MP-10332	'19.12

HOTRON

Sensor Partners

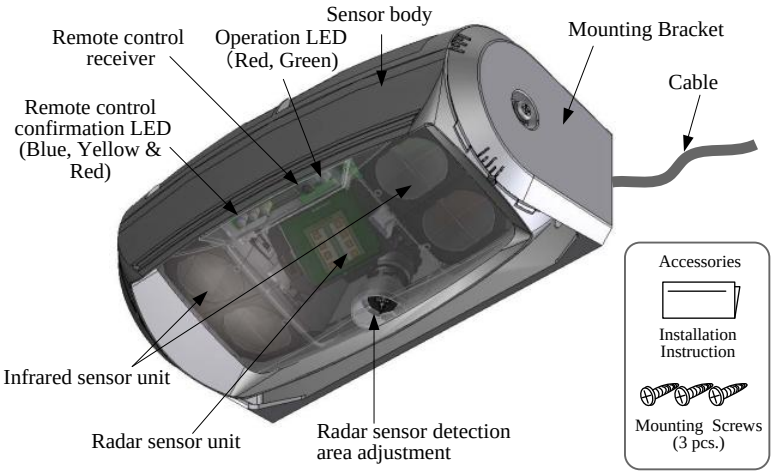
KABUTO
User Manual CE

WARNING Disregarding this symbol may result in serious injury or death

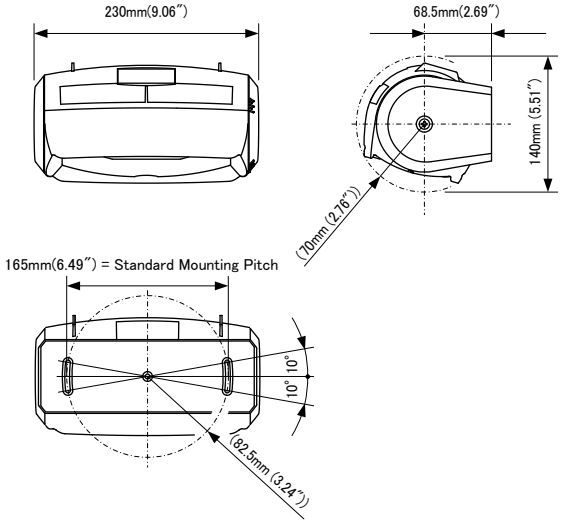
CAUTION Disregarding this symbol may result in injury or damage to equipment

Note Special attention is required when this symbol is shown

1. DESCRIPTION



2. DIMENSIONS

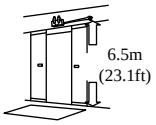


3. LED INDICATORS (Operation LED)

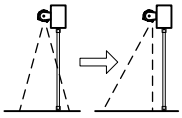
Green	Standby
Green blinking	Sensor Initializing
Red	Infrared Detecting / RADAR and Infrared Detecting
Red blinking	RADAR Detecting
Yellow	Inner detection "ROW 1" is detecting door movement
Green/Red blinking (Fast)	Internal Sensor Error

4. MOUNTING PRECAUTIONS

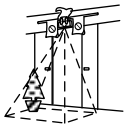
Mounting height of 6.5m (21.3ft) or lower



Adjust the sensor body so that the sensor does not detect the door.



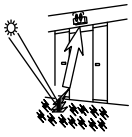
Ensure there are no moving objects in the detection zone



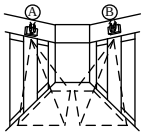
Ensure no condensation gets onto the sensor.

If possible ensure no accumulation of snow or water on the floor.

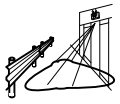
Ensure the minimum of reflected sunlight from the floor



Use different frequency settings for sensors in close proximity



The Radar part of the KABUTO sensor may be negatively influenced by metal close to or in the detection field



5. TECHNICAL SPECIFICATIONS

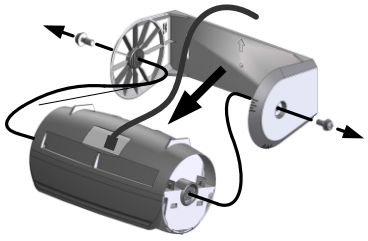
Common Specification		
Model Name	KABUTO	
Installation Height	3.5-6.5[m] (11.5-21.3 [ft])	
Supply Voltage	AC/DC 12 to 24 [V] ±10% 50/60Hz	
Power Consumption	AC12V-2.5 [VA] (Max) AC24V-3.3 [VA] (Max) DC12V-150 [mA] (Max) DC24V-80 [mA] (Max)	
Output	Output1 (IR.Output)	Opto Relay Non Pole Voltage: 48 [VDC] Max. Current : 300 [mA] Max. (Resistance load)
	Output2 (Radar Output)	Opto Relay Non Pole Voltage: 48 [VDC] Max. Current : 300 [mA] Max. (Resistance load)
Operating Temperature	-20 to +60 [Deg.C],(-4 to 140 Deg.F)	
Operating humidity	Below 80%	
IP Rate	IP65	
Weight	2.87 [lb.] (1.3 [kg])	
Color	Black	
Cable	10[m] ※Directly from the sensor.	
Accessories	Mounting Screw 3pcs., Installation Instruction Remote Control "KABUTO-RC" sold separately	
Specifications of Reflection Sensor		
Detection Method	Active Infrared Reflective	
Output Holding Time	0.5 [seconds] App.	
Response Time	0.25 [seconds] App.	
Presence Timer	30 [seconds], 1,2,5,10,20[minutes],1,2 [hours] or ∞	
Specifications of Redar Sensor		
Detection Method	Doppler method: (moving body detection)	
Transmit frequency	24.15 [GHz]	
Output Holding Time	0.5 [seconds] App.	
Response Time	0.1 [seconds] App.	

Notice: Specification may be changed without prior notice.

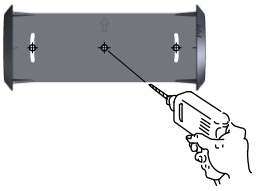
6. MOUNTING & WIRING INFORMATION

WARNING Drilling may cause electric shock.
Be careful of hidden wires inside the door engine cover.

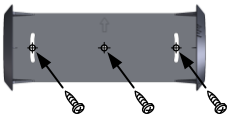
① Remove the sensor body from its mounting bracket.



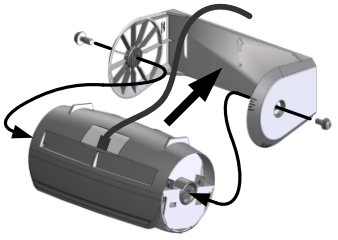
② Drill a hole to match the mounting hole in the mounting bracket. (3.5mm ϕ)



③ Attach the mounting bracket with the mounting screws provided.

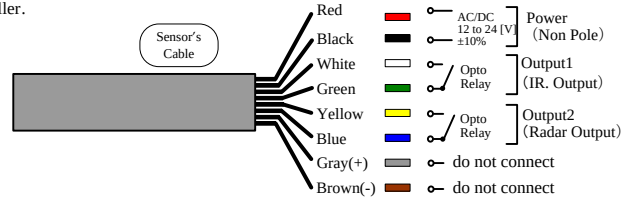


④ Attach the sensor body to its mounting bracket. Route the cable around the mounting bracket.

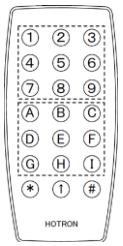


Recommended screw tightening torque : 5.2N·m

⑤ Wiring to the door controller.



7. REMOTE CONTROL OPERATION ／ FUNCTION LIST



← KABUTO-RC Remote Control (Sold Separately)

Function	Description	Function selection button	Possible Setting Options（Press the desired button） Default settings are shown in bold	Complete button
Relay Output (IR./Radar)	Set the relay output status (IR/Radar)	Ⓐ	1 / 2: **NO/NO** / NO/NC / NC/NO / NC/NC	#
Direction Detection	This function prevents the sensor from detecting an object that moves away from the sensor. Infrared (IR) direction detection works only when all IR. detection spots are active. (5x12 spots)	Ⓑ	**Both** / Approach Only / IR. Approach Only / Radar Approach Only (IR. / Radar)	
Cross Traffic	This function prevents the sensor from detecting movement parallel to the door. Infrared (IR) Cross traffic only works when all IR. detection spots are active. (5x12 spots)	Ⓒ	**Off** / On / IR. On / Radar On (IR. / Radar)	
Radar Sensitivity	Set the radar detection sensitivity.	Ⓓ	1（Low） 2 3 4 **5** 6 7 8 9（High）	
Infrared (IR) Sensitivity	Set the IR. detection sensitivity.	Ⓔ	1（Low） 2 3 **4** 5 6（High）	
Infrared (IR) Detection Rows	The number of rows of IR detection can be configured.	Ⓕ	1rows 2rows 3rows 4rows **5rows**	
Infrared (IR) Detection - Width Adjustment - Left Side	Set the IR. detection width for the left side of the sensor.	Ⓖ	L0 L2 L4 **L6**	
Infrared (IR) Detection - Width Adjustment - Right Side	Set the IR. detection width for the right side of the sensor.	Ⓗ	R0 R2 R4 **R6**	
Infrared (IR) Frequency	When more than two sensors are installed in close proximity select different frequency settings for each sensor to prevent cross interference.	↑Ⓐ	**A** B C D	
Infrared (IR) Presence Timer	The sensor will detect a stationary object for the preset presence timer setting on the inner 5 rows.	↑Ⓑ	**30s** 1min 2min 5min 10min 20min 1h 2h ∞	
Insect mode	Reduce malfunction caused by insects.	↑Ⓒ	**Off** / On	
Environment (snow) mode	Reduces malfunctions due to snowfall.	↑Ⓓ	**Off** / Low（Fix） Mid.（Fix） High（Fix） Low（Auto） Mid.（Auto） High（Auto）	
Vibration mode	Reduce malfunction due to sensor body vibrations.	↑Ⓔ	**Off** / On	
Infrared (IR) detection target	The detection target for the IR detection area can be set to “Vehicle and people” or “Vehicle only”.	↑Ⓕ	**Vehicle and people** / Vehicle	

When set to any of the (Fix) settings, the sensor operates in this state irrespective of the outside temperature.

When set to any of the (Auto) settings, the sensor will operate in the selected setting at temperatures of below 5°C. At temperatures of above 5°C Environment mode is disabled.

The Radar detection area targets vehicle, not people.

Detection Rows and Detection Width can be set independently.

Example

L2 R4

3rows

* If the [1-9] button are not pressed and the [#] button is pressed, the last selected [1-9] button becomes valid.
* When the [#] button is pressed after pressing the [1-9] button the setting is confirmed and the setting is saved.
* The last function selected on the remote control is the one that will be changed when buttons (1-9) are pressed.
  (Example A - C followed by pressing 2 will set Cross Traffic to ON)
* If you press the [#] button without pressing the [1-9] button, you will exit the setting state without any setting been saved. (Example A - #)
* You can change from one function setting to another as much as you like until the [#] button is pressed.

8. CHECK THE SETTINGS

	Setting confirmation button	Function selection button	Confirm button	Visual confirmation	Complete button
The setting of any sensor function can be checked as follows	*	↑ A～F A～H	#	The green LED flashes 1 to 9 times to confirm the actual sensor setting. (Refer to section 7)	#

9. MAINTENANCE MODE

	Function selection button	Possible Setting Options（Press the desired button）				Complete button
		1	2	3	4	
This setting is used during maintenance.	↑ H	Permanently activate the relay to open the door so that the position of detection row 1 can be checked.	Cancel permanent activation of the relay	Return to factory settings	Soft reset Restart the sensor.	#

10. SETTING AND CLEARING A FOUR DIGIT SECURITY

Function	Function selection button	Press a 4-digit number				Complete button
Setting a security code	↑ I	1～9 Choose	1～9 Choose	1～9 Choose	1～9 Choose	
Unlocking the security code	I	1～9 Choose	1～9 Choose	1～9 Choose	1～9 Choose	#
Clearing the security code	↑ I	9	9	9	9	

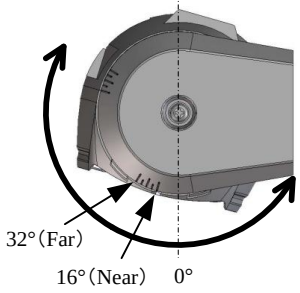
11. LED INDICATORS (Remote control LED)

Function	Button	On / Flashing / Off			
		Blue	Yellow	Red	
Setting confirmation	*	On	Off	Off	
	↑	Flashing	Off	Off	
Complete	#	On	Flashing	Flashing	When the Complete button # is pressed the sensor LED blinks green to indicated registration.
Relay Output (IR./Radar)	A	Off	Off	On	
Direction Detection	B	Off	On	Off	
Cross Traffic	C	Off	On	On	
Radar Sensitivity	D	Off	Off	Flashing	
IR. Sensitivity	E	Off	Flashing	Off	
IR. Row	F	Off	Flashing	Flashing	
IR. Left width	G	Off	On	Flashing	
IR. Right width	H	Off	Flashing	On	
IR. Frequency	↑ A	Flashing	Off	On	
IR. Presence Timer	↑ B	Flashing	On	Off	
Insect mode	↑ C	Flashing	On	On	
Environment (snow) mode	↑ D	Flashing	Off	Flashing	
Vibration mode	↑ E	Flashing	Flashing	Off	
IR. detection target	↑ F	Flashing	Flashing	Flashing	
Maintnance mode	↑ H	Flashing	On	Flashing	
		On	On	Flashing	When “1” is selected
Access code operation	↑ I	Flashing	Flashing	On	Setting/Clearing a security code
	I	On	On	Off	Unlocking security code
		On	On	On	Unlocking security code complete

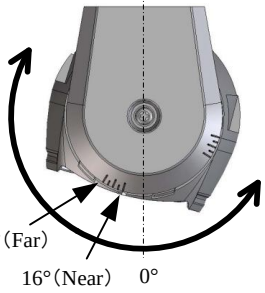
12.DETECTION AREA WIDTH AND DEPTH ADJUSTMENT

Detection Area Depth Adjustment: Infrared-IR (5 Rows)

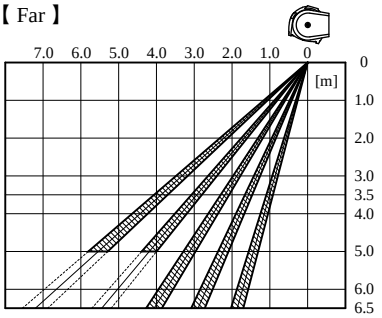
When mounted on the wall



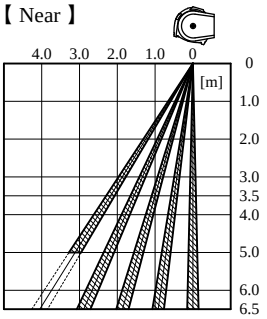
When ceiling mounted



【 Far 】



【 Near 】

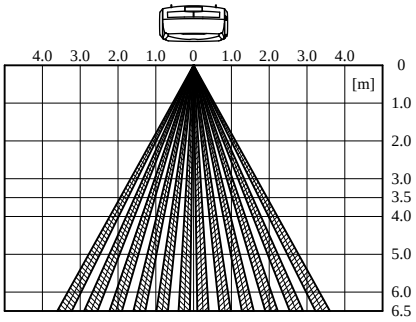


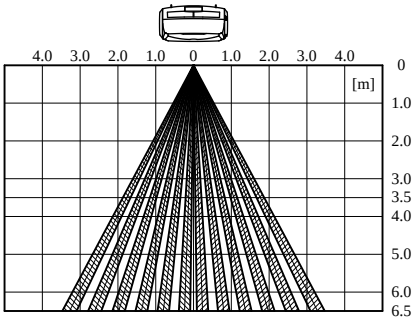
Detection Area Width : Infrared (**5 Rows**)

【When the sensor body angle is set to 32° (Far)】

【When the sensor body angle is set to 16° (Near)】

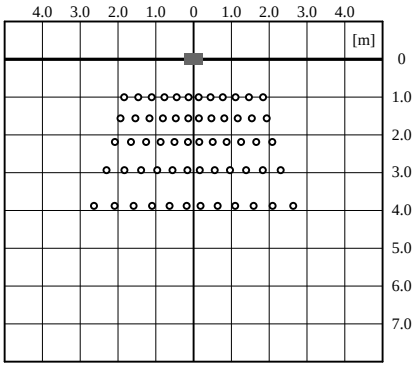
Beam positions at row 1

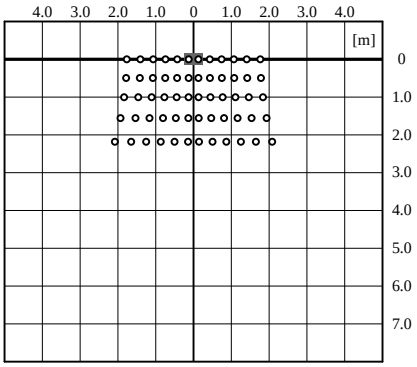




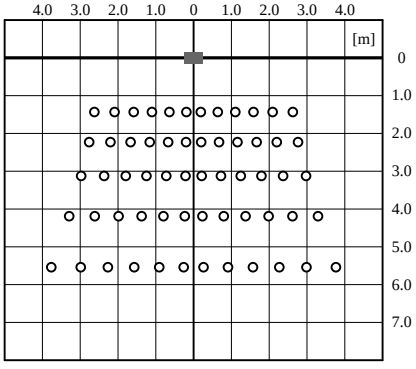
Infrared floor pattern

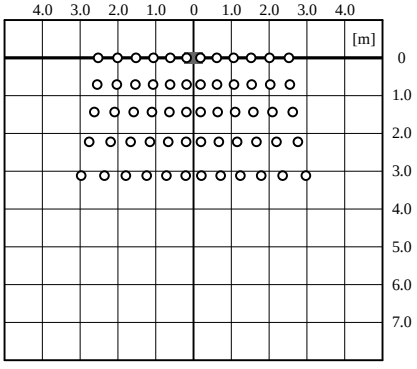
Installation Height: 3500mm





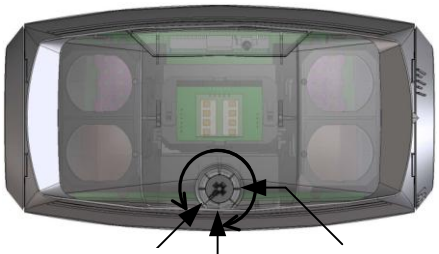
Installation Height: 5000mm





Detection Area Depth Adjustment: RADAR

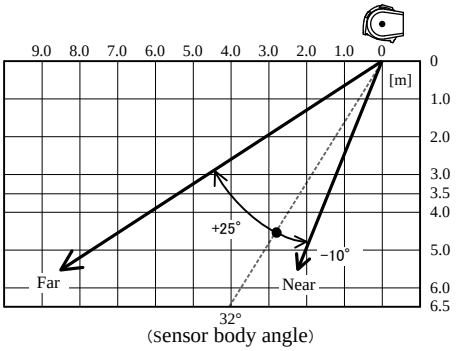
The detection area varies depending on the object size and approach speed.
The Radar is design to detect only large objects and not people.



25°（Far） -10°（Near） 0°（IR. 3 row）

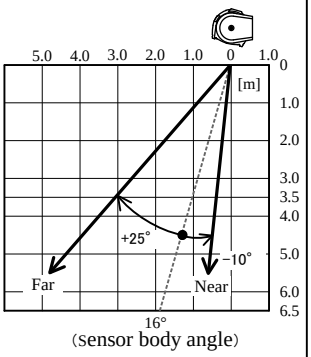
Turn left or right

【 When the sensor body angle is set to 32° 】



（sensor body angle）

【 When the sensor body angle is set to 16° 】



（sensor body angle）

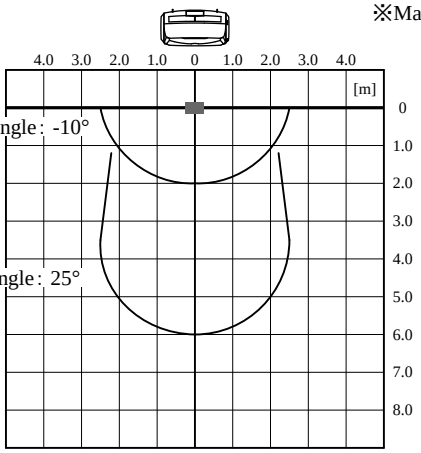
The radar swings from the third row of infrared detection spots as its base point.

Detection Area Width : RADAR

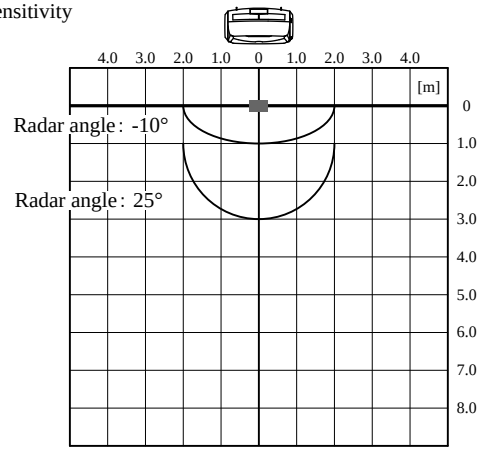
【When the sensor body angle is set to 32°】

※Maximum sensitivity

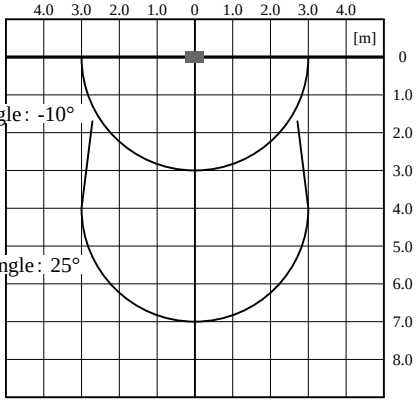
Installation Height: 3500mm

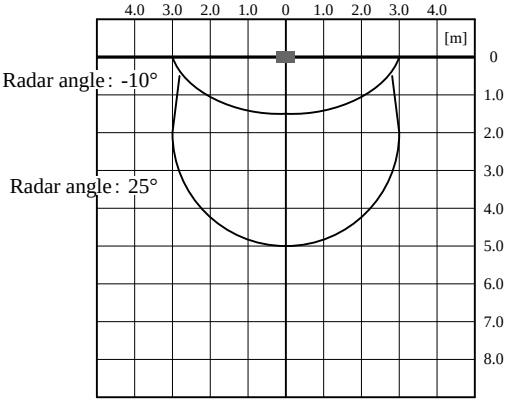


【When the sensor body angle is set to 16°】



Installation Height: 5000mm





If the RADAR detects people, decrease its sensitivity setting.

CAUTION

The above illustrated detection areas represent the actual position of the infrared and radar beams. The actual detection area observed will vary depending on the sensor installation environment, objects been detected and sensor settings.

13. TROUBLESHOOTING

Problem	LED Status	Possible Cause	Solution
Door does not open when the object enters the detection area	OFF	Incorrect power supply voltage	Apply proper voltage to the sensor. (AC/DC 12-24V)
		Incorrect sensor wiring	Double check sensor wiring
Door opens and closes for no apparent reason (Ghosting)	Door Opens RED or RED Blinking Door Closes GREEN	Object moving in the detection area	Remove the moving object from detection area.
		Sensitivity too high for the installation environment	Reduce the sensor sensitivity setting
		Dust, frost or water droplet on the sensor lens	Wipe the sensor lens clean
		Detection area overlaps with that of another sensor	Ensure different frequency settings for each sensor. Adjust the detection areas so that they do not overlap.
		Detection of falling snow	Set Environment (snow) mode according to the amount of snowfall.
		Detection of flying insects	Set Insect mode to "On".
When Door opens or closes, LED YELLOW	YELLOW	Detection row “ROW1” is detecting too close to the door.	Adjust the IR detection area away from the door.
Door opens and remains in the open position	RED	Detection area changed, while the ∞ (infinity) presence timer setting is in use	Re-power the sensor or change the presence timer settings to something other than ∞.
		Incorrect sensor wiring	Double check sensor wiring
		Reflected IR signal saturation	Remove highly reflective objects from the detection area, or lower the IR sensitivity setting
	RED Blinking	Moving objects in the radar detection area	Remove moving objects from the detection area.
	GREEN/RED FAST FLASH	Internal sensor error	Replace the sensor

14. KABUTO EC DECLARATION OF CONFORMITY

Product Description:

KABUTO combined motion and presence detection sensor for automatic doors.
Technology used : Active Infrared Technology and Doppler Method Radar Technology

Directives Fulfilled:

KABUTO is in conformity with the basic requirements of the directives 2014/53/EU and 2011/65/EU.

< Disclaimer > The manufacturer cannot be held responsible for below.

1. Misinterpretation of the installation instructions, miss connection, negligence, sensor modification and inappropriate installation.
2. Damage caused by inappropriate transportation.
3. Accidents or damages caused by fire, pollution, abnormal voltage, earthquake, thunderstorm, wind, floods and other acts of providence.
4. Losses of business profits, business interruptions, business information losses and other financial losses caused by using the sensor or malfunction of the sensor.
5. Amount of compensation beyond selling price in all cases.