HUMAN FALL DETECTION RADAR(MILLIMETER WAVE)

Powered by tuya Intelligence Inside

MG1-6DZ INSTRUCTION

Catalogue

Instructions

Based on the FMCW radar signal processing mechanism, Through the monitoring of personnel movement and the synchronous perception technology of personnel physiological parameters, the wireless perception of personnel status in a specific place is realized, and realizes scene linkage through wireless signal notification gateway. Suitable for home, hotel, office and other places.

Features

- Detect and synchronously perceive the status of people, whether they are in motion or static(sitting, falling).
- Continuously detect the status of stationary person to ensure real-time data output.
- It can quickly detect the distance of human from the radar.
- It can detect various motion amplitude and ensure real-time data output.
- Limit the detection objects to persons with biological characteristics(moving or stationary), and eliminate the interference of other inanimate objects in the environment.
- Effectively eliminate interference from non living objects and also achieve detection of non living moving objects.

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

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 Specifications

Voltage input: AC 110V~220V

Power: 2W

Communication protocol: Zigbee

Communication distance: 100m (Open area)

Radar frequency: 60GHz

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

Detection Angle: A three-dimensional fan-shaped area with a horizontal angle of 90° and an elevation of 60° , when monitored vertically downwards, the detection surface is elliptical in shape

Response speed: It will report in about 0.5 seconds when the human body is detected. When a person falls, it will report a fall within about 10 seconds and if the person stands up about 1 meter below the radar, it will break the radar fall state (It is recommended to set the fall duration to 30 seconds or more.)

Working temperature: -10℃~+55℃

Working humidity: Relative humidity ≤ 95%RH

Product size: 80x45.5mm

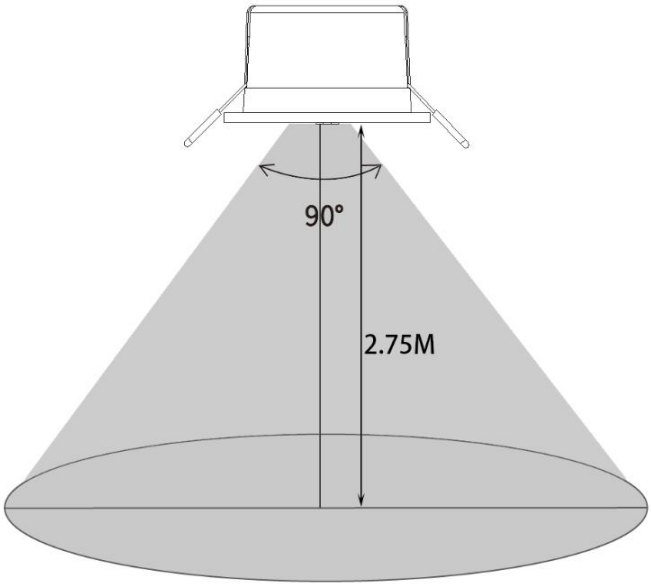
Installation barrel diameter: 65~70mm

Installation method: Ceiling mounted

Product Installation Instructions

1. Installation Height

The recommended installation height is between 2 m and 2.75 m. The device should be mounted perpendicular to the ground 90°, with a horizontal deviation angle not exceeding 5°, to ensure the radar's main beam covers the intended detection area. Keep the front of the radar clear of obvious obstructions or coverings.

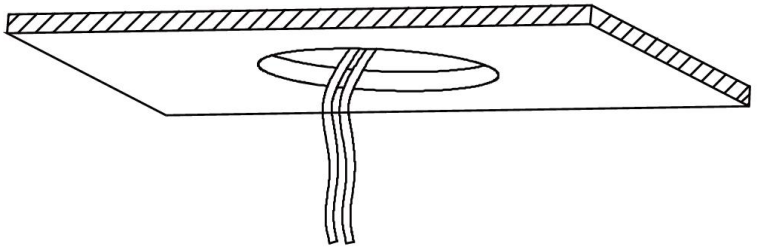


2. **Installation Method**

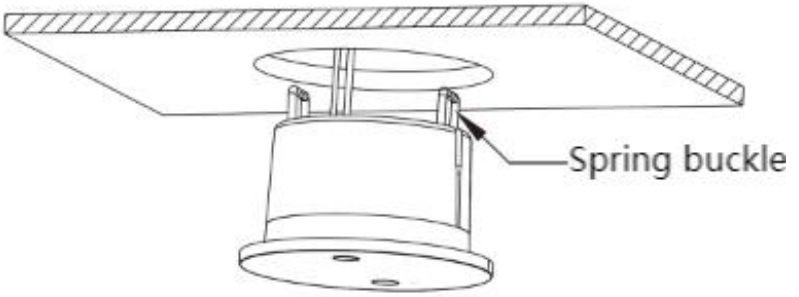
According to the layout of the room, select the installation location with effective detection range to ensure that the room can be effectively covered.

The embedded size of the product is 65mm. It is suggested to open a standard hole with a diameter of 65mm~70mm on the top of the decoration.

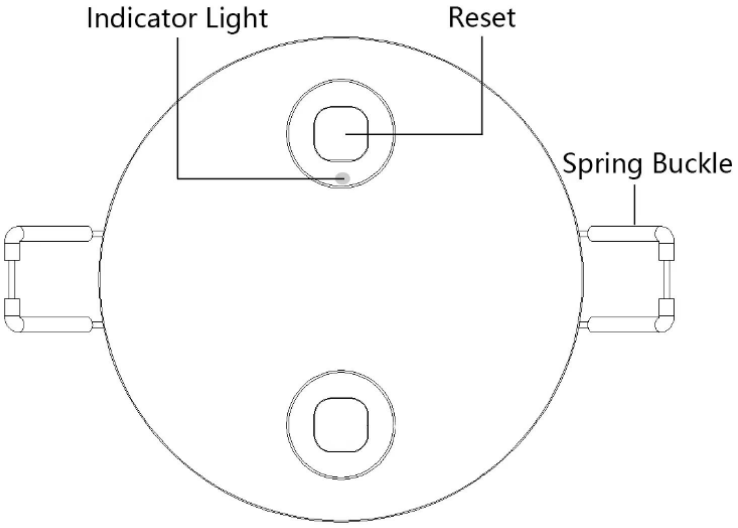
Lead out the wire from the opening, strip the lead wire and connect it to the product wire, it is recommended to use the internal power supply, no positive and negative points of the double line.



Refer to the picture to fix the spring buckle:



3. Diagram Reference



Network Pairing

1)Scan the QR code with your smartphone, or search for "Tuya" in your app store to download and install the Tuya app. Existing users can simply open the app and log in to begin connecting devices.

2) On the Tuya app home page, tap "Add Device" or the "+" icon in the upper-right corner.

3)Connect the gateway using a Type-C cable and ensure it remains powered (the gateway must stay connected to a power source).

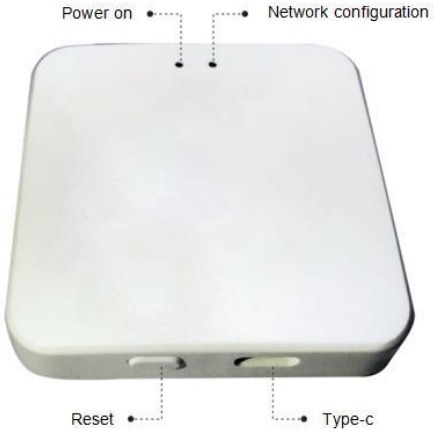
a. Open the Tuya app, tap "Add Device" to enter pairing mode. Note that only 2.4GHz Wi-Fi is supported (5GHz is not compatible).

b. Press and hold the gateway's reset button for 5–10 seconds until the pairing indicator flashes red. Enter your Wi-Fi password in the app and wait for pairing to complete.

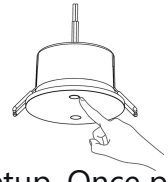
c. A steady blue power indicator means the device is on. A flashing red pairing indicator

means the gateway is ready to connect Zigbee devices. If both lights remain steadily lit, the network setup is successful.

(Note: Zigbee devices must be connected to the gateway first before adding them. During Zigbee device pairing, the gateway's blue power indicator will flash.)

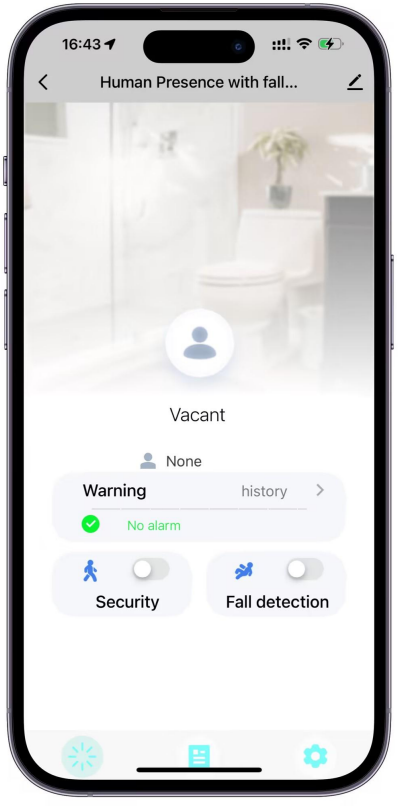


4)After powering on the product, press and hold the pairing button for 3–5 seconds to enter pairing mode. The pairing indicator will flash red. Once pairing is complete, the red light will turn off and the device will automatically switch to monitoring mode.

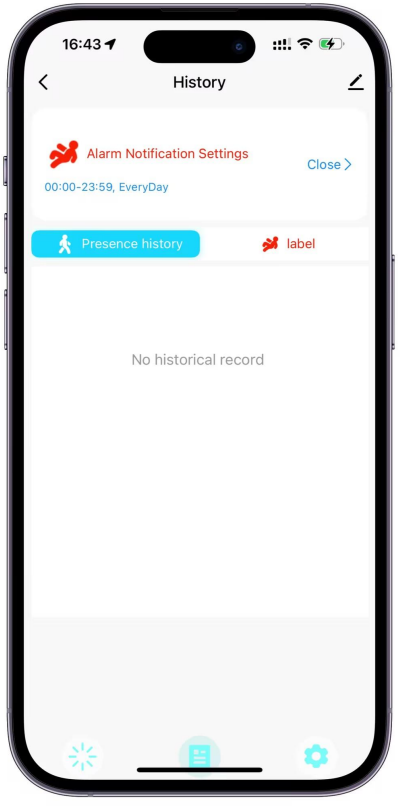


5)Select the Zigbee gateway for network setup. Once pairing starts, a fall detection icon will appear in the search results—tap it to add the device.

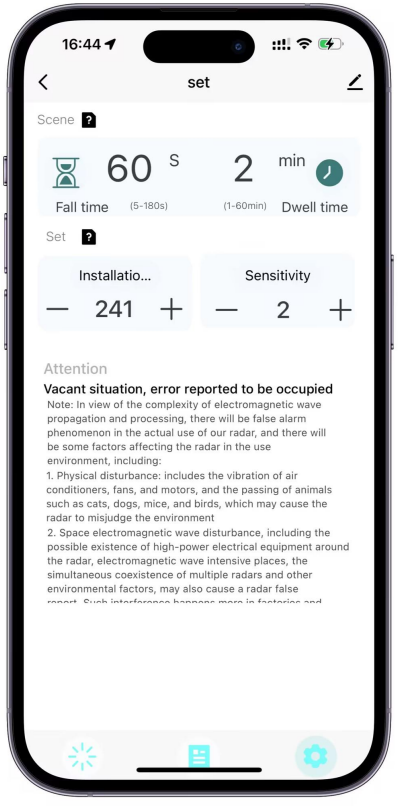
App Interface Diagram



Home Page



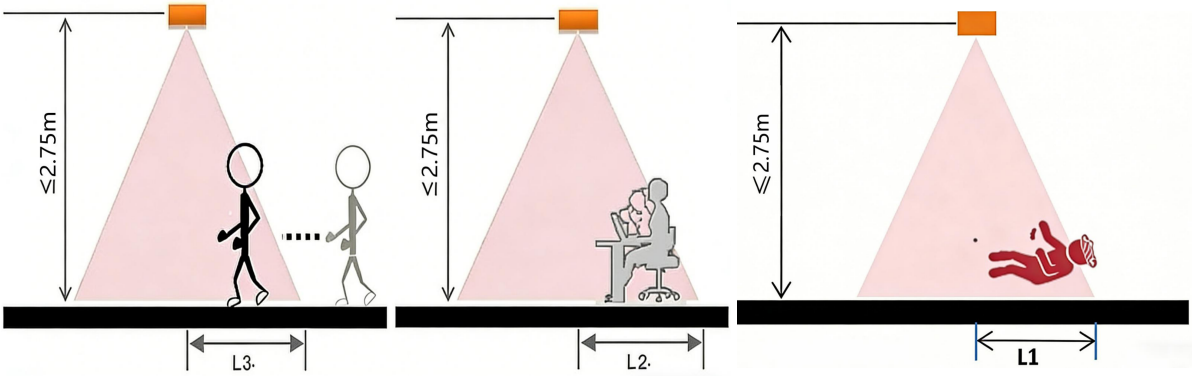
History



Settings

Detection Range

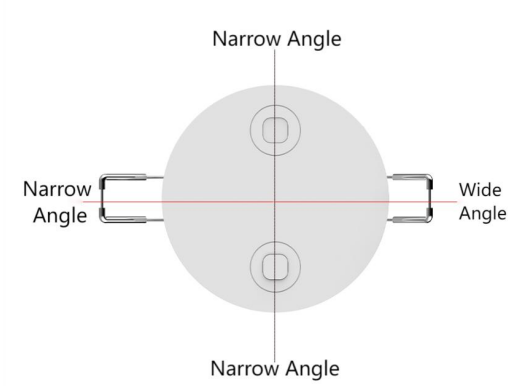
The sensitivity of radar to human body sensing varies in different states. When the installation height is about 2.75 meters, the installation direction is vertical downwards. The following diagram shows the ceiling installation.

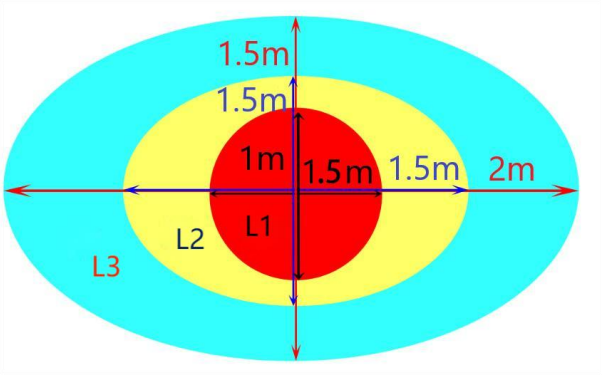


Affected by the radar installation height and radar beam range,
the maximum detection distance L3 of moving human body in this installation mode is≈ 2m in long side radius and≈1.5m in short side radius; The maximum distance L2 for human sitting detection is≈1.5m for long side radius and≈1.5m for short side radius; The maximum detection distance of human fall L1, the radius of long side is≈1m, and the radius of short side is≈1.5m.

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

Radar range parameter diagram:





Function supplements:

- **Stationary Detection Function:** If a person remains motionless within the radar's fall detection range for the default dwell time of 5 minutes, the radar will report a stationary dwell alarm.
- **Dwell Time Setting:** The dwell time can be configured in the app. The default is 5 minutes and can be adjusted from 1 minute to 60 minutes.
- **Fall Detection Function:** When a person falls within the radar's fall detection range, the radar will report a fall alarm status, with the reporting time based on your set fall duration. If the person sits still after triggering a fall alarm, the radar will not cancel the fall alarm status.

  If the person stands up or stands and waves within 1 meter of the radar after a fall alarm is triggered, the radar will cancel the fall alarm status.
- **Fall Time Setting:** The fall detection time can be set in the app. The default is 5 seconds and can be adjusted from 5 seconds to 180 seconds.

- **Radar Height Setting:** The radar height can be configured in the app. The recommended installation height is between 2 m and 2.75 m, which should match the actual installation height of the radar.
- **Motion Monitoring Function:** When a person moves within the motion monitoring range, the radar will report "Occupied" within about 0.5 seconds.
  If the person continues moving within this range, the radar will keep reporting an active occupied status. When the person leaves the motion monitoring range, the radar will report an "Unoccupied" status, with a default reporting delay of about 5 seconds.
- **Micro-Motion / Seated Monitoring Function:** When a person remains still within the micro-motion/seated monitoring range, the radar will report a "Stationary Occupied" status within about 0.5 seconds. If the person leaves the static monitoring range but remains still within the dynamic detection range, the radar will report a "Stationary Unoccupied" status within about 5 seconds.

Applications and 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 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.

Troubleshooting

- **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.

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.