SPECIFICATION

Product Name: Microwave Sensor

Model No.:   MC087D RC

Issue Date: Sept 23, 2022

CUSTOMER APPROVED

PRODUCT DIRECTOR APPROVED	P&M CHECKED	R&D CHECKED	PREPARED

*Please read the 11st instruction carefully before using this product, since the performance of DC-powered microwave products is closely related to the stability and characteristics of the auxiliary power supply of the LED driver.

1. Features

1) Adopting new bipolar antenna, small cut size, and strong adaptability to working environment.

2) Built-in microwave module and daylight sensor, 12V DC input and 0-10V Dimming Signal output.

3) Cut size: 10mm x 40mm, suitable for many kinds of linear lights.

4) Set all parameters by infrared remote control MH10 / MH12

5) 5 years warranty

## 2. Parameter

Input	Voltage Range	12±1VDC		
	Operating	12V DC		
	Rated Voltage	<25mA		
	Voltage Ripple	<100mVp-p		
Output	0-10VDC Dimming Signal	YES		
Sensor Parameters	Operating Frequency	5.8 GHz ±75 MHz, ISM Wave Band.		
	Transmitting power	1mW Max.		
	Detection Area	25%/50%/75%/100%(set by infrared remote control MH10 / MH12)		
	Hold Time	5S/30S/1min/3min/5min/10min/20min/30min (set by infrared remote control MH10 / MH12)		
	Stand-by Period	0s/10S/1min/3min/5min/10min/30min/+∞ (set by infrared remote control MH10 / MH12)		
	Daylight Sensor	Normal	5lux/15Lux/30Lux/50Lux/100lux/150lux/Disable	
		Daylight Priority:	ON	OFF
			5lux/15Lux/30Lux/50Lux	150Lux
			100Lux	200Lux
			150Lux	300Lux
	Stand-by DIM Level	10%(1.4-1.6V), 20%(1.9-2.1V), 30%(2.9-3.1V), 50% (4.9-5.1V)		
	Detecting Radius (Detection Area: 100%)	Ceiling Mounting at 3m: 0.3m/S ≥3m, 1m/S ≥3m		
		Wall Mounting at 2m: 0.3m/S ≥8m, 1m/S ≥4m		
	Mounting Height	2.5-6m 6m Max		
	Detecting Angle	130°@Xz filed / 90°@Yz filed		
Environment	Operating Temperature	-25~70℃		
	Storage Temperature	Temperature: -40℃…+80℃; Humidity ≤85%		

| Certificates	EMC Standards	CE RED
	Environmental Requirement	Compliant to RoHS
	IP Rating	IP20
Others	Wiring	3 pin+2 pin 2.0mm terminal
	Installation	☒ Built-in
	Dimension	See "4. Dimension"
	Package	Instruction+white box+box label+clapboard+carton(K=A)
	Net Weight	18g
	Lifetime	5 years warranty@Ta

3. Function

1) On/OFF Function (set Stand-by Period to "0s")
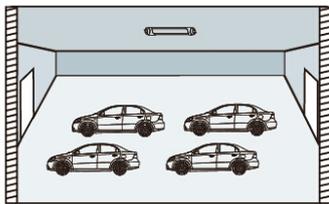
❶ With sufficient ambient light, the light will not be switched on even if with motion signal.
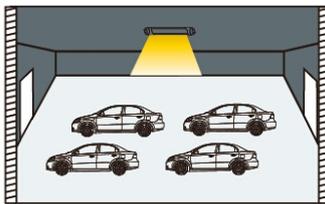
❷ With insufficient ambient light, the sensor switches on the light when motion is detected.

❸ After elapse of hold time, the sensor switches off the light when no motion is detected.

2) 2-step Dimming Function (set Stand-by Period to "+∞")
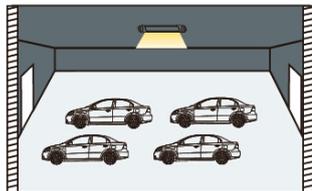
❶ If there is no motion detected, the light will be remained at a low light level all the time.
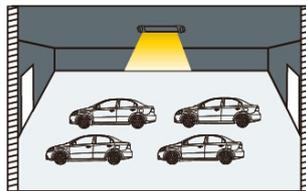
❷ When motion is detected, the sensor will switch on the light to 100% brighteness
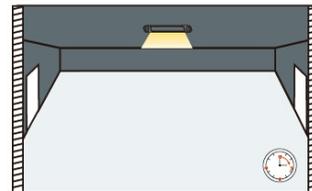
❸ After elapse of hold time, the sensor dims the light at the present low light level if no motion is detected.

3) 3-step dimming function (stand-by period be set to "10S/1min/3min/5min/10min/30min")
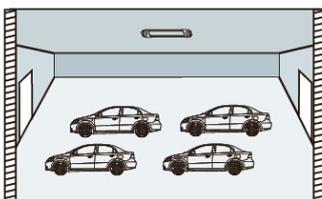
❶ With sufficient ambient light, the light will not be switched on even if with motion signal.
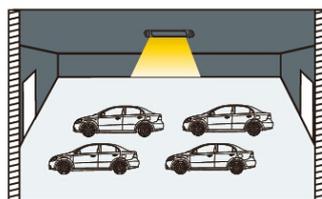
❷ With insufficient ambient light, the sensor switches on the light when motion is detected.
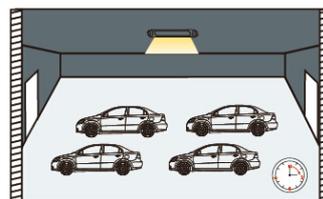
❸ After elapse of hold time, the sensor dims the light at a low light level if no new motion is detected.

❹ After elapse of standby period, the sensor switches off the light if no motion is detected in the detection zone.

4) Daylight Priority (stand-by period be set to "+∞ " , and MH10 remote control long press 3S "DH Mode" , other sensor parameters can be set actual needs)

❶ With sufficient ambient light, the light will not be switched on even if with motion signal.

❷ When the ambient light is insufficient, the lamp will turn on and enter the low light state (standby level).

❸ With insufficient ambient light, the lamp goes on full light when a mobile signal is detected.

❹ After hold time, if no moving is detected in the detection area, the lamp will automatically turn to standby brightness.

❺ After standby time, if no moving object is detected in the detction area and the ambient light is sufficient, the lamp will turn off automatically.

## 4. Dimension (mm)

5. Wiring

0-10V
GND
12V

*The sensor is designed for connect one load only. Connecting to more than one load may damage the sensor.

*If no auxiliary 12Vdc interface driver, MC103S can be an option of power supply for sensor.
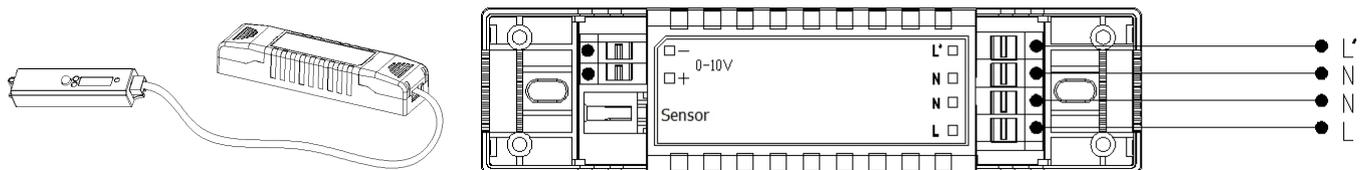
6. Structure
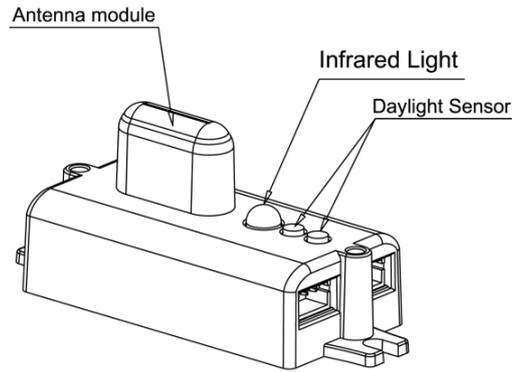
# 7. Installation

1. Cut a suitable openning size.

2. Put the product into the openning, and fasten it with screws.

LED tray

SECTION A-A
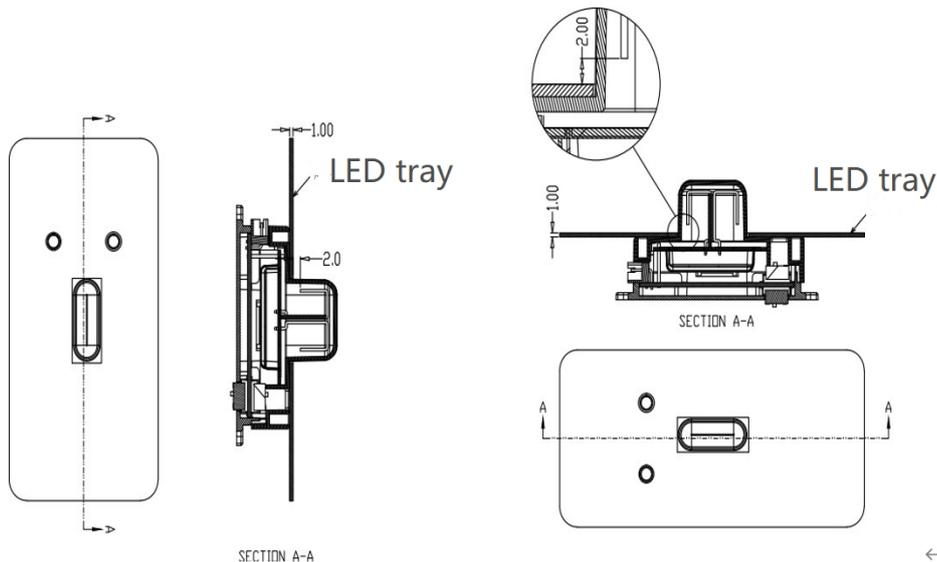
Note: Sensor antenna should be above LED tray at least 2mm.

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Page 5 of 9

8. Radiation Pattern

Wall mounted height: 2m	Ceiling mounted height: 3m	Ceiling mounted height: 6m
Sensitivity: 100%/75%/50%/25%	Sensitivity: 100%/75%/50%/25%	Sensitivity: 100%/75%
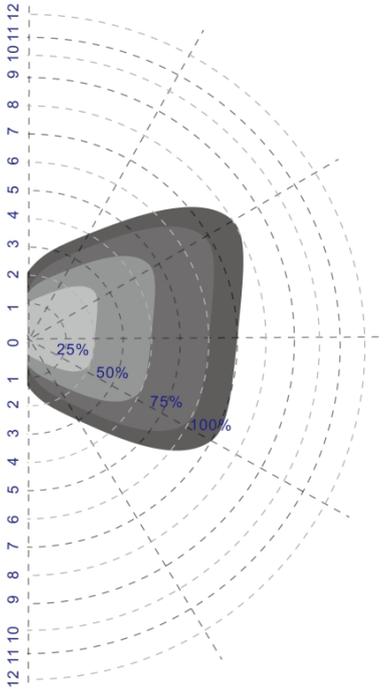
Normal moving (Speed:1m/s)

Normal moving (Speed:1m/s)
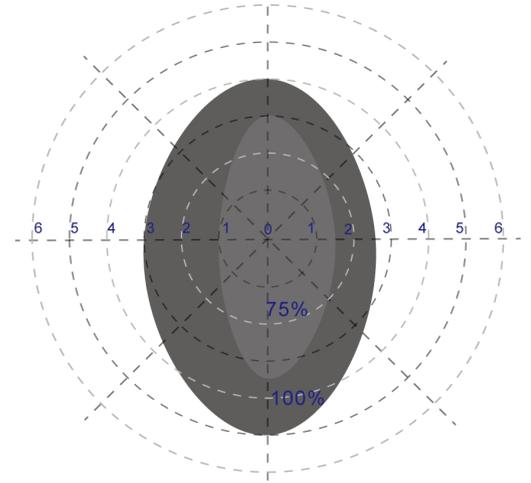
Normal moving (Speed:1m/s)
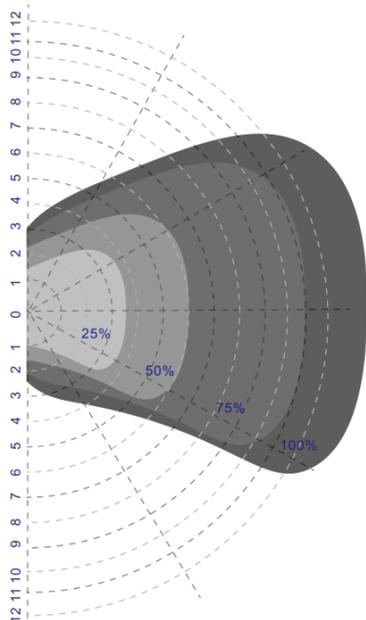
Slow moving (Speed: 0.3m/s)
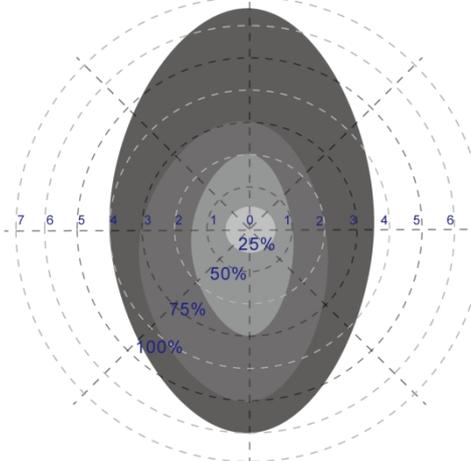
Slow moving (Speed: 0.3m/s)
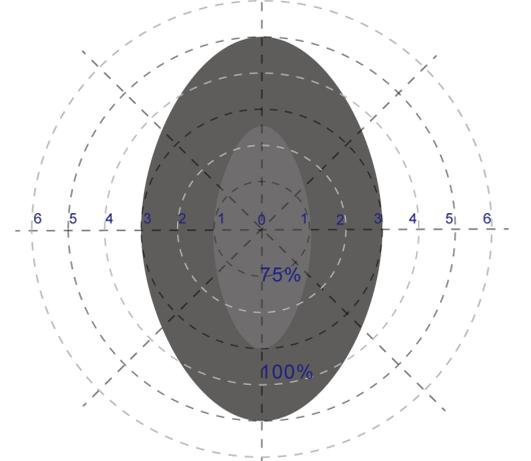
Slow moving (Speed: 0.3m/s)

*When installed at 6m height, sensor with 50%/25% detection area is unable to detect motion signall.

9. Remote control

MH10

merrytek ®

MH10
Instruction

Remote Control Setting	Button	Remarks
	ON/OFF	Press "ON/OFF", the load lamp will enter normal ON/OFF mode, sensor function will be override. DIM+ / DIM- can be used to dim up / down load. Dimming level has memory after restart power supply.
	Reset	Press "RESET", sensor parameters return to default setting.
	Sensor motion	Press "Sensor motion", return to sensor mode (previous parameters setting is valid)
	DIM Test	N/A
	Override DH	Long press 3S to exit the daylight priority mode.
	DIM + DIM -	Short press "DIM+/DIM-"to dim up/down load,each press will dim 5% of full power Dimming range: 50% to 100% Note: Press "DIM+ / DIM-" to dim up/down load in normal ON mode
	DH Mode	Long press 3S to enter the Daylight Priority function Note: long press the "Override DH" key for 3S and short press the "Disable" key to exit the Daylight Priority function and enter the normal Daylight Control mode. (If Daylight Priority function is in needed, stand-by period should be set to "+∞")

Scence Options	Dection Area	Hold Time	Stand-by period	Stand-by dim level	Daylight Sensor
QS1	100%	5min	10min	10%	30Lux
QS2	100%	10min	30min	10%	Disable
QS3	100%	20min	30min	10%	Disable

Remote Control Setting	Button	Remarks
	Q1 Q2 Q3	Note: Dection area / Hold time / Stand-by period / Stand-by Dim level / Daylight sensor can be adjusted by pressing the corresponding button. The latest setting will stay valid.
	TEST 2S	Press the "Test 2S" botton can enter the test mode any time. At the mode, the sensor parameters as below: Detection Area is 100%, Hold Time is 5s, Stand-by Dim Level is 10%, Stand-by Period is 0s, daylight sensor disable. This function only for testing. Quit the mode by pressing "RESET" or any other function buttons.
	HS LS	N/A
	(daylight icon)	Daylight Sensor Set up daylight threshold: 5LUX/15LUX/30LUX/50LUX/100LUX/150LUX/Disable
	(clock icon)	Stand-by period Set up stand-by time: 0S/10S/1min/3min/5min/10min/30min/+∞
	(clock icon)	Hold time Set up hold time: 5S/30S/1min/3min/5min/10min/20min/30min
	(steps icon)	Stand-by dim level Set up stand-by dim level: 10%/20%/30%/50%
	(signal icon)	Detection Area Set up detection area: 25%/50%/75%/100%
	5m 10m 15m	Remote Distance Toggle bottom can set the remote distance of remote control and sensoer.

MH12

MH12		
Remote Control Settings	Button	Function
	Detection area	Short press to set detection area :25% / 50% / 75% / 100%, long press 3s to transmit selected value.
	Send	Short press to transmit all selected value on remote screen.
	Stand-by Period	Short press to set standby period 0S / 10S / 1min / 3min / 5min / 10min / 30min / +∞ Long press 3s to transmite selected value
	Stand-by DIM Level	Short press to set stand-by DIM Level 10% / 20% / 30% / 50%. Long press 3s to transmit selected value
	Hold Time	Short press to set hold time 5S / 30S / 1min / 3min / 5min / 10min / 20min / 30min Long press 3s to transmit selected value
	Auto Mode	Short press to set working mode: MD=Motion+daylight threshold; MP=Motion +Daylight priority (daylight switch) ; P= Daylight priority Long press 3s to transmit selected mode Note: MP or P is not available for all models, please follow spec. sheet of motion sensor.
	Daylight Threshold	Short press to set Daylight threshold 5Lux / 15Lux / 30Lux / 50Lux / 100Lux / 150Lux / Disable. Long press 3s to transmit selected value. When set Daylight threshold to Disable,sensor will switch on light when detect motion regardless of ambient brightness level.
	Motion Sensor	Short press to quit from constant on / off mode,sensor start to work (the previous setting stays in validity)
	Dim+/Dim-	Short press "Dim+/Dim-" for dimming, to add or subtract 5% per press Note: In normal "daylight" mode, set the maximum brightness via Dim+/Dim-, the maximum brightness value should be higher than the stand-by dimming level.
	Reset	Long press 3s to return to factory default setting.
	S	N/A
	H/L	N/A
	2	2nd optional quick setting, short press to show the setting configuration, long press 3s to save this configuration. Press "Send"to transmit selected quick setting
	1	1st optional quick setting, short press to show the setting configuration, long press 3s to save this configuration. Press "Send"to transmit selected quick setting
	ON/OFF	Press this button to enter the "constant on / off" mode, this mode has memory function. Press "Reset" or "Motion Sensor" to exit to sensor function mode.

10. Initialization

When power on, the sensor automatically turns on light to 100% brightness and turns off light in 10 seconds. During initialization, sensor is unable to detect motion signals.

11. Factory Setting

Detection area: 100%, Hold Time: 5S, Stand-by Period: 0s, Daylight Sensor: Disable, Stand-by dim level: 10% (can be changed as required)

12. Application Notice

1) The sensor should be installed by professional electricians. Please turn off power before installing, wiring, and setting parameters.

2) Microwaves cannot penetrate metal. Do not place product in a closed or a half-closed metal lamp. Neither metal nor glass is not allowed to cover the product. If antenna needs to pass through the metal flat, please ensure that the top of sensor is close to the metal flat.

3) The distance among sensors should be greater than 3 meters. Keep sensor at least 1.5 meters away from switches, routers and other wireless devices to avoid interference. The antenna surface of microwave sensor should be away from input AC and output DC to avoid low or high frequency signals affecting the normal operation of microwave sensor's antenna.

4) Vibration signals will be regarded as moving signals to trigger sensor. Installing sensor should be away from the object that vibrates for a long time, such as large metal equipment, pipes, air conditioning outlets, exhaust vents, smoke exhaust machine ports, shaking fans, etc. Pets in detecting area may trigger sensing.

5) Sensor is for indoor use only. When installed outdoor or half-outdoor, the waterproof effect will be affected. Wind, rain, and moving objects may cause false triggering. When the sensor is installed in a metal lamp, on a metal reflective surface, or in a narrow enclosed device, microwave will be reflected repeatedly and cause false triggering. Please reduce the sensitivity of sensor or contact manufacturer for technical support.

6) This product is suitable for ceiling mounting. If wall mounting, the detecting area will enlarge which makes microwave penetrate wall or light not turn off. Please change sensitivity to 50%. If 50% is useless, please avoid wall mounting or contact the manufacturer for technical support.

7) Due to continuous improvement, the contents of this instruction will be changed without prior notice.

8) The effect of low brightness will be different when connecting to different 0-10V drivers. The daylight thresholds are measured on a sunny day without shadow and in an ambient light diffuse reflection status. Different environment and climate cause different brightness values that daylight sensor measures.

9) Sensitivity area is related to moving speed of objects, size of moving objects, mounting height, mounting angle, installation environment, reflecting materials and others.

10) Given detecting area is typical value that is measured by 165cm high testers in an indoor open environment.

11) The product should be connected to DC stabilized power supply with stabilized output voltage and low ripple ratio(ripple ratio <100mV; load current > 25mA).

12) When installing in new environment, please install and test at least 5pcs product firstly before mass installation.

13) Set "Stand-by Period" to "+∞" when daylight priority function is required.

14) Daylight priority function may be out of control when it is used in lamps with a color temperature below 3500K.

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Page 9 of 9