

# AI Workplace Occupancy Sensor

## VS121



### ◆ Introduction

Milesight VS121, is an AI workplace sensor designed to monitor occupancy and utilization in modern workspace, which can reach up to 98% recognition rate<sup>1</sup> based on its AI algorithm. Milesight VS121 has dual versions transmitting data through LoRaWAN<sup>®</sup> or Ethernet for different applications.

Based on standard LoRaWAN<sup>®</sup> protocol, VS121 can work with Milesight LoRaWAN<sup>®</sup> gateway and mainstream LoRaWAN<sup>®</sup> network servers. They are equipped with Wi-Fi for easy configuration without any configuration tools.

With Ethernet transmission, VS121-P is available to provide more applications. Rich serial interfaces such as DI, DO, and RS485 are provided in VS121-P for various scenarios. VS121-P supports data push via HTTP(S)/MQTT(S) for easily integration and allows for remote management via Milesight DeviceHub or Milesight Development Platform.

VS121 can be used in workplaces, retail stores and airports, etc.



**VS121**

**VS121-P**

## ◆ Features

### Shared Values

- Recognition rate is up to 98%<sup>1</sup> based on advanced AI identification and analysis technologies
- Wide installation height and detection range with two versions for various scenarios
- Compliant with GDPR without images collected, free from privacy concerns
- Support regional people counting, occupancy detection and dwell time detection
- Support up to 16 mapped regions for detection
- Allow for bi-directional line-crossing people counting and people flow analysis
- Smart U-turn counting to filter redundant counting of people wandering around the area
- Support people flow analysis to calculate the traffic from different directions
- Support normal or blur mode and privacy masks up to 8 regions
- Support local data storage and data retransmission to collect data securely

### LoRaWAN® Version Only

- Equipped with Wi-Fi for web GUI configuration
- Support Milesight D2D protocol to enable ultra-low latency and directly control without gateway
- Function well with standard LoRaWAN® gateways and network servers
- Quick and easy management with Milesight IoT Cloud

### PoE Version Only

- Support scheduled detection
- Support Milesight DeviceHub or Milesight Development Platform management remotely
- Adapt to more applications with rich industrial interfaces
- DC or PoE power supply optional
- High compatibility of data transmission via Ethernet port (HTTP/MQTT/HTTP API/HTTPS)
- BACnet/IP native integration for building management systems

## ◆ Specifications

Model	VS121	VS121-P
<b>People Counting</b>		
Field of View	Standard Version: 190 ° Horizontal, 112 ° Vertical High Ceiling Mount Version: 129.4 ° Horizontal, 68.4 ° Vertical	
Installation Height	Standard Version: 2.5m to 4m High Ceiling Mount Version: 5m to 7m	

<b>Advanced Function</b>		
Regional People Counting & Dwell Time Detection	Up to 16 areas (up to 10 sides for each area) for regional people counting and dwell time detection	
Bi-Directional People Counting	Support	
U-turns Filtering	Filter redundant counting of people wandering in the bi-directional people counting areas	
People Flow Analysis	Calculate the traffic of different directions at most 4 edges	
Privacy Mask	Up to 8 privacy masks to cover certain areas	
Data Retransmission	Support 1000 data retransmission packets	MQTT(S): Support 1000 data retransmission packets HTTP(S): Up to 3 × 1000 data retransmission packets
<b>LoRaWAN® Transmission</b>		
Protocol	LoRaWAN®, Milesight D2D	
Frequency	CN470/IN865/RU864/EU868/US915/AU915/KR920/AS923-1&2&3&4	
Tx Power	16 dBm (868 MHz)/20 dBm (915 MHz)/19 dBm (470 MHz)	
Sensitivity	-137 dBm @300bps	
Mode	OTAA/ABP Class C	
<b>Ethernet Transmission</b>		
Ethernet Port	-	1 × RJ45 10/100 Mbps (PoE PD)
Ethernet Isolation		1.5 kV RMS
Network Protocol		MQTT(s), HTTP(s), RTSP, NTP, SSH, BACnet/IP, etc.
<b>Other Interfaces</b>		
Wi-Fi	IEEE 802.11 b/g/n, 2.4GHz (AP Mode for Configuration)	-
DI/DO	-	1/1
Serial Interface	-	1 × RS485 (Under development)
Button	1 × Reset Button, 1 × Wi-Fi Button	1 × Reset Button
LED Indicators	1 × Wi-Fi	1 × Status
Power Input	-	2-pin 3.5 mm Terminal Block
<b>Physical Characteristics</b>		

Power Supply	DC 5V/ 1.5A by Type-C Port	1. DC 5V/2A by Terminal Block 2. 802.3af PoE
Power Consumption	3.5W	1. DC:3.5W 2. POE:4.5W
Operating Temperature	-5°C ~ +55°C	
Storage Temperature	-20°C ~ +60°C	
Relative Humidity	0 ~ 95% (Non-condensing)	
Ingress Protection	IP30	
Housing	PC + Cast Aluminium	
Color&Weight	White/Black (Optional), 126.9g	White, 186g
Dimension	85 × 85 × 20 mm (3.35 × 3.35 × 0.79 in)	85 × 85 × 30 mm (3.35 × 3.35 × 1.18 in)
Installation	Ceiling Mounting	
<b>Approvals</b>		
Regulatory	CE, FCC, Telec, GDPR	CE, FCC, GDPR
Environmental	RoHS	

## ◆ Installation Height and Detection Range

To better utilize the advantage of AI algorithm, it's recommended to follow the below installation heights:

Object	Height	Note
Sitting object	>2.5 m (8.2ft)	Commonly used for region people counting
Standing object	> 3 m (9.8ft) (the optimum height is 3m)	Commonly used for line cross counting

It's recommended to refer to below detection ranges<sup>2</sup> for people counting at different heights for accurate recognition:

Installation Height (m)	Detection Range (m <sup>2</sup> )
2.3	2.6 × 8.6
2.5	3.2 × 9.8
2.7	4.2 × 13.6
3.0	4.8 × 14
3.2	5.2 × 15.4
3.5	6 × 17
4.0	6.8 × 18.8

For high ceiling mount version, the detection ranges are as below:

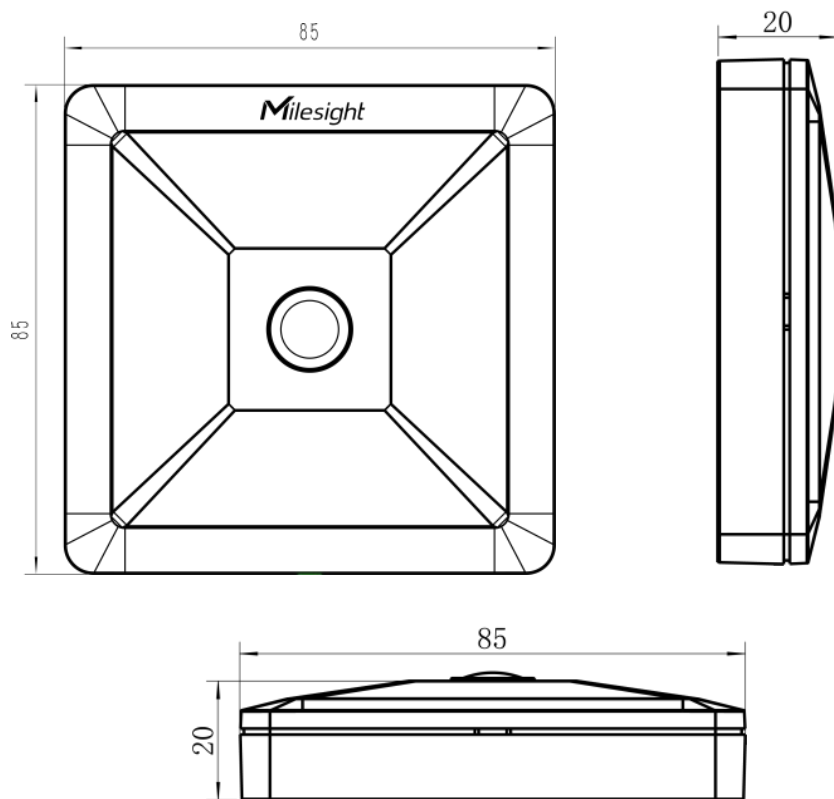
Installation Height (m)	Detection Range (m <sup>2</sup> )
5.0	3.5 × 10.0
6.0	4.5 × 12.0
7.0	5.5 × 14.0

<sup>1</sup> Tested under the recommended detection range.

<sup>2</sup> The actual detection range may vary based on the height of the target individual.

## ◆ Dimensions (mm)

### VS121:



### VS121-P:

