



VS135

Ultra ToF People Counter

User Guide

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Chapter 1. Preface

Copyright Statement

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Safety Instruction

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

**Warning:**

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

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

**CAUTION:**

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

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



- Do not place the device where the temperature is below/above the operating range.
- The device must never be subjected to shocks or impacts.
- To protect the security of the device, please change the device password when first configuring.
- To prevent heat accumulation, do not block air circulation around the device.
- Do not use volatile solvents such as alcohol, benzene or thinners as they may damage the surface finishes.
- Do not expose the device to where a laser beam equipment is used.

Revision History

Data	Doc Version	Description
Feb. 23, 2024	V1.0	Initial version
May 20, 2024	V1.1	1. Support to configure WLAN IP address; 2. Add ToF lighting mode and noise filtering; 3. Add validation record task list; 4. Add Enhanced Detection Mode; 5. Update installation distance.
Jul.30, 2024	V1.2	1. Add Multi-Device Stitching; 2. Add detection line list; 3. Add People Counting Trigger Report.
Feb. 12, 2025	V1.3	1. Add configuration of Wi-Fi passwords at login, user passwords are required to contain 4 styles. 2. Add Obstacle Exclusion. 3. Add Occlusion Detection. 4. Add Heatmap. 5. Add reporting on the dot. 6. Support time synchronization with the LoRaWAN[®] network server. 7. Support Individual Filter of Group Counting.

Data	Doc Version	Description
		8. Add LED indicator switch and diagnostic function for support. 9. Support for downloading logs and Ping detection. 10. Support separate reporting of children's data.
May 28, 2025	V1.4	1. Add automatic U-turn filtering. 2. Add Record Track Start/Stop Points and show Static Track Line. 3. Add Log Mode - File to choose the level of the download log files. 4. Add downlink commands. 5. Support to configure TX Power. 6. Add Data Retransmission and Retrievability. 7. Modify the display style of real-time track line and preview layout. 8. Remove Ping detection.

Chapter 2. Product Introduction

This chapter describes basic product information.

Overview

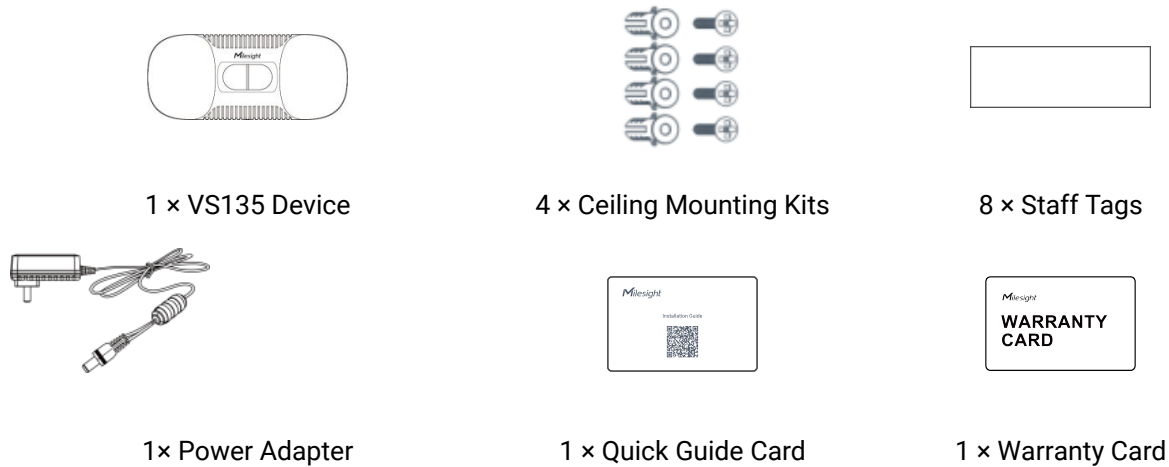
VS135 is a high-end people counting sensor that is based on deep learning AI and second-generation ToF technology. It is capable of adapting to various complex scenarios while ensuring excellent privacy protection. This sensor possesses an impressive accuracy of up to 99.8% in people counting, fully meeting your needs, and it delivers exceptional performance for indoor applications. With high ceiling mounting of up to 6.5m, it adapts seamlessly to any environment.

The device has the following features:

- Up to 99.8% accuracy with the 2nd generation ToF technology and AI algorithm.
- Allow to collect more accurate people counting data by differentiating children / adults and detecting staffs via identification like staff lanyards for clearer people analysis.
- Support Multi-Device Stitching which enables the fusion of multiple devices, allowing for up to four-device stitching to expand coverage.
- Support queuing management via dwell time detection and regional people counting.
- Support advanced Heat Map function which provides deeper insights by visually representing the distribution and intensity of foot traffic.
- With radar sensor based ESG friendly working mode, it allows to experience full-speed operation when occupied while switching to a power-saving sleep mode when unoccupied.
- By incorporating 3-axis sensors for automatic height calibration, it ensures enhanced precision and guarantees accurate data analysis.
- Working well even in low-light or completely dark environments with great lighting adaptability.
- Free from privacy concerns without image capturing.
- Automatically detect the optimal installation height, facilitating fast deployment and intelligent detection.
- Support local data storage and data retransmission to collect data securely.
- Function well with standard LoRaWAN[®] gateways and network servers.
- Quick and easy management with Milesight IoT Cloud.

Packing List

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

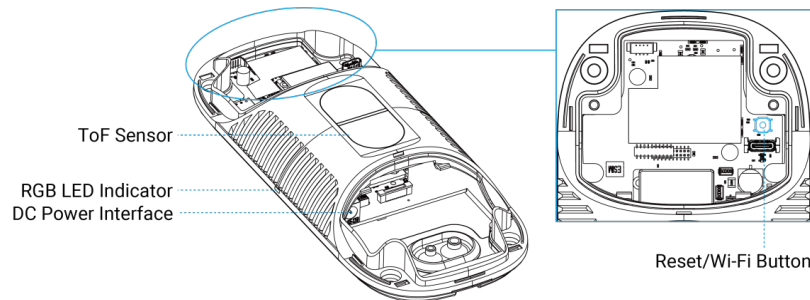


The device is also compatible with multiple mounting kits and accessories that can be purchased independently. For detailed information about them, refer to [Accessories for Mileight People Counters](#).

Hardware Introduction

Main Components

The following figure shows the main components of the device.



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

Name	Description
ToF Sensor	Uses depth data instead of video for privacy-safe people detection.
RGB LED Indicator	Provides visual status indications through a multi-color LED .
DC Power Interface	Provides a power input for the device.
Reset/Wi-Fi Button	See Button Patterns .

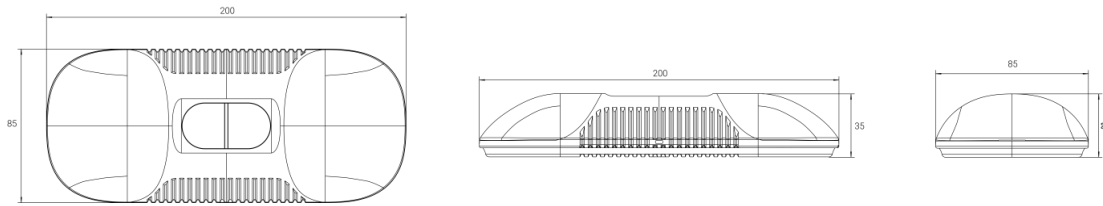
Button and LED Indicators

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

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

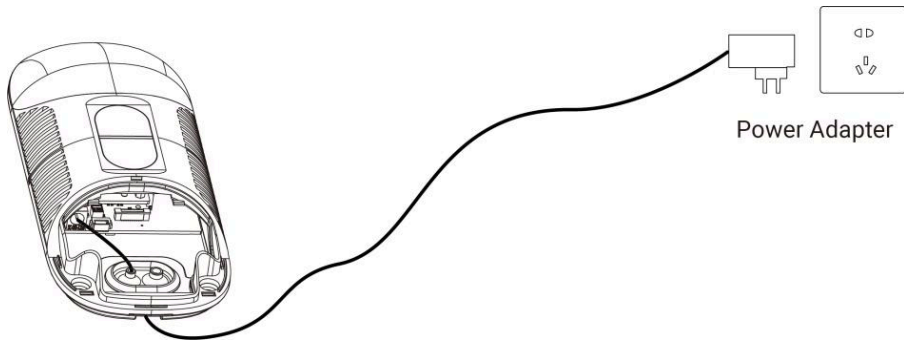
Dimensions

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



Power Supply

The device can be powered by the DC power interface (12V, 2A) with the provided DC power adapter.



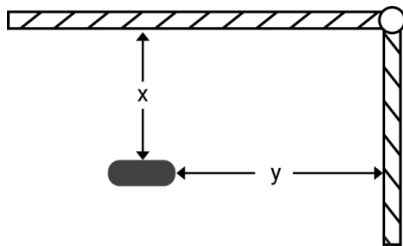
Chapter 3. Hardware Installation

This section describes how to perform a complete device installation.

Installation Prerequisites

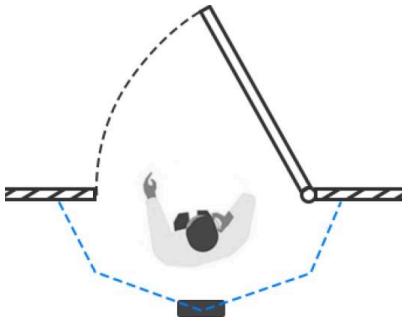
Choose an Installation Position

- Avoid installing the device against the wall. Keep the following minimum distances between the device and the wall:



Condition	Standard Environment	Dark Carpet/Floor (need to set noise filtering to the maximum level)
Normal imaging	$x > 50 \text{ cm}, y > 60 \text{ cm}$	$x > 50 \text{ cm}, y > 75 \text{ cm}$
Normal counting	$x > 50 \text{ cm}, y > 50 \text{ cm}$	$x > 50 \text{ cm}, y > 50 \text{ cm}$

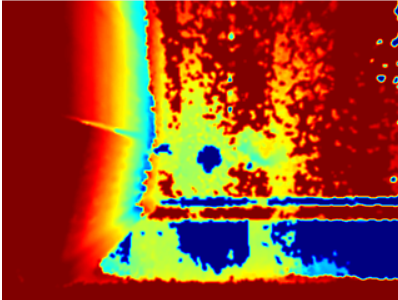
- When installing above a swinging door, keep the door normally open. If the door must stay closed, install the device on the opposite side, at least **40 cm** away from the door's movement path.



- Keep the ToF sensor facing downward. The tilt angle from the ground must not exceed **15°** for the standard version and **10°** for the high ceiling mount version.
- Ensure no objects block the ToF light within a **50 cm radius** in front of the device.
- Avoid direct Infrared LED light in the detection area.
- Do not install the device close to glass or mirror surfaces.

Check Environment Conditions

- Avoid **940 nm** light sources, which may cause incorrect counting.
- Direct outdoor sunlight on the monitoring area has no effect. However, avoid mirrored reflections that direct sunlight onto the ToF sensor.
- Keep the live view free of obstacles. Obstacles may cause the device imaging to appear abnormally red and affect counting accuracy. Adjust the noise filtering level according to the actual image: the harder it is to distinguish targets, the higher the filter value should be.



Estimate Detection Coverage

The **monitored area** is the full range visible to the device (shown on the dashboard). The **detection area** is the smaller region within it where the device can actually detect changes in the number of people. The detection area depends on the device's field of view angle, installation height, and target height.

Table 1. Parameter Reference

Parameter	Description	Value
H	Installation height	Standard Version: ≤ 3.5 m High Ceiling Mount: ≤ 6.5 m
d	Minimum detection distance	Standard Version: 0.5 m High Ceiling Mount: 2 m
Δd	Distance measurement error	0.035 m
$h_{\max}$	Maximum pedestrian height	Example: 1.8 m
h	Average pedestrian height	Example: 1.7 m
α	ToF horizontal field of view angle	Standard Version: 98° High Ceiling Mount: 60°
β	ToF vertical field of view angle	Standard Version: 80°

Parameter	Description	Value
		High Ceiling Mount: 45°
x	Detection range length	$2 \times \tan(\alpha/2) \times (H-h+0.05)^*$
y	Detection range width	$2 \times \tan(\beta/2) \times (H-h+0.05)^*$

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

Installation height limits:

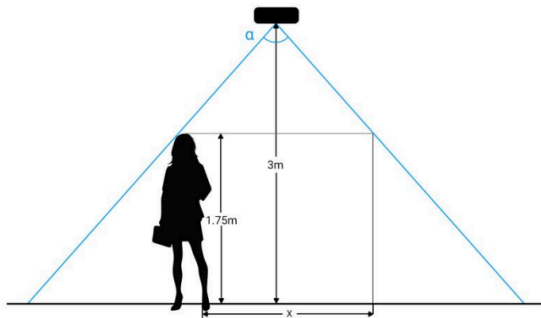
- **Standard Version:** Maximum 3.5 m. Minimum = $h_{\max} + d + \Delta d$. For example, with $h_{\max} = 1.8$ m: $1.8 + 0.5 + 0.035 = 2.335$ m.

Conclusion: $2.335 \text{ m} \leq H \leq 3.5 \text{ m}$

- **High Ceiling Mount:** Maximum 6.5 m. Minimum = $h_{\max} + d + \Delta d$. For example, with $h_{\max} = 1.8$ m: $1.8 + 2 + 0.035 = 3.835$ m.

Conclusion: $3.835 \text{ m} \leq H \leq 6.5 \text{ m}$

The following illustration uses an installation height of 3 m and a target height of 1.75 m as an example:



Detection area lookup (target height: 1.75 m):

Table 2. Standard Version

Installation Height (m)	Monitored Area (m ²)	Detection Area (m ²)
2.5	5.75 × 4.20	1.84 × 1.34
2.6	5.98 × 4.36	2.07 × 1.51
2.7	6.21 × 4.53	2.30 × 1.68

Installation Height (m)	Monitored Area (m ²)	Detection Area (m ²)
2.8	6.44 × 4.70	2.53 × 1.85
2.9	6.67 × 4.87	2.76 × 2.01
3.0	6.90 × 5.03	2.99 × 2.18
3.1	7.13 × 5.20	3.22 × 2.35
3.2	7.36 × 5.37	3.45 × 2.52
3.3	7.59 × 5.54	3.68 × 2.69
3.4	7.82 × 5.71	3.91 × 2.85
3.5	8.05 × 5.87	4.14 × 3.02

Table 3. High Ceiling Mount Version

Installation Height (m)	Monitored Area (m ²)	Detection Area (m ²)
3.5	4.04 × 2.90	2.08 × 1.49
3.7	4.27 × 3.07	2.31 × 1.66
3.9	4.50 × 3.23	2.54 × 1.82
4.1	4.73 × 3.40	2.77 × 1.99
4.3	4.97 × 3.56	3.00 × 2.15
4.5	5.20 × 3.73	3.23 × 2.32
4.7	5.43 × 3.89	3.46 × 2.49
4.9	5.66 × 4.06	3.70 × 2.65
5.1	5.89 × 4.22	3.93 × 2.82
5.3	6.12 × 4.39	4.16 × 2.98
5.5	6.35 × 4.56	4.39 × 3.15
5.7	6.35 × 4.72	4.62 × 3.31
5.9	6.81 × 4.89	4.85 × 3.48
6.1	7.04 × 5.05	5.08 × 3.65
6.3	7.27 × 5.22	5.31 × 3.81

Installation Height (m)	Monitored Area (m ²)	Detection Area (m ²)
6.5	7.51 × 5.38	5.54 × 3.98

Plan Multi-Device Coverage

When the area you need to monitor exceeds a single device's detection range, use multiple devices side by side to extend coverage. The devices stitch their detection ranges together to act as one unified monitoring zone. Use the following parameters to calculate how many devices are required for your space.

Table 4. Multi-Device Parameter Reference

Parameter	Description	Value
H	Installation height	Standard Version: ≤ 3.5 m High Ceiling Mount: ≤ 6.5 m
d	Minimum detection distance	Standard Version: 0.5 m High Ceiling Mount: 2 m
Δd	Distance measurement error	0.035 m
h _{max}	Maximum pedestrian height	Example: 1.8 m
h	Average pedestrian height	Example: 1.7 m
α	ToF horizontal field of view angle	Standard Version: 98° High Ceiling Mount: 60°
β	ToF vertical field of view angle	Standard Version: 80° High Ceiling Mount: 45°
x	Detection range length of each device	$x = 2 \times \tan(\alpha/2) \times (H-h+0.05)^*$
y	Detection range width of each device	$y = 2 \times \tan(\beta/2) \times (H-h+0.05)^*$
a	Number of devices required along the coverage length	Coverage length ÷ x, round to the nearest integer based on deployment requirements
b	Number of devices required along the coverage width	Coverage width ÷ y, round to the nearest integer based on deployment requirements

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

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

$x = 2.99 \text{ m}$, a: Coverage length $\div x = 6 \div 2.99 \approx 2.00 \approx 2$ devices

$y = 2.18 \text{ m}$, b: Coverage width $\div y = 3 \div 2.18 \approx 1.38 \approx 2$ devices

Conclusion: $2 \times 2 = 4$ devices are required for complete coverage of the 6 m × 3 m area.

Install the Device

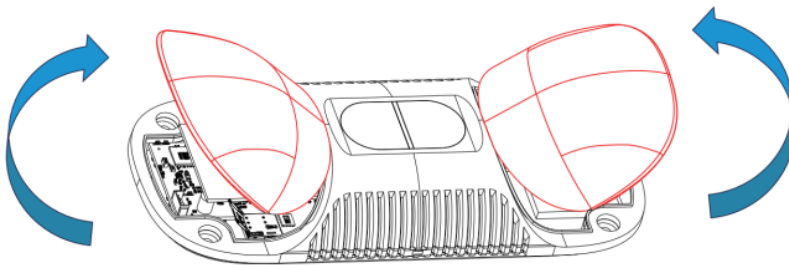
Before you start, ensure you have reviewed the [Installation Prerequisites](#) and confirmed that your site meets the position, environment, and coverage requirements.

Ceiling Mount Installation Requirements: Flat ceiling, thickness > 30 mm. Tilt angle: $\leq 15^\circ$ (standard version) or $\leq 10^\circ$ (high ceiling mount version).

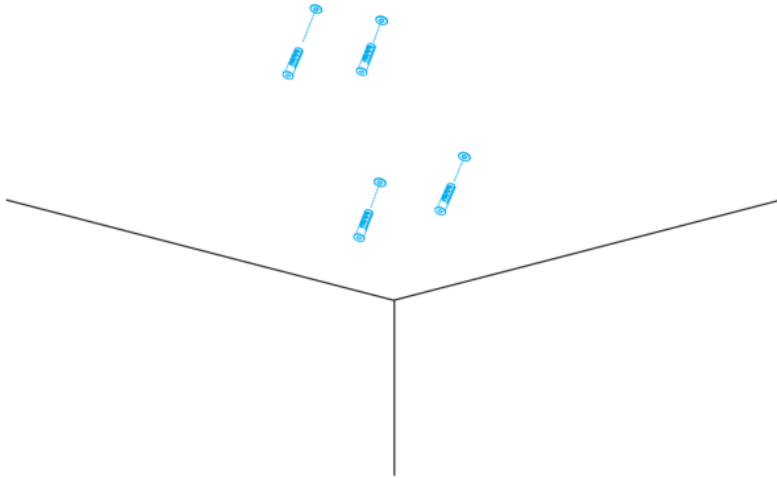
Preparations:

- Verify that the device and accessories are complete according to the [Packing List](#).

1. Take down the side covers.

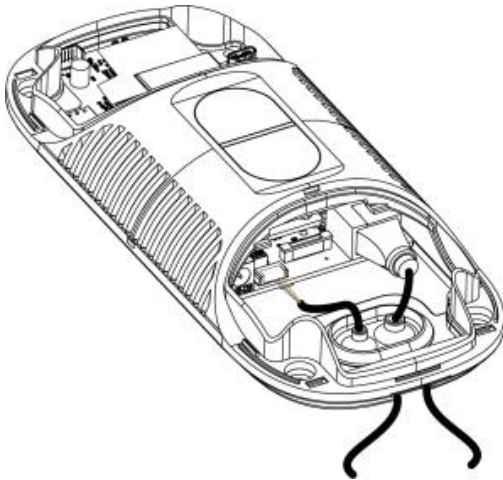


2. Fix wall plugs into ceiling holes.
 - a. Mark the drilling positions on the ceiling according to the mounting holes of the device.
 - b. Drill four 4 mm holes at the marked positions.
 - c. Insert wall plugs into the holes.

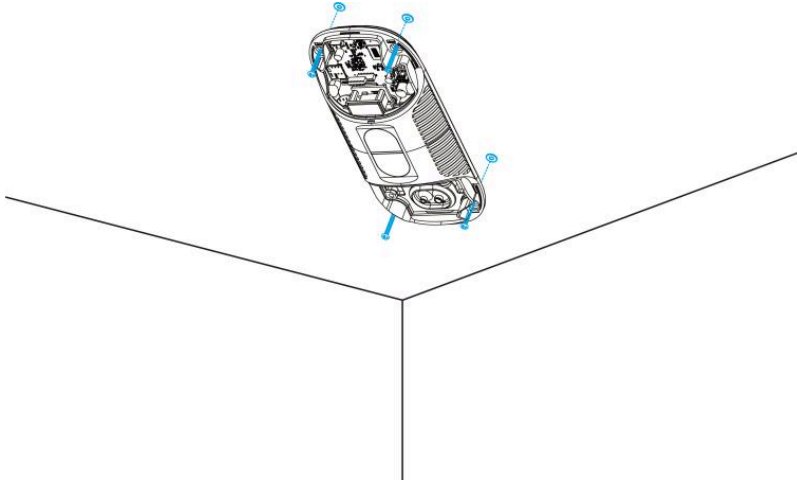


3. Route and Connect the Cables.

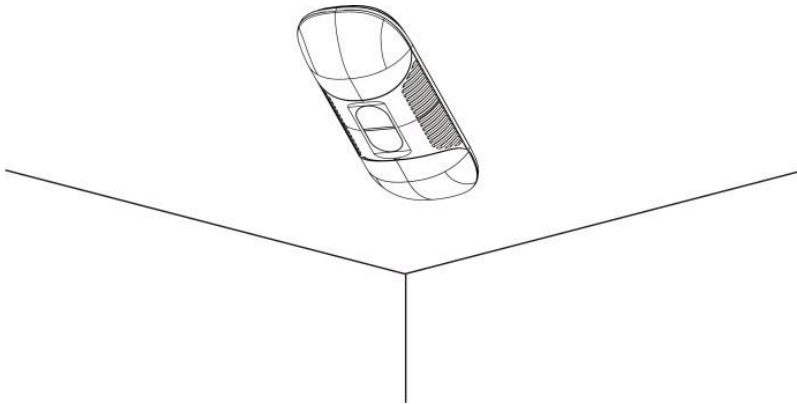
- a. Remove the rubber plugs from the rubber sleeve.
- b. Route all required **round cables** through the openings in the rubber sleeve and connect them as needed.
- c. Tighten the cables to ensure they do not come into contact with the internal modules.
- d. Ensure the rubber sleeve is tightly fitted to the bottom cover with no gaps to maintain dust protection.



4. Fix the device to the ceiling with mounting screws.



5. Restore the side covers.



6. Remove the lens protective film.

7. [Log in to the web GUI](#) and check the preview on the **Dashboard** page.

Chapter 4. Web Configuration

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

Access the Device

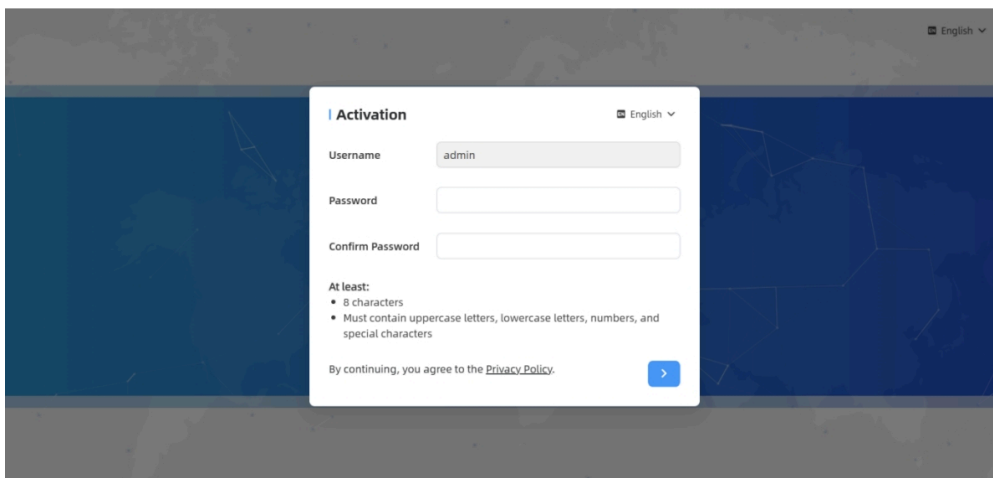
The device can be configured through the web GUI accessible via Wi-Fi connection. The recommended browsers are Chrome and Microsoft Edge.

Default Wi-Fi IP address: 192.168.1.1

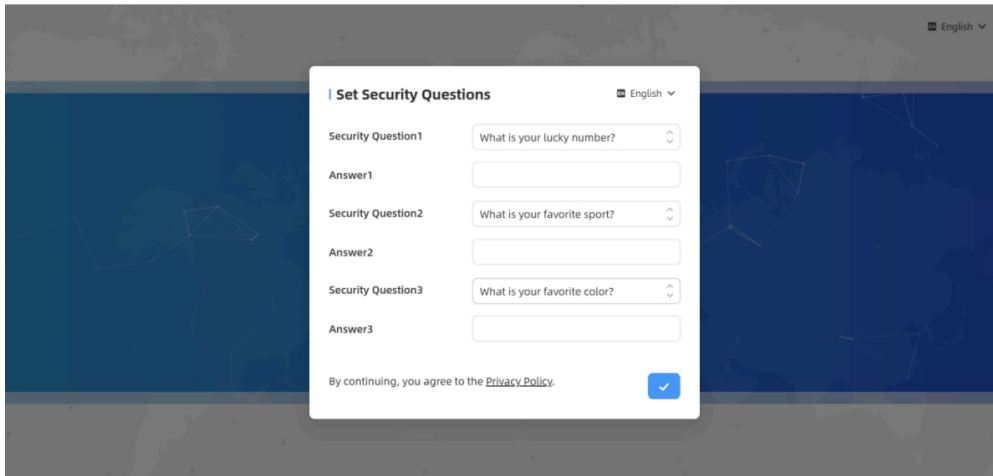
Default SSID: **People Counter_XXXXXX** (can be found on the device label)

Steps:

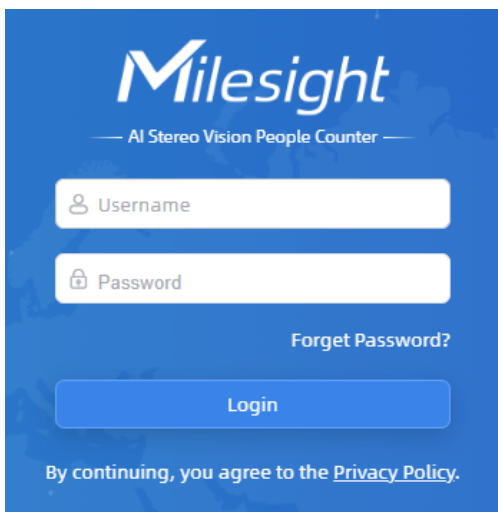
1. Enable the Wireless Network Connection on your computer and search for corresponding access point, then connect computer to this access point.
2. Open a browser and enter IP address 192.168.1.1.
3. The **Activation** dialog box is displayed. Set the login password that is 8 to 63 characters long and contains numbers, lowercase letters, uppercase letters, and special characters, then click .

The screenshot shows a web browser window with a dark blue background. In the center is a white 'Activation' dialog box. The dialog box has a title bar with 'Activation' and a language dropdown set to 'English'. It contains three input fields: 'Username' with the value 'admin', 'Password', and 'Confirm Password'. Below the fields, it lists requirements: 'At least: 8 characters' and 'Must contain uppercase letters, lowercase letters, numbers, and special characters'. At the bottom, it says 'By continuing, you agree to the Privacy Policy.' and has a blue right arrow button.

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



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

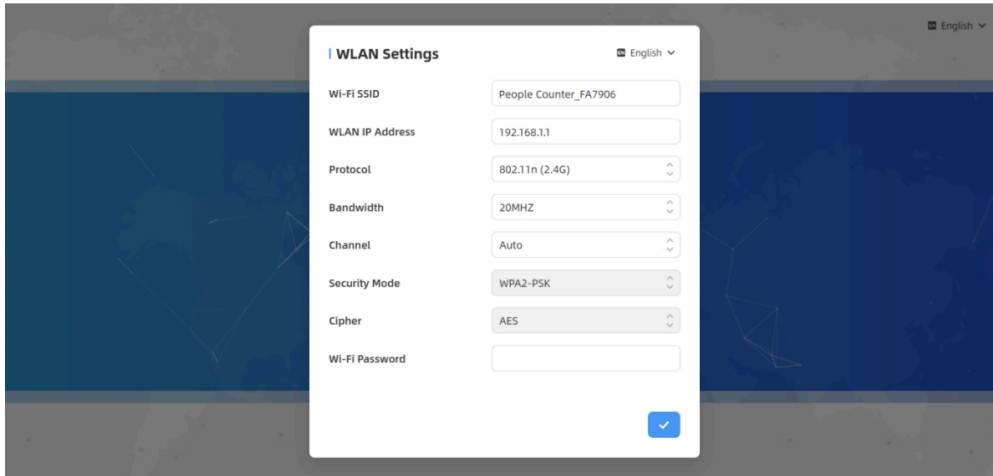


Note:

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

6. (Optional) You can click **Forget Password?** in the login page to reset the password by answering three security questions when you forget the password if you set the security questions in advance.

7. The **WLAN Settings** dialog box is displayed. Set the Wi-Fi password and click  to save the configuration.

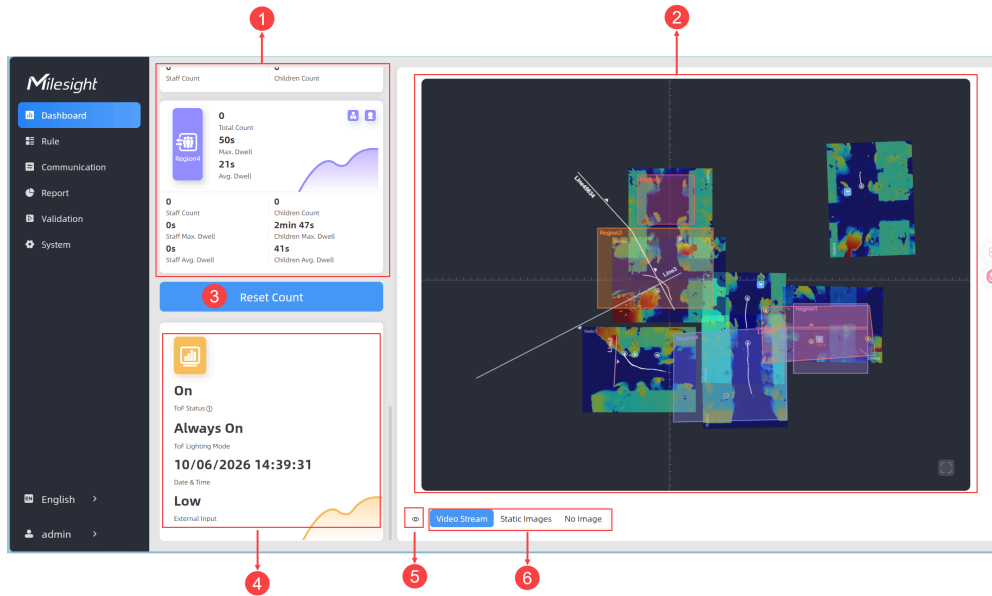


Check the Dashboard

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

Steps:

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



NO.	Item	Description
1	Line, Region, data display area	After functions Line Cross Counting, Region Monitoring are configured, the corresponding line, region data is displayed in this area.  Hide/Show Capacity: Hides/shows the total data counting capacity.  Children Included/Excluded: Includes/Excludes children data from statistical data.  Staff Included/Excluded: Includes/Excludes staff data from statistical data.
2	Preview	Real-time video display area.
3	Reset Count	Clears all accumulated people counting values.
4	Device Info	Displays device-related information, including ToF status, system time, and external input status.
5	Edit Preview Layout	Click  . The Edit Preview Layout dialog box is displayed.

NO.	Item	Description
		◦ Visual Configuration: Select the items to be displayed in the pre-view as needed. The items displayed here are dependent on the functions enabled. ◦ AI Result: Show track line. ▪ Instant Track Line: Show or hide the target's track line in the preview. ▪ Static Track Line: Show or hide the history of the target's track line in the preview. Up to 1000 historical track records are supported. They are cleared upon page refresh. ◦ Others: Show or hide the start and end points of the target trajectory and the time period. Visual Configuration ☒ Detection Line ☒ U-turn Area ☒ Detection Region ☒ Obstacle Exclusion Region AI Result ☒ Instant Track Line ☐ Static Track Line Other ☐ Track Start ● / Stop ● Points
6	Scene Pre-view	Select video stream preview, static image preview or no image preview as needed.

Configure Rules

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

Configure Basic Counting Functions

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

Limitations: Uncontrollable Factors Affecting Accuracy

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

- **Target appearance and characteristics:**

- **Low color contrast:** Recognition challenges when targets and the floor have similar colors.
- **Shape similarity:** Non-human objects with a human-like silhouette may trigger false detections.

- **Target motion and density:**

- **High velocity:** Tracking may be inaccurate for individuals walking faster than 2.5 m/s.
- **Dense crowding:** Accuracy decreases when the distance between targets is less than 30 cm.

- **Specific scenarios:**

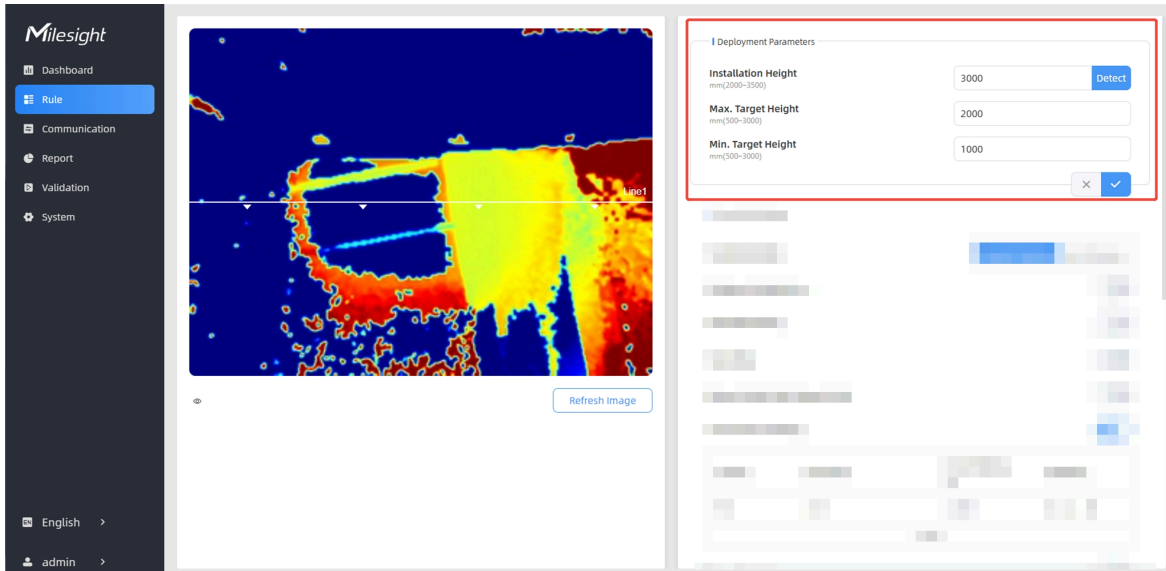
- **Partial occlusion:** The risk of missed detection increases with the proportion of the target obscured by other objects.
- **Simultaneous bidirectional crossing:** When two people pass through the detection line simultaneously in opposite directions and in close proximity, it may result in a missed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

Configure Deployment Parameter

This section describes how to configure deployment parameters.

Steps:

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



2. In the **Deployment Parameters** area on the right, configure the following parameters as needed.

Parameters	Description
Installation Height	Set the device installation height manually or automatically. For proper height detection, the device requires an unobstructed vertical field of view directly beneath the installation position. ◦ To set height manually: Enter a value between 2000 and 3500 mm (Standard Version) or between 2000 and 6500 mm (High Ceiling Version). ◦ To set height automatically: click Detect to detect the current installation height. Not supported with dark-colored flooring or carpeting (e.g., black, gray).  Note: The accuracy of automatic height detection may be compromised under low-texture ground conditions or in low-light environments such as at night.
Max. Target Height	Set the maximum target height. The device ignores the objects detected above this value. Range: 500-3000 mm. Recommended value: Maximum pedestrian height + 0.035 m (ToF distance measurement error)

Parameters	Description
Min. Target Height	Set the minimum target height. The device ignores the objects detected below this value. Range: 500-3000 mm. Recommended value: Minimum pedestrian height - 0.035 m (ToF distance measurement error)
Child Filter Height	This parameter is displayed only when the Children Distinction feature is enabled. It sets the maximum child height. Range: 500-3000 mm. For configuration details, refer to Configure Children Distinction .

3. Click  to save the configuration.

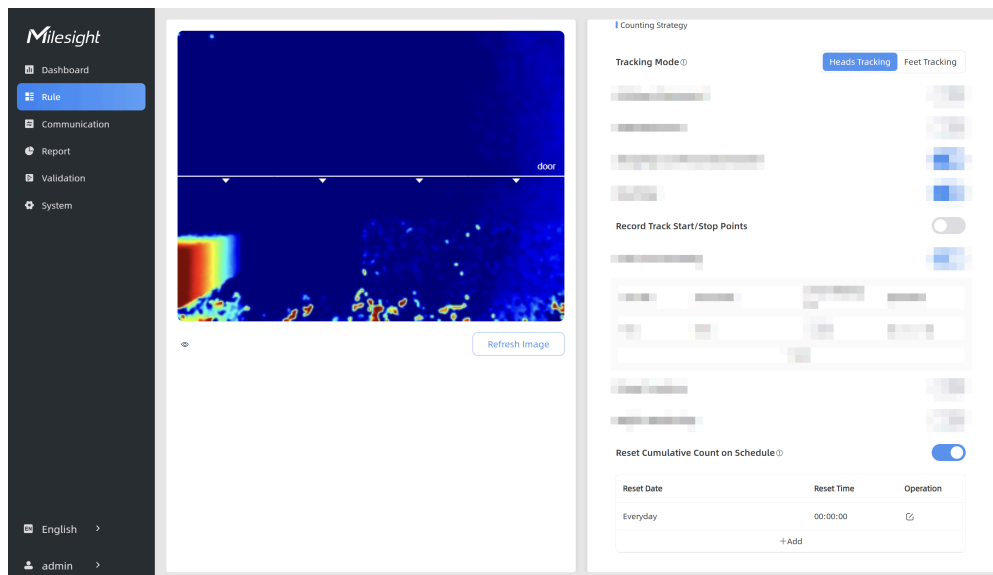
Configure Device Strategies

This section describes how to configure device strategies.

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

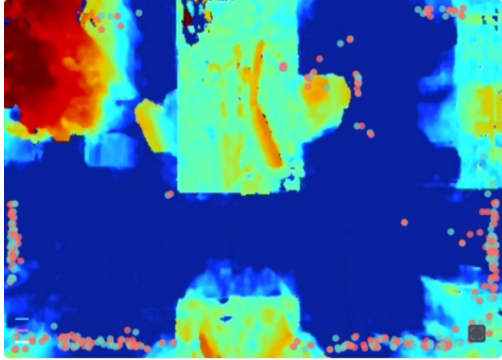
Steps:

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



2. In **Counting Strategy** area, configure the following parameters as needed.

Parameters	Description
Working Mode	Options: Standalone, Master, Node. ◦ Standalone: The device operates independently. ◦ Master: The master device handles all functional configuration, counting, and data transmission. This configuration is a must to stitch multiple devices. For details, refer to Stitch Multiple Devices. ◦ Node: Its primary function is to extend the overall detection coverage. This configuration is a must to stitch multiple devices. For details, refer to Stitch Multiple Devices.
Tracking Mode	Sets the tracking mode of counting. Options: Heads Tracking and Feet Tracking. ◦ Heads Tracking: When detecting the target's head and shoulders within the FOV, the device generates a trajectory line based on the movement path. This mode applies for most detection scenarios. ◦ Feet Tracking: When detecting both feet of the target within the FOV, the device generates a trajectory line based on the movement path. It is rarely used in other detection scenarios.  Note: Only Feet Tracking mode is supported in multi-device stitching working mode.
Record Track Start/Stop Points	Enable this parameter to record the start and end points of person trajectories in the live view for detection line adjustment. The system can store up to 5,000 track points with green indicating the start point and red indicating the end point.

Parameters	Description
	
Reset Cumulative Count on Schedule	Enable this parameter to periodically reset cumulative counts periodically based on a configured schedule. Cumulative counts include: ◦ Total In/Out counting of each detection line ◦ Max./Avg. Dwell Time of each detection region ◦ Total Effective Audience and Avg. Attention Time of each attention region a. Click  to enable reset schedule. b. Click  to modify the reset date and time, or click +Add to add a new schedule. Up to 5 reset schedules are supported. c. Click  to save the configuration.
Enhanced Detection Mode	Turn on when any one of the following situations occurs, it will ensure normal counting and detecting: ◦ The depth image is abnormal; ◦ There is obstacle in the live view; ◦ Installation conditions are not met.

Configure Line Crossing Counting

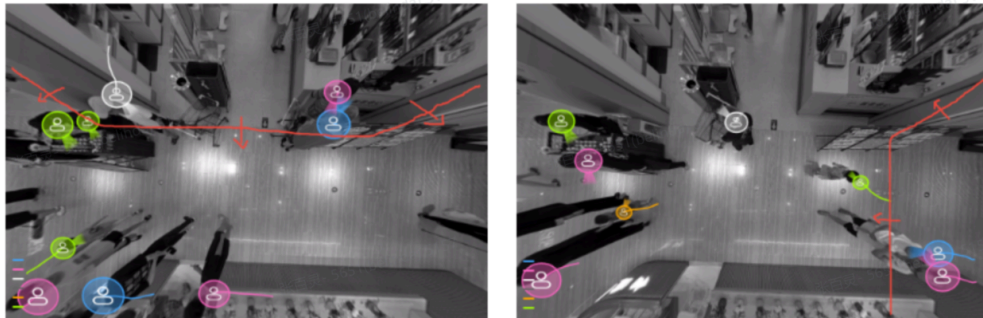
This section describes how to configure the line crossing counting function.

Add a Detection Line

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

Detection line drawing requirements:

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

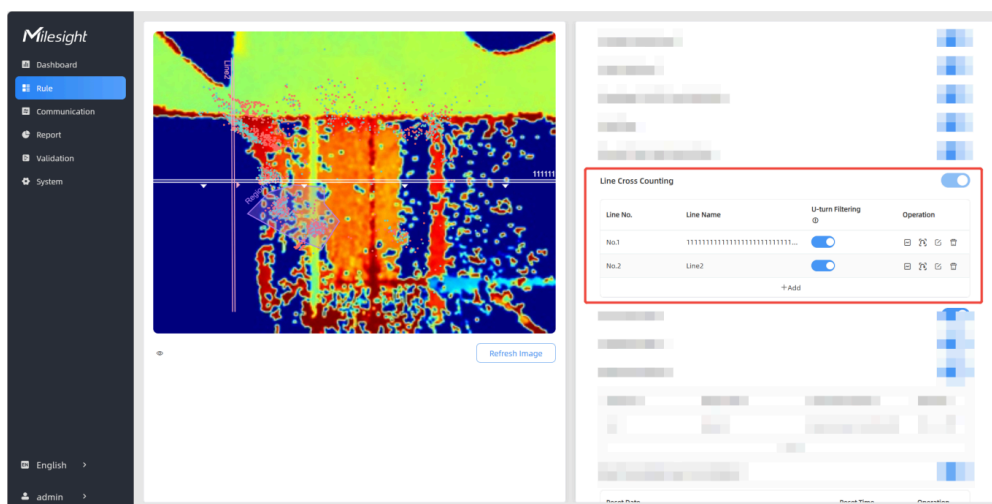


Prerequisite:

The **deployment parameters** and **device strategies** are configured.

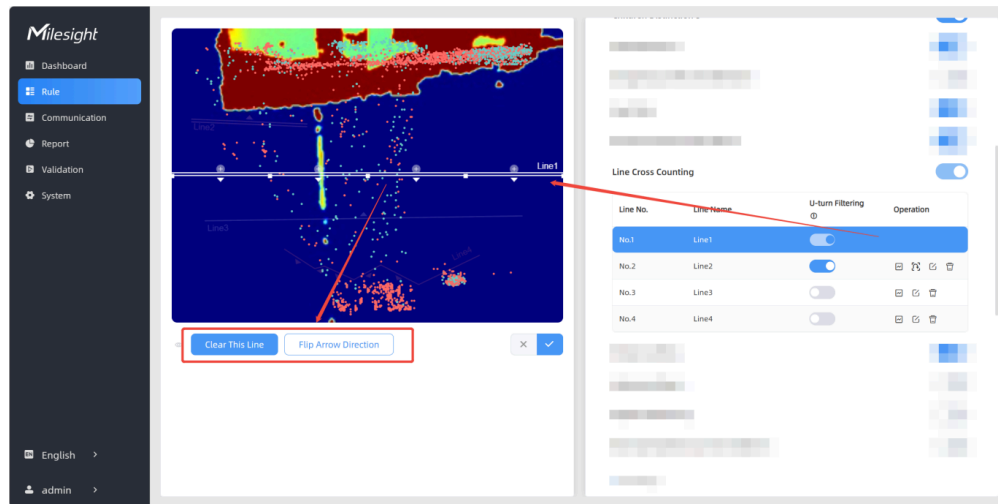
Steps:

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



3. Draw a detection line in the preview, you can draw up to 4 polylines with a maximum of 10 points per polyline:

- Left-click to start and drag to draw the first line segment. The arrow in the middle of the segment indicates the direction of entry.
- Left-click to add vertices and change direction and drag to draw another line segment.
- Repeat step b to draw more line segments as needed.
- Right-click to finish.
- (Optional) Adjust the line location and length by dragging.
- (Optional) To redraw a line, click **Clear This Line**.
- (Optional) To flip the line direction, click **Flip Arrow Direction**.



h. Click  to save the configuration.

4. The line information is listed in the **Line Cross Counting** area.

Line Cross Counting 

Line No.	Line Name	U-turn Filtering 	Operation
No.1	Line45634		  
No.2	Line2		  
No.3	Line3		  
+Add			

5. (Optional) Click  to customize the line name.

6. (Optional) To enable **U-turn Filtering**, click . For detailed configuration, refer to [Configure U-turn Filtering](#).

7. Modify the data reporting strategy by configuring the following parameters as needed.

a. Set periodic report strategy.

Parameters	Description
Periodic Report	Regularly report the number of people counted crossing a line or within a region based on time.
Periodic Report Scheme	Select the periodic report of "On the Dot" or "From Now On".
Period	▪ On the Dot: Report at each integer moment. For example, current time is 0:07, when the interval is set to 10 minutes, it will report at 0:10, 0:20, 0:30, and so on. ▪ From Now On: Begin reporting from this moment onwards and regularly report based on the interval cycle.

b. Enable Trigger Report strategy.

Parameters	Description
Trigger Report	Report immediately when there is a change of the line crossing people counting number or region people counting number.

c. Enable Data Retransmission. The device supports up to 4000 historical records.

Prerequisite:

- The device join type is **OTAA**.
- The device time is correct. Please refer Time Configuration to sync the time.
- Go to **Communication > LoRaWAN** page, enable **Rejoin Mode** and set the number of packets sent.

Result:

- When the device detects that the network status is deactivated via the rejoin mode mechanism, it records a data loss time point. Upon reconnection, the device retransmit the lost data according to the data retransmission interval.

Retransmission data is reported with timestamps and uses a different format from periodic report data.

- If the device reboots or re-power during data retransmission, it will resend the entire retransmission dataset once it reconnects to the network.
- If a new network disconnection occurs during an ongoing retransmission, only the data logged during this latest outage will be sent upon reconnection.

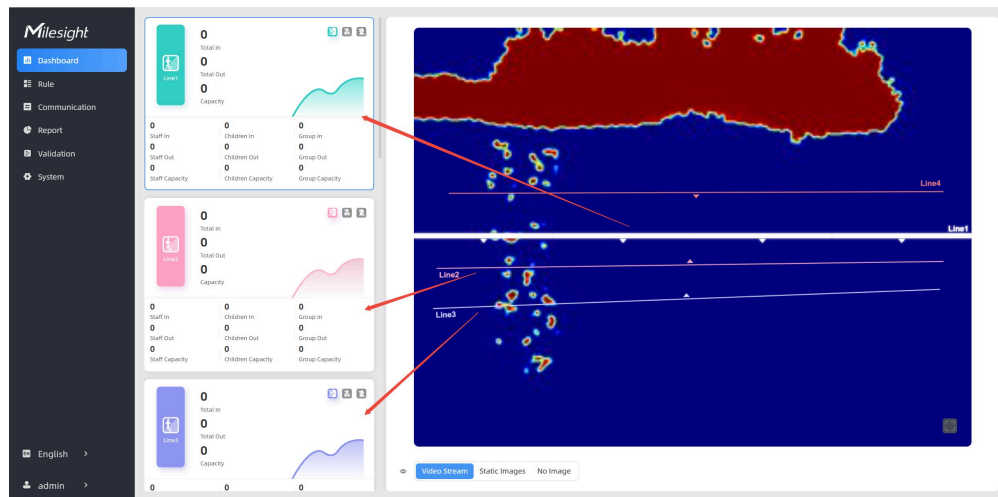


Note:

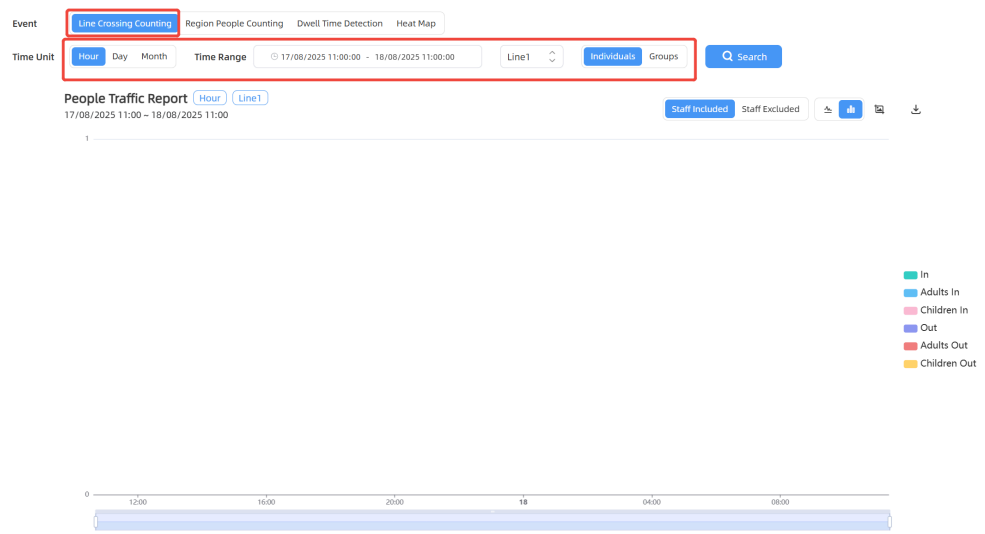
The default report data retransmission interval is 600s, this can be changed via downlink command.

8. Check data through any of the following methods:

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



- To view the line data for a certain time period and generate report, click **Report** from the navigation tree on the left. For details, refer to [Generate Reports](#).

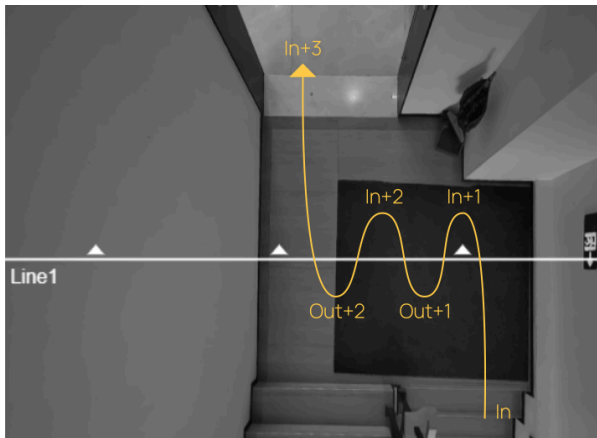


Configure U-turn Filtering

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

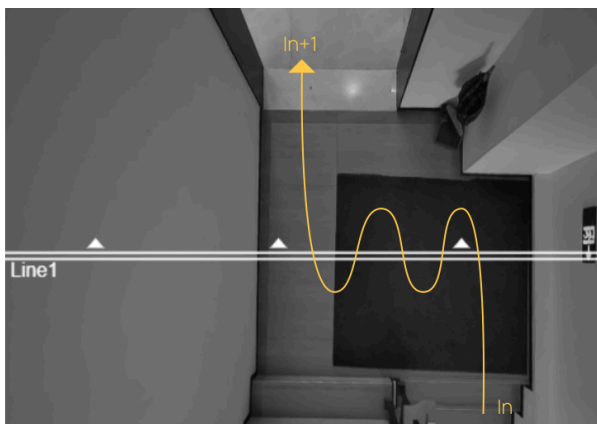
The device supports the U-turn filtering function. It eliminates duplicate counting by identifying individuals who do not complete a full entrance/exit transition. You can draw an area for every detection line and the device will analyze movement patterns within the defined areas and registers counts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

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



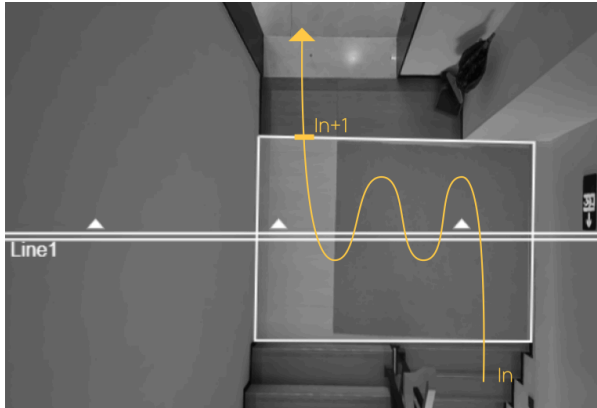
- **Counting example when U-turn filtering is enabled:**

The device automatically filters out wandering individuals in the preview.



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

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



The above illustration is for reference only, here are the steps to draw the U-turn area:

Prerequisite:

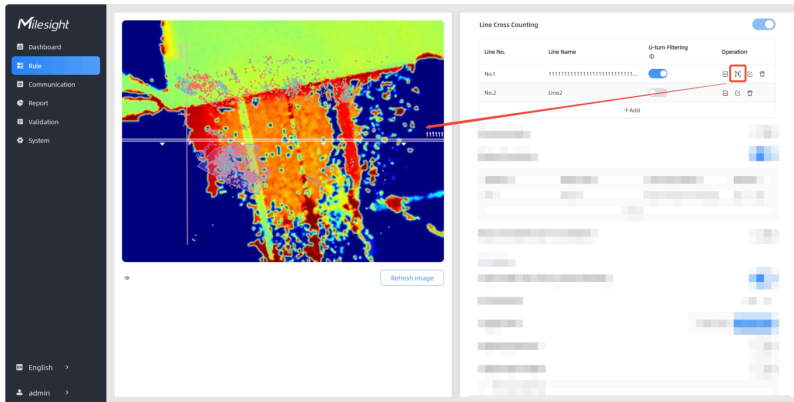
A detection line is added in the [Line Cross Counting](#) area on the **Rule** page.

Steps:

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



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



4. (Optional) Draw a U-turn area for the detection line, you can draw up to 4 areas with a maximum of 10 line segments per area:

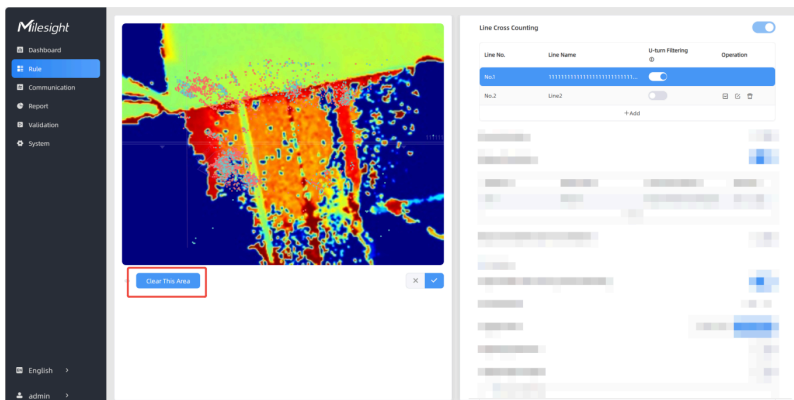
- Left-click to start and drag to draw the first line segment.
- Left-click to add vertices and change direction and drag to draw another line segment.
- Repeat step b to draw more line segments as needed.
- Right-click to finish.
- (Optional) Adjust the region by dragging.
- (Optional) To redraw an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



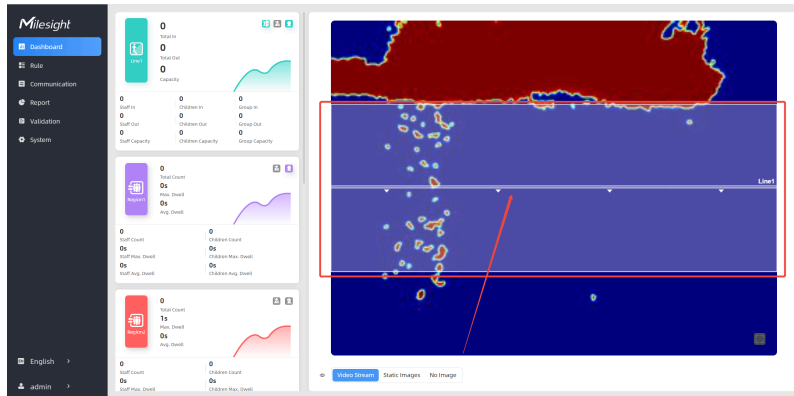
Note:

Ensure the movement trajectory is fully included.

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



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



Configure Region Monitoring

This section describes how to configure region monitoring.

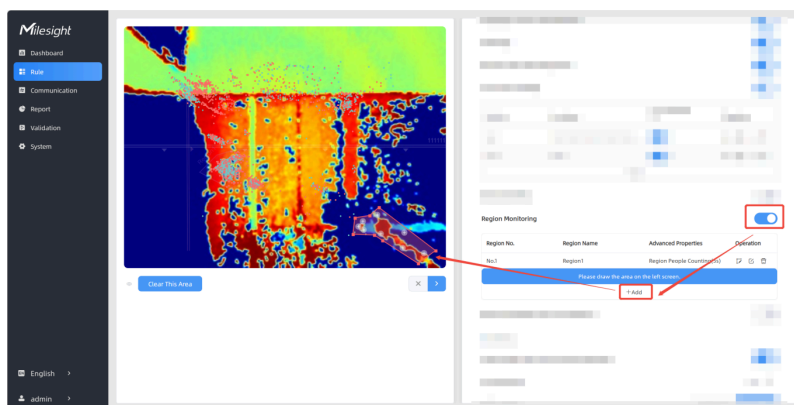
The device supports region monitoring by tracking person count and dwell time within configured regions for generating valuable analytical data.

Prerequisite:

The [deployment parameters](#) and [device strategies](#) are configured.

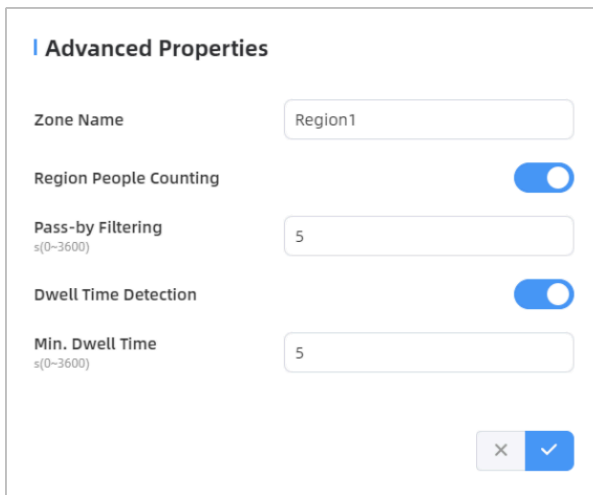
Steps:

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



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

- a. Left-click to start and drag to draw the first line segment.
 - b. Left-click to add vertices and change direction and drag to draw another line segment.
 - c. Repeat step b to draw more line segments as needed.
 - d. Right-click to finish.
 - e. (Optional) Adjust the region by dragging.
 - f. (Optional) To redraw a region, click **Clear This Area**.
4. Click . The **Advanced Properties** dialog box is displayed. Configure advanced properties parameters.



The **Advanced Properties** dialog box contains the following fields and controls:

- Zone Name:** A text box containing "Region1".
- Region People Counting:** A toggle switch that is currently turned on (blue).
- Pass-by Filtering:** A text box containing "5", with a range indicator "s(0~3600)" below it.
- Dwell Time Detection:** A toggle switch that is currently turned on (blue).
- Min. Dwell Time:** A text box containing "5", with a range indicator "s(0~3600)" below it.
- At the bottom right, there are two buttons: a grey "X" button and a blue checkmark button.

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

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

- d. Click  to save the configuration.
5. The region information is displayed in the list on the right.

Region Monitoring 

Region No.	Region Name	Advanced Properties	Operation
No.1	Region1	Region People Counti...	  
No.2	Region2	Region People Counti...	  
No.3	Region3	Region People Counti...	  
No.4	Region4	Region People Counti...	  

6. (Optional) Perform the following operations as needed.

- To redraw the region, click .
- To modify the advanced properties of the region, click .
- To delete the region, click .

7. Modify the data reporting strategy by configuring the following parameters as needed.

a. Enable Trigger Report strategy.

Parameters	Description
Trigger Report	Report immediately when there is a change of the line crossing people counting number or region people counting number.

b. Enable Data Retransmission. The device supports up to 4000 historical records.

Prerequisite:

- The device join type is **OTAA**.
- The device time is correct. Please refer Time Configuration to sync the time.
- Go to **Communication > LoRaWAN** page, enable **Rejoin Mode** and set the number of packets sent.

Result:

- When the device detects that the network status is deactivated via the rejoin mode mechanism, it records a data loss time point. Upon reconnection, the device retransmit the lost data according to the data retransmission interval.

Retransmission data is reported with timestamps and uses a different format from periodic report data.

- If the device reboots or re-power during data retransmission, it will resend the entire retransmission dataset once it reconnects to the network.
- If a new network disconnection occurs during an ongoing retransmission, only the data logged during this latest outage will be sent upon reconnection.

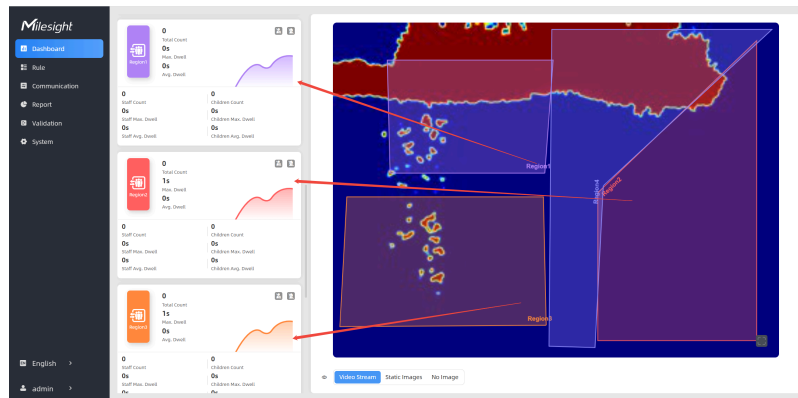


Note:

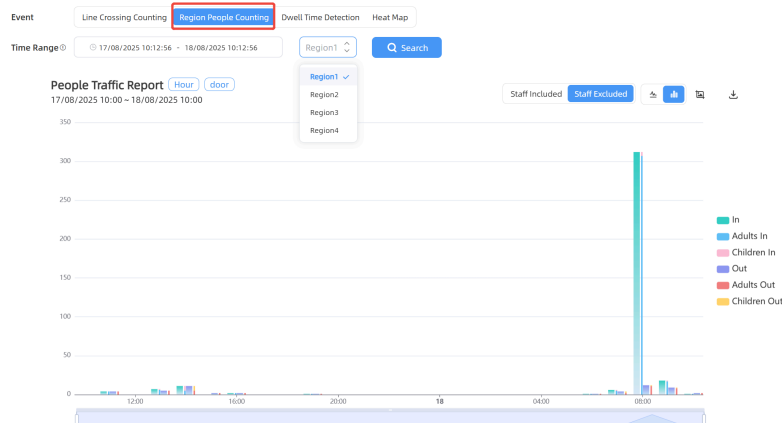
The default report data retransmission interval is 600s, this can be changed via downlink command.

8. Check data through any of the following methods:

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



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



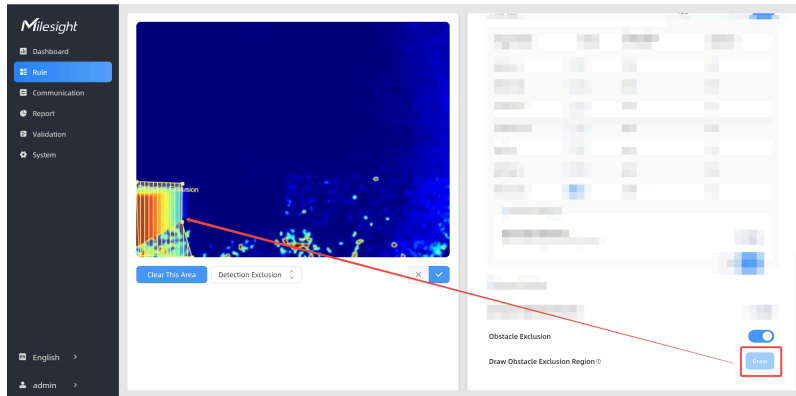
Configure Obstacle Exclusion

This section describes how to configure Obstacle Exclusion function.

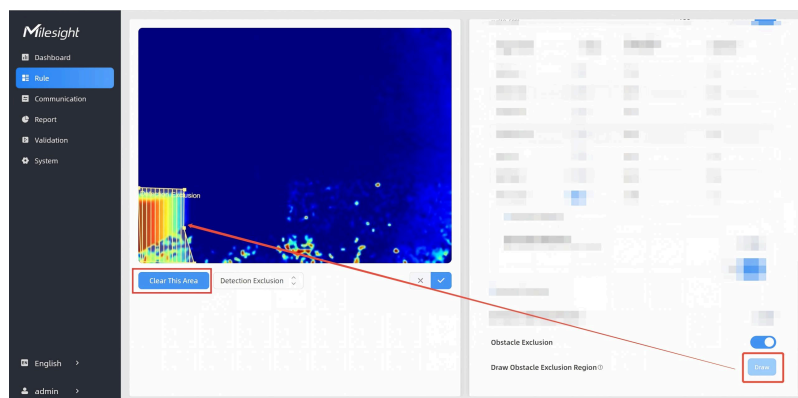
The device supports the **Obstacle Exclusion** function. It can exclude human-like static obstacles from detection when they cannot be avoided through adjustment of detection lines or regions.

Steps:

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



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



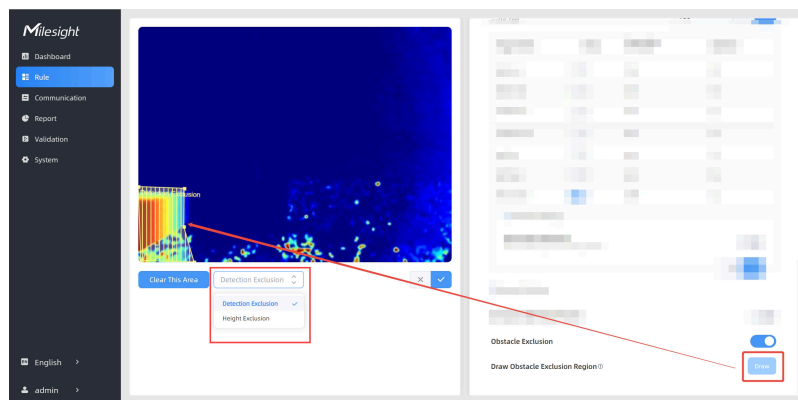
- g. Select the exclusion method:

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

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

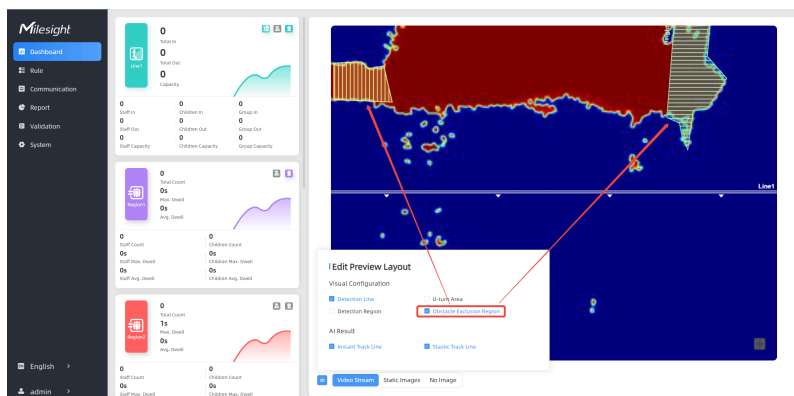
- **Height Exclusion:** Select it when you want to avoid false detection caused by mixing obstacles with targets. You can just box out the parts that are easy to confuse with the targets.

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



4. Click  to save the configuration.

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



Configure Attribute Recognition Functions

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

Configure Children Distinction

This section describes how to configure the Children Distinction function.

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

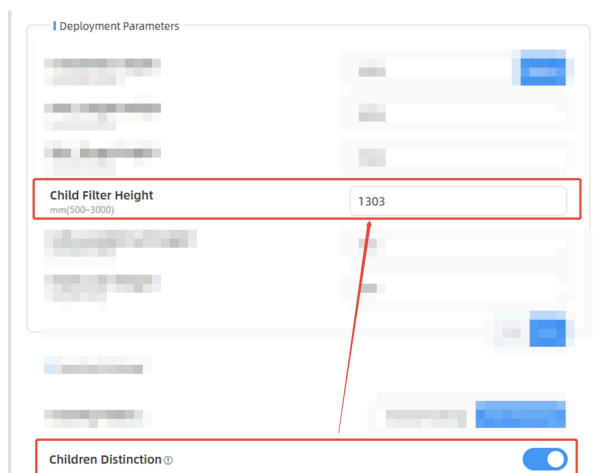
Limitations: Uncontrollable Factors Affecting Accuracy

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

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

Steps:

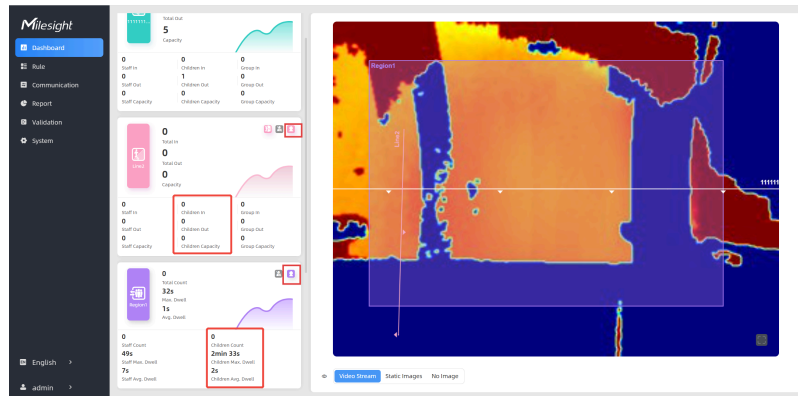
1. In the main page, click **Rule** from the left navigation tree.
2. Enable **Children Distinction**. The **Child Filter Height** parameter is displayed in the **Deployment Parameters** area.



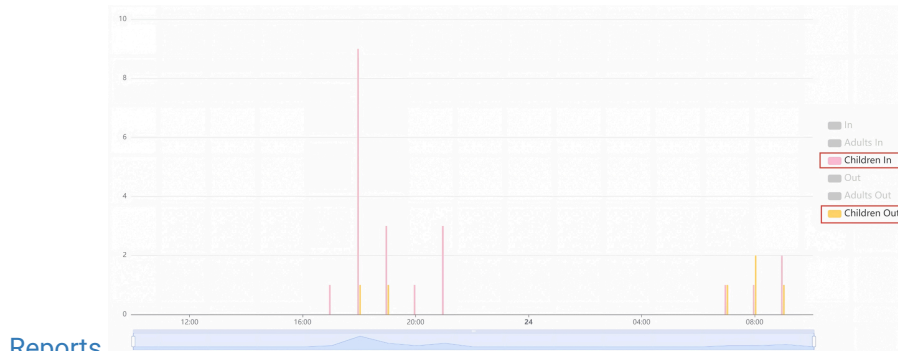
3. Enter a threshold value in the **Child Filter Height** text box and click  to save the configuration. The device classifies any individual detected below this value as a child.

4. Check data through any of the following methods:

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



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



Note:

LoRa reporting only transmit group counting data when [group counting](#) function is enabled.

Configure Staff Detection

This section describes how to configure the Staff Detection function.

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

Limitations: Uncontrollable Factors Affecting Accuracy

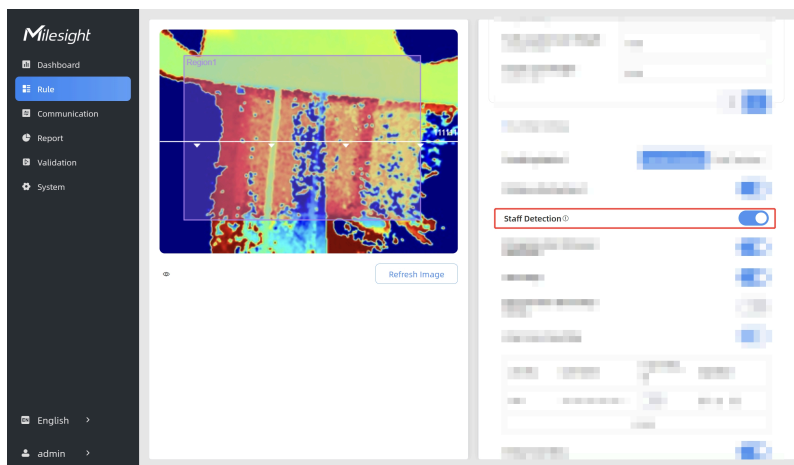
- When two individuals walk side by side, the device may incorrectly classify the person without a staff accessory as staff, while failing to recognize the actual staff member wearing the accessory.
- Clothing with patterns resembling staff lanyards (such as striped designs) may cause false staff detection.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

Staff Accessories Requirements:

- Wear included staff tags on the visible parts (neck, shoulders, etc.).
- Do not block the tags with collars, scarves, hair, or any other objects.
- Reflective stripe: width > 2cm; reflectivity: 500 cd/lux.m².

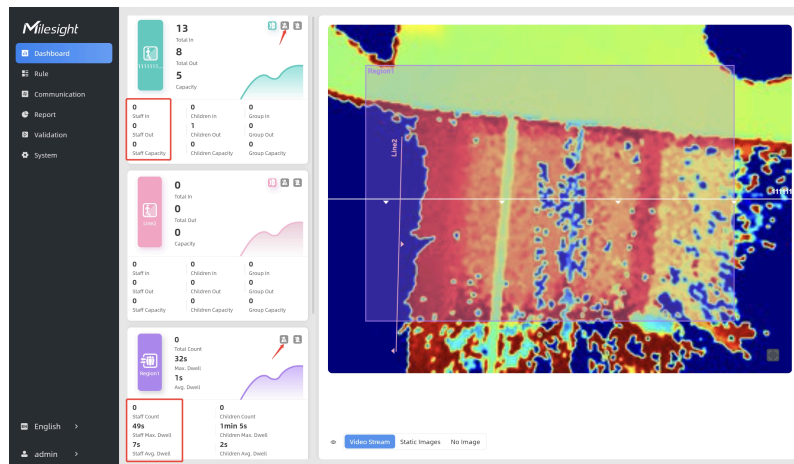
Steps:

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

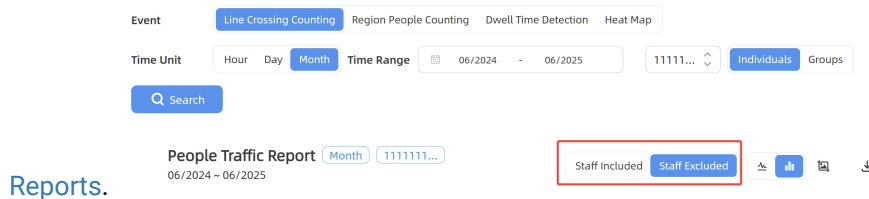


3. From the **Staff Accessories** drop-down list, select an accessory for staff detection.
4. Check data through any of the following methods:

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



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



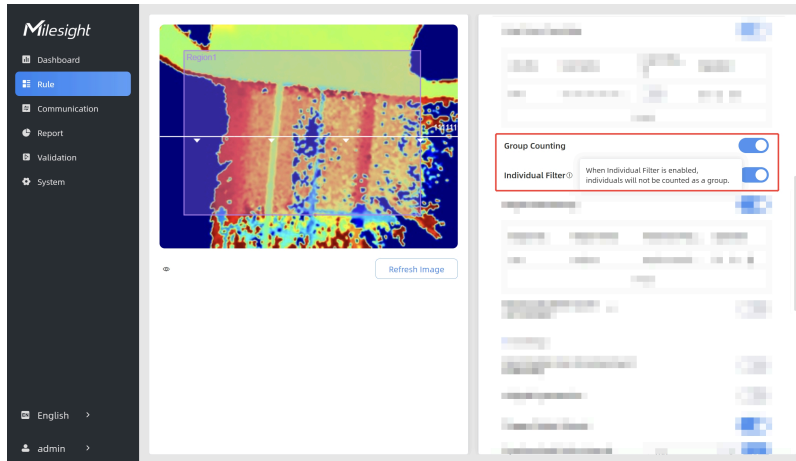
Configure Group Counting

This section describes how to configure the Group Counting function.

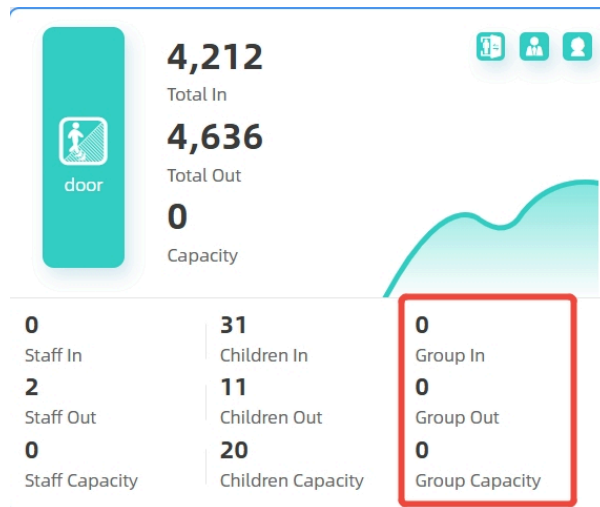
The device supports multi-person recognition and counting within the detection area. By analyzing variations in human spacing, movement directions, and speed differences, it provides advanced customer behavior analysis. Group Counting is built upon the Line Crossing Detection functionality.

Steps:

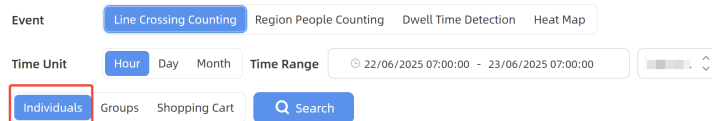
1. In the main page, click **Rule** from the left navigation tree.
2. Enable the **Group Counting** function. The device classifies any individual and any party of two or more individuals as a group.



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



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

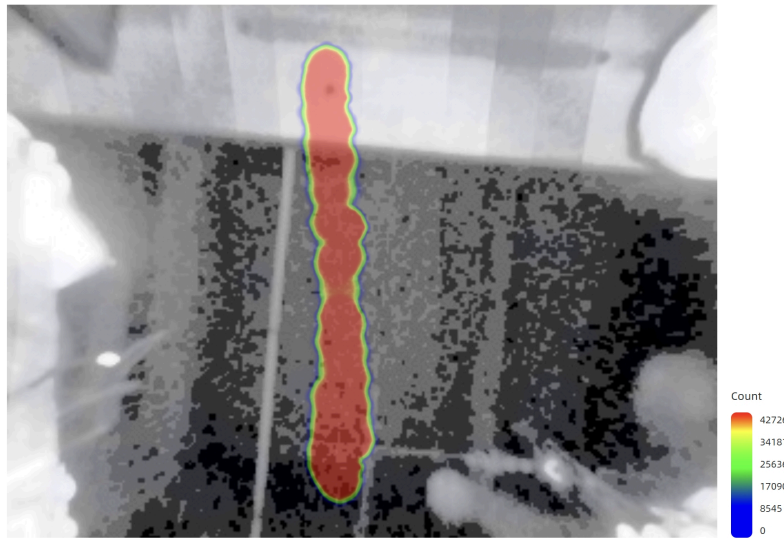


Configure Heat Map

This section describes how to configure Heat Map function.

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

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



Limitations: Uncontrollable Factors Affecting Accuracy

- Wearing a fisherman hat or carrying a cardboard box on the shoulder: The target may not be recognized because its shape in the depth map may no longer resemble a human body.
- Carrying a human-shaped doll of sufficient height by hand or on a cart: The doll may be mistakenly detected as a person because its shape in the depth map resembles a human body.

Steps:

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



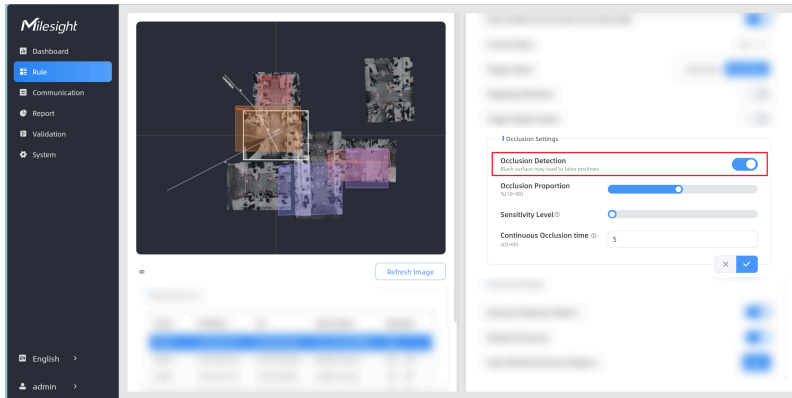
Configure Occlusion Alarm

This section describes how to configure Occlusion Alarm function.

Occlusion Alarm can be enabled to detect when the sensor is occluded. Alarms are issued when occlusion occurs, and notification of deactivation is given when occlusion is lifted. Not recommended for use in environments with black carpets.

Steps:

1. In the main page, click **Rule** from the navigation tree on the left.
2. In the **Occlusion Settings** area, enable **Occlusion Detection**.



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

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

4. Click  to complete the configuration.
5. Users can also view the data through [Alarm Report](#). When Multi-Device Stitching is enabled, the occlusion settings of the master and node devices are synchronized. If any device is occluded, the master device triggers an alarm.

Stitch Multiple Devices

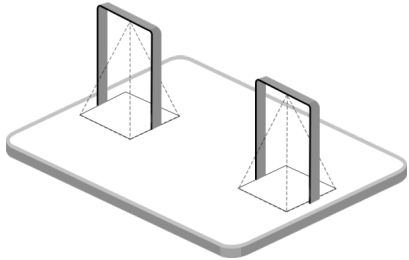
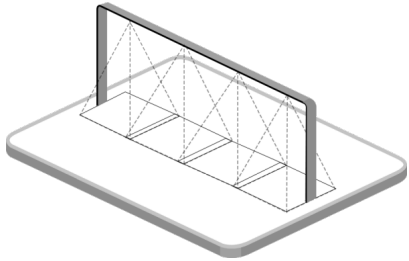
This section describes how to stitch multiple devices.

The device supports multi-device stitching, which extends the monitoring coverage beyond the capability of a single device. A maximum of 8 devices can be stitched.

Device Roles in a Stitched System:

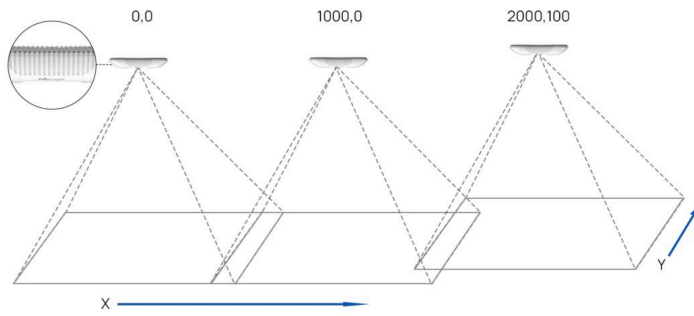
- Master device: One device is set to **Master**. It handles all functional configuration, counting, and data transmission.
- Node device: All other devices are set to **Node**. Their primary function is to extend the overall detection coverage.

Stitching Connection Method:

Stitch Method	Description	Illustration
Frame Non-overlapping	Device coverage does not require overlapping areas; only the areas of interest need to be covered.	
Frame Overlapping	Device coverage requires overlapping areas to ensure complete tracking of targets.	

Device Positioning:

Device positioning is done via X&Y coordinates. For example, the installation direction of the master device is shown as below, the logo needs to be facing the front. When the master device's coordinate is (0, 0), the coordinates of the node devices are all positive values.



Preparations:

- Installation: Multiple devices are installed according to [Install the device](#).
- Firmware: All devices must be updated to the latest version.
- Compatibility:

Stitching	Master Device	Node Devices	Stitching Number
Support	VS135-P	VS135-P	8
	VS135-P-High	VS135-P-High	
	VS135-L08EU	VS135-P, VS135-HL, VS135-LoRa, VS135-L08EU	4
	VS135-L08EU-High	VS135-P-High, VS135-HL-High, VS135-LoRa-High, VS135-L08EU-High	
	VS135-HL	VS135-P, VS135-L08EU, VS135-LoRa, VS135-HL	
	VS135-HL-High	VS135-P-High, VS135-L08EU-High,	

Stitching	Master Device	Node Devices	Stitching Number
		VS135-LoRa-High, VS135-HL-High	
	VS135-LoRa	VS135-P, VS135-L08EU, VS135-HL, VS135-LoRa	
	VS135-LoRa-High	VS135-P-High, VS135-L08EU-High, VS135-HL-High, VS135-LoRa-High	
Not Support	VS135-P	VS135-LoRa, VS135-L08EU, VS135-HL	/
	VS135-P-High	VS135-LoRa-High, VS135-L08EU-High, VS135-HL-High	
	VS135 stan- dard versions	VS135 high ceil- ing mount versions	
	VS135 high ceil- ing mount versions	VS135 stan- dard versions	
	VS133-P	VS135-P	
	VS135-P	VS133-P	

Configuration Procedure:

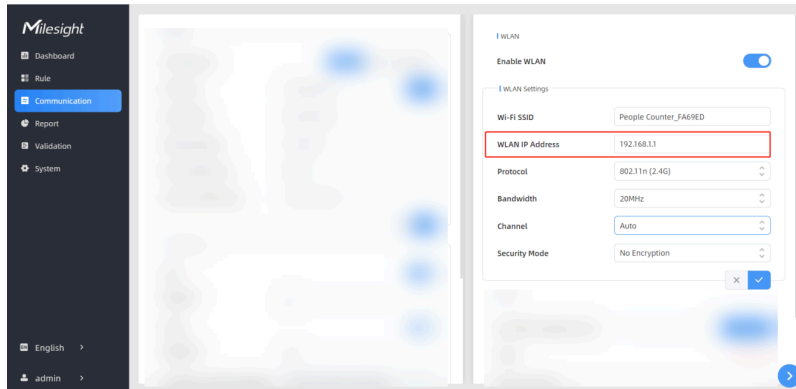
After completing the preparations, designate one device as the master device and the remaining devices as node devices, follow the sequence below sections.

Configure a Node Device

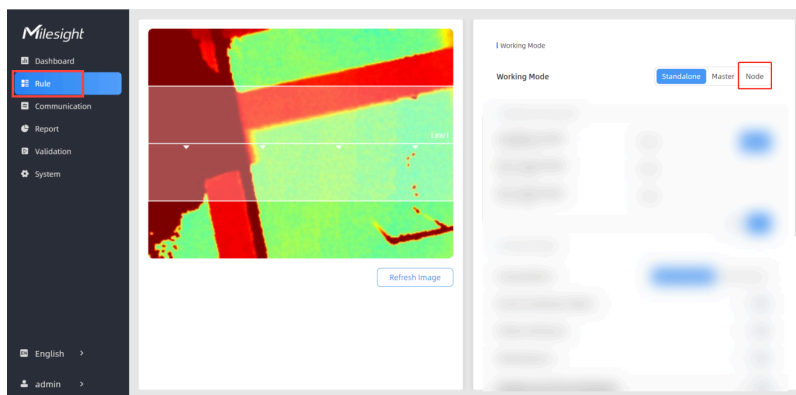
This section describes how to configure node devices.

Steps:

1. Log into the web GUI of the node device, and click **Communication** from the left navigation tree.
2. Change the WLAN IP Address of node devices to different subnets from master device's WLAN IP address.



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



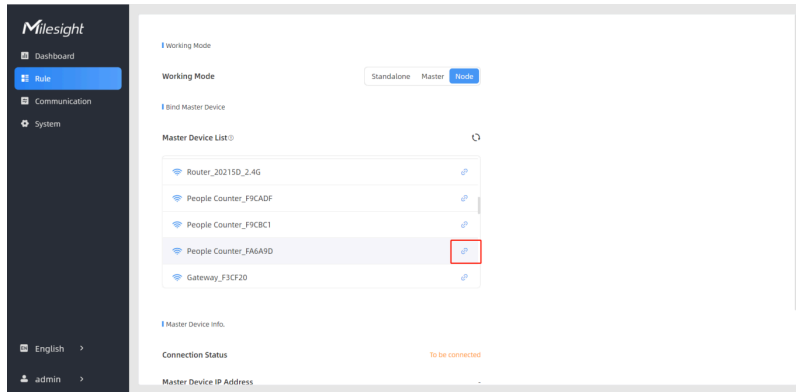
4. The **Tips** information box is displayed. Click  to wait for the device to reboot.

Tips

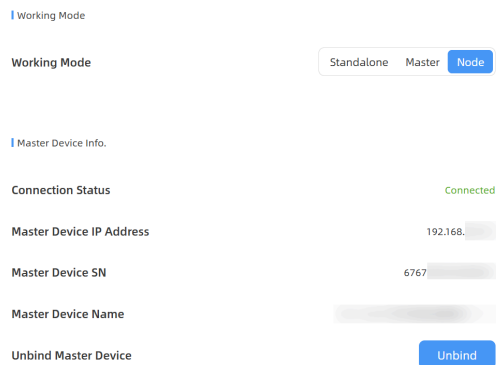
The device needs to reboot to switch to the new Working Mode.
Continue?



5. Find the Wi-Fi access point of master device and connect.



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



Parameters	Description
Connection Status	Connection status between the node device and master device.
Master Device IP Address	Master device IP address. If this IP address is within the same subnet as the node device, the node device can be bound to the master device.
Master Device SN	Master device serial number.
Master Device Name	Master device name.
Unbind Master Device	Click Unbind to release the connection. This device will be deleted from the list of the master device.

Stitch the Master Device and Node Devices

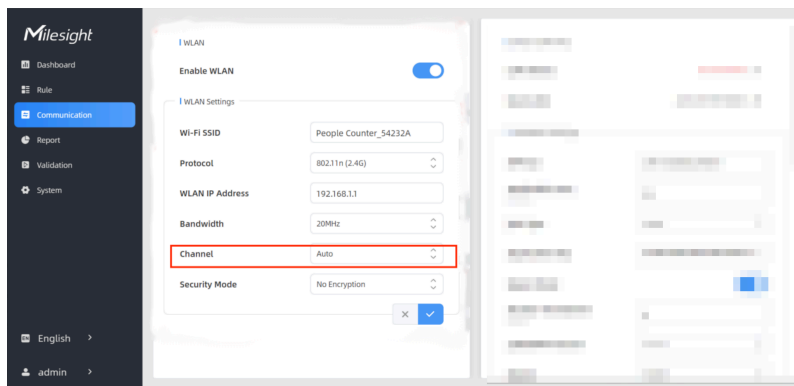
This section describes how to stitch the master device and node devices, which includes the following procedures:

1. Set **Working Mode** to **Master**
2. Select Bind Node Device
3. Bind Node Device to Master Device

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

Set Working Mode to Master

1. Log into the web GUI of the master device, and click **Rule** from the left navigation tree.
2. When work mode is on Standalone, select the WLAN channel to an idle channel. Users can use test App (like Wi-Fi Analyzer) to check ideal WLAN channels to reduce interference.



The scene preview and people counting results are dependent on the WLAN channel selection, also the distance between node devices and master device. Please adjust the distance to ensure accurate scene preview or counting results.

WLAN Channel	Video Stream	Static Image/ No Image	Counting Inaccuracy
Occupied Channel	Not Support	≤ 6.5m	> 6.5m
Idle Channel	≤8m	≤10m	>10m

3. In the **Working Mode** area on the right, click **Master**. The **Tips** information box is displayed.

Tips

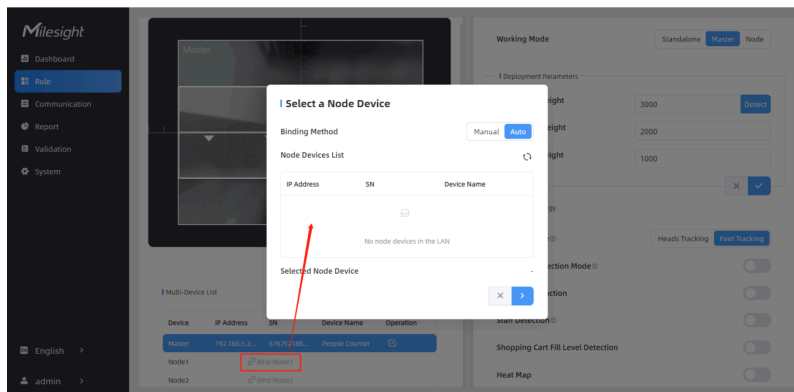
The device needs to reboot to switch to the new Working Mode.
Continue?



- Click  to wait for the device to reboot.

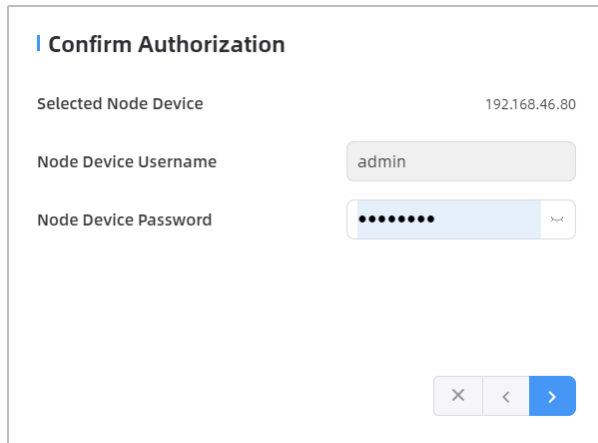
Select Bind Node Device

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



- The device automatically uses the multicast protocol to discover the unbound node devices within the same local network. The discovered devices are listed in **Node Devices List**.

- Select the node device to be added and click . The **Confirm Authorization** dialog box is displayed.



Confirm Authorization

Selected Node Device 192.168.46.80

Node Device Username

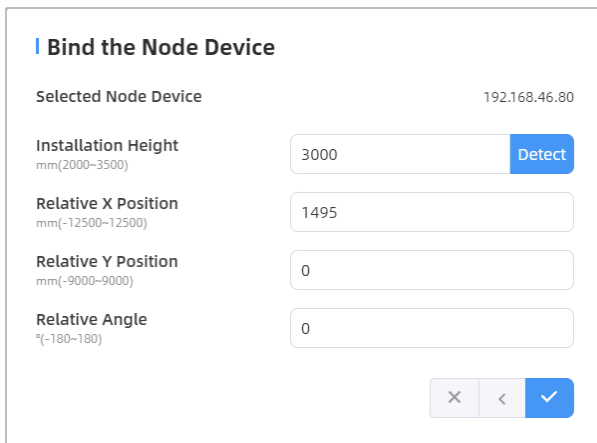
Node Device Password

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

Bind Node Device to Master Device

Select the node device and type the login password of the node device.

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



Bind the Node Device

Selected Node Device 192.168.46.80

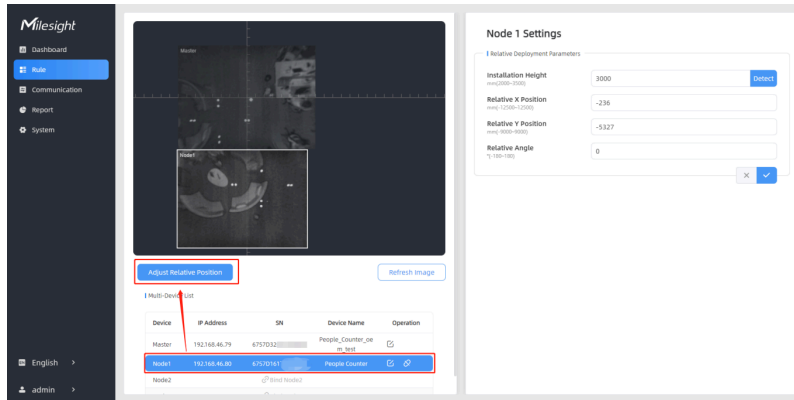
Installation Height mm(2000~3500)

Relative X Position mm(-12500~12500)

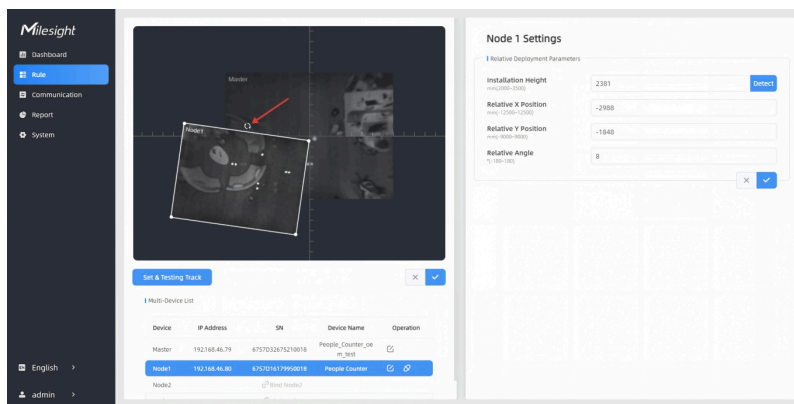
Relative Y Position mm(-9000~9000)

Relative Angle °(-180~180)

2. Fill in the installation height of a node device and relative position information if these parameters are already measured. If not, save default settings and skip to the next step. Click  to save the configuration.
3. Select the node device on the **Multi-Device List**, click **Adjust Relative Position**.



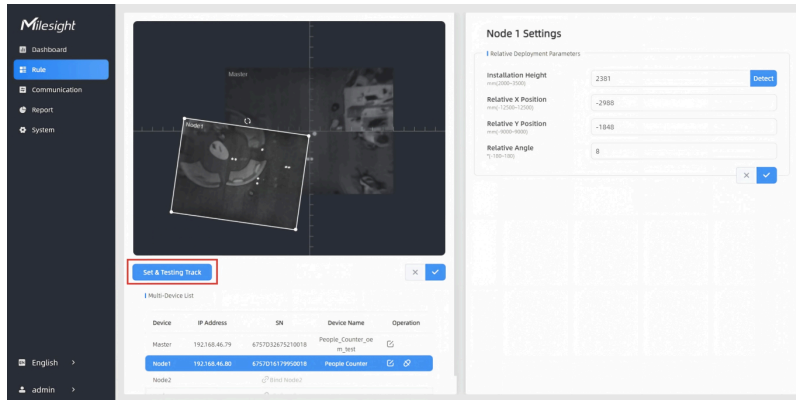
4. Drag the live view of node device to adjust the location and angle, and the relative position parameters will change automatically as your operations. You can also adjust the size of this live view.



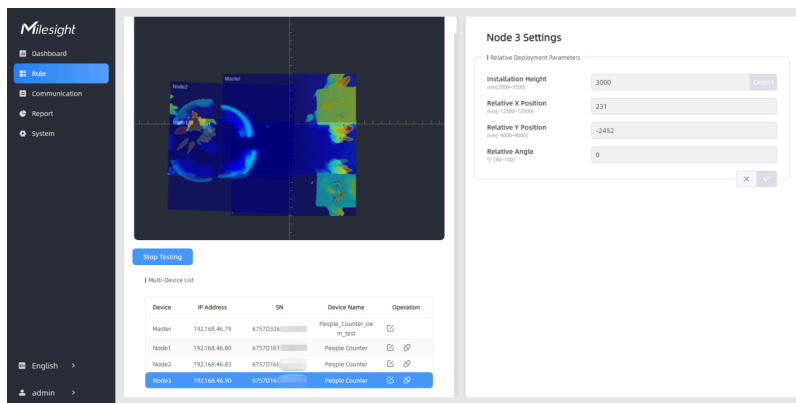
Tip:

Cut the staff tags or other reflective stripes into pieces and stick them to the ground of overlapping areas, then drag the live view of node devices to make highlight markers in the two live views overlap. This enables configuration without measurement.

5. Click **Set & Testing Track**, then check if the tracking lines are connected and smooth when people pass on the live views of multiple devices.

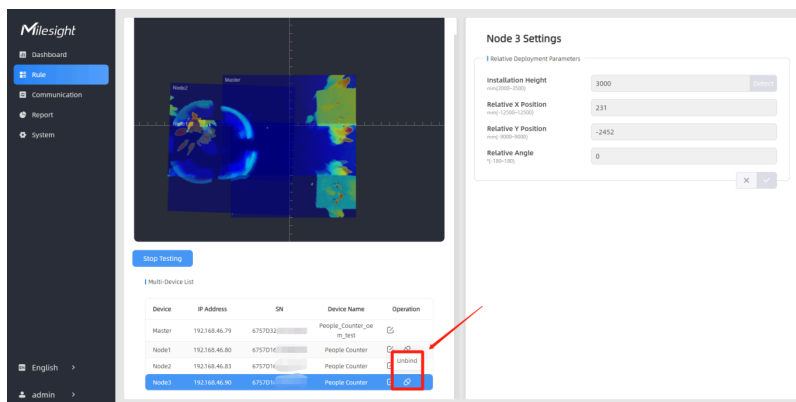


If not, click **Stop Testing** to adjust the node device's live view location slightly.



6. 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.

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



Configure Communication Parameters

This section describes how to configure communication parameters, which includes WLAN parameters, LoRaWAN[®] parameters.

Configure WLAN Parameters

This section describes how to configure WLAN parameters.

Steps:

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

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

Parameters	Description
Wi-Fi SSID	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	Options: 802.11g (2.4 GHz) and 802.11n (2.4 GHz) .
Bandwidth	Options: 20 MHz or 40 MHz .
Channel	Options: Auto , 1 ,..., 11 .

Parameters	Description
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.

4. Click  to save the configuration.

Configure LoRaWAN® Parameters

This section describes how to configure the device transmission parameters for the LoRaWAN® network. LoRaWAN® is enabled by default on this device.

Usually, it consists of the below steps:

1. [Configure Join Type and Supported Frequency \(Necessary\)](#)
2. [Configure Other LoRaWAN® Parameters \(Optional\)](#)

Configure Join Type and Frequency

It is necessary to configure the join type and the frequency to establish communication with LoRaWAN® gateways.

Steps:

1. In the main page, click **Communication** from the navigation tree on the left.
2. Navigate to the **LoRaWAN** page, the page is displayed, see the following figure.

Device LoRa Info.

LoRa Status

Activated

Device EUI

24E124757E033128

LoRaWAN® Settings

APP EUI

24E124C0002A0001

Application Port

86

Join Type

OTAA

Application Key

.....

Rejoin Mode

Number of Detection

8

LoRaWAN® Version

V1.0.2

Region

AS923-1

RX2 Data Rate

DR2 (SF10, 125k)

RX2 Frequency

923.2

Spreading Factor

SF7-DR5

TXPower

TXPower0-16 dBm

Channel List

3. From the **Join Type** selection box, select **OTAA** or **ABP** as needed.



Note:

OTAA is required if you connect the device to the [Milesight Development Platform](#).

4. Configure **Join Type** related parameters as needed. You can use default values unless otherwise specified.

- If **OTAA** is selected, configure **Application Key** and **Rejoin Mode** as needed. For details, refer to the following table.

Parameter	Description
Application Key	Appkey for OTAA mode. Default: Device EUI + Device EUI (since Q4 of 2025). Example: 24e124123456789024e1241234567890. Default value of earlier devices: 5572404C696E6B4C6F52613230313823. Tip: For device security, it is recommended to modify the default value or contact sales before purchase to use random keys.

Parameter	Description
Rejoin Mode	Rejoin mode for OTAA mode. Reporting interval ≤ 35 minutes: The device sends a specific number of LinkCheckReq MAC packets at each reporting interval or every other reporting interval to verify connectivity. Reporting interval > 35 minutes: The device sends a specific number of LinkCheckReq MAC packets at each reporting interval to validate connectivity. If there is no response, the device will re-join the network. When Rejoin Mode is enabled, enter a number in the Set the number of detection signals sent text box. The actual sending number is the configured number +1.

- If **ABP** is selected, configure **Network Session Key**, **Application Session Key** and **Device Address** as needed. For details, refer to the following table.

**Tip:**

For device security, it is recommended to modify the default values.

Parameter	Description
Network Session Key	Nwkskey for ABP mode. Default: 5572404C696E6B4C6F52613230313823.
Application Session Key	Appskey for ABP mode. Default: 5572404C696E6B4C6F52613230313823.
Device Address	DevAddr for ABP mode. Default: 5 th to 12 th digits of SN.

5. Select a frequency from the **Region** selection box as needed. This must be the same as the frequency configured on the gateway's web GUI.

- If the **Region** is **CN470**, **US915** or **AU915**, enter the channel index(es) separated by commas.

Examples:

1, 40: Enabling Channel 1 and Channel 40

1-40: Enabling Channel 1 to Channel 40

1-40, 60: Enabling Channel 1 to Channel 40 and Channel 60

All: Enabling all channels

Null: All channels are disabled

**Tip:**

Set the **Channel List** to **8-15** when connecting to a Milesight LoRaWAN[®] gateway with default settings.

- If the **Region** is **AS923**, select a channel plan and enable the frequencies as needed.
 - If the **Region** is any option other than those listed above, enable the frequencies as needed.
6. Click  to complete the configuration.

Configure Other LoRaWAN[®] Parameters

Steps:

1. In the main page, click **Communication** from the navigation tree on the left.
2. Navigate to the **LoRaWAN** page, the page is displayed, see the following figure.

Device LoRa Info.

LoRa Status Activated

Device EUI 24E124757E033128

LoRaWAN Settings

APP EUI 24E124C0002A0001

Application Port 86

Join Type OTAA

Application Key

Rejoin Mode ☒

Number of Detection 8

LoRaWAN Version V1.0.2

Region AS923-1

RX2 Data Rate DR2 (SF10, 125k)

RX2 Frequency 923.2

Spreading Factor SF7-DR5

TXPower TXPower0-16 dBm

Channel List

3. Configure the following parameter as needed. You can use default values unless otherwise specified. For a description of the parameters, refer to the following table.

Parameter	Description
Device EUI	Unique ID of the device labelled on the device housing.

Parameter	Description
	 Tip: For bulk deployments, contact sales to request the device EUI list.
App EUI	The default App EUI (join EUI) is 24E124C0002A0001.
Application Port	Port used for sending and receiving data. Default: 85 .
Join Type	Refer to Configure Join Type and Frequency .
LoRaWAN [®] Version	Options: V1.0.2, V1.0.3 .
Region	Refer to Configure Join Type and Frequency .
RX2 Data Rate	RX2 data rate to receive downlinks.
RX2 Frequency	RX2 frequency to receive downlinks. Unit: MHz
Spreading Factor	If ADR mode is disabled, the device sends uplink data using this spreading factor. A higher spreading factor increases transmission range but reduces data rate and increases power consumption. This parameter varies with Region .
Tx Power	Defined by the LoRa Alliance. Specifies the strength of the radio signal transmitted by the device.
Channel List	Refer to Configure Join Type and Frequency .
Confirmed Mode	If the device does not receive ACK packet from network server, it will re-send data once.
ADR	Enables the network server to adjust the spreading factor, the bandwidth and the transmission power to optimize data rates, airtime and energy consumption in the network.

4. Click  to complete the configuration.

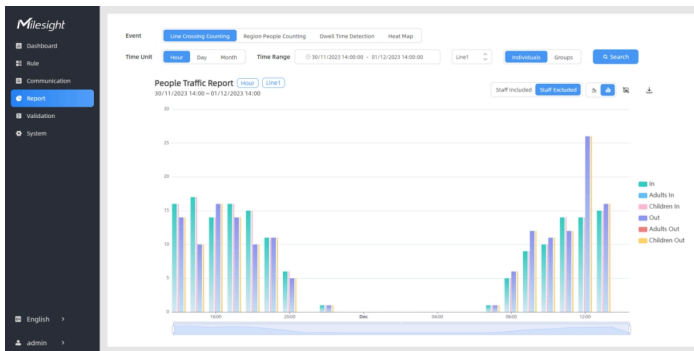
Generate Reports

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

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

Steps:

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



2. Select the data type for report generation. Options: **Line Crossing Counting, Region People Counting, Dwell Time Detection, Heat Map.**
3. Perform any of the following operations as needed.

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

If	Do
	i. Click on any category on the following figure to hide it from the chart.  In  Adults In  Children In  Out  Adults Out  Children Out
If Data Type is set to Region People Counting	a. Set Time Range and select a region from the drop-down list. b. (Optional) Select Individuals or Shopping Cart as needed. c. Click Search. The People Counting Report is displayed correspondingly. It may take up to 30 seconds to retrieve data from a long time period, with a maximum of 20,000 records available at once. d. Click Staff Included or Staff Excluded to include/exclude staff counting values in the report. e. Click  to download the chart screenshot. f. Click  to export the historical traffic data to a CSV file. The system supports exporting up to 1,000,000 data records per CSV file. g. Click on any category on the following figure to hide it from the chart.  In  Adults In  Children In  Out  Adults Out  Children Out
If Data Type is set to Dwell Time Detection	a. Set Time Range, Min. Value, Bin Width and Number Of Bins and select a region from the drop-down list. b. Click Search. The Total Dwell Time Report is displayed correspondingly. c. Click Staff Included or Staff Excluded to include/exclude staff counting values in the report.

If	Do
	d. Click  to download the chart screenshot. e. Click  to export the historical traffic data to a CSV file. The system supports exporting up to 1,000,000 data records per CSV file. f. Click on any category on the following figure to hide it from the chart.  In  Adults In  Children In  Out  Adults Out  Children Out
If Data Type is set to Heat Map	a. Select an event. Options: Motion Heatmap, Dwell Heatmap. b. Set Time Range. c. Click Search. The Motion Heatmap Report or Dwell Heatmap Report is displayed correspondingly. d. Click  to download the chart screenshot.

Configure Video Validation

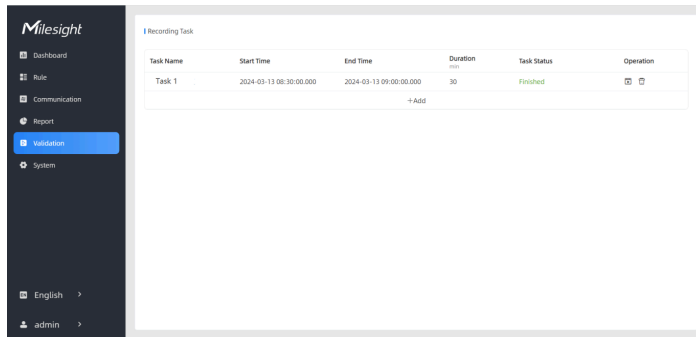
This section describes how to configure Video Validation function.

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

Available only in Standalone and Master working mode.

Steps:

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



2. In the **Recording Task** area on the right, click **+ Add**. The **Set a Task of Recording** dialog box is displayed. The device can add up to 24 tasks.

| Set a Task of Recording

Task Name

Recording Mode Record Now Setting Time

Start Time

Duration min(1~240)

Video Quality Standard Low Quality

✕ ✓

3. Configure the following parameters as needed.

Parameters	Description
Task Name	Customize a task name.
Recording Mode	Options: Record Now or Setting Time .
Start Time	This parameter is displayed only when Recording Mode is set to Setting Time . It sets the recording start time.
Duration	Set the recording duration. Range: ≤ 240 minutes.
Video Quality	When video quality is low, the video size will be smaller and quicker to download.



Note:

The configured time ranges for different tasks must not overlap.

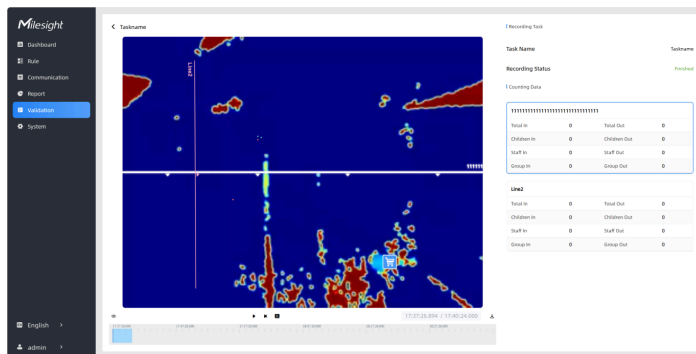
4. Click . The task is listed in the **Recording Task** area.



Restriction:

Detection rules and ToF frequency parameters cannot be modified during the recording process.

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



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

Visual Configuration

☒ Detection Line

☒ U-turn Area

☒ Detection Region

☒ Obstacle Exclusion Region

AI Result

☒ Instant Track Line

☒ Stastic Track Line

☒ Shopping Cart

Other

☒ Track Start  / Stop  Points

Start Time

 2025-05-15 01:49

End Time

 Present Time

☒ Up to the present

Parameters	Description
Visual Configuration	Select the items to be displayed in the preview as needed. The items displayed here are dependent on the functions enabled.
AI Result	Click the corresponding lines to show/hide them in the video.

Parameters	Description
	◦ Instant Track Line: Show or hide the target's track line in the preview. ◦ Static Track Line: Show or hide the history of the target's track line in the preview. Up to 1000 historical track records are supported. They are cleared upon page refresh.
Other	Show or hide the start and end points of the target trajectory and the time period.

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

**Note:**

The playback progress bar in the bottom highlights video frames where data changes occur.

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

Configure System Parameters

This section describes how to configure system parameters.

Configure Device Parameters

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

Steps:

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

Device Info.

Device Name	People Counter
Product Model	V5135
SN	67
Hardware Version	V
Software Version	V_135
WLAN MAC Address	24

✕ ✓

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

Configure User Parameters

This section describes how to configure user parameters.

User Roles:

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

Users

Username	User Level	Operation
admin	Administrator	 
viewer	Viewer	 

Modify Administrator's Parameters

1. In the main page, click **System** from the left navigation tree.
2. To change the login password of the device:

- a. In the **User** area, click  in the **Operation** column. The **Users modify** dialog box is displayed.

Users modify

Username	admin
User Level	Administrator
Administrator Password	
New Password	
Confirm Password	

At least

- 8 characters
- Must contain uppercase letters, lowercase letters, numbers, and special characters

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

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

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 color?
Answer3	

- b. Enter the login password and provide answers to the three security questions.
- c. Click  to save the configuration.



Troubleshooting:

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

Add a Viewer

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

Add User

Username	viewer
User Level	Viewer
Password	
Confirm Password	

At least

- 8 characters
- Must contain uppercase letters, lowercase letters, numbers, and special characters

×
✓

2. In the **Password** area, enter a new password.
3. In the **Confirm Password** area, enter the new password again.
4. Click  to save the configuration. The user is listed in the **Users** area.
5. (Optional) Click  to change the password of the viewer.

Configure Time Parameters

This section describes how to configure time parameters.

Steps:

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

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

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

If	Do
If Synchronize Mode is set to Gateway Timing	In the Time Interval area, enter the time synchronization interval between the device and the gateway and click  .
If Synchronize Mode is set to Manual Timing	i. In the Setting Time area, set the device time and click . ii. In the Synchronize with your computer time area, click Synchronize to synchronize the device time with the computer system time.

Configure System Maintenance Parameters

This section describes how to configure system maintenance parameters.

Steps:

1. In the main page, click **System** from the left navigation tree.
2. Click  in the lower right corner. The following page is displayed.

Hardware Settings

Frequency Adjustment^① Modulation Mode A

ToF Lighting Mode Always On **Auto** Schedule

ToF Noise Filtering ☐

Tilt Correction ☐

LED Indicator switch ☒

Reset

Recovery device basic configuration Basic Recovery

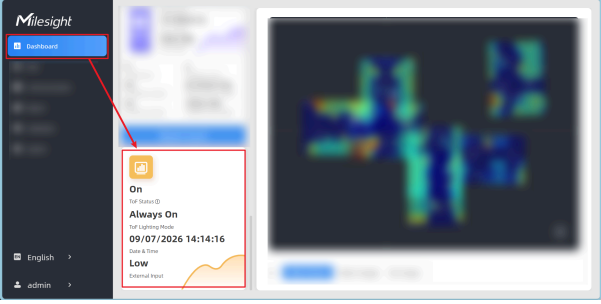
Recovery device to factory settings All Recovery

Reboot

Reboot the Device Reboot

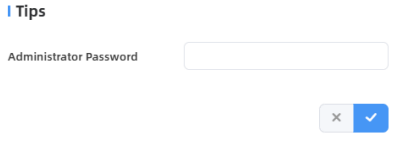
3. In the **Hardware Settings** area, configure the following parameters as needed:

Parameters	Description
Frequency Adjustment	Adjust the ToF frequency modulation mode to reduce interference from nearby IR devices. For multiple nearby VS135 devices, use different modes whenever possible. If only one mode is available, please contact Milesight IoT support: iot.support@milesight.com
ToF Lighting Mode	Optional: Always On, Auto or Schedule. The related information is displayed on the Dashboard. ◦ Always On: The ToF light remains on. ◦ Auto: The ToF light turns off when no person is detected for a period of time to save power. Turning off the ToF light does not affect periodic reporting. ◦ Schedule: The ToF light turns on only during the scheduled time range to save power. Turning off the ToF light does not affect periodic reporting.

Parameters	Description
	 During validation, the ToF light remains On regardless of the configured lighting mode. In Master working mode, the ToF lighting settings are synced to all node devices. Individual settings can still be configured on each node device.
ToF Noise Filtering	Filter the noisy point on the screen when working with dark floor or carpet. Noise Filtering Level: Set the appropriate noise filtering level according to the actual image. The more difficult it is to see the target, the higher the filter value should be set.
Tilt Correction	Enable to automatic compensation of person height values when the device is mounted at a tilt.
LED Indicator Switch	Enable or disable the LED indicator when the device is in normal operation.

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

Parameters	Description
Recovery device basic configuration	Click Basic Recovery to reset the device while keeping the IP settings and user information.

Parameters	Description
Recovery device to factory settings	a. Click All Recovery to reset the device to default factory settings. The Tips dialog box is displayed.  b. Enter the login password of the device.

5. In the **Reboot** area, click **Reboot** button to restart the device immediately.
6. In the **Upgrade** area, configure the following parameters as needed:

Parameters	Description
Software Version	The software version of the sensor.
Upgrade Image	a. Click  to upload the upgrade file. b. Click Upgrade. The upgrade takes 1-10 minutes , and the device will restart automatically upon completion.  Note: Do not disconnect the power of the device during the upgrade process.

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

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

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

Parameters	Description
System Log	Click Download to download log files for troubleshooting.

Parameters	Description
Logging Level Settings	System logs do not include debug information by default. To obtain more detailed debug logs for troubleshooting, please switch to Include Debug .
Log Mode - File	Select the desired level of the download log files for troubleshooting. Recommendation level to Fatal, Error and Warn. ◦ Fatal: recording device crashes or unrecoverable critical events ◦ Error: recording errors that is abnormal for a critical function ◦ Warn: recording events that may cause problems ◦ Debug: recording detailed internal operational and status information ◦ Trace: recording all events

Chapter 5. Uplink Packets & Downlink Commands

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

Uplink Data

This section describes the uplink packets reported by the device.

Basic Information Packet

After joining the network, the device reports a packet containing the basic device information.

Packet description:

Item	Channel	Type	Description
Protocol Version	ff	01	01=>V1
Device SN	ff	16	16 digits
Hardware Version	ff	09	01 04 => V1.4
Software Version	ff	1f	1f 07 00 4b => V31.7.0.75

Example:

Packet Description:

ff0101 ff166600b09409760000 ff090100 ff1f1f07004b		
Channel	Type	Value
ff	01	Protocol Version: 01 (V1)
ff	16	Device SN: 66 00 b0 94 09 76 00 00
ff	09	Hardware Version: 0100 (V1.0)
ff	1f	Software Version: 1f 07 00 4b => (V31.7.0.75)

Periodic Data Packet

Normally Periodic Data Packet

The device reports a data packet at a configured reporting interval.

Packet description:

Item	Channel	Type	Byte	Description
Accumulat- ed counter*	03	d2	4	Line 1 accumulated in counter
	04	d2	4	Line 1 accumulated out counter
	06	d2	4	Line 2 accumulated in counter
	07	d2	4	Line 2 accumulated out counter
	09	d2	4	Line 3 accumulated in counter
	0a	d2	4	Line 3 accumulated out counter
	0c	d2	4	Line 4 accumulated in counter
	0d	d2	4	Line 4 accumulated out counter
Children accu- mulated counter	11	d2	4	Line 1 accumulated in counter about children
	12	d2	4	Line 1 accumulated out counter about children
	14	d2	4	Line 2 accumulated in counter about children
	15	d2	4	Line 2 accumulated out counter about children
	17	d2	4	Line 3 accumulated in counter about children
	18	d2	4	Line 3 accumulated out counter about children
	1a	d2	4	Line 4 accumulated in counter about children
	1b	d2	4	Line 4 accumulated out counter about children
Region Monitoring	0f	e3	4	Byte 1: number of people in region 1 Byte 2: number of people in region 2 Byte 3: number of people in region 3 Byte 4: number of people in region 4
Children Re- gion Monitoring	1d	e3	4	Byte 1: number of children in region 1 Byte 2: number of children in region 2 Byte 3: number of children in region 3 Byte 4: number of children in region 4
Region Dwell Time	10	e4	5	Byte 1: region ID

Item	Channel	Type	Byte	Description
				Byte 2-3: avg. dwell time Byte 4-5: max. dwell time
Children Region Dwell Time	1e	e4	5	Byte 1: region ID Byte 2-3: avg. dwell time Byte 4-5: max. dwell time
Periodic counter*	05	cc	4	Line 1: Byte 1-2: in counter during the report interval Byte 3-4: out counter during the report interval
	08	cc	4	Line 2: Byte 1-2: in counter during the report interval Byte 3-4: out counter during the report interval
	0b	cc	4	Line 3: Byte 1-2: in counter during the report interval Byte 3-4: out counter during the report interval
	0e	cc	4	Line 4: Byte 1-2: in counter during the report interval Byte 3-4: out counter during the report interval
Children Periodic counter	13	cc	4	Line 1: Byte 1-2: in counter during the report interval Byte 3-4: out counter during the report interval
	16	cc	4	Line 2: Byte 1-2: in counter during the report interval Byte 3-4: out counter during the report interval
	19	cc	4	Line 3: Byte 1-2: in counter during the report interval

Item	Channel	Type	Byte	Description
				Byte 3-4: out counter during the report interval
	1c	cc	4	Line 4: Byte 1-2: in counter during the report interval Byte 3-4: out counter during the report interval

- If Group Counting is enabled, the **Accumulated Counter** and **Periodic Counter** are replaced by the **Accumulated Group Counter** and **Periodic Group Counter**.
- If Children Distinction or Staff Detection is enabled, counter uplinks exclude children and staff.

Example, when Children Distinction is enabled: Accumulated In = Total In – Children In, and Accumulated Out = Total Out – Children Out.

Example:

1. Period Report. (Disable Children Distinction)

03d205000000 04d203000000 11d245030000 12d2cb010000 06d249050000 07d246030000 14d246030000 15d2c9010000 09d200000000 0ad200000000 17d200000000 18d200000000 0cd200000000 0dd200000000 1ad200000000 1bd200000000 0fe300000000 1de300000000 10e4012a005a00		
Channel	Type	Value
03	d2	Line 1 accumulated in counter: 05 00 00 00 => 00 00 00 05=5
04	d2	Line 1 accumulated out counter: 03 00 00 00 => 00 00 00 03=3
11	d2	Line 1 accumulated in counter about children: 45 03 00 00=>00 00 03 45=837
12	d2	Line 1 accumulated out counter about children: cb010000=>000001cb=459
06	d2	Line 2 accumulated in counter: 49 05 00 00=>00 00 05 49=1353
07	d2	Line 2 accumulated out counter: 46030000=>00000346=838
14	d2	Line 2 accumulated in counter about children: 46030000=>00000346=838

03d205000000 04d203000000 11d245030000 12d2cb010000 06d249050000 07d246030000 14d246030000 15d2c9010000 09d200000000 0ad200000000 17d200000000 18d200000000 0cd200000000 0dd200000000 1ad200000000 1bd200000000 0fe300000000 1de300000000 10e4012a005a00		
Channel	Type	Value
15	d2	Line 2 accumulated out counter about children: c9010000=>000001c9=457
09	d2	Line 3 accumulated in counter: 00000000=>0
0a	d2	Line 3 accumulated out counter: 00000000=>0
17	d2	Line 3 accumulated in counter about children: 00000000=>0
18	d2	Line 3 accumulated out counter about children: 00000000=>0
0c	d2	Line 4 accumulated in counter: 00000000=>0
0d	d2	Line 4 accumulated out counter : 00000000=>0
1a	d2	Line 4 accumulated in counter about children: 00000000=>0
1b	d2	Line 4 accumulated out counter about children: 00000000=>0
0f	e3	Region Monitoring Number: 00000000=>0
1d	e3	Children Region Monitoring Number: 00000000=>0
10	e4	Region Dwell Time: 00000000=>0
1e	e4	Children Region Dwell Time: 01=region 1 avg. dwell time: 2a00=>002a=42s max. dwell time: 5a00=>005a =90s

2. Period Report. (Enable Children Distinction)

13cc05000000 08cc03000000 16cc02000000 0bcc05000000 19cc03000000 0ecc04000000 1ccc05000000		
Channel	Type	Value
13	cc	Children Periodic counter:

13cc05000000 08cc03000000 16cc02000000 0bcc05000000 19cc03000000 0ecc04000000 1ccc05000000		
Channel	Type	Value
		Line 1 In: 05 00 => 00 05=5 Line 1 Out: 00 00 => 00 00=0
08	cc	Periodic counter: Line 2 In: 03 00 => 00 03=3 Line 2 Out: 00 00 => 00 00=0
16	cc	Children Periodic counter: Line 2 In: 02 00 => 00 02=2 Line 2 Out: 00 00 => 00 00=0
0b	cc	Periodic counter: Line 3 In: 05 00 => 00 05=5 Line 3 Out: 00 00 => 00 00=0
19	cc	Children Periodic counter: Line 3 In: 03 00 => 00 03=3 Line 3 Out: 00 00 => 00 00=0
0e	cc	Periodic counter: Line 4 In: 04 00 => 00 04=4 Line 4 Out: 00 00 => 00 00=0
1c	cc	Children Periodic counter: Line 4 In: 05 00 => 00 05=5 Line 4 Out: 00 00 => 00 00=0

Historical Periodic Data Report

When data retransmission is triggered, the device will report a historical periodic report at data retransmission interval.

Packet description:

Channel	Type	Byte	Description
20	ce	8/9	Byte 1-4: Unix Timestamp, Unit:s Byte 5: Data Type. • 03-Line 1 accumulated in counter • 04-Line 1 accumulated out counter • 06-Line 2 accumulated in counter • 07-Line 2 accumulated out counter • 09-Line 3 accumulated in counter • 0a-Line 3 accumulated out counter • 0c-Line 4 accumulated in counter • 0d-Line 4 accumulated out counter • 05-Line 1 Periodic counter • 08-Line 2 Periodic counter • 0b-Line 3 Periodic counter • 0e-Line 4 Periodic counter • 0f-Region people number • 10-Region avg. dwell time • 20-Region max. dwell time • 11-Line 1 Children accumulated in counter • 12-Line 1 Children accumulated out counter • 14-Line 2 Children accumulated in counter • 15-Line 2 Children accumulated out counter • 17-Line 3 Children accumulated in counter • 18-Line 3 Children accumulated out counter • 1a-Line 4 Children accumulated in counter • 1b-Line 4 Children accumulated out counter • 13-Line 1 Children Periodic counter • 16-Line 2 Children Periodic counter • 19-Line 3 Children Periodic counter • 1c-Line 4 Children Periodic counter • 1d-Children region people number • 1e-Children region ID avg. dwell time • 3c-Children region ID max. dwell time Byte 6-N: history data.

Example:

20ce fd605b69 03 07			
Command	Report Mode	Timestamp	Value
20	ce	fd 60 5b 69 => 695b60fd =1767596285s	03=Line 1 accumulated in counter
			Historical Data: 07=>7

Trigger Data Packet

The device supports to report immediately when something changes.

Packet description:

Item	Channel	Type	Byte	Description
Accumulat- ed counter	03	d2	4	Line 1 accumulated in counter
	04	d2	4	Line 1 accumulated out counter
	06	d2	4	Line 2 accumulated in counter
	07	d2	4	Line 2 accumulated out counter
	09	d2	4	Line 3 accumulated in counter
	0a	d2	4	Line 3 accumulated out counter
	0c	d2	4	Line 4 accumulated in counter
	0d	d2	4	Line 4 accumulated out counter
Children accu- mulated counter	11	d2	4	Line 1 accumulated in counter about children
	12	d2	4	Line 1 accumulated out counter about children
	14	d2	4	Line 2 accumulated in counter about children
	15	d2	4	Line 2 accumulated out counter about children
	17	d2	4	Line 3 accumulated in counter about children
	18	d2	4	Line 3 accumulated out counter about children
	1a	d2	4	Line 4 accumulated in counter about children
	1b	d2	4	Line 4 accumulated out counter about children

Item	Channel	Type	Byte	Description
Region Monitoring	0f	e3	4	Byte 1: number of people in region 1 Byte 2: number of people in region 2 Byte 3: number of people in region 3 Byte 4: number of people in region 4
Children Re- gion Monitoring	1d	e3	4	Byte 1: number of children in region 1 Byte 2: number of children in region 2 Byte 3: number of children in region 3 Byte 4: number of children in region 4
Region Dwell Time	10	e4	5	Byte 1: region ID Byte 2-3: avg. dwell time Byte 4-5: max. dwell time
Children Re- gion Dwell Time	1e	e4	5	Byte 1: region ID Byte 2-3: avg. dwell time Byte 4-5: max. dwell time

Example:

1. Report immediately when two adults have entered line 1.

03d2 02000000		
Channel	Type	Value
03	d2	Line 1 accumulated in counter: 02 00 00 00 => 00 00 00 02=2

2. Report immediately when 3 children are detected in region 2.

1de3 00020000		
Channel	Type	Value
1d	e3	The number of children in region 1: 00=>0 The number of children in region 2: 02=>2

1de3 00020000		
Channel	Type	Value
		The number of children in region 3: 00=>0 The number of children in region 4: 00=>0

Alarm Packet

The device supports reporting alarm packets.

Packet description:

Item	Channel	Type	Byte	Description
Alarm	50	fc	3	Byte 1: 01=Occlusion Detection Alarm Byte 2: ID, 00=This Device, 01~0f=Node device Byte 3: 01=Alarm; 00=Release

Example:

1. The device triggers an Occlusion Alarm when it is occluded.

50fc 010001		
Channel	Type	Value
50	fc	01 => Occlusion Detection Alarm 00 => This Device 01 => Alarm

Downlink Command

The device provides API commands for developers, please refer to [VS13x API Documentation](#) .

Downlink commands can be used for remote control of device through a network server. The downlink port (application port) is 85 by default and can be configured through ToolBox.

If the device receives a downlink command requiring confirmation, it will send a reply packet in the following format:

Channel (1 Byte)	Type (1 Byte)	Command (1-N Byte)	...
Downlink command channel -1	Same as downlink command		...

For details of downlink commands please refer to the sections below.

Command for General Setting

The device supports multiple commands for general settings.

Command description:

Item	Channel	Type	Byte	Description
Reboot	ff	10	1	ff
Wi-Fi	ff	42	1	00: disable, 01: enable
Clear the accumulated counting	ff	51	1	ff
LED Indicator	f9	ba	1	00: disable, 01: enable
Log Mode - File	f9	89	2	Byte 1: 04 Byte 2: Log file level • 01-Fatal, • 02-Error, • 03-Warn, • 04-Debug, • 05-Trace
Gateway Time Synchronization	f9	84	3	Byte 1: 01=Enable; 00=Disable Byte 2-3: Time Synchronization Interval, Unit: min
Manual system time setting	ff	11	4	Unix Timestamp, Unit:s

Example:

1. Reboot the device.

ff10ff		
Channel	Type	Value
ff	10	ff

2. Modify the system time as 2025/05/27 20:44:00.

ff11 90b33568		
Channel	Type	Value
ff	11	90 b3 35 68=>6835B390= 1748349840 s =>2025/05/27 20:44:00

Command for People Counting Setting

The device supports people counting commands sent via downlink.

Command description:

Item	Channel	Type	Byte	Description
People Counting Periodic Report	ff	43	1	00=disable, 01=enable
People Counting Trigger Report	ff	44	1	00=disable, 01=enable
Periodic Report Interval	ff	47	2	Unit: s
Periodic Report Scheme	f9	8a	1	01=From Now On, 00=On the Dot
Data Retransmission	ff	69	1	00=Disable, 01=Enable
Data Retransmission Interval	ff	6a	3	Byte 1: 00 Byte 2-3: UINT16, Unit: s, Range: 30-1200, Default: 600

Example:

1. Set Periodic Report Interval as 20 minutes.

ff47 b004		
Channel	Type	Value
ff	47	b004=>04b0=1200s=20minutes

2. Set the data retransmission interval as 1200s.

ff6ab004		
Channel	Type	Value
ff	6a	b004=>04b0=1200s

Command for LoRaWAN[®] Setting

Modifying the following parameters triggers the device to re-enter the network.

Command description:

Item	Channel	Type	Byte	Description
Confirm Mode	ff	04	1	00=Disable, 01=Enable
LoRaWAN [®] Channel Mask	ff	05	3	Byte 1: Channel index range • 01=0-15, • 02=16-31, • 03=32-47, • 04=48-63, • 05=64-79, • 06=80-95 Byte 2-3: Indicate disable or enable via every bit • 0=Disable, • 1=Enable
ADR	ff	40	1	00=Disable, 01=Enable
Application Port	ff	41	1	Range: 1-223, Default: 85

Item	Channel	Type	Byte	Description
LoRa Rejoin Mode	f9	85	2	Byte 1: 00=Disable; 01=Enable Byte 2: The Number of Detection, Range: 4-32
Spreading Factor	f9	86	1	00-SF12, 01-SF11, 02-SF10, 03-SF9, 04-SF8, 05-SF7
TX Power	f9	87	1	Range: 0-14

Example:

1. Set AU915 or US915 channel mask as 8-15.

ff0501ff00 ff05020000 ff05030000 ff05040000 ff05050000		
Channel	Type	Value
ff	05	01=>Channel index 0-15, ff00 => 8-15 is enabled
		02=>Channel index 16-31, 0000 => all disabled
		03=>Channel index 32-47, 0000 => all disabled
		04=>Channel index 48-63, 0000 => all disabled
		05=>Channel index 64-79, 0000 => all disabled

2. Set application port as 50.

ff41 32		
Channel	Type	Value
ff	41	32=> 50

Commands for Historical Data Query

The device can query historical data for a specified time point or range through downlink commands. The specified time point can use [Unix Timestamp Converter](#) to calculate. The prerequisites are that the device time is correct and the **data storage function** is enabled. The device uploads a maximum of 300 data records per range query.

When querying data for a specific time point, the device uploads the record closest to the requested time within the current reporting interval. For example, with a 10-minute reporting interval, a query for 17:00

will return the exact record if it exists. Otherwise, the device searches for data within a tolerance of ± 10 minutes (16:50 to 17:10) and uploads the record closest to 17:00.

Command description:

Item	Channel	Type	Byte	Description
Query data for a specified time point	fd	6b	4	Unix timestamp, UINT32, Unit: s
Query data for a specified time range	fd	6c	8	Start Unix Timestamp (4B) + End Unix Timestamp (4B), UINT32, Unit: s
Stop data query report	fd	6d	1	ff
Query report interval	ff	6a	3	Byte 1: 00 Byte 2-3: UINT16, Unit:s, Range: 30-1200, Default: 60s

Reply format:

Item	Channel	Type	Byte	Description
Query Result	fc	6b/6c	1	00: data query success 01: invalid time point or time range 02: no data for this time point or time range

Example:

Enquire the historical data in a time range.

fc6c44605b699c625b69		
Command	Type	Value
fd	6c	Start time: 44 60 5b 69 => 69 5b 60 44 = 1767596100s End time: 9c 62 5b 69 => 69 5b 62 9c = 1767596700s

Reply:

fc6c00		
Channel	Type	Value
fc	6c	00: data query success

20ce fd605b69 03 07			
Command	Report Mode	Timestamp	Value
20	ce	fd 60 5b 69 => 695b60fd =1767596285s	03=Line 1 accumulated in counter
			Historical Data: 07=>7

Chapter 6. Services

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

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