

Specification

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

Product Model: MSA216D 99

Product Version: V1.0

Versions	Release/ change Date	Publishing
V1.0	2023.08.10	Jacky

【Product Description】

Based on the 24G millimeter wave radar technology of Merrytek and the new generation of breathing algorithm, our MSA216D 99 can accurately identify the biological signal of people in the static state of breathing, to detect presence or absence status, and output PWM and TUYA BLE signal, which is ideal for application in office, education, kitchen and washing room illumination.

【Product Feature】

- Merrytek patent human breath detection technology
- Detect presence / absence status accurately
- Daylight threshold / daylight harvesting function
- Tuya Bluetooth communication available
- Output PWM signal
- Apply 24GHz mm wave radar technology
- Same detection range for breath, slight motion and motion signal
- Detection range: 4-6 in diameter
- Circled radiation pattern without blind detection area
- Parameters can be set by remote or tuya app
- Not affected by temperature, humidity, noise, airflow, dust, light and other environments
- Blind time from absence to presence status: 0.5s
- Blind time from presence to absence status: over 30s
- Realization of intelligent perception function based on Doppler radar technology
- Ultra low RF power output, harmless to human health



【Applied fixture】

● Panel	Model:	MSA216D 99 A	MSA216D 99 B
● Linear			
● Ceiling lamp	Function:	Slave(BLE function)	Master(sensor+BLE function)
● Kitchen and bathroom lamp	Output:	3.3V PWM	3.3V PWM

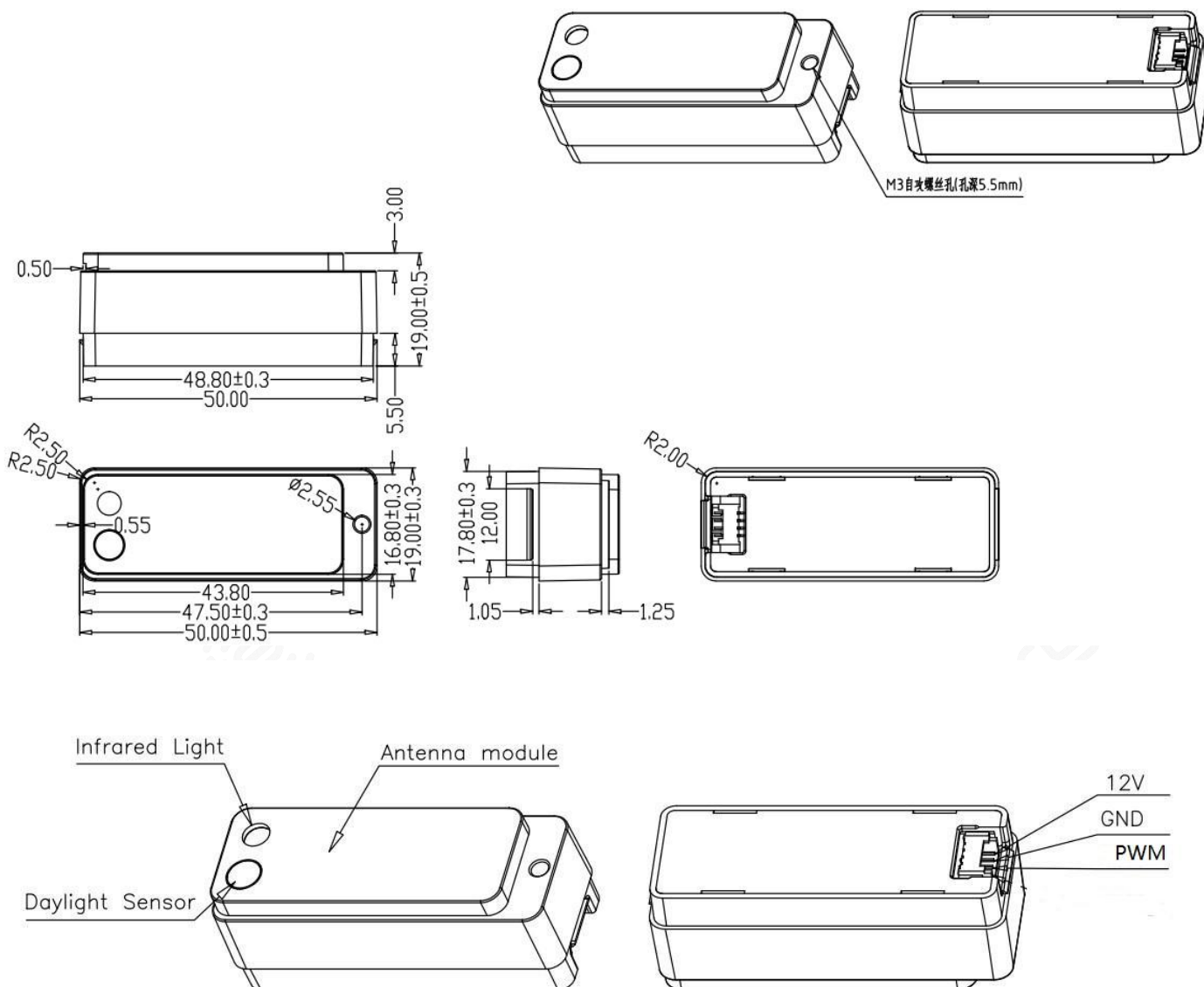
【Housing】

- Dimension: 50*19*19mm
- Wiring: by 3pin terminals

【Parameters】

Input/Output	Input voltage	12-24V DC
	Rated voltage	12V DC
	Working current	MSA216D RC A $\leq 50\text{mA}$ (@12V dc) MSA216D RC B $\leq 10\text{mA}$ (@12V dc)
	Ripple voltage	<100mVp-p
	Power consumption	$\leq 0.6\text{W}$ @12V DC
	Output signal	3.3V PWM
Sensor parameters	Operating Frequency	24GHz-24.25GHz ISM 频段.
	Microwave Transmitting Power	2mW Max
	Detection Area	APP setting: 10%-100%
	Hold time	APP setting: 30s-20min
	Daylight harvesting	available
	Standby dimming level	15%-100%
	Detecting Area (100%,radius)	Normal movement detection (3m in height) : 2-3m
		Presence detection (3m in height) : 2-3m
	Remote control	available
	Mounting height	2.5-4m,typical:3m
	3db beam angle	80° (horizontal)
		96° (vertical)
Environment	Operating Temperature	0℃...+50℃
	Storage Temperature	-25℃...80℃ humidity: $\leq 85\%$ (no condense)
Certificate	Complied by	FCC / RED
	Environmental requirements	Comply with RoHS
	IP rating	IP20
	Others	N/A
Note:		
"N/A" means not available		

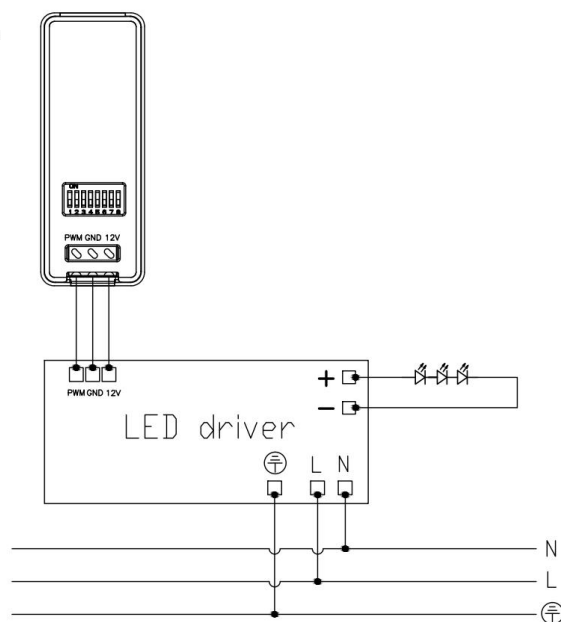
【Dimension】



【Terminal instruction】

Terminal No.	Des.	Typical value	Function
1	VCC	12V DC	Input +
2	GND		GND / 0-10V-
3	PWM		PWM +

【Wiring】



【Initialization】

When powered on, sensor indicator will turn off after flashing for 20S and will not detect moving signal during this time. After 20S, you can use our MH10 remote or tuya APP to adjust detection area、hold time and daylight sensor etc parameter.

【Factory setting】

Detection Area : 100%

Hold Time : 1min

Indicator light: open

【Detection signal instruction】

- **Normal motion signal:** detect normal movement (walking) in detection range
- **Presence(breath) signal:** signal from human respiratory vital (abdominal cavity and thoracic cavity expansion behavior)

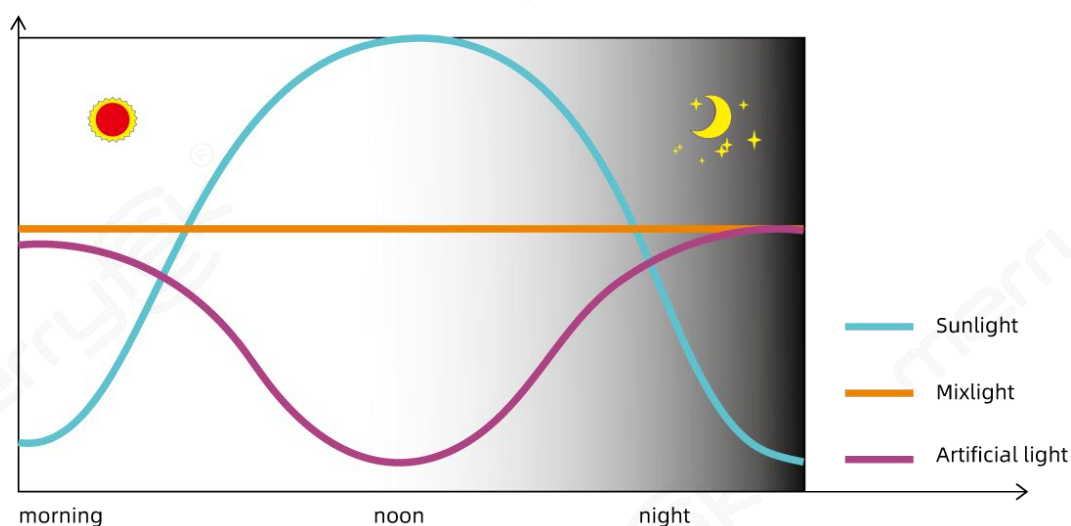
Note: Presence and normal movement signal are motion signal

【Daylight harvesting control】

The built-in constant light controller automatically detects the intensity of natural light to adjust the artificial light according to the preset lux level, to maintain target illumination. It can be used in offices, airports, shopping malls and other occasions where the brightness of lamps needs to be adjusted according to sunlight during the day

Note: Daylight harvesting function only available on model C/D, press “DH Mode” on remote control MH10 for 3s to start this function, load fixtures switch off and on once means the function is set successfully “DIM+”/ “DIM-” and remote MH10 can be used to set target lux level. After the setting is successful, when the external natural light becomes dark (brighter), the sensor will increase (lower) the brightness of the lamp to maintain preset target lux level (this status is short in “With DH” in following)

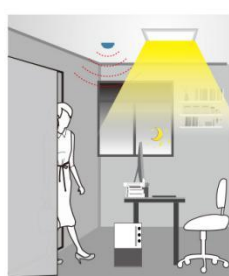
Press “Override DH” 3s on remote control to override daylight harvesting function, load fixtures switch off and on once means the function is closed successfully (this status is short in “Without DH” in following)



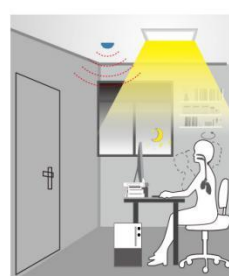
ON/OFF function



- When the ambient light is sufficient, the light will not turn on even if the moving signal is detected.



- When the ambient light is insufficient, a moving signal is detected and the light will turn on automatically.

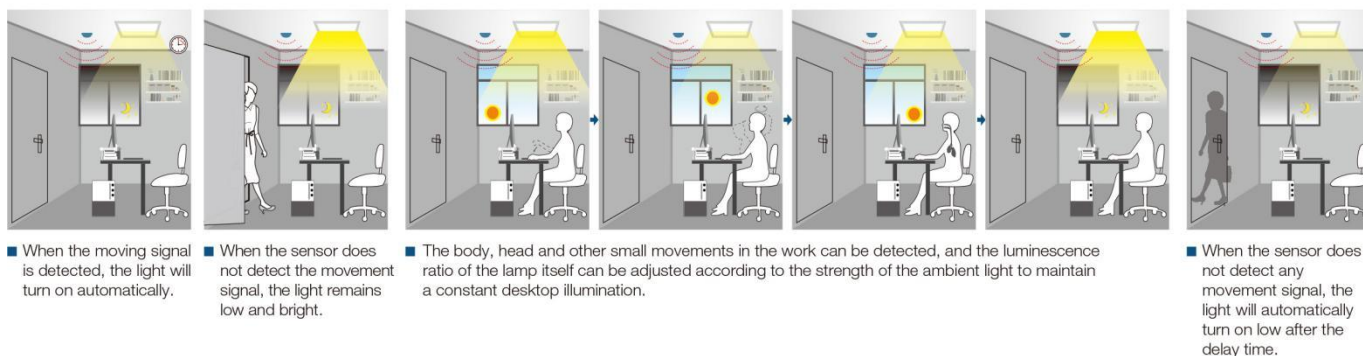


- The body, head and other small movements in normal work can be detected, and the light is always on.



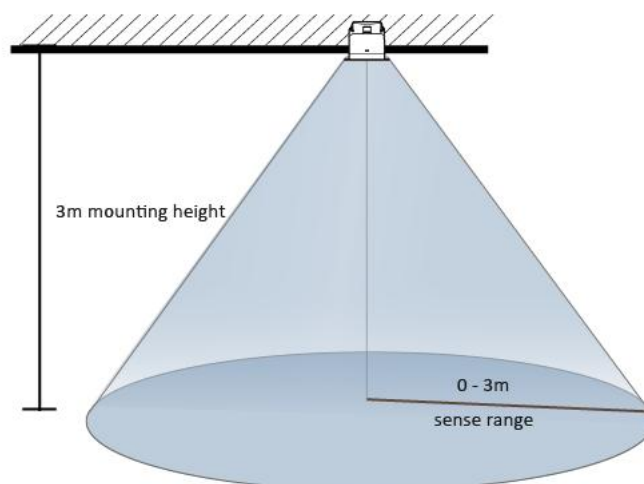
- When the sensor fails to detect movement and inching signal, the light will automatically turn off after the delay time.

Presence detection with daylight harvesting function

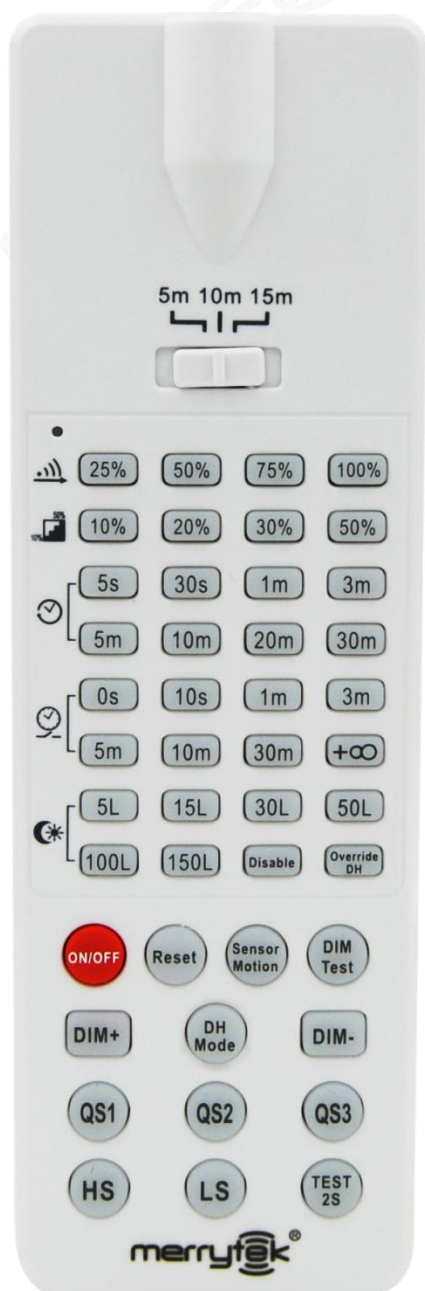


【Detection radiation】

MSA216D 99 is highly recommended ceiling flush mounting and its detection radiation is as below shows:



【Remote manual】



Detection range: 25%/50%/75%/100%

Hold time: 5s/30s/1min/3min/5min/10min/20min/30min

Daylight threshold: 5lux/15lux/30lux/50lux/100lux/150lux/Disable

ON/OFF: disable sense function

Sensor motion: enable sense function

Reset: all parameter back as factory setting

QS1/QS2/QS3: High/Medium/Low sensitivity setting

HS: turn on indicator

LS: turn off indicator

【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.