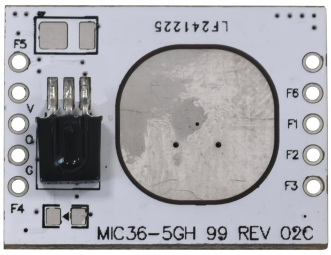
Specification

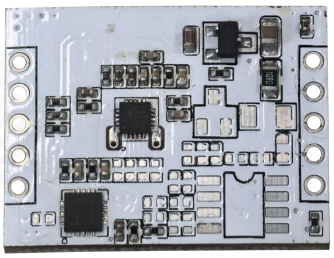
Product Name: **5.8G Microwave Module**

Product Model: **MIC36-5GH 99 series**

Versions	Release/ Change Date	Rationale for modification	Issuer
V1.0	2024.12.03		Leun Huang
V1.1	2025.06.03	Update the remote control	Leun Huang
V1.2	2025.07.02	Fix Bug	Leun Huang

【Product Feature】





- The product adopts patented low impedance antenna technology, which has a larger detection range and strong anti-interference ability
- It can resist wireless device interference while not interfering with other wireless devices and stably output high and low level signals
- It integrated circuit solution and suitable for using ceiling lights and tri-proof lights application
- Single light detection of human movement signals, easy to use terminal
- Multi functional expansion interfaces F1-F6 are available, with simple expansion of sensing functions without the need for additional MCU
- Batching certified by FCC and RED

【Parameter】

Input				
Model	MIC36-5GH 99 A	MIC36-5GH 99 B	MIC36-5GH 99 C	MIC36-5GH 99 D
Rated Voltage	5-13Vdc	12±1Vdc	8-13Vdc	3.3Vdc
Working Current	5±2mA			
Ripple Voltage	<120mVp-p			
Output				
Output Signal	3.3V high and low level signals, 1kHz PWM dimming signal	0/1-10Vdc dimming signal	5V high and low level signals, 1kHz PWM dimming signal	3.3V high and low level signals, 1kHz PWM dimming signal
Sensor Parameters				
Operating Frequency	5.8GHz ±75MHz, ISM band			
Transmission Power	1mW Max.			
Detection Area	25% / 50% / 75% / 100% MH16 and MH10 Remote control settings			
Hold Time	External dialing for parameter setting: 5s/30s/3min/5min/10min/20min (see dialing function table for details) MH16 and MH10 remote control settings			
Daylight Sensor	Normal daylight:	External dialing code for parameter setting: 5Lux / 25Lux / 50Lux / Disable MH16、MH10 Remote control settings		
	Daylight priority:	Switch ON	Switch OFF	
		5Lux	Switch on value + (50-100Lux)	
		25Lux	Switch on value +(50-100Lux)	
		50Lux	Switch on value + (50-100Lux)	
Stand-by Period	External dialing for parameter setting: 0s/30s/10min/+∞ MH16 and MH10 remote control settings			
Stand-by Dim Level	External dialing for parameter setting: 20%/30% MH16、MH10 Remote control settings			

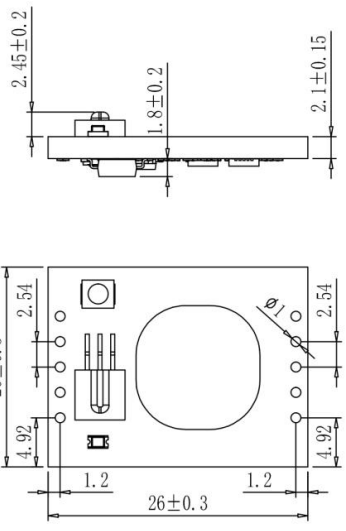
Sensor Parameters	
Detection Range (radius)	Ceiling installation 3m high Human body sensing: r≥ 3m@0.3m/s， r≥ 2.5m@1m/s Test conditions: The product sensing range is set to 100%, and the testing site is an indoor space of 60m^2
Installing Height	3m (6m Max.)
Environment	
Working Environment Temperature	-25~85℃
Storage Temperature	20℃~30℃, Humidity ≤ 60% (non condensing)
Certification Standards	
Compliant with Certification	CE, RED, FCC
Environmental Requirements	Compliant with RoHS 2.0 and Reach requirements
Protection Grade	IP00
Others	
Connection	4pin+5pin PinHeader
Installation Requirement	Built in installation
Packaging Requirements	Clapboard + Carton(K=A)
Net Weight	2±0.5g
Lifetime	5-year warranty@Ta

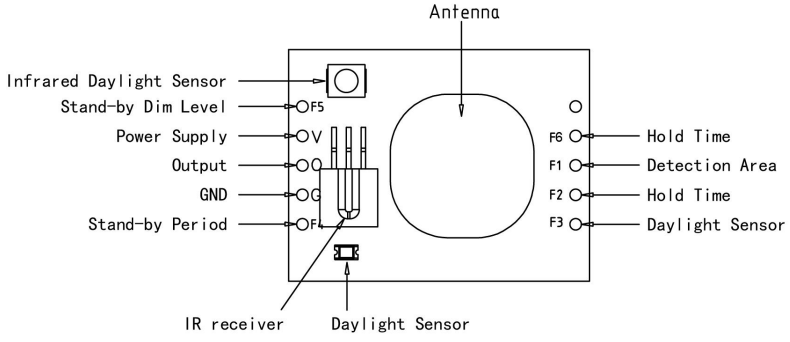
【Function Description】

☑ON/OFF function	Stand-by Period set to “0s”
☑Two-step dimming function	Set the Stand by Period to "+∞" and the Daylight Sensor to "Disable"
☑Three-step dimming function	Stand-by Period set to “3min/10min”
☐Daylight harvesting	N/A
☑Daylight priority	Dial code: Stand by Period set to "+∞", Daylight Sensor not set to "Disable"MH10 remote control: Long press the DH Mode button to enter the light control priority mode.

【Product Information】

- Dimension diagram (unit: mm), Functional diagram

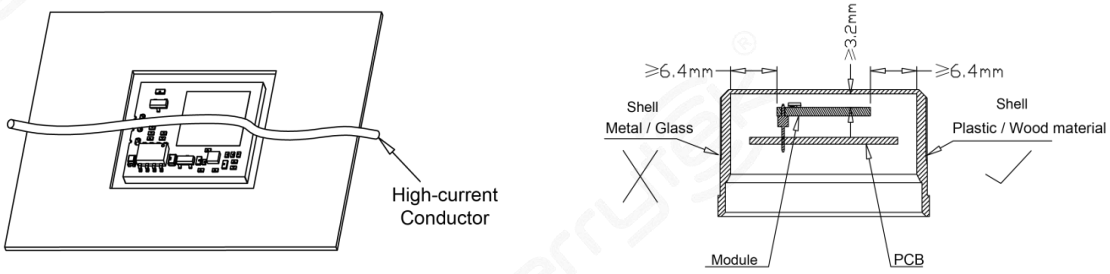




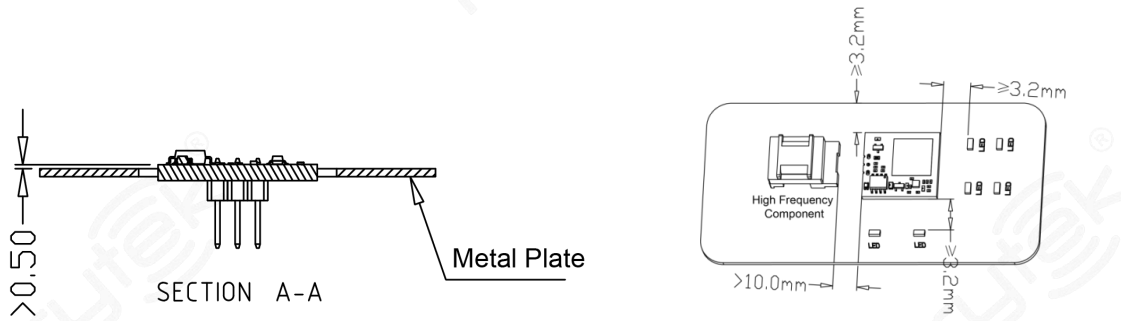
- Functional Sequential Logic

Name	Description	Function and Parameters
VCC	Positive pole of power input	Voltage input range: 12±1V DC
OUT	Output	High and low voltage levels: The high and low voltage levels are 0/3.3V or 0/5V PWM dimming: 1kHz dimming signal 0/1-10V dimming: 0/1-10V dimming signal
GND	Negative pole of power input	Negative pole of power supply.
Daylight sensor	photosensitive sensor	Detecting external light intensity sensor.
Infrared Daylight Sensor	Near infrared photosensitive sensor	Detecting external light intensity sensor.
IR receiver	Infrared remote control receiver head	Receive remote control commands.
F1	Function configuration pins 1	Detection Area gear selection.
F2	Function configuration pins 2	Hold Time gear selection.
F3	Function configuration pins 3	Daylight Sensor gear selection.
F4	Function configuration pins 4	Stand-by Period gear selection.
F5	Function configuration pins 5	Stand-by Dim Level gear selection.
F6	Function configuration pins 6	Hold Time gear selection.

- Installation Instruction



Prohibited (unit: mm)

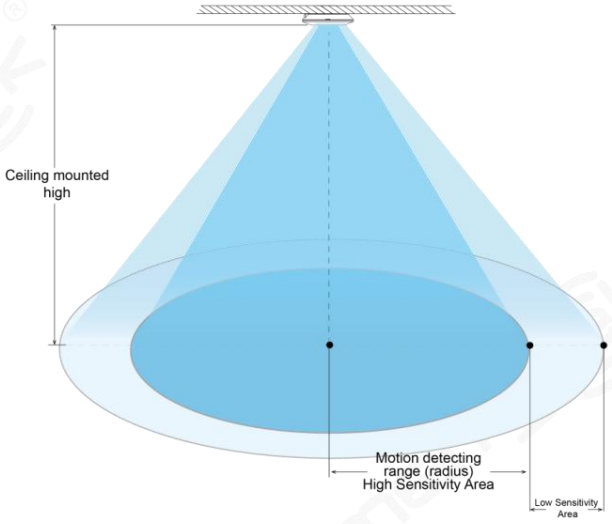


Space item (unit: mm)

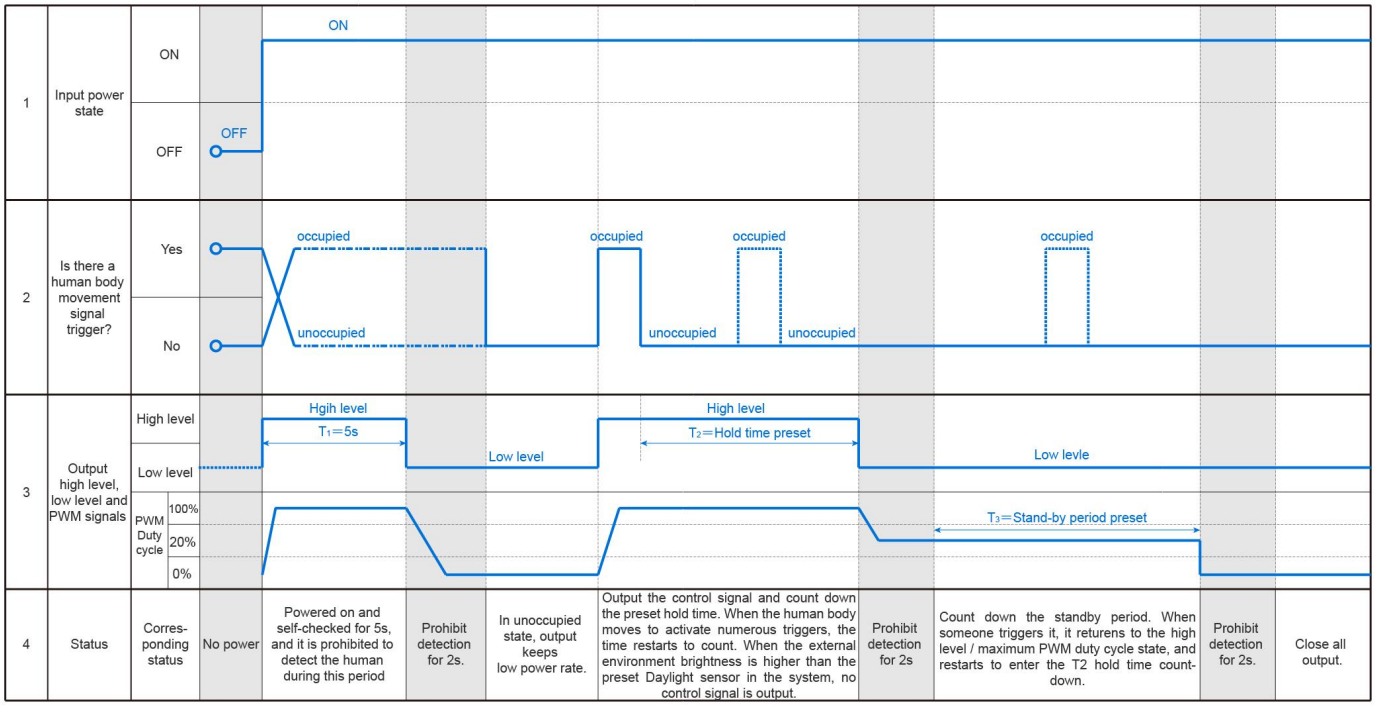
Note:

When installing and designing, please pay attention to the distance between the microwave antenna and the light panel, high-frequency components and high-current wires. See the precautions for details.

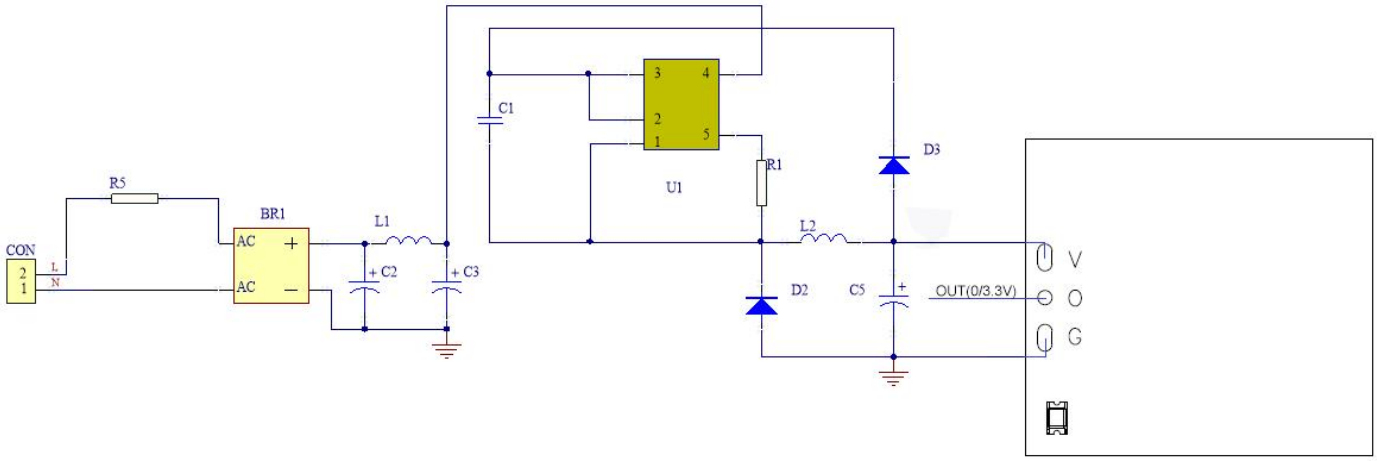
【Radiation Pattern】



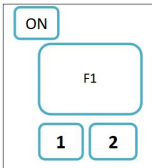
【Functional Sequential Logic】

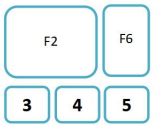


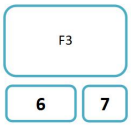
【Typical Application Circuit& Parameters】

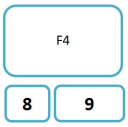


【Dial function table】









Dip switch function table
2024.12.03

Note: ON-- connected to the GND, low level; OFF-- Circuit suspended, high level

Detection Area				Hold Time						Daylight Sensor				Stand-by Period				Stand-by Dim Level		
1	2	F1 voltage	Parameters	3	4	5	F2 voltage	F6 voltage	Parameters	6	7	F3 voltage	Parameters	8	9	F4 voltage	Parameters	10	F5 voltage	Parameters
ON	ON	<0.3V	100%	ON	ON	ON	<0.3V	0V	5s	ON	ON	<0.3V	5Lux	ON	ON	<0.3V	0s	ON	0V	20%
ON	-	0.3-0.83V	75%	ON	-	ON	0.3-0.83V	0V	30s	ON	-	0.3-0.83V	25Lux	ON	-	0.3-0.83V	1min	-	1.347V	30%
-	ON	0.83-1.2V	50%	-	ON	ON	0.83-1.2V	0V	3min	-	ON	0.83-1.2V	50Lux	-	ON	0.83-1.2V	10min			
-	-	>1.2V	25%	-	-	ON	>1.2V	0V	5min	-	-	>1.2V	Disable	-	-	>1.2V	+∞			
				ON	ON	-	<0.3V	1.347V	10min											
				ON	-	-	0.3-0.83V	1.347V	20min											
				-	ON	-	0.83-1.2V	1.347V	30min											
				-	-	-	>1.2V	1.347V	60min											

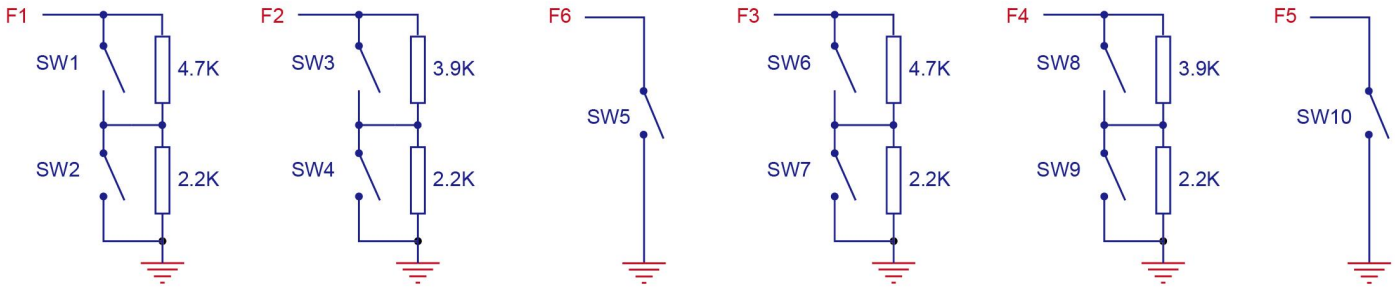
Explanation: F1 is the Detection Area setting pin, F2 and F6 are the Hold Time setting pins, F3 is the Daylight Sensor setting pin, F4 is the Stand-by Period setting pin, and F5 is the Stand-by Dim Level setting pin. If only fixed parameter settings are needed, the dip switch in the above figure can be replaced with a corresponding resistor.

1) Detection sensitivity refers to the sensitivity of a sensor in detecting human movement signals. The higher the sensitivity percentage, the farther the sensing distance, and the lower the sensitivity percentage, the closer the sensing distance.

2) The Hold Time of the O pin output is the time for outputting a high level, which can be repeatedly triggered for timing. When the sensor detects no one, it will delay the set time before outputting a low level.

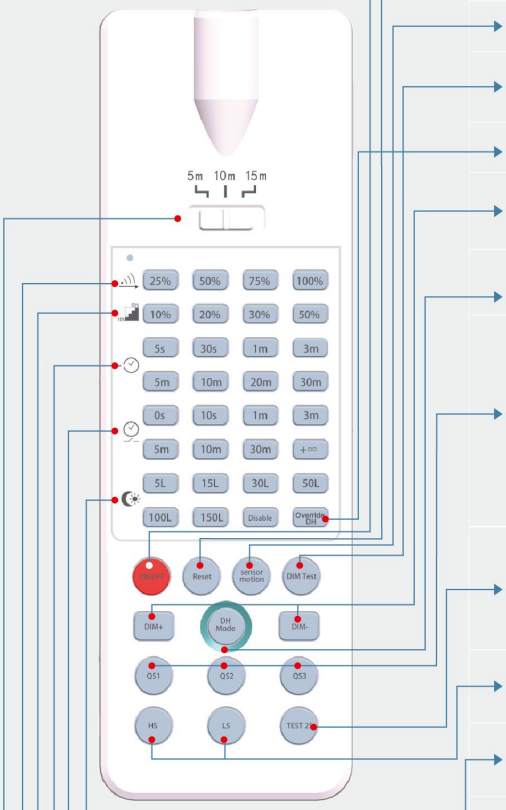
3) The threshold for photosensitive activation is when the light sensor detects that the external light intensity is less than the set value and is triggered by human movement before outputting a control level signal.

Recommended external dialing circuit:



【Remote Controller】

MH10
Instruction

Remote Control Setting	Button	Remarks
	ON/OFF	Press the "ON/OFF" button, the load light enters the normal on/off mode, and the sensing function is disabled. In the normal on/off mode, the "DIM+/DIM-" function can be used to maintain the load light brightness after powering on again. In the normal on mode, the load light enter ON after powering on again. If the load light is OFF, the load light is ON for 2 seconds and then enter OFF after powering on again.
	Reset	Press “Reset" button, all parameters are same as setting of DIP switch or factory settings. Note: Only the product has DIP switch, it will revert to the current DIP setting.
	Sensor motion	Press "Sensor motion" button, the light quits from the normal on/off mode, and the sensor starts to work. (The latest setting stays in validity)
	DIM Test	N/A
	Override DH	Long Press 3s "Override DH" button to exit the Daylight priority mode or Daylight harvesting mode, and then enter the Daylight Sensor mode. (The latest setting stays in validity)
	DIM + DIM -	Short press "DIM+/DIM-" button to set occupancy light level, the brightness of the load light adjusts at 2% per unit. Long press "DIM+/DIM-" button to set occupancy light level, the brightness of the load light adjusts at 2% per unit. Dimming range: 50%-100%. (apply for normal on mode and sensor with daylight harvesting function)
	DH Mode	Long Press 3s to enter the Daylight priority function or Daylight harvesting function. Note: Short press "Disable" button will exit the Daylight priority mode and the Daylight Sensor is uncontrolled.
	QS1 QS2 QS3	Scence Options / Dection Area / Hold Time / Stand-by period / Stand-by dim level / Daylight Sensor / Induction way QS1: 100% / 5min / 10min / 10% / 30Lux / HS QS2: 100% / 10min / 30min / 10% / Disable / HS QS3: 100% / 20min / 30min / 10% / Disable / HS Note: The sensor parameters can be adjusted by pressing the corresponding button. When user press any button to change the sensor parameters, the last setting prevails. If the sensor doesn't have the function of the above parameters, that parameter is invalid. (Stand-by period and Stand-by DIM Level are not applicable to ON-OFF Sensor. Induction way is not applicable to low-mount sensor)
	TEST 2S	Press the "TEST 2s" botton can enter the test mode anytime. At test mode, the sensor parameters as below: Detection Area is 100%, Hold Time is 2s, Stand-by Dim Level is 10%, Stand-by Period is 0s, Daylight sensor is disabled. This function only for testing. Quit the test mode by pressing "RESET" or any other function buttons. This mode has no memory function. After powering on again, the parameters are restored to the last setting.
	HS LS	N/A
		Daylight Sensor Set up Daylight Sensor: 5Lux/15Lux/30Lux/50Lux/100Lux/150Lux/Disable
		Stand-by period Set up Stand-by period: 0s/10s/1min/3min/5min/10min/30min/+∞
		Hold time Set up Hold time: 5s/30s/1min/3min/5min/10min/20min/30min
	50% 10%	Stand-by dim level Set up stand-by dim level: 10%/20%/30%/50%
		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 sensor.

Remote controland code setting conversion

1.DIP switch setting convert to remote control

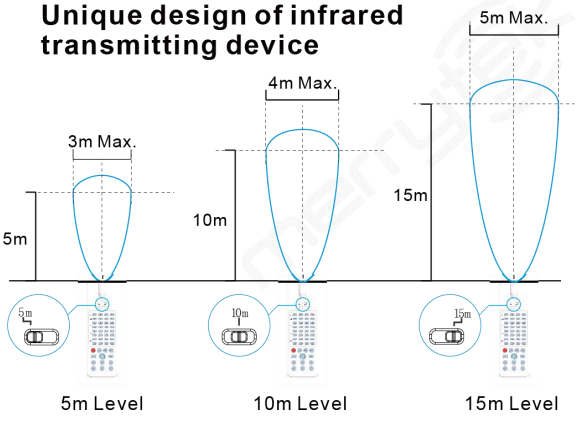
Press any bottom except "RESET" on the remote control, and the sensor settings convert to the function currently selected by the remote control. (No function button settings invalid)

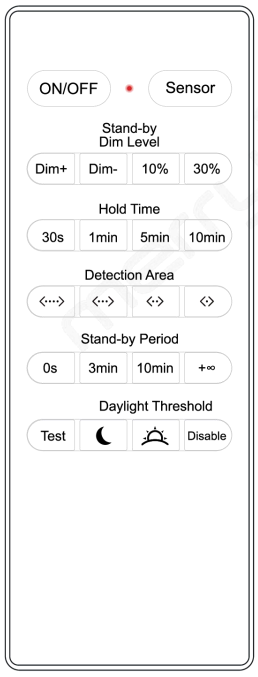
2.remote control convert to DIP switch setting

a.Press the "RESET" button on the remote control, and all settings return to the DIP switch settings of the sensor.

b.Turn off the power, toggle any DIP switch, connect to the power, and all settings return to the DIP switch settings when supply power again.

Unique design of infrared transmitting device





Button	Function	Description
ON/OFF	Normal ON/OFF	Press the ON/OFF button, sensing function is canceled and the light will remain ON/OFF. Sensor has power-off memory function, that is: Power on again under the “ON” mode of the load lamp, the load lamp enters “ON” mode. Power on again under the “OFF” mode of the load lamp, the load lamp enter the normally “OFF” mode after on for 2s.
Sensor	Recover sensing	Press this button to recover sensing function, The parameter is restored to the last parameter set.
Dim+	Increasing Brightness	Press this button to increase by 2% each time, adjust range 50%-100%, long press can continuously dimming. Power on again after power off: 100% brightness for 2s and then to the set brightness.
Dim-	Reducing Brightness	Press this button to reduce by 2% each time, adjust range 50%-100%, long press can continuously dimming. Power on again after power off: 100% brightness for 2s and then to the set brightness.
Stand-by Dim Level	Low Brightness	10%, 30%
Hold Time	100% Brightness	30s, 1min, 5min, 10min
Detection Area	Detection Area	100% ⟷ , 75% ⟷ , 50% ⟷, 25% ⟷
Stand-by Period	Stand-by Time	0s, 3min, 10min, +∞
Test	TEST Button	Press this button, Sensitivity: 100%, Hold time: 2s, Stand-by period: 0s, Stand-by dim level: 10%, Daylight sensor: Disable; Restore to the previous induction setting after power failure.
Daylight Threshold	Threshold	15lux , 50lux , Disable

【Default Setting】

Detection Area: 100% Hold time: 5s Stand-by period: 0s Stand-by DIM level: 10%

Daylight sensor: 5Lux

【Initialization】

The light will be turned on 100% brightness after power on, and self test for 5s. During initialization, no external motion sensing signal will be detected.

【Application Notice】

- Sensor should be installed by a professional electrician. Please turn off power before installing, wiring.
- Microwave sensor has good penetration ability to plastic and wood, but microwaves cannot penetrate metal. Neither metal nor glass is not allowed to cover above the product, otherwise the transmitting and receiving of microwave antennas will be affected.
- Sensitivity area is related to moving speed of objects, size of moving objects, mounting height, mounting angle, working environment, reflecting materials and etc..And the sensing distance in different directions will also have certain differences.
- 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.
- The installation spacing between sensors is recommended to be greater than 1.5m, and the installation spacing between sensors and routers is recommended to be greater than 1.5m. So as not to

interfere with the normal operation of the microwave.

● The installation plane of the product (for example, aluminum substrate, PCB board) needs to be a certain height different from the antenna plane of the microwave module.The spacing between the sensor antenna and surrounding materials should be greater than 5mm.

● It is recommended to connect with stable AUX power supply with lower current and ripple voltage (ripple voltage< 120mV; the minimum load current > 100mA), and to set an electrolytic capacitor filter of no less than 220uF at the VCC port of the input power supply.

● 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.

● The antenna surface of microwave module should be away from AC drive power supply, rectifier bridge, transformer, switch tube and other high-power devices to avoid high frequency signals affecting the normal operation of microwave sensor’s antenna.

● When design product: The antenna surface of the microwave module and its nearby circuit should avoid large current flow, and it also should avoid transformers or high-frequency components nearby, the distance should be greater than 10mm.

● When wiring, the antenna surface and the component surface on the back of the product should not be shielded by wires or large current flow, avoid to influence the normal operation of the sensor.

● There should be no metal or glass barrier directly in front of or near the product, avoid to influence the normal operation of the sensor. Meanwhile, the height between the antenna surface and plastic should be greater than 3.2mm. The thickness of the plastic should be less than 2mm. If it is too thick, it will affect the detection effect and orientation of the microwave module. Please refer to the spacing item description in the installation diagram.

● The height between the antenna surface and metal plane(aluminum substrate, iron shell) is recommended greater than 0.5mm.

● When the product structure, power supply mode/circuit, sensor antenna front shield changes, should notice the sensor manufacturer for confirmation, so as not to cause the product to work abnormally. If the change is not notified to the manufacturer, the manufacturer will not take responsibility to the abnormal.

● The input and output pins are not welded by default.

● For the new installation environment, it is recommended to install and test 5pcs of prototypes before batch installation.