

# Specification

Product Name: 24GHz Large-space presence sensor (KNX version)

Product Model: MSA206K 99

Product Version: V1.0

Versions	Release/ change Date	Publishing
V1.0	2022.06.15	Jacky

## 【Product Description】

MSA206K 99 is a 24GHz radar sensor based on Merrtek patented orthogonal half-wave bending antenna. Its antenna has high gain and wide detection range and is combined with Merrytek's unique software algorithm. It can accurately detect minor movements brought by human in almost all indoor spaces and provide fast and accurate front-end sensing input for smart home, smart hotel, smart office and other scenes.

## 【Product Feature】

- Exclusive Merrytek Lifebeing Presence Detection
- FMCW modulation technology applied to detect micro movement brought by breathing
- Germany RF technology applied for 5-year gurantee assurance
- Accurate Presence/Absence Output
- Daylight Sensor Available
- Support KNX communication
- 24Ghz ISM Band Millimeter Wave Radar technology
- Major/Minor/Micro Motion detection diameter: 6-8m Max
- Major/Minor/Micro Motion detection range are highly coincide
- Round radiation. Effectively managing a whole space by a single sensor
- Absence switch to Presence within 0.5S
- Presence switch to Absence no less than 15S
- Flush mounting and 86 panel mounting installation available
- Sensor parameter adjustable by ETS
- 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



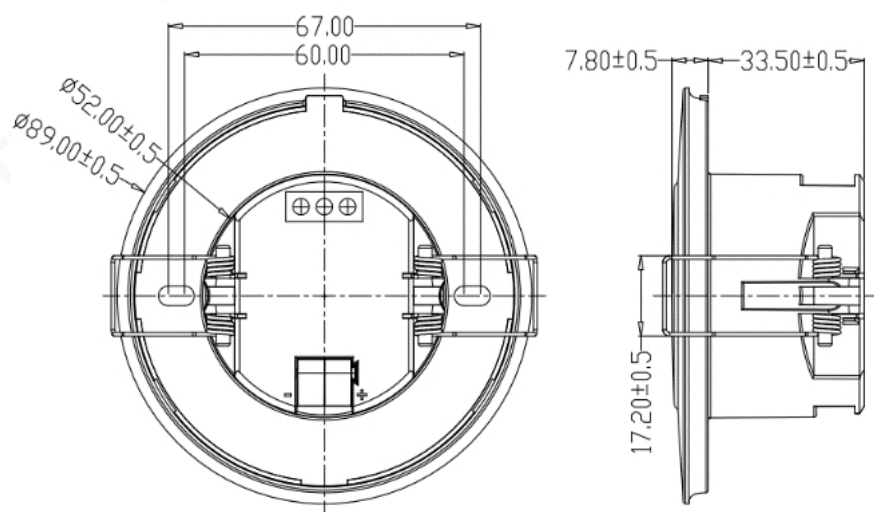
## 【Product Package】

- Dimension:  $\phi 89 \times 34$ mm
- Wiring: Auxiliary power supply: 2-pin yellow and white shrapnel lifting terminals  
KNX bus terminal: 4-pin red and black KNX terminals

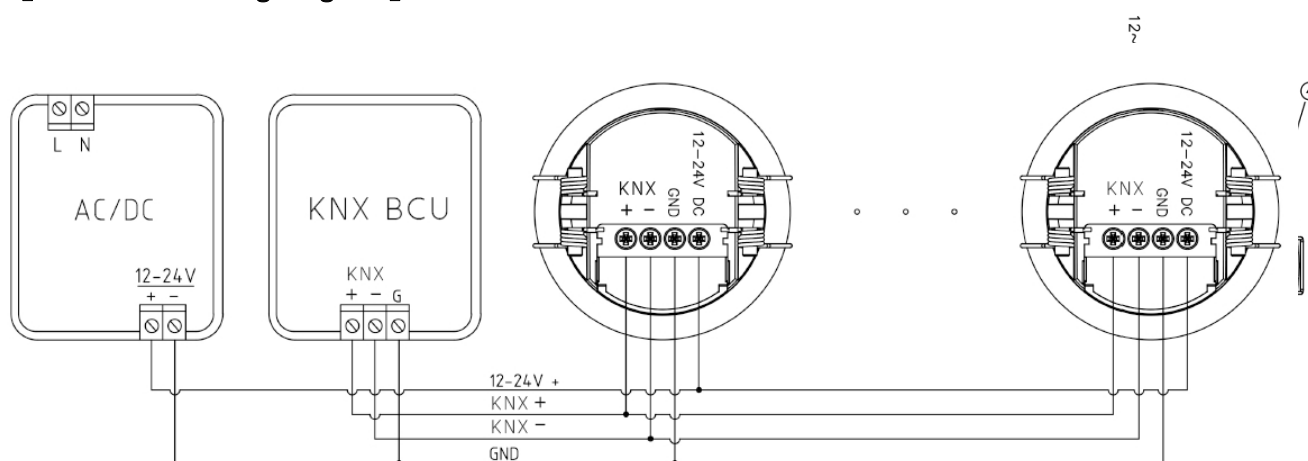
## 【Parameter】

Input/Output	Auxiliary Power Supply Voltage Range	12-24V DC
	KNX Terminal Voltage	21-30V DC
	Auxiliary Power Supply Working Current	12V: 70mA    24V: 40mA
	KNX Terminal Current	≤10mA
	Working Power	≤0.5W @24V DC
Sensor Parameter	Working Frequency	24GHz-24.25GHz    ISM Wave.
	Transmitting Power	5mW Max
	Detection Area	ETS setting: 8%-100% (100%=4m,88%=3.5m,80%=3m,72%=3m,64%=2.5m,56%=2m,48%=1.5m,40%=1m,<40%=0.5m)
	Hold Time	ETS setting: 3S-7200S
	Detecting Range (100% detection area, radius)	major/minor/micor movement (3m height installation) : 3.5±0.5m (based on 41m² open area test and might change due to different space)
	Remote Control	Support
	Mounting Height	2-4m, typical value: 3m
	3db Beam Angle	100° (XZ field) 100° (YZ field)
Environment	Flush-mounted Hole Size	Φ55-65mm
	Working Temperature	0℃...+50℃
	Storage Temperature	-40℃...80℃, Humidity: ≤85%(non-condensing)
Certificate Standard	Certificate	FCC/RED
	Environmental Requirement	Compliant to RoHS
	IP Rating	IP20
	Gurantee	5 year (only for product quality problem)
Note: "N/A" means not available.		

## 【Dimension】



## 【Function & Wiring Diagram】



- ① Daylight sensor and red programming button.
- ② Programming button surface
- ③ Rotary ring for installing (surfaced ceiling mounting)
- ④ Screw fixing port(86 box installation)
- ⑤ KNX terminal
- ⑥ Auxiliary power supply port

## 【Wiring Diagram & Recommendations】

Wiring recommendations:

1. KNX bus wiring suggestion hand in hand to the end, star or tree wiring is not recommended to ensure the stability of signal transmission.

2. KNX bus wiring wire recommends KNX standard EIB shielded wire or Category 6 network cable, the length of the bus wiring is recommended not to exceed 400 meters, and the number of sensor connected to a bus is recommended to not exceed 12.

3. The number of sensors connected to a bus needs to fully consider the current load capacity of the power supply: that is the sum of the currents of all KNX devices (including sensors) shall not be greater than the load current of the KNX power supply.

### 【Start Process & Initialization】

After routing the physical addresses and setting the channel parameters, follow these steps:

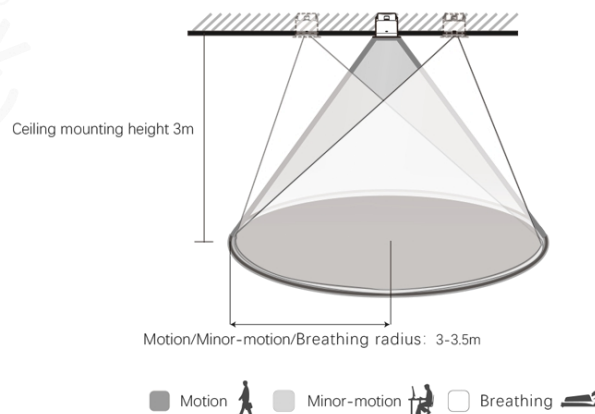
- (1) Connect Bus interface;
- (2) Set Bus and auxiliary power on (note: please make sure that product has auxiliary power supply, otherwise the device may not work properly);
- (3) Press the programming switch of the product, the LED light will turn red;
- (4) Use the bus interface to download the physical address through the ETS software. The programming LED light is off to indicate that the physical address download is successfully completed;
- (5) Download the application after setting the required application parameters.
- (6) After downloading the application, the product goes into initialization. During initialization, detection function is disable. After 20S, the initialization is completed, and the product works normally;

**Note:** Please use the latest version of ETS 5 or 5.7.2 version. Please obtain thee ETS engineering configuration file of this sensor from our sales staff.

### 【Sensing Radiation Pattern】

The typical installation of the MSA206K 99 milliter wave radar sensor is recommended for ceiling installation.

The radiation range of the ceiling installation is as follows:



## 【Signal Detection Description】

This millimeter-wave radar sensor detects human body movement, micro-movement, and presence signals, and realizes the detection of human body presence(human-existing/no-human) in a non-sleeping state. The following is a description of movement, micro-motion, and presence signals:

- **Major movement:** detect the human significant moving (walking) in the detection area.
- **Minor movement:** 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.
- **Micro movement:** detect human abdominal and thoracic expansion behaviors caused by breathing, but not detect moving signal and minor moving signal.



Major movement



Minor movement



Micro movement

## 【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.