     | 4.37 × 2.52        |
| 4.0                     | 5.58 × 3.22        |
| 4.5                     | 6.80 × 3.92        |
| 5.0                     | 8.01 × 4.62        |
| 5.5                     | 9.23 × 5.32        |
| 6.0                     | 10.44 × 6.02       |

## 6.2 Installation

### Ceiling Mount

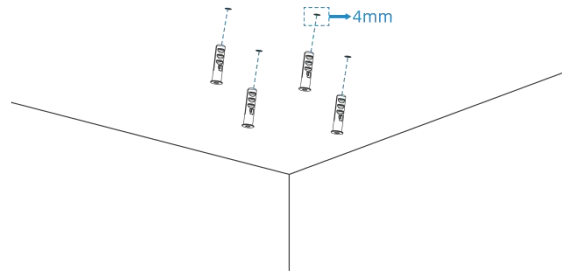
**Installation condition:** ceiling thickness > 30mm.

**Step 1:** Remove the cover. (If the wires need to be protruded from the side of the device, remove the blocking rubber.)

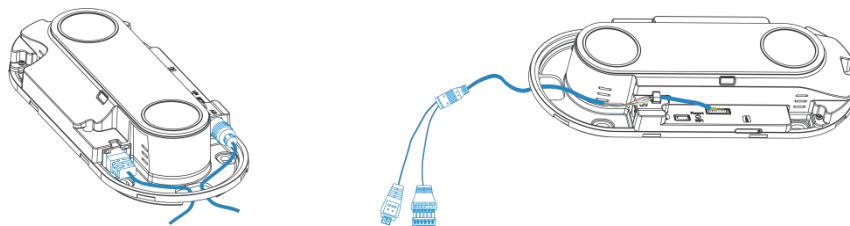


**Step 2:** Drill 4 holes with a diameter of 4mm according to the hole position of the device screw.

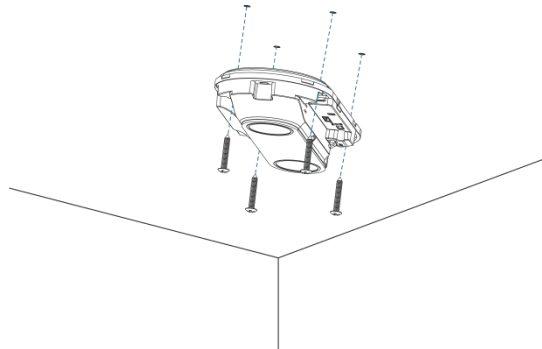
(If you need to hide the power cord into the ceiling, drill another wire hole.) Attach the expansion bolts to the hole position in the ceiling.



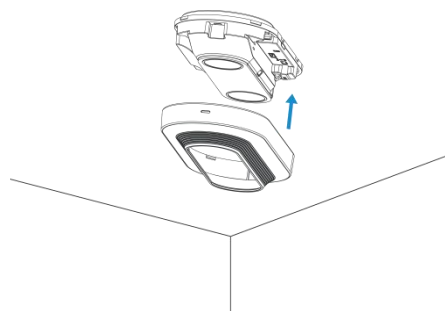
**Step 3:** Connect all required wires, and pass them through the wire holes behind the device. (If the alarm I/O is going to be used, please connect the Multi-interface to the device.)



**Step 4:** Fix the device to the wall plugs via mounting screws.



**Step 5:** Fix the cover back to device.



### Ceiling/Lintel Mount (with Optional Multifunctional Bracket)

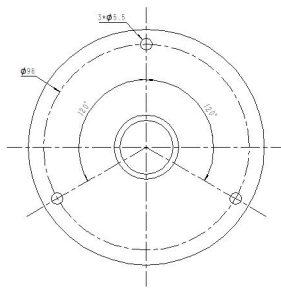
**Step 1:** Fix the pole to the device with the hole on the device.

**Step 2:** Adjust the length of the pole, then adjust the direction of 3-axis ball and tighten it with the handle.

**Step 3:** Determine the mounting location and drill 3 holes, fix the wall plugs into the mounting holes, then fix the bracket base to the wall plugs via mounting screws.

**(Note:** If the wire needs to be extended to the interior of the ceiling or wall, a wire hole with a suitable

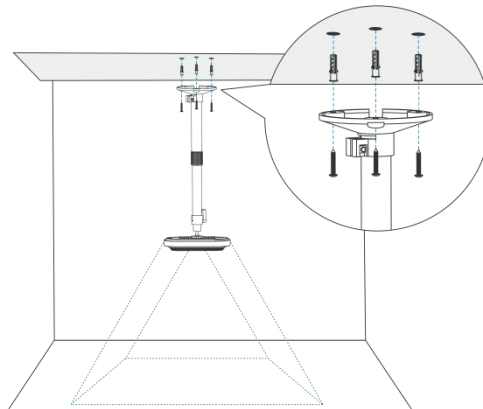
size is also required to be drilled.)



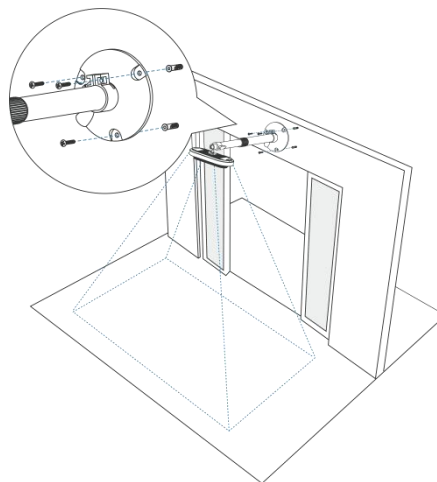
**Step 4:** Remove the cover on the device, and then connect all required wires and pass them through the inside of pole.

**Step 5:** Fix the pole to bracket base with screws and nuts.

- **Ceiling Mount**



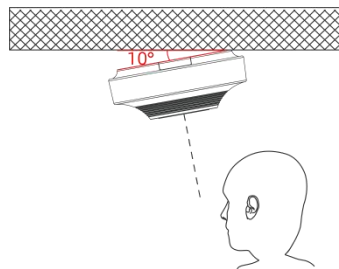
- **Lintel Mount**



**Installation Note:**

- It is recommended to inform people at the deployment site in advance that their images will be collected (through signage, user agreements, etc.) and obtain their consent before installation. Additionally, inform them that they have the option to opt out if they do not consent to the collection of their images.

- The device is sensitive to ambient light, so it's best to avoid placing it in areas where light conditions fluctuate significantly.
- Make sure there are no obstacles within the live view of device.
- When the device is installed on the door frame or above the doorway, it is recommended to use the multifunctional bracket. Adjust it until there are no obstructions in the device's real-time field of view. (The multi-functional bracket can be purchased from Milesight or sourced independently).
- When the device is installed at the door of the fan switch, the device needs to be installed on the opposite side of the door.
- For more accurate target attribute detection, tilt the device slightly (within 10 degrees).



## 6.3 Factors Affecting Accuracy

- Impact over the line detection:
  - 1) The device can not recognize well if the ground is smooth and lacks patterns.
  - 2) It is indistinguishable when the color of targets and the floor is similar.
  - 3) Objects imaged similarly to people have a probability of being misdetected.
  - 4) The device may not accurately recognize people walking at extremely fast speeds (more than 2.5 m/s).
  - 5) Detection accuracy decreases in crowded scenes (distance between targets less than 30cm).
  - 6) When two people pass through the detection line at the same time and are in close proximity to each other (one in and one out), it is possible that both people will miss the count.
- Impact Attribute Detection:
  - 1) Children under 1.1m in height, children in strollers/shopping carts, children being held, and children covered by an adult have a probability of undercounting.
  - 2) Gender detection is prone to misdetection when the target has longer hair for men and shorter hair for women.

- 3) The device does not detect men and women when hair/clothing color is close to the color of the floor or when wearing large concealing accessories such as head scarves.
- 4) If the Milesight specific lanyard worn by the staff is obstructed by collars, scarves, hair, or other objects, it may result in inaccurate counting.
- 5) If the staff wear striped clothing or clothing with patterns similar to the Milesight specific staff lanyard, it may lead to false detections.

## 7. Communication Protocol

VS125 will post the people counting data in json format to HTTP URL or MQTT broker.

### 7.1 Periodic Report

```
{
  "device_info":
  {
    "cus_device_id": "123456",
    "cus_site_id": "789123",
    "device_mac": "24:E1:24:FA:0C:6C",
    "device_name": "People Counter",
    "device_sn": "6384E16179950009",
    "firmware_version": "V_125.1.0.1",
    "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": "true", //True is connected, False is disconnected
    "iccid": "89860117838009934120",
    "imei": "860425047368939",
    "cell_id": "340db80",
    "lac": "5299"
  },
  "line_periodic_data": [{
    "line": 1,
    "line_name": "Line11111111111111111111111111111111",
    "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": "Line22222222222222222222222222222222",
  "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": "Line11111111111111111111111111111111",
    "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"
    }
]
},
"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)"
}
}
```

## 7.2 Trigger Report-Line Crossing People Counting

```
{
  "device_info":
  {
    "cus_device_id": "123456",
    "cus_site_id": "789123",
    "device_mac": "24:E1:24:FA:0C:6C",
    "device_name": "People Counter",
    "device_sn": "6384E16179950009",
    "firmware_version": "V_125.1.0.1",
    "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": "true", //True is connected, False 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": "Line11111111111111111111111111111111",
"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": "Line33333333333333333333333333333333",
    "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)"
}
}
```

### 7.3 Trigger Report-Region People Counting

```
{
    "device_info":
    {
        "cus_device_id": "123456",
        "cus_site_id": "789123",
        "device_mac": "24:E1:24:FA:0C:6C",
        "device_name": "People Counter",
        "device_sn": "6384E16179950009",
        "firmware_version": "V_125.1.0.1",
        "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": "true",    ////True is connected, False 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)"  
  }  
}
```

## 7.4 Trigger Report-Dwell Time Detection

```
{  
  "device_info":  
  {  
    "cus_device_id": "123456",  
    "cus_site_id": "789123",  
    "device_mac": "24:E1:24:FA:0C:6C",  
    "device_name": "People Counter",  
    "device_sn": "6384E16179950009",  
    "firmware_version": "V_125.1.0.1",  
    "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": "true", ///True is connected, False 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": "2024-05-30T19:12:20+08:00",  
        "dwell_time": 6000,  
        "region_id": "1",  
        "trigger_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",
        "sex": "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)"
}
}
```

## 8. MQTT API Command

VS125 supports to send three commands via MQTT API to enquire the data.

### 8.1 Search Report

#### 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"
  }
}

```

| Parameter   | Type   | Description                                                                                                          |
|-------------|--------|----------------------------------------------------------------------------------------------------------------------|
| dst         | string | all: send to all recipients that subscribe the MQTT API topic<br>SN: send to a certain recipient                     |
| type        | number | 0: request, 1: response                                                                                              |
| msgId       | number | Identifier of this request                                                                                           |
| requestData | object |                                                                                                                      |
| event       | number | 0: Line crossing counting<br>1: Region people counting<br>2: Dwell time detection<br>3: Heat map<br>4: History Point |
| startTime   |        |                                                                                                                      |
| endTime     |        |                                                                                                                      |
| lineParam   |        |                                                                                                                      |
| regionCount |        |                                                                                                                      |
| dwellDetct  |        |                                                                                                                      |
| heatMap     |        |                                                                                                                      |
| uuid        | string | A random unique ID defined by user                                                                                   |

### Response example: Success

```

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

```

| Parameter | Type    | Description                |
|-----------|---------|----------------------------|
| code      | integer |                            |
| message   | string  |                            |
| msgId     | number  | Identifier of this request |
| src       | string  | SN for response            |
| type      | number  | 0: request, 1: response    |

## 8.2 Get Report Result

### Request example

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

| Parameter   | Type   | Description                                                                                      |
|-------------|--------|--------------------------------------------------------------------------------------------------|
| dst         | string | all: send to all recipients that subscribe the MQTT API topic<br>SN: send to a certain recipient |
| type        | number | 0: request, 1: response                                                                          |
| msgId       | number | Identifier of this request                                                                       |
| requestData | object |                                                                                                  |
| uuid        | string | A random unique ID defined by user                                                               |
| event       | number | 0: Line crossing counting<br>1: Region people counting<br>2: Dwell time detection<br>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
}
```

| Parameter | Type      | Description                                                                                      |
|-----------|-----------|--------------------------------------------------------------------------------------------------|
| code      | integer   |                                                                                                  |
| data      | object [] | Return data                                                                                      |
| event     | number    | 0: Line crossing counting<br>1: Region people counting<br>2: Dwell time detection<br>3: Heat map |
| isReady   | boolean   |                                                                                                  |
| line      | object    |                                                                                                  |

|           |         |  |
|-----------|---------|--|
| Children  | object  |  |
| femaleIn  | integer |  |
| femaleOut | integer |  |
| In        | integer |  |
| maleIn    | integer |  |
| maleIn    | integer |  |
| Out       | integer |  |
| staff     | object  |  |
| femaleIn  | integer |  |
| femaleOut | integer |  |
| In        | integer |  |
| maleIn    | integer |  |
| maleIn    | integer |  |
| Out       | integer |  |
| total     | object  |  |
| femaleIn  | integer |  |
| femaleOut | integer |  |
| In        | integer |  |
| maleIn    | integer |  |
| maleIn    | integer |  |
| Out       | integer |  |
| time      | object  |  |
| femaleIn  | integer |  |
| femaleOut | integer |  |
| In        | integer |  |
| maleIn    | integer |  |
| maleIn    | integer |  |
| Out       | integer |  |
| group     | object  |  |
| femaleIn  | integer |  |
| femaleOut | integer |  |
| In        | integer |  |
| maleIn    | integer |  |
| maleIn    | integer |  |
| Out       | integer |  |
| region    | object  |  |
| Children  | object  |  |
| femaleIn  | integer |  |
| femaleOut | integer |  |
| In        | integer |  |
| maleIn    | integer |  |
| maleIn    | integer |  |
| Out       | integer |  |

|           |         |  |
|-----------|---------|--|
| staff     | object  |  |
| femaleIn  | integer |  |
| femaleOut | integer |  |
| In        | integer |  |
| maleIn    | integer |  |
| maleIn    | integer |  |
| Out       | integer |  |
| total     | object  |  |
| femaleIn  | integer |  |
| femaleOut | integer |  |
| In        | integer |  |
| maleIn    | integer |  |
| maleIn    | integer |  |
| Out       | integer |  |
| time      | object  |  |
| femaleIn  | integer |  |
| femaleOut | integer |  |
| In        | integer |  |
| maleIn    | integer |  |
| maleIn    | integer |  |
| Out       | integer |  |
| dwel      | object  |  |
| Children  | object  |  |
| femaleIn  | integer |  |
| femaleOut | integer |  |
| In        | integer |  |
| maleIn    | integer |  |
| maleIn    | integer |  |
| Out       | integer |  |
| staff     | object  |  |
| femaleIn  | integer |  |
| femaleOut | integer |  |
| In        | integer |  |
| maleIn    | integer |  |
| maleIn    | integer |  |
| Out       | integer |  |
| total     | object  |  |
| femaleIn  | integer |  |
| femaleOut | integer |  |
| In        | integer |  |
| maleIn    | integer |  |
| maleIn    | integer |  |
| Out       | integer |  |

|               |          |                                                                                  |
|---------------|----------|----------------------------------------------------------------------------------|
| time          | object   |                                                                                  |
| femaleIn      | integer  |                                                                                  |
| femaleOut     | integer  |                                                                                  |
| In            | integer  |                                                                                  |
| maleIn        | integer  |                                                                                  |
| maleIn        | integer  |                                                                                  |
| Out           | integer  |                                                                                  |
| heatmap       | object   |                                                                                  |
| height        | number   | Height of the heatmap data grid                                                  |
| width         | number   | Width of the heatmap data grid                                                   |
| max           | number   | The Maximum value of heat map                                                    |
| min           | number   | The minimum value of heat map                                                    |
| values        | object[] |                                                                                  |
| X             | number   |                                                                                  |
| Y             | number   |                                                                                  |
| value         | number   |                                                                                  |
| historyPoints |          |                                                                                  |
| values        | object[] | Trajectory Point Types:<br>0: Start Trajectory Point<br>1: Stop Trajectory Point |
| X             | number   |                                                                                  |
| Y             | number   |                                                                                  |
| message       | string   | Return Information                                                               |
| transmitTime  | number   | Processing time                                                                  |

## 8.3 Search Log

### Request example:

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

| 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  | Identifier of this request                                                                      |
| requestData | object  |                                                                                                 |
| startTime   | string  | Start Timestamp, Unit: ms                                                                       |
| endTime     | string  | End Timestamp, Unit: ms                                                                         |
| logType     | number  | 0: Starting up log                                                                              |
| admin       | boolean | true: display response parameter "rebootCode",<br>false: hidden 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
}
```

| 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<br>1: Manual reboot<br>2: Network modification reboot<br>3: Web upgrade reboot<br>4: Software reset reboot<br>5: Hardware reset reboot<br>6: Configuration import reboot<br>7: Remote management configuration import<br>8: Remote management upgrade<br>9: Upgrade failure reboot<br>10: Multicast network configuration modification reboot<br>11: mssserver crash<br>12: avserver crash<br>13: lighttpd crash<br>14: Multi-device stitching mode change<br>15: Multiple 4G dial-up failures |
| runningTime  | integer |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| runningTime  | string  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| recordCount  | integer | Number of restarts, maximum display 1000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| message      | string  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| transmitTime | number  | Processing time                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

**-END-**