

MINI-24G-REL

24GHz Radar Presence and Motion Sensor Presence Sensor

Product Manual (Dry Contact Version)

Installation Manual



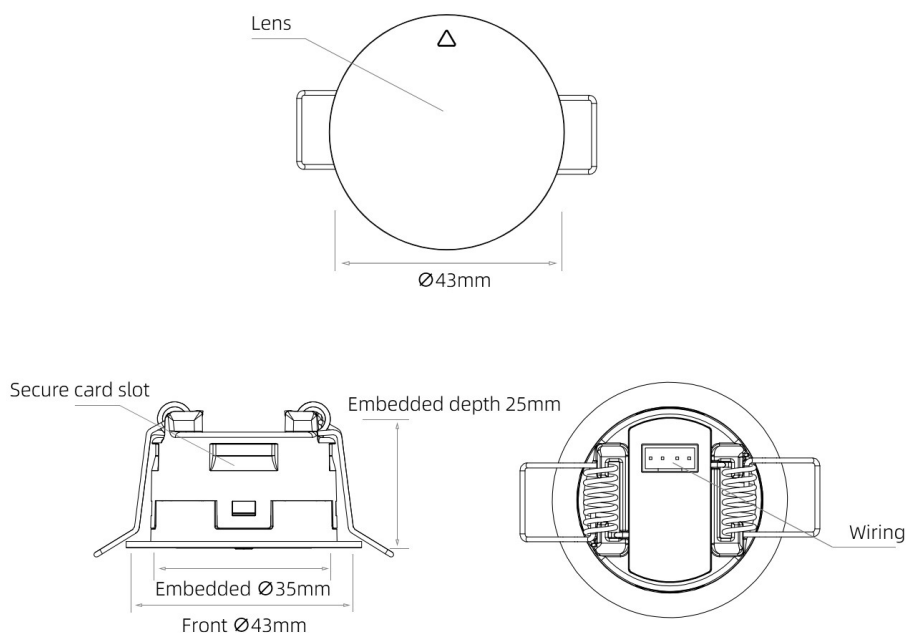
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Appearance

The front diameter of the product is 43mm, the depth is 25mm, 35mm hole-cut. Ceiling mounted, 86 panels wall mounted, surface mounted, surface-mounted bracket, embedded installation.



Default Parameters

No.	Function	Default value
1	Delay	1 second
2	Illumination	Close
3	Detection Distance	450 cm
4	Sensitivity	50%
5	Detection Mode	Motion + Presence
6	Dry contact output mode	Normally Open
7	Indicator light	Open

Detection Principle

24Ghz FMCW frequency modulation continuous wave radar can detect the expansion of chest and abdomen during breathing, so as to accurately detect the static, micro-motion and moving state of the living body.



Applications

Home

Bathroom | Entrance hall/Walkway/Staircase | Bedroom | Cloakroom

Accurately detect the presence, the light is on when people come, automatically turned off when they leave, and the light is not turned off when people in the static state.

Control light according to the change of environmental illumination.

Office

Office | Meeting Room | Shared Office Space

When people come, the office equipment is turned on. When people leave, the office equipment is turned off automatically.

Save energy consumption and improve human efficiency.

Hotel

Guest Room | Toilet | Walkway/Stair

Assist to judge whether the room is occupied or not, save energy consumption and improve human efficiency.

Accurately detect the presence and achieve a more smart check-in experience.

School/Library

Classroom | Reading Room | Study Room

Accurately detect the presence, turn on the light/equipment when people come, and turn off the light/equipment when people leave.

Precise energy saving can be realized.

Elderly Care

Rooms | Toilets | Walkways/Stairs

Accurately detect the presence and assist in abnormal monitoring.

Accurately detect the presence, turn on the light/equipment when people come, and turn off the light/equipment when people leave, so that the energy efficiency is saved and the human efficiency is improved.

Smart Parking Lot

Entrance and exit | driving passage | parking space

Accurately detect the presence, turn on light when car come, automatically turn off the car after people leaves the car.

According to the change of environmental illumination, intelligent lighting control is carried out to save energy accurately.

Smart security

Residential Community | Office Park | Building

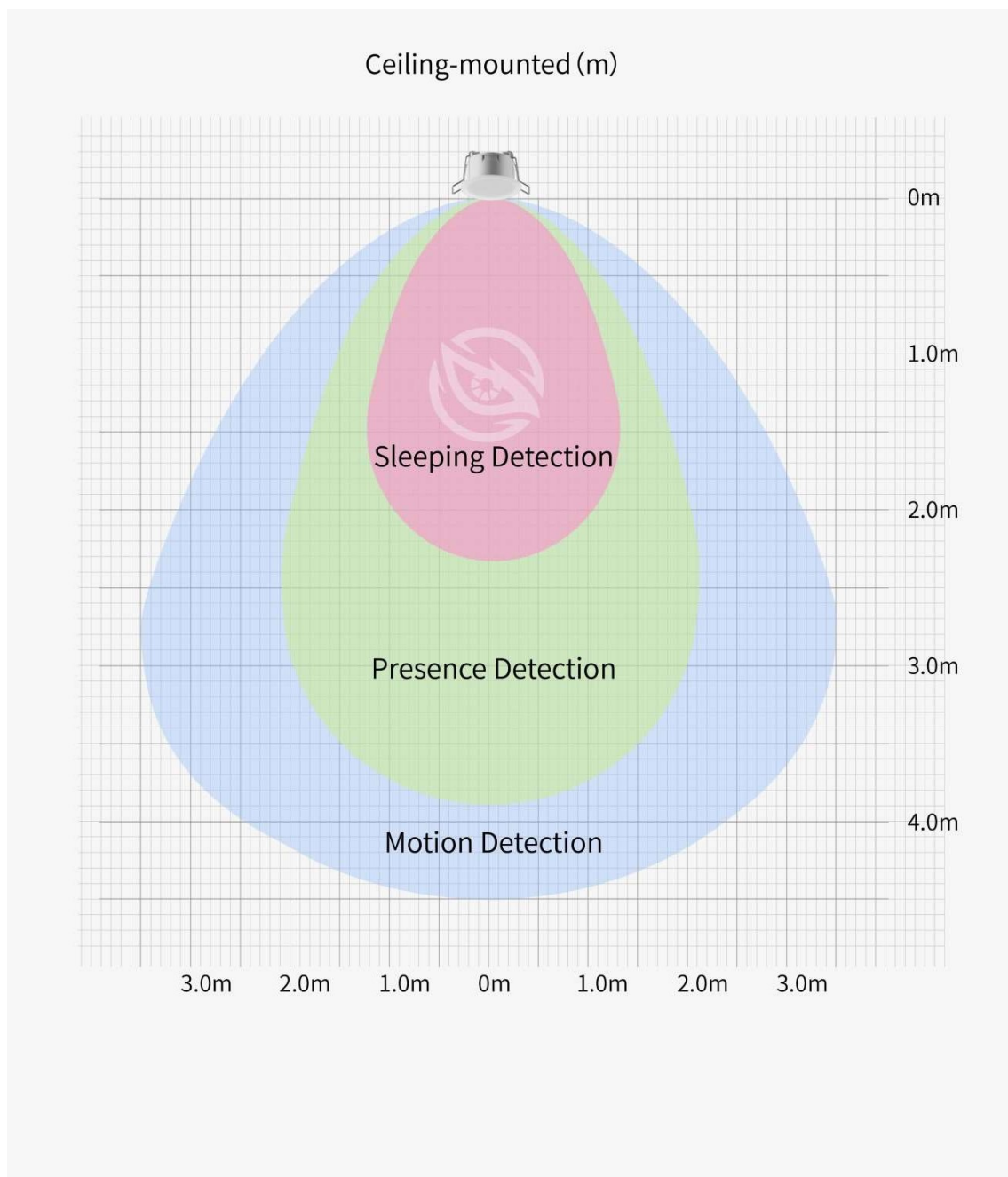
All-weather work, accurate detection, intelligent tracking

Linkage alarm system to deter intruders

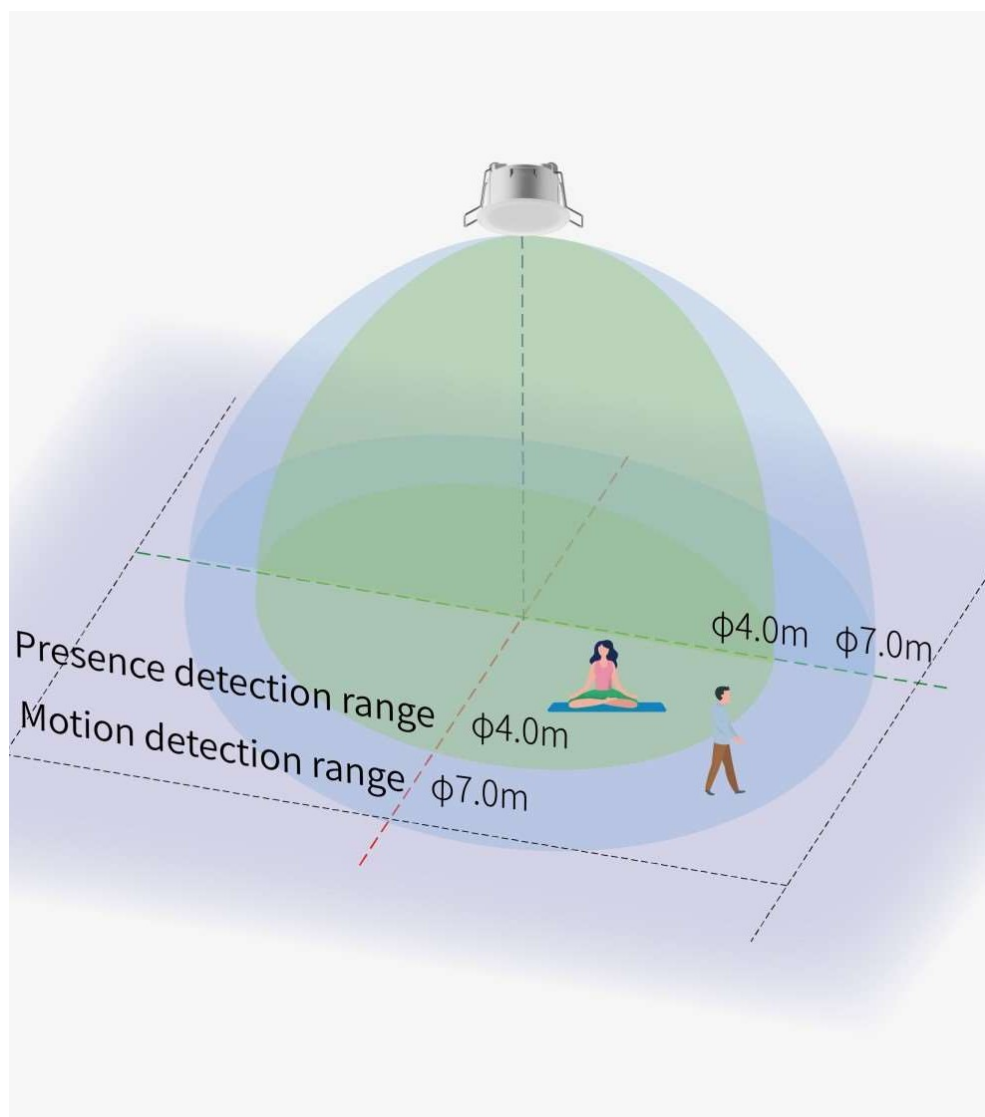
Specifications

Detection Mode	24 GHz mmWave radar FMCW Technology	
Mounting Height	2.0 ~ 4.0m	
Detection Angle	360°	
Detection Range	When the installation height is 2.5 ~ 3.5m ① Minor-motion and motion detection $\leq \phi 7.0\text{m}$ ② Presence detection $\leq \phi 4.0\text{m}$	
Detection Distance	1.5 ~ 4.5m	
Detection Sensitivity	0~100%	
Illumination Sensing	0 ~ 32000 Lux (Precision $\pm 1\%$)	
Product Size	43mm*25mm	
Hole Size	$\phi 35\text{mm}$	
Product Weight	18g	
Operating Voltage	DC12~30V(Standby power $< 0.5\text{W}$)	
Work Temperature	Temperature -20 ~ 45 °C Humidity $< 95\%$	
Dry Contact Output	Delay Time	1 ~ 3600 seconds
	Relay Load	$\leq 36\text{V(AC/DC)}$, $\leq 100\text{mA}$
	Output Type	Solid state relay 1 set, support normally open/normally closed/normally open
LED indicator		① Flash for 3 seconds after receiving the configuration command ② It is always on when someone is detected, and the brightness of the indicator light is automatically adjusted with the ambient illumination. ③ The off mode can be set (it will not be on when someone is detected)

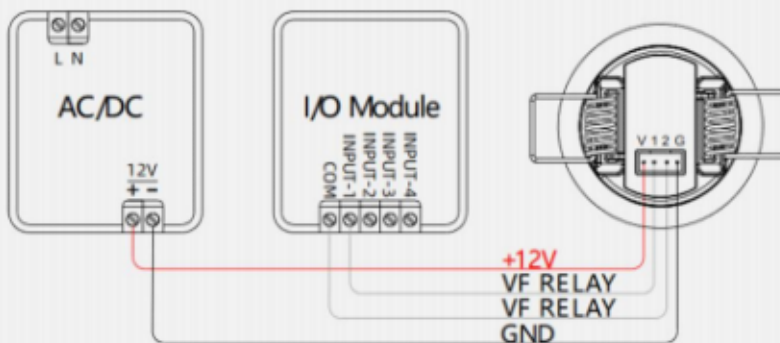
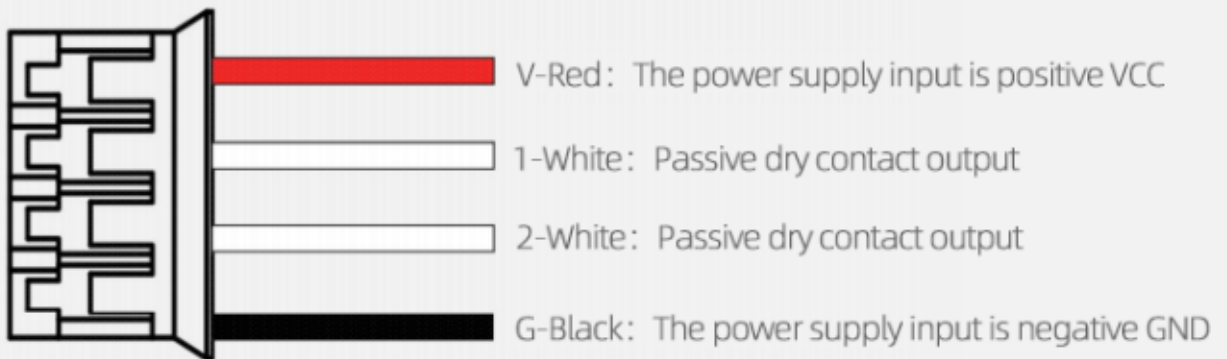
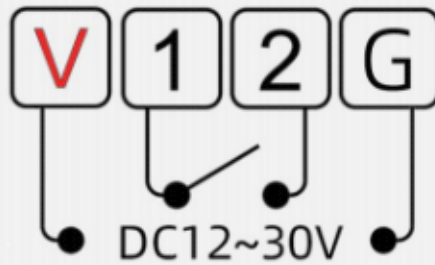
Detection Range



Detection range

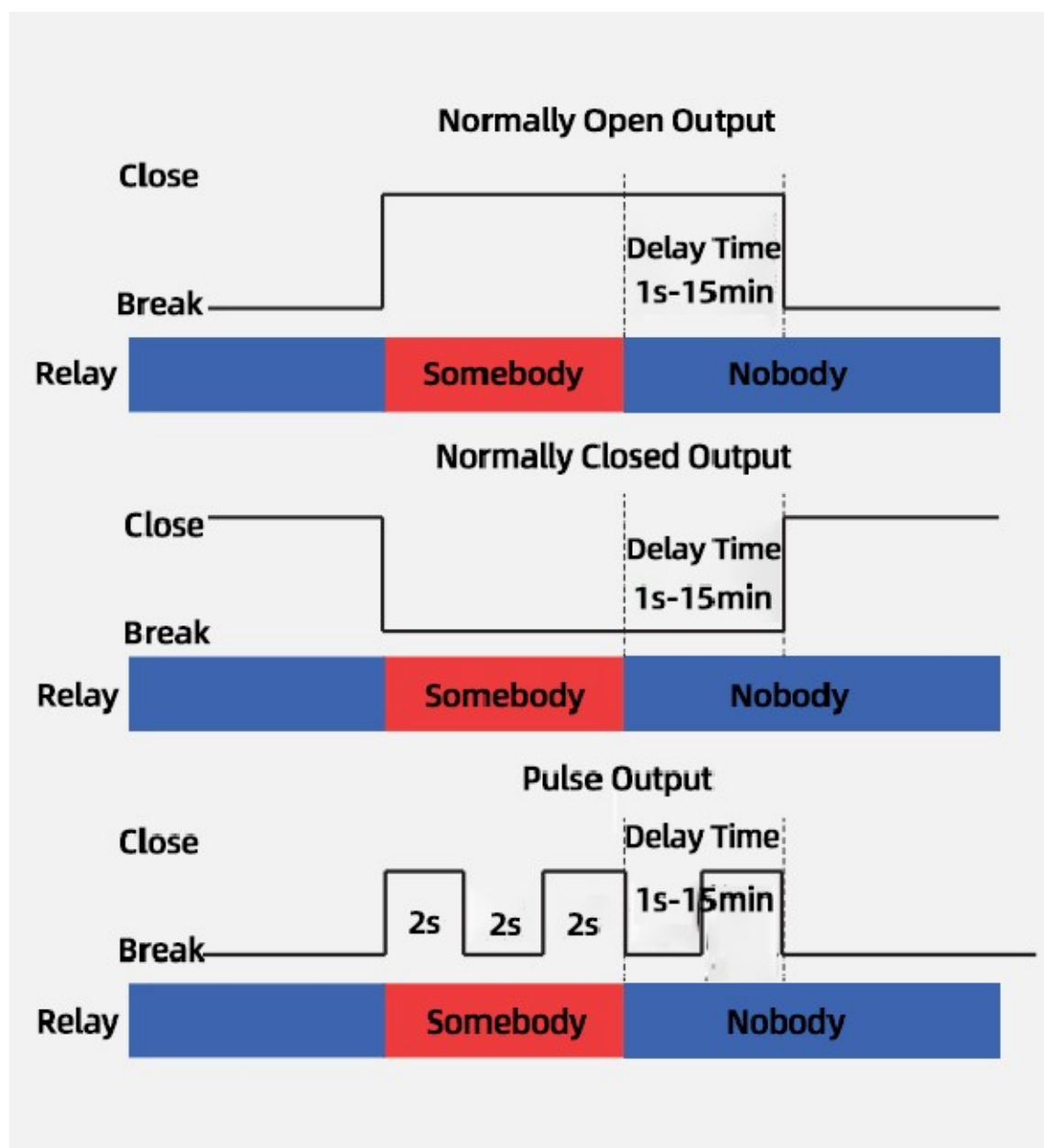


Wiring



Set up

Schematic diagram of dry contact output is as follows:



Set up

Use any set-top box remote controller at your hand to set and query of sensor parameters, including delay time, illumination threshold, sensitivity, detection distance, etc.



Set up

Use only the number keys 1-9 * # to set and query parameters as follows:



1. Set the parameters and press the following buttons in turn



Start setting: the indicator light flashes.

Set successfully: the indicator light quickly flashes for 1 second.

Error: the indicator light keeps on for 3 seconds.

2. Query parameters and input them by remote controller in turn



Start query: the indicator light flashes

Query result: the number of times the indicator light flashes indicates the query result.

For example, query the set illuminance value you set, press * 2 # , and the indicator light replies:

Flash 3 times (number 3)

On for 2 seconds (digit 0)

Flash 7 times (number 7)

Off or Breathing Light (Exit)

Indicates 307 Lux

Set up

Function code and parameter comparison table

1. Comparison table of common parameter settings

Function Code		Parameter value
1	Time Delay (1-3600s) Set/Query	0-9999
2	Illumination Threshold (0-32000 Lux) Set/Query	
3	Detection Distance (150-450 cm) Set/Query	
4	Sensitivity (0-100%) Set/Query	

Setting example:

Set the delay time to 60s and press * 1 # 60 #

Query the delay time you set and press * 1 # #

Set illumination threshold to 70 Lux, press * 2 # 70 #

Query the illumination threshold you set, press * 2 # #

Set the detection distance to 450 cm, press * 3 # 450 #

Query the detection distance you set, press * 3 # #

Set sensitivity to 60%, press * 4 # 60 #

To query the sensitivity you set, press * 4 # #

Set up

2. Comparison table of more function parameter settings

Function Code		Parameter value
5	Real-time illumination value query	/
6	Detection mode Set/Query	1: Only Motion 2: Presence&Motion
7	Dry contact mode setting/query	1: Normally open 2: Normally closed 3: Normally open pulse 4: Normally closed pulse
9	①LED Indicator ②Factory Reset	1.Indicator On 2.Indicator Off 9.Factory Reset

Setting example:

Query the real-time illuminance value,press * 5 # , and the number of flashes of the indicator light represents the query result.

For example, if the measured real-time illuminance value is 50 Lux, the indicator light will reply.

Flash 5 times (number 5)

On for 2 seconds (digit 0)

Off or Breathing Light (Exit)

Set up •

Set the detection mode to only motion detection, press * 6 # 1 #

Set the detection mode to presence&motion detection,press * 6 # 2 #

Query the detection mode, press * 6 # #

Set the working mode of dry contact to normally closed mode, input * 7 # 2 #

Set the working mode of dry contact to normally open pulse, input * 7 # 3 #

Set the working mode of dry contact to normally closed pulse, input * 7 # 4 #

Query the protocol mode and input * 7 # #

Set indicator on,press * 9 # 1 #

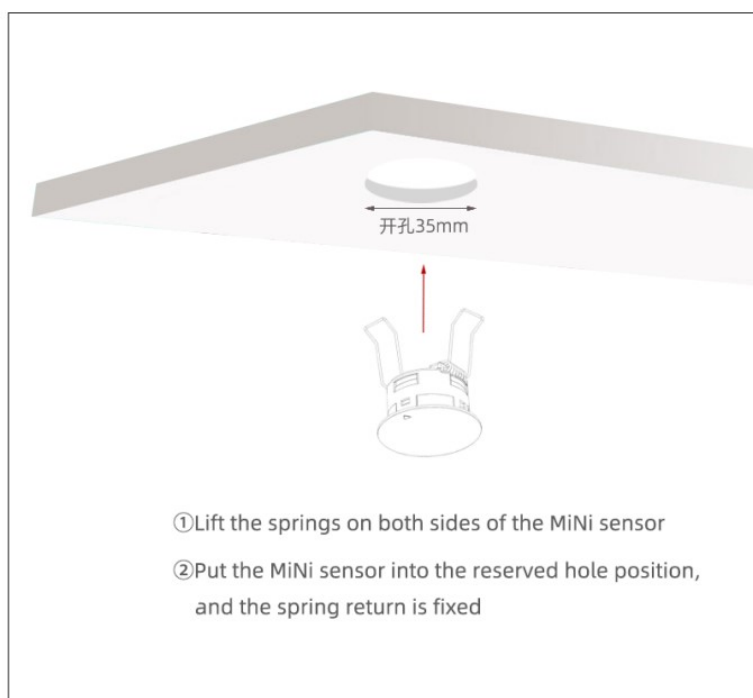
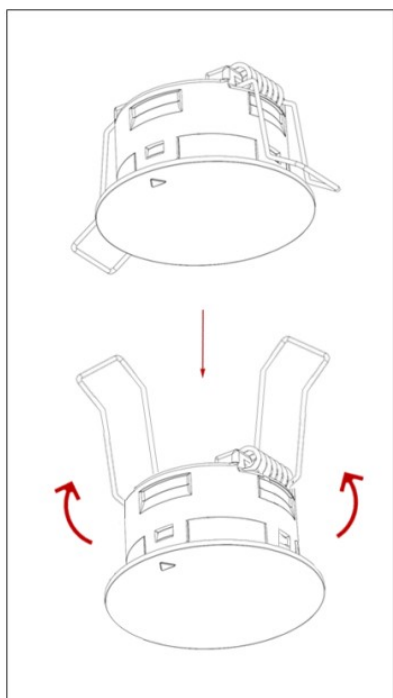
Set indicator light off, press * 9 # 2 #

Factory reset, press * 9 # 9 #

Installation

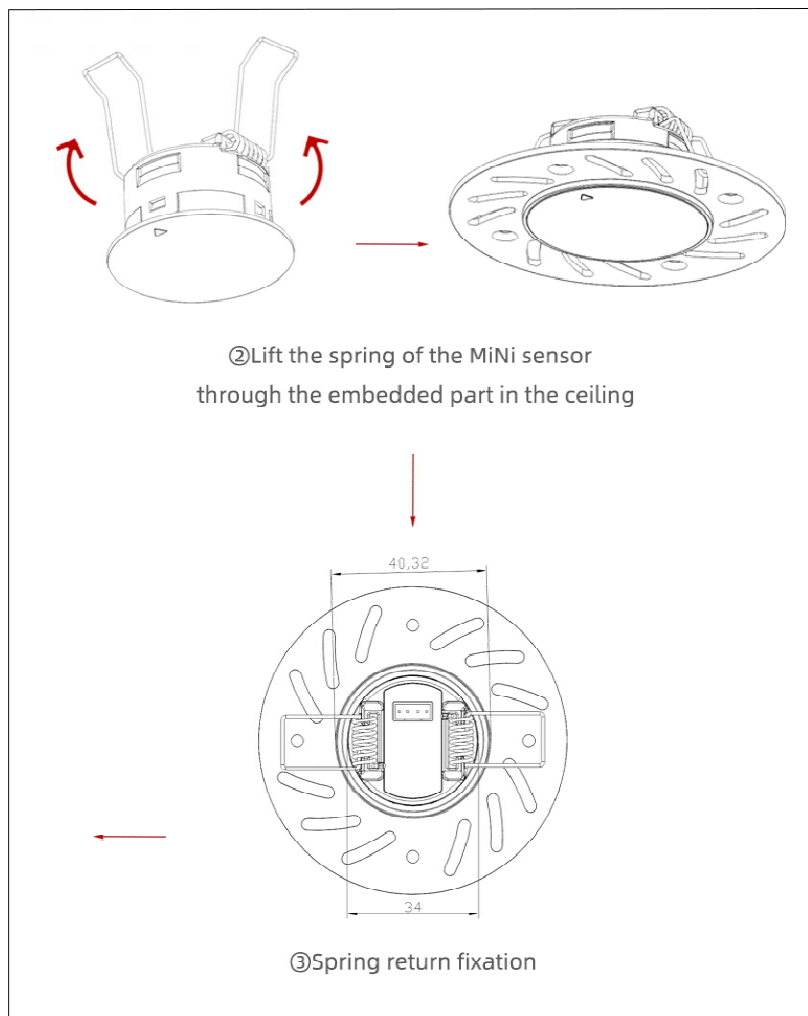
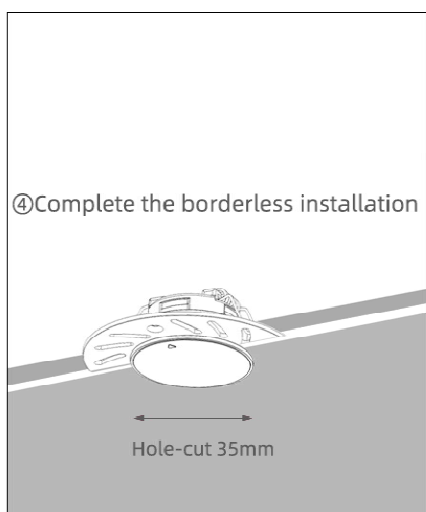
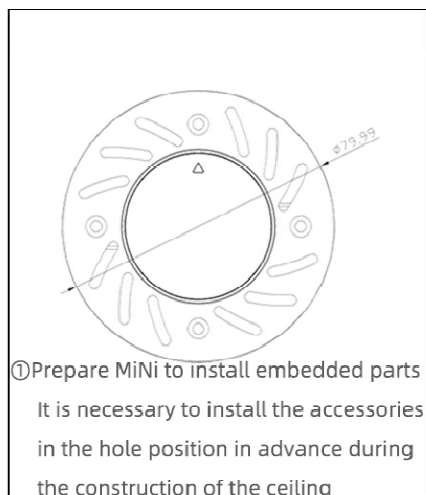


General Ceiling Mounted Procedure

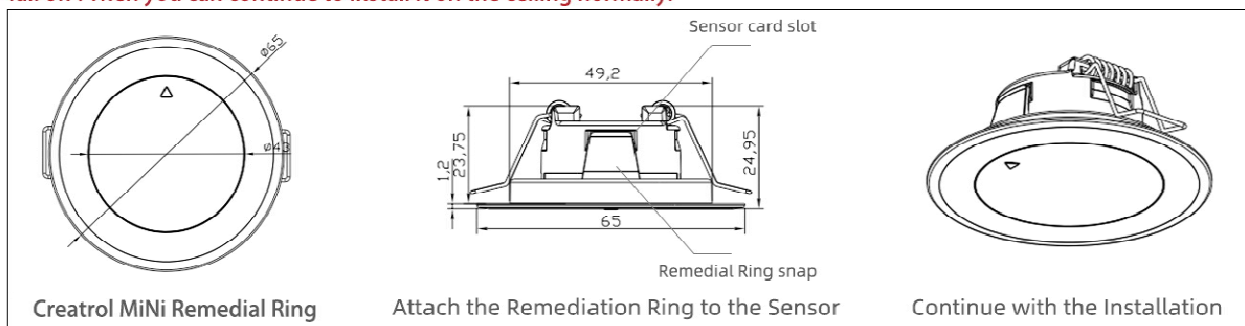


Installation

Procedure for Ceiling Mounting (Without a Border)



Note: If the reserved opening hole for ceiling installation is too large, you can use a remedial ring for installation, and combine the card slot on the side of the MiNi sensor with the snap of the remedial ring to confirm that the stability will not fall off. Then you can continue to install it on the ceiling normally.

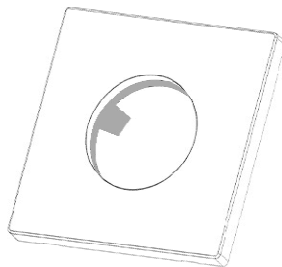


Installation

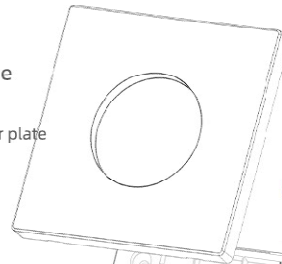
Wall installation

① Prepare the MiNi wall installation 86 box mounting kit and separate it into cover plate and base

② Use screws to fix the base in the hole position and thread the embedded wire out of the hole



Cover plate



Thread the

embedded wire out of this hole

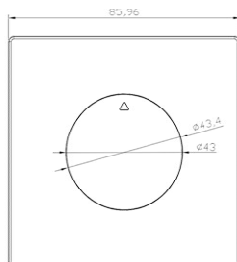
③ Connect the embedded wire to the MiNi sensor, then insert the sensor vertically into the base and use the side slots on the sensor and the clasps on the base to secure it in place.

④ Close the cover to complete the MiNi wall installation

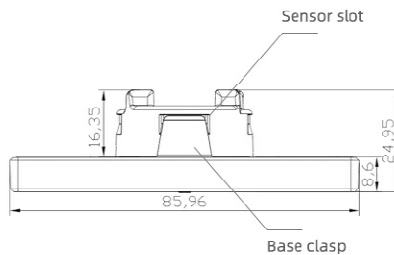
Base

Screw fixation

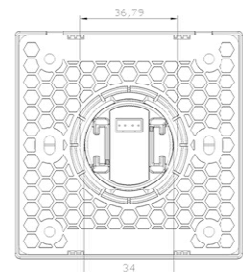
NOTE: During installation, if you don't hear a crisp clicking sound when inserting the sensor into the base, please make sure to check if the sensor is securely fixed. If it's not, gently rotate the sensor until the slots and clasps are completely locked to avoid any impact on its detection effectiveness.



Wall Mounting Back



Wall Mounting Side

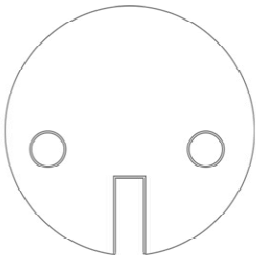


Wall Mounting Back

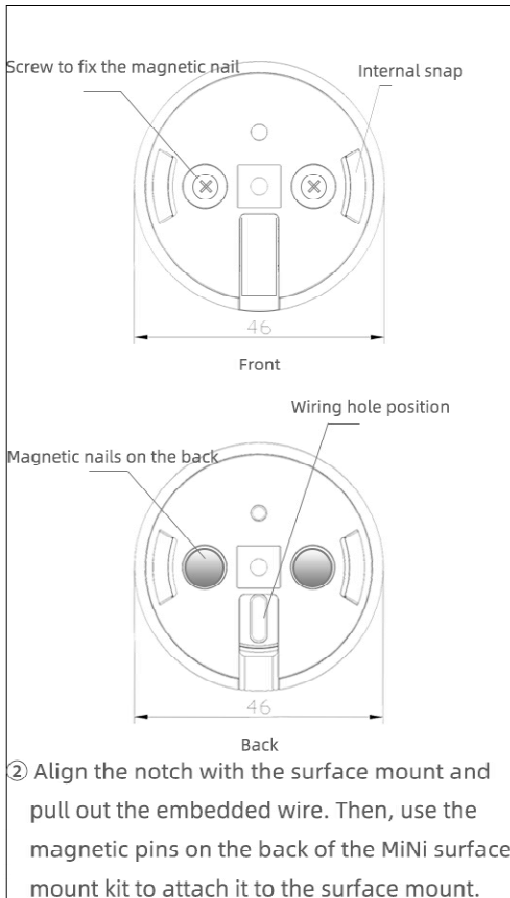
Installation

Surface-mounted/External

①Magnetic Fixation



- ① Prepare a MiNi surface-mounted magnetic patch. Fix it at the mounting point and the embedded wire is pulled out of the notch.



- ② Align the notch with the surface mount and pull out the embedded wire. Then, use the magnetic pins on the back of the MiNi surface mount kit to attach it to the surface mount.

④Complete surface-mounted/external installation

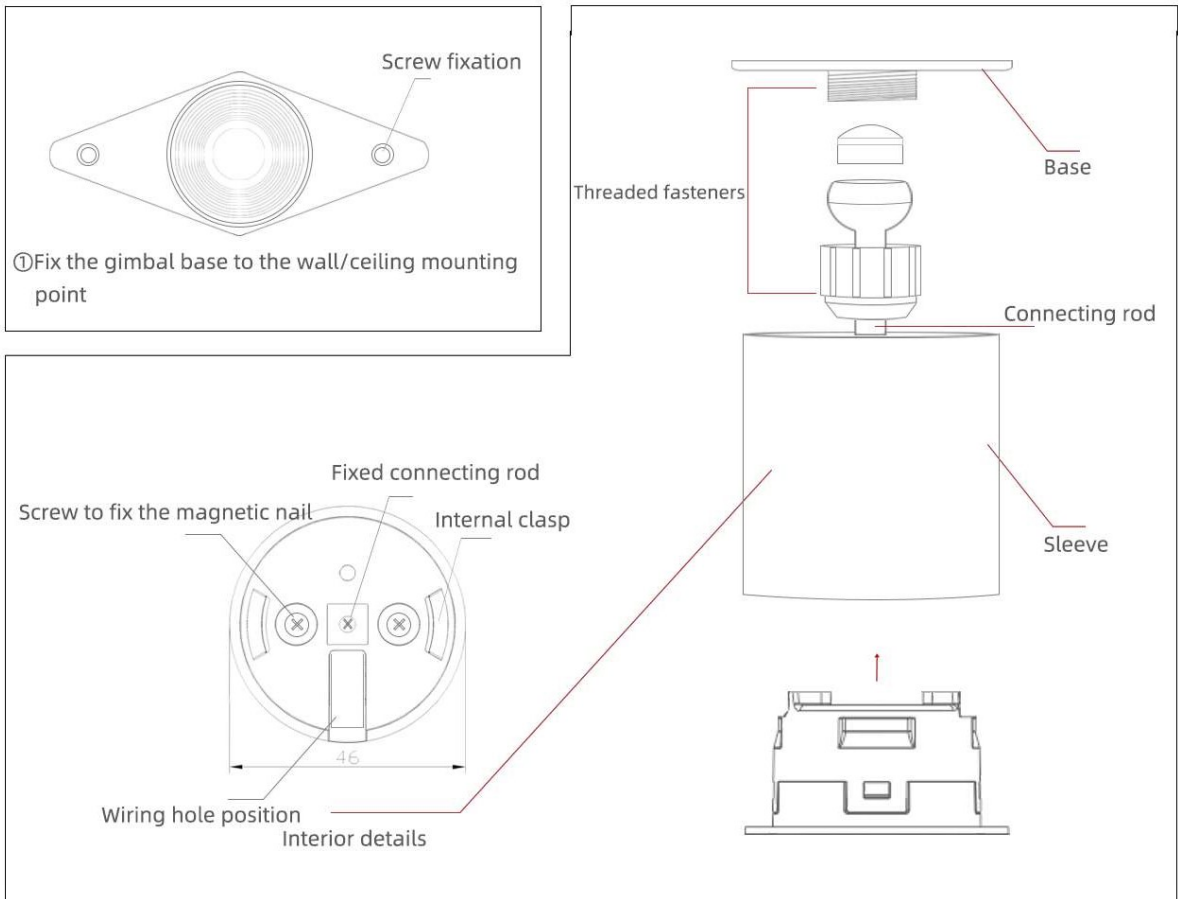


- ③ Connect the embedded wire to the MiNi sensor, place the sensor vertically into the base, and fix it with the card slot on the side of the sensor and the snap on the base.

Installation

Surface-mounted/External

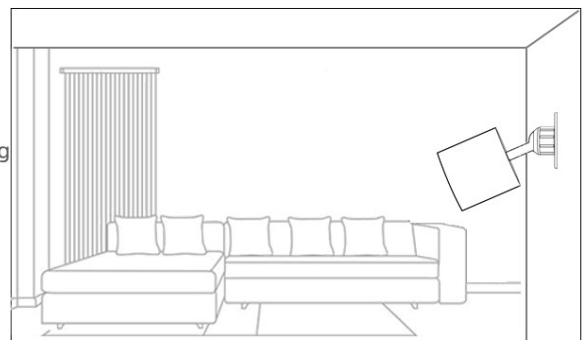
Gimbal Mount



② Connect the buried wire to the MiNi sensor through the wiring hole on the back of the accessory.

③ Place the vertical part of the MiNi sensor into the opening and secure it by using the slot on the side of the sensor and the snap inside the part. If the slot and snap are not tightly fastened, turn the sensor slightly to connect the slot and snap to ensure the stability of the sensor.

④ Finally, tighten the threaded fastener on the accessory, and your installation is complete. Adjust the direction according to your specific needs.



Installation •

Installation instructions

Installation environment requirements

To ensure the correct operation and accuracy of this product, please install it according to the following environmental requirements. Test results may be disturbed by operating in an unsuitable environment:

Dynamic distractors: Please avoid non-human objects that move continuously in the sensing area, such as animals, curtains that swing continuously, large green plants facing the draught, etc.

Strong reflective material: there should be no large area of strong reflective material in the sensing area, for example, the strong reflective material facing the millimeter wave radar sensor may cause interference.

Installation position: Avoid installing this product on the metal bottom box, metal top surface, mirror surface, water ripple ceiling and other large area reflectors, or in the ventilation duct, which may cause self-excitation and false alarm of the equipment.

Packaging and installation

1. When using sharp tools to open the packing box, pay attention to safety and avoid scratching the product or itself.
2. After unpacking, check whether the quantity of products and accessories is complete in time.
3. To avoid suffocation of infants or children, the packaging should be destroyed immediately after disassembly or kept out of the reach of children.
4. Do not discard the packaging at will, and handle it properly according to the regulations of the local sanitation department.

Electrical safety

1. Make sure that the power supply is disconnected before connecting the wires.
2. Please conduct wiring operation in strict accordance with the wiring diagram and requirements.
3. Handle carefully during installation to avoid collision with circuit board components and prevent equipment from falling or shell deformation and damage.
4. All line voltage and main cables must use cables certified by the state or professional testing institutions.
5. Appropriate short circuit and overload protection must be provided on the distribution cabinet, and ensure that the voltage does not exceed the voltage specified in the product instructions.

Mounting distance and stability

1. When installing multiple millimeter-wave radar sensors, the distance between them should not be less than 4 meters to avoid mutual interference.
2. Ensure that the installation position of the sensor is firm and stable, and avoid shaking the equipment itself, which may affect the accuracy of the test results.
3. Ensure that there is no movement or vibration of objects on the back of the radar. Due to the penetration of radio frequency, moving objects at close range on the back may also be detected.
4. Ensure that the radar antenna is facing the detected area and there is no shelter around it, so as to facilitate the transmission and reception of the waveform.

Product Specifications and Changes

Product design specifications are subject to change without notice. The physical product may vary slightly from the illustration.

Disclaimer

Please strictly follow the above installation guidelines. The Company shall not be liable for any interference or equipment performance problems caused by improper installation. Ensure that all installation steps and environmental requirements are properly executed to ensure optimum performance and accuracy of the equipment. If you have any questions or problems during the installation process, please contact us for help in time.

Maintenance

Clean the outside of the detector

Periodically: when the external lens surface of the sensor is stained or blocked.

Material used: Soft cloth-Scrub with clean water without any chemical agent.

- Attention!

Do not use chlorinated or abrasive products or alcohol to remove visible dirt.

- 1.Clean the upper cover of the body with a cloth dipped in water.
2. Wipe with dry cloth after cleaning.

Disposal and scrapping

- Important!

Do not discard scrap parts or any other product materials in the environment.

Seek the assistance of recycling waste companies.

Fault Treatment

Fault	Cause	Solution
The LED indicator is not on	Incorrect supply voltage (Disconnected, low voltage)	Check the power supply and voltage according to the specification sheet.
	The led light is set to off	Set the LED light to on
No one is in the detection area, but the indicator light is also on.	There are moving objects in the area (swinging curtains, rotating fans. etc)	Remove the moving objects or change the position of the sensor.
	The person does not leave the detection zone completely	The person leaves the detection area, and wait for the time delay ends.
	Detection distance is too large	Adjust the detection distance by according to the settings table
	The wiring is wrong	Please connect the wires in the correct way.
LED indicator light is on, but no signal output	The person does not leave the detection zone completely	The person leaves the detection area, and wait for the time delay ends.
	Illumination value set too low	Detect light values, turn off or adjust light values

Warranty

Warranty period

The equipment is guaranteed for 2 years from the date of original purchase.

Maintenance mode

During the warranty period, the equipment shall be replaced free of charge for non-man-made faults.

The replacement unit is covered for the remainder of the original 2-year warranty period.

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