Wireless AI Occupancy Sensor

Featuring LoRaWAN®

VS321

◆ Introduction

VS321 is a low-power, battery-operated wireless occupancy sensor empowered by advanced AI algorithms. It achieves up to 95% occupancy detection accuracy powered by its AI algorithm. It is equipped with built-in temperature, humidity, and ambient light sensors to provide comprehensive environmental monitoring. Its wire-free design enables effortless and flexible installation.

As a Milesight D2D controller, VS321 seamlessly communicates with other Milesight D2D devices, enabling ultra-low-latency, peer-to-peer interaction without gateway dependency. With simple configuration and wireless detection, VS321 can be integrated with the Milesight LoRaWAN® gateway and Milesight Development Platform, enabling remote monitoring, data visualization, and centralized management.

VS321 can be used in scenarios such as meeting rooms, offices, and campuses to detect space occupancy or personnel activity.

◆ Features

➢ Achieves up to 95% detection accuracy with advanced AI recognition and analysis technologies

- Adopting a low-power AI chip and PIR triggered detection, combined with scheduled hibernation, effectively reduces overall power consumption
- Supports switching between People Counting and Desk Occupancy modes to meet various needs across different scenarios
- Integrates temperature, humidity and light sensors to enable comprehensive environmental awareness and intelligent scenario-based control
- Wireless and battery-operated design ensures simple, fast and easy installation
- Stores local historical records and supports retransmission to prevent data loss
- Fully GDPR-compliant, with no image collection, ensuring privacy and data security
- Supports Milesight D2D protocol for ultra-low latency, direct device-to-device control without a gateway
- Fully compatible with standard LoRaWAN® gateways and network servers
- Supports remote monitoring and management via the Milesight Development Platform

◆ Specifications

Measurement	
People Counting & Occupancy Detection	
Technology	AI & PIR
Field of View	129 ° Horizontal, 93 ° Vertical
Installation Height	2.4m ~ 4m
Required illumination	50 Lux
PIR Measuring Angle (To be Determined)	125°
PIR Detection area (To be Determined)	6m × 7m (15°C, 2.2m Installation Height)
Recognition Rate	People Counting: Up to 95% Occupancy: Up to 97% Desk Occupancy: Up to 95%
Temperature	
Operating Principle	Digital CMOSens® technology (MEMS)
Measuring Range	-40 °C~125 °C
Accuracy	±1 °C
Resolution	0.1 °C
Humidity	
Operating Principle	Digital CMOSens® technology (MEMS)

Measuring Range	0~100 %RH
Accuracy	± 2.5 %RH
Resolution	0.5 %RH
Light	
Operating Principle	Photodiode
Status	Bright/Dim
Transmission	
Protocol	LoRaWAN®, Milesight D2D
Antenna	Internal Antenna
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
Work Mode	OTAA/ABP Class A
Others	
USB	1 × Type-C Port for Power Supply
LED Indicator	1 × Status Indicator
Button	1 × Multi-function Button
Software	
Configuration	Bluetooth
Advanced Feature	Milesight D2D Controller, Data Storage (2048 entries), Data Retransmission, Data Retrievability, Threshold Alarm, Hibernate Mode
Physical Characteristics	
Power Supply	1) 4 × 2700 mAh ER14505 Li-$SOCl_2$ Replaceable Batteries 2) DC 5V/ 1A by Type-C Port
Battery Life (Working 12h per day, 2-min detection interval, 25 °C)	Around 3.6 Years (SF7, EU868) Around 2.3 Years (SF10, EU868) Around 3.5 Years (SF7, US915) Around 2.7 Years (SF10, US915)
Operating Temperature	0°C ~ +30°C
Relative Humidity	0 ~ 95% (Non-condensing)
Ingress Protection	IP30
Housing&Color	Plastic (UL94, V2) & White/Black (Optional)
Weight	145g (Batteries excluded)
Dimension	100 × 100 × 26 mm (3.94 × 3.94 × 1.02 in)
Installation	Ceiling Mounting (Screws or Adhesive Backed Fixed)

Approvals(Planned)	
Regulatory	CE, FCC
Environmental	RoHS

◆ Detection Range

To fully leverage the AI capabilities, it is recommended to follow the installation height guidelines below:

Object	Height
Sedentary object	> 2.4 m
Standing object	> 3 m

For accurate people counting, please refer to the following detection ranges corresponding to different installation heights:

Installation Height (m)	Detection Range (m^2)*
2.4m	1.4m × 3.0m
2.5m	1.6m × 3.6m
2.6m	1.8m × 4.0m
2.7m	1.9m × 4.3m
2.8m	2.1m × 4.6m
2.9m	2.3m × 5.0m
3.0m	2.3m × 5.0m
3.1m	2.7m × 5.7m
3.2m	2.9m × 6.0m
3.3m	3.0m × 6.4m
3.4m	3.3m × 6.7m
3.5m	3.3m × 7.4m
3.6m	3.0m × 7.5m
3.7m	3.8m × 7.8m
3.8m	4.0m × 8.2m
3.9m	4.2m × 8.5m
4.0m	4.6m × 8.7m

* The effective detection range may differ with the height of the person being detected.

◆ Dimensions (mm)