User Manual for MTDx61 Dry contact Series Human Occupancy Detection Sensor

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Statement

Please read this statement carefully before using the products described in this document. Once used, it is deemed a recognition and acceptance of the contents of this statement.

When the user has a sensing sensor, according to the product characteristics, performance and functions described in this document, they must retest based on their own application to meet the user's application needs. In case of damage or damage caused by improper use, it shall not bear the corresponding loss and compensation liability.

Due to continuous update and iteration, the document may be changed without notice. Please confirm the update and errata information through appropriate channels during the application. We have the ultimate power of interpretation.

Please carefully review this statement before using the products described in this document. By using the products, you acknowledge and accept the contents of this statement.
When using a sensing sensor, users must conduct their own testing based on their specific application needs, taking into account the product characteristics, performance, and functions described in this document. The company shall not be held liable for any losses or damages resulting from improper use or damage caused by the user.

Safety Precautions

Safety Signs

The following safety marks are used in this manual.

Safety Signs	Instruction
⚠⚡	When used improperly, it will cause dangerous conditions, which is very likely to lead to personal injury or death.
⚠	When used improperly, it will cause dangerous conditions, may lead to personal injury or death and equipment damage.
📖	Read carefully and follow the instructions for equipment operation

Before starting the operation, please carefully read the operation instructions and precautions to reduce the occurrence of accidents. The "care, attention, warning, danger" items in the product and user manual do not represent all safety matters observed and serve only as a supplement to various operational safety precautions. Therefore, the product installation, operation personnel must be through strict training, master the correct operation methods of the system and various safety precautions, before the operation of the equipment.

In the operation of the company's products and equipment, we must comply with the safety specifications of the relevant industry, and strictly observe the relevant equipment precautions and special safety instructions.

Electrical Safety

This manual covers the installation and use of the MTDx61 Dry contact series of human presence sensors.

Please strictly observe all the warning signs and operation instructions in this manual and do not operate the equipment without reading all the safety instructions and operation instructions.

⚠ ⚡ warning
1.MTDx61 Dry contact series human presence sensor must be installed and debugged by the manufacturer or its authorized agent, otherwise it may endanger personal safety and lead to sensor failure of MTDx61 Dry contact series. The resulting MTDx61 Dry contact series human body sensor damage, is not covered by warranty.
2. This product adopts internal non-isolated power supply, and it is strictly prohibited to install or remove the equipment.
3. It is strictly prohibited to put the MTDx61 Dry contact series human body sensor in the fire to avoid explosion and endanger personal safety.
4. It is strictly forbidden to dismantle and repair without permission.

⚠️ Caution

1. The standard model MTDx61 Dry contact series human body has sensors connected with external AC electric power. Before this operation, it must be operated under power failure, which must be operated by professionals, and private operation is prohibited.

2. Use environment and preservation methods have a certain impact on the service life and reliability of MTDx61 Dry contact series human body sensors, and avoid the long-term use of MTDx61 Dry contact series human body sensors in the following working environment:

The high temperature, low temperature or damp places beyond the specified technical index of the product

Places with conductive dust, corrosive gas, salt spray, or combustible gas

Vibrating, vulnerable places

Close to the heat source or in places with strong electromagnetic field interference

3. Liquid or other foreign objects are not allowed to enter the MTDx61 Dry contact series human body sensor.

4. If a fire occurs around the equipment or equipment, first cut off the power supply; a dry powder fire extinguisher must be used to extinguish the fire, and the liquid fire extinguisher will risk electric shock.

5. If not used for a long time, the MTDx61 Dry contact series human presence sensor must be stored in a dry environment. Storage temperature and humidity range of the standard model MTDx61 Dry contact series human body presence sensor: -20℃ ~ + 65℃, 40 ~ 60% RH.

Precautions for Use

📖 Please read and understand carefully before you use it

It is forbidden to use MTDx61 Dry contact series human body sensors in elevator, metal plate room (less than 6m 6m) and metal sealed toilet; it is not recommended to use the plane area of metal decorative material in the area exceeding 20%. The above scenario and sensor features can lead to abnormal usage.

It is forbidden to install MTDx61 Dry contact series human body sensors and routers or other high-power WIFI equipment close to them. For installation spacing requirements, refer to 5.4 Installation principles.

When deploying intensively in large space, please deploy in strict accordance with the spacing requirements. refer to 5.4 Installation principles for details.

MTDx61 Dry contact series human body sensor is ceiling embedded installation, horizontal installation is not recommended, affecting the detection effect.

Cataloge

1. Product Parameter

1. Main Parameter

product model	5.8GHz	24GHz
	MTD061-RC	MTD261-RC
Parameter item	Description	

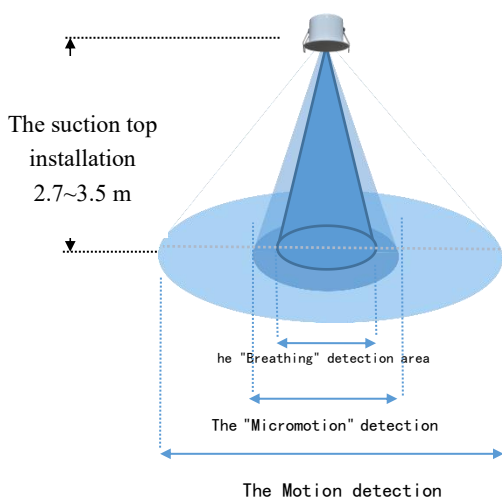| Physical parameters	product size	The maximum diameter of the outer edge of the dry contact is 50mm, the height is 37mm, and a circular hole with a diameter of 40-42mm is opened	
	colour	Ceramic white	
	weight	≤30g	
Induction parameters	Beam Angle	120×120° ,the angle of the signal energy at 3 dB (0.5 times)	115×115° ,the angle of the signal energy at 3 dB (0.5 times)
	Top mount: detection radius	Respiratory detection radius:2.5～3 m Micromotion detection radius: 3~4 m Movement detection radius: 4~5.5m	Respiratory detection radius:2～3 m Micromotion detection radius: 3~4 m Movement detection radius: 4~4.5m
	Top mount: mounting height	Typical height:2.7m～3.5m	
	sensitivity	1~9; Minimum sensitivity 1, highest sensitivity 9; default 7 explanatory note: 0 Turn off the sensor detection, the larger the value, the more sensitive, the sensitivity within 6 can only achieve motion detection, 7-9 can achieve breath detection, the reliability of the existence is related to "unmanned delay" (see the recommended parameter configuration in different scenarios for corresponding Settings).	
	detection range	1.5-10 m; the default maximum detection distance is 6m	1.5~10m; the default probe distance is 7m
		explanatory note: 1. Detection distance refers to the longest distance of the sensor from the straight line that can detect the movement, micromovement and breathing target, and the maximum diameter or radius not mapping to the ground. 2. The distance is non-absolute distance, the sensor detection has a distance resolution, the resolution is about 1m. If 3m is set, it is normal to trigger in the ± 1m interval at the 3m position. 3. The distance value is mainly used as filter glass partition, gypsum board and wood partition, and is not strictly used as the detection area. If 3m is set, there may be missing report and false touch at 3m position ± 1m.	
	delay time	5s~25 min; it is recommended not to be less than 15 seconds, too small and easy to miss the report explanatory note: This delay indicates: 1. The sensor triggers the time to leave; 2. The sensor triggers within the delay time and continues to extend.3. In the observation window of the sensor, the longer the delay, the smaller the probability of sensor omission, and the respiratory detection delay is not less than 60s. Test: It is recommended to set the delay of 5s & 10s to avoid the long waiting time.	
	light sense	0～250 Lux explanatory note: The detection value is not the absolute value of ambient light, which is limited by the installation direction, illumination Angle and other factors, and can only roughly reflect the trend of ambient brightness.	
	gang control	Support linkage control and dynamic configuration of linkage parameters	

system paramet er	micro wa ve	service frequency	5.8 GHz ± 75 MHz, in the ISM band	24GHz ± 125 MHz, in the ISM band
		(Pt)Transmit ting power (Pt)	3～5 dBm	10dBm
		Modulation mode	FMCW、CW	
working conditi ons		working voltage	DC9-36 V,Typical 12 V	DC9-36 V,Typical 12 V
		operating power	＜ 1 W	
		working temperature	-10℃~+50℃	
		Storage temperature	-20℃～65 ℃	
		Working humidity	5～90% RH	
		Work altitude	0-3500m	
		Protection level	IP20	
output		Output method	Relay output; Voltage ≤ 24V, current ≤ 100mA	Relay output; Voltage ≤ 24V, current ≤ 100mA
others		Installation requirements	Installation height: 2.7-3.5m; Installation method: embedded; Hole size: circular hole with a diameter of 40-42 mm	
		input terminal	Wire harness connection, equipped with 0.1m wire harness, it is recommended to use terminal blocks for extension	
		Limit usage scenarios	Inside the elevator, metal slab room (less than 6m 6m) and metal sealed toilet, the plane area of metal decorative materials outside the ceiling exceeds 20%.	In elevators and metal sealed toilets in all metal sealed space; more than 20% of metal decorative materials in the area outside the ceiling.

2.   **Detection Range: Top Mount**

The following figure is a schematic diagram of the detectable area of the human body facing the sensor when "top mounted".

"Micro-movement" detection area: can detect micro-movement (head, wave, hand, light start, turn over the book, left and right front and back slightly tilt and other small movements), movement (walking, trot, running, circle, jump movement), existence (standing still, squatting motionless);

"Existence" detection area: can detect the standing still, squatting still, sitting still and other human body in the static state.

The suction top
installation
2.7~3.5 m

he "Breathing" detection area

The "Micromotion" detection

The Motion detection

5.8G radar module
● Detection coverage range (related to installation height and sensitivity parameters):
● Detection radius during top installation: 2-3 meters for human breathing
● Detection radius during top installation: 3-4 m for human body micro movement
● Detection radius during top installation: human body movement of 4-4.5 meters

24G radar module
● Detection coverage range (related to installation height and sensitivity parameters):
● Detection radius during top installation: 2.5 to 3 meters for human breathing
● Detection radius during top installation: 3-4 m for human body micro movement
● Detection radius during top installation: human motion 4-5.5 m

Note: 1. The above range value is based on the conclusion of 3m, 10 x10m length and width, and parameter configuration: sensitivity 7-9. With a delay of 60s and a detection distance of 9m, different scenes will have certain differences.

2. The detectable radius is related to many factors such as the installation environment, human size, relative Angle, and micro-motion / motion range. The above parameters are the test results of sensors used by our tester. The descriptions of small movements and movements are qualitative, not quantitative, for reference only. **Under different test conditions, please refer to the actual test.**
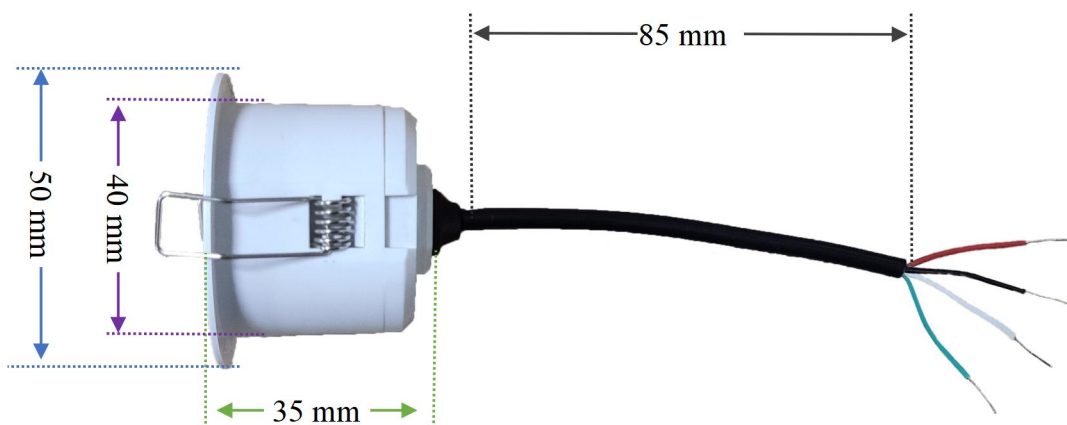
2. Interface Size.

2.1 Interface
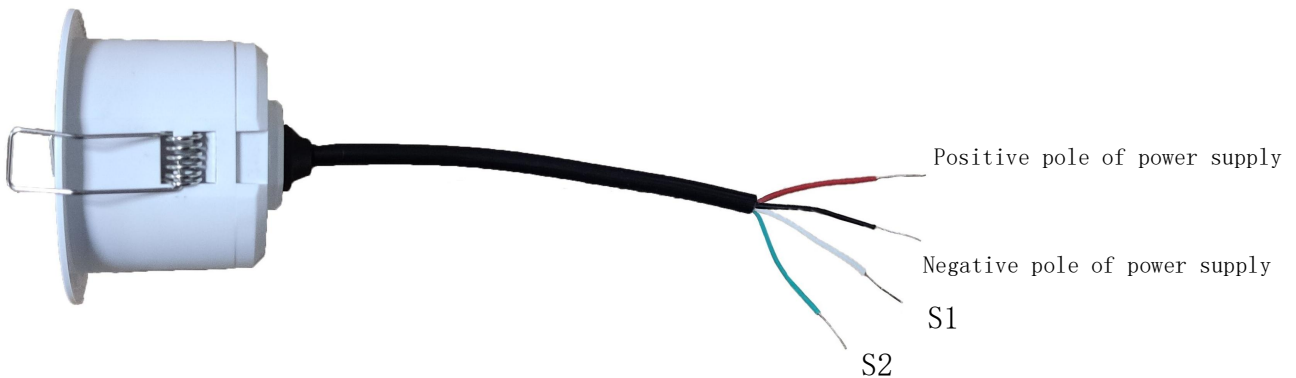
| Serial Number	colour	function
1	red	Positive pole of power supply
2	black	Negative pole of power supply
3	white	S1
4	green	S2

2.2 Size

The MTDx61 dry contact sensor series adopts an embedded ceiling installation method, with an outer edge of 50mm; The size of the embedded ceiling part is: diameter $\times$ High=40 $\times$ 35mm.

Tip: It is recommended to open circular holes with a diameter of 40-42mm on the ceiling during installation

2.3 **Wiring**

Connect the external power and signal wires to the sensor's built-in harness and introduce them into the ceiling opening.
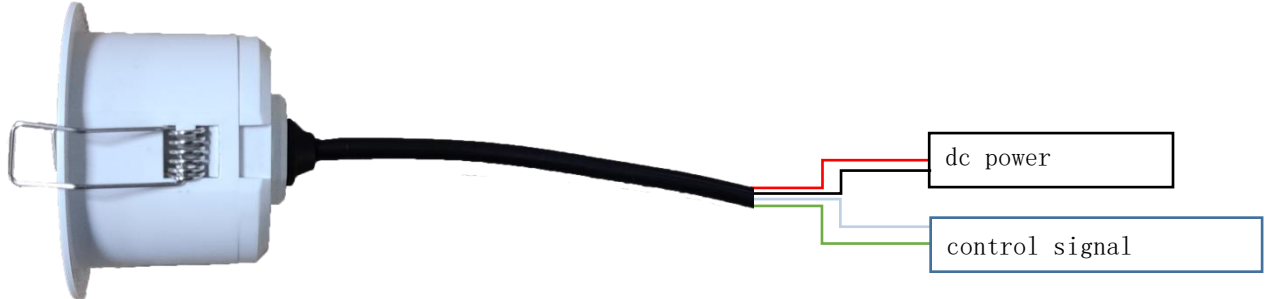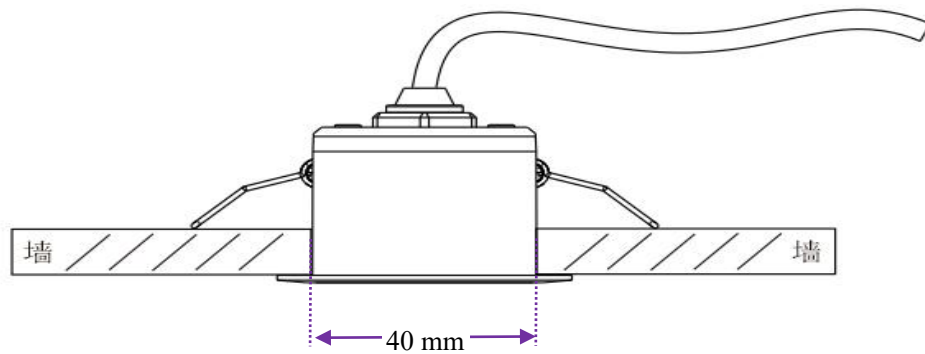

3. Install

3.1 Installation Method 1: Embedded Installation

1. According to the scope and shape of the area to be tested, select a suitable installation location on the ceiling to ensure that the testing area can be effectively covered.

2. The edge diameter of the equipment is 50mm, and the embedded part is 40 * 35mm (cylindrical). Circular holes with a diameter of 40-42mm can be opened on the ceiling, and the minimum reserved space at the top is not less than 50mm.

3. Clip the power and signal cables onto the equipment (gently clip the cables, otherwise they may be easily cut) and introduce them into the ceiling opening.

4. Insert the device into the ceiling hole to complete the installation.

installation diagram

3.2 Installation Method 2: Bracket Installation

1. According to the scope and shape of the area to be tested, select a suitable installation location on the wall to ensure that the testing area can be effectively covered.

2. Fix the sensor on the installation bracket, and according to the installation angle of the sensor, make wire harness holes and bracket fixing holes on the wall. The wire harness through-hole is a circular hole with a diameter of 8mm.

3. The fixed hole diameter of the equipment installation bracket is 5mm, and a circular hole with a diameter of 5mm can be opened on the wall. The bracket is fixed with matching expansion screws, and the minimum reserved space at the top is not less than 50mm.

4. Introduce the power and signal wires into the bracket opening and clip them onto the reserved wiring harness of the equipment (gently clip the wires, otherwise they may be easily cut) to complete the installation.

installation diagram

Bracket fixing hole with a diameter of 5mm

The product comes with a wiring harness, with a diameter of 4mm
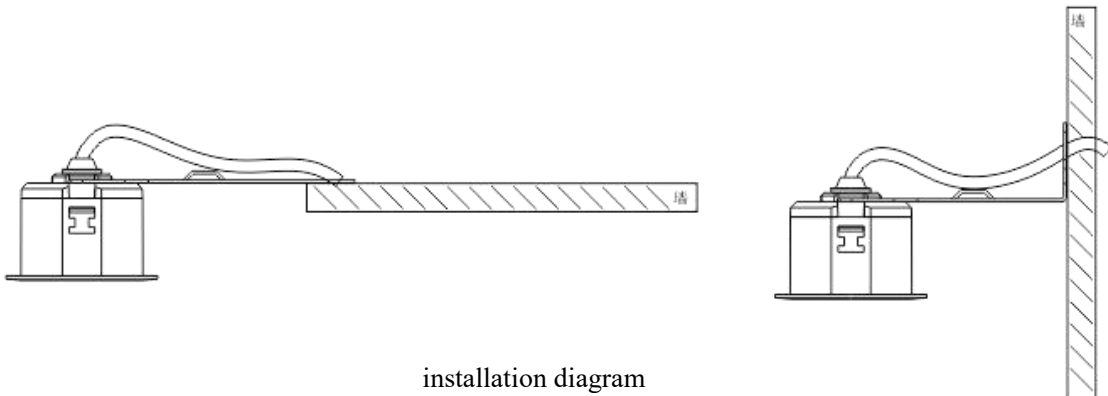
Wire harness through-hole on the bracket, with a diameter of 8mm
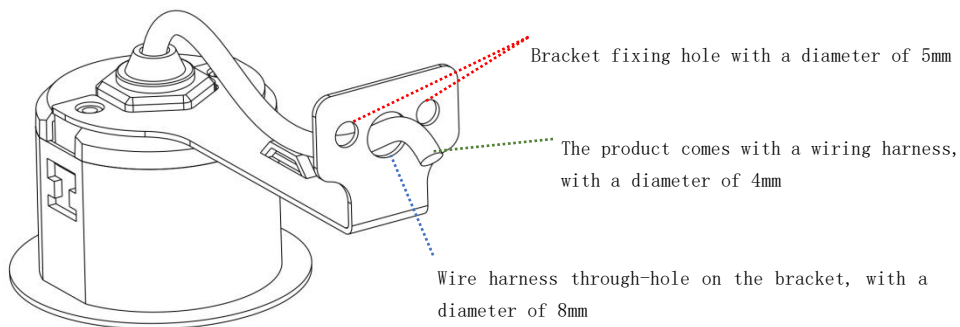
Installation dimension identification diagram

4. product use

4.1 Output signal access to user system

Connect the sensor's reed output terminals S1 and S2 to the user system; Choose the appropriate access plan based on the specific situation:

(1) Four wire fully isolated access method:

S1 and S2 terminals have no electrical connection with the sensor. When the presence of a human body is detected, S1 and S2 terminals are connected; Otherwise, S1 and S2 terminals are disconnected;

Reminder: Refer to the "Explanation of Reed Output Signal" section of the "Ordering and Selection" section

4.2 Sensor power supply

Provide 9 V DC power supply for sensors with suffix DC; Provide 9-24 V DC power supply for sensors with suffix RC; DC power can be supplied centrally using a switching power supply or separately using a power adapter.

4.3 Using the Remote Control to Configure Parameters

Using a remote control to configure the parameters of the MTDx61 dry contact series sensors facilitates on-site installation, debugging, and maintenance management.

(1) Configure parameters such as "detection distance", "sensitivity", "delay time", and "light intensity";

Tip: Refer to the "Remote Control Setting Parameters" section of Chapter 7

4.4 Recommended Parameter Configuration for Different Scenarios

scene	Scenario requirements	installation requirements	Parameter configuration suggestions	notes
porch / corridor Dressing Room	Microactive motion detection and motion detection	1. Regional center	Sensitivity: 1~9; detection range: Family porch 2.5-3.5m; Public area: 3.5~9m; Someone to no one delay for more than 20s.	Porch, corridor, dressing room normally the personnel stay time is relatively short, the movement range is obvious, the actual scene only needs the movement triggered to meet the demand, such as special demand stay for a long time or the public area has a conversation scene, improve sensitivity, elongate "someone to no delay" can
kitchen	Respiratory detection micromotion detection motion detection	Kitchen: in the center of the kitchen, stay away from the exhaust fans, glass doors and Windows, etc	Sensitivity: 6~9; The detection distance is 2.5~4m; Someone to no one delay of more than 30s.	1. In the kitchen scene, there are few people completely motionless. "Someone to no delay" can be set slightly shorter
Family bathroom lavatory	Respiratory detection micromotion detection motion detection	Sanitary room and toilet: away from doors and Windows, away from exhaust fan; 0.4-0.6m of toilet / squat in front of the roof, comprehensive evaluation.	Sensitivity: 7~9; Probe distance of 2.5~3.5m; 1. Someone to no one delay of more than 60s.	This kind of scene generally has a small area, and people may be in a static state for a long time. It needs to do respiratory detection, high sensitivity needs to be set, and special attention is paid to the glass door when setting the detection distance.
saloon dining room assembly	micromotion detection motion	Living room: 0.5~1m position in front of the sofa Dining room: the	Sensitivity: 7~9; Detection range of 4~9m; Someone to no one delay of	Living room, meeting room scene, the area is relatively large, personnel sitting, lying completely motionless, sensitivity and distance need to set a

room	detection	center location of the dining table Conference room: on the central axis of the long side of the meeting table	more than 60s.	high value. The dining room scene is small and large, and the actual scene overlaps with the living room or open kitchen. It is necessary to set an appropriate distance to achieve a better experience.
bedroom study	micromotion detection motion detection	Bedroom: within the bed area Study: inside the 0.6-1.5m before and after the desk	Sensitivity: 8-9; Detection distance of 5.5-9m; Delay of more than 180 seconds from someone to no one.	Bedroom scenario: users spend most of sleep, reading and rest time, with less movement; breath detection requires high sensitivity, and long delay to keep the sensor not to miss. Under the study scene: people are in a state of reading or working for a long time, and they also need to detect breathing to judge the existence of people. It needs high sensitivity. The distance setting is considered according to the area of the actual scene and the potential source of interference comprehensively.

Please refer to the above table for setting the scene parameters, otherwise the best sensor effect cannot be achieved!

4.5 Installation Principle

(1)Porch / aisle, changing clothes room scene: center, fixed firmly.

(2)Kitchen scene: in the center, fixed firmly. For example, when the installation area is square, there is an open glass door on the long side, and if the central installation position is just opposite the glass door, you need to re-select the position. At this time, the door piercing problem can be solved by installing the sensor on the side position of the solid wall on the side of the door, and the experience will not be affected after setting the appropriate distance.

(3)Home bathroom and toilet scene: stay away from doors and Windows; 0.4-0.6m in front of the toilet / squat location covering the whole scene space; microwave signal can penetrate the glass door or wooden door by solve the sensor on the side wall of the door. The actual positioning requires comprehensive evaluation on site.

(4)Living room / dining room / meeting room scene: Living room: 0.5~1m in front of sofa; dining room: table center; conference room: on the long central axis of meeting table.

(5)Bedroom, study scene: Bedroom: in the area directly above the bed; study: in the 0.6-1.5m before and after the desk.

(6) **Other types of scenarios**

① Long and special-shaped area scenario: both sides of the long side of the long area (long side is less than 10m); if the long side is glass or gypsum board, and the long side is less than 1.3 times, the solid wall can be more than 1.3 times, two sensors shall be installed in sections; if the long side is glass or gypsum board, the long and remote area is larger than the sensor, and the area shall be divided and the above principles shall be observed.

② Glass and gypsum board partition: Keep away from glass and partition test, and try as close to the solid wall on the premise that the sensor can meet the breathing area to be covered. For example, the surrounding is glass and partition installed in the middle, and set the appropriate detection distance, indent distance, trigger sensitivity to solve the detected outside the glass and the wall.

③ People sitting, squatting, standing in the motionless scene: sensor top, 0.4-0.8m in front of the front of the head. Should not be directly on the head position.

④ Intensive deployment scenario: the sensor is not less than 4m.

4.6 Common Interference Sources and Solutions

(1)Fan: fan shaking head (blade diameter greater than 10cm), metal fan without shaking head, ceiling fan.

The fan blade greater than 10cm causes the sensor to continuously output the human state; the metal blade fan can trigger or maintain the human state output of the sensor when working; and the plastic blade fan without shaking the head can be filtered by the sensor in areas other than the area of the breath detection. Setting appropriate trigger sensitivity can effectively avoid some interference trigger sensor output.

(2)Air conditioning: the air swing of the hang and cabinet, the metal ornaments blown by the air conditioning, the thick curtain blown by the air conditioning, the ceiling vibration driven by the ceiling air conditioning, the shutter vibration of the central air conditioner.

The air swing and louver vibration of the air conditioner can trigger or maintain the human state of the sensor within the breathing coverage of the sensor; the air conditioner can also trigger or maintain the human state of the sensor. Setting appropriate trigger sensitivity and trigger indent can avoid most false triggers; but it cannot completely solve the problem that interference causes the sensor to continuously output human state after human leave.

(3)Curtains: curtains that sway significantly, roller blinds with aluminum alloy bottom rails.

Small swing curtains such as cloth, cotton, and sand curtains used in ordinary households are not easy to trigger sensors; If the roller shutter with aluminum alloy lower rail swings within the detection distance range, it is easy to trigger the sensor. By setting an appropriate detection distance and filtering out such interference, it is possible to effectively avoid false triggering caused by the above scenarios.

(4)Drain fan: ceiling vibration caused by metal fan leaf and exhaust fan of exhaust fan. If the sensor cannot be triggered without the diameter of the front side of the sensor, the ceiling vibration caused by the exhaust fan drives the sensor vibration or the vibration surface detected by the sensor will be triggered.

(5)Strong 5.8GHz WiFi signal interference: 5.8GHz WiFi router / AP in the front area of the sensor, or 5.8GHz WiFi router / AP in the horizontal or 1.5m of the sensor.

It is recommended that the WiFi router in the front area of the sensor be installed over 3m from the sensor; the other direction shall be separated above 1.5m from the sensor; and the top-mounted AP shall be separated above 1.5m from the sensor.

(6)Air flow (wind): the movement, movement and vibration of objects in the scene caused by blowing may cause the trigger.

Setting the appropriate trigger sensitivity can filter the wind and grass below 2-3, the larger the wind level, the more likely to trigger.

(7)Animals: cats, dogs, mice, other pets, etc. The difference between other animal species and human characteristics is in that of the body size, such as the animal body size and human body, and the triggering mechanism and human body are also consistent.

Set the appropriate trigger sensitivity and trigger indent distance, most of the kitten and puppy mice are unable to trigger the sensor. Such as the curtains caused by cats and dogs, or clothes, sheets, quilt covers dragging, the movement of objects will also trigger sensors.

(8)Low frequency vibration: wall or ceiling vibration caused by high sound volume, vibration caused by upstairs and downstairs decoration, etc.

When installation, it is necessary to maintain a suitable distance with the stereo to avoid the radar signal directly hitting the main stereo. When choosing the installation position, the main consideration is to cover the stationary area, such as sofa, seat, etc. Set a relatively low sensitivity (avoid mistriggering) and a longer 'human to no delay' to achieve more reliable detection.

5. Common Problems and Solutions

frequently asked question	cause analysis	resolvent
After connecting to the power supply, the sensor indicator light does not respond	1. Is the power supply normal and meets the working voltage of the sensor?	Check if the power supply meets the working voltage of the sensor
	2. Is the indicator light damaged?	Contact after-sales personnel and return to the factory for repair
In the presence of someone, the sensor cannot detect someone	1.Is the detection area set too small?	Reset the matching detection area based on the scene
	2.Is the sensitivity setting too low?	Adjust the corresponding sensitivity according to the scenario

	3. Is the sensor installed properly?	Ensure that the sensor is installed normally without obstruction, ensuring that the sensor is installed normally without obstruction
	4.Is the delay time set too short?	Ensure a delay time of 30 seconds or more
Sensors detect someone in an unmanned state	1.Is there any interference source in the environment?	Eliminate interference sources in the environment
	2.Is the detection area too large?	Reset the matching detection area based on the scene
	3. Is the sensitivity setting too high?	Adjust the corresponding sensitivity according to the scenario

6. Special Instructions for the Sensor

Due to the characteristics of microwave technology, the ideal detection results will not appear in some application scenarios, or the ideal detection results should be obtained under the right conditions.

The MTDx61 dry contact series sensors are sensors with high detection performance, which can detect microdynamic changes that cannot be seen by the human eye. If you encounter a different performance than expected in the test, please contact us to provide detailed technical support, so as not to affect the use of parameter setting errors, and the sensor is unable to play the best detection performance.

The default configuration parameters of MTDx61 dry contact series sensors are not suitable for the actual scenarios of all users. Please be sure to reconfigure the sensor parameters so that the working parameters of the sensor are suitable for the use scenarios to achieve better test effect and performance.

1. Detection technology: Weak motion detection technology at the respiratory level:

   （1）The current version of the sensor can detect the fluctuation range as low as 1 mm or speed as low as 3 mm/s, and most human breathing movement, body micromovement, its fluctuation range is much greater than 1 mm or more than 3 mm / s, so it can be highly sensitive to identify whether there is a human body;

   (2) From the use point of view, it can be understood as motion detection with higher sensitivity but lower false positive rate, and can stably and reliably detect weak undulating movements such as respiration.

2. Limitations of the "weak motion detection technology":

   (1) Dithering air conditioners, fans, washing machines; shaking curtains, green plants; shaking large metal equipment, ventilation pipes, fire pipes, drainage pipes; motion frequency or harmonic frequency of invisible vibration in human eyes falls into the human respiratory frequency range, and may be observed by sensors and mistaken for "human body existence";

   （2）Eliminate the interference of shaking or shaking objects, and exclude the interference area by setting the maximum detection distance, or by adjusting the mounting position to prevent the beam from directly or indirectly reflecting the interference. Or for the presence of a fixed interference source, the general version of the sensor cannot solve, the interference algorithm can be customized to filter the interference interference (such as electric fan, air conditioning, bath bully, etc.).

3. Relative movement is required:

   (1) Because the sensor has the highest sensitivity to the radial motion (relative motion) of the target detection, the longest detection distance, and it is easier to detect the target. Therefore, the best installation method is: horizontal installation> oblique downward installation> top installation; however, when using the detection function, top installation is recommended, because horizontal installation and oblique downward installation will have a certain detection blind area.

（2）On top, the best relative movement is up and down; the motion in the upper and lower direction;

(3) Top loading, a certain distance from the sensor of the human body, the beam is oblique irradiation to the body, the level of the body in the upper and lower direction of the movement component, so it can detect the presence of people;

(4) At the top, sitting directly under the sensor and the body does not shake, only breathing movement, because the breathing movement is horizontal movement, there is no movement component in the upper   and lower direction, the sensor will not detect the presence of someone. In this case, the sensor delay time is generally increased, so that in a longer observation time, the probability of the human body directly under the sensor becomes smaller, then the probability of detecting the existence of the human body will increase, and the omission rate is reduced;

（5）Horizontal installation: only irradiation to the foot, will not be able to detect the human presence.

4. Sensor Angle

（1）Electromagnetic waves, like a flashlight, have energy beyond the edge, and the light near the edge is there, but relatively weak. For example, the sensor of 120120,120 represents the antenna radiation angle, which is the angle measured when the signal energy is 0, not the target detection angle that can be detected, and the central cross section of the detection area is not a triangular detection surface like an opening 120.

（2）The size and distance of the detection area are related to the volume, relative angle, and motion speed of the detected target. For horizontal installation: the larger the target volume, the easier it is to be detected; The smaller the relative angle (such as forward relative motion), the easier it is to be detected.

5. signal enhancement

Due to the multi-path propagation effect of the signal microwave, the reflection signal will be enhanced in the closed and many obstacle environment, so that the sensor detection performance is better. Set the same configuration parameters in a small area will be better than a large area conference room; small rooms will be better than the hall.
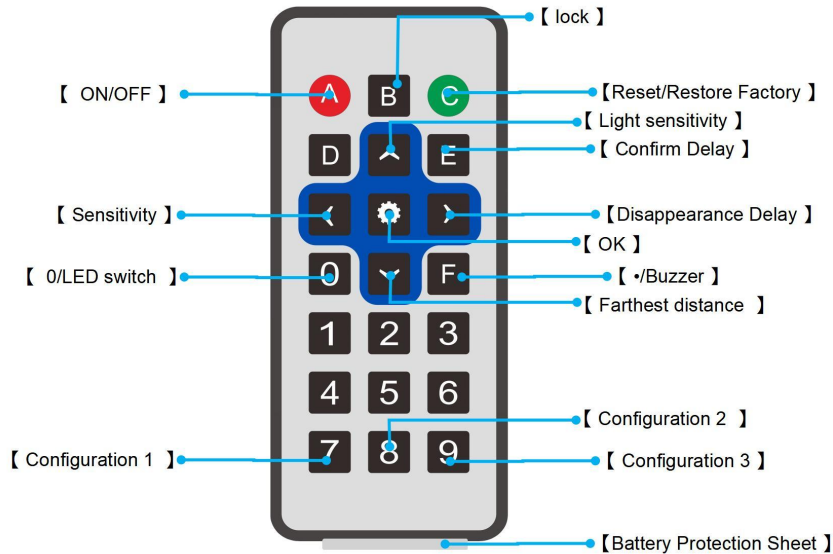
7. Remote Control Setting Parameters

The dry contact version of the sensor also supports remote control configuration parameters, on-site installation, debugging, and maintenance management

1. Remote control instructions

Long press is defined as holding down the button for more than 3 seconds

If it is not specified as a long press, it is a short press

2. Supplementary instructions for function keys

(1) 【ON/OFF】key：

Users can use this button to make the output signal normally open or normally closed.

(2) 【lock】 key：

The sensor is in the "unlocked" state by default at the factory, and users can directly operate it using the remote control. During normal use of the sensor, if encountering interference from the remote control of other electrical appliances, the sensor can be locked by long pressing to prohibit remote control operation.

(3) 【 Reset/Restore Factory 】 key

When the sensor is in the manual remote control output or closed output state, press the reset button to restore the sensor to the induction output state; Long press this button to restore the sensor parameters to the default state: sensitivity 7, detection distance 6 meters, and delay time 15 seconds.

(4) 【 Light sensitivity 】 key:

Short press to configure the light sensitivity, with a value range of 0-45Lux; If the light

sensing function is not required, configure the light sensing value to 255 or 0 to turn off the light sensing function.

Long press the configuration to trigger the indentation distance, with a value range of 0-9m and a default of 0.6m. The larger the value, the more indentation, and the smaller the triggering radius, and vice versa.

(5) 【Sensitivity】 key:

Short press the configuration to maintain sensitivity, with a value range of 0-9 and a default of 7. The higher the value, the higher the sensitivity.

Long press the configuration to trigger sensitivity, with a value range of 0-9 and a default of 5. The larger the value, the higher the sensitivity.

(6) 【Confirm Delay】 key

1) The configurable value range is 0-10s, with one decimal place remaining valid. Excess decimal points and decimal values will be ignored by the sensor.

2) The confirmation time after detecting the target and configuring the optimal parameter values can greatly reduce the false alarm rate. Although the higher the value, the more reliable it is, when a true target appears, the sensor needs to take a longer time to report that the target has been detected.

(7) 【 Disappearance Delay 】 key:

1) The configurable value range is 0.5~1500s, with one decimal place remaining valid. Excess decimal points and decimal values will be ignored by the sensor.

2) The delay time after "target disappearance", the larger the configured parameter value, the easier it is to reduce missed alarms caused by accidental target disappearance. Although the higher the value, the more reliable it is, when the target truly disappears, the sensor needs to take a longer time to report that the target has disappeared. For scenarios where the response speed requirement is not high after the target disappears, it is recommended to set it to more than 15 seconds or longer, such as 30 seconds, 60 seconds, 90 seconds, etc.

(8) 【 farthest distance 】 key:

1) Short press to configure the farthest detection distance: value range 0-9m, default to 7m

5.8G radar module: value range 0-10m, default 7m;

24G radar module: value range 0-12m, default 7m;

2) Long press to configure the nearest detection distance

5.8G radar module: value range 0-10m, default 0.6m;

24G radar module: value range 0-12m, default 2m;

Sensors will only detect targets located between the closest and farthest distances. For example, if the nearest distance is 1 meter and the farthest distance is 3 meters, the sensor will not detect targets within 1 meter or greater than 3 meters.

(9) 【OK】 key:

After pressing the [Light Sensitivity], [Sensitivity], [Delay], or [Maximum Distance] keys on the remote control, input the parameter values. Finally, press the [Confirm] key before the sensor will store and use the new parameter values, otherwise they will not be used.

(10) 【·/Buzzer】key:

The default buzzer is on, and a sound will sound when the remote control button is pressed. If the buzzer needs to be turned off, long press and hold the button to turn off the buzzer; Press and hold again to turn on the buzzer.

(11) 【 0/LED switch 】 key:

The default LED indicator light turns off when working normally, and flashes or lights up when abnormal. Long press and hold this button to turn off the indicator light (it will still flash when the remote control is in use), and it will no longer flash or light up in case of abnormalities. Press and hold again to turn on the indicator light.

(12) Quick parameter configuration: Users can quickly configure typical parameters by long pressing these buttons.

[Configuration 1] key, with the following parameters, suitable for scenarios such as bathrooms and kitchens:

Sensitivity: 6; The nearest detection distance is 0.9m; The farthest detection distance is 2.4m; Target confirmation time is 0.2 seconds; Delay time of 20 seconds;

[Configuration 2] key, with the following parameters, suitable for scenarios such as study and bedroom:

Sensitivity: 8, nearest detection distance 0.9m, farthest detection distance 3m, target confirmation time 0.5s, delay time 120s;

[Configuration 3] key: The parameters are as follows, suitable for living rooms, halls, conference rooms, and other spaces:

Sensitivity: 7; The nearest detection distance is 0.6m; The farthest detection distance is 6m; Target confirmation time 0.1; Delay time of 60 seconds;

(13) 【Battery Protection Sheet】:

Before using the remote control, please remove the plastic sheet that isolates the battery to ensure that the remote control is powered on and working properly. It is recommended to keep the plastic sheet and insert it back when the remote control is not frequently used to protect it.

Reminder:

(1) After pressing the [Light Sensitivity], [Sensitivity], [Delay], or [Maximum Distance] buttons, if there is no operation within 5 seconds, the sensor will timeout and exit the configuration state;

(2) 【·】, 【0】, 【1】, 【2】, 【3】, 【4】, 【5】, 【6】, 【7】, 【8】, 【9】 are numerical combination keys used for parameter value input.

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3. Example

(1) Set sensitivity to 8:

Operation steps: In the remote control unlocking state, first press the [Sensitivity] key to enter the configuration state, then press the number key [8], and finally press the [Confirm] key to take effect.

(2) If the maximum detection distance is set to 6.5 meters:

Operation steps: In the remote control unlocking state, first press the [farthest distance] button to enter the configuration state, then press the number key [6], decimal point key [•], number key [5], and finally press the [confirm] button to take effect.

(3) To quickly configure the parameters of parameter group 2:

Operation steps: In the remote control unlocking state, press the [8/Configuration 2] button for more than 3 seconds.

(4) Restore factory configuration:

Press the 'Restore Factory' button for more than 3 seconds while the remote control is unlocked.