ENTREMATIC

ENGLISH
ORIGINAL

Ditec PAS024AST

CE 1731

311014-1EN OCT 2014

TM-0072-7

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

1. 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.
2. When setting the sensor's detection area, make sure that there is no traffic around the installation site.
3. Before turning the power ON, check the wiring to prevent damage or malfunction of equipment connected to the product.
4. Only use the product as specified in the operation manual provided.
5. 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.
6. 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.
7. 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 Danger of electric shock	Do not wash, disassemble, rebuild or repair the sensor, otherwise it may cause electric shock or breakdown of the equipment.

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

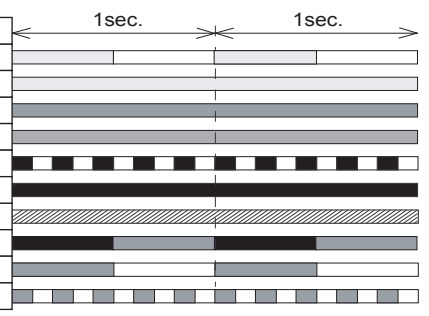
Model : PAS024AST
Cover color : Black
Mounting height : 2.0 (6'6") to 3.5m (11'6")
Detection area : See **DETECTION AREA**
Detection method : Active infrared reflection *1
Microwave doppler effect
Depth angle adjustment : AIR area -6 to +6°
Microwave area +25 to +45°
Power supply *2 : 12 to 24VAC ±10% (50 / 60 Hz)
12 to 30VDC ±10%
Power consumption : < 2.5W (< 4VA at AC)
Operation indicator : See **Operation indicator table**
Test input : Opto coupler
Voltage 5 to 30VDC
: Current 6mA Max. (30VDC)
Activation output : See **INSTALLATION 2**

Safety / test output : Opto coupler (NPN)
Voltage 5 to 50VDC
Current 100mA Max.
Dark current 600nA Max.
(resistance load)
Noise level : <70dBA
Output hold time : <0.5 sec.
Response time : <0.3 sec.
Operating temperature : -20 to +55°C (-4 to 131°F)
Operating humidity : <80%
IP rate : IP54
Category : See **Table 1**
Performance level : See **Table 1**
Weight : 320g (11.2oz)
Accessories : 1 Operation manual
2 Mounting screws
1 Mounting template
1 Area adjustment tool
1 Cable 3m (9'10")
(8 × 0.22mm² AWG24) *3

Table 1		PAS024AST
AIR part	Cat.	2 (EN ISO13849-1 : 2008)
	PL	d (EN ISO13849-1 : 2008)
Microwave part	Cat.	2 (EN ISO13849-1 : 2008)
	PL	d (EN ISO13849-1 : 2008)

Operation indicator table

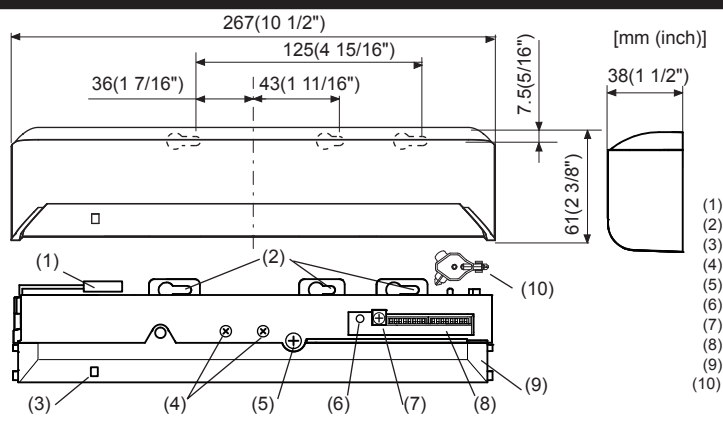
Status	Operation indicator color
Set-up	Yellow blinking
Stand-by (installation mode)	Yellow
Stand-by (operation mode)	Green
Lookback (1st row) detection*4	Blue
2nd row detection	Red blinking
3rd row detection	Red
Microwave detection	Orange
Setting error	Red & green blinking
Signal saturation	Slow green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



NOTE The specifications herein are subject to change without prior notice due to improvements.

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

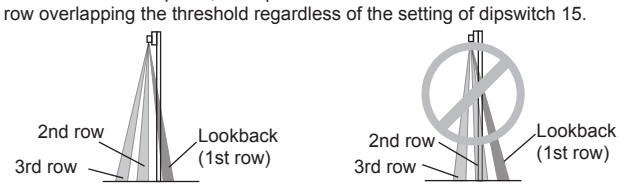
OUTER DIMENSIONS AND PART NAMES



(1) Connector
(2) Mounting holes
(3) Operation indicator
(4) Width adjustment screws
(5) Depth angle adjustment screw
(6) Function switch
(7) Microwave sensitivity potentiometer
(8) Dipswitches
(9) Detection window
(10) Area adjustment tool

LOOKBACK AREA

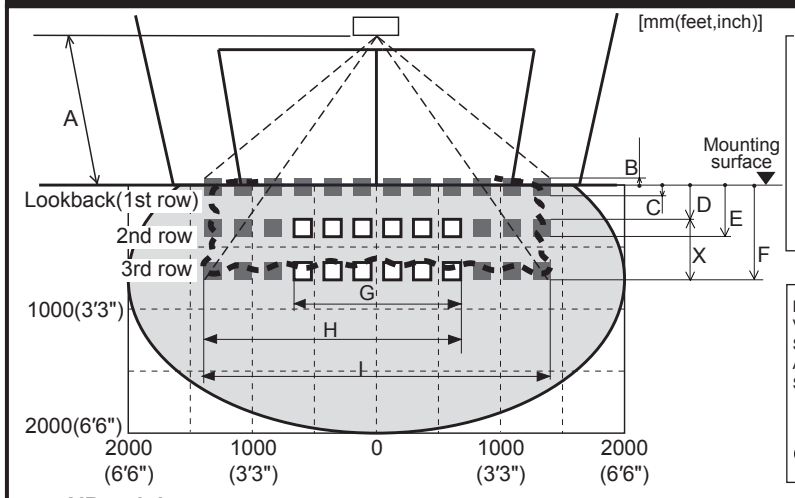
When dipswitch 15 is set to ON, the lookback area, that provides extra safety over the threshold, is activated.
In case the lookback function is not required, set dipswitch 15 to OFF.
Do not set the 2nd row overlapping the threshold regardless of the setting of dipswitch 15.



COMPLIANCE

EN16005:2012
EMC Directive 2004/108/EC
EN61496-3:2001 clause 4. 3. 5 and 5. 4. 7. 3
EN12978+A1:2009
EN ISO13849-1:2008
Machinery Directive 2006/42/EC
EN ISO13849-2:2008
AutSchR
Notified Body: TÜV SÜD Product Service GmbH, Daimlerstraße 40 60314 Frankfurt Germany

DETECTION AREA



AIR emitting area

The chart shows the values at depth angle +6° [m(feet,inch)]

A	2.00 (6'6")	2.20 (7'2")	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 (1'4")
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 (2'8")	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 (5'11")
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 EN16005, make sure that the detection area is within the values of the chart below.

A	2.00 (6'6")	2.20 (7'2")	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 EN16005
Floor :Grey paper
Detection object : EN 16005 CA reference body
Sensitivity : middle
Speed of detection object : 50mm / sec.

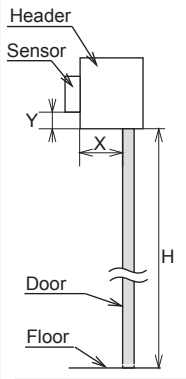
The values mentioned in "detection area" refer to the test conditions as described in the EN16005 (the emitting area is specified in "emitting area").
*: When installed at higher than 3.0m(9'10"), EN16005 requirements are fulfilled only within the area width "I" of 3.6m(11'10").

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

1

1. Affix the mounting template at the desired mounting position. Refer to the chart in below.
2. Drill two mounting holes of ø3.4mm (ø1/8").
3. To pass the cable through the header, drill a wiring hole of ø8mm (ø5/16").
4. Remove the mounting template.
5. 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
Y : Distance between the bottom of the header and the sensor
X : Distance between the door and the mounting surface

Maximum distance (Y) [m (feet,inch)]

X \ H	2.00 (6' 6")	2.30 (7' 6")	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

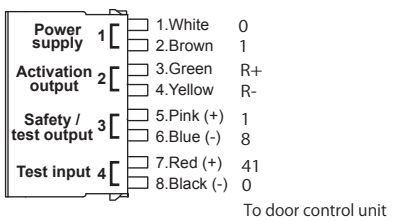
NOTE Make sure not to mount the sensor lower than the bottom of header.

⚠ CAUTION Risk of getting caught	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.

2

Wire the cable to the door controller as shown below.

	PAS024AST
1	12 to 24VAC±10% / 12 to 30VDC±10%
2	(+) (-) Voltage output 3.2V@10mA Min. 4.5V(no load)
3	Opto coupler(NPN) / Voltage: 5 to 50VDC
4	Opto coupler / Voltage: 5 to 30VDC



⚠ WARNING Danger of electric shock	Before starting the procedure, make sure that the power is turned OFF. When passing the cable through the hole, do not tear the shield otherwise it may cause electric shock or breakdown of the sensor.

3

1.Plug the connector.
2.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 dipswitches and/or potentiometer, make sure to push the function switch for 2 seconds.

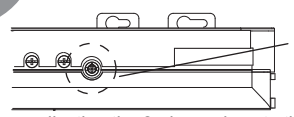
4

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

⚠ WARNING Danger of electric shock	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.

ADJUSTMENTS

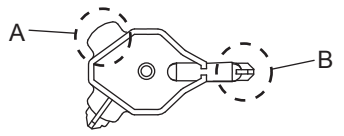
1 Area depth angle adjustment



Depth angle adjustment screw

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

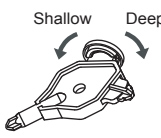
Area adjustment tool



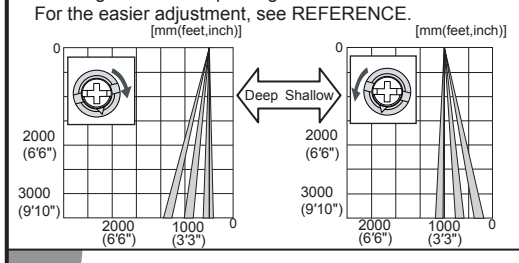
NOTE Make sure that the detection area does not overlap with the door / header, and there is no highly reflecting object near the detection area otherwise ghosting / signal saturation may occur.

1-1 AIR adjustment

Depth angle adjustment screw for the AIR area

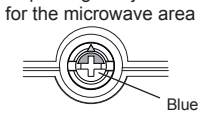


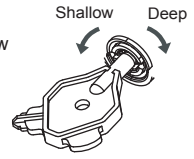
Use the area adjustment tool (A) as shown above to change the area depth angle.
For the easier adjustment, see REFERENCE.



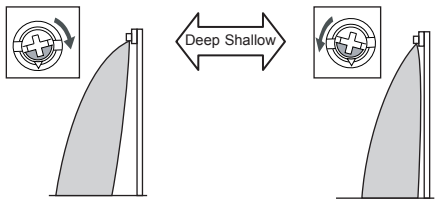
1-2 Microwave adjustment

Depth angle adjustment screw for the microwave area





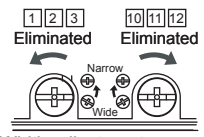
Use the area adjustment tool (B) as shown above to change the area depth angle.



2 Area width adjustment

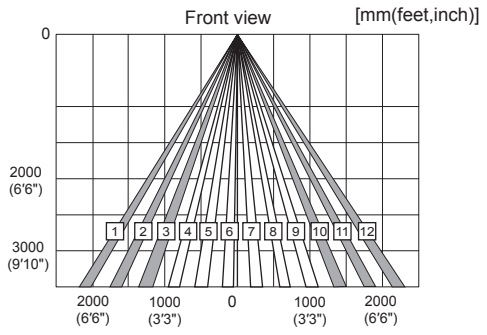
2-1 AIR adjustment

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



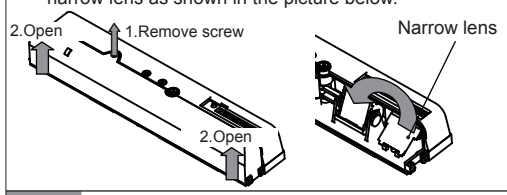
Width adjustment screws

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



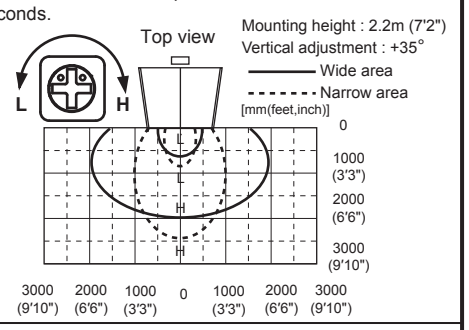
2-2 Microwave adjustment

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.

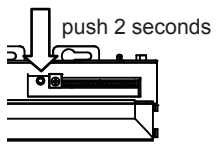


Table 2

AIR settings Microwave settings Other settings

	Function	Setting				Comment
Dipswitch 1 / Dipswitch 2	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 dipswitch are reference only. Adjust the sensitivity according to your risk assessment.
Dipswitch 3 / Dipswitch 4	Presence timer	30sec 3 4	60sec 3 4	180sec 3 4	600sec 3 4	To comply with EN16005, set the timer to " 30sec." or more.To enable the presence detection, do not enter the detection area for 10 seconds after setting the timer.
Dipswitch 5 / Dipswitch 6	Frequency	Setting1 5 6	Setting2 5 6	Setting3 5 6	Setting4 5 6	When using more than two sensors close to each other, set the frequency different for each sensor.
Dipswitch 7	Safety / Testoutput (to the door controller)	High 7	Low 7			
Dipswitch 8	Test input (from the door controller)	High 8	Low 8			The delay time between test input and Safety / Test output is 10msec.
Dipswitch 9	Direction	Bi 9	Uni 9			When dipswitch 9 is set to uni-directional, this setting enables the door to close earlier when a person walks away from the door.
Dipswitch 10	Autocaution	OFF 10	ON 10			When dipswitch 10 is set to ON, a person wavering in the motion detection area can be detected. This is only effective when dipswitch 9 is set to uni-directional.
Dipswitch 11	Immunity	OFF 11	ON 11			Set dipswitch 9 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	N.O. 12	N.C. 12			Not applicable
	Activation / Testoutput (to the door controller)	N.O. 12	N.C. 12			Not applicable
Dipswitch 13	AIR output	Safety 13	Safety + Activation 13			When dipswitch 13 is ON, the sensor outputs safety and activation simultaneously.
Dipswitch 14	Self monitoring	Enable 14	Disable 14			When the door remains open and the operation indicator shows fast / slow green blinking, refer to TROUBLESHOOTING. If the door still remains open, set dipswitch 14 to "Disable".To comply with EN16005, set the self monitoring to "Enable".
Dipswitch 15	Lookback	OFF 15	ON 15			When dipswitch 15 is set to ON, the lookback (1st row) 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. After setting the row switch dipswitch 16 OFF. During the installation mode only the 2nd row remains active and the operation indicator shows yellow.

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 Lookback (1st row)
Status			-	Stand-by	Motion detection active	Motion / Presence detection active		
Operation indicator			None	Green	Orange	Red	Red blinking	Blue
Activation output	PAS024AST	13 Safety	0V	*	<=0.5V	*		
		13 Safety + Activation	0V	*	<=0.5V	<=0.5V		
Safety / Test output		7 High	OFF	ON		OFF		
		7 Low	OFF	OFF		ON		

*3.2V@10mA Min.4.5V(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.)

TO COMPLY WITH EN16005

Make sure to confirm the following content to comply with EN16005.
1. Detection area settings (See **DETECTION AREA**)
2. Presence timer (See **ADJUSTMENTS 4. Dipswitch settings**)
3. Self monitoring (See **ADJUSTMENTS 4. Dipswitch settings**)

TROUBLESHOOTING

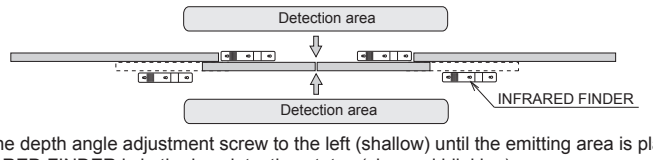
Door operation	Operation indicator	Possible cause	Possible countermeasures
Door does not open when a person enters the detection area.	None	Wrong power supply voltage.	Set to the stated voltage.
		Wrong wiring or connection failure.	Check the wires and connector.
	Unstable	Wrong detection area positioning.	Check **ADJUSTMENTS 1, 2 ,3 & 4**.*
		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 another sensor.	Check **Table 2** dipswitch 5, 6.*
		Waterdrops on the detection window.	Wipe the detection window with a damp cloth. Do not use any cleaner or solvent.
		Detection area overlaps with 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 and / or dipswitch 11 to ON.*
		Others	Set dipswitch 11 to ON.*
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.
		Setting error of dipswitches	Check **Table 2** dipswitch 7, 8, 12, 14.*
	Yellow	Installation mode is set to ON.	Set dipswitch 16 to OFF.*
	Fast green blinking	Sensitivity is too low.	Set the sensitivity higher.* Set AIR area width to "wide".
		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. Lower the sensitivity.* 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 of dipswitch and/or potentiometer	After changing the dipswitches and/or potentiometer settings, make sure to push the function switch for 2 seconds.
Proper operation	Slow green blinking	Signal saturation (Lookback)	Remove highly reflecting objects from the detection area. Lower the sensitivity.* Change the area depth angle for AIR area.

*After changing the dipswitches 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).

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