



OAM-DUAL T / P / TV / TF / PF / TT

MANUFACTURER'S STATEMENT

Read this operation manual carefully before use to ensure proper operation of this product. Failure to read this operation manual may cause improper operation and may result in serious injury or death of a person. The meanings of the symbols are as follows.

| | | |
|--|----------------|---|
| | WARNING | Disregard of the warning symbol can cause improper operation which may cause death or serious injury. |
| | CAUTION | Disregard of the caution symbol can cause improper operation which may cause injury of a person or damage the object. |
| | NOTE | Special attention is required to the section of this symbol. |
| | | It is required to check the operation manual if this symbol is shown on the product. |

NOTE

- This product is a non-contact switch intended for header mount or wall mount for use on an automatic sliding door. Do not use for any other applications.
- When setting the sensor's detection area, make sure that there is no traffic around the installation site.
- Before turning the power ON, check the wiring to prevent damage or malfunction of equipment connected to the product.
- Only use the product as specified in the operation manual provided.
- Be sure to install and adjust the sensor in accordance with the local laws and standards of the country in which the product is installed.
- Before leaving the installation site make sure that the product is operating properly and instruct the building owner/operator on proper operation of the door and the product.
- The product settings can only be changed by an installer or service engineer. When changed, the changed settings and the date shall be registered in the maintenance logbook accompanying the door.

| | | |
|---------------------------------|----------------|--|
| | WARNING | Do not wash, disassemble, rebuild or repair the sensor, otherwise it may cause electric shock or breakdown of the equipment. |
| Danger of electric shock | | |

NOTE

- The following conditions are not suitable for sensor installation.
- Fog or exhaust emission around the door
 - Wet floor
 - Vibrating header or mounting surface
 - Moving objects, steel plate, emergency lights or illumination in the detection area or in vicinity
 - Highly reflecting floor or highly reflecting objects around the door

SPECIFICATIONS

| | | | |
|----------------------------|---|-------------------|--|
| Model | : OAM-DUAL T/P/TV/TF/PF/TT | Activation input | : Opto coupler Voltage 5 to 30VDC Current 6mA Max. (30VDC) |
| Cover color | : Black | Activation output | : See INSTALLATION 2 |
| Mounting height | : 2.0 (6'7") to 3.5m (11'6") | Safety input | : Opto coupler Voltage 5 to 30VDC Current 6mA Max. (30VDC) |
| Detection area | : See DETECTION AREA | Safety output | : Opto coupler (NPN) Voltage 5 to 50VDC Current 100mA Max. Dark current 600nA Max. (Resistance load) |
| Detection method | : Active infrared reflection (*1) Microwave doppler effect | IP rate | : IP54 |
| Transmitter frequency | : 24.125GHz | Category | : See Table 1 |
| Transmitter radiated power | : < 20dBm | Performance level | : See Table 1 |
| Depth angle adjustment | : AIR area -6° to +6° Microwave area +25° to +45° | ESPE | : Type 2 |
| Power supply (*2) | : 12 to 24VAC ±10% (50 / 60Hz) 12 to 30VDC ±10% | Weight | : 270g (9.5oz) |
| Power consumption | : < 2.5W (< 4VA at AC) | Accessories | : 1 Operation manual 2 Mounting screws 1 Mounting template 1 Area adjustment tool 1 Cable 3m (9'10") (8×0.22mm² AWG24) (*3) |
| Operation indicator | : See Operation indicator table | | |
| Output hold time | : < 0.5sec. | | |
| Response time | : < 0.3sec. | | |
| Operating temperature | : -20 to +55°C (-4 to 131°F) | | |
| Operating humidity | : < 80% | | |
| Noise level | : < 70dBA | | |

| Table 1 | OAM-DUAL T OAM-DUAL P | OAM-DUAL TV OAM-DUAL PF | OAM-DUAL TF OAM-DUAL PF | OAM-DUAL TT |
|----------------|--|----------------------------|----------------------------|-------------|
| AIR part | Cat. 2 (EN ISO13849-1:2015) PL d (EN ISO13849-1:2015) | | | |
| Microwave part | Cat. 3 (EN ISO13849-1:2015) PL d (EN ISO13849-1:2015) | | | |

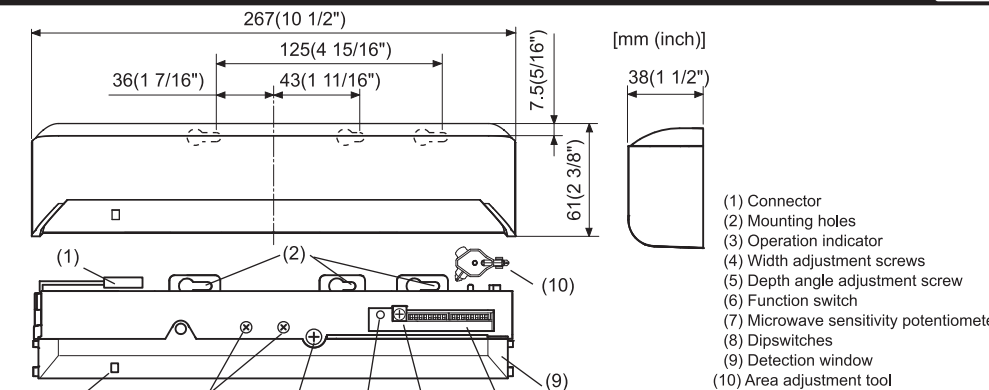
Operation indicator table

| Status | Operation indicator color | 1sec. | 1sec. |
|-----------------------------------|---------------------------|-------|-------|
| Set-up | Yellow blinking | | |
| Stand-by (Installation mode) | Yellow | | |
| Stand-by (Operation mode) | Green | | |
| BLUEZONE (Lookback) detection(*4) | Blue | | |
| 2nd row detection | Red blinking | | |
| 3rd row detection | Red | | |
| Microwave detection | Orange | | |
| Setting error | Red & Green blinking | | |
| Signal saturation | Slow Green blinking | | |
| Sensor failure | Fast Green blinking | | |

NOTE

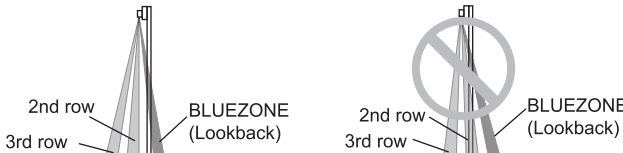
- *1 : Active infrared reflection has a presence detection function. *4 : See **BLUEZONE (LOOKBACK) AREA**
 *2 : The sensor has to be connected to a door system which has a SELV circuit.
 *3 : Overcurrent protection with less than 2A.

OUTER DIMENSIONS AND PART NAMES



BLUEZONE (LOOKBACK) AREA

When dipswitch 15 is set to "ON", the BLUEZONE (Lookback) area, that provides extra safety over the threshold, is activated. In case the BLUEZONE (Lookback) function is not required, set dipswitch 15 to "OFF". Do not set the 2nd row overlapping the threshold regardless of the setting of dipswitch 15.



COMPLIED STANDARDS AND EXTRACT FROM EC DECLARATION OF CONFORMITY

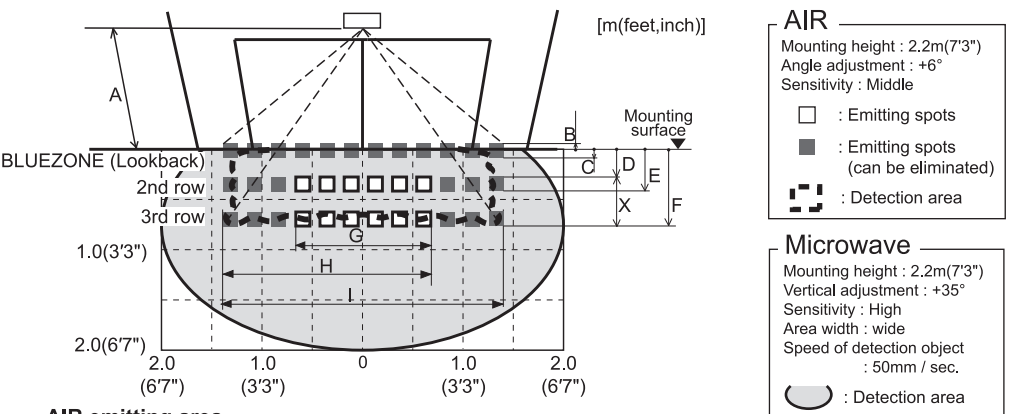
DIN 18650-1:2010 Chapter 5.7.4 ESPE Chapter 5.8.2.4.3 (OAM-DUAL TV/TF/PF/TT)
 EN 16005:2012/AC:2015 Chapter 4.6.8 and Annex C
 Chapter 4.7.2.3 (OAM-DUAL TV/TF/PF/TT)
 EN 61496-3:2001 clause 4. 3. 5 and 5. 4. 7. 3
 EN 61000-6-3:2007 +A1:2011/AC:2012
 EN 61000-6-2:2005/AC:2005
 Machinery Directive 2006/42/EC
 AutSchR (OAM-DUAL TV/TF/PF/TT)
 Notified Body 0044 : TÜV NORD CERT GmbH Langemarckstr. 20 45141 Essen Germany

EN 12978:2003 +A1:2009
 EMC Directive 2014/30/EU
 EN ISO 13849-1:2015
 EN ISO 13849-2:2012

A. Maekawa
 General Manager
 OPTEX CO., LTD.
 Quality Control Dept.

For technical document, see European Subsidiary

DETECTION AREA



AIR emitting area

The chart shows the values at depth angle +6°

| | A | 2.00 (6'7") | 2.20 (7'3") | 2.50 (8'2") | 2.70 (8'10") | 3.00 (9'10") | 3.50 (11'6") |
|---|--------------|-------------|--------------|--------------|--------------|--------------|--------------|
| B | 0.05 (2") | 0.06 (2") | 0.07 (3") | 0.074 (3") | 0.08 (3") | 0.09 (4") | |
| C | 0.07 (3") | 0.08 (3") | 0.09 (4") | 0.10 (4") | 0.11 (4") | 0.12 (5") | |
| D | 0.23 (9") | 0.25 (10") | 0.28 (11") | 0.31 (1") | 0.34 (1'1") | 0.39 (1'3") | |
| E | 0.35 (1'2") | 0.39 (1'3") | 0.44 (1'5") | 0.48 (1'7") | 0.53 (1'9") | 0.61 (2') | |
| F | 0.59 (1'11") | 0.65 (2'2") | 0.74 (2'5") | 0.80 (2'7") | 0.89 (2'11") | 1.03 (3'5") | |
| G | 1.21 (3'12") | 1.33 (4'4") | 1.51 (4'11") | 1.63 (5'4") | 1.81 (5'11") | 2.11 (6'11") | |
| H | 1.86 (6'1") | 2.05 (6'9") | 2.32 (7'7") | 2.51 (8'3") | 2.79 (9'2") | 3.25 (10'8") | |
| I | 2.52 (8'3") | 2.78 (9'1") | 3.15 (10'4") | 3.40 (11'2") | 3.79 (12'5") | 4.42 (14'6") | |

AIR detection area

To comply with EN 16005, make sure that the detection area is within the values of the chart below.

| A | 2.00 (6'7") | 2.20 (7'3") | 3.00 (9'10") |
|----|--------------|-------------|---------------|
| X | 0.23 (9") | 0.25 (10") | 0.34 (1'1") |
| G | 1.02 (3'4") | 1.12 (3'8") | 1.53 (5') |
| I* | 2.41 (7'11") | 2.65 (8'8") | 3.60 (11'10") |

Test conditions required by EN 16005
 Floor : Grey paper
 Detection object : EN 16005 CA reference body
 Sensitivity : Middle
 Speed of detection object : 50mm / sec.

The values above are those of the **AIR detection area** when tested referring to the test conditions of EN 16005. (The emitting area is as shown in **AIR emitting area** above.)

*: When installed at higher than 3.0m(9'10"), EN 16005 requirements are fulfilled only within the area width "I" of 3.6m(11'10").

NOTE

The actual detection area may become smaller depending on the ambient light, the color / material of the object or the floor as well as the entry speed of the object.
 The sensor may not be activated when the entering speed of the object or a person is slower than 50mm / sec. or faster than 1500mm / sec.

INSTALLATION

- Affix the mounting template at the desired mounting position. (When setting the detection area close to the door, mount the sensor according to the chart below.)
- Drill two mounting holes of ø3.4mm (ø1/8").
- To pass the cable through the header, drill a wiring hole of ø8mm (ø5/16").
- Remove the mounting template.
- Remove the housing cover. Fix the sensor to the mounting surface with the two mounting screws.

H : Height from the floor to the bottom of the header
 (The mounting height is "H + Y".)
 Y : Distance between the bottom of the header and the sensor
 X : Distance between the door and the mounting surface

Maximum mounting distance (Y)

| X \ H | 2.00 (6'7") | 2.30 (7'7") | 2.50 (8'2") | 2.80 (9'2") | 3.00 (9'10") | 3.50 (11'6") |
|------------|-------------|-------------|-------------|-------------|--------------|--------------|
| 0 | No limit | | | | | |
| 0.05 (2") | 0.13 (5") | 0.13 (5") | 0.13 (5") | 0.14 (6") | 0.14 (6") | 0 |
| 0.10 (4") | 0.11 (4") | 0.12 (5") | 0.12 (5") | 0.12 (5") | 0.12 (5") | 0 |
| 0.15 (6") | 0.10 (4") | 0.10 (4") | 0.11 (4") | 0.11 (4") | 0.11 (4") | 0 |
| 0.20 (8") | - | 0.09 (4") | 0.10 (4") | 0.10 (4") | 0.10 (4") | 0 |
| 0.25 (10") | - | - | 0.09 (4") | 0.09 (4") | 0.09 (4") | 0 |
| 0.30 (12") | - | - | - | - | - | 0 |

NOTE Make sure not to mount the sensor lower than the bottom of header.

CAUTION Make sure to affix the mounting template as described in the above chart, otherwise it can be dangerous since there may be no detection area around the threshold. Install the sensor as low as possible on the header.

Risk of getting caught

- Plug the connector.
- Supply power to the sensor. Adjust the detection area and set the dipswitches. (See **ADJUSTMENTS 4. Dipswitch settings**)

NOTE Make sure to connect the cable correctly to the door controller before turning the power ON. When turning the power ON or after adjusting the settings, do not enter the detection area for more than 10 seconds in order to enable the presence detection. Do not touch the dipswitches before turning the power ON, otherwise an error occurs. After changing the dipswitch and/or potentiometer settings, make sure to push the function switch for 2 seconds.

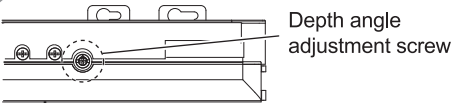
Place the housing cover.
 If wiring is to be exposed, break the knockout.

WARNING Do not use the sensor without the cover. When using the cable knockout, install the sensor indoors or use the rain cover (Separately available) otherwise electric shock or breakdown of the sensor may occur.

Danger of electric shock

ADJUSTMENTS

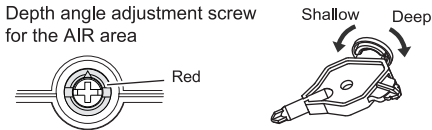
1 Area depth angle adjustment



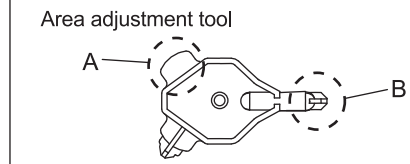
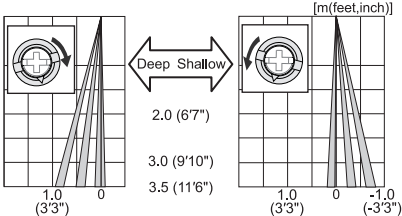
When adjusting the 2nd row close to the door, see **Table 2** dipswitch16 for the easier adjustment.

NOTE Make sure that the detection area does not overlap with the door/header, and there is no highly reflecting object near the detection area otherwise ghosting/signal saturation may occur.

1-1 AIR adjustment



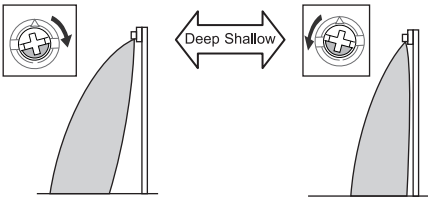
Use the area adjustment tool (A) as shown above to change the area depth angle. For the easier adjustment, see **REFERENCE**.



1-2 Microwave adjustment



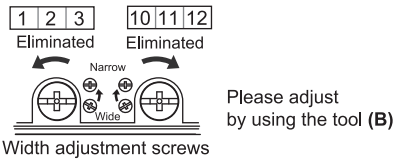
Use the area adjustment tool (B) as shown above to change the area depth angle.



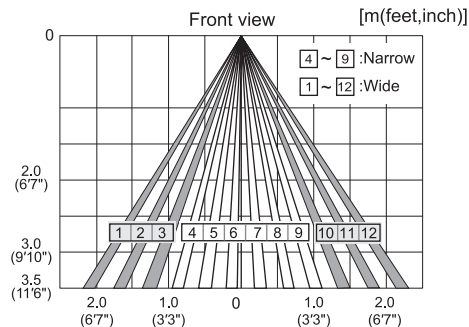
2 Area width adjustment

2-1 AIR adjustment

To adjust the AIR detection area width, use the adjustment screws as shown in the picture below.

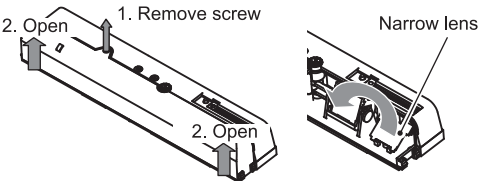


NOTE When setting the detection area width, make sure to turn the adjustment screws until it clicks. [1][2][3] cannot be eliminated separately, neither can [10][11][12]



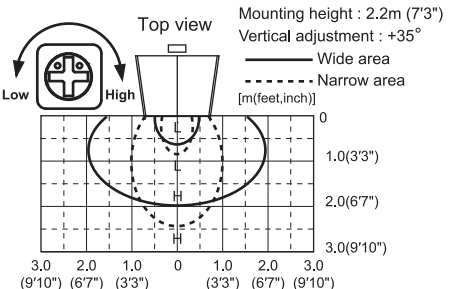
2-2 Microwave adjustment

To adjust the microwave detection area width, use the narrow lens as shown in the picture below.



3 Microwave sensitivity

Adjust the microwave detection area with potentiometer. Afterwards, make sure to push the function switch for 2 seconds.



4 Dipswitch settings

After changing the dipswitch settings, make sure to push the function switch for 2 seconds.

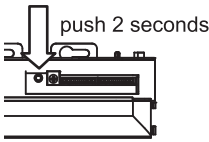


































Table 2

AIR settings Microwave settings Other settings

| | Function | Setting | | | | Comment |
|--------------|---|--|---|---|---|--|
| Dipswitch 1 | Sensitivity | Low  1 2 2.0 to 3.0m | Middle  1 2 2.0 to 3.0m | High  1 2 2.5 to 3.2m | S-High  1 2 3.0 to 3.5m | Set the sensitivity according to the mounting height. Values below dipswitches are reference only. Adjust the sensitivity according to your risk assessment. |
| Dipswitch 2 | | | | | | |
| Dipswitch 3 | Presence timer | 30sec.  3 4 | 60sec.  3 4 | 180sec.  3 4 | 600sec.  3 4 | To enable the presence detection, do not enter the detection area for 10 seconds after setting the timer. |
| Dipswitch 4 | | | | | | |
| Dipswitch 5 | Frequency | Setting1  5 6 | Setting2  5 6 | Setting3  5 6 | Setting4  5 6 | When using more than one sensor close to each other, set the frequency different for each sensor. |
| Dipswitch 6 | | | | | | |
| Dipswitch 7 | Safety output (to door controller) | High  7 | Low  7 | Not for OAM-DUAL P/PF. | | The delay time between Safety input and Safety output is 10msec.. |
| Dipswitch 8 | Safety input (from door controller) | High  8 | Low  8 | | | |
| Dipswitch 9 | Direction | Bi  9 | Uni  9 | When dipswitch 9 is set to "Uni", this setting enables the door to close faster when a person walks away from the door. | | |
| Dipswitch 10 | Autocautious (A.C.M.) | OFF  10 | ON  10 | | | |
| Dipswitch 11 | Immunity | OFF  11 | ON  11 | Set dipswitch 11 to "ON" when the sensor operates by itself (Ghosting). When dipswitch 11 is set to "ON" the actual detection area may occur smaller. | | |
| Dipswitch 12 | Activation output (to door controller) | N.O.  12 | N.C.  12 | | | |
| Dipswitch 13 | AIR output | Safety  13 | Safety + Activation  13 | When dipswitch 13 is set to "Safety + Activation", the sensor outputs safety and activation simultaneously. | | |
| Dipswitch 14 | Self monitoring | Enable  14 | Disable  14 | | | |
| Dipswitch 15 | BLUEZONE (Lookback) | OFF  15 | ON  15 | When dipswitch 15 is set to "ON", the BLUEZONE (Lookback) is active and looks through the threshold. | | |
| Dipswitch 16 | Installation mode | OFF  16 | ON  16 | | | |
| | | | | | | Set dipswitch 16 to "ON" to adjust the 2nd row. During the installation mode only the 2nd row remains active and the operation indicator shows yellow. After setting the row set dipswitch 16 "OFF". |

CHECKING

Check the operation in the operation mode according to the chart below.

| Entry | | Power OFF | Outside of detection area | Entry into microwave area | Entry into 3rd row | Entry into 2nd row | Entry into BLUEZONE (Lookback) |
|---------------------|---------------------|-----------|---------------------------|---------------------------|------------------------------------|--------------------|--------------------------------|
| Status | | - | Stand-by | Motion detection active | Motion / Presence detection active | | |
| Operation indicator | | None | Green | Orange | Red | Red blinking | Blue |
| Activation output | OAM-DUAL T/P/TT | 12 | N.O. | Safety | | | |
| | | 12 | N.C. | | | | |
| | | 13 | N.O. | Safety + Activation | | | |
| | | 13 | N.C. | | | | |
| | OAM-DUAL TV | 13 | Safety | 0V | (*) | <=0.5V | |
| | | 13 | Safety + Activation | 0V | (*) | <=0.5V | |
| Safety output | OAM-DUAL T/TT/TV/TF | 7 | High | OFF | ON | | OFF |
| | | 7 | Low | OFF | OFF | | ON |
| | OAM-DUAL P/PF | | | Pulse OFF | Pulse ON | | Pulse OFF |
| | | | | | | | |

*3.2V@10mA 4.5V Min. (no load)

INFORM BUILDING OWNER / OPERATOR OF THE FOLLOWING ITEMS

WARNING

1. Always keep the detection window clean. If dirty, wipe the window with a damp cloth. Do not use any cleaner / solvent.
2. Do not wash the sensor with water.
3. Do not disassemble, rebuild or repair the sensor yourself, otherwise an electric shock may occur.
4. When the operation indicator blinks green, contact your installer or service engineer.
5. Always contact your installer or service engineer when changing the settings.
6. Do not paint the detection window.

NOTE

1. When turning the power ON, always walk-test the detection area to ensure the proper operation.
2. Do not place any objects that move or emit light in the detection area. (e.g. plant, illumination, etc.)

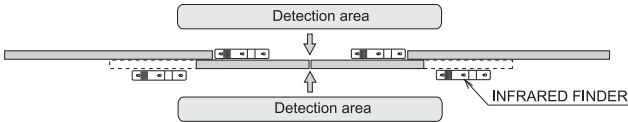
TROUBLESHOOTING

| Door operation | Operation indicator | Possible cause | Possible countermeasures |
|---|-------------------------------------|--|---|
| Door does not open when a person enters the detection area. | None | Wrong power supply voltage. | Set to the stated voltage. |
| | | Wrong wiring or connection failure. | Check the wires and connector. |
| | Unstable | Wrong detection area positioning. | Check ADJUSTMENTS 1, 2, 3. (*) |
| | | Sensitivity is too low. | Set the sensitivity higher.(*) |
| | | Short presence timer. | Set the presence timer longer.(*) |
| | | Dirty detection window. | Wipe the detection window with a damp cloth. Do not use any cleaner or solvent. |
| Proper | Wrong wiring or connection failure. | Check the wires and connector. | |
| Door opens when no one is in the detection area. (Ghosting) | Unstable | Objects that move or emit light in the detection area. | Remove the objects. |
| | | The detection area overlaps with that of another sensor. | Check Table 2 dipswitch 5, 6.(*) |
| | | Waterdrops on the detection window. | Use the rain-cover. (Separately available) Or wipe the detection window with a damp cloth. Do not use any cleaner or solvent. Or install in a place keeping the waterdrops off. |
| | | The detection area overlaps with the door/header. | Adjust the detection area to "Deep" (Outside). Or set dipswitch 11 to "ON".(*) |
| | | Sensitivity is too high. | Set the sensitivity lower.(*) |
| | | Raining or snowing. | Set dipswitch 9 to "Uni" and/or dipswitch 11 to "ON".(*) |
| | Others | Set dipswitch 11 to "ON".(*) | |
| | Proper | Wrong setting of dipswitches. | Check Table 2 dipswitch 7, 8, 12.(*) |
| Door remains open | Proper | Sudden change in the detection area. | Check Table 2 dipswitch 1 to 4.(*) If the problem still persists, hard-reset the sensor.(Turn the power OFF and ON again) |
| | | Wrong wiring or connection failure. | Check the wires and connector. |
| | Yellow | Installation mode is set to "ON". | Set dipswitch 16 to "OFF".(*) |
| | Fast Green blinking | Sensitivity is too low. | Set the sensitivity higher.(*) |
| | | Dirty detection window | Wipe the detection window with a damp cloth. Do not use any cleaner or solvent. |
| | | Sensor failure | Contact your installer or service engineer. |
| | Slow Green blinking | Signal saturation (2nd or 3rd row) | Remove highly reflecting objects from the detection area. Or lower the sensitivity.(*) Or change the area depth angle for AIR area. |
| | | The detection area overlaps with the door/header. | Adjust the detection area to "Deep" (Outside). |
| Red & Green blinking | Setting error. | After changing the dipswitch and/or potentiometer settings, make sure to push the function switch for 2 seconds. | |
| Proper operation | Slow Green blinking | Signal saturation. (BLUEZONE) | Remove highly reflecting objects from the detection area. Or lower the sensitivity.(*) Or change the area depth angle for AIR area. |

*After changing the dipswitch and/or potentiometer settings, make sure to push the function switch for 2 seconds.

REFERENCE

- Area depth adjustment with INFRARED FINDER (Separately available)
1. Turn the depth angle adjustment screw to the right (Deep) to place the detection area most away from the door.
 2. Set INFRARED FINDER sensitivity to "H" (High) and place it on the floor as shown below.



3. Turn the depth angle adjustment screw to the left (Shallow) until the emitting area is placed at the position where INFRARED FINDER is in the low detection status (Slow Red blinking).

Hereby, OPTEX declares that the radio equipment type OAM-DUAL series are in compliance with RED 2014/53/EU. The full text of the EU DoC is available at the following internet address; www.optex.net

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