

TAKEX

Dual Zone Outdoor PIR

MS-12TE & MS-12FE

Instruction Manual

We appreciate your purchase of a TAKEX passive infrared sensor. This sensor will provide long and dependable service when properly installed. Please read this Instruction Manual carefully for correct and effective use.

Please Note : This sensor is designed to detect intrusion and to initiate an alarm ; it is not a burglary-preventing device.

TAKEX is not responsible for damage, injury or losses caused by accident, theft, Acts of God (including inductive surge by lightning), abuse, misuse, abnormal usage, faulty installation or improper maintenance.

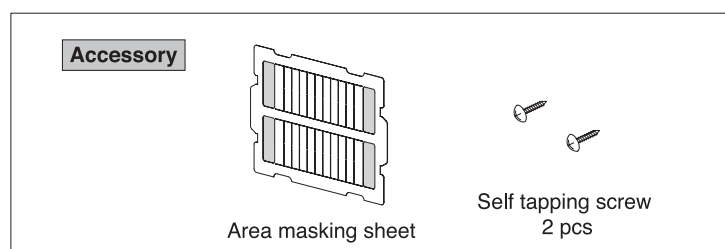
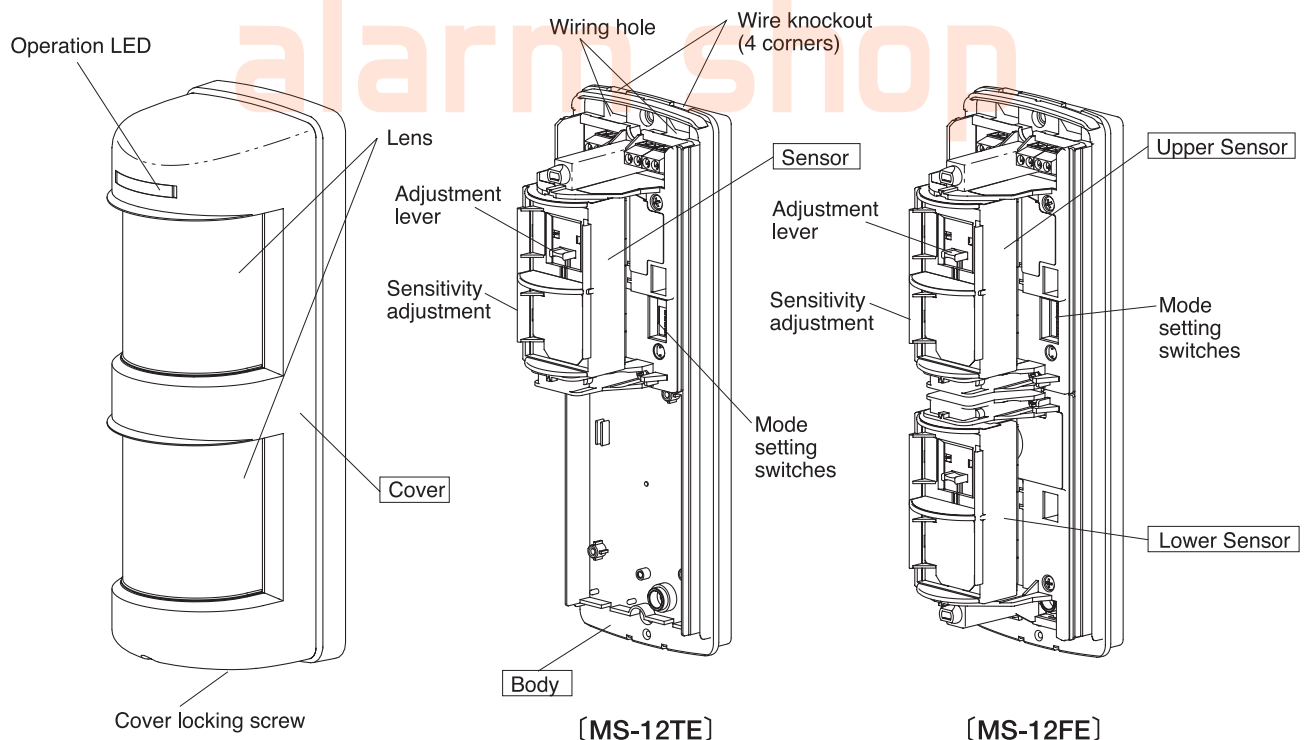
1 PRODUCT DESCRIPTION

The dual zone outdoor PIR is an automatic switch which uses passive infrared sensor to detect infrared (body temperature) emitted from a human body. (Suitable for indoor/outdoor)

- 1) This sensor is equipped with an "AND" detection and pulse count system.
- 2) The AND detection system will issue an alarm signal only when detection occurs in both horizontal and downward zones simultaneously.
- 3) The sensor is equipped with many features such as
 - ① Alarm output control depending on the illuminance of the surrounding area.
 - ② Output time delay switch setting.
 - ③ Combining the sensor with other devices such as a video monitoring system to display and record the presence of an intruder.

The sensor can be combined with an audible or visual warning device to announce the presence of visitors.

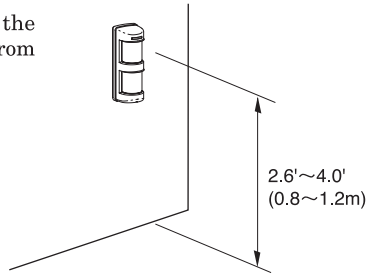
2 PARTS DESCRIPTION



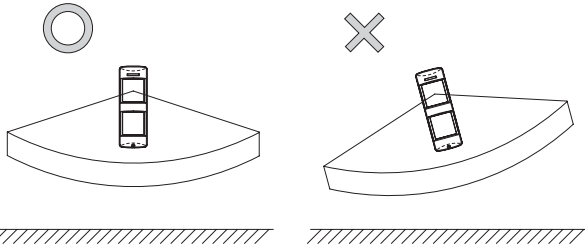
3 PRECAUTIONS

1. Precautions on installation

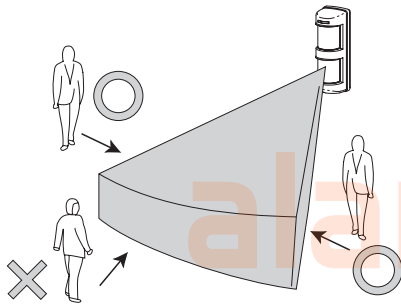
* Install the unit at the height of 2.6' to 4.0' from the ground.



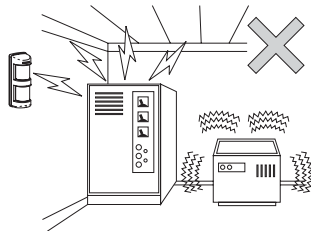
* Install the unit horizontally so that its horizontal zone is parallel to the ground.



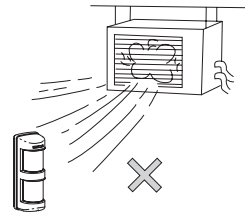
* Install the unit in such a direction that people are more likely to cross the detection zone.



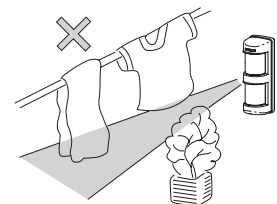
* Do not install in an environment subject to electrical noise or intense vibration.



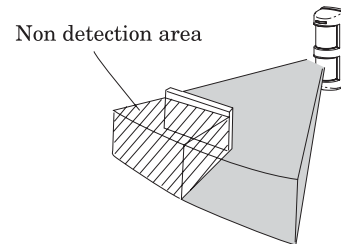
* Do not install the unit by an air conditioning exhaust vent.



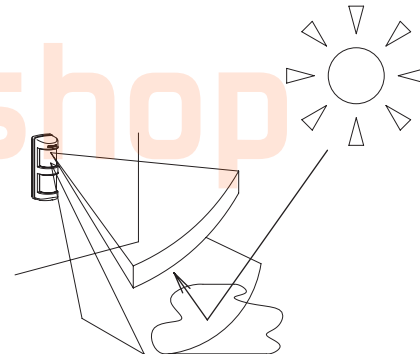
* Remove all obstructions (trees, clotheslines, etc.).



* Remove all obstacles (including clear glass) which will create non detection zone.



* Make sure that downward zone will not be affected by sun light reflected by water on the road etc.



⊙ Make sure that there is no undesirable detection of traffic including vehicles if there is a path or road at the front of detection zone.

2. Other Precautions

* Operation LED blinks for about 1min after turning on power. During this warm up period, the sensor does not detect.

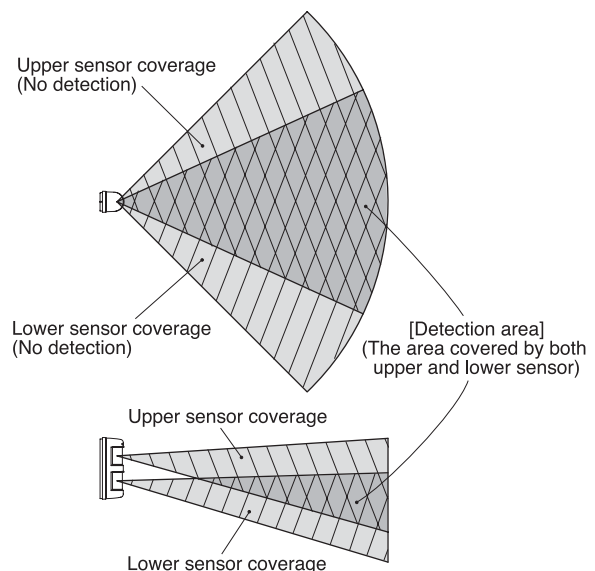
* Day light switch allows this unit to issue an alarm signal only when the surrounding area is darker than set illuminance. In other words, if surrounding area is brighter than set illuminance, this sensor doesn't output a signal.

* This sensor operates during detecting time + delay time set by a potentiometer. It continues to issue an alarm as long as it detects objects regardless of the set delay time.

* Do not pour water on this unit with a hose as it is designed to be rainproof, not waterproof.

* When detection mode is set at AND mode, this sensor outputs an alarm signal only when both upper and lower sensor detect objects.

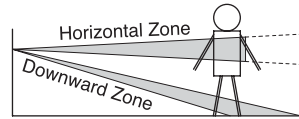
In other words, it won't make detection in the area which is not covered by both upper and lower sensor.
[Only applicable to MS-12FE]



4 DETECTION AREA

The detection zone of this unit consists of a horizontal zone and downward zone.
Alarm signal is issued only when both detection zones detect objects.
Detection distance can be set by adjusting the angle of downward zone.

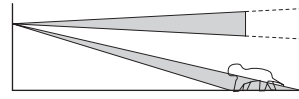
MS-12TE is equipped with 1set of sensors on the upper side.
MS-12FE is equipped with 2sets of sensors on the upper and lower side,
making it possible to select AND mode or OR mode.



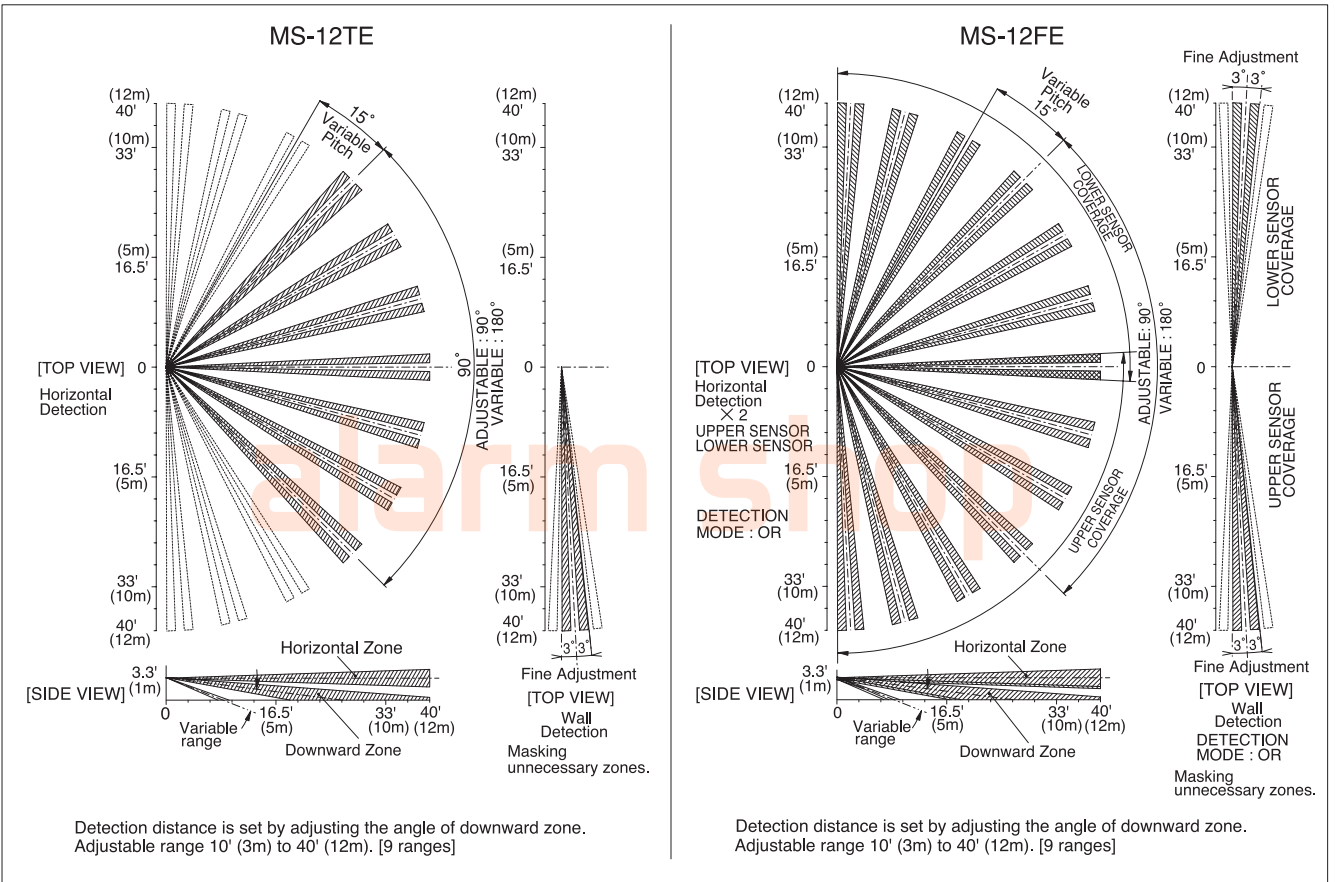
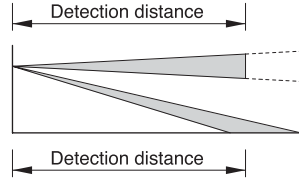
Alarm signal is issued only when both horizontal and downward zone detect objects.



It does not detect small animals which are not likely to reach the height of horizontal zone.

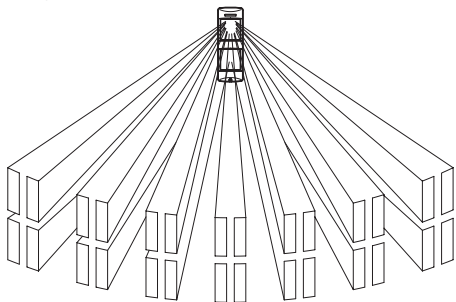


It does not detect vehicles moving in the area outside the range of the downward zone.

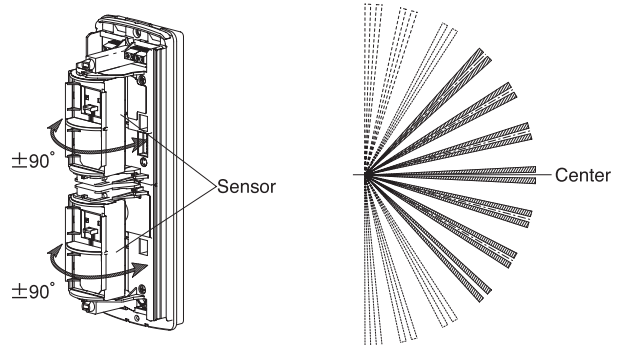


Area adjustment

[Wide angle detection]

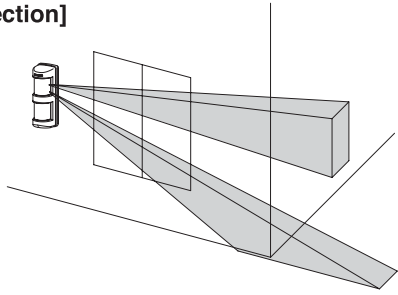


- (1) Point the sensor to the center of the area to be detected. By turning the sensor up to $\pm 45^\circ$, it can detect all zones in front of it. When the unit is turned more than $\pm 45^\circ$, detection zone will be eliminated one by one from the end.

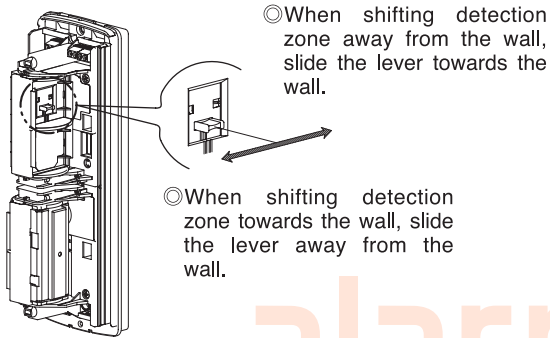


- (2) It consists of seven detection zones (Wide angle: 90°).
- (3) Utilize attached area masking sheet when eliminating detection zones.

[Wall detection]

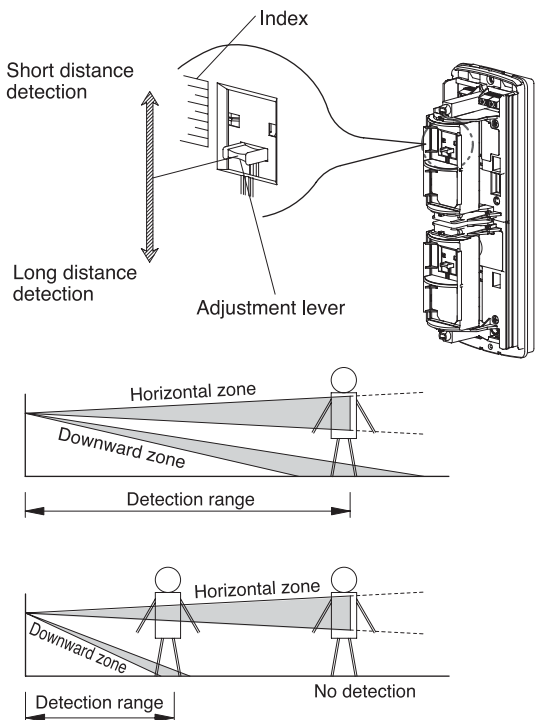


- (1) Attach area masking sheet to the lens holder (inside the cover) without cutting it out. (Refer to Area masking on how to attach the sheet to the lens holder.)
- (2) Rotate the sensor by 90° and face it to the direction to be detected.
- (3) Horizontal fine adjustment
 Fine adjustment can be made within the range of ±3°, in case there is some obstacles on the wall.
 (Detection zone shifts about 2' (0.6m) at 40' (12m) range.)
 Slide the lever to the left or right.
 *Make sure that the lever be set at 0° for horizontal detection.



○Detection distance adjustment

Detection distance can be adjusted within a range from 10' (3m) to 40' (12m) by turning the angle of downward zone vertically. Refer to the index and slide the adjustment lever up or down. Slide it up and the detection distance becomes shorter, sliding it down, detection distance becomes longer.



IMPORTANT NOTES

The following factors may have an effect on the actual detection range or sensitivity. The greater the distance covered, the more prominent this effect becomes.

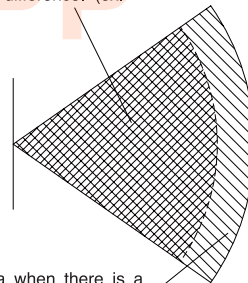
- Ambient temperature vs object temperature.
 Actual detection range may decrease when the object being detected of similar temperature to the ambient target area.
- Direction of object path.
 PIR detection works best when movement crosses the sensitive zones. Sensitivity deteriorates when movement is directly towards the detector within single zones.
- Mounting height.
 The closer the mounting height is to the ground, the shorter the achievable detection range.
- Mounting orientation.
 Detector should be installed on a true vertical to ensure proper detection range.
- Slope in detection area
 When the ground slopes downward (upward) from the sensor, the detection range becomes longer (shorter).

The following settings should be appropriately adjusted by WALK TEST in order to obtain expected performance of the detector according to the various environmental factors of the installation site.

- Detection range adjustment. (Adjustment lever with 9 steps)
 The distance index is not definitive and is only to be used as a guide.
- Area setting.
 Consider likely object travel direction to maximise possibility of crossing sensitive zones.
- Sensitivity setting (by PIR SENS pot).

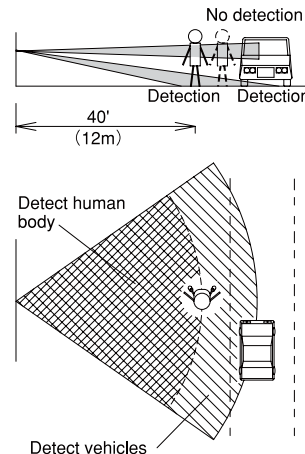
Note that the actual detection range may lessen by up to 20% when the ambient temperature is enough high so that there is a little temperature difference the object to be detected and the background. (See below figure)
 If this situation is likely then it is recommended to increase the detection range to compensate.

Detection area when there is a little temperature difference. (ex. hot summer)



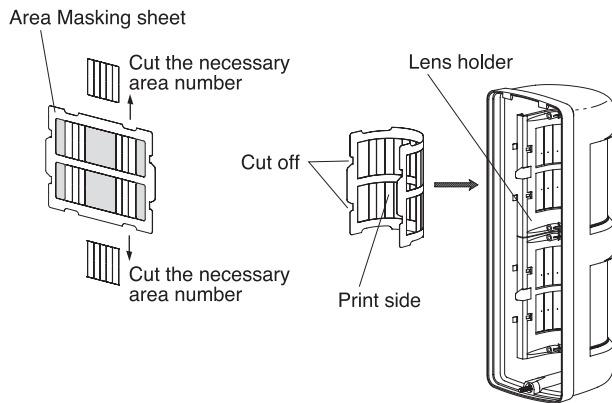
Detection area when there is a big temperature difference. (ex. cold winter)

- When there is a path or road at the front of detection zone, vehicles with comparatively higher temperature than human body may be detected at a longer distance. Readjust the area setting and range adjustment when there is such undesirable detections.



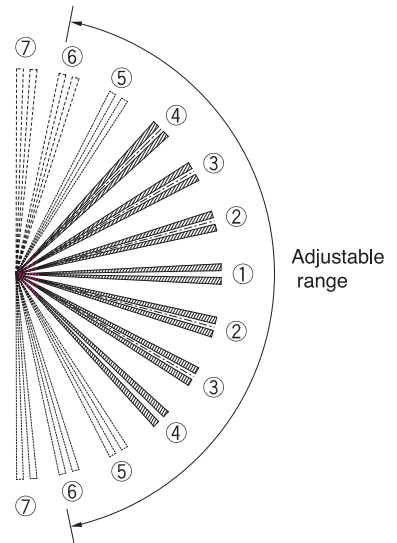
◎Area masking sheet

- (1) Cut the necessary area number on the area masking sheet.
See below area masking picture for your reference and cut out the same place on both horizontal and downward zones.
- (2) Attach the area masking sheet to the lens holder located inside cover.



(3) Attach cover and check detection zone.

*Zone ⑦ cannot be masked by area masking sheet.



5 ADJUSTMENT

◎Warm up period

Operation LED blinks for about 1 min after supplying power.
The unit doesn't operate for this time as it is the sensor stabilizing period.

◎pulse count selectable

The number of counts can be selected according to the environmental conditions.

ON <input type="checkbox"/>	ON	Less sensitive, prevents false alarms caused by temperature fluctuation.
OFF <input type="checkbox"/>	OFF [Factory set]	More sensitive

*MS-12FE has two sets of above switches upper and lower sensor.

◎Sensitivity adjustment

	Sensitivity can be adjusted between 30% (L) and 170% (H). [Factory set : 100%]
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◎LED ON/OFF selectable switch

ON <input type="checkbox"/>	ON [Factory set]	<ul style="list-style-type: none"> • Lights at alarm • Light flickers during warm up period.
OFF <input type="checkbox"/>	OFF	LED disabled

◎Day light

Alarm is triggered only when surrounding environment is darker than the illuminance setting.

	The unit operates during only at night.
	The unit operates day and night. (Factory set)

◎Delay time

Operation time can be adjusted between 2sec. and 5min approx.

	Operation time can be adjusted between 2sec and 5min. approx. [Factory set : 2sec]
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◎Contact output selectable

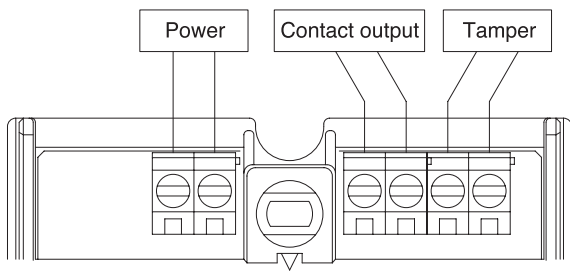
ON <input type="checkbox"/>	1a	a (N.O.)
OFF <input type="checkbox"/>	1b	b (N.C.) [Factory set]

◎Detection mode [Only applicable to MS-12FE]

ON <input type="checkbox"/>	AND	Alarm signal is issued only when both upper and lower sensor detect objects simultaneously.
OFF <input type="checkbox"/>	OR [Factory set]	Alarm signal is issued when either upper or lower sensor detect objects.

6 WIRING

1. Terminal Configuration



SUPPLY VOLTAGE

- 12V to 30VDC (Non Polarity)
- Power consumption
35mA MAX (MS-12TE)
40mA MAX (MS-12FE)

OUTPUT SIGNAL

- Dry contact relay output form N.O/N.C selectable
CONTACT OPERATION : Detection time +off delay
(2sec.-5min. approx.)
CONTACT CAPACITY : 30V (AC · DC), 0.5A MAX.
(resistive load)
DAY LIGHT : Output operates when daylight is below setting.

TAMPER

- Dry contact relay output N/C
CONTACT CAPACITY : 30V (AC · DC), 0.5A MAX.
(resistive load)

◎ WIRE SIZE : AWG24~AWG14
(0.2mm²)~(2mm²)

2. Wiring distance

Size of wire used	Power voltage	
	DC12V	DC24V
0.3mm ² (φ0.65mm)	820' (250m)	8500' (2600m)
0.5mm ² (φ0.8mm)	1480' (450m)	14100' (4300m)
0.8mm ² (φ1.0mm)	2300' (700m)	21300' (6500m)
1.2mm ² (φ1.25mm)	3120' (950m)	29500' (9000m)

- NOTE : 1) Maximum wiring distance when two or more sets are connected is the value above divided by number of sets.
2) The signal line can be wired to a distance of up to 3,000ft. (1,000m) with AWG 22 (dia. 0.65mm) telephone wire.

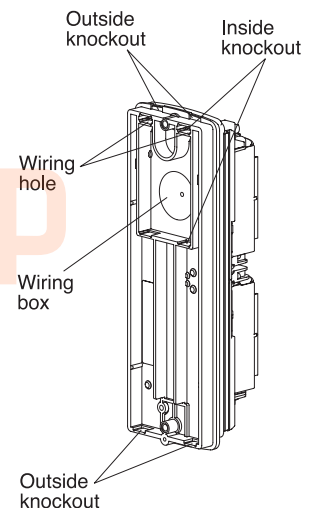
3. Wiring insertion

◎ Exposed wiring

- Break one outside knockout and its related inside knockout as necessary.
Pull wire through the insertion holes and connect it to the terminals.

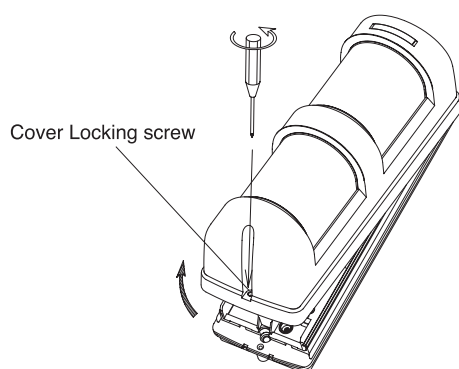
◎ Mounted wiring

- Break inside knockout, pull wire through wiring hole and connect it to the terminals.
* When installing the sensor to flush mount box, use wall mount bracket (BW-24) [sold separately].



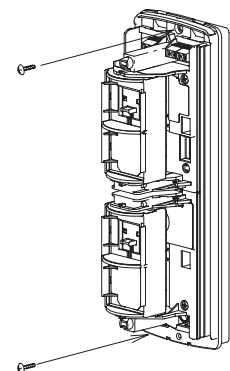
7 INSTALLATION

- (1) Read PRECAUTIONS (3) before installation.
- (2) Loosen cover locking screw and detach cover.



- (3) Refer to WIRING (6) and connect wires to the terminal.
- (4) Install the unit.

- (5) Refer to DETECTION AREA (4) and OPERATION CHECK (8) and check detection area and operation.
- (6) Replace the cover.



8 OPERATION CHECK

(1) Setting for operation check

- * Operation LED : ON
- * Day light : DAY&NIGHT
- * Delay time : 2 sec.
- ◎ Determine the required area of detection and set the horizontal angle of the sensor and detection distance.
- ◎ Attach cover and fix it to the sensor with the locking screw.
- ◎ Turn the power ON and wait for 1min.until the alarm LED stops blinking.
- ◎ After warm-up period, operate a walk test in the detection area to check, if the required area is covered.
- ◎ Readjust sensitivity, masking or count if necessary.

(2) Operation check

- ◎ Make final setting according to the purpose.
- ◎ Attach cover and check if operation LED and connected devices operate properly.
- * Make sure that there is no undesirable detection of traffic including vehicles if there is a path or road at the front of detection zone.

9 TROUBLESHOOTING

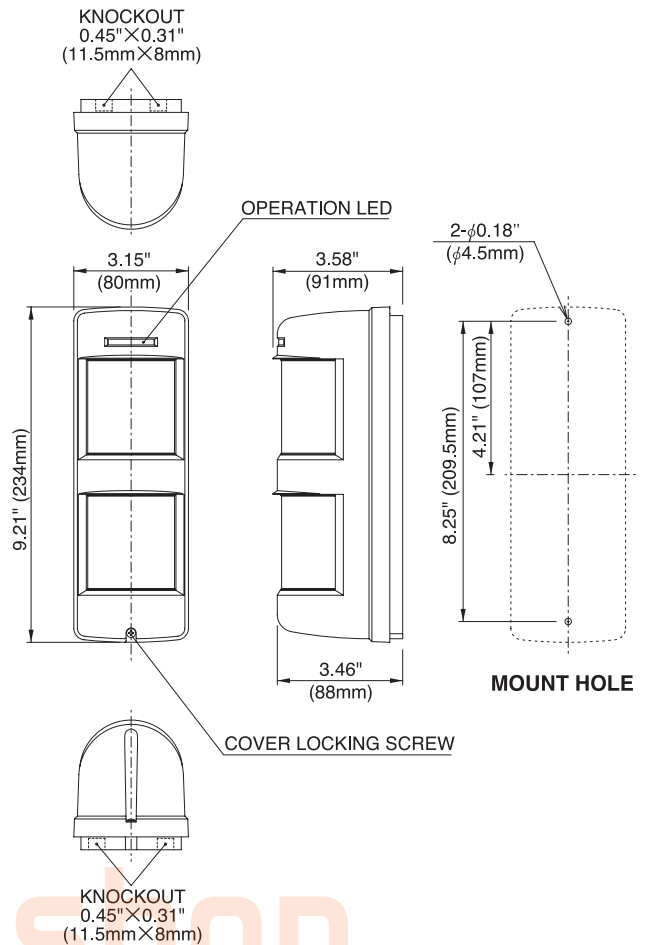
Solve possible problems according to the following table. If normal operations cannot be restored by this means, contact either the dealer from whom you bought the unit or TAKEX.

Trouble	Check	Corrective Action
Completely inactive	No power supply, broken wire or improper voltage.	Correct power supply or replace broken wire.
	Cover shielded by substances (including glass).	Remove the substances.
	Improper area adjustment.	Readjust the protection area setting.
	Improper operation mode setting.	Readjust operation mode setting.
	Not yet 1minute after power turned on. (Operation LED is flickering.)	Allow for warming up time (about 1min.)
	No area covered by both upper and lower sensor when set at AND mode. [Only applicable to MS-12FE]	Readjust the sensor angle so that the area to be detected is covered by both upper and lower sensor.
Sometimes inactive	Improper area adjustment.	Readjust the protection area setting.
	Improper operation mode setting.	Readjust operation mode setting.
	Cover face is soiled with dust or water drop.	Clean the cover with soft cloth.
	Area covered by both upper and lower sensor is too small to be detected when set at AND mode. [Only applicable to MS-12FE]	Readjust the sensor angle.
Activated when no person has passed	Unstable power voltage.	Stabilize the power voltage.
	Something moving in protected area or too rapid temperature variations.	Remove the cause.
	Large electrical noise source such as power machine nearby or its wiring close to that of sensor.	Relocate device.
	Intense reflection of sun light or head light shining on the sensor.	Relocate device. Readjust the protection area setting.
	Reflective lights such as sun light or head light affect the downward zone.	Remove reflective objects. Readjust the protection area setting.
	Improper installment of the sensor.	Install the sensor parallel.
	Detection distance of the downward zone is too long.	Readjust detection distance.
	Cars or motor bikes located at the front of detection area may activate the sensor.	Readjust the area setting and range adjustment so that there is no such undesirable detections.
The alarm LED lights, but connected device is inactive	Poor contact connection or broken wire or short circuit.	Check the wiring or connection.
	Contact output is not working.	Check the contact output terminal using a tester.
	Is the connected device operation normal ?	Check the connected device.

10 SPECIFICATIONS

11 EXTERNAL DIMENSIONS

Model	MS-12TE	MS-12FE
Detection system	Passive infrared	
Coverage	When horizontal detection Angle : 90° Detection distance : 40' (12m) Horizontal zone : 7zones Downward zone : 7zones	2sets of MS-12TE sensors
Coverage adjustment	Horizontal : ±90° Detection distance : 10'~40' (3m~12m) (By adjusting vertical angle of downward curtain)	
Supply voltage	12 to 30V DC (non-polarity)	
Current consumption	35mA MAX.	40mA MAX.
Alarm output	Dry contact relay output N.C./N.O. selectable * Contact capacity : 30V (AC·DC), 0.5A MAX. (Resistive load) * Contact operation : Detection time+off delay (2sec. -5min. approx) * Day light : Night (10 lux)~Day and Night	
Tamper output	Dry contact relay output N/C * Contact capacity : 30V (AC/DC), 0.5A MAX. (Resistive load)	
Operation LED	Red LED Blinking at warming up (LED disabled) Lighting at alarm (LED disabled)	
Counts selectable switch	once / three times (with a switch)	
Sensitivity adjustment	* Approx. 30% (L)-Approx. 170% (H) (By Potentiometer)	
Detection mode	AND/OR selectable	
Connection	Terminals	
Ambient temperature	-4°F to + 122°F (-20°C to + 50°C)	
Mounting position	Indoor / Outdoor	
Weight	13.7oz (390g)	16.5oz (470g)
Appearance	Body : AES resin	Lens : PE resin
Accessory	Tapping screw : 2 Area masking sheet : 1	Tapping screw : 2 Area masking sheet : 2
Optional	Wall mount attachment (BW-24) Pole attachment (BP-22)	



Limited Warranty :

TAKEX products are warranted to be free from defects in material and workmanship for 12 months from original date of shipment. Our warranty does not cover damage or failure caused by Acts of God, abuse misuse, abnormal usage, faulty installation, improper maintenance or any repairs other than those provided by TAKEX. All implied warranties with respect to TAKEX, including implied warranties for merchantability and implied warranties for fitness, are limited in duration to 12 months from original date of shipment. During the Warranty Period, TAKEX will repair or replace, at its sole option, free of charge, any defective parts returned prepaid. Please provide the model number of the products, original date of shipment and nature of difficulty being experienced. There will be charges rendered for product repairs made after our Warranty Period has expired.



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