

# Specification

**Product Name:** 24GHz Medium-space presence sensor (Tuya zigbee version)

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**Product Model:** MSA220 Z

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**Product Version:**  
**V1.0**  
**n:**

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Versions	Release/ change Date	Publishing
V1.0	2023.07.25	Jacky

## 【Product Description】

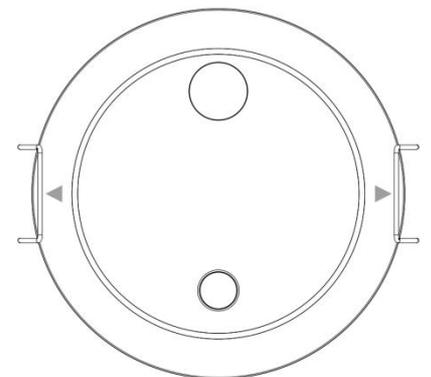
MSA220 Z is a 24GHz radar sensor based on Merrtek patented multi-array high-gain. Its antenna gain is high, and it is especially suitable for detection of human body existence information after people enter deep sleep within the range of a bed. Combining with the special algorithm of Merrytek, it can accurately detect the subtle movements brought about by vital signs after people enter deep sleep on the bed. Thus, it provides fast and accurate front-end sensing input for cardless power access of smart hotels based on the presence of human bodies.

## 【Product Feature】

- The first Lifebeing detection created by Merrytek
- Accurately output human-existing/ no-human signals
- Accurately detect the human presence information after human enter deep sleep state
- Support TUYA ZigBee wireless communication
- International standard: 24Ghz ISM Band Millimeter Wave Radar
- Presence detection diameter: 1-4m Max
- Minor Moving detection diameter: 1-4m Max
- Moving detection diameter: 1-4m Max
- Presence, minor moving and moving detection range are highly coincide
- Elliptical radiation. Effectively realize bed space detection coverage
- Switching time of no-human state to human-existing state: less than 0.5s
- Switching time of human-existing state to no-human state: more than 30s
- Support surfaced mounting and flush-mounted installation
- Set parameters by TUYA APP
- The direction pointed by the arrow is the long side of the sensor, and the direction perpendicular to it is the short side of the sensor
- Sensing function based on millimeter wave radar technology
- Low RF power output. No harm to human health
- Not affected by temperature, humidity, noise, airflow, dust, light and other environments

## 【Product Package】

- Dimension:  $\phi 65 \times 54.5 \text{mm}$
- Wiring: 2-position terminal

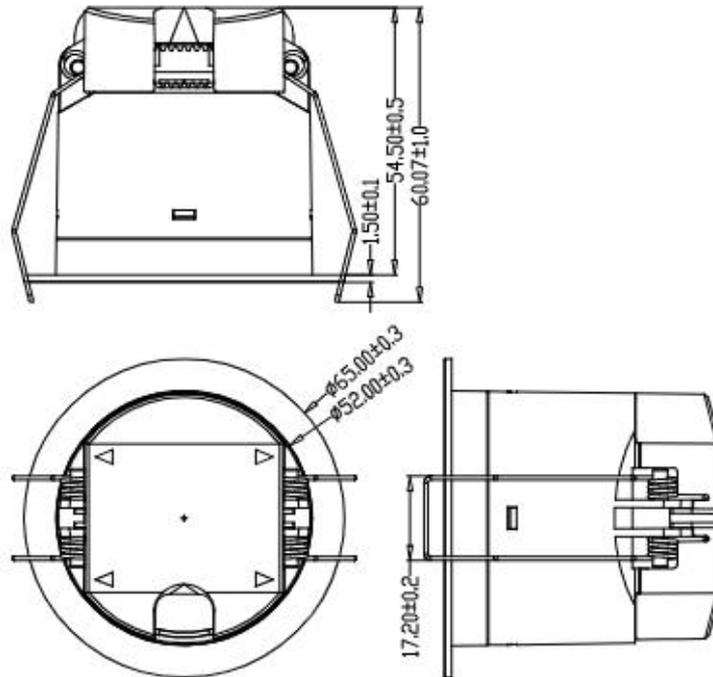


The direction pointed by the arrow should point to the head and the end of the bed after installation.

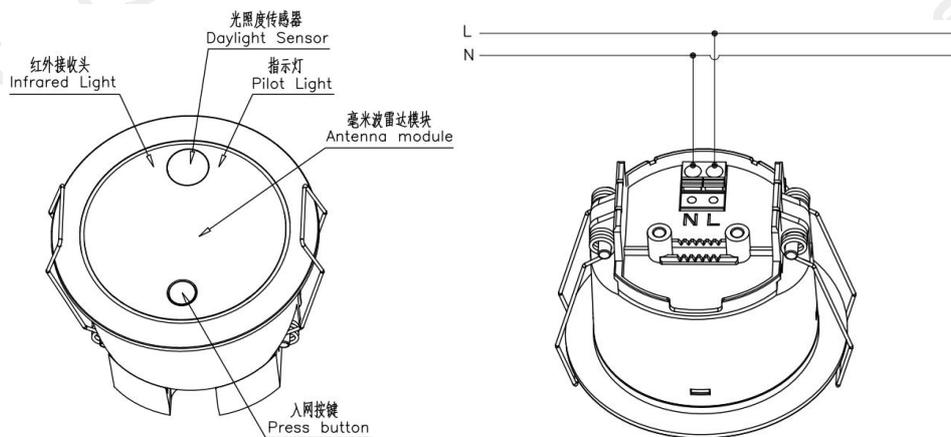
## 【Parameter】

<b>Input/Output</b>	Voltage Range	100-240Vac 50Hz/60Hz
	Rated Voltage	220V AC
	Working Current	50mA max
	Working Power	≤1W 230V AC
<b>Wireless module</b>	Communication Model	2.4GHz-2.484GHz ZigBee Transmitting Frequency: 10dB Receiving Sensitivity: -101±2dBm
<b>Sensor Parameter</b>	Transmitting Working Frequency	24GHz-24.25GHz ISM Band.
	Transmitting Power	5mW Max.
	Detection Area	Grade1-Grade12(set by APP)
	Hold Time	30s-30min(set by APP)
	Daylight	When the change in ambient illuminance meets the preset illuminance difference, the sensor immediately reports the ambient illuminance value The change value: 10-100lux, set by APP
	Illuminance	5-1200Lux
	Detecting Range (100% detection area, radius)	Movement: (at 3m height) Short side: 0.5-1m, Long side: 1.5-2m
		Minor Movement: (at 3m height) Short side: 0.5-1m, Long side: 1.5-2m Presence:(at 3m height) Short side: 0.5-1m, Long side: 1.5-2m
	Mounting Height	2.5-4.0m typical value: 3m
	3dB Beam Angle	100° (XZ field)
100° (YZ field)		
<b>Environment</b>	Insert mounting hole dimensions	Φ55mm
	Working Temperature	0℃...+50℃
	Storage Temperature	-25℃~+80℃
<b>Certificate Standard</b>	Certificate	FCC/RED
	Environmental Requirement	Compliant to RoHS
	IP Rating	IP20
Note: "N/A" means not available.		

## 【Dimension】



## 【Function & Wiring Diagram】

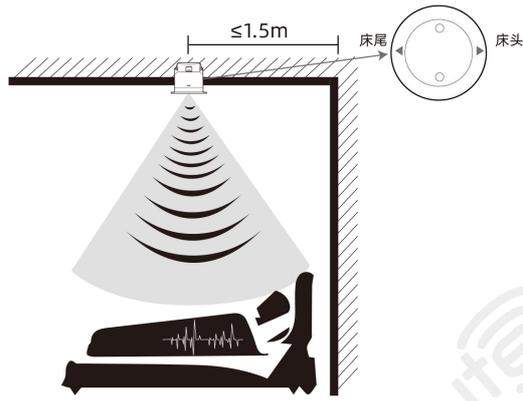


### Wiring layout suggestion:

1. Our sensor is recommended layout in UPS circle to guarantee instant smart scene execution or electrical appliance operation

### Installation suggestion

Our sensor is suggested installed heading to human chest or adjust its sensing antenna toward human chest for best detection result



### 【Start Process & Initialization】

When the first power-on, indicator turns off after flashing for 20 seconds. Sensor does not detect moving signal during initialization. Turning ON/OFF indicator, hold time and detection area can be set by APP.

### 【Factory setting】

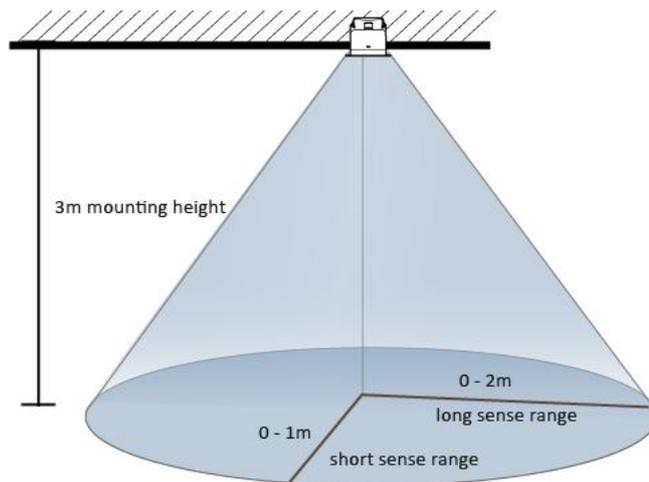
Detection Area: 100%

Hold Time: 5min

Indicator light: open

### 【Detection radiation】

MSA220 Z is highly recommended ceiling flush mounting and its detection radiation is as below shows:



## 【Detection Signal】

The product detects human moving, minor moving, and presence signals, and realizes the detection of human-existing/no-human in sleep state. The following is a description of the moving, minor moving and presence signals:

- **Moving signal:** detect the human significant moving (walking) in the detection area.
- **Minor moving signal:** detect the human slight moving in the detection area, such as leaning forward, leaning forwarder and back, swinging limbs, shaking head, typing, playing with mobile phones and so on.
- **Presence signal:** detect human abdominal and thoracic expansion behaviors caused by breathing, but not detect moving signal and minor moving signal.

## 【Disclaimer】

Due to the complexity of product technology and differences in application environment, it is difficult to guarantee a completely accurate or complete description, so this specification is only for user reference.

We will reserve the right to make changes to the product specifications without notifying the user, and do not make any commitments and guarantees in the legal sense.

At the same time, our company encourages users to supplement or modify the contents of our specifications after using our products.