HUMAN PRESENCE RADAR

(MILLIMETER WAVE)

MG3-5RZ—INSTRUCTION

CONTENTS

1. Instructions

Based on the enhanced Doppler radar signal processing mechanism, our product achieves wireless perception of personnel status in specific places through synchronized perception technology of Doppler parameters of personnel movement and physiological parameters of personnel. Scene linkage is achieved through wireless signal notification gateway. Suitable for home, hotel, office and other places.

2. Features

- Accurately achieve synchronous perception function for both active and stationary individuals (sitting, micro motion);
- Can maintain the detection of breathing and heart rate of stationary individuals, ensuring real-time output;
- Can quickly output the distance from the target to the radar's far and near status;
- Detect various motion amplitudes and output numerical states in real-time;
- Limit the detection object to individuals with biological characteristics (moving or stationary), and eliminate interference from other inanimate objects in the environment;
- This module effectively eliminates interference from non living objects and can also achieve detection of non living moving objects.

3. Technical Advantage

- Strong environment adaptability：Not affected by light, sunshine, temperature, haze etc.
- Higher accuracy of speed, distance and angle measurement
- Simple and fast：real-time output of measurement data
- Safe：no privacy leakage
- Low output power, no harm to human body

Comparison of different types of body sensors

传感器	存在检测	接近/远离检测	体征检测	与毫米波雷达对比
PIR红外传感器	×	√	×	当人体静止则不能检测，受环境温度变化影响较大，误报率高，距离不可控
红外阵列模块	√	√	×	易受环境热源干扰，成本偏高
超声波传感器	×	√	×	只能测运动幅度较大的目标，距离仅3-5m，不能实现高精度参数测量
心率传感器（内置于智能手环）	×	×	√	接触式，穿戴不便
摄像头	√	√	×	图像、视频等非结构化数据，后处理要求高，有隐私风险
毫米波雷达	√	√	√	-

4. Parameters

Voltage input: AC 110V~220V

Communication protocol：Zigbee

Communication distance：100m(Open area)

Radar frequency：5GHz

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

Detection Angle: A three-dimensional rectangular area with a horizontal angle of 180 ° and a vertical angle of 90 °

Response speed：It will report in about 0.5 seconds when the human body is detected. After the person leaves, report on one within about 1 minute.

Working temperature：-10℃～+55℃

Working humidity: Relative humidity ≤ 95%RH

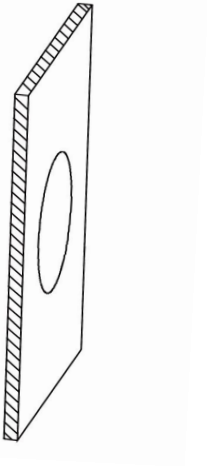
Product size：Φ75x65mm

Installation barrel diameter: 65-70mm

Installation method: Wall mounted

5. Installation Height

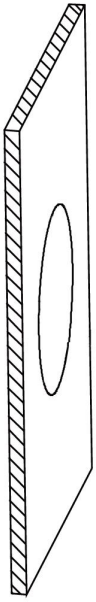
The recommended installation height for wall mounted is 1.5m. Please ensure that the radar main beam covers the detection area and there are no obvious obstructions or coverings in front of the radar.



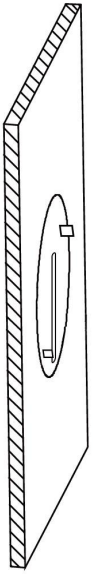
6. Installation instructions

Based on the room layout, select installation locations with effective detection range to ensure effective coverage of the room. Firstly, fix the bottom cover to the wall with screws, rotate the product clockwise until it is tightened against the bottom cover, and connect it with a Type-c data cable. It is recommended to use it for long-term power supply.

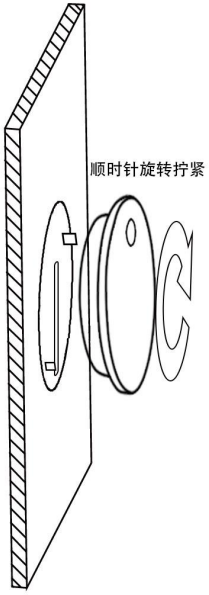
Refer to the diagram to fix the device in a suitable position.



Step 1: Confirm the installation position

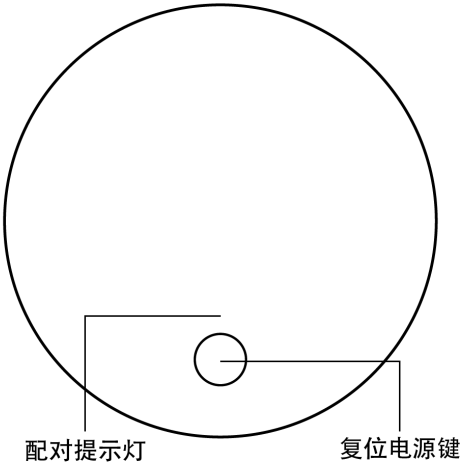


Step 2: Fix the bottom cover in a suitable place



Step 3: Rotate the device clockwise and tighten it

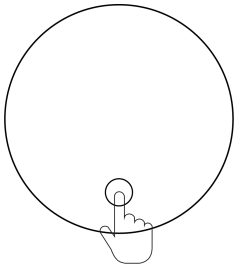
7. Illustration



8. Network Pairing

1. The eWeLink Zigbee gateway is powered on by a micro USB data cable. It is recommended to maintain a long-term power on state;
2. Gateway distribution network indicator light: The blue light quickly flashes to indicate that the distribution network is in progress. Click “Add” to add it;

3. Radar search indicator light: Enter the gateway and click on "Add Device". The green light flashes to indicate that the radar device is being searched. Once the search is successful, click "Add" to proceed.



1) After the device is powered on, press and hold the reset power button for 5-10 seconds to get into the network pairing mode;

2) At this point, the flashing red light indicates that the distribution network mode has been activated; If the red light goes out, it indicates successful network access.

3) Download eWeLink APP;

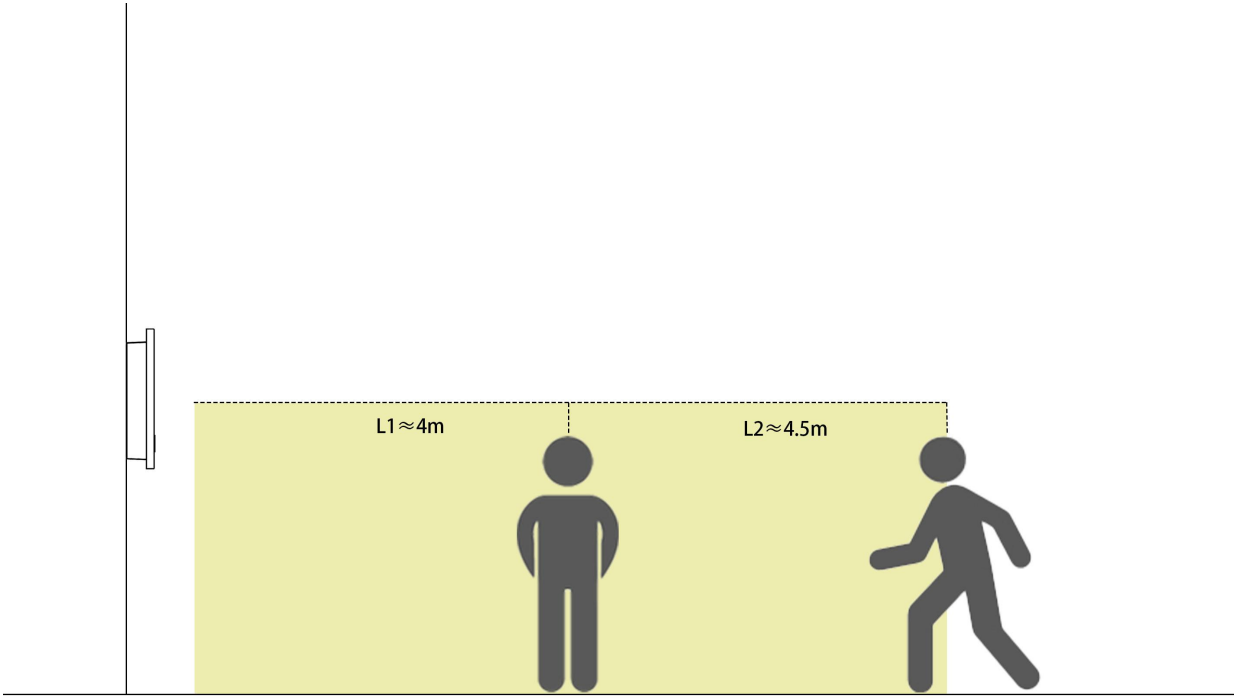
4) Connect to the Zigbee gateway before adding radar device;
5) Open the Zigbee gateway and click “Add”. At this time, the gateway will automatically search for devices. Follow the prompts on the eWeLink APP to complete the distribution network.

9. App Interface

10. Detection Range

The sensitivity of radar to human body sensing varies in different states (stationary, moving). The installation height is about 1.5 meters, and the Installation direction is horizontal.

The following diagram shows the wall installation.



Affected by the installation height and radar beam range, in a state of no interference, the maximum distances L1 and L2 for static and human motion detection are both 4m. (Note: There may be an error of ± 0.5m in the motion monitoring range of radar device under different installation environments)

Radar range parameter diagram：

The monitoring range varies with different sensitivities. Please refer to the following chart. (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.)

Motion or micro motion/sitting monitoring distance unit: m			
Angle | Sensitivity	High	Medium	Low
Narrow angle	4m	3m	2m
Wide angle	4m	3m	2m

Specific description of functions:

- Sensitivity setting: Sensitivity can be set on the APP, and the motion (or micro motion) and sitting monitoring distance of the radar varies under different sensitivities. (please refer to the Motion or micro motion/sitting monitoring distance chart for specific data.)
- Maintain occupied time setting: It is supported to set the maintain occupied time on the APP (range: 01min~11h59min), and the system defaults to reporting unoccupied status for about 1min.
- Motion monitoring function: When a person is moving within the motion monitoring range, the radar will report occupied, and the reporting time is about 0.5 seconds; When a person keeps moving within this range, the radar will continuously report an active state; When a person leaves the motion monitoring range, and there is no any interference, the radar will report unoccupied status, and the default time for reporting unoccupied status is around 1 minute.
- Micro motion/sitting monitoring function: When a person is stationary within the micro motion/sitting monitoring range, the radar will report an occupied state within 0.5 seconds. As long as the person does not leave the micro motion/sitting monitoring range, it will continuously report an occupied but stationary state; When a person leaves the micro motion/sitting monitoring range, if without any interference, the radar will report the unoccupied status, and the reporting time is about 1 minute.

11. Precautions

- 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;
- It is best to install the radar in the same direction to avoid interference from the opposite side of the radar;
- The radar needs fixed installation, and vibration and shaking may cause false reports 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.

12. Troubleshooting

◆ **There is no one, but falsely reported as an occupied 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 falsely reported as an unoccupied state:**

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

13. 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.