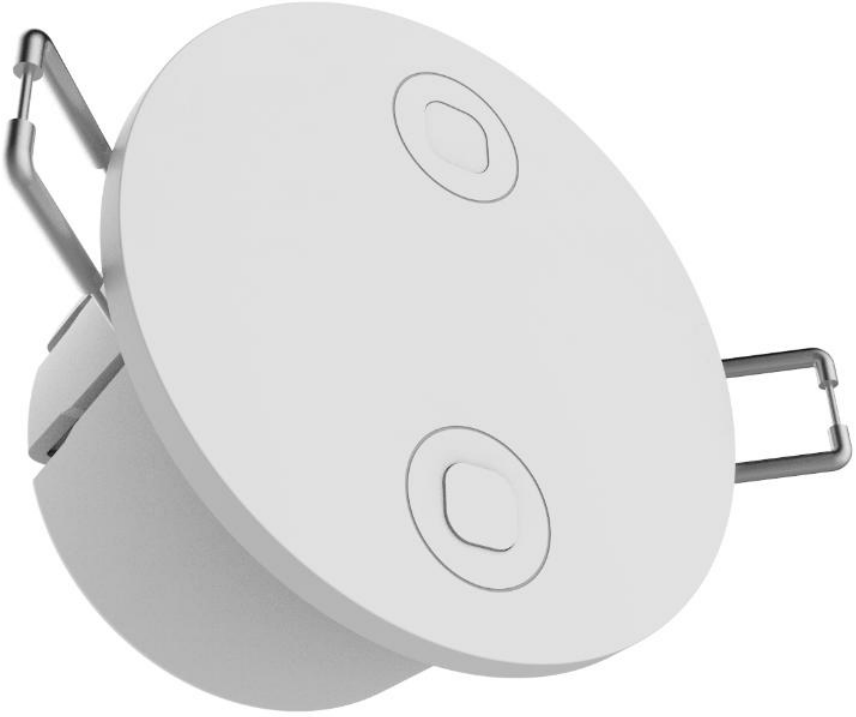
HUMAN PRESENCE RADAR

(MILLIMETER WAVE)

MGB-2RY-Z — MANUAL



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Product Presentation

Before using the product, please read this manual carefully and keep it properly. This product employs high-precision human monitoring technology, which can monitor moving, sitting, and standing human bodies, achieving precise perception of movement, slight movement and standing human bodies. Through intelligent dynamic sensing, it can sensitively capture human movements and subtle activities, with real-time data updates. It can easily adapt to various scenarios such as homes, hotels, and offices, achieving precise linkage between the intelligent environment and human state.

Functional Characteristics

- Real-time tracking of moving/micro-moving human bodies, with millisecond-level synchronous response.
- Intelligent locking of stationary targets, and real-time update of human presence status.
- Independent setting of trigger and continuous monitoring thresholds, with strong anti-interference capability.
- Based on vital sign analysis, accurately distinguish between human bodies and environmental objects.
- 360° circular detection, with no blind spots within a 3-meter radius of protection.
- Supports top-mounted installation method, with a wider detection sensing range.
- Precise capture of human presence and movement within a 3-meter radius (error ±0.5 meters).

Technical Advantage

- **Strong environmental adaptability:** High penetration capability, capable of withstanding complex weather conditions such as rain, snow, haze, and dust.
- **High detection accuracy:** Can provide higher spatial resolution and measurement accuracy,

especially in terms of distance and angle.

- **Simple data output:** Can directly output stored data without the need for complex signal processing.
- **Privacy security:** No need to process images/videos, avoiding the risk of privacy leakage (compared to camera solutions).
- **Low monitoring power:** The power of millimeter-wave radar is usually less than 1W (in line with FCC/IEC human radiation safety standards).

Comparison of different types of body sensors

Name	Presence Detection	Proximity/Distance Detection	State Detection	compared with millimeter wave technology
PIR Infrared sensor	×	✓	×	When the human body is static, it cannot be detected. It is greatly affected by environmental temperature changes, with high false alarm rate and uncontrollable distance
Infrared array module	✓	✓	×	Easily affected by environmental heat sources, the cost is high
Ultrasonic transducer	×	✓	×	It can only measure the large motion amplitude, and the distance is only 3-5m, so it cannot realize high-precision parameter measurement
Heart rate sensor	×	×	✓	not convenient to wear
Camera	✓	✓	×	Image, video and other unstructured data, high post-processing requirements, privacy risks
Millimeter wave radar	✓	✓	✓	_

Technical parameters

product model: MGB-2RY-Z

Voltage input: AC 110V~220V

Communication protocol: Zigbee communication

Radar frequency: 2.4GHz

Response speed: TIt takes about 0.5 seconds for the transition from no one to someone

Working temperature: -10℃~+55℃

Working humidity: Relative humidity ≤ 95%RH

Product size: 80x45.5mm

Installation barrel diameter: 65mm

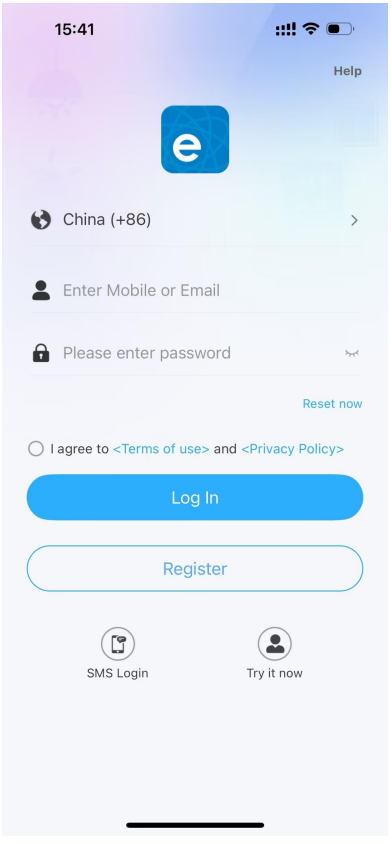
Installation method: Ceiling mounted

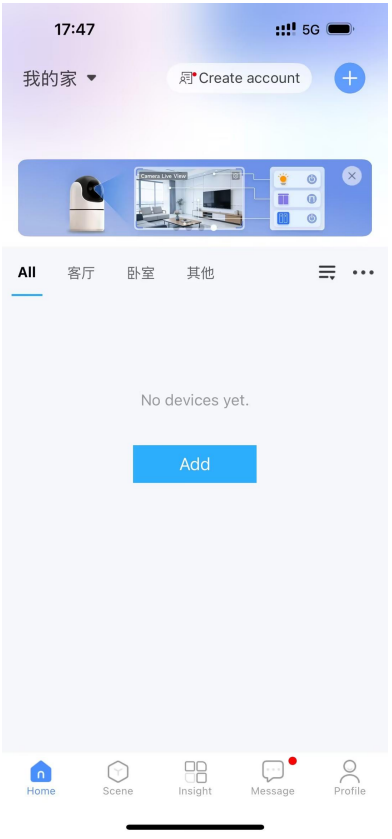
Transmitting power of millimeter wave radar: ≤10dBm (10mW)

Network Pairing

(1) Scan the QR code with your mobile phone or search for "EweLink" in the app store, download and install the EweLink app. Users who have already installed it can directly open the app. After successful login, you can connect to the device.

(2) Enter the Yiweilian APP, register an account, and then go to the home page of the APP. When adding a device for the first time, you need to enable the Bluetooth and location permissions of the APP. After successful authorization, click "Add" or the "+" icon on the upper right, and select "Add Device".





(3) Use a Type-C data cable to connect the gateway and ensure continuous power supply (the gateway must remain powered on at all times).

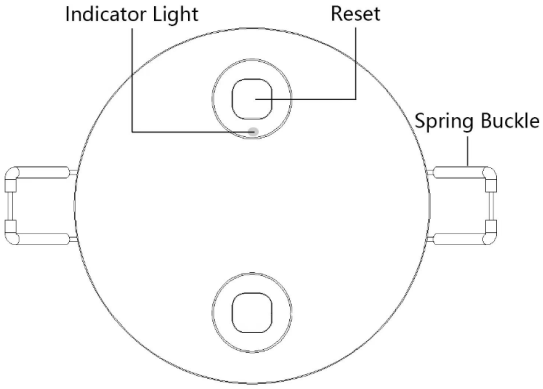
① Press and hold the gateway reset button for 5–10 seconds until the gateway network configuration indicator blue light starts flashing. Open the eWeLink app and click "Add Device". Note that the Wi-Fi network used for connection must support only the 2.4GHz band (5GHz band is not supported). Wait for the device to be added. Once successfully added, the gateway is paired with the eWeLink app.

② When powered on, the gateway network configuration indicator blue light remains steady on, indicating that the gateway has started.

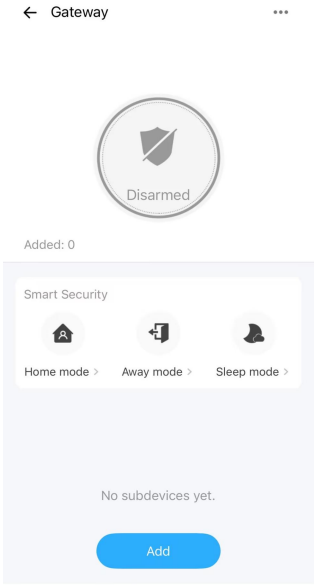
③ While in network configuration mode, when the radar search indicator green light flashes, the device is in device-adding network configuration mode and is ready to connect Zigbee devices.

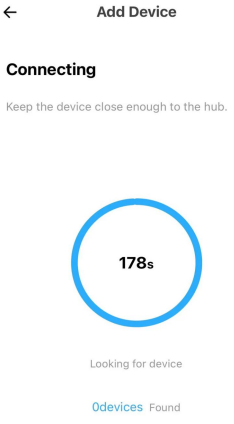
(Note: Zigbee devices must first connect to the gateway before adding the device.)

(4) The product will automatically power on when connected to electricity. Press and hold the button for 3–5 seconds to enter pairing mode. At this time, the device's red light will flash. When the red light turns off, it indicates that the device has successfully joined the network, and it will then enter monitoring mode with the light off.



(5) Open the Zigbee gateway and select "Add Device". The gateway will then automatically search for devices. Follow the prompts in the eWeLink app to complete the pairing process.





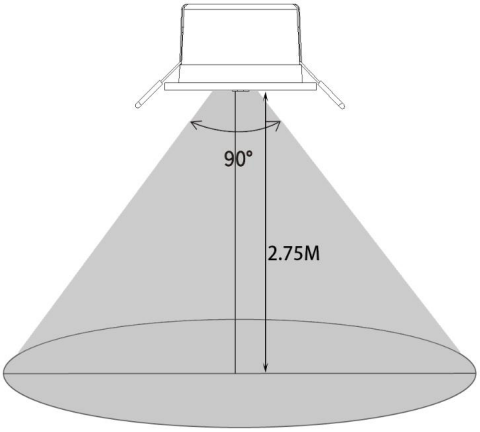
Installation Instructions

1. Installation Requirements and Precautions

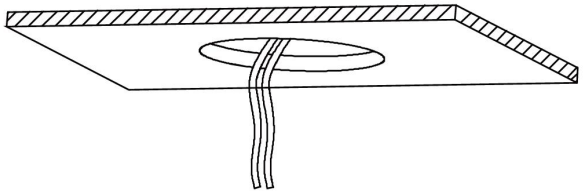
- Before installation, ensure that the Zigbee gateway has a good signal.
- Ensure that the device is properly paired and connected before performing the fixed installation.
- Ensure that the radar is facing the monitoring area and there is no obstruction on all sides.
- When monitoring a stationary human body, align the sensor with the front of the human body to improve detection accuracy.
- Ensure that the sensor is installed securely to avoid equipment shaking that affects the monitoring effect.
- It is recommended to add a metal backplate or shielding cover behind the radar to utilize the millimeter wave penetration characteristic to suppress interference signals caused by the movement of objects on the backside.
- During installation, avoid air flow interference areas such as air conditioning vents, bathroom heaters, and convection windows. It is recommended to adjust the installation position and angle, and stay away from areas where large pets are active to avoid misjudgment of biological signs.
- Avoid dynamic interference sources such as curtains, rotating electrical appliances, and moving green plants. If necessary, adjust the radar position or install a shielding device to avoid monitoring errors.

2. Installation Steps

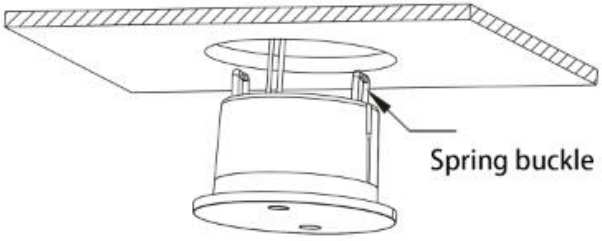
(1) It is recommended to install the height at ≤ 2.75m, with the radar's horizontal position perpendicular to the ground at 90°, and the horizontal deviation angle ≤ 3°. Ensure that the main beam of the radar covers the detection area; there should be no obvious obstructions or covers in front of the radar.



(2) Based on the room layout, select the installation position with an effective detection range to ensure that the room can be fully covered; the embedded size of the product is 65mm. It is recommended to make a standard hole with a diameter of 66-68mm above the ceiling during the decoration; lead the wires out from the hole, strip the insulation of the led wires and connect them to the product wires. It is recommended to use the internal long power supply method, and the two wires do not have positive and negative poles.



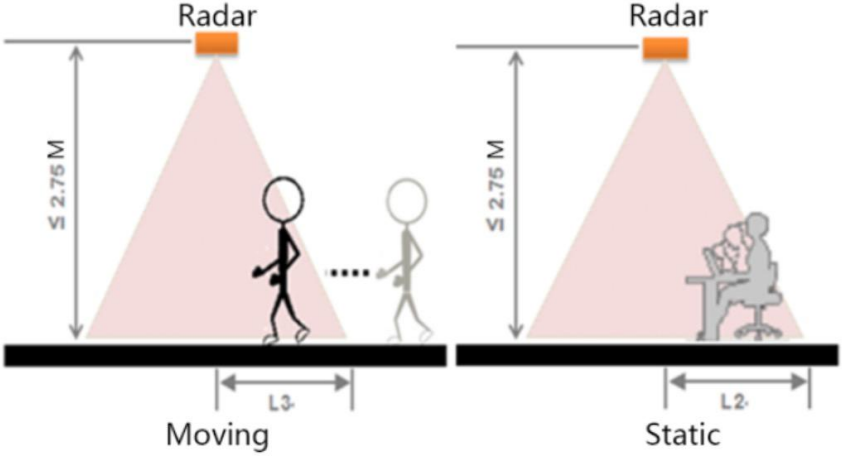
(3) Follow the illustration to fix the spring clip:



Function Description

The sensitivity of radar to human body sensing varies in different states (static, moving). When the installation height is about 2.75 meters, the installation direction is vertical downwards.

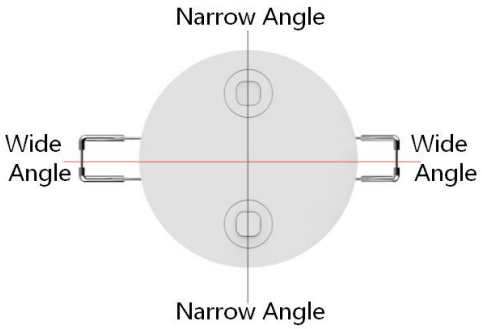
The following diagram shows the ceiling installation:



Affected by the radar installation height and radar beam range, in the state of no interference, the maximum distance for human motion and static detection is a radius of 3.3m.

(Note: there will be an error of ±0.5m in the movement monitoring range due to different installation environments.)

Radar range parameter diagram:



The monitoring range for different application scenarios and sensitivities varies. Please refer to the following chart:

Moving, micro motion/ static monitor distance Unit: m(Radius)			
Angle|Sensitivity	High	Middle	Low
Narrow angle	3.3m	3.3m	3.1m
Wide angle	3.3m	3.2m	3.1m

(Note: this data is only used as reference data, and there may be an error of ± 0.5m between the actual detection distance and the reference data.)

Detailed description of functional points:

◆ **Sensitivity setting:** Supports 3 levels (high, medium, low):

The sensitivity is used for adjusting the sensitivity of motion triggering and maintaining the presence status when the object is stationary.

Low sensitivity: Reduces the radar detection sensitivity. If there are frequent false alarms of presence and the presence status cannot be exited, this level can be selected. The detection range will be shorter.

Medium sensitivity: Approaches the factory-set detection distance, suitable for 90% of installation environments (it is recommended to use the medium level).

High sensitivity: Increases the radar detection sensitivity, enabling the detection of more detailed target signals. If the presence trigger fails, this level can be selected, and the detection range will be longer. (Note: For more complex installation environments, the "unmanned automatic compensation" calibration can be used in combination.)

◆ **Detection time interval:** The delay time for unmanned determination can be customized and set to 1 minute - 23 hours 59 minutes.

Example: Set to 5 minutes, the unmanned determination mechanism will be triggered 5 minutes after the target leaves the area (default unmanned time: 5 minutes).

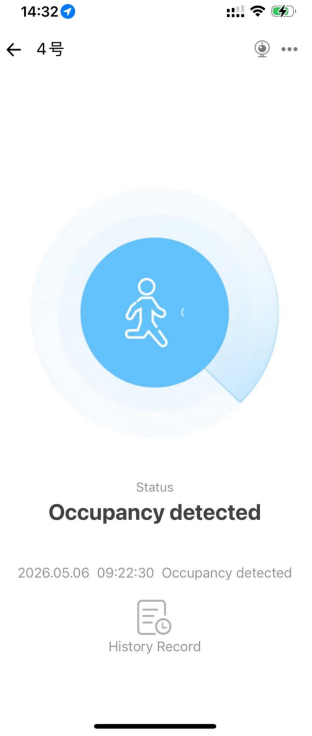
The principle of radar presence detection is: Real-time reporting of the presence status when personnel enter the range. When the personnel leave the area, the unmanned state will be entered according to the set detection time interval.

◆ **Unmanned automatic compensation:** Can be activated as needed.

Example: In actual usage environments, there may be rare special situations that cannot enter the unmanned state or there are environmental disturbances. Through the unmanned automatic

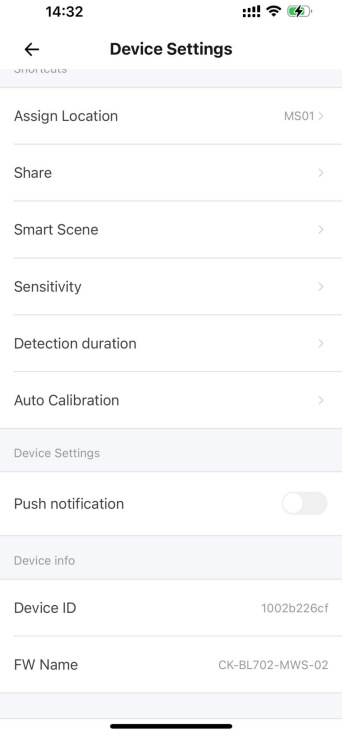
compensation function, calibration and adaptation for different environments can be performed to improve the accuracy and reliability of radar detection. When performing the unmanned automatic compensation operation, it is necessary to ensure that there is no one within the radar detection range. After the operation, the indicator light will flash green, and it will go out after completion. The entire process takes 30 seconds. Through automatic calibration, the equipment can effectively adapt to environmental changes and make self-adjustments, thereby ensuring the continuous accuracy of radar data. Generally, it does not need to be turned on.

APP UI



App Homepage

History Record Interface



Device Settings Interface

Matters Need Attention

1.This product is only for indoor use.

2. Be cautious of moisture. Do not splash water or other liquids onto this product.

3. Do not attempt to repair this product yourself. It should be repaired by authorized professionals only.

4. The manufacturer shall not be held responsible for any risks or property losses resulting from failure to follow the usage instructions or failure to comply with these important notes.

Application Matters

- No interference: The radar can pass through cotton fabrics and clothes without being affected by light and fog.
- Weak interference: Radar can pass through a certain thickness of wooden boards, glass, gypsum board walls, and plastic, ensuring that there are no issues with daily home environments.
- Strong interference: Radar cannot pass through metal, so do not be obstructed by metal.
- If a single radar cannot cover a certain area, the number of radars can be increased. Installing less than 3 radars in the same area will not cause mutual interference.
- The radar needs fixed installation, and vibration and shaking may cause false alarms in the radar.
- Startup time description: Due to the fact that when this product starts working after initial power on, it is necessary to completely reset the internal circuit of the module and fully evaluate the environmental noise in order to ensure the normal operation of the module. Therefore, during the initial power on operation of the module, it is necessary to have a stable power on time of ≥ 30 seconds to ensure the effectiveness of subsequent output parameters.

Failure Recovery

◆ No one,but a false report into a human state:

1) If the wall is too thin, the radar signal sweeps through the wall to the person next door, and false report happened.

2) Radar power is unstable, causing false report.

3) Moving objects, such as fans, wind-blown plants or swaying metal, large pets, electric fans, working washing machines and so on cause the false report.

◆ There is someone, but mistakenly reported that there was no one:

The human body is out of range or obscured by metal and thick desks and chairs.

◆ Unable to maintain presence:

1) When the personnel cannot be maintained in a stationary state, increase the sensitivity or activate the "unattended automatic compensation" when the personnel are out of the range.

2) To activate "unattended automatic compensation", it is necessary to install in an empty environment with no personnel present for compensation.

◆ Unable to enter unattended:

Reduce the unattended time, decrease the sensitivity, or activate the "unattended automatic compensation".

Warranty Card

Warranty policy

- Within 7 days from the date of sale, if the product experiences performance failure, consumers can choose to return, exchange, or repair it.
- Within 15 days from the date of sale, if there is a performance malfunction, consumers can choose to exchange or repair it.
- Within 12 months from the date of sale, if there are any quality issues with the product, we can provide you with warranty services.

Non warranty policy

- No "three guarantees" certificate or the validity period of the "three guarantees" is exceeded.
- Damage caused by failure to use, maintain, and store according to product instructions.
- Damage caused by unauthorized disassembly and repair by our company.
- Damage caused by force majeure.
- The normal fading and wear of the product during use are not covered by the warranty.

Attached: Declaration of Low-Power Short-Range Devices

1. The millimeter-wave radar used in this product complies with Class H general low-power equipment in the "Catalogue and Technical Requirements for Micro-Power Short-Range Radio Transmitting Devices", and is used for human detection in smart home scenarios. For control, adjustment, switching and other usage methods, please refer to the relevant contents in the product manual.

2. Do not change the usage scenario or conditions, expand the transmission frequency range, increase the transmission power (including additional installation of radio frequency power amplifier), or change the transmission antenna without authorization.

3. Do not cause harmful interference to other legal radio stations (stations), nor request protection from harmful interference.

4. Should be able to withstand interference from industrial, scientific and medical (ISM) applications of radiation radio frequency energy, or other legal radio stations (stations).

5. If harmful interference is caused to other legal radio stations (stations), immediately stop using it and take measures to eliminate the interference before resuming use.

6. When using low-power devices in aircraft and within the electromagnetic protection areas of radio telescopes, meteor radar stations, satellite earth stations (including measurement control, ranging, receiving, navigation stations), military and civilian radio stations, airports, etc., as stipulated by laws, regulations, national relevant provisions and standards, comply with the regulations of the relevant industry authorities for electromagnetic protection.