Specification

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

Product Model: MSA040D RC

Product Version: V1.3

Versions	Release/ change Date	Publishing
V1.0	2023.10.20	Jacky

【Product Description】

MSA040D RC is a 24GHz radar sensor based on Merrytek 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
- Accurate Presence/Absence Output
- Daylight Sensor Available
- NO/NC dry contact output available
- 24Ghz ISM Band Millimeter Wave Radar technology
- Presence detection diameter: 5-7m Max
- Minor Motion detection diameter: 6-8m Max
- Motion detection diameter: 6-8m Max
- Presence, minor motion and 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 30S
- Flush mounting and Surface mounting installation available
- Sensor parameter adjustable by MH10 remote
- 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
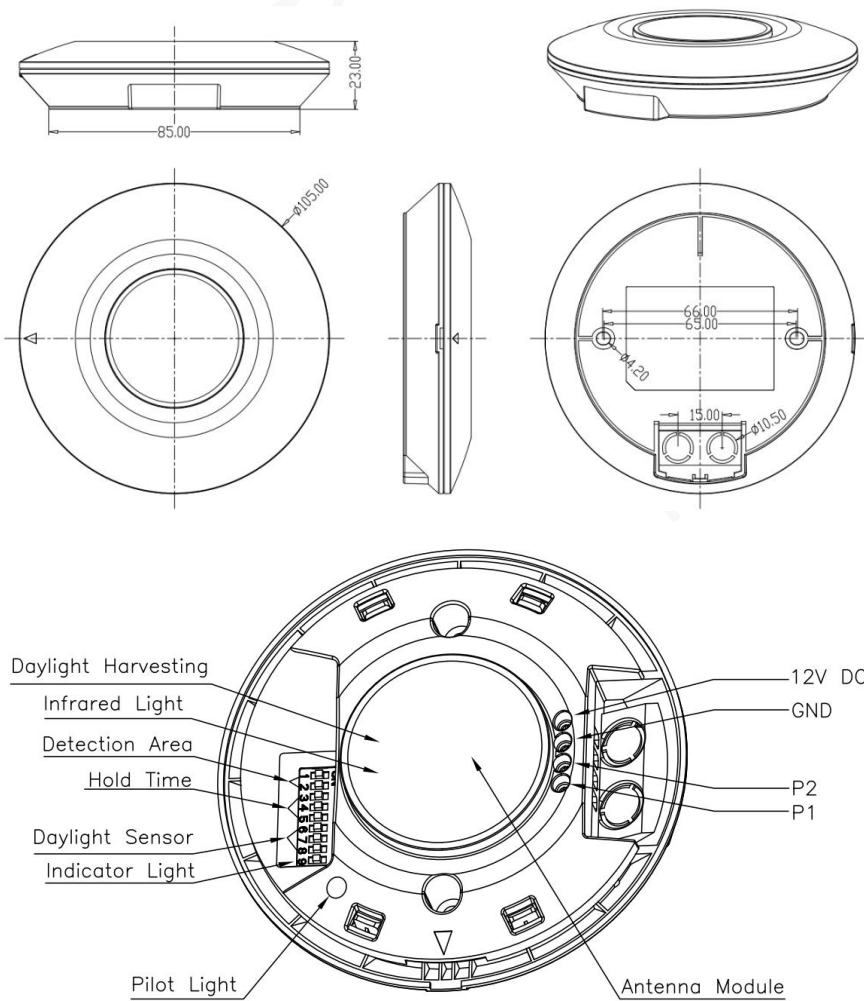
【Product dimension】
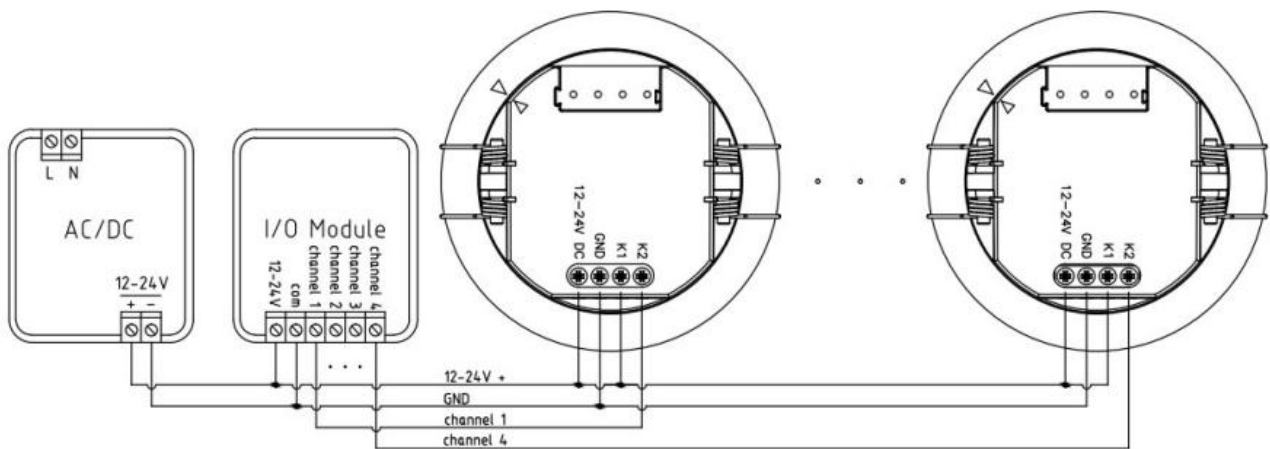
- Dimension:φ105x23mm
- Terminal: 4pin terminal

【Input/Output】

Input/Output	Input voltage	12-24V DC
	Rated voltage	24V DC
	Working Current	@12Vdc：50mA max @24Vdc：30mA max
	Working Power	≤1W @24V DC
	Output signal	NO/NC dry contact (Factory setting is NO dry contact)
	Load type	Resistive (load voltage :Vdc≤36V,load current:50mA max)
Sensor Parameter	Radar frequency	24GHz -24.25GHz，ISM band
	Transmitting Power	5mW Max.
	Detection Sensitivity	MH10 remote setting: 100% 75% 50% 25%
	Hold Time	MH10 remote setting: 5s/30S /1min / 3min /5min /10min /20min
	Daylight Sensor	MH10 remote setting: 5Lux/15Lux/30Lux/50Lux/100Lux/150Lux/Disable
	Radius detection range(based on QS1 mode 100% sensitivity)	Motion detection（3m height）：3-4m Minor motion detection（3m height）：2.5-3.5m Presence（3m height）：2.5-3.5m
	Mounting height	2.5-4.0m typical value:3m
	3db beam angle	100°(horizontal)
		100°（vertical）
Application Environment	Mounting	Surface mounting
	Working Temperature	0℃...+50℃
	Storage Temperature	-25℃~+80℃
Certificate Standard	Certificate	FCC/RED
	Environmental Requirement	Compliant to RoHS
	IP Rating	IP20
Note: "N/A" means not available.		

【Dimension and Function diagram】

Daylight Harvesting
Infrared Light
Detection Area
Hold Time
Daylight Sensor
Indicator Light
Pilot Light

12V DC
GND
P2
P1
Antenna Module

【Wiring instruction】

Wiring layout suggestion：

1. Hand-in-hand wiring is highly recommended,yet star-topology or tree-topology is strongly deprecated

2. When there's more than 1pc sensor is a line,you shall consider all equipment current consumption shall not surpass your driver's loading capacity.

【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 to adjust detection area、hold time and daylight sensor etc parameter.

【Factory setting】

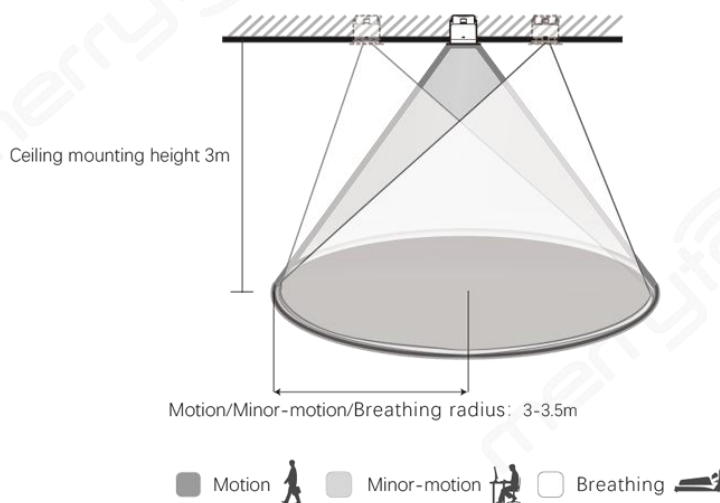Detection Area: QS1 mode 100%   Hold Time: 1min

Daylight Sensor: Disable   Indicator light: Open

【Detection radiation】

MSA040D RC is highly recommended surface mounting and its detection radiation is as below shows:

Ceiling mounting height 3m

Motion/Minor-motion/Breathing radius: 3-3.5m

■ Motion 🚶   ▥ Minor-motion 🧍   ☐ Breathing 🛏

【Detection Signal】

The product detects human moving, minor moving, and presence signals, and realizes the detection of human-existing/no-human in non-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.

【DIP setting】

Detection Area

	1	2	
I	ON	ON	100%
II	-	ON	75%
III	ON	-	50%
IV	-	-	25%

Hold Time

	3	4	5	
I	ON	ON	ON	5S
II	ON	-	ON	30S
III	ON	ON	-	1min
IV	ON	-	-	3min
V	-	ON	ON	5min
VI	-	-	ON	10min
VII	-	ON	-	20min
VIII	-	-	-	30min

Remark: Hold time shall be more than 30s if you want presence detection function

Daylight Sensor

	6	7	8	
I	ON	ON	ON	5Lux
II	-	ON	ON	30Lux
III	ON	-	ON	50Lux
IV	-	-	ON	100Lux

V	ON	ON	-	150Lux
VI	-	-	-	Disable

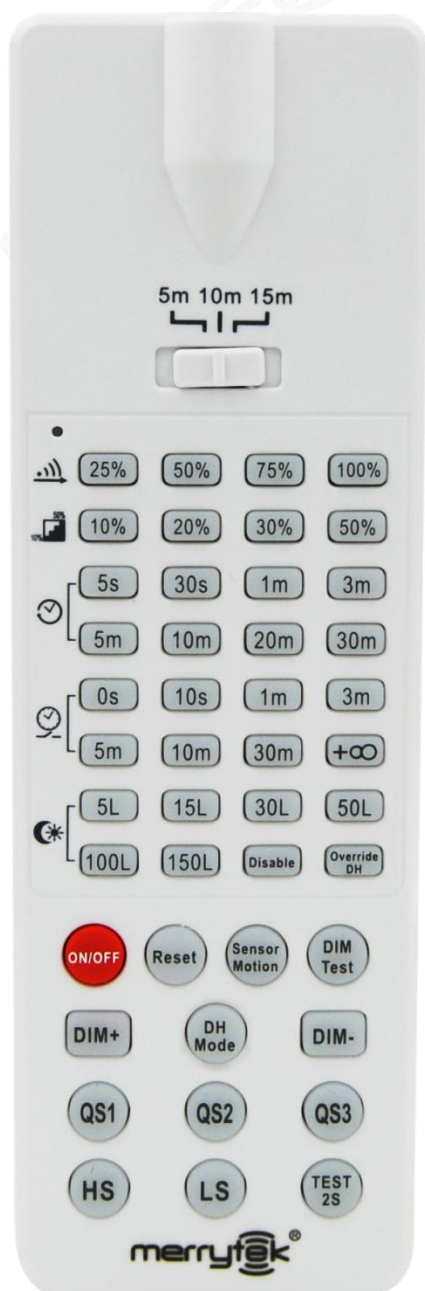   Once daylight sensor set as Disable,our motion sensor will detect human movement regardless of environment lux

Indicator light

	9	
I	ON	open
II	-	close

Remark: indicator is factory setting ON and can be switch off   by MH10 remote control

【Remote manual】

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

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

Daylightthreshold: 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.