# OPTEX

# OA-603

CE

## Swing Door Safety Sensor



## MANUFACTURER'S STATEMENT

Read this document and this Operation Manual carefully before use, to ensure proper operation of this Optex sensor.
Failure to read this Operation Manual may cause improper sensor operation and may result in serious injury or death.
This product is a non-contact activating switch intended for mounting on the header of an automatic door.
Do not use it for any other applications; otherwise proper operation and safety cannot be guaranteed.
Cautions :
1. Follow the instructions (especially **Note** ) in this Operation Manual when installing and adjusting the sensor.
2. When setting the sensor's area pattern, make sure there is no traffic around the installation site.
3. Before turning the power on, check the wiring to prevent damage or malfunction of equipment that is connected to the sensor.
4. Do not disassemble, rebuild or repair the sensor yourself; otherwise it may cause electric shock or breakdown of the sensor.
5. Only use the sensor as specified in the supplied instructions.
6. Be sure to install the sensor in accordance with the local laws and standards of your country.
7. Before leaving the jobsite, be sure this equipment is operating properly and instruct the building owner/operator on proper operation of the door and this sensor.

## SPECIFICATIONS

| | | | |
|---|---|---|---|
| Model | : OA-603 | Current Draw | : 120mA Max |
| Mounting Height | : 2.1m (6'11") to 2.5m (8'2") | Response Time | : < 0.3 second |
| Detection Area | : See the chart in "ADJUSTMENT". | Operating Temperature | : -20°C to +55°C (-4°F to +131°F) |
| Detection Method | : Active Infrared Reflection | Weight | : 230g (8.2oz.) |
| | (Presence Detection Type) | Accessories | : 1 Sensor Cable (1m) |
| Detection Angle | : Threshhold Area ±5° (Inside & outside) | | 2 Mounting screws |
| Adjustments | Swing Area ±5° (Inside & Outside) | | 1 Operation Manual |
| Operation Indicator | : Green : Stand-by | | 1 Mounting Template |
| | Blinking Red : Threshhold Area Detection Active | | |
| | Red : Swing Area Detection Active | | |
| | Blinking Yellow :Teaching | The specifications herein are subject to change without prior notice due to improvements. | |

## OUTER DIMENSIONS
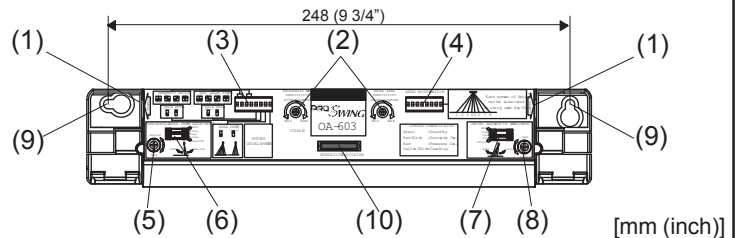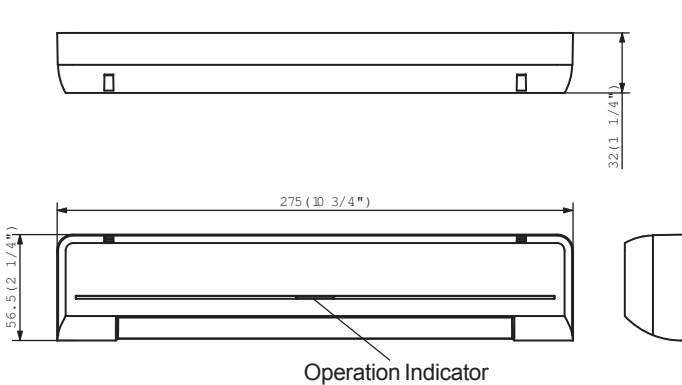


Operation Indicator

248 (9 3/4")

[mm (inch)]

(1) Connector
(2) Sensitivity Potentiometer
(3) Mode Setting Switches
( Area Depth Adjustment, Auto Learning Timer,
Frequency, Rain Mode, Snow Mode )
(4) Area Width Switch

(5) Threshhold Area Angle Screw
(6) Threshhold Area Angle Gauge
(7) Swing Area Angle Screw
(8) Swing Area Angle Gauge
(9) Mounting Holes
(10) Operation Indicator

## INSTALLATION

**1** Be sure to install the sensor where it will not be directly sprayed with rainwater.
1. Affix the Mounting Template to the mounting surface.
2. Drill two mounting holes ( φ 1/8" or 3.2mm).
3. To carry through the cable to the header, drill Ⓐ ( φ 3/8" or 10mm).
4. After drilling the holes, remove the Mounting Template.



**2** Break off the cable knockout (as shown in the picture).
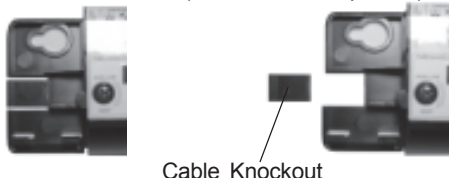


Cable Knockout

**3** Attach the sensor with screws.

**4** Plug in the sensor cable for the sensor and controller(OC-903C).

**5** Apply power to the sensor. Then, adjust each detection area (See ADJUSTMENT).
Warning: Make sure of the wirings between controller(OC-903C) and door **before** turning the power on.

**6** Place the cover on the top then fit it on.

**7** How to remove the cover

Insert the flathead screw driver and push it down as shown in the picture.

Grab the top and remove the cover.

# ADJUSTMENT

Be sure to walk-test all of the detection areas.
When the Threshhold Area Angle and the Swing Area Angle are set to 0°, each detection area will be placed as shown on the right.

[mm (feet)]

| A | 2000 (6'7") | 2200 (6'11") | 2500 (8'3") |
|---|---|---|---|
| B | 364 (1'2") | 400 (1'4") | 455 (1'6") |
| C | 182 (7") | 200 (8") | 227 (9") |
| D | 23 (1') | 25 (1') | 28 (1') |
| E | 664 (2'2") | 730 (2'5") | 830 (2'9") |
| F | 1391 (4'7") | 1530 (5'1") | 1739 (5'9") |
| G | 682 (2'3") | 750 (2'6") | 852 (2'10") |
| H | 1318 (4'4") | 1450 (4'9") | 1648 (5'5") |
| I | 2045 (6'9") | 2250 (7'5") | 2557 (8'5") |
| J | 2864 (9'5") | 3150 (10'4") | 3580 (11'9") |

## Detection Area

THRESHHOLD AREA
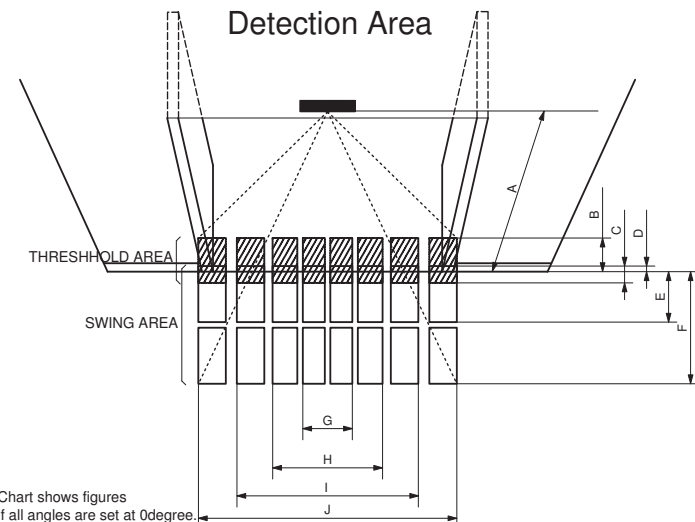
SWING AREA

Chart shows figures if all angles are set at 0degree.

**1** **Adjusting the Detection Area Depth**

DEEP     7

SHALLOW     7

For standerd application     For bi-fold or smaller door
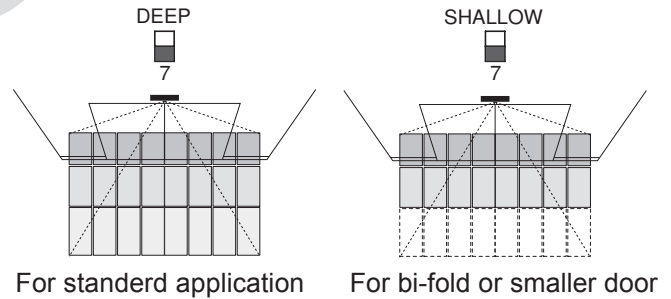
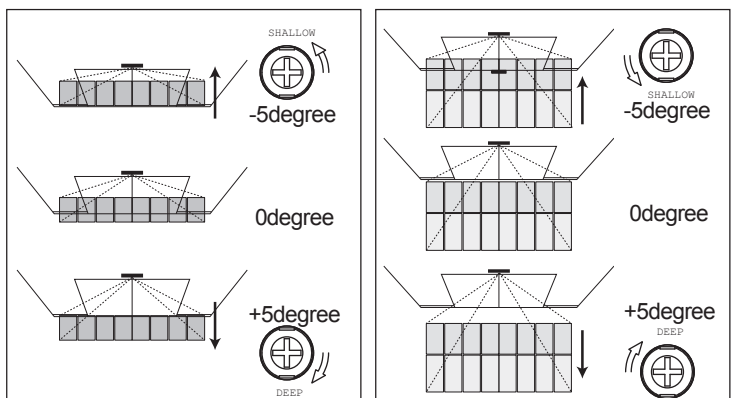**2** **Adjusting the Detection Area Angle**

Use this function for fine setting.

Swing Area Angle Screw     Threshhold Area Angle Screw

OPTEX PRO SWING OA-603

SHALLOW
-5degree

0degree

+5degree
DEEP

SHALLOW
-5degree

0degree

+5degree
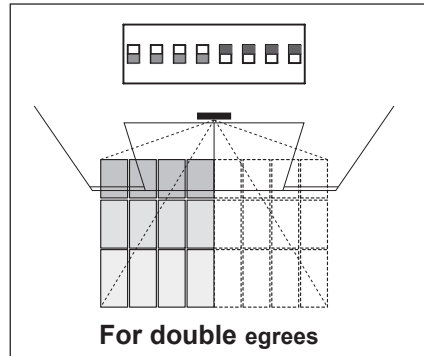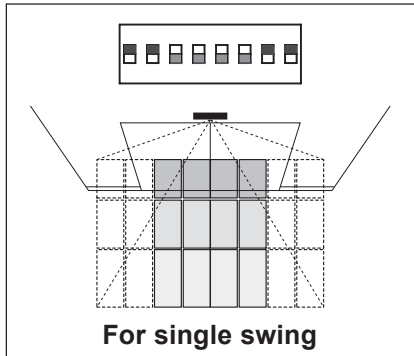DEEP

# 3 Adjusting the Detection Area Width
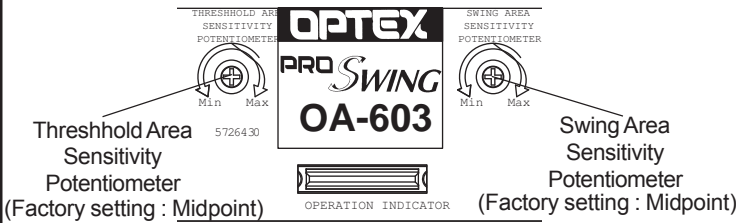
Area Width Switch
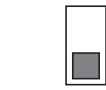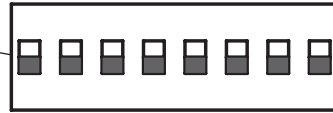


Area Active    Area Inactive

Adjust the width of the Detection Area according to the door width.

**For double swing**          **For single swing**          **For double egrees**
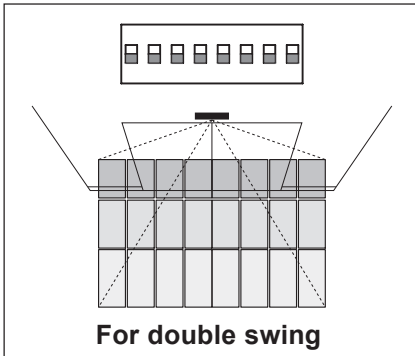
# 4 Adjusting the Sencitivity

THRESHHOLD AREA SENSITIVITY POTENTIOMETER

SWING AREA SENSITIVITY POTENTIOMETER

Threshhold Area Sensitivity Potentiometer
(Factory setting : Midpoint)

Swing Area Sensitivity Potentiometer
(Factory setting : Midpoint)

# 5 Dipswitch Settings

Dipswitches
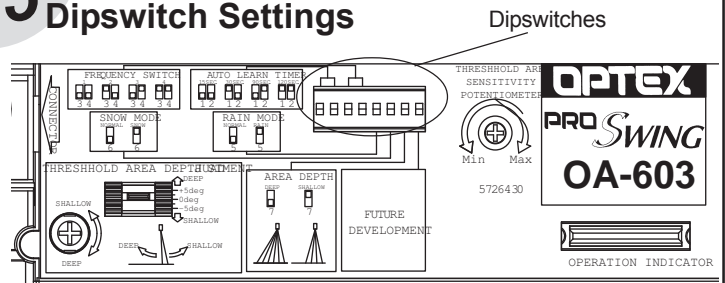
1,2: Auto Learning Timer          5: Rain Mode
3,4: Frequency                    6: Snow Mode

## 5-1 Setting the Auto Learning Timer

(1) Select the Auto Learning time.
(2) Turn the power on.
(3) Do not enter the detection area for 15 seconds.
   (Factory setting : 30sec)

15 Sec    30 Sec    60 Sec    120 Sec

1  2      1  2      1  2      1  2

## 5-2 Setting the Frequency Function (Interference Prevention)

Four different frequencies can be set by adjusting Dipswitches 3 and 4.
When two or more sensors are mounted close to each other, they
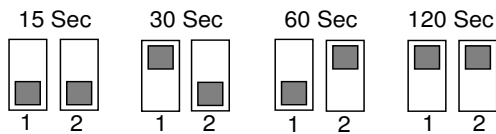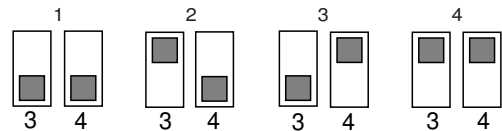may interfere.  When that happens, change Frequency .

1          2          3          4

3  4      3  4      3  4      3  4

## 5-3 Setting the Rain Mode

Set this switch to Rain if the sensor is used in a region with a
lot of rain.

Normal    Rain

5         5
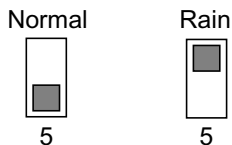
## 5-4 Setting the Snow Mode

Set this switch to Snow if the sensor is used in a region with
snow or a lot of insects.

Normal    Snow

6         6
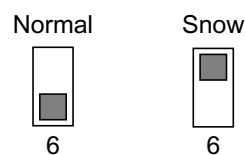
# 6 Maintenance

Keep the detection window clean.
If dirty, dip cloth in neutral detergent and wipe the window lightly.
Do not use any organic solvent (thinner, benzine, etc.).

# 7 Checking

## Teaching flow

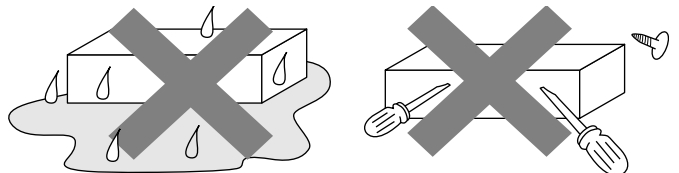| Status | Turn on the Power | Door opening | Door opened Completely | Start closing | Door closing | Door closed |
|---|---|---|---|---|---|---|
| (Image) | | | | | | |
| Sensor Status | 1st Teaching | 1st Complete Teaching | Lockout | 2nd Teaching | Complete Teaching | Lockout | Standby |
| Operation Indicator | Blinking Yellow | Yellow | Orange | Orange | Green | Orange | Green |
| Relay Contact — Activate / Safety | | | | | | | |

## Check the entry motion according to the following flow chart.

| Door Status | Closed | | | Opened | | Closed |
|---|---|---|---|---|---|---|
| Entry motion | Outside the Detection area | Entry into the Swing Area | Entry into the Threshhold Area | Entry into the Swing Area | Entry into the Threshhold Area | Outside the Detection Area |
| (Image) | | | | | | |
| Sensor Status | Standby | Swing Area detection Active | Threshold Area detection Active | Swing Area detection Active | Threshold Area detection Active | Standby |
| Operation Indicator | Green | Red | Blinking Red | Red | Blinking Red | Green |
| Relay Contact — Activate / Safety | | | | | | |

*Note: The response time may differ according to the color of the objects and the color/material of the floor.

# TROUBLESHOOTING

| Door status | Trouble | Possible cause | Solution | Reference |
|---|---|---|---|---|
| close | Door does not open | OC-903C NO and NC are inverted. | Change the OC-903C Dipswitch | OC-903C ADJUSTMENT |
| | | OC-903C Wrong Wiring | Check the OC-903C wiring | OC-903C INSTALLATION |
| | | OC-903C SAFETY OUTPUT HOLD TIME is set long. | Shorten the OC-903C setting time | OC-903C ADJUSTMENT |
| | The door does not open while the sensor keeps detection. | Moving object in the detection area | Remove the object | OA-603C ADJUSTMENT |
| | | There was an abrupt change in the detection area. | Carry out the teaching again | OA-603C ADJUSTMENT |
| | | Waterdrops on the sensor. | Keep the sensor free from waterdrops. | OA-603C ADJUSTMENT |
| | | Vibration of the header | Secure the header | |
| | | The detection area overlapping with it of another sensor | Change the Frequency dipswitch. | OA-603C ADJUSTMENT |
| | | Unadequate detection area setting | Reset the detection area | OA-603C ADJUSTMENT |
| opening | The door starts opening while the sensor detects. | OC-903C NO and NC are inverted. | Change the OC-903C Dipswitch | OC-903C INSTALLATION |
| | | OC-903C Wrong Wiring | Check the OC-903C wiring | OC-903C ADJUSTMENT |
| | | The lock out timer is set long with OC-903C Manual setting. | Change the OC-903C Lockout Timer | OC-903C ADJUSTMENT |
| | | Unadequate detection area setting | Reset the detection area | OA-603C ADJUSTMENT |
| | The door starts opening without the | Wrong Wiring | Check the OC-903C wiring | OC-903C INSTALLATION |
| open | Door remains open | OC-903C NO and NC are inverted. | Change the OC-903C Dipswitch | OC-903C INSTALLATION |
| | | OC-903C Wrong Wiring | Check the OC-903C wiring | OC-903C INSTALLATION |
| | | OC-903C SAFETY OUTPUT HOLD TIME is set long. | Shorten the OC-903C SAFETY OUTPUT HOLD TIME. | OC-903C ADJUSTMENT |
| | | Wrong wiring of motor power voltage | Check the OC-903C wiring | OC-903C ADJUSTMENT |

| Door status | Trouble | Possible cause | Solution | Reference |
|---|---|---|---|---|
| open | The sensor keeps detecting and the door remains open. | There is an object that moves. | Remove the object | OA-603C ADJUSTMENT |
| | | There was an abrupt change in the detection area. | Carry out the teaching again | OA-603C ADJUSTMENT |
| | | Water drops on the sensor. | Keep the sensor free from waterdrops. | OA-603C ADJUSTMENT |
| | | Header Vibration | Secure the header | |
| | | The detection area overlapping with it of another sensor | Change the Frequency dipswitch. | OA-603C ADJUSTMENT |
| closing | Does not lock out. | Wrong wiring of motor power voltage | Check the OC-903C wiring | OC-903C ADJUSTMENT |
| | The door starts closing while the sensor detects. | OC-903C NO and NC are inverted. | Change the OC-903C Dipswitch | OC-903C INSTALLATION |
| | | OC-903C Wrong Wiring | Check the OC-903C wiring | OC-903C ADJUSTMENT |
| | | The lock out timer is set long with OC-903C Manual setting. | Change the OC-903C Lockout Timer | OC-903C ADJUSTMENT |
| | | Wrong door controller setting | Change the door controller setting. | |
| | No detection | The power supply is not ON. | Make sure that the sensor cable between OA-603 and OC-903C is connected. | OA-603 INSTALLATION |
| | | | Check the OC-903C wiring | OC-903C ADJUSTMENT |
| | | Dirty detection window. | Wipe the OA-603 detection window lightly with a damp cloth. | OA-603C ADJUSTMENT |
| | | Unadequate detection area setting | Reset the detection area | OA-603C ADJUSTMENT |
| | | Communication error. | Make sure that the sensor cable is not cut off. | OA-603 INSTALLATION |
| | | No sufficient sensitivity | Adjust the sensitivity. | OA-603C ADJUSTMENT |
| | | The mounting height is too high. | Adjust the mounting height to the stated height. | OA-603C ADJUSTMENT |

## How to reset the sensor

When wish to reset the sensor settings, put any dipSW to ON/OFF for more than 1 second.

More than 1 second → Reset completed    or    More than 1 second → Reset completed
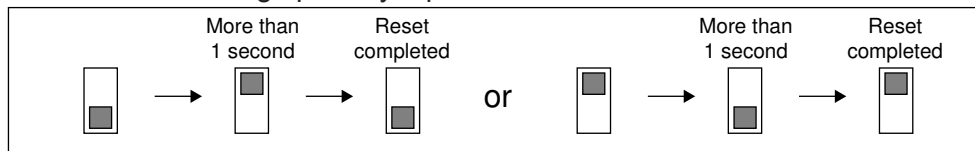
## Warning Indication

| Mode | Self Monitoring Function | Life cycle Notification | Signal Saturation | Communication Error | Setting Error |
|---|---|---|---|---|---|
| Operation Indicator | Fast Green Blinking | Twice Green Blinking | Slow Green Blinking | Twice Orange Blinking | Fast Orange Blinking |
| Explanation | The sensor is reaching the end of its life cycle. | The relay is reaching the end of its life cycle. | Either the mounting position is too low or the detection area includes the wall or another object. Refer to "ADJUSTMENT". | The sensor cable is connected, but unstable communication. Refer to "ADJUSTMENT". | When all the area width switches are inactive. Refer to "ADJUSTMENT". |

If the trouble still persists after checking and remedying as described above, contact your local sales representative.

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