CTL-SEN-R5/6208
60.50.6208
R5-60G-485

60GHz Radar Monitoring Sensor

Product Manual (RS485 version)

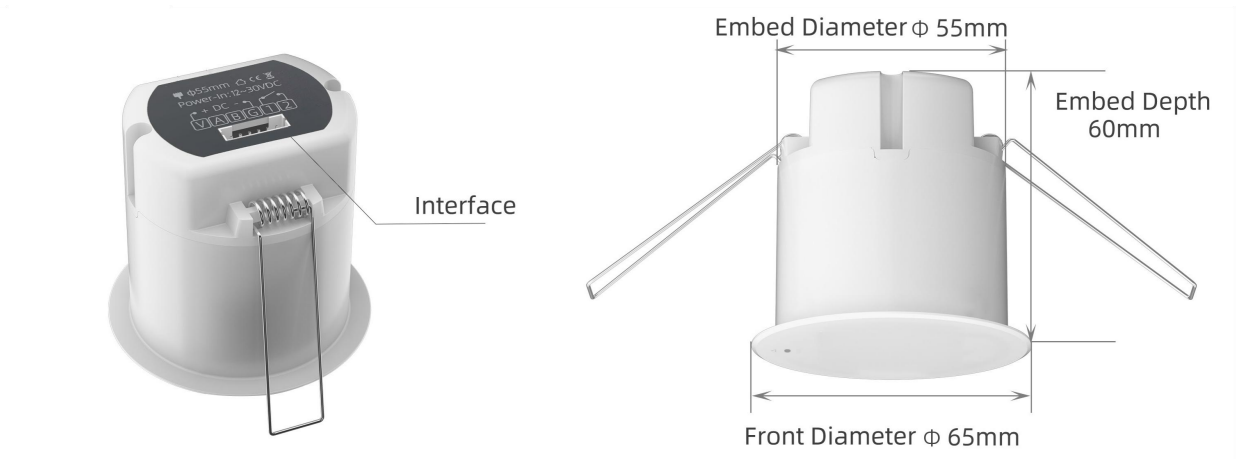
Installation Manual

CREATROL

CONTENTS

Appearance

The product has an outer diameter of 65mm, a depth of 60mm, and an opening of 55mm.



Default Parameters

No.	Function	Default value
1	Exit Location	1.0m
2	Presence Delay	30s
3	Indicator Light	On
4	Sensor Installation Height	2.7m
5	Lying Height After Falling	0.4m
6	Sliding Distance After Falling	0.2m
7	Fall Alarm Timing	3s
8	Bed Width	1.8m
9	Bed Length	2.0m
10	Bed Height	0.5m

11	Number of Triggers for Height When Leaving Bed	3 times
12	Radar Installation Offset from Bed Center X	0.0m
13	Radar Installation Offset from Bed Center Y	0.0m
14	Detection Range Width	6.0m
15	Detection Range Length	6.0m
16	Presence Confirmation Time	0s
17	Minor-Motion Sensitivity	50%
18	Presence Sensitivity	50%

Detection Principle

The mmWave Radar Monitoring Sensor uses FMCW waveform modulation technology and MIMO array to achieve 4-dimensional detection of the target. Based on the point cloud signal of human body detection, target tracking and algorithms are used to realize the detection of human posture.

Application

Elderly Care

Room | Bathroom | Corridor/Stairs

Accurately detect the presence of breathing, the light is on when people are present, and the light is automatically turned off when people leave, saving energy and improving efficiency

Fall alarm reporting data, getting out of bed and returning to bed monitoring

Home

Entrance/Foyer | Bedroom | Living room | Bathroom

Accurately detect the presence of breathing, the light is on when people come, and it is automatically turned off when they leave, supporting home and away status recognition

Fall alarm reporting data, human posture recognition, getting out of bed and returning to bed monitoring

Hotel

Guest Room | Bathroom | Aisle/Stairway

Auxiliary judgment of whether there is someone in the room, saving energy consumption, improving human efficiency and accurately detecting the existence of breathing

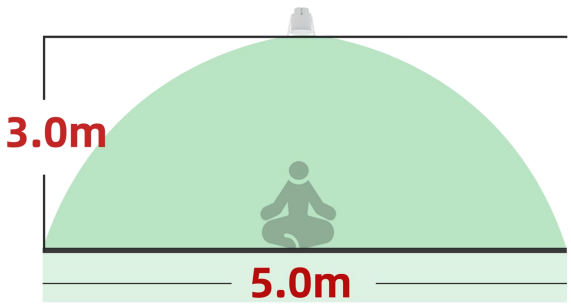
Fall alarm reporting data, assisting in realizing a more intelligent stay experience

Specifications

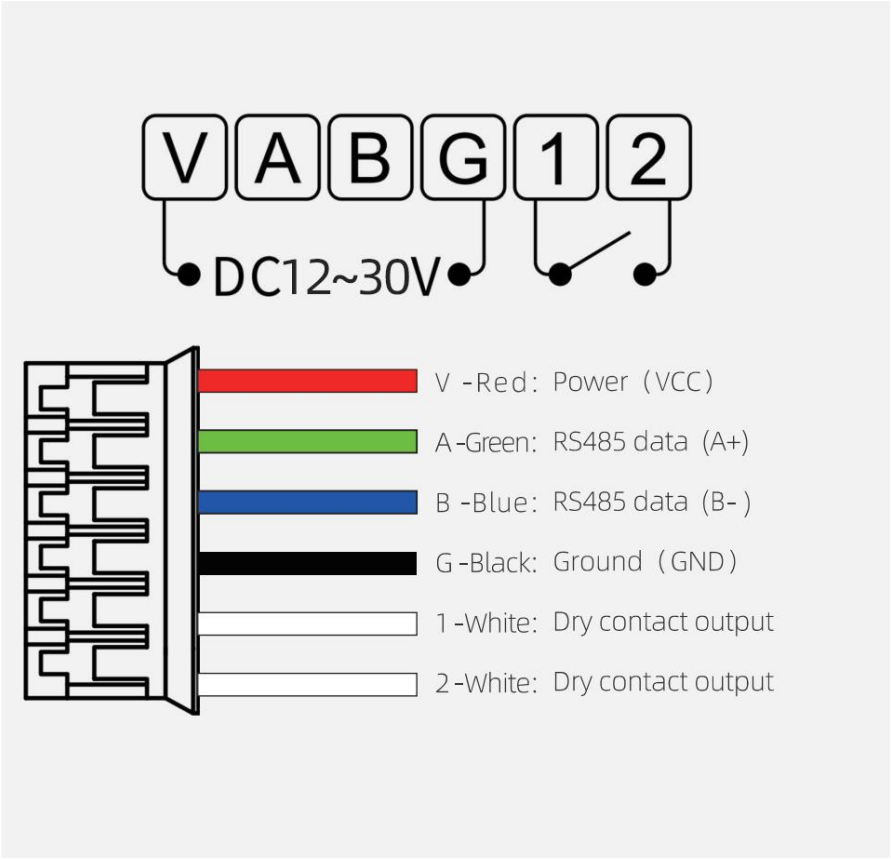
Detection method	60GHz millimeter-wave radar FMCW (Frequency Modulated Continuous Wave)
Installation height	2.0~3.2 meters
Detection angle	360°
Detection Range	When the installation height is 2.7~3.2 meters detection range ≤ ϕ5.0m
Detection sensitivity	0~100%
Illuminance Sensor	0~32000 Lux (Accuracy ±1%)
Product Dimensions	65*60mm
Hole size	Φ55mm
Product weight	62g
Operating Voltage	DC12~30V
Operating environment	-20~45℃ Humidity<95%
LED Indicator Light	①Flash for 3 seconds when receiving command ②Constant light when someone is detected, the brightness of the indicator light is automatically adjusted with illuminance ③Can be set to off (not lit when someone is detected) Indicator Light Description Entering network configuration: Blue light slowly flashes at 1Hz Detecting presence: Blue light breathes and adjusts brightness Detecting absence: Blue light is off Fall alarm: Red light flashes quickly at 3Hz, in a loop Left bed: Green light flashes once, exit Right side off bed: Green light flashes 2 times, exit Left side back to bed: Green light flashes 3 times, exit Right side back to bed: Green light flashes 4 times, exit Leave area: Steady light for 2 seconds, exit

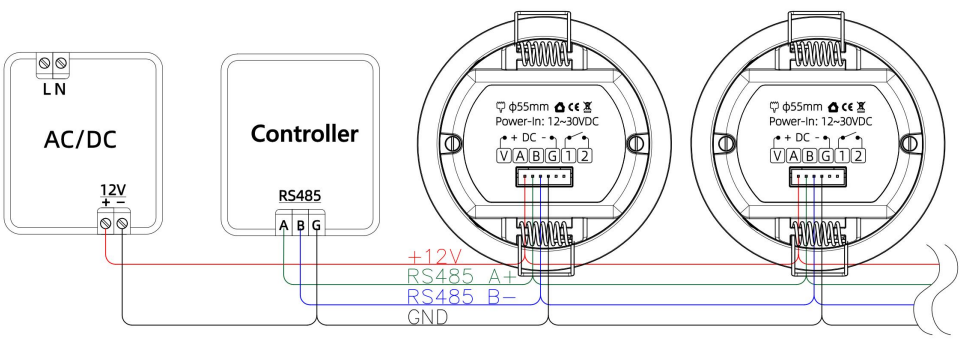
Detection Range

Angle:**360°** Distance:**1~6m**



Wiring


V A B G 1 2
DC12~30V
V -Red: Power (VCC)
A-Green: RS485 data (A+)
B -Blue: RS485 data (B-)
G-Black: Ground (GND)
1-White: Dry contact output
2-White: Dry contact output


L N
AC/DC
12V
+ −
Controller
RS485
A B G
ϕ55mm
Power-In: 12~30VDC
+ DC -
V A B G 1 2
+12V
RS485 A+
RS485 B−
GND

Setup

Fall detection

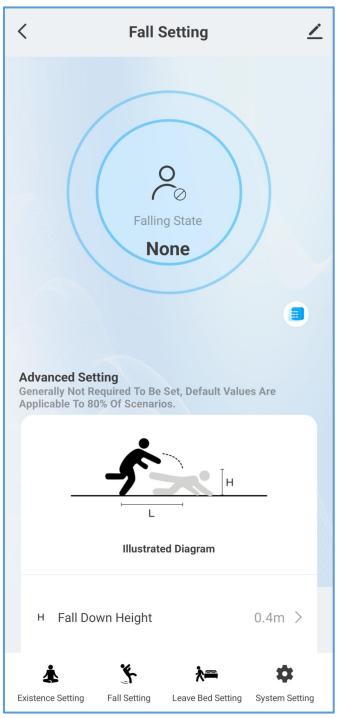
Parameter settings:

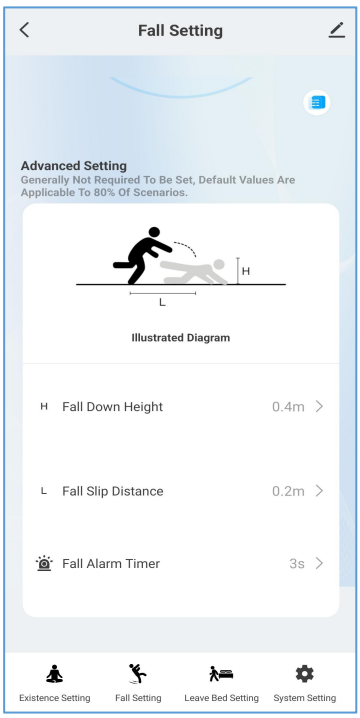
Serial number	Parameter name	Recommended setting value	Parameter modification	Glossary
1	Installation height	Actual value	Support	Actual height of the sensor installed horizontally from the ground
2	Height H when lying on the ground after a fall	Default value	Support	Height of the person lying on the ground after a fall
3	Distance L slid out after a fall	Default value	Support	Distance the person slides out after a fall
4	Fall alarm timing	Default value	Support	Reporting time after a fall

Notes:

1. Installation must be level without tilting
2. Accurately set the sensor installation height
3. No obstacles should block the body after a fall, otherwise it will affect the detection results

Reference Example





Setup

Get Up and Return to Bed Detection

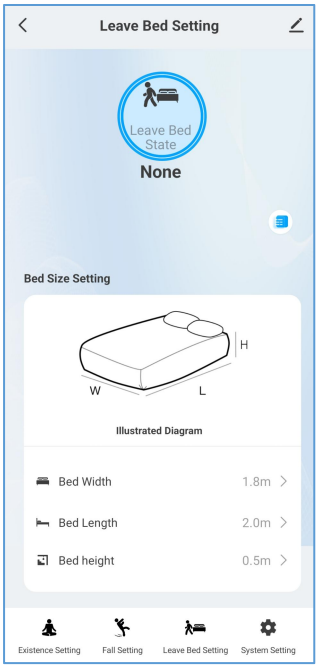
Parameter settings:

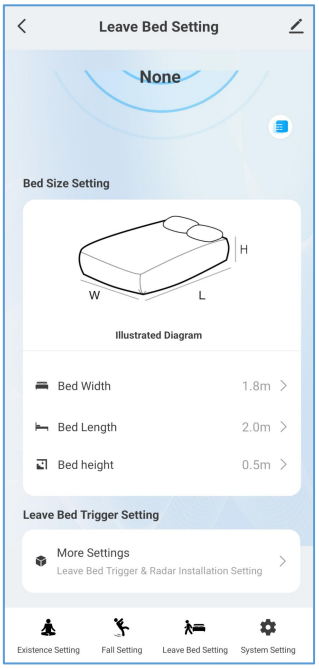
Serial number	Parameter name	Recommended setting value	Parameter modification	Glossary
1	Installation height	Actual value	Support	Actual height of the sensor installed horizontally from the ground
2	Window Width Size	Actual value	Support	Actual Bed Width
3	Bed length size	Actual value	Support	Actual Bed Length
4	Bed Height	Actual value	Support	Actual Bed Length
5	Radar installation deviation from bed center X	Default value	Support	Offset from Bed Center Position X
6	Radar installation deviation from bed center Y	Default value	Support	Offset from Bed Center Position Y

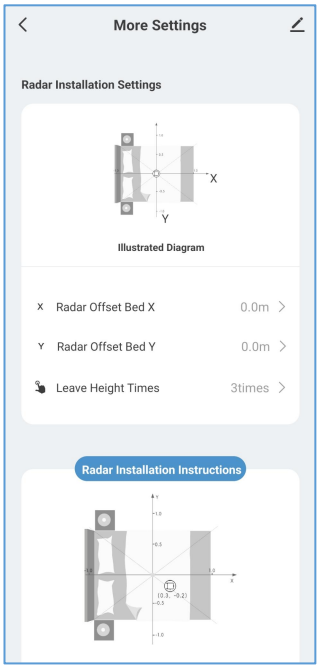
Notes:

1. Installation must be level without tilting
2. Sensor Installation Offset from Bed Center X, Y Axis ≤ 20cm
3. Bed Dimensions: Length, Width, Height ≤ 2.2m, 2m, 70cm

Reference Example







Setup

Presence Detection

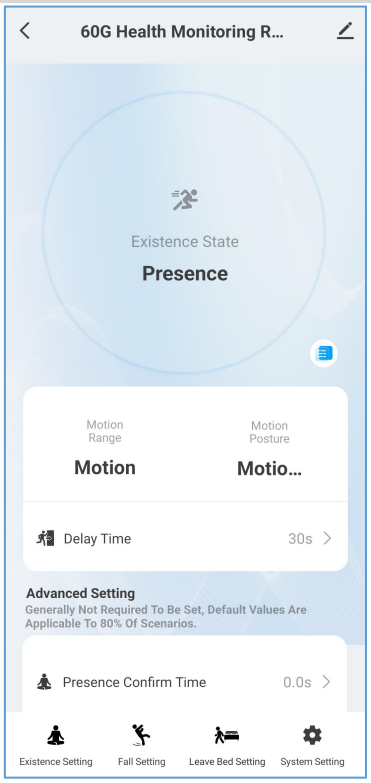
Parameter settings:

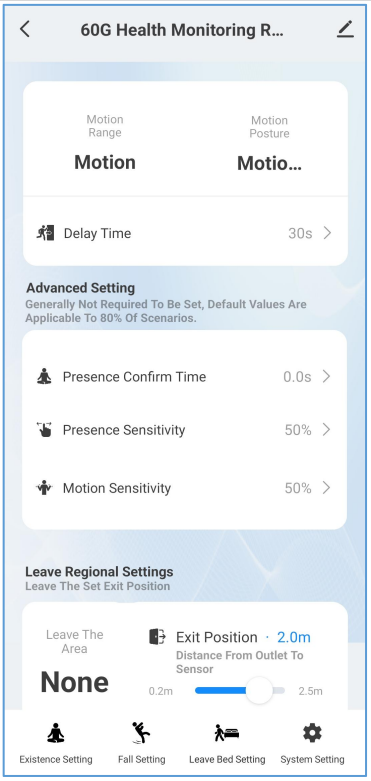
Serial number	Parameter name	Recommended setting value	Parameter modification	Glossary
1	Installation height	Actual value	Support	Actual height of the sensor installed horizontally from the ground
2	Detection Range Width W	Actual value	Support	Detection range width
3	Detection range length L	Actual value	Support	Detection range length
4	Existence confirmation time	Default value	Support	Confirmation time from no one to someone
5	Micro-movement sensitivity	40%~80%	Support	Micro-motion detection sensitivity
6	Static sensitivity	40%~80%	Support	Static detection sensitivity

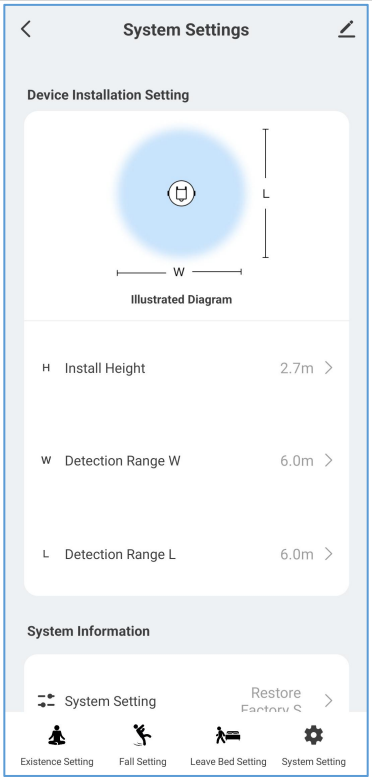
Notes:

1. Installation must be level without tilting
2. Maximum detection range width: 3.0 meters, 4.0 meters

Reference Example







Setup Instructions

Leave area detection

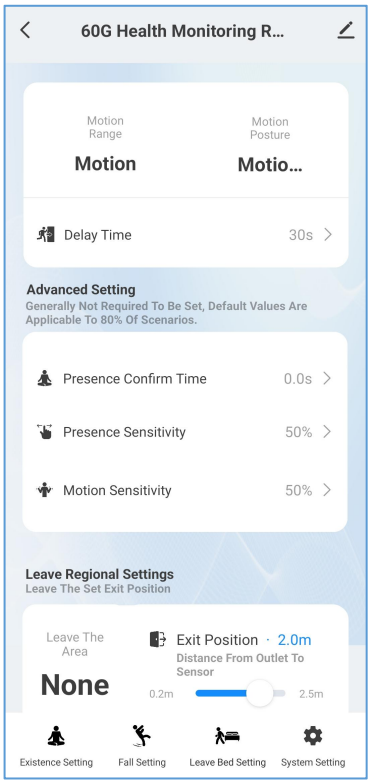
Parameter settings:

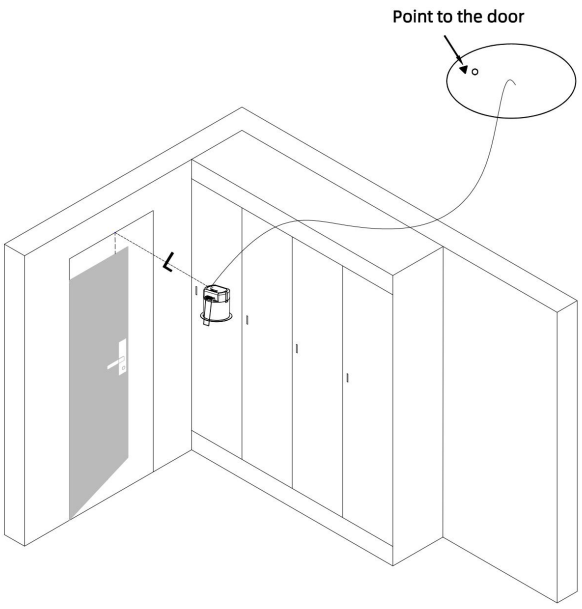
Serial number	Parameter name	Recommended setting value	Parameter modification	Glossary
1	Installation height	Actual value	Support	Actual height of the sensor installed horizontally from the ground
2	Exit position	Actual value	Support	Sensor installation distance from the door position

Notes:

1. Installation must be level without tilting
2. 0.5 meters ≤ sensor installation distance from door frame L ≤ 1.5 meters

Reference Example





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 and press the following buttons in turn

*	1-9	#	0-9999	#
Start	Function Code	OK	Parameter Value	OK

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

*	1-9	#	#
Start	Function Code	OK	Query

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 (150-800 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 # #

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	/	/
8	Protocol Mode Set/Query	2.RS485 Polling 4.Modbus 5.RS485-Active
9	①LED Indicator ②Factory Reset	1.Indicator On 2.Indicator Off 9.Factory Reset
0	485 ID Set/Query	01-99
11	Detection confirmation time	0.1~10 seconds

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 protocol mode to 485 query and press * 8 # 2 #
Set the protocol mode to 485 active, press * 8 # 3 #
Query the protocol mode , press * 8 # #

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 indicator on,press * 9 # 1 #
Set indicator light off, press * 9 # 2 #
Factory reset, press * 9 # 9 #

Set sensor detection confirmation time to 1 second * 11 # 10 #

Set 485 ID to 10, press * 0 # 10 #
Query 485 ID, press * 0 # #

Indicator light reply
Flash 1 time (number 1)
On for 2 seconds (digit 0)
Off or Breathing Light (Exit)

Indicates an ID of 10

Installation

Ceiling Installation

① Connect sensor wiring

② Mount the sensor on the ceiling

Cutout dimensions : ∅55mm

Depth : 60mm

Installation

Installation Environment Requirements

To ensure the correct operation and detection accuracy of this product, please follow the environmental requirements for installation. Operating in unsuitable environments may interfere with detection results:

Dynamic Interference Objects: Please avoid the presence of continuously moving non-human objects in the sensing area, such as animals, continuously swinging curtains, or large potted plants facing the wind.

Strong Reflective Materials: There should be no large areas of strong reflectors in the sensing area, as strong reflections directly facing the millimeter-wave radar sensor may cause interference.

Installation Location: Avoid installing this product in metal junction boxes, on metal surfaces, on mirrored or water ripple ceilings, or within ventilation ducts, as these environments may cause the device to self-excite and generate false alarms.

Packaging and Installation

1. When using sharp tools to open the packaging box, safety should be a priority to avoid injuring the product or yourself.
2. After unpacking, promptly check whether the product and accessories are complete.
3. To prevent suffocation hazards for infants or children, packaging materials should be destroyed immediately after unpacking or kept out of reach of children.
4. Do not discard packaging materials carelessly; they should be disposed of properly according to local sanitation department regulations.

Electrical Safety

1. Before wiring, please ensure that the power is turned off.
2. Please strictly follow the wiring diagram and requirements for wiring operations.
3. Handle with care during installation to avoid colliding with circuit board components, and prevent the device from falling or the casing from deforming or breaking.

4. All line voltages and main cables must use cables certified by national certification or professional testing agencies.
5. Appropriate short-circuit and overload protection must be provided in the distribution cabinet, and ensure that the voltage does not exceed the specifications stated in the product manual.

Installation 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 sensor installation position is secure and stable to avoid any movement of the device itself, as this may affect the accuracy of the detection results.
3. Ensure that there are no moving or vibrating objects behind the radar, as the penetration of radio frequency may also detect nearby moving objects.
4. Ensure that the radar antenna is facing the detection area and that there are no obstructions around it to facilitate the propagation and reception of the waveform.

Product Description

Product Specifications and Changes

If there are changes to the product design specifications, no further notice will be given. The actual product may differ slightly from the illustrations.

Disclaimer

Please strictly adhere to the installation guidelines above. The company is not responsible for any interference or performance issues caused by improper installation. Ensure that all installation steps and environmental requirements are properly executed to guarantee optimal performance and accuracy of the device. If you have any questions or encounter issues during the installation process, it is recommended to contact us for assistance in a timely manner.

This product is an auxiliary item designed to provide users with a convenient daily life experience. Please note that this product is not a medical device and does not possess any medical diagnostic, treatment, or prevention functions. Users should be aware of the auxiliary nature of this product and avoid misusing it as a medical device. This product is only intended for assisting in detecting human movement postures. Our company is not responsible for any losses or damages resulting from improper use of this product.

We strongly recommend that users consult a professional doctor or medical institution promptly when encountering any health issues or concerns. Please be sure to follow the doctor's advice and treatment plan, and do not use this product as a medical means. When using this product, please be sure to operate according to the manual or relevant guidelines to ensure safe use. If you have any questions or discomfort, please stop using it immediately and contact our customer service team. Thank you for your understanding and cooperation; we will do our best to provide you with quality products and services.

Maintenance

Cleaning the exterior of the detector

Regularly: When the surface of the detector's external lens is dirty or obstructed.
Cleaning materials: Soft cloth - wipe with clean water that does not contain any chemical agents.

- Caution!

Do not use chlorine-containing or abrasive products or alcohol to remove particularly noticeable dirt.

1. Clean the top cover of the device with a cloth soaked in water.
2. Wipe with a dry cloth after cleaning.

Disposal and Waste

- Important Notice!

Do not dispose of discarded components or any other product materials carelessly in the environment.
Seek assistance from a waste recycling company for disposal.

Troubleshooting

Malfunction	Cause of Malfunction	Solution
Device cannot connect to the network	Wi-Fi and Bluetooth are not turned on	Check if Bluetooth is enabled on the phone and if the network is connected to 2.4G
Inaccurate distance from bed and exit	Coordinate position does not match the actual location	Modify coordinate position
LED indicator light is not lit	LED light has been set to off	Set LED light to on
No one in the detection area, the indicator light also lights up	There are moving objects in the area (swaying curtains, rotating fans, etc.)	Remove moving objects from the detection area or change the position of the detector
	Person has not completely left the detection area	Person leaves 4 meters away and remains still for more than 30 seconds or turn off breath detection
	Detection distance is too high or sensitivity is too high	Adjust the detection distance or sensitivity according to the setting table
	Wiring error	Please wire according to the correct wiring method
LED indicator light is on, but no signal output	Person has not completely left the detection area	Person leaves 4 meters away and remains still for more than 30 seconds Then re-enter
	Illuminance value set too low	Detecting illuminance value, close the lighting conditions

Warranty

Warranty period

The equipment is guaranteed for 3 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 3-year warranty period.

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