

TAKEX DIRECTIONAL DETECTION SENSOR SWITCH

MS-60E (DC12V)

Instruction Manual

Thank you for purchasing a TAKEX product.

This switch will provide long and dependable service when properly installed.

Please read this Instruction Manual carefully for correct and effective use.

Please Note : ; This switch is designed to detect passing objects and to initiate a signal ; it is not a burglary-preventing device.

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

1 PRODUCT DESCRIPTION

This Sensor Switch is an automatic switch which uses passive infrared sensors to detect infrared emitted from moving objects such as human body and vehicles.

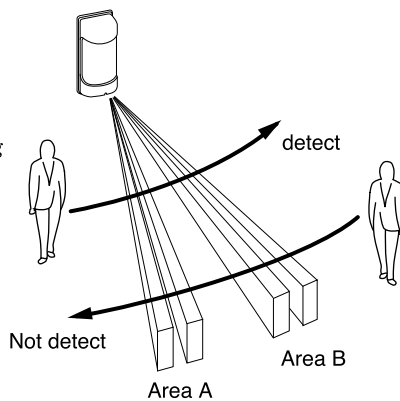
This switch is designed for wide applications such as a switch to control illumination or home automation apparatus.

Particularly, this unit has two independent detection areas, making it suitable to detect one-way direction of moving objects.

The detection area of this unit consists of area A & B as follows and direction can be selected with switch.

When detect direction is set "A→B", this unit detects only objects moving from A→B direction.

Opposite direction movement is not detected. Once moving objects pass through this area, it does not detect again for approximately 5 seconds.



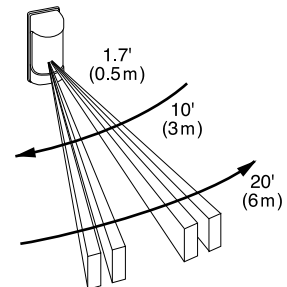
Detect direction is set "A→B"

2 DETECTION VELOCITY

This Sensor has a limitation of detection velocity. Extremely fast or slow moving objects might fail to be detected.

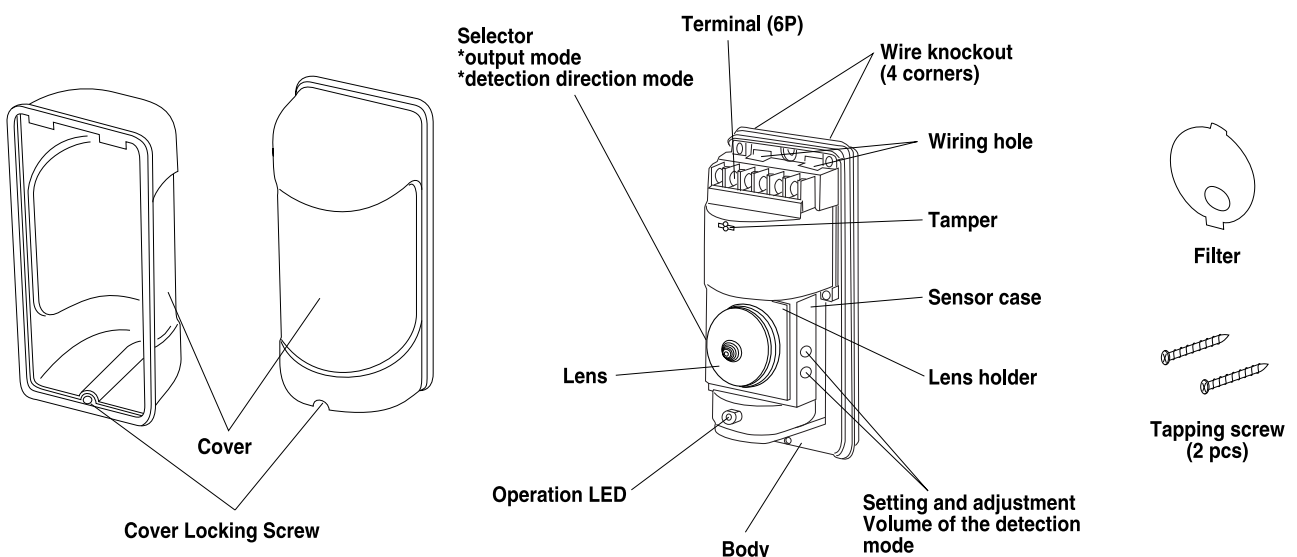
Detection velocity depends on the distance that the object is from the detector.

The following detection velocity table is based on a car passing through the detection area.



Objects passing point	Minimum detection velocity	Maximum detection velocity
1.7' (0.5m) away	0.17/s (0.05m/s) (0.1mile/h) (0.18km/h)	3.3/s (1m/s) (2.2mile/h) (3.6km/h)
10' (3m) away	0.7/s (0.2m/s) (0.5mile/h) (0.75km/h)	13/s (4m/s) (9.3mile/h) (15km/h)
20' (6m) away	1.3/s (0.4m/s) (0.9mile/h) (1.5km/h)	26/s (8m/s) (18.6mile/h) (30km/h)

3 PARTS DESCRIPTION



4 PRECAUTIONS

1. Precautions on installation

- Install the unit in such a direction that people are more likely to cross the detection zones. (Not parallel to the detection zone)
- Do not install the unit upside-down. (Lower portion has cover-lock screw)
- Remove obstructions, including glass from the detection zones.
- Do not install the unit near an air conditioning exhaust vent.
- Remove all moving obstructions (trees, curtains etc.) from the detection area.
- Do not install in a site which is subject to electrical noise or vibration.
- In case of outdoor installation, adjust the lens holder to 2°, 4°, 6° DOWNWARD from horizontal so that the lens does not face sunshine directly.
- In order to avoid the influence of sunshine, the following installation procedure is recommended.

- Install where direct sunshine does not face the unit.
- Install the unit facing north-direction.

- In order to avoid detection of unexpected objects, set the detection area correctly.

2. Other precautions

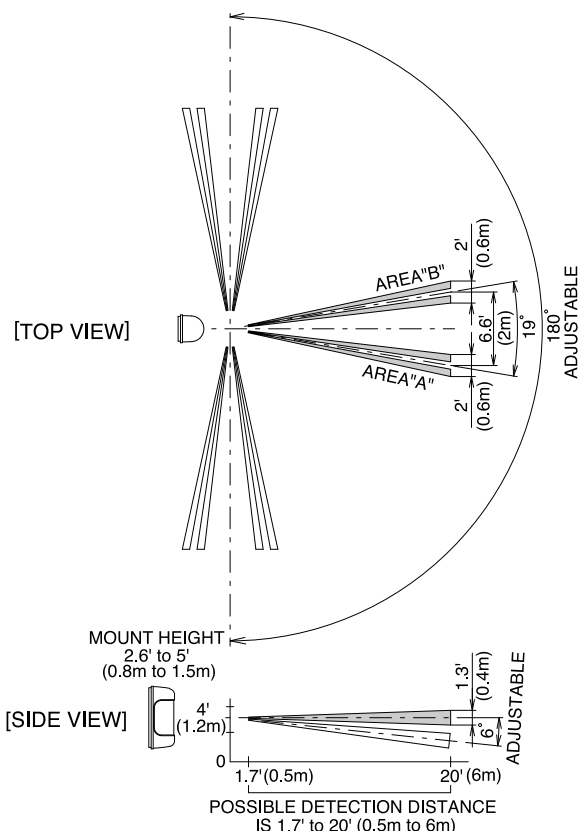
- This unit does not detect for approximately 5 seconds after moving objects pass through.
- Distance from the detector will vary depending on speed. Test the function prior to actual use.
- Avoid using the unit for primary security purpose. (The unit is designed to detect infrared energy variation caused by a human body. Therefore, similar variations in conditions due to other reasons, may cause the sensor to create a signal as it is unable to distinguish between the sources.)
- This unit is a simplified direction detection sensor which is not designed for the purpose of accurate detection of objects. For such cases, other systems with Photoelectric Beam Sensors would be recommended.
- When installed outside, detection distance might become shorter during rain.
- Insert the filter between the lens and the lens holder when using the unit in a site which is subject to direct sunlight.

This sensor is designed to detect the variation of infrared energy. However under some conditions, it might fail to issue an alarm. We will not be responsible for damage, injury or loss to the user should this occur.

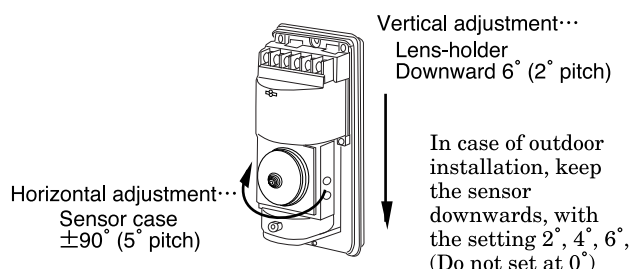
Caution !

- Use designated supply voltage otherwise fire or electric shock might occur.
- Do not connect apparatus whose capacity is over designated capacity.
- Do not dissolve or remodel otherwise fire or electricity shock might occur.

5 DETECTION AREA



Area adjustment

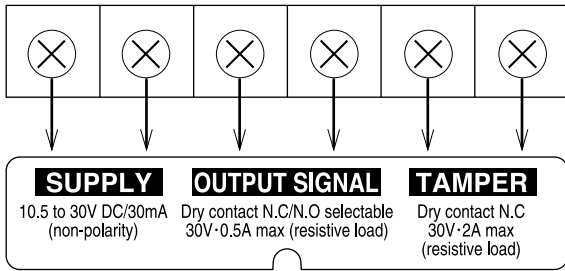


6 ADJUSTMENT

FUNCTION	ADJUSTMENT / SELECTION
Day Night mode	Operation output can be controlled according to the surrounding daylight. When the sensitivity is turned to "Night", the switch operates during nighttime only. When turned to "Day. Night", the switch operates day and night.
Relay hold time	Operation time can be adjusted between 5 sec. to 5 min.
Contact output	Selectable 1a, 1b by switch.
Sensitive direction	Selectable 2 ways. The unit initiates output only in case of selected direction detection.

7 WIRING

1. Terminal Configuration



SUPPLY VOLTAGE

- DC10.5~30V (Non Polarity)
- Power Consumption 40mA MAX.

OUTPUT SIGNAL

- Dry contact relay output form N.O / N.C selectable.
- DAY & NIGHT MODE :**
Output operates when daylight is below setting.

RELAY HOLD TIME :

Detection time + off delay
(approx. 5 sec. — approx. 5 min.)

CONTACT CAPACITY :

30V (AC·DC), 0.5A MAX. (resistive load)

TAMPER

- Dry contact relay output N.C
- CONTACT CAPACITY :**
30V (AC·DC), 2A MAX. (resistive load)

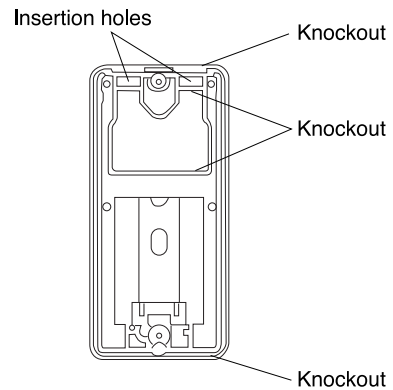
2. Wiring distance

Input Voltage	DC 12V	DC 24V
Size of Wire		
AWG 22 (Dia. 0.65mm)	Up to 660ft (200m)	Up to 6600ft (2000m)
AWG 20 (Dia. 0.8mm)	Up to 1000ft (300m)	Up to 10000ft (3000m)
AWG 18 (Dia. 1mm)	Up to 1650ft (500m)	Up to 16500ft (5000m)

NOTE : Maximum wiring distance when two or more sets are connected is the value above divided by number of sets.

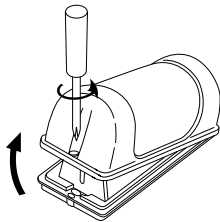
3. Wire insertion

- Break either the top or bottom knock-outs, if necessary. Pull wire through the insertion holes.

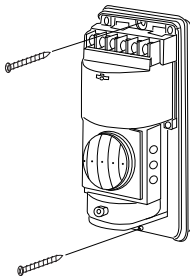


8 INSTALLATION

- (1) Loosen the cover screw and remove cover from unit.



- (2) Adjust to the required angle.
- (3) Connect wires to the terminal.
- (4) Secure the body of unit to wall with screws provided.



- (5) Check the operation.
- (6) Set up for desired operation.
- (7) Replace the cover.

9 OPERATION CHECK

1. Setting for operation check

Relay hold time 5 sec.
Day Night mode Day. Night
Contact output Select N.O or N.C by switch
Sensitive direction Adjust to the required angle. A→B (or B→A)

2. Operation check

- (1) Supply power with cover detached and wait approx. 1 min for warm-up period.
- (2) Check if the operation LED is activated properly according to set direction by walk test.
- (3) Check if whole system functions.

10 TROUBLESHOOTING

Analyze possible problems according to the following table.

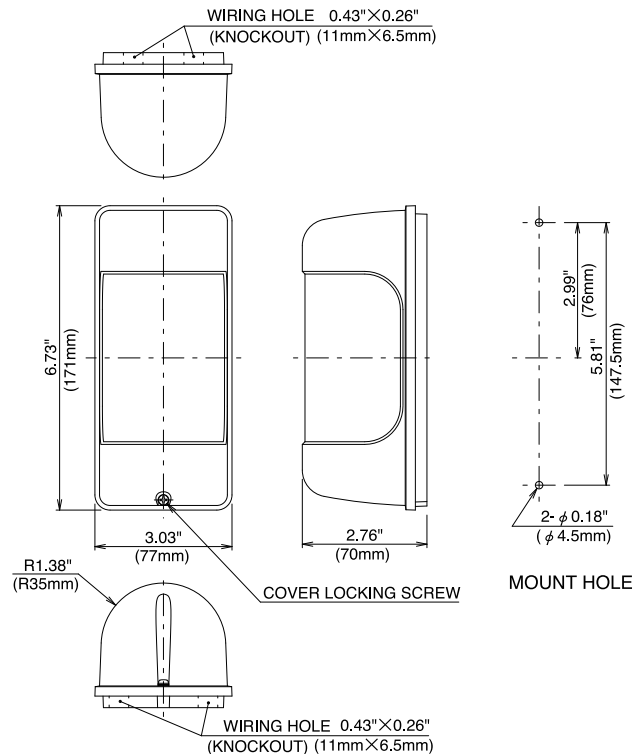
Symptom	Possible Cause	Remedy
Inactive	<ol style="list-style-type: none"> 1. No power supply. Inadequate voltage. 2. Warm-up period. 3. Obstructions in the coverage. 4. Mis-alignment of coverage. 5. Mis-setting of "DAY NIGHT" selector. 6. Stained cover. 7. Mis-setting of detect direction. 	<ol style="list-style-type: none"> 1. Ensure correct and adequate supply voltage. 2. Wait 1 min. after power is supplied. 3. Remove obstructions. 4. Readjust. 5. Reset properly. 6. Clean with soft cloth. 7. Reset properly.
Malfunction False signal	<ol style="list-style-type: none"> 1. Unstable voltage. 2. Something moving or rapid temperature variation in detection area. 3. A large electric noise source is located nearby. 4. Direct sunlight shining on the unit. 5. Detecting untargetted objects. 6. Small animals. 	<ol style="list-style-type: none"> 1. Stabilize supply voltage. 2. Remove cause or change coverage. Turn the sensitivity down. 3. Remove the problem or replace the unit. 4. Remove the problem or replace the unit. Readjust the coverage. Insert the attached filter. 5. Readjust the coverage. 6. Prevent small animals from coming in or readjust unit.
Installed unit does not operate, while LED is on.	<ol style="list-style-type: none"> 1. Bad wiring connection or broken wire or short. 2. Improper terminal connection. 3. Improper unit is connected. 	<ol style="list-style-type: none"> 1. Check wiring again. 2. Check terminal connection with a tester. 3. Check connected unit.

If normal operation can not be restored by these means, contact either the dealer from whom you bought the unit or TAKEX directly.

11 SPECIFICATIONS

Sensor Switch	
Model	MS-60E
Detection system	Passive infrared
Coverage	Detection area A Detection area B Detection distance 1.7'~20' (0.5m~6m)
Supply voltage	10.5VDC to 30VDC (non polarity)
Power consumption	40mA or less
Output signal	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 (Approx 5 sec. - approx. 5 min.)
Tamper signal	Dry contact relay output N.C. ● Contact capacity : 30V (AC · DC), 2A MAX. (Resistive load)
Adjustment volumes	Relay hold time ● Approx 5 sec. - approx. 5 min. (Detection time + off delay) Day. Night mode selector
Contact changeover	Form N.C / N.O changeover (by switch)
Ambient temperature	-4° F to +122° F (-20°C to +50°C)
Mounting position	Vertical installation Indoor / outdoor
Weight	7.7 oz (220g)
Appearance	Cover : PE resin (white) Body : AES resin (white)
Optional	Pole cover (BP-11), Wall mount attachment (BW-14), Magnetic sheet (BR-M5), Pole attachment (BP-12)

12 EXTERNAL DIMENSIONS



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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