Milesight

VS373

Radar Fall Detection Sensor

User Guide

Contents

Contents

Chapter 1. Preface

Copyright Statement

This guide may not be reproduced in any form or by any means to create any derivative such as translation, transformation, or adaptation without the prior written permission of Xiamen Milesight IoT Co., Ltd (Hereinafter referred to as Milesight).

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

Safety Instruction

These instructions are intended to ensure that user can use the product correctly to avoid danger or property loss. Milesight will not shoulder responsibility for any loss or damage resulting from not following the instructions of this operating guide.

> ⚠️ **Warning:**
> Serious injury or death may be caused if any of these warnings is neglected.
>
> - 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.
> - The device must not be disassembled or remodeled in any way.

> ◈ **CAUTION:**
> Injury or equipment damage may be caused if any of these cautions are neglected.
>
> - Do not place the device where the temperature is below/above the operating range.
> - The device must never be subjected to shocks or impacts.
> - Do not expose the device to where a laser beam equipment is used.

⚠️ • 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.

Revision History

Release Date	Version	Revision Content
January 22, 2025	V1.0	Initial version
September 26, 2025	V1.1	1. Add Lying Alarm. 2. Added Breathing Detection. 3. Introduced AI Fall Alarm Filtering. 4. Added Digital Output alarm. 5. Added Ignore sub-region. 6. Added support for data transmission via WiFi STA mode. 7. Supports multi-person fall alarms (for special scenarios). 8. Supports out-of-bed alarms for multi person. 9. Sub-region limit increased from 4 to 6. 10. Optimized interface: separated room settings and detection configuration, improved sub-region layout, enhanced information page, and merged LoRa and D2D pages.

Chapter 2. Product Introduction

Overview

VS373 is a Radar Fall Detection Sensor that adopts a Millimeter Wave Radar to detect fall. It enables non-contact human detection using point cloud data and triggers fall alarms. With up to 99% fall detection accuracy, it helps ensure user safety.

With easy configuration and wireless detection, the VS373 supports Wi-Fi communication, enabling high-speed data transmission. It also supports LoRaWAN® communication and can be integrated with the Milesight LoRaWAN® gateway and Milesight Development Platform, enabling remote monitoring, data visualization, and centralized management. As a Milesight D2D controller & agent, the VS373 seamlessly communicates with other Milesight D2D devices, establishing more connections and paving the way for smoother operations. It can also be connected to an alarm switch to notify relevant personnel for emergency response.

VS373 can be used in living rooms, bathrooms, bedrooms, kitchens, hospital wards, care homes, and other spaces where falls may occur.

Key Features

- Equipped with Millimeter Wave Radar, it can overcome the adverse effects of light and water mist, which make it able to penetrate some obstacles
- Equipped with a millimeter-wave MIMO array antenna (24 Transmitters & 22 Receivers), it can provide higher precision and reliability
- Support continuous 24-hour detection and management capabilities, it does not rely on visible light and can operate stably both day and night
- Support fall detection with a 99% fall capture rate and less than 1% false alarm rate
- Supports adding sub-regions for independent detection
- Support multi-bed presence detection, leaving the bed within the scheduling time will trigger an alarm
- Supports breathing detection by sensing chest movement and providing a reference breathing rate
- 100% privacy protection, no images will be captured
- Support on-site alarms of buzzer and LED indicator and provide backend reporting of alarm information, enabling timely notification of any emergency
- Stores historical data locally and supports retransmission to prevent data loss
- Supports convenient data transmission via Wi-Fi
- Compliant with standard LoRaWAN® gateways and network servers
- Support Milesight D2D protocol to enable ultra-low latency and direct control without gateways

Chapter 3. Hardware Introduction

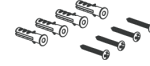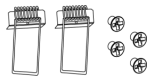## Packing List
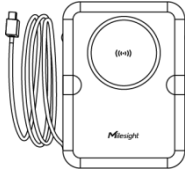
1 × VS373 Device
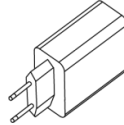
1 × Type-C Power Adapter

4 × Ceiling Mounting Kits

2 × Spring Clips
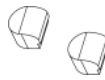
2 × Silicone Plugs

1 × DO Wiring
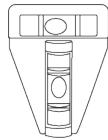
1 × T-shaped Spirit Level

1 × Warranty Card

1 × Quick Guide

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

Hardware Overview

Reset Button

Multi-function Button

Radar

LED Indicator

Buzzer
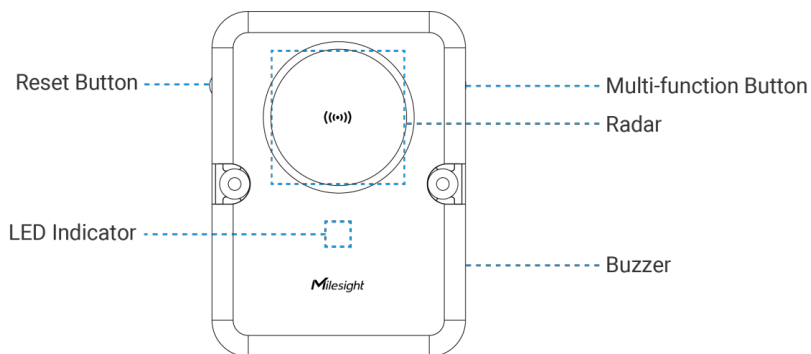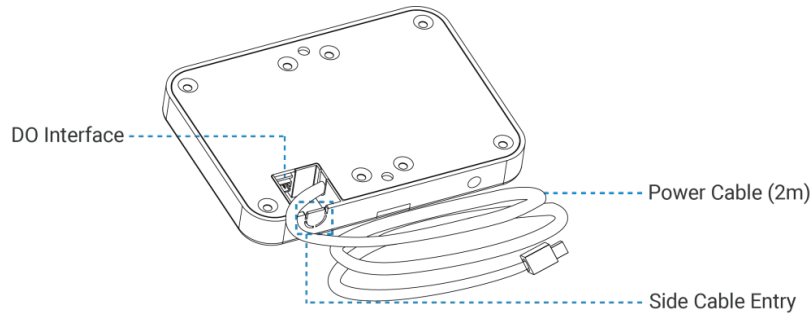
DO Wiring

When alarms are confirmed, the DO will trigger a high level signal (connected) until the alarm is released. For customizable alarm types, please see Hardware Settings.
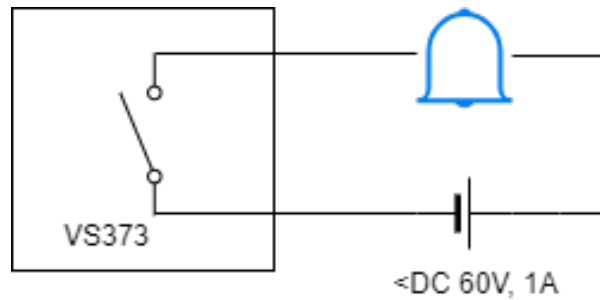
Button and LED Descriptions

> 📝 **Note:**
>
> Remove the silicone plug from the reset button before use.

Function	Action & Description	LED Indication
Turn On/Off Wi-Fi	Press and hold the Multi-function button for 2~5 seconds	Wi-Fi On: Green Light on
		Wi-Fi Off: Green Light Blinks Slowly
Enable Wi-Fi STA Mode	Press and hold the Multi-function button for 2~5 seconds	Blue Light on
Turn On Radar	Radar Initializing	Green Light Blinks Quickly
Reset to Factory Default	Press and hold the reset button for 10 seconds	Blue Light Blinks Quickly

Function	Action & Description	LED Indication
Fall Alarm	Fall event occurred	Red Light Blinks Quickly
Stop Alarm	Press and hold the reset button for 6~9 seconds	Green Light Stays On or Blinks Slowly
Device Abnormality	Radar anomaly; WiFi anomaly	Red Light Stays On

Dimensions (mm)
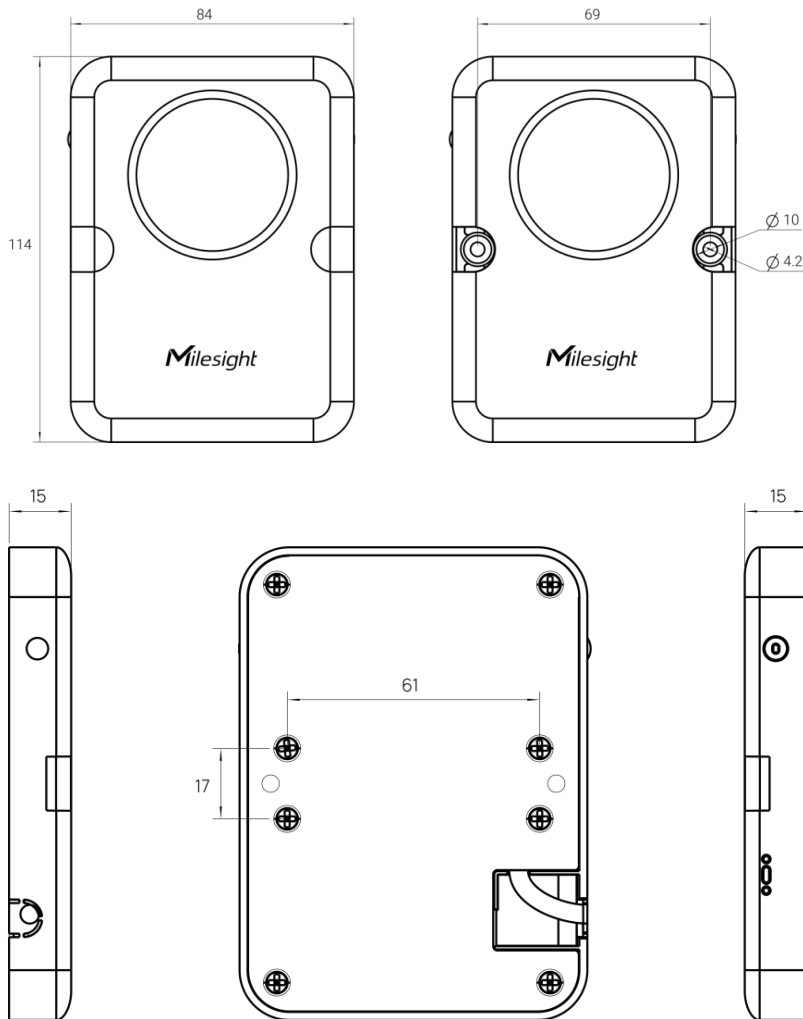
Chapter 4. Power Supply

• **Powered by Type-C Power Adapter (5V, 3A)**
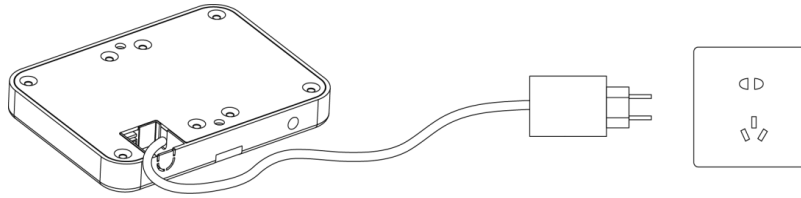
> 📝 **Note:**
> If the default power cable length does not suit your application, please add a Type-C extension cable and ensure the length of extension cable matches the formula below:
>
> $R * 3A \leq 5V - 4.2V$
>
> Where:
>
> R—Cable Resistance in Ω, refer to Wire Resistance Calculator.

Chapter 5. Installation

Scenario Recommendation

Recommendation	Scenarios
Most Recommended	Bedrooms (10-20 m^2) with enough walking space
	Hospital rooms (Active area of every patient: 8-20 m^2)
	Residential toilets (4-15 m^2)
	Public toilets (every cubicle: 3-5 m^2)
	Accessible toilets (≥ 4.5 m^2)
Medium Recommended	Narrow spaces (≥ 2 × 2 m^2)
	Places with ceiling fans
Not Recommended	Factories/warehouses where there are a large number of metal brackets, moving trolleys and other interfere with radar detection
	Outdoor applications with multiple detection targets and multiple interference factors
	Hotels or conference rooms where fall detection is not a primary requirement
	Narrow spaces under 2 × 2 m^2

Note:

1. The reference area size is for 1 device unit. If your rooms are larger, you need to deploy more than 1unit ensuring the coverage.
2. If your scenarios are not listed above, please enquire Milesight for details.

Installation Location

Installation Height: 2.3~3m.

Installation Location: Ensure the center of radar placed in the center of detection area. Take a room without any objects as example, place the device on the ceiling with the center of radar matching the

center of the room. The long side of the device should align with the longer dimension of the room, while the short side should align with the shorter dimension of the room.
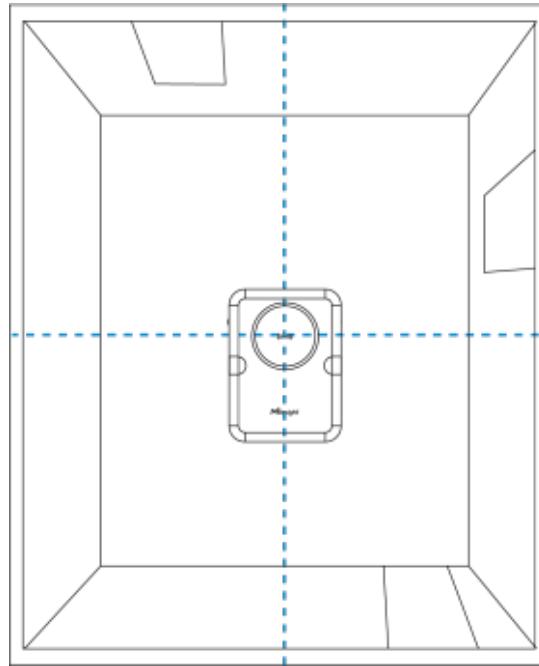
> 📝 **Note:**
>
> - If the centered position of the room ceiling is not suitable for mounting the device, find a proper position that is at least 1 meter away from the wall.
> - Ensure the installation location of the device is flat and stable to avoid tilting or instability.
> - Avoid installing the device near ceiling fans or chandeliers.
> - Minimize the accumulation of cabinets or clutter within the device's detection range, and avoid the presence of large metal surfaces, mirrors, or other reflective objects nearby.
> - The room size, installation height, and detection height should be accurately measured using tools such as a rangefinder or tape measure before setting.

Installation Steps

Ceiling Mount

Step 1: Drill two 6 mm holes aligned with the screw positions of the device, then insert wall plugs into the ceiling.
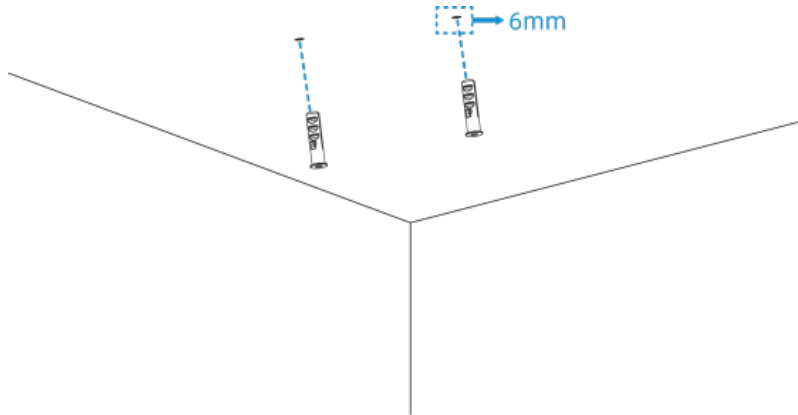
> **Note:**
>
> If you need to hide the power cord inside the ceiling, drill an additional hole for the wire.

Step 2: Cut a side wire hole according to the mark on the device, and thread the power cable through the side wire hole.
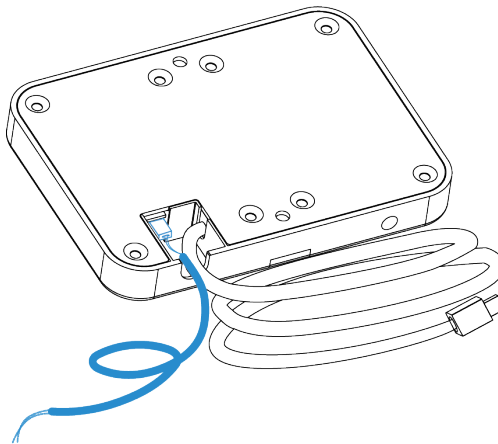
> **Note:**
>
> If the DO wiring is going to be used, please connect the DO wiring to the device, then pass it through the side wire hole.

Step 3: Fix the device to the wall plugs using the mounting screws.
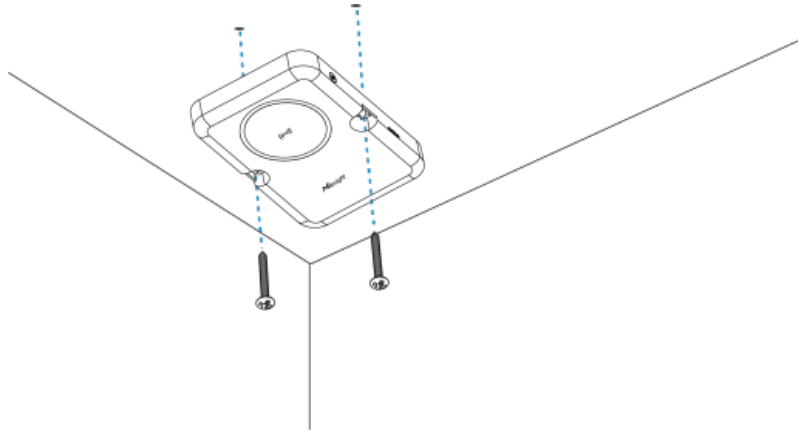
Step 4: Align one edge of the T-shaped Spirit Level with either edge of the device and adjust the device until both water bubbles are centered, ensuring that the device is perfectly parallel.
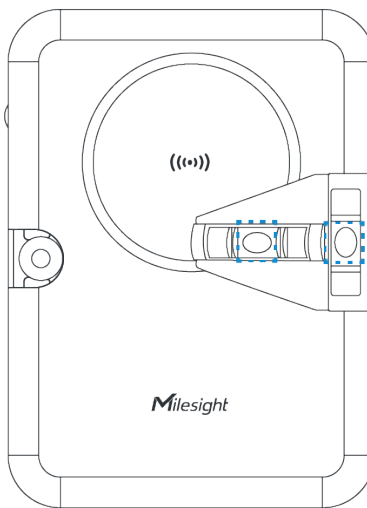
Step 5: Install the silicone plugs.
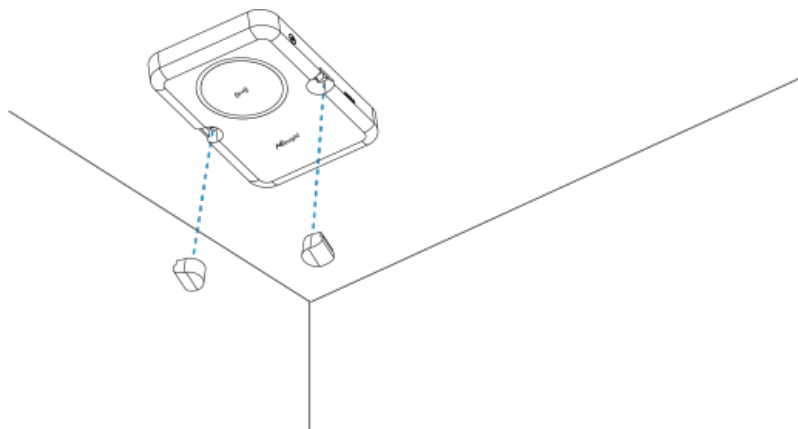
Cutout Mount

Step 1: Drill a hole with a diameter of 76.3~80mm in the ceiling.

d=76.3~80mm
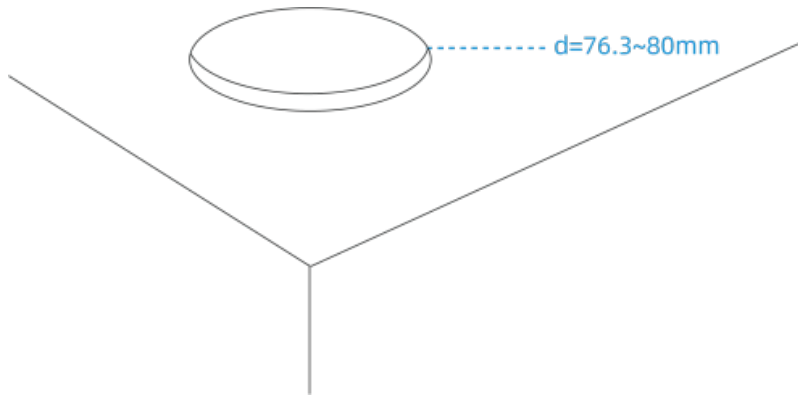
Step 2: Fix the spring clips to the device with screws.
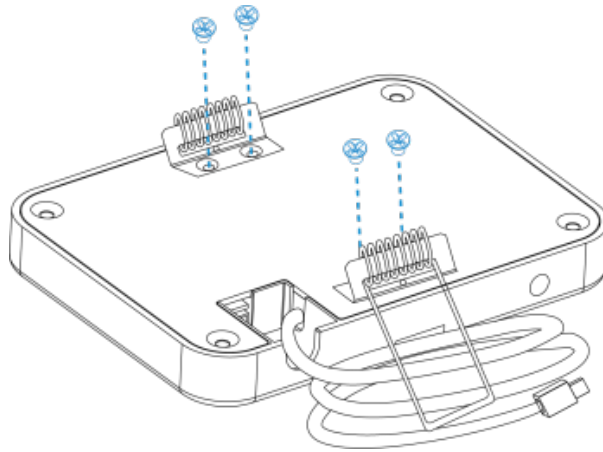
Step 3: Cut a side wire hole according to the mark of the device, and thread the power cable through the side wire hole.
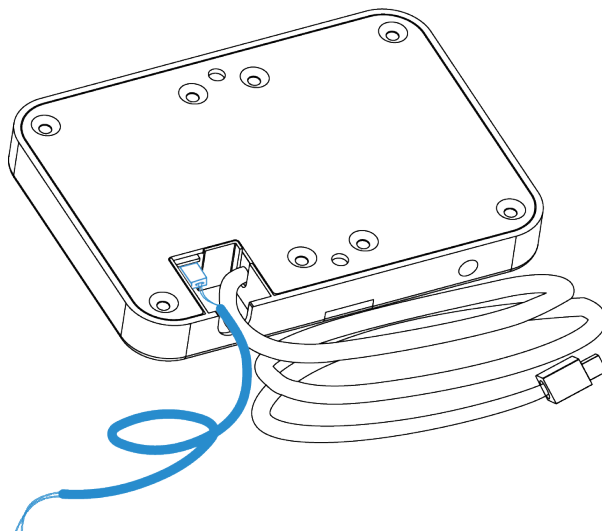
> **Note:**
> If the DO wiring is going to be used, please connect the DO wiring to the device, then pass it through the side wire hole.

Step 4: Insert both spring clips vertically into the ceiling hole by hand.
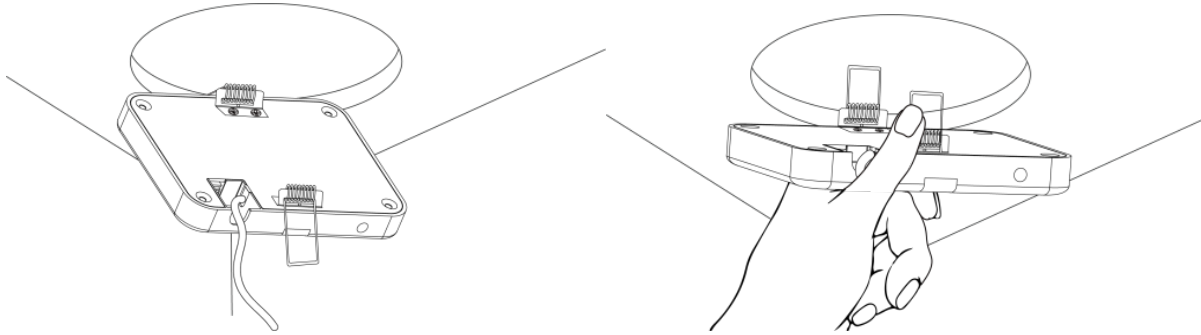
Step 5: Align one edge of the T-shaped Spirit Level with either edge of the device and adjust the device until both water bubbles are centered, ensuring that the device is perfectly parallel.
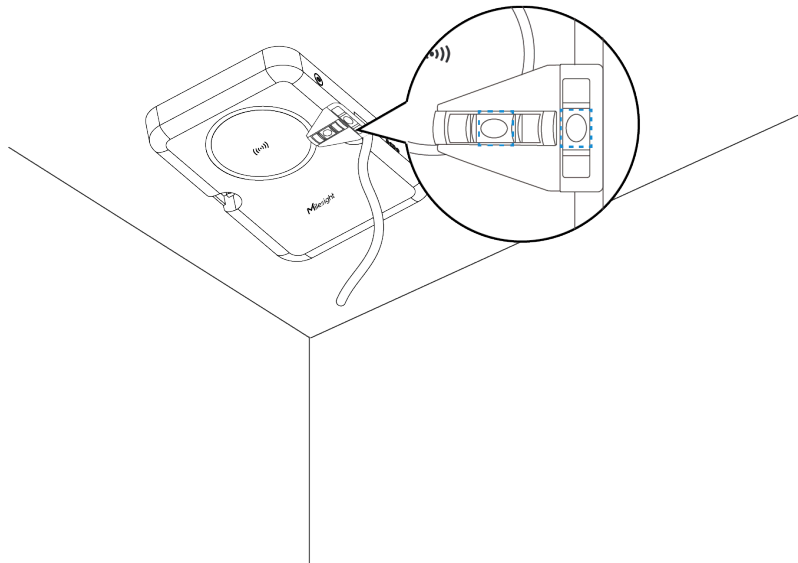
Step 6: After the device is completed, install the silicone plugs.
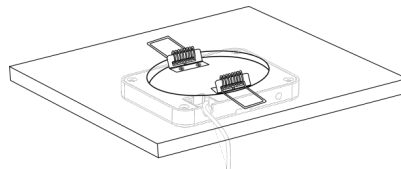
Factors Affecting Accuracy

- The device supports single-person and multi-person fall detection. In multi-person scenarios, alerts are only supported when one person has fallen and another person is completely incapacitated.
- The fall event occurring outside the detection space will not be detected.
- If the device is installed less than 1 m from a wall, missed or false detections may occur.
- If there are large mirrors, glass, or similar objects in the detection area, it can cause multi-path effects, leading to reduced detection accuracy of the radar.
- When the following objects appear in the detection space, hey may be misidentified as a fall and trigger an alarm: e.g., robot vacuums, pets, low oscillating fans, or people lying on the floor.

Chapter 6. Access the Sensor

The device provides a user-friendly web GUI for configuration access via Wi-Fi. The default settings are as below:

Wi-Fi SSID: **Fall Detection_xxxxxx** (can be found on the device label)

Wi-Fi IP: **192.168.1.1**

> **Note:**
>
> Check the device LED indicator: A steady green light or steady blue light indicates Wi-Fi is enabled. If the LED indicator blink green slowly, press and hold the multi-function button for 2~5 seconds to turn on Wi-Fi.

Step 1: Enable the Wireless Network Connection on your computer, search for the corresponding for Wi-Fi SSID to connect it, then enter 192.168.1.1 to access the web GUI.

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

Set Security Questions

Security Question 1

What is your lucky number? ⌄

* Answer 1

Please Input

Security Question 2

What is your favorite sport? ⌄

* Answer 2

Please Input

Security Question 3

What is your favorite color? ⌄

* Answer 3

Please Input

Activation

User Name

admin

* Password

Please Input

* Confirm Password

Please Input

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

Step 3: After configuration, log in with the username (admin) and the newly set password.

Note:

1. Password must be 8 to 16 characters long and contain at least two of the following: numbers, lowercase letters, uppercase letters and special characters.
2. It is recommended that users regularly update their passwords to enhance device security and prevent unauthorized access.
3. You can click "forgot password" in login page to reset the password by answering the three security questions when you forget the password if you set the security questions in advance.

Chapter 7. Operation Guide

Configure Room and Targets Parameters

Setting Room Parameters

After successful access to the device, you need to set up the detection space.

Navigate to **Rule→General Settings→Room**, define the cuboid detection space by configuring the distance coordinates (with the radar center as the origin), the space detection height, and the device installation height.

> 📝 **Note:**
> These parameters should be accurately measured using tools such as a rangefinder or tape measure before setting; otherwise, missed or false detections may occur.

Figure 1. Detection Space Settings
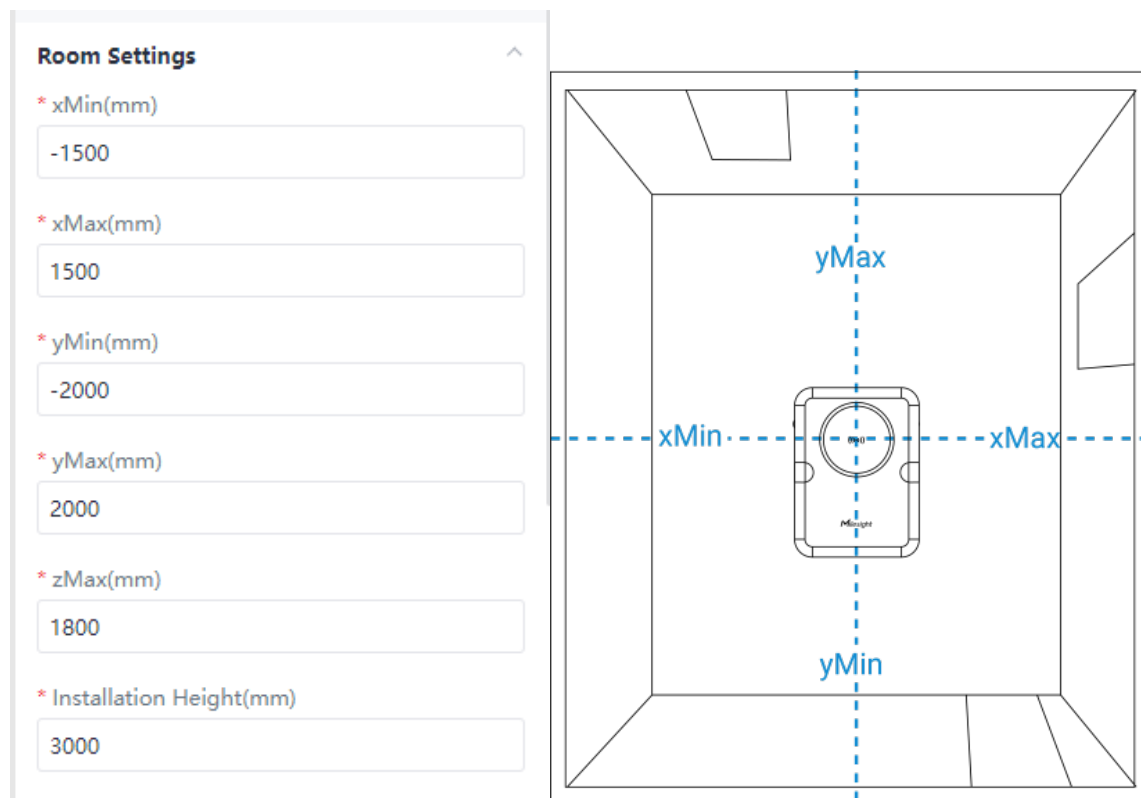
Parameters	Description
xMin/xMax	Corresponding to the **short side** of the detection space, since the maximum detection width of the device is 4m, the maximum value is ±2000mm.
yMin/yMax	Corresponding to the **long side** of the detection space, since the maximum detection width of the device is 5m, the maximum value is ±2500mm.
zMax	Corresponding to the **height** of the detection space. Assuming a ceiling fan is located 2.8 meters within the detection space, set zMax to 2500 mm to exclude interference from the ceiling fan.
Installation Height	Installation height of the device.

Configuring Targets Detection Parameters

After setting the detection space size, scroll down to **Advance Settings** to configure the target appearance and disappearance timing parameters.

Parameters	Description
Presence Confirmation Time(s)	When the target appearance time reaches this value, it is recognized as present in the detection space.
Absence Confirmation Time(s)	When the target disappearance time reaches this value, the target is recognized as having disappeared from the detection space.

Configure General Settings

This chapter describes the features supported by the device throughout the entire detection space, which include:

- Fall Alarm
- Lying Alarm
- Dwell Alarm
- Motionless Alarm
- Sleep Detection

Fall Alarm

The device provides fall detection with alarm reporting capability. In multi-person environments, an alarm is triggered only when one person falls and the others remain incapacitated.

Before configuring, you need to understand the different stages of fall detection:

Figure 2. Fall Detection Process
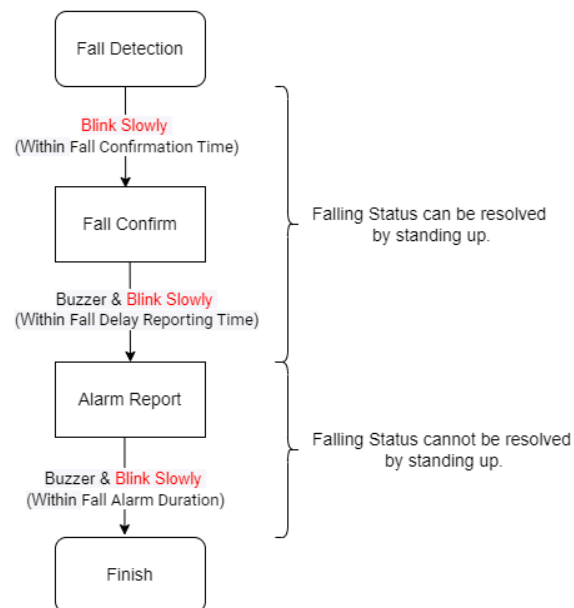
Stage 1:

Someone has entered the room and walked around for over 20 seconds. Suddenly, a fall occurs. A change in target altitude is detected. The red light blinks slowly for the duration set by **Fall Confirmation Time**. The alarm can be canceled at this stage if the person stands up.

Stage 2:

The fall event is confirmed. The LED will blink red quickly and the buzzer start sounding for a duration that depends on the **Fall Delay Reporting Time**. The alarm can be canceled at this stage by standing. Alarm data is not reported at this stage but will appear on the **<Information>** page.

Stage 3:

An alarm message will be reported. The LED will still blink red quickly and the buzzer will sound for a duration that depends on the **Fall Alarm Duration**. The alarm cannot be canceled by standing up but can be resolved by clicking the **Handle** button on the **<Information>** page.

Steps to configure the fall alarm:

Step 1: Ensure that you have completed room setting.

Step 2: Go to **<General Settings>**, click **<Parameters>**, scroll to find the **Fall Alarm**, set Fall Parameters.

Information	General Settings	Sub Regions

Room	Parameters

Basic Settings ∧

Fall Alarm ⬤

* Fall Confirmation Time(s)

50

* Fall Delay Reporting Time(s)

40

* Fall Alarm Duration(s)

30

Table 1. Fall Parameters

Parameters	Description
Fall Confir-mation Time	When the device detects the target falling and this condition persists for the speci-fied duration, it will judge this to be a fall event. Default: 50s, Range: 0~300s.

Parameters	Description
	✏ **Note:** It is recommended to set the confirmation time between 30s~60s, as setting it below the time may reduce detection accuracy.
Fall Delay Reporting Time	When the duration of the fall event reaches this value, an alarm will be reported. Default: 40s, Range: 0~300s.
Fall Alarm Duration	The duration for which the alarm and buzzer will sound. Default: 30s, Range: 0~1800s.

Step 3 (Alternative): Scroll to find Advanced Settings, adjust Fall Advanced Settings as need.
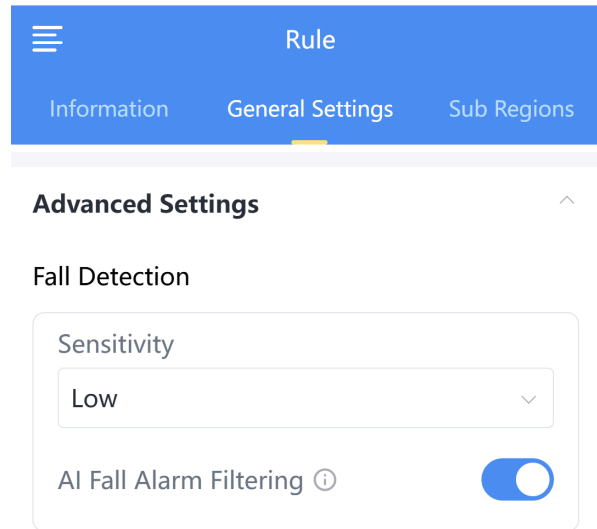
Table 2. Fall Advanced Settings

Parameters	Description
Sensitivity	The radar's ability to detect and identify targets. **Low:** Select to reduce false alarms when there are more interfering objects in the detection space or when the environment is more complex. **High:** Select when there are fewer interfering objects in the detection space and accurate detection of smaller or more distant targets is required. **Medium:** Select between the two options above according to your environment.

Parameters	Description
	🖊 **Note:** If you are unsure how to make a selection, please contact Milesight sales representative for assistance.
AI Fall Alarm Filtering	When enabled, this feature performs secondary fall detection, reducing false alarms but possibly increasing missed detections. 🖊 **Note:** It is recommended to use this function only in complex environments with frequent false fall alarms (such as bathrooms and washrooms). For regular open areas like bedrooms, it is not recommended to enable this feature, as it may affect the detection and reporting of actual fall events.

Step 4: After complete configuration, click **Apply** to save the settings.

Please wait 1~2 minutes; the device will automatically restart and apply the new settings.

Step 5: When a fall occurs, no one can assist the fallen individual in getting up until the fall alarm has been reported. Navigate to **<Information>**, you can see the target's point displayed on the coordinate axis, and the Fall Alarm.

The alarm will be resolved when the target stands out or manually clicking **Handle** button.
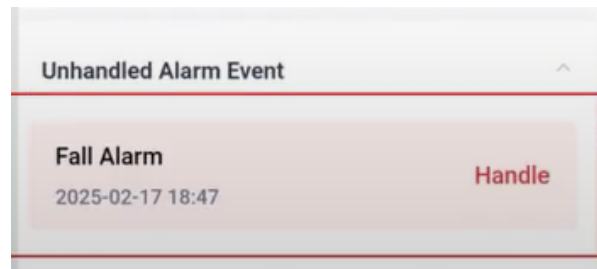
> ✏️ **Note:**
>
> For persistent detection issues (missed or erroneous) after parameter adjustment, please see troubleshooting.

Lying Alarm

This feature detects specific fall scenarios: if a person falls within 20 seconds of being detected and remains on the ground for 5 minutes, a lying alarm is triggered.

> ✏️ **Note:**
>
> 1. If a fall alarm has been triggered and not resolved, a lying alarm will not be triggered again.
> 2. This feature is **not** recommended for bathrooms, restrooms, or cluttered areas.
> 3. If the default lying alarm duration (5 minutes) does not meet your needs, please contact a Milesight sales representative for customization.

Steps to configure the lying alarm:

Step 1: Ensure that you have completed room setting.

Step 2: Switch to **<General Settings>**, enable **Lying Alarm**, then click **Apply** to save the settings.

Please wait 1~2 minutes; the device will automatically restart and apply the new settings.

Step 3: Navigate to **<Information>**, you can see the target's point displayed on the coordinate axis.
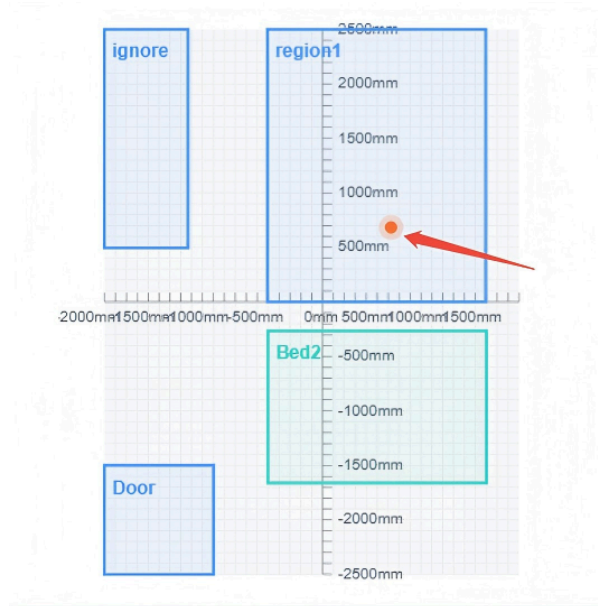
When the target enters the detection space and remains lying for 5 minutes, the device will report an alarm.
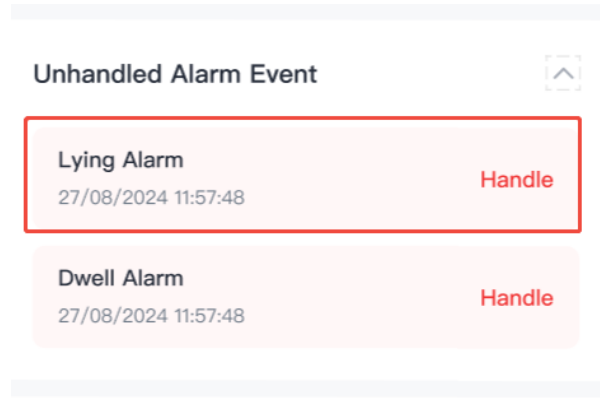
The alarm will be resolved when the target stands out or manually clicking **Handle** button.

> ✏️ **Note:**
>
> For persistent detection issues (missed or erroneous) after parameter adjustment, please see troubleshooting.

Dwell Alarm

This function detects when a target stays in a specified area beyond the set duration threshold and reports the event automatically.
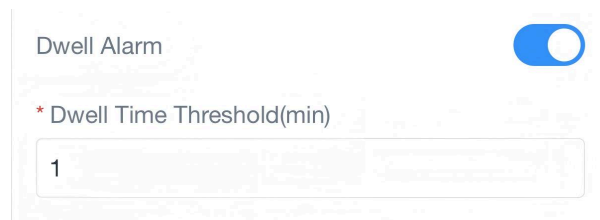
Steps to configure the dwell alarm:

Step 1: Ensure that you have completed room setting.

A door sub region is required because the radar cannot detect static or departing targets. Instead, a target's presence is inferred from its entry and exit events.

Step 2: Switch to **<General Settings>**, enable **Dwell Alarm**, set **Dwell Time Threshold**, then click **Apply** to save the settings.

Please wait 1~2 minutes; the device will automatically restart and apply the new settings.

Step 3: Navigate to **<Information>**, when the target enters the detection area through the door sub-region, you can see the target's point displayed on the coordinate axis.

Additionally, an alarm will be triggered if the threshold is exceeded.

The alarm will be resolved when the target leaves the detection space or manually clicking **Handle** button.

> 📝 **Note:**
> For persistent detection issues (missed or erroneous) after parameter adjustment, please see troubleshooting.

Motionless Alarm

The motionless alarm is triggered when a target's coordinates remain unchanged for a long period, indicating a possible abnormal condition. This function is suitable for environments with expected frequent movement (e.g., hospital wards, corridors), enabling prompt detection of emergencies or unusual behavior.

Steps to configure the motionless alarm:

Step 1: Ensure that you have completed room setting.

A door sub region is required because the radar cannot detect static or departing targets. Instead, a target's presence is inferred from its entry and exit events.

Step 2: Switch to **<General Settings>**, enable **Motionless Alarm**, set **Motionless Time Threshold**, then click **Apply** to save the settings.

Please wait 1~2 minutes; the device will automatically restart and apply the new settings.

Step 3: Navigate to **<Information>**, when the target enters the detection area through the door sub-region, you can see the target's point displayed on the coordinate axis.
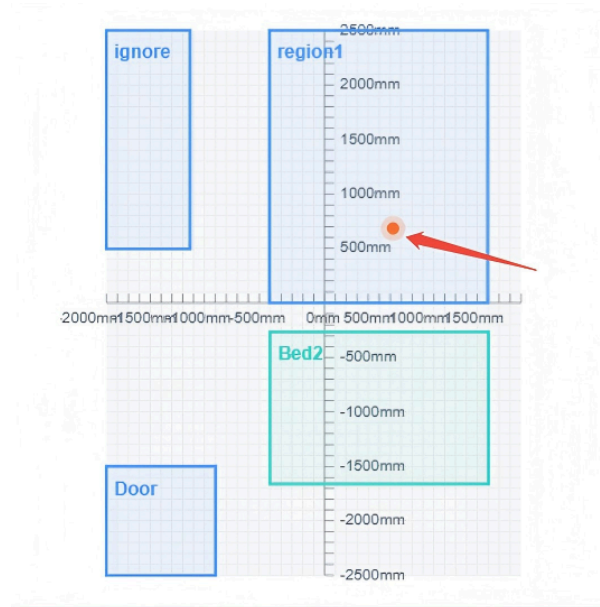
When the target remains stationary at a specific location and the no-movement duration reaches the configured value, the target's point on the coordinate axis turns yellow, and the target status will be displayed as "Motionless".
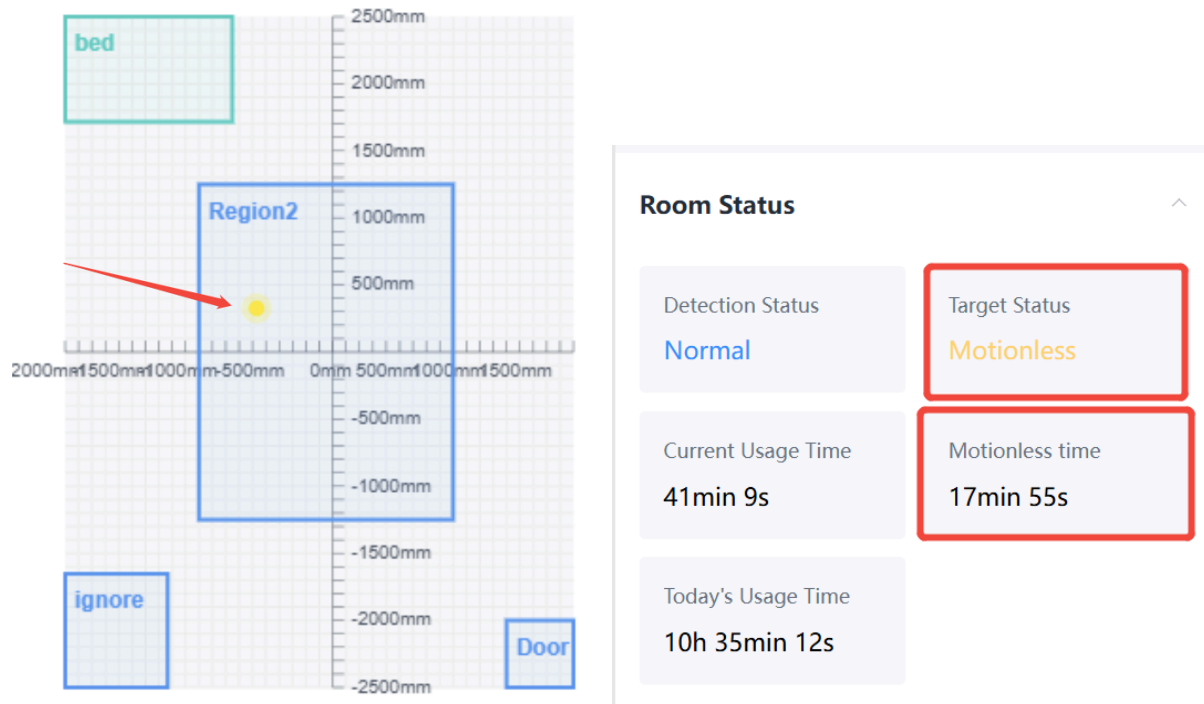
The target status returns to "Normal" when the person resumes walking.

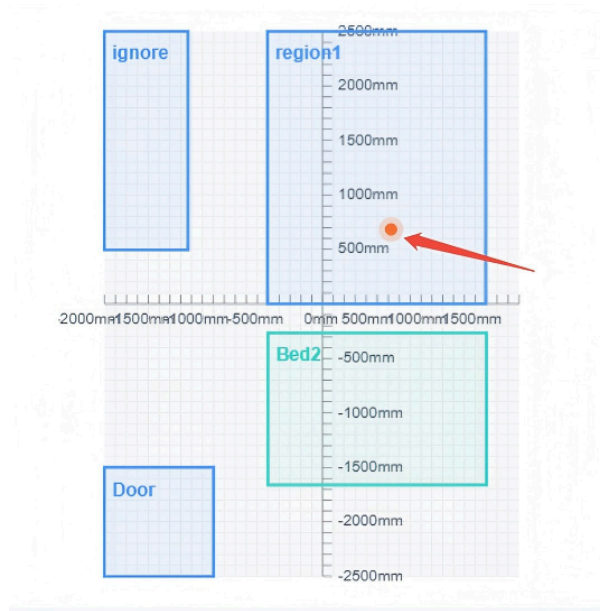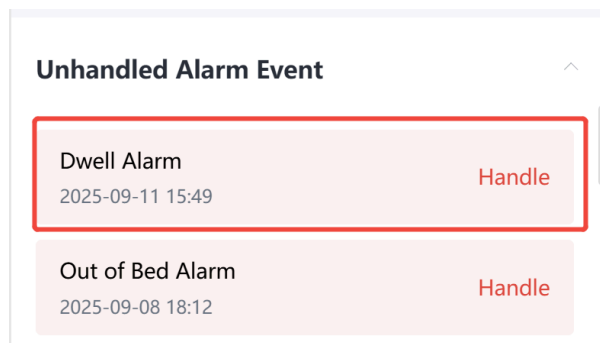> **Note:**
> For persistent detection issues (missed or erroneous) after parameter adjustment, please see troubleshooting.

Sleep Detection

The sleep detection function requires configuration of the "Bed Sub-Region". Please click Bed Sub-Region to view detailed setup instructions.

Information

After completing the settings, the user can view the following information.
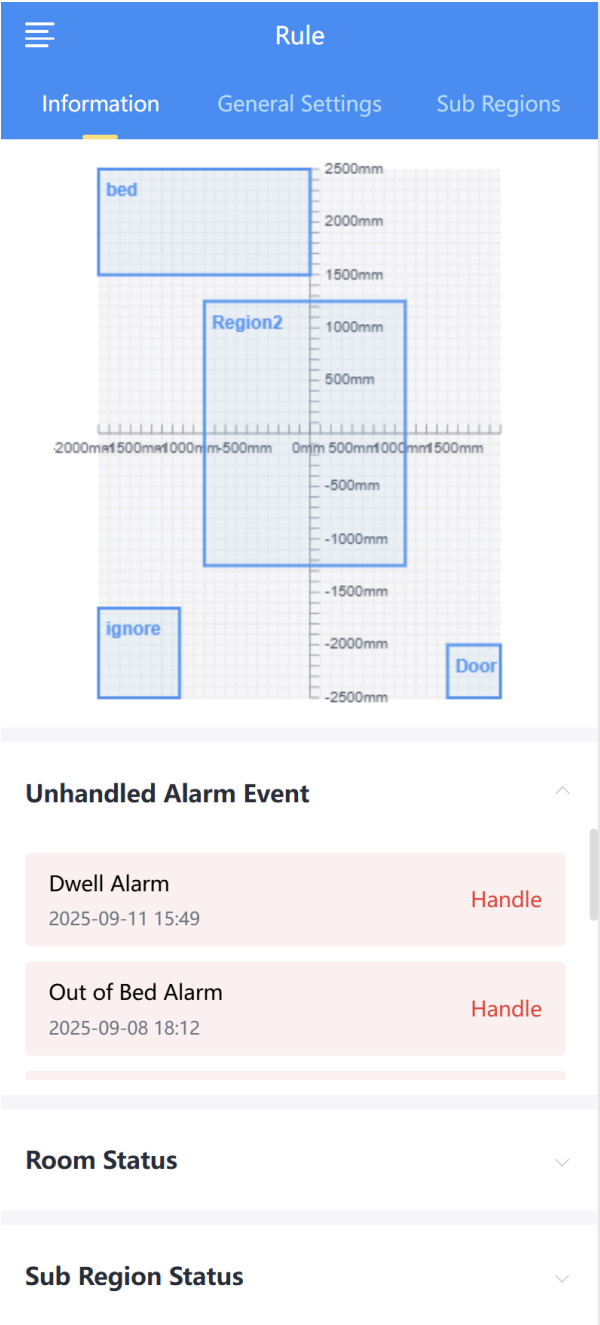
Parameters	Description	
Coordinate Axis	Displays all the sub regions and the location of target.	
Unhandled Alarm Event	Displays all unresolved alarm messages.	
Room Status	Detection Status	Displays the current detection space status.

Parameters		Description
		Possible states: "Normal", "Vacant", "Out of Bed", "Fall".
	Target Status	Displays the current status of target: "Normal", "Motion-less","Lying".
	Motionless time	Displays the motionless time when target status is "Motion-less".
	Current Us-age Time	Duration the detection space has been occupied.
	Today's Us-age Time	Cumulative occupancy duration for the day (resets daily at 00:00)
Sub Region Status	Displays the current status of every sub-region, including "Occupied", "Vacant", "In Bed", "Out of Bed".	

Configure Sub Regions

The device supports sub-region configuration for precise monitoring or masking of designated areas. Each sub-region's status is reported individually. This chapter describes the following types:

- Door
- Bed
- Custom Region
- Ignore Region
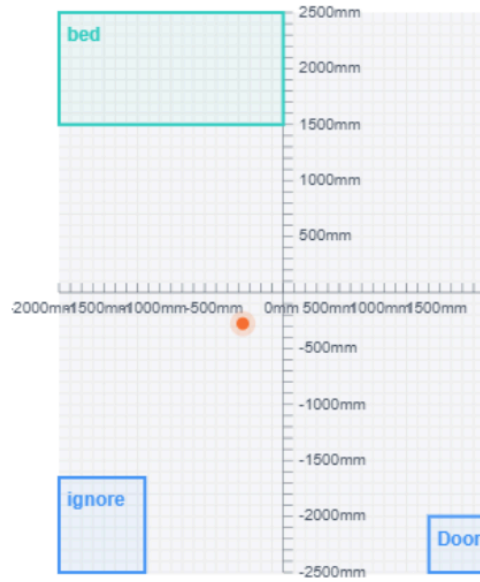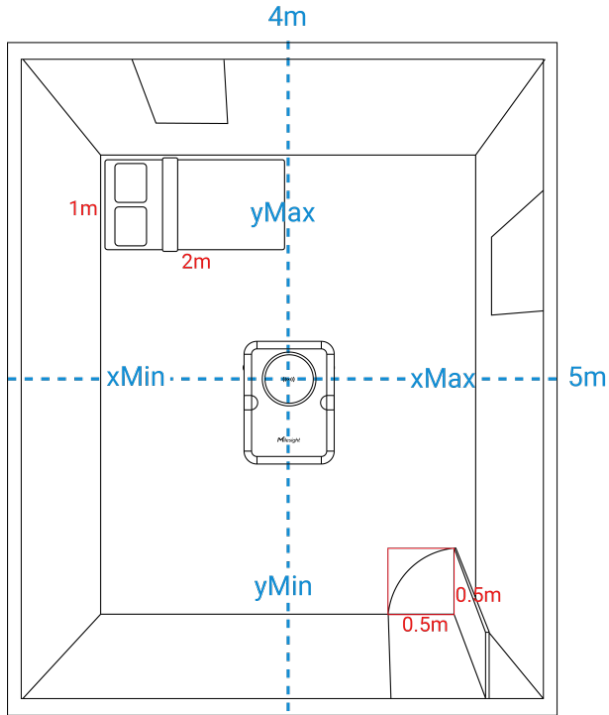
Draw Door Sub-Region

This sub-region enables the device to detect entries and exits of targets. All alarms related to this sub-region are governed by the general system settings.

Step 1: Go to **<Sub Region>**, click **Add Sub Region**. One device supports to add up to 6 sub regions.
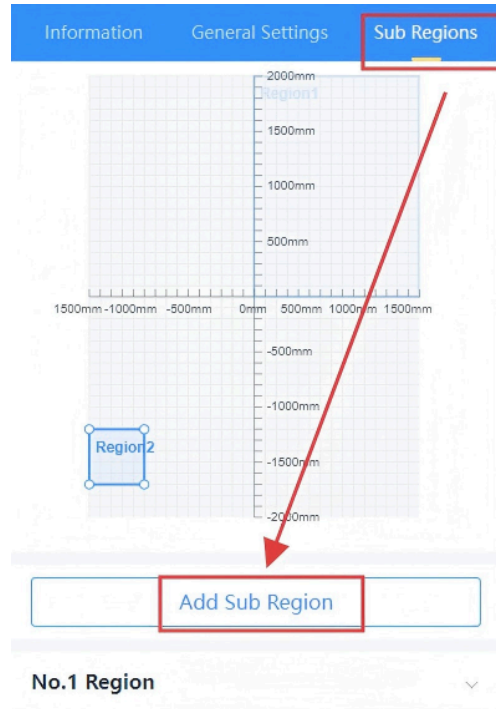
Step 2: Select the region type as **Door**, set the name, width, length, and location of the door according actual information, you can also adjust these parameters by dragging or zooming the region in the view above.

Step 3: Click **Apply** to save configuration.

Please wait 1~2 minutes; the device will automatically restart and apply the new settings.

Step 4: Navigate to **<Information>**, you can see this subregion and the target's point displayed on the coordinate axis. Scroll down to view the status of this sub-region.

> **Note:**
>
> For persistent detection issues (missed or erroneous) after parameter adjustment, please see troubleshooting.

Draw Bed Sub-Region

This sub-region defines a monitoring zone around a bed, used to detect when a target leaves the area and to collect health data such as respiratory rate. All alarms related to this sub-region are governed by the general system settings.

Step 1: Go to **<Sub Region>**, click **Add Sub Region**. One device supports to add up to 6 sub regions.
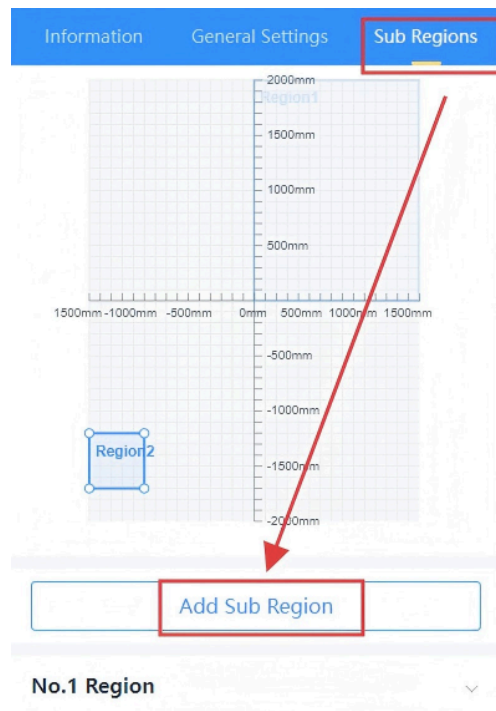
Step 2: Select the region type as **Bed**.

> **Note:**
>
> - Only the monitoring bed supports respiratory detection.
> - The first added bed is automatically set as the monitoring bed. Any additional bed sub-regions are set as regular beds.
> - A maximum of three beds can be configured, each at least 50 cm apart.

Then set the name, width, length, height, and location of beds according actual information, you can also adjust these parameters by dragging or zooming the region in the view above.

Step 3: Click **Apply** to save configuration.

Step 4: Switch to **<General Setting>**, enable **Sleep Detection**, set the sleep period (Both out-of-bed detection and respiratory detection are based on this). You can enable relevant functions and configure the corresponding parameters as needed, or use the default parameters.

Please wait 1~2 minutes; the device will automatically restart and apply the new settings.

Step 5: Navigate to **<Information>**, you can see that the monitoring bed subregion is displayed in green, the regular bed subregion is displayed in blue.

If the target's time away from bed reaches the threshold during the sleep period, an alarm will be reported.

Additionally, the target's respiratory status and subregion status are displayed.

| Parameters	Description
Respiratory Status	When no data is entered, when no monitoring bed is present, or when the monitoring bed has no target, display "-"; When a monitored bed is detected with the target present on the bed, **Respiratory Status** displays "Normal", "Bradycardia", "Tachypnea" or "Unable Detect", and **Respiratory Rate** is shown in bpm.
Sub Region Status	Display the name and status of the subregion. When the target is in bed, display "In Bed"; when the target is out of bed, display "Out of Bed".

> 📝 **Note:**
> For persistent detection issues (missed or erroneous) after parameter adjustment, please see troubleshooting.

Draw Custom Sub-Region

This sub-region is user-defined, allowing focused monitoring of specific areas (e.g., a sofa). Detection can be independently enabled or disabled, with customizable parameters to suit application needs.

Step 1: Go to **<Sub Region>**, click **Add Sub Region**. One device supports to add up to 6 sub regions.
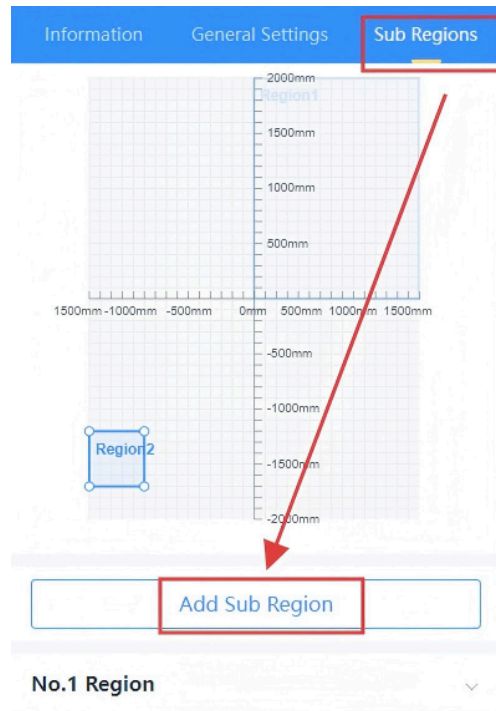
Step 2: Select the region type as **Custom**, set the name, width, length, height, and location of sub-region according actual information, you can also adjust these parameters by dragging or zooming the region in the view above.

Step 3: Select the alarm notification set for this sub-region.

Step 4: Click **Apply** to save configuration.

Please wait 1~2 minutes; the device will automatically restart and apply the new settings.

Step 5: Navigate to **<Information>**, you can see this subregion and the target's point displayed on the coordinate axis. Scroll down to view the status of this sub-region.

> **Note:**
>
> For persistent detection issues (missed or erroneous) after parameter adjustment, please see troubleshooting.

Draw Ignore Sub-Region

This sub-region maintains detection capability while suppressing all alarm triggers within its boundaries. It is useful for areas with interfering objects (e.g., ceiling fans, moving decorations) to reduce false alarms.

Step 1: Go to **<Sub Region>**, click **Add Sub Region**. One device supports to add up to 6 sub regions.
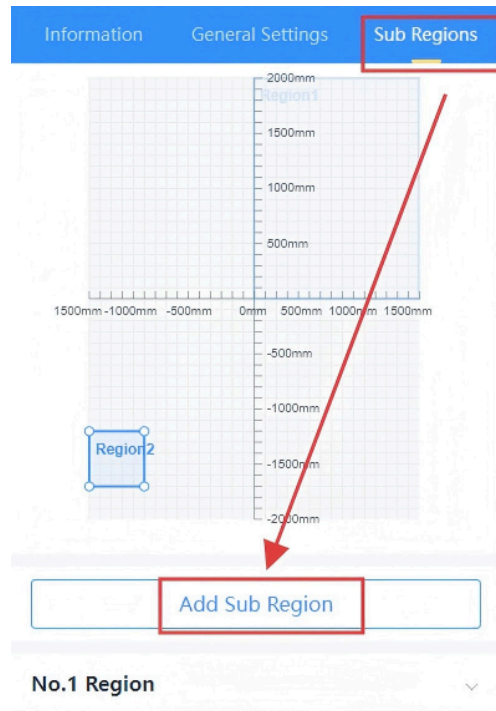
Step 2: Select the region type as **Ignore**, set the name, width, length, height, and location of sub-region according actual information, you can also adjust these parameters by dragging or zooming the region in the view above.

Step 3: Click **Apply** to save configuration.

Please wait 1~2 minutes; the device will automatically restart and apply the new settings.

Step 4: Navigate to **<Information>**, you can see this subregion and the target's point displayed on the coordinate axis. Scroll down to view the status of this sub-region.

> **✎ Note:**
>
> For persistent detection issues (missed or erroneous) after parameter adjustment, please see troubleshooting.

Configure Hardware Settings

This device is equipped with an LED indicator, a buzzer, and a DO (digital output) interface for device status display and alarm notifications.

Parameters	Description
LED	Enable or Disable indicator light for fall detection alarm.
Buzzer	Enable or Disable buzzer sounding for fall detection alarm.
Digital Output	When any of the following selected alarms are triggered, the device will output a level signal.

Parameters	Description
	When multiple alarms are triggered, priority is: Fall > Lying > Out of Bed > Dwell > Motionless. If a higher-priority alarm is triggered while a lower-priority alarm is still being processed, the device will interrupt the lower-priority alarm and give precedence to reporting and outputting the higher-priority alarm signal. Fall alarm duration = Fall Delay Reporting Time+Fall Alarm Duration, all other alarms last 15s.

Configure Data Transmission

LoRa

Report Settings
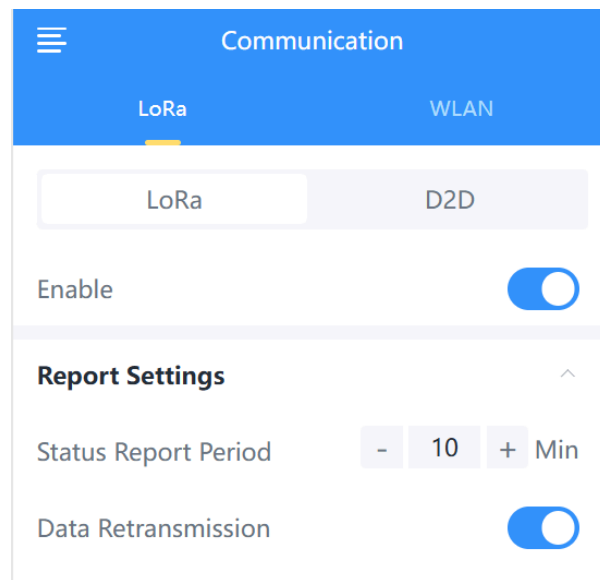
Parameters	Description
Status Report Period	The interval of reporting regional usage and alarm data to network server. Default: 10 min, Range: 1 ~ 1440 min
Data Retransmission	When enabled, if the LoRa connection is lost, the device stores data locally and automatically uploads it once the connection is restored.

Parameters	Description
	✏️ **Note:** It is necessary to enable the Rejoin Mode for this feature.

Trigger Report

Parameters	Description
Alarm Type	Enable or disable the reporting of corresponding alarms when they are triggered. For trigger data details, see Uplink Packets.

LoRaWAN Settings

Configure AppEUI, Join Type, Application Key, and other information. You can also keep all settings by default.

Parameters	Description
LoRa Status	LoRaWAN® network joining status of this device.
Device EUI	Unique ID of the device which can be found on the device. ✏️ **Note:** please contact sales for device EUI list if you have many units.
App EUI	The default App EUI (join EUI) is 24E124C0002A0001.
Application Port	The port used for sending and receiving data, the default port is 85.
Device Type	It's fixed as Class C.
Join Type	OTAA and ABP mode are available. ✏️ **Note:** it's necessary to select OTAA mode if connecting device to Milesight Development Platform.

Parameters	Description
Application Key	Appkey for OTAA mode, default value: "Device EUI" + "Device EUI" (since Q4 of 2025). Example: 24e124123456789024e1241234567890 ✏️ **Note:** • The default value of earlier devices is 5572404C696E6B4C6F52613230313823. • Please contact sales before purchase if you require random App Keys.
Network Session Key	Nwkskey for ABP mode, the default is 5572404C696E6B4C6F52613230313823.
Application Session Key	Appskey for ABP mode, the default is 5572404C696E6B4C6F52613230313823.
Device Address	DevAddr for ABP mode, default is the 5th to 12th digits of SN.
Rejoin Mode	Reporting interval≤35 mins: the device will send a specific number of LinkCheckReq MAC packets to the network server every reporting interval or every double reporting interval to validate connectivity; If there is no response, the device will re-join the network. Reporting interval > 35 mins: the device will send a specific number of LinkCheckReq MAC packets to the network server every reporting interval to validate connectivity; If there is no response, the device will re-join the network. ✏️ **Note:** 1. Only OTAA mode supports rejoin mode. 2. The actual sending number is **Set the number of packets sent** +1.
LoRaWAN® Version	V1.0.2 and V1.0.3 are available.

Parameters	Description
Supported Frequency	Enable or disable the frequency to send uplinks. If frequency is one of CN470/AU915/US915, enter the index of the channel to enable in the input box, making them 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: Indicate that all channels are disabled
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 will send uplink data following this SF parameter. The higher the spreading factor, the longer the transmission distance, the slower the transmission speed and the more the consumption.
Tx Power	Tx power (transmit power) refers to the strength of the outgoing signal transmitted by the device. This is defined by LoRa alliance.
Confirmed Mode	If the device does not receive ACK packet from network server, it will resend data once.
ADR Mode	Enable or disable network server to adjust Spreading Factor, Bandwidth an Tx Power to optimize data rates, airtime and energy consumption in the network.

Milesight D2D

Milesight D2D protocol is developed by Milesight and used for connections among Milesight devices without a gateway reducing latency and achieving quick control.

Milesight D2D Controller
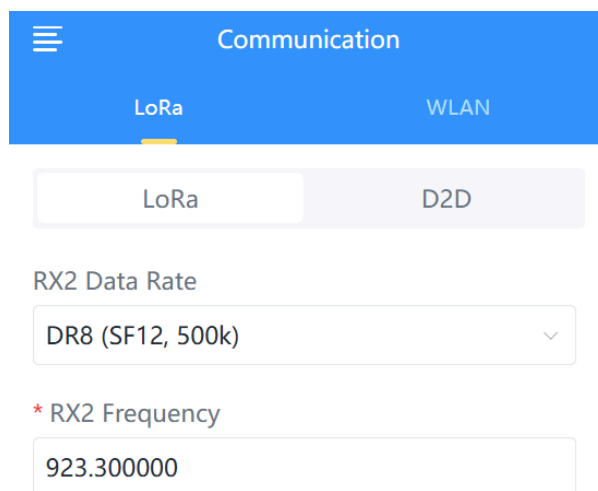
Step 1: Go to **General Settings** page to enable and configure alarm parameters.

Step 2: Configure the RX2 datarate and RX2 frequency.

> ✏️ **Note:**
> It is suggested to change the default values if there are many LoRaWAN$^®$ devices around.

Step 3: Enable Milesight D2D feature and define a unique D2D key that is the same as Milesight D2D agent devices. (Default D2D key: 5572404C696E6B4C6F52613230313823)

Step 4: Enable one of statuses and configure 2-byte hexadecimal Milesight D2D command.

> **Note:**
>
> After enabling the **Control Time**, Milesight D2D agent devices will take corresponding actions within this duration after receiving commands from Milesight D2D controller. This feature is currently under development for Milesight D2D agent devices.

Example

When motionless alarm is triggered, VS373 will send a D2D command 0004 to trigger the Milesight D2D agent devices to take actions within 5 minutes.
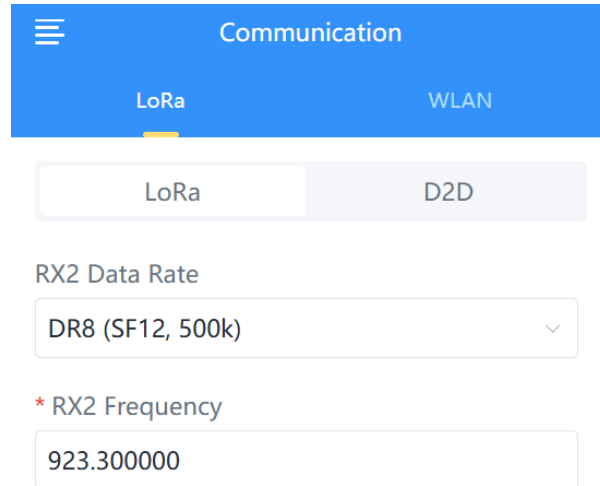
Milesight D2D Agent

When D2D setting is enabled, VS373 can work as a Milesight D2D agent device to receive commands from Milesight D2D controller devices.

Step 1: Ensure the RX2 datarate and RX2 frequency in LoRaWAN settings are the same as the D2D controller devices.
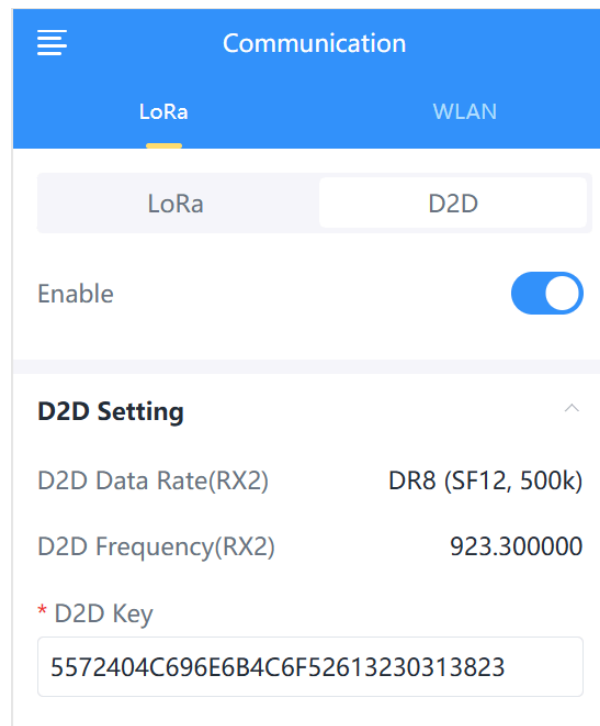
Step 2: Enable Milesight D2D feature and define an unique D2D key which is the same as Milesight D2D controller devices. (Default D2D key: 5572404C696E6B4C6F52613230313823)

Step 3: Define different 2-byte hexadecimal control commands (0x0000 to 0xffff) and command actions. Up to 3 actions can be added.

Example

After receiving D2D command 0x1510 from Milesight D2D controller devices, the VS373 will trigger the multi-function button to enable Wi-Fi.

WLAN

Scan

The device scans for nearby 2.4GHz Wi-Fi networks and connects to to the selected network.
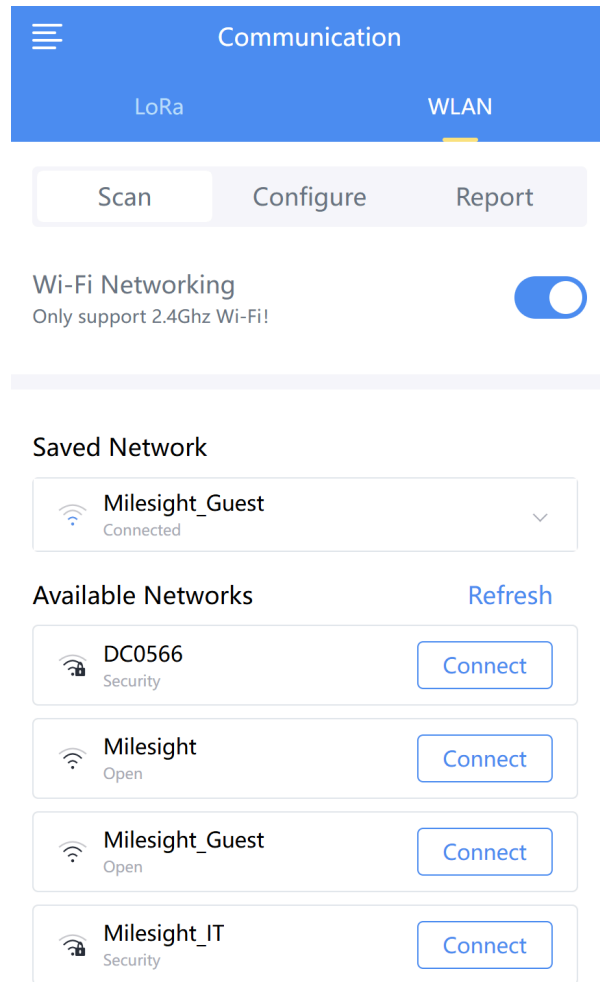
To connect, enable the **Wi-Fi networking** to scan for available networks. Select your preferred network, click **Connect**, and enter the password to join.

Configure

Modify the device's own WLAN settings.

WLAN Setting

Enable

* Wi-Fi SSID

Fall Detection_XXXXXX

* WLAN IP Address

192.168.1.1

Wi-Fi Password

* Password

Please Input

Hide Wi-Fi
Hide this Wi-Fi so it can only be connected to manually

Parameters	Description
Enable	Enable or disable Wi-Fi feature. This can also be turned on/off via multi-function button.
Wi-Fi SSID	The unique name for this device Wi-Fi access point, defined as Fall Detection_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.
Wi-Fi Password	Customize the password when security mode is not No Encryption.
Hide Wi-Fi	Hide this Wi-Fi to prevent discovery. The SSID must then be entered manually to connect.

Report

This section covers various settings related to Wi-Fi data transmission and reporting. Please ensure that you are connected a Wi-Fi network .

Parameters	Description
Recipient Settings	

Parameters	Description
Report Protocol	MQTT or HTTP is optional.
Connect Status	Connected or Disconnected.
URL/Host	The host of HTTP server or MQTT broker.
Client ID	Client ID is the unique identity of the client to the server. It must be unique when all clients are connected to the same server, and it is the key to handle messages at QoS 1 and 2.
User Name	The username used for connecting to the HTTP server or MQTT broker.
Password	The password used for connecting to the HTTP server or MQTT broker.
Topic	Topic name used for publishing.
QoS	QoS0, QoS1, and QoS2 are optional
TLS	Enable the TLS encryption in MQTT communication.
Certificate Type	CA Signed Server or Self Signed is optional. **CA Signed Server:** verifying with the certificate issued by Certificate Authority (CA) that is pre-loaded on the device. Supported file formats for import include [.crt] and [.pem]. **Self Signed:** upload the custom CA certificates, client certificates and secret key for verification. Supported file formats for import include [.crt] and [.pem].
Report Settings	
Status Report Period	The interval of period reporting. Periodic data information please see Periodic Report.
Data Retransmission	Enable to resend stored data packets from the disconnected period when the device's network connection is restored. The device supports to store 1,000 pieces of data at most.

Parameters	Description
	Note: 1. When this feature is disabled, the existing retransmission data will be cleared. 2. Switching protocols or modifying URL and topic does not require clearing retransmitted data. 3. The historical data format is different from regular reports.
Trigger Report	
Trigger the following events to immediately report and alarm: Fall Alarm, Lying Alarm, Out of Bed Alarm, Dwell Alarm, Motionless Alarm, Bradycardia, Tachypnea, Occupied, Vacant Trigger data information please see Trigger Report.	

System Settings

Device

Device Info

All information about the hardware and software can be checked on this page.

Device Info

Model	VS373-868M
SN	6806E48399660001
Software Version	V_373.1.0.1-b
Hardware Version	V1.0
MAC Address	24:E1:24:88:27:66

Synchronize Time

Parameters	Description
Device Time	Display the current time.
Time Zone	Choose the current time zone.
Synchronize Mode	**Gateway Timing:** Synchronize the system time with embedded network server of Milesight gateway when LoRaWAN$^{®}$ version is 1.0.3. The device will sync the time with gateway once per day or every time re-joining the network. **Manual Timing:** Choose to automatically synchronize with the browser time or manually set the time. **NTP Timing:** Synchronize the system time with NTP server. Fill in NTP server address and set the interval to sync time.

User

Parameters	Description
User Info	You can change the login password of this device.

Parameters	Description
Security Question	Click to set three security questions for your device. In case that you forget the password, you can click **Forget Password** button on login page to reset the password by correctly answering three security questions correctly.

Parameters	Description
	Securit Question ⌃ (Already Set) * Password [Please Input] Security Question 1 [What is your lucky number? ⌄] * Answer 1 [Please Input] Security Question 2 [What is your favorite sport? ⌄] * Answer 2 [Please Input] Security Question 3 [What is your favorite color? ⌄] * Answer 3 [Please Input]

Maintenance

Parameters	Description
Data	Click to select the data time range and view the historical data. Choose **Export** to export data. The maximum export data period is 14 days.
Reset	**Basic Configuration Reset:** keep the IP settings and user information when resetting.
	Factory Data Reset: reset device to factory default, requiring admin password verification

Parameters	Description
Reboot	Restart the device immediately.
Upgrade	Click **Browse** and select the upgrading file, then click the **Upgrade** button to upgrade. The update will be done when the system reboots successfully. ✎ **Note:** The upgrade process takes about 1-3 minutes. Do not turn off the power and complete automatic restart after the upgrade.
Backup and Restore	**Export Config File:** Export configuration file.
	Import Config File: Click **Browse** and select the configuration file, click **Import** button to import configuration file.
Custom Sensitivity	Used to import custom sensitivity files given by Milesight technical support.
Diagnostics	Download log files for troubleshooting.

Chapter 8. Uplink and Downlink(LoRa)

Overview

All messages are based on following format (HEX), the Data field should follow little-endian:

Channel1	Type1	Data1	Channel2	Type2	Data2	Channel3	...
1 Byte	1 Byte	N Bytes	1 Byte	1 Byte	N Bytes	1 Byte	...

For decoder examples please find files on https://github.com/Milesight-IoT/SensorDecoders.

Uplink Packets

Basic Information

The device will report a basic information packet whenever joining the network.

Item	Channel	Type	Byte	Description
Protocol Version	ff	01	1	Example: 01=V1
Serial Number	ff	16	8	16 digits
Hardware Version	ff	09	2	Example: 03 10 = V3.1
Firmware Version	ff	0a	2	01 14 => V1.14
Device Type	ff	0f	1	00: Class A, 01: Class B, 02: Class C, 03: Class C to B

Example:

ff0101 ff166806e39739840003 ff090100 ff0a0101 ff0f02		
Channel	Type	Value
ff	01	Protocol Version: 01(V1)
ff	16	SN: 6824e30817560003
ff	09	Hardware Version: 0100 (V1.0)
ff	0a	Firmware Version: 0101(V1.1)

ff0101 ff166806e39739840003 ff090100 ff0a0101 ff0f02		
Channel	**Type**	**Value**
ff	0f	Device Type: 02(Class C)

Periodic Report

The device supports the sensor data according to reporting interval.

Item	Channel	Type	Byte	Description
Room Status (Firmware V373.1.0.1 Only)	03	f8	6	Byte 1: Detection Status, 00-Nomal; 01: Vacant; 02-In-bed; 03-Out of Bed; 04-Fall Byte 2: Target Status, 00-Normal; 01-Motionless; 02-Abnormal Byte 3-4: User Time-Now, Unit: s Byte 5-6: User Time-Today, Unit: s
Room Status	07	b0	8	Byte 1: Detection Status, 00-Nomal; 01: Vacant; 03-Out of Bed; 04-Fall Byte 2: Target Status, 00-Normal; 01-Motionless; 03-Lying; Byte 3-4: User Time-Now, Unit: s. Length of time this room area was occupied. Start counting from the moment occupancy is detected. Byte 5-6: User Time-Today, Unit: s
Respiratory Status	08	b1	3	Byte 1: Respiratory Status 01-No data

Item	Channel	Type	Byte	Description
				02-Normal
				03-Tachypnea
				04-Bradycardia
				05-Unable Detect
				Byte 2-3: Respiratory Rate, UINT16/100, Unit: bpm
Sub Region Type	09	b2	6	Up to 6 subregions,
				00-Custom Region
				01-Bed
				02-Door
				03-Ignore
				ff-Unset
Sub Region Status (Firmware V373.1.0.1 Only)	04	f9	4	Byte 1: Sub Region1, 00: Occupied; 01: Vacant
				Byte 2: Sub Region2, 00: Occupied; 01: Vacant
				Byte 3: Sub Region3, 00: Occupied; 01: Vacant
				Byte 4: Sub Region4, 00: Occupied; 01: Vacant
Sub Region Status	0a	b3	5	Byte 1: 06
				Byte 2:
				Bit0-Bit5
				Indicates the occupancy status of each subregion. 1: Occupied; 0: Vacant
				Bit6-Bit7
				00
				Byte 3-5: 000000

Item	Channel	Type	Byte	Description
Out Of Bed Time (Firmware V373.1.0.1 Only)	05	fa	8	Byte 1-2: Bed Sub Region1, Unit: s Byte 3-4: Bed Sub Region2, Unit: s Byte 5-6: Bed Sub Region3, Unit: s Byte 7-8: Bed Sub Region4, Unit: s
Out Of Bed Time	0b	b4	9	Byte 1-3: Bed Sub Region1, Unit: s Byte 4-6: Bed Sub Region2, Unit: s Byte 7-9: Bed Sub Region3, Unit: s
	0c	b4	9	Byte 1-3: Bed Sub Region4, Unit: s Byte 4-6: Bed Sub Region5, Unit: s Byte 7-9: Bed Sub Region6, Unit: s

Examples:

1. Periodic packet(Firmware V373.1.0.1 Only):

03f80100e0105046 04f901010101 05fab004000000000000		
Channel	**Type**	**Value**
03	f8	01=>Detection Status is Vacant 00=>Target Status is Normal User Time-Now: e010=>10e0=4320s=1h12min User Time-Today: 5046=>4650=18000s=5h
04	f9	01 => Sub Region1 is Vacant 01 => Sub Region2 is Vacant 01 => Sub Region3 is Vacant

03f80100e0105046 04f901010101 05fab004000000000000		
Channel	**Type**	**Value**
		01 => Sub Region4 is Vacant
05	fa	b004=>04b0=1200s=20min, Bed Sub Region1

2. Periodic packet:

07b00001e10101ac2600 08b102dc05 09b2000203ffffff 0ab30700000000		
Channel	**Type**	**Value**
07	b0	00=>Detection Status is Normal 01=>Target Status is Motionless Current Usage Time: e10101=>0101e1=66017s=18h20min16s Today's Usage Time: ac2600=>0026ac=9900s=2h45min
08	b1	Respiratory Status: 02=>Normal Respiratory Rate: dc05=>05dc=>1500/100=15bpm
09	b2	00=>Sub-region 1 type is custom. 02=>Sub-region 2 type is door. 03=>Sub-region 3 type is ignore ff=>Sub-region 4 is unset. ff=>Sub-region 5 is unset. ff=>Sub-region 6 is unset.
0a	b3	Sub Region Status: 07 =>00000111=> Sub Region 1~3 are Occupied, Sub Region 4~6 are Vacant

Alarm Report

The device supports to report below types of alarm report packets.

Item	Channel	Type	Byte	Description
Alarm	06	fb	5	Byte 1-2: Random Alarm ID, Range:0-9999, Only Fall/Lying/Dwell/Out of Bed alarms have ID, other alarms ID are fixed to ffff. Byte 3: Alarm Type, 00-Fall; 01: Motionless; 02-Dwell; 03-Out of Bed; 04-Occupied; 05-Vacant 06-Bradycardia 07-Tachypnea 08-Lying Byte 4: 01-Alarm; 02-Resolved; 03-Ignore; 04-Report Respiratory Status Byte 5: Bed Sub Region ID, Only used when Out of Bed or Respiratory Status, other situation is ff.

Example:

1. Motionless Alarm packet:

06fb ffff 01 01 ff		
Channel	Type	Value
06	fb	ffff => ID

06fb ffff 01 01 ff		
Channel	**Type**	**Value**
		01 => Motionless 01 => Alarm

2. Dwell Alarm packet:

06fb 1400 0203 ff		
Channel	**Type**	**Value**
06	fb	1400 => ID 02 => Dwell 03 => Ignore

3. Out of bed Alarm packet:

06fb b503 03 01 00		
Channel	**Type**	**Value**
06	fb	b503 =>03b5=949=> Alarm ID 03 => Out of Bed 01 => Alarm 00 => Bed Sub-Region ID

Historical Data

The device will report retransmission data or stored data as below example.

Item	Channel	Type	Byte	Description
Historical Data	20	ce	9	Byte 1-4: Unix Timestamp, Unit: s Byte 5-6: Random ID, Range:0-9999, Fall/Lying/Dwell/Out of Bed is ffff.

Item	Channel	Type	Byte	Description
				Byte 7: Alarm Type,
				00-Fall;
				01: Motionless;
				02-Dwell;
				03-Out of Bed;
				04-Occupied;
				05-Vacant
				06-Bradycardia
				07-Tachypnea
				08-Lying
				Byte 8: 01-Alarm; 02-Resolved; 03-Ignore; 04-Report Respiratory Status
				Byte 9: Bed Sub Region ID, Only used when Out of Bed or Respiratory Status, other situation is ff.

Example:

20ce 1932ec64 17000203ff			
Channel	Type	Time Stamp	Value
20	ce	1932ec64 => 64ec3219 = 1693200921s	1700 => ID 02 => Dwell 03 => Ignore

Downlink Commands

The device supports downlink commands to configure the device. Application port is 85 by default.

General Setting

Item	Channel	Type	Byte	Description
Reboot	f9	10	1	ff
LED	ff	2f	1	01-enable, 00-disable
Buzzer	ff	3e	1	01-enable, 00-disable
Release All Alarm	ff	64	1	ff
Single Alarm Handle	f9	b4	3	Byte 1-2: the alarm ID Byte 3: 02-Resolved; 03-Ignore
Reporting Interval	ff	8e	3	Byte 1: 00 Byte 2-3: interval time, unit: min
WLAN	ff	42	1	01: Enable, 00: Disable
Hide Wi-Fi SSID	f9	4d	1	01: Enable, 00: Disable
Manual system time setting	ff	11	4	Unix timestamp, Unit:s
Synchronize Time	f9	91	5	Byte 1: 00-Synchronize With Gateway Time, 01-Manual Byte 2-5: Timestamp, If gateway synchronization is enabled, this value is 00000000
DO level signal	f9	4e	1	01: High, 00: Low
DO	f9	b5	6	Byte 1: 01: Enable, 00: Disable Byte 2: Fall Alarm Enable; Fall Alarm Disable Byte 3: Lying Alarm Enable; Lying Alarm Disable Byte 4: Out of Bed Alarm Enable; Out of Bed Alarm Disable Byte 5: Dwell Alarm Enable; Dwell Alarm Disable

Item	Channel	Type	Byte	Description
				Byte 6: Motionless Alarm Enable; Motionless Alarm Disable

Example:

1. Reboot the device.

ff10ff

2. Set report interval as 20 minutes.

ff8e 00 1400		
Channel	**Type**	**Value**
ff	8e	1400=>0014=20 minutes

Detection

Item	Channel	Type	Byte	Description
Room Settings	f9	4f	12	Byte 1-2: xMin, UINT16, Unit: mm Byte 3-4: xMax, UINT16, Unit: mm Byte 5-6: yMin, UINT16, Unit: mm Byte 7-8: yMax, UINT16, Unit: mm Byte 9-10: zMax, UINT16, Unit: mm Byte 11-12: Installation Height, UINT16, Unit: mm
Sensitivity	f9	50	2	Byte 1: 00 Byte 2: 00-Low; 01-High; 02-Midium; 03-Custom
Fall Detection	f9	51	6	Byte 1-2: Fall Confirmation Time, UINT16, Unit: s, Range: 0~300 Byte 3-4: Fall Delay Reporting Time, UINT16, Unit: s, Range: 0~300

Item	Channel	Type	Byte	Description
				Byte 5-6: Fall Alarm Duration, UINT16, Unit: s, Range: 0~1800
Dwell Time Detection	f9	52	3	Byte 1: 01-enable, 00-disable Byte 2-3: Dwell Time Threshold, Unit: min
Motionless Detection	f9	53	3	Byte 1: 01-enable, 00-disable Byte 2: 00 Byte 3: Motionless Time Threshold, Unit: min
Sleep Detection	f9	b1	7	Byte 1: 01-enable, 00-disable Byte 2-3: Start Time, Unit: min Byte 4-5: End Time, Unit: min Byte 6: 01-Enable Out of Bed Alarm; 00-Disable Out of Bed Alarm Byte 7: Out of Bed Time Threshold, Unit: min
Respiratory Detection	f9	b2	3	Byte 1: 01-enable, 00-disable Byte 2: Min. Respiratory Value Byte 3: Max. Respiratory Value
AI Fall Alarm Filtering	f9	b3	1	01-enable, 00-disable

Example:

1. Set room size.

f9 4f e803 d007 30f8 3cf6 0807 c409		
Channel	Type	Value
ff	4f	e803=>03e8=1000=> xMin d007=>07d0=2000=> xMax,

f9 4f e803 d007 30f8 3cf6 0807 c409		
Channel	**Type**	**Value**
		30f8=>f820=-2000=> yMin
		3cf6=>f63c=-2500=> yMax
		0807=>0708=1800=> zMax
		c409=>09c4=2500=> Installation Height is 2.5m

2. Fall Detection.

f9 51 3700 2d00 2300		
Channel	**Type**	**Value**
f9	51	Fall Confirmation Time, 3700=>0037=55s
		Fall Delay Reporting Time, 2d00=>002d=45s
		Fall Alarm Duration, 2300=>0023=35s

Sub Region

Item	Channel	Type	Byte	Description
Sub Region Size	f9	49	9	Byte 1: Sub Region number, Range 0~3 Byte 2-3: xMin, UINT16, Unit: mm Byte 4-5: xMax, UINT16, Unit: mm Byte 6-7: yMin, UINT16, Unit: mm Byte 8-9: yMax, UINT16, Unit: mm
Delete Sub Region	f9	48	1	Sub Region number, Range 0~3
Sub Region Detection	f9	4a	5	Byte 1: Sub Region number, Range 0~5 Byte 2: Fall Detection, 01-enable, 00-disable

Item	Channel	Type	Byte	Description
				Byte 3: Dwell Detection, 01-enable, 00-disable
				Byte 4: Motionless Detection, 01-enable, 00-disable
				Byte 5: Type, 00-Custom, 01-Bed, 02-Door, 03-Ignore
In-bed Detection (Firmware V373.1.0.1 Only)	f9	4b	9	Byte 1: Sub Region number, Range 0~3
				Byte 2: In-bed Detection, 01-enable, 00-disable
				Byte 3-4: Start time, Unix timestamp, Unit: s
				Byte 5-6: End time, Unix timestamp, Unit: s
				Byte 7-8: Bed Height, Unit: mm
				Byte 9: Out of Bed Time Threshold, Unit: min

Example:

Set Door Sub Region Detection.

f94a 01 01 01 02		
Channel	**Type**	**Value**
f9	4a	01=> Sub Region number
		01=> Enable Fall Detection
		01=>Enable Occupancy Detection
		01=>Motion Detection
		02=>Type is Door

Advance Setting

Item	Channel	Type	Byte	Description
Targets Detection	f9	56	2	Byte 1: Presence Confirmation Time, Unit: s, Range: 0~60 Byte 2: Absence Confirmation Time, Unit: s, Range: 0~60

Example:

Set target presence confirmation time as 3s and absence confirmation time as 5s.

f9 56 03 05		
Channel	**Type**	**Description**
f9	56	Presence Confirmation Time, 03=3s Absence Confirmation Time, 05=5s

LoRaWAN® Setting

Modifying the following parameters triggers the device to rejoin the network.

Item	Channel	Type	Byte	Description
LoRa Con-firm Mode	ff	04	1	01: Enable, 00: Disable
ADR Mode	ff	40	1	01: Enable, 00: Disable
LoRa Re-join Mode	f9	85	2	Byte 1: 01-Enable; 00-Disable 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
TXPower	f9	87	1	Range: 0~14

Data Retransmission

Item	Channel	Type	Byte	Description
Data Retransmission	ff	69	1	00: Disable, 01: Enable
Data Retrans-mission Interval	ff	6a	3	**Byte 1**: 00 **Byte 2-3**: UINT16, Unit: s, Range: 30~1200, Default: 600

Example:

1. Set report interval as 20 minutes.

ff8e001400		
Channel	**Type**	**Value**
ff	8e	1400=>0014=20minutes

Milesight D2D Setting

Item	Channel	Type	Byte	Description
D2D Feature	ff	84	1	00: Disable, 01: Enable
D2D Key	ff	35	8	The first 16 digits of D2D key, and the last 16 digits are fixed as 0.
D2D Settings (controller)	ff	96	8	Byte 1: 00-Occupied 01-Vacant 02-Fall Alarm 03-Out of bed alarm 04-Motionless Alert 05-Dwell Alarm Byte 2: 01-enable, 00-disable

Item	Channel	Type	Byte	Description
				Byte 3: 01-enable LoRa Uplink, 00-disable LoRa Uplink
				Byte 4-5: D2D control command
				Byte 6-7: control time, unit: min
				Byte 8: 00-disable control time, 01-enable control time
D2D Settings (agent)	f9	4c	5	Byte 1: ID, Range: 0~3
				Byte 2-3: D2D control command
				Byte 4: Action Object, 01 - Multi-function button, 00-Delete this action
				Byte 5: Action Event, 00-Release Alarm, 01-Enable Wi-Fi, 02-Disable Wi-Fi

Example:

1. Set Milesight D2D Key as 12345678123456780000000000000000.

ff35 1234567812345678		
Channel	**Type**	**Value**
ff	35	1234567812345678

2. Set Milesight D2D controller settings.

ff96 03 01 01 04e0 0500 01		
Channel	**Type**	**Value**
ff	96	03=> Out of bed alarm; 01=>Enable; 01=>Enable LoRa Uplink;

ff96 03 01 01 04e0 0500 01		
Channel	**Type**	**Value**
		04 e0=>e0 04, Control Command is e0 04;
		05 00=>00 05, Control time is 5 mins;
		01=>Enable Control Time

Historical Data Enquiry

The device supports data retrievability feature to send downlink command to enquire the historical data stored in the device. Before that, ensure the device time is correct and data storage feature was enabled to store data.

Command Format:

Item	Channel	Type	Byte	Description
Enquire Data in Time Point	fd	6b	4	Unix timestamp, Unit: s
Enquire Data in Time Range	fd	6c	8	Byte 1-4: Start timestamp, Unit: s Byte 5-8: End timestamp, Unit: s
Stop Query Data Report	fd	6d	1	ff
Data Retriev-ability Interval	ff	6a	3	Byte 1: 01 Byte 2-3: UINT16, Unit: s, Range: 30~1200, Default: 60

Reply Format:

Item	Channel	Type	Byte	Description
Enquiry Result	fc	6b/6c	1	00: Enquiry success. The device will report the historical data according to data retrievability interval. 01: Time point or time range invalid

Item	Channel	Type	Byte	Description
				02: No data in this time or time range

> **Note:**
>
> 1. Use Unix Timestamp Converter to calculate the time.
> 2. The device only uploads no more than 300 data records per range enquiry.
>
> 3. When enquiring the data in time point, it will upload the data which is closest to the search point within the reporting interval range. For example, if the device's reporting interval is 10 minutes and users send command to search for 17:00's data, if the device find there is data stored in 17:00, it will upload this data; if not, it will search for data between 16:50 to 17:10 and upload the data which is closest to 17:00.

Example:

Enquire the historical data in a time range.

fd6c 64735b63 7c885b63		
Channel	**Type**	**Value**
fd	6c	Start time: 64 73 5b 63 => 63 5b 73 64 = 1666937700s End time: 7c 88 5b 63 => 63 5b 88 7c = 1666943100s

Reply:

fc6c00		
Channel	**Type**	**Value**
fc	6c	00: Enquiry success

20ce 1932ec64 17000203ff			
Channel	**Type**	**Time Stamp**	**Value**
20	ce	1932ec64 => 64ec3219 = 1693200921s	1700 => ID 02 => Dwell

20ce 1932ec64 17000203ff			
Channel	Type	Time Stamp	Value
			03 => Ignore

Chapter 9. Communication Protocol(WLAN)

Periodic Report

```json
{
  "device_info": {
    "device_model": "VS373-470M",
    "device_sn": "6806E51154140003",
    "device_mac": "7c:2c:67:8c:da:20",
    "ipAddress": "192.168.2.100",
    "time": "2025-08-18 20:04:06"
  },
  "periodic_report": {
    "room_usage": {
      "detect_status": 0,//0: Normal; 1: Vacant; 3: Out of bed; 4:Fall
      "target_status": 0,//0: Normal; 1: Motionless; 3: Lying
      "current_use_time": 1053,
      "total_use_time": 10222
    },
    "breath_info": {
      "breath_status": 1,//1: Vacant or Not Scheduled; 2: Normal; 3:Tachypnea; 4:Bradycardia; 5: Unable Detect
      "breath_rate": 0
    },
    "regions": [{
      "sub_no": 0,
      "type": 2,//0: Custom; 1:Bed; 2: Door; 3: Ignore
      "status": 1//0: Occupancy; 1: Vacant
    }, {
      "sub_no": 1,
      "type": 2,
      "status": 1
    }, {
      "sub_no": 2,
      "type": 1,
      "status": 1,
      "leave_time": 550
    }]
```

```
    }
  }
```

Trigger Report

Occupancy Trigger

```
{
  "device_info": {
    "device_model": "VS373-915M",
    "device_sn": "6806E51510750004",
    "device_mac": "d8:3b:da:9e:6e:a4",
    "ipAddress": "192.168.130.157",
    "time": "2025-08-26 10:34:03"
  },
  "trigger_data": {
    "type": 0,
    "event": 4,//0:Fall; 1:Motionless; 2:Dwell; 3:Out-of-bed; 4:Occupancy; 5:Vacant; 6:Bradycardia; 7:Tachypnea; 8:Lying
    "status": 1//1:Alarm; 2:Resolve; 3:Ignore; 4: Status report
  }
}
```

Out-of-Bed Alarm

```
{
  "device_info": {
    "device_model": "VS373-915M",
    "device_sn": "6806E41970333123",
    "device_mac": "24:85:18:8c:17:ef",
    "ip_address": "192.168.2.164",
    "time": "2025-09-06 14:13:28"
  },
  "trigger_data": {
    "type": 0,
    "trigger_id": 1073,
    "event": 3,//0:Fall; 1:Motionless; 2:Dwell; 3:Out-of-bed; 4:Occupancy; 5:Vacant; 6:Bradycardia; 7:Tachypnea; 8:Lying
    "status": 1,//1:Alarm; 2:Resolve; 3:Ignore; 4: Status report
    "sub_no": 3
```

```
    }
}
```

Fall Alarm

```
{
    "device info": {
        "device model": "Vs373-915M",
        "device sn": "6806E51510750004",
        "device mac": "d8:3b:da:9e:6e:a4",
        "ipAddress": "192.168.130.157",
        "time": "2025-08-18 20:44:34",
        "trigger data": {
            "type": 0,
            "trigger id": 266,
            "event": 0, //0:Fall, 1:Motionless, 2:Dwell, 3:Out-of-bed, 4:Occupancy, 5:Vacant; 6:Bradycardia; 7:Tachypnea; 8:Lying
            "status": 1,//1:Alarm; 2:Resolve; 3:Ignore; 4: Status report
            "location": " (565, -838, 277)"
        }
    }
}
```

Dwell Alarm

```
{
    "device info": {
        "device model": "Vs373-915M",
        "device sn": "6806E51510750004",
        "device mac": "d8:3b:da:9e:6e:a4",
        "ipAddress": "192.168.130.157",
        "time": "2025-08-18 20:44:34",
        "trigger data": {
            "type": 0,
            "trigger id": 266,
            "event": 2, //0:Fall, 1:Motionless, 2:Dwell, 3:Out-of-bed, 4:Occupancy, 5:Vacant; 6:Bradycardia; 7:Tachypnea; 8:Lying
            "status": 1,//1:Alarm; 2:Resolve; 3:Ignore; 4: Status report
            "location": " (565, -838, 277)"
        }
```

```
    }
}
```

Lying Alarm

```
{
    "device info": {
        "device model": "Vs373-915M",
        "device sn": "6806E51510750004",
        "device mac": "d8:3b:da:9e:6e:a4",
        "ipAddress": "192.168.130.157",
        "time": "2025-08-18 20:44:34",
        "trigger data": {
            "type": 0,
            "trigger id": 266,
            "event": 8, //0:Fall, 1:Motionless, 2:Dwell, 3:Out-of-bed, 4:Occupancy, 5:Vacant; 6:Bradycardia; 7:Tachypnea; 8:Lying
            "status": 1,//1:Alarm; 2:Resolve; 3:Ignore; 4: Status report
            "location": " (565, -838, 277)"
        }
    }
}
```

Breathing Detection

```
{
    "device info": {
        "device model": "Vs373-915M",
        "device sn": "6806E51510750004",
        "device mac": "d8:3b:da:9e:6e:a4",
        "ipAddress": "192.168.130.157",
        "time": "2025-08-18 20:44:34",
        "trigger data": {
            "type": 1,
            "event": 6,//0:Fall; 1:Motionless; 2:Dwell; 3:Out-of-bed; 4:Occupancy; 5:Vacant; 6:Bradycardia; 7:Tachypnea; 8:Lying
            "status": 4,//1:Alarm; 2:Resolve; 3:Ignore; 4: Status report
            "sub_no": 1,
            "respiratory_rate": 22
        }
```

```
  }
}
```

Chapter 10. Services

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

Technical Support Mailbox: iot.support@milesight.com

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

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

MILESIGHT CHINA

TEL: +86-592-5085280

FAX: +86-592-5023065

Add: Building C09, Software Park Phase III, Xiamen 361024, Fujian, China