


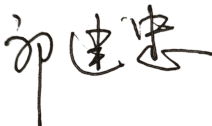

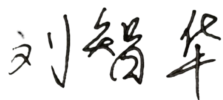
# SPECIFICATION

Product Name: Microwave Sensor

Model No.: MC116D B1

Issue Date: June 2<sup>nd</sup>, 2023

CUSTOMER APPROVED

PRODUCT DIRECTOR APPROVED	PRODUCT CHECKED	R&D CHECKED	PREPARED
			

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Website: [www.merrytek.com](http://www.merrytek.com)

\*Please read the 12<sup>th</sup> 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) 12V DC input, suitable for DC system or LED driver with 12V DC auxiliary power output.
- (2) 0-10V dimming terminal and 3-steps or 2-steps dimming function. Detection area can be set.
- (3) Mini microwave sensor and 6m Max mounting height.
- (4) All sensor parameters can be set by APP(TUYA Bluetooth module). Able to connect to gateway.

## 2. Parameter

<b>Input</b>	Voltage Range	11-13VDC	
	Operating Current	< 50mA	
	Rated Voltage	12V DC	
	Ripple Voltage	<100mVp-p	
<b>Output</b>	Dimming Signal	0-10V DC dimming signal	
<b>Parameter</b>	Operating Frequency	5.8 GHz ±75 MHz, ISM wave band.	
	Transmitting Power	1mW Max	
	Detection Area	25%/50%/75%/100%(set by APP)	
	Hold Time	5S/30S/1min/3min/5min/10min/20min/30min(set by APP)	
	Stand-by Period	0s/10S/1min/3min/5min/10min/30min/+∞(set by APP)	
	Daylight Sensor	Daylight Threshold	5Lux/15Lux/30Lux/50Lux/100lux/150lux/Disable (set by APP)
		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) (set by APP)	
<b>Parameter</b>	Detection Distance (100% sensitivity radius)	Ceiling Mounting(height: 3m): 0.3m/S ≥4m, 1m/S ≥2.5m ; Wall Mounting(height: 2m): 0.3m/S ≥8m, 1m/S ≥4m	
	Mounting Height	Typical value: 3m (6m Max )	
	3db Beam Angle	82°@Xz field	
		95°@Yz field	
<b>Wireless Module</b>	Module Name	BT7L-IPEX	

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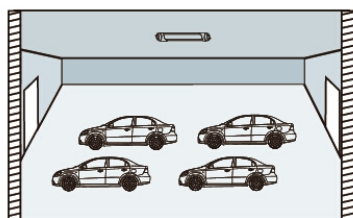
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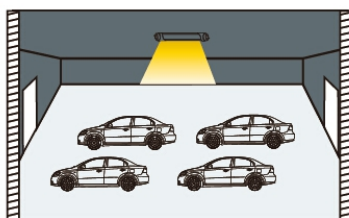
<b>Wireless Module</b>	Operating Frequency	2.4GHZ ISM band	
	Transmitting Power	10dBm(max:10.5dBm)	
	Transmitting Distance	60m(visible distance)	
	Wireless Standard	Low power Bluetooth 4.2/5.0	
<b>Environment</b>	Operating Temperature	-25~60℃	
	Storage Temperature	-40℃...+80℃ Humidity≤85% (non-condensing)	
<b>Certificate Standards</b>	Certificate	RED	
	Environmental Requirement	Compliant to RoHS	
	IP Rating	IP20	
<b>Others</b>	Wiring Method	terminal	3pin 2.0mm terminal
	Installation	<input checked="" type="checkbox"/> Built-in	
	Dimension	See Dimension diagram	
	Package	Clapboard + paper carton(K=A)	
	Net Weight	17.5±3g	
	Lifetime	5 years warranty@Ta	

### 3. Function

#### (1) On/OFF Function (Set “Stand-by Period” to “0s”)



① With sufficient ambient light, the light will not be switched on even if with motion signal.

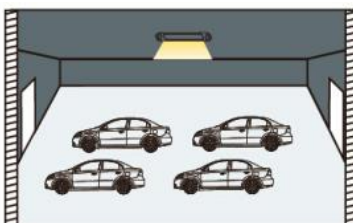


② With insufficient ambient light, the sensor switches on the light when motion is detected.

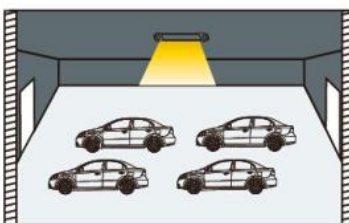


③ After elapse of hold time, the sensor switches off the light when no motion is detected.

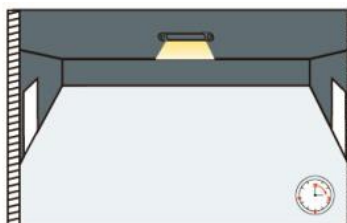
#### (2) 2-step dimming function (Set Stand-by Period to “+∞”)



① If there is no motion detected, the light will be remained at a low light level all the time.



② When motion is detected, the sensor will switch on the light to 100% brightness



③ After elapse of hold time, the sensor dims the light at the present low light level if no motion is detected.

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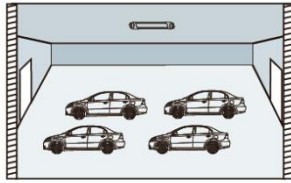
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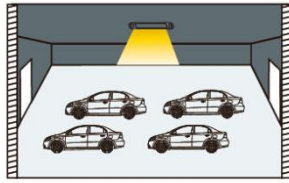
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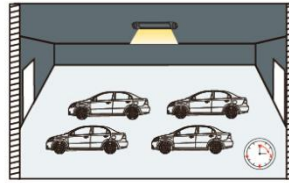
(3) 3-step dimming function (Set Stand-by Period to “10s/1min/3min/5min/10min/30min”)



- ① With sufficient ambient light, the light will not be switched on even if with motion signal.



- ② With insufficient ambient light, the sensor switches on the light when motion is detected.

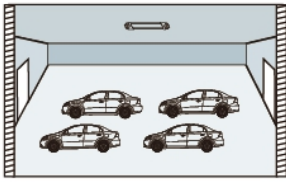


- ③ After elapse of hold time, the sensor dims the light at a low light level if no new motion is detected.

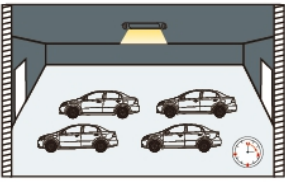


- ④ After elapse of standby period, the sensor switches off the light if no motion is detected in the detection zone.

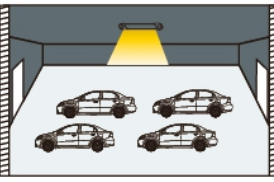
(4) Daylight priority (Set by APP. “Daylight Switch” button turn to blue.)



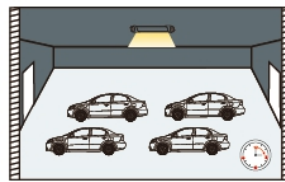
- ① When ambient light is sufficient, the lamp will not turn on even if detecting moving signal.



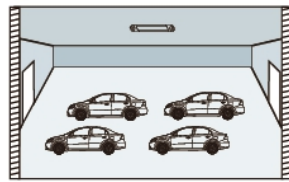
- ② Lamp turns on at low light level 10% in the night.



- ③ Motion detected, lamp automatically lights up to 100%.



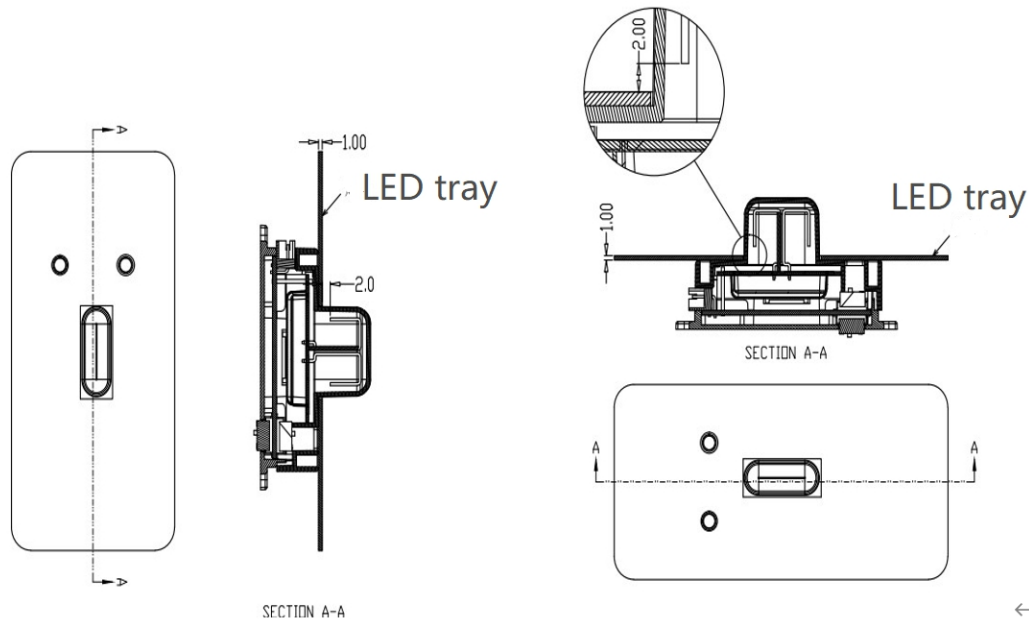
- ④ After hold time, the lamp gradually dims to a low light level 10% if no movement is detected.



- ⑤ Lamp turns off after dawn.



## 7. Installation Instruction



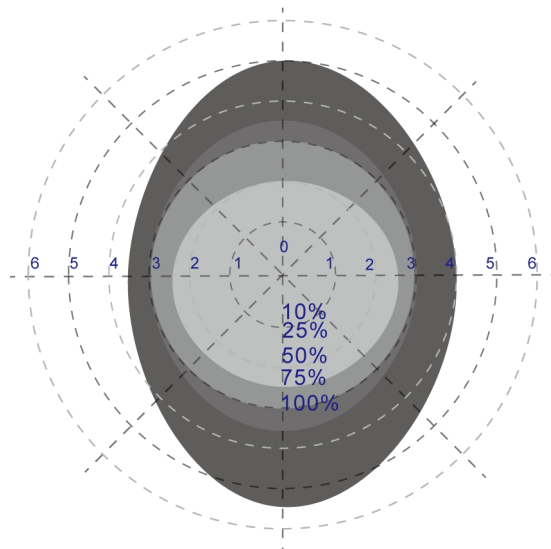
\*The interval between LED tray and the bottom of antenna should be 2mm at least, otherwise the detection distance will shorten.

## 8. Radiation Pattern

Ceiling Mounting

Height: 3m

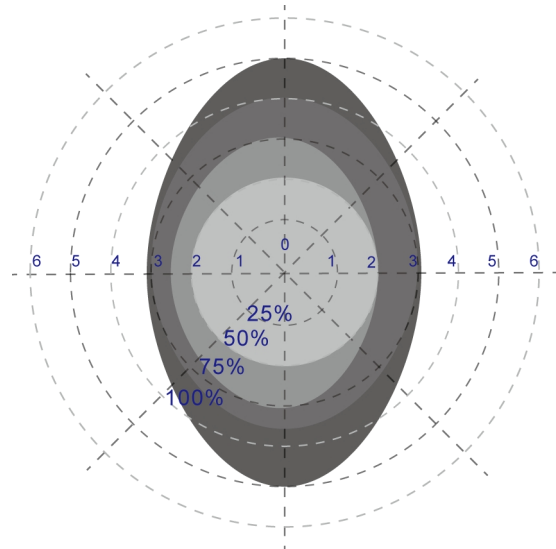
Detection Area: 100%/75%/50%/25%



Fast walking(speed: 1m/s)

Height: 3m

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



Slow walking(speed: 0.3m/s)

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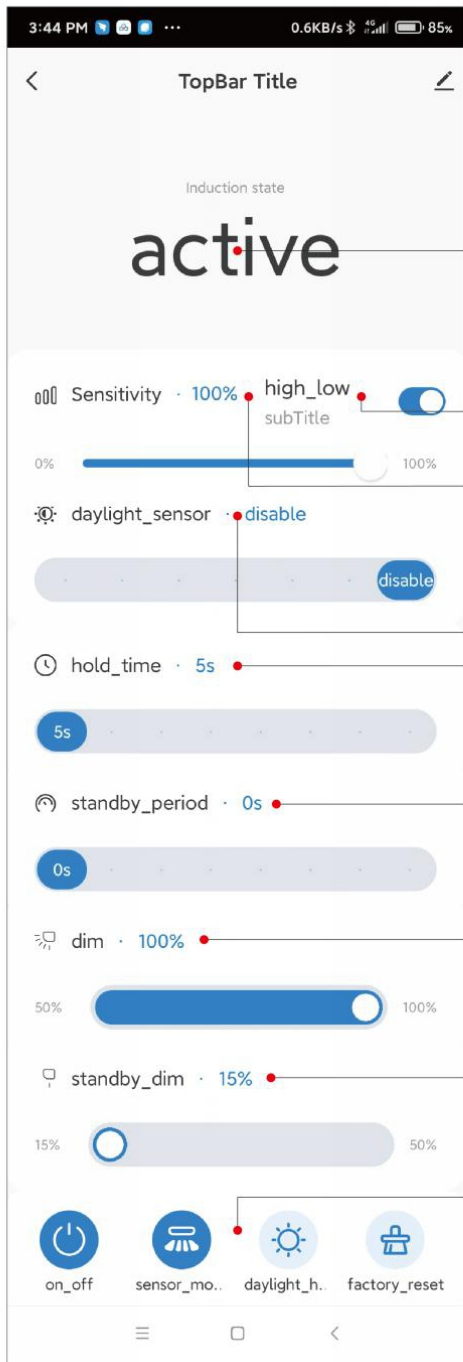
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## 9. APP Interface



\*The operation interface and the location of various parameters may be updated constantly.  
The picture is for reference only, take practicality as standard.

Analyzing the states of human's activity:

- 1) No-human state: there is no one in the detecting area.
- 2) Activity state: someone is moving greatly, such as walking.

Reporting the states:

- 1) Reporting immediately when no-one state changes to activity state.
- 2) "Hold time" starts after everyone leaves detecting area. Reporting no-human state after "hold time" ends.

Selecting "High/Low Sensing" can change the sensitivity in chosen detecting area

Adjusting "Sensitivity" can change the detecting sensitivity: 0%/25%/50%/75%/100%

Adjusting "daylight\_sensor" can change the daylight value: 5Lux/15Lux/30Lux/50Lux/100Lux/150Lux/Disable

"Hold\_time" starts after everyone leaves detecting area. Reporting no-human state after "hold\_time" ends. Adjusting "hold\_time" to 30s/1min/2min/3min/5min/10min/20min

Adjusting "standby\_period" can change the time of low brightness: 0S/30S/1min/3min/5min/10min/30min/+∞

Adjusting "dim" can change the proportion of full brightness: 50%-100%

Adjusting "standby\_dim" can change the proportion of low brightness: 15%-50%

**on\_off:**

Clicking "on\_off", light remains on or off constantly and sensing function is disabled.

**sensor\_motion:**

Clicking "sensor\_motion", constant on/off mode is changed to sensing mode.

**daylight\_harvesting:**

Clicking "daylight\_harvesting", daylight priority mode turns on.

**factory\_reset:**

Clicking "factory\_reset", all settings are changed to factory setting.

## 10. Initialization

When powering on for the first time, the sensor will turn the light on to 100% brightness, and the light will be turned off after 10 seconds. During initialization, movement signal will not be detected.

(1) Download TUYAAPP on the phone and connect Bluetooth gateway.

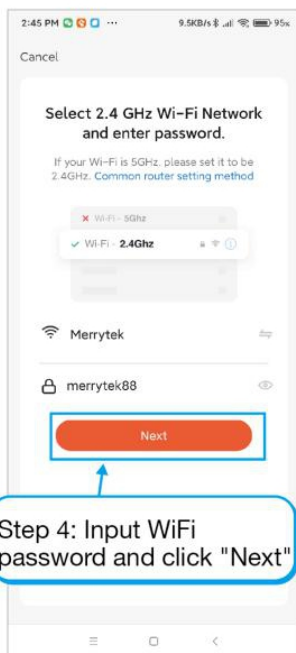
Step 1: Click Add symbol [+]



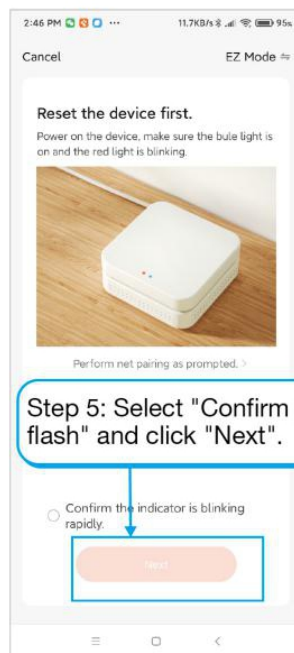
Step 2: Select [manual Add]



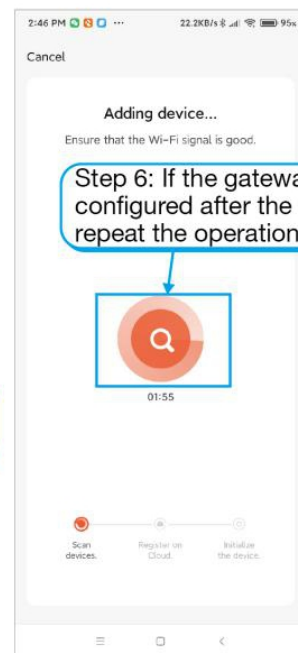
Step 3: Select [Gateway Control], select the [gateway] you buy



Step 4: Input WiFi password and click "Next"



Step 5: Select "Confirm indicator flash" and click "Next".



Step 6: If the gateway cannot be configured after the countdown ends, repeat the operation



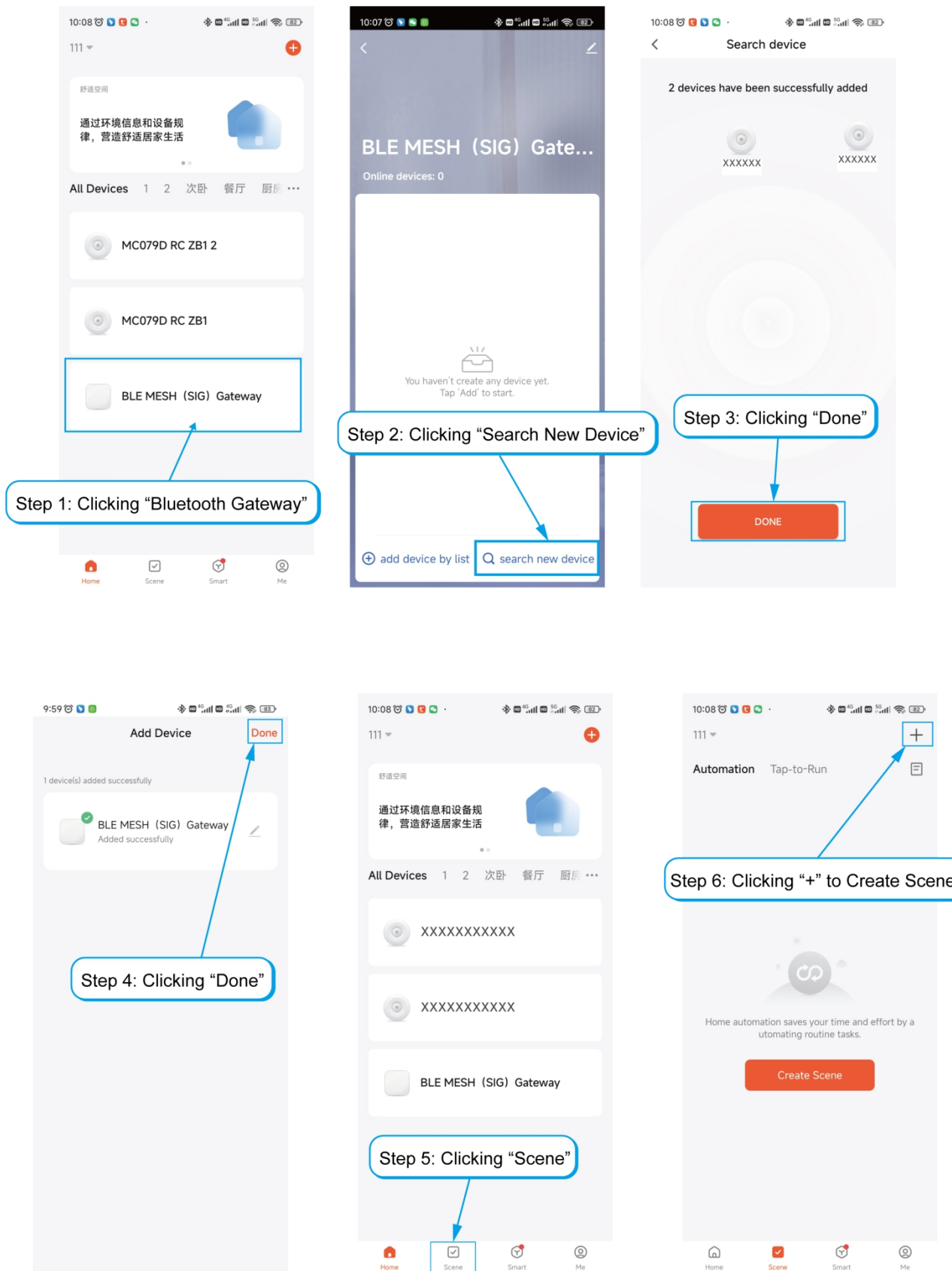
- (2) Connecting gateway automatically when first power on. The sensor will turn the light on to the preset brightness. Movement signal will not detected. Sensor can work normally. At this moment, Bluetooth module can be paired. When pairing successfully, the sensor parameters can be set by APP.
- (3) If the pairing cannot be configured on the power supply, you can press the TEST 2s button of MH10 remote control to configure the sensor (pairing prompt: the light flashes three times). After pairing, you can set parameters of the sensor through APP.

\* Using phone to screen the below QR code to download APP.



Tuya Smart APP

(4) Interconnection Setting(need gateway):



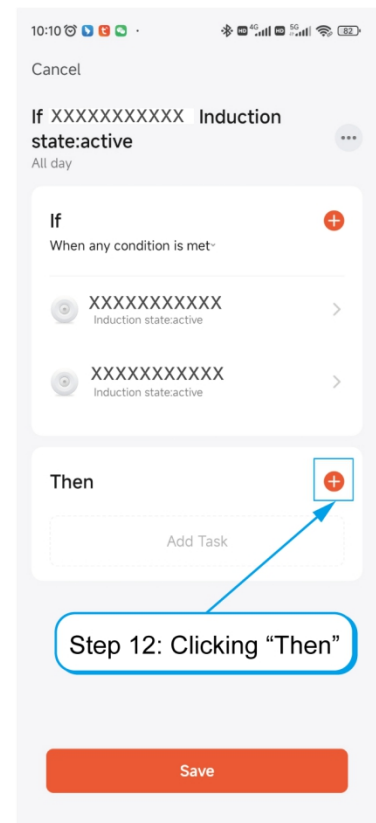
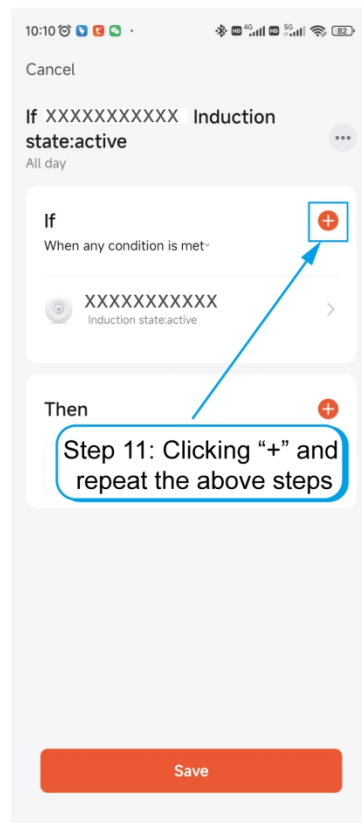
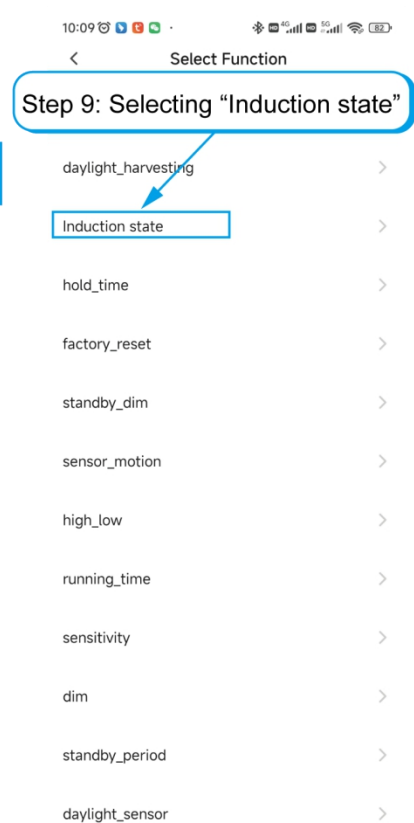
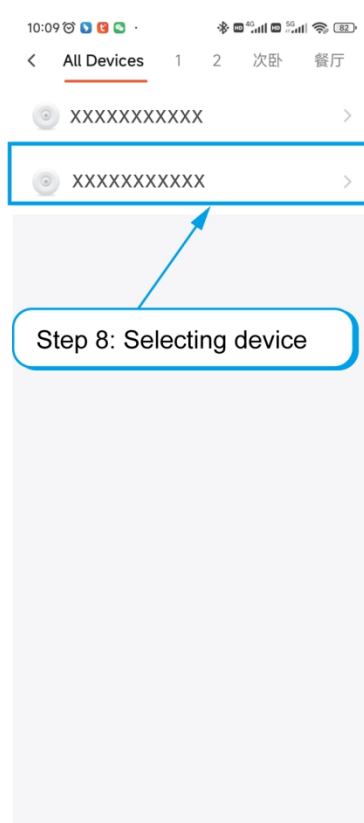
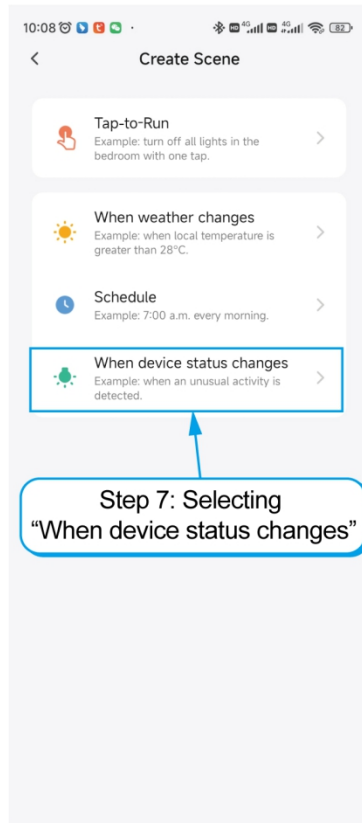
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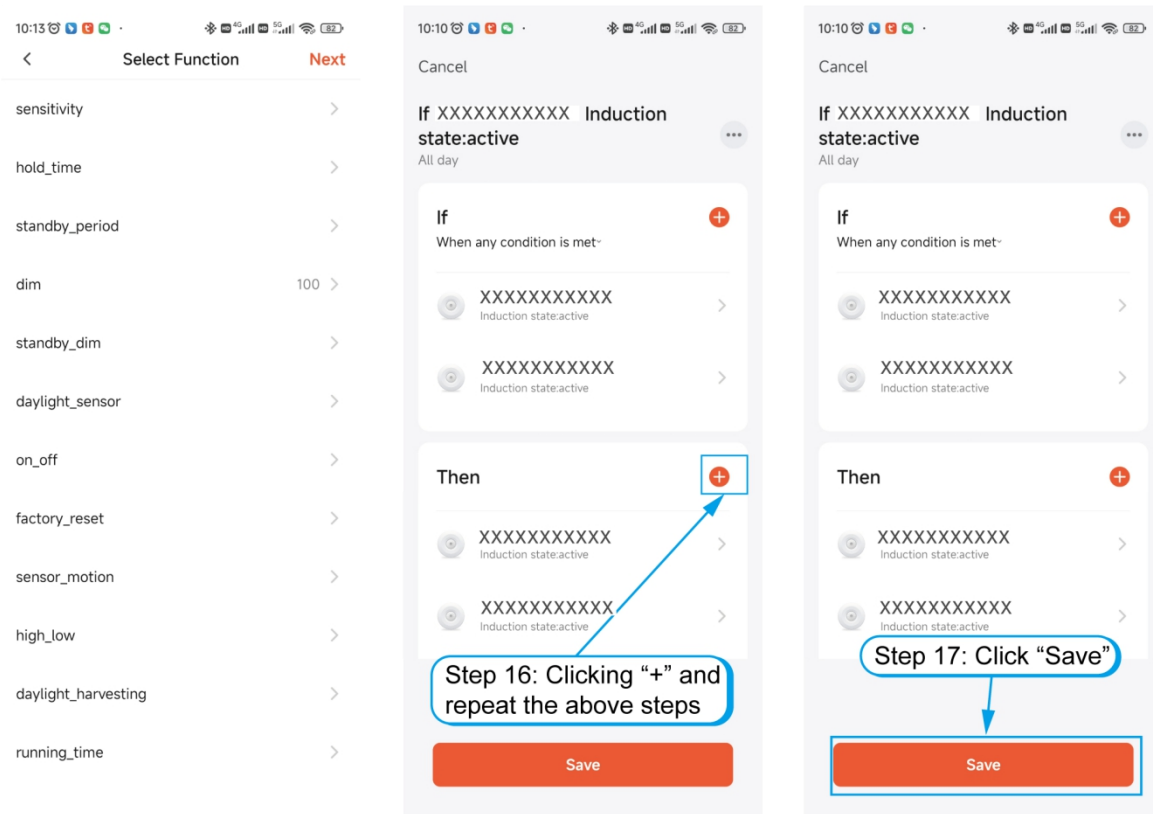
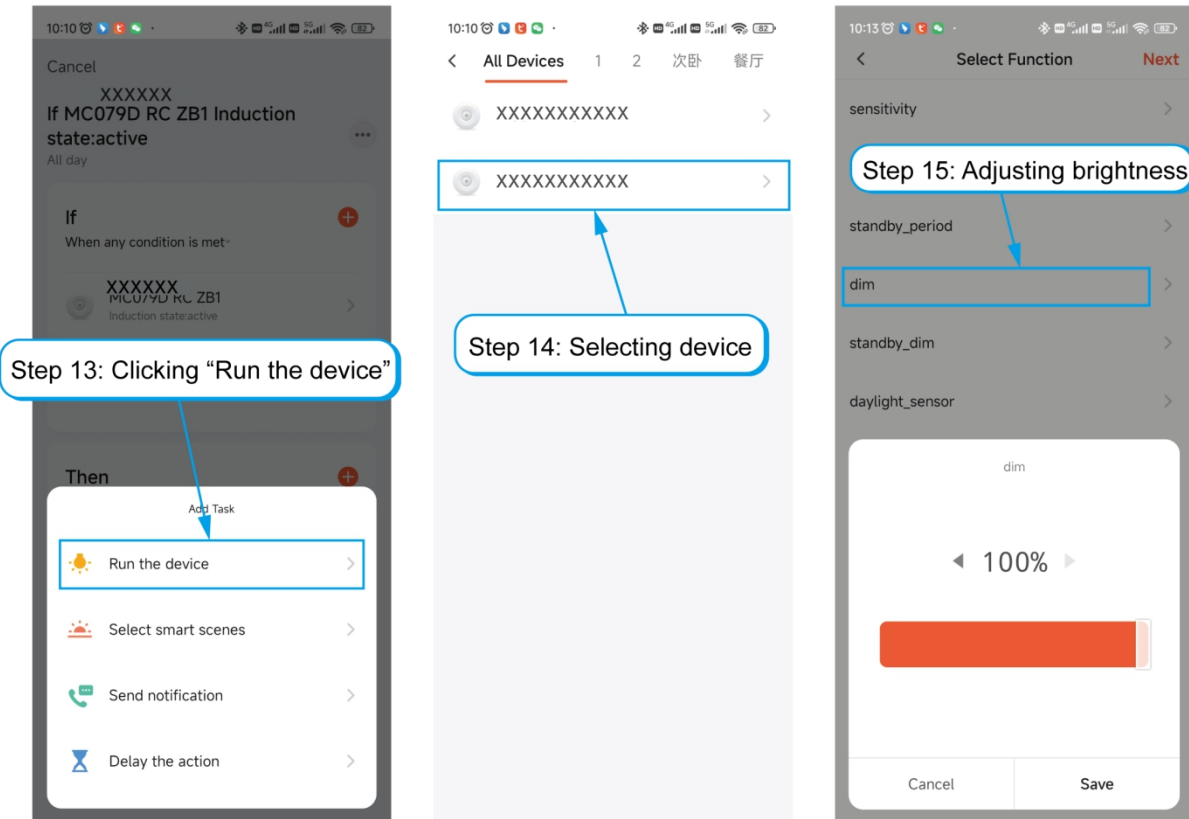
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## 11. Factory Setting

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

## 12. Instruction

- (1) The sensor should be installed by a professional electrician. Please turn off the power before installing, wiring, changing the setting of the DIP switch.
- (2) Sensitivity area is related to moving speed of objects, size of moving objects, mounting height, mounting angle, working environment, reflecting materials and etc. Given detecting area is typical value that was measured by 165cm high testers in an indoor open environment.
- (3) This product is suitable for ceiling mounting. If wall mounting, the detection distance will enlarge. Please lower the sensitivity area or contact the manufacturer for technical support.
- (4) Daylight threshold is in a sunny environment with no shadows and ambient light diffuse reflection conditions. The values illumination detected by sensor may vary in different environment, at different times, in different seasons, and in different climates.
- (5) The parameters of the sensor may need to be connect again in different installation environments. Please refer to the following instructions or contact the manufacturer.
- (6) This sensor is for indoor use only. It will affect the waterproof effect for outdoor use. Wind, rain, and moving objects around will cause false triggering.
- (7) The mounting height is no more than 6m. The best height is 3m. The distance between any sensors should be greater than 3m.
- (8) When the sensor is installed in a metal lamp, metal reflective surface, or a narrow enclosed object, the microwave will be reflected repeatedly and cause false triggering. Please reduce the sensitivity or contact the manufacturer for technical support.
- (9) Please ensure that there are no moving signals around the sensor, such as fan, DC motor, sewer pipe, air outlet and so on. Otherwise the sensor may generate false trigger.
- (10) Microwaves cannot penetrate metal. Do not place the sensor in a closed metal lamp or a half-closed metal lamp and no metal or glass cover above sensor.
- (11) Different 0-10V driver, different low brightness.

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(12) Require stabilized DC power supply with stable output voltage and low ripple, the power supply ripple should be less than 100mV, and the load current should be greater than 60mA.

(13) Due to continuous improvement, the contents of this instruction could be changed without prior notice.