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Mounting and adjustment instructions

RIC 290

STANDARD (US)

Combi sensor with radar motion detector and active infrared presence detection

for applications in automatic entrance and door systems, for **wall- or ceiling installation**.

102-290401161 A (Original instruction)

E

ABBREVIATIONS

AKA	Actuation contact outside
AKI	Actuation contact inside
AIR	**A**ctive **i**nfra**r**ed presence detector
AIS	Safety sensor for side screen protection
EPC	Easy-Programmer
FEM	Function extension module
FPC	Service- and Flash programmer
IR	Infrared
LED	Light emitting diode
RAD	**Rad**ar motion detector
RIC	Combi sensor (radar infrared combined)
SA	Safety sensor outside
SFT	Sensor functional button
SI	Safety sensor inside
STM	Door control module

E

Symbols

Note *Especially useful details concerning installation.*

Attention *Special details essential for the satisfactory operation of the system.*

Caution *A possibly dangerous situation, which could lead to light injury and material damage.*

Warning *An imminent dangerous situation, which could lead to severe or fatal injury and cause extensive material damage.*

→ 14 *Cross-reference to other chapter*

1 SAFETY INSTRUCTIONS

Use for the intended purpose

*The combi sensor **RIC 290** with radar motion detector and active infrared presence detection is designed exclusively for normal applications in automatic entrance and door systems, for wall, ceiling or built-in installation. It is designed for the use in dry rooms and must be installed indoors or on the inner side of a building.*
It can also be mounted on the outer side, for which we recommend the optionally available weather shield.

Any other application or use beyond this purpose is not considered to be an intended purpose. The manufacturer bears no liability for any resulting damage; the operator alone shall bear the responsibility.

The intended purposes also include observation of the operating conditions specified by the manufacturer, such as the use of original accessories, as well as regular care, maintenance and repair.

Unauthorized modifications to the automatic door will release the manufacturer from all liability for any resulting damage.
All the instructions contained in this installation and adjustment manual must be observed to use this product for the intended purpose.

The CAN interface of the sensor can only be connected to door systems 20 or appropriate door controls from other operator families. Only use the cables delivered by record.

Installation, maintenance and repairs to the radar must only be performed by qualified and authorized personnel (technicians).

*The combi sensor RIC 290 has been constructed with state of the art technology and recognized technical safety regulations. The sensor complies with the requirements of **ANSI 156.10 codes**.*
Nevertheless, danger can arise if not used as intended.

To comply with the requirements, all appropriate instructions must be observed while adjusting the sensor.

Important hints, when using the microwave sensor RAD 290 in the US

15.19: This device complies with Part 15 of the FCC Rules and with RSS-210 of Industry Canada. Operation is subject to the following two conditions:
(1) this device may not cause harmful interference, and

(2) this device must accept any interference received, including interference that may cause undesired operation.

*15.21: Warning: Changes or modifications made to this equipment not expressly approved by **agtatec ag** may void the FCC authorization to operate this equipment.*

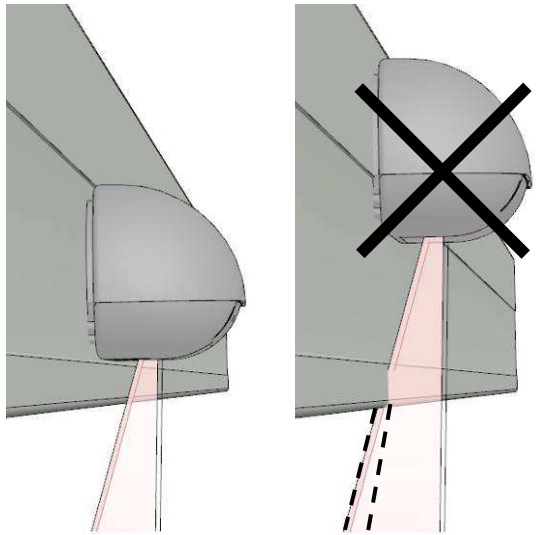
15.105: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- *Reorient or relocate the receiving antenna.*
- *Increase the separation between the equipment and receiver.*
- *Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.*
- *Consult the dealer or an experienced radio/TV technician for help.*

2 INSTALLATION
Opening the case

Insert screwdriver into front notches and press lower lid open.

2.1 *Positioning the sensor*



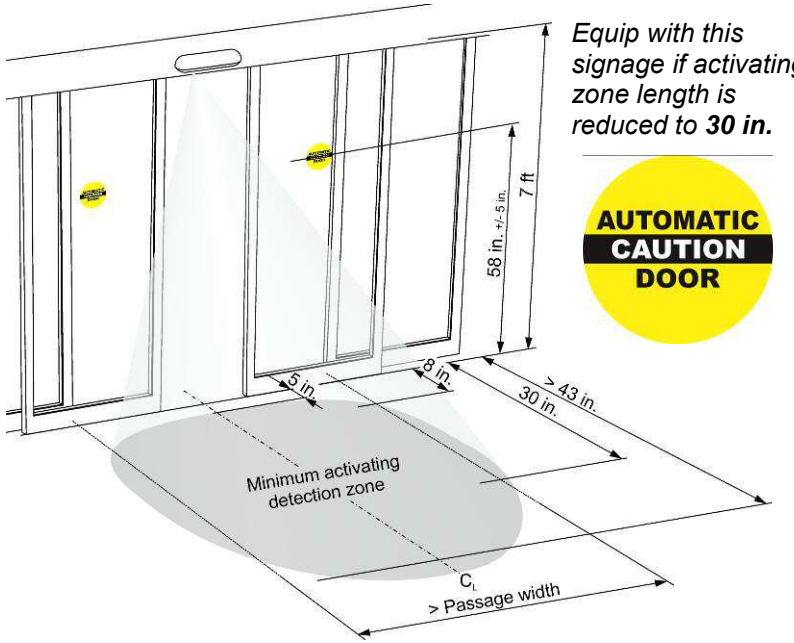
Position the sensor horizontally so that the light curtain is not influenced by objects.

2.2 *Positioning sensors in case of large passage width*

→ 8.2

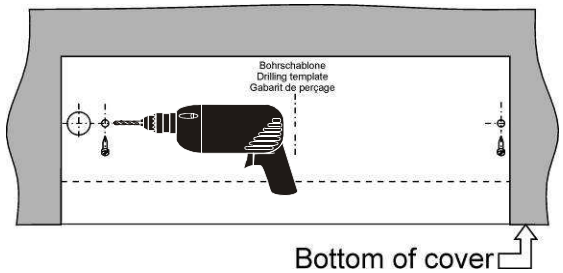
Installation height	*1 sensor*	*2 sensors*		*3 sensors**	*Distance sensor to sensor*
	Field width	*Field width*	*Distance sensors*	*Field width*	
[ft.]	*[ft.]*	*[ft.]*	*[ft.]*	*[ft.]*	*[ft.]*
6'7"	*6'11"*	*-*	*-*	*20'8"*	*6'11"*
6'11"	*7'3"*	*7'7"*	*1'*	*21'8"*	*7'3"*
7'3"	*7'7"*	*8'2"*	*1'*	*22'8"*	*7'7"*
7'7"	*7'10"*	*8'10"*	*1'*	*23'7"*	*7'10"*
7'10"	*8'2"*	*9'6"*	*1'4"*	*24'7"*	*8'2"*
8'2"	*8'6"*	*10'2"*	*1'8"*	*25'7"*	*8'6"*
8'6"	*8'10"*	*10'10"*	*2'*	*26'7"*	*8'10"*
8'10"	*9'2"*	*11'6"*	*2'4"*	*27'7"*	*9'2"*
9'2"	*9'6"*	*12'2"*	*2'7"*	*28'7"*	*9'6"*
9'6"	*9'10"*	*12'10"*	*3'*	*28'7"*	*9'10"*
9'10"	*10'2"*	*13'5"*	*3'3"*	*30'6"*	*10'2"*

** only on one side*

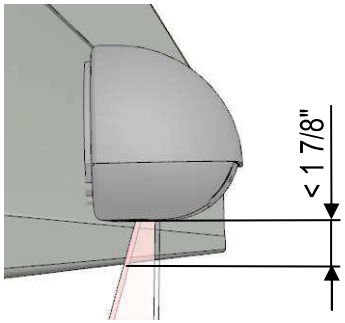


*Equip with this signage if activating zone length is reduced to **30 in.***

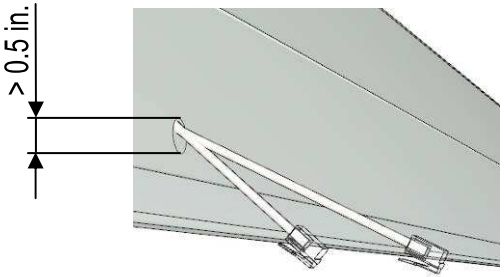
2.3 Drilling template



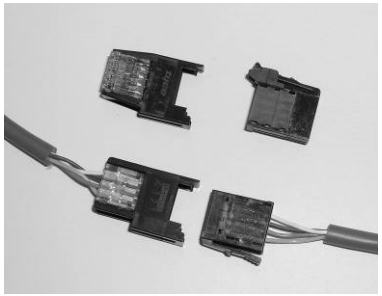
*Fix the drilling template **exactly in the middle,** drill.*
Do not mount onto vibrating base. Protect against influences of weather (rain, snow, etc.).



2.4 Insert the connecting wire



1-2 CAN cables = ∅ > 1/2”

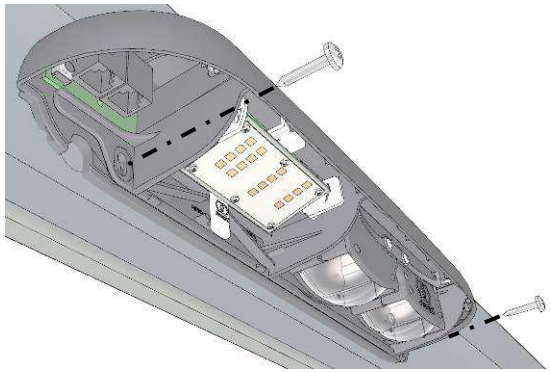


For smaller through-holes (∅ 2/5” – 1/2”) use 4-pole CAN-connectors.

102-015302 *socket*

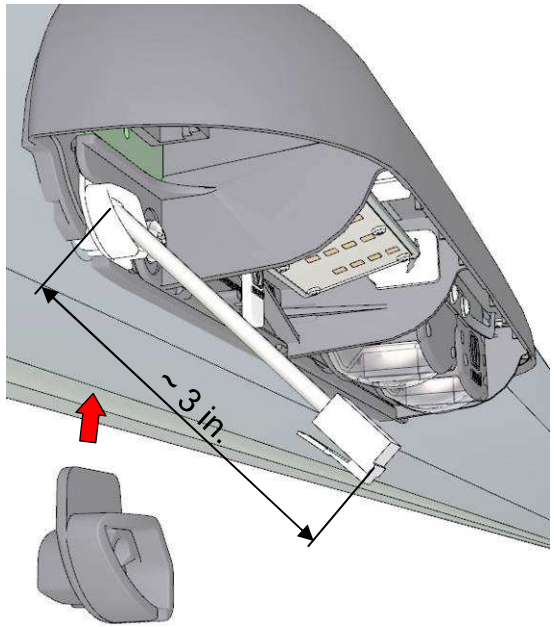
102-015303 *plug*

2.5 Installation of sensor



Don’t touch the electronic parts on the pc-board. Otherwise electrostatic discharge could damage the module.

2.6 Adjust the cable length

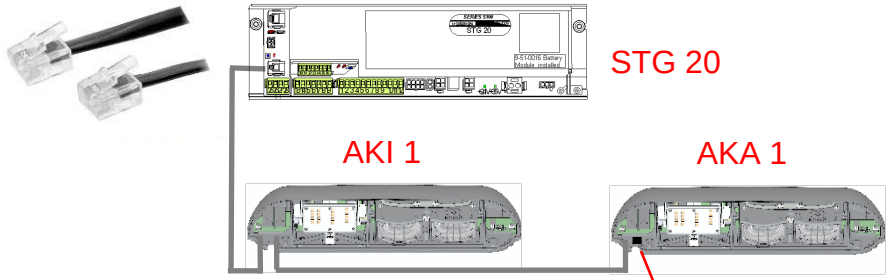


Adjust the cable length, use cable tie for pull relief.
Attach grommet onto cable and slide it under mounting frame.

3 WIRING
CAN bus system (figure shows an example)

- *The bus must basically be terminated at both ends (● = terminating resistance 120 Ω).*
- *Only use the cables delivered by record.*

102-020808481	*cable CAN, 3'3" (1000 mm)*
102-020808718	*cable CAN, 5' (1500 mm)*
102-020808406	*cable CAN, 8'2" (2500 mm)*



3.1 Wiring

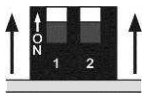
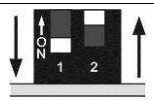
Example of sensor cable routing on backside of cover into header.

3.2 DIP switches to address the sensor

DIP1: Defines sensor position **interior** or **exterior**
DIP2: Defines sensor # **1** or **2**

Identification of the sensors, in case several of the same type are installed. ***Address the sensors or adjust the DIP switches before being installed and connected to the CAN bus!***

→ 15

RIC #	DIP switch setting	Device	Function	Output signal	IR-Code
1		***AKI 1***	*RAD*	*Actuating "inside"*	*1*
		SI 1	*AIR*	*Safety "inside"*	*11*
2		***AKA 1***	*RAD*	*Actuating "outside"*	*3*
		SA 1	*AIR*	*Safety "outside"*	*13*

Note: See page 15 table for addressing multiple sensors on each side of unit.

3.3 Plug in the connecting cable

Plug in the connector(s) carefully.
If only one CAN-cable is connected, please plug in the CAN-termination on the other connector. → ***No free socket!***

4 COMMISSIONING

While commissioning the system it is recommended to

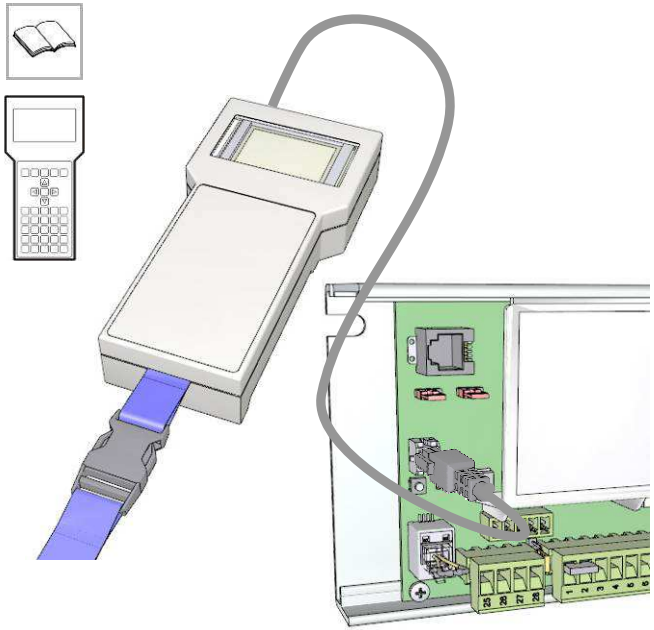
1. *first perform and complete the door learning and only then*
2. *prepare and connect the sensors according to the following data* — *chapters 2 to 4.2*
3. *start with the motion detector setup (AKI 1, AKI 2, AKA 1, AKA 2 → RAD **rad**ar motion detector)* — *chapters 5 to 5.4*
4. *activate and finish the sensor learning only for the motion detector (AKI 1… AKxx)* — *chapters 5.5 to 5.7*
5. *do the mechanical and parameter settings for the safety sensor (SI 1, SI 2, SA 1, SA 2 → AIR **a**ctive **i**nfra**r**ed presence detector)* — *chapters 6 to 6.6*
6. *check again the intended purpose, the functions meet customer requirements and make sure that the adjustments selected comply with the standard in force applied.*

If this operating order is not respected, door movements can be detected and can lead to self-irritation (uncontrolled openings).

If sensors 290 are connected to the bus but not listed, the setting of the DIP switches must be checked (→ same combinations?).

The number of sensors listed must tally with the number of (bus compliant) sensors installed.

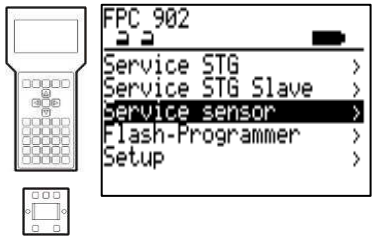
4.1 PARAMETERIZATION WITH FPC 902



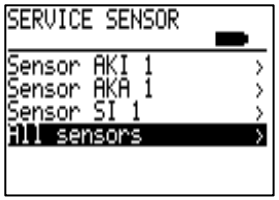
Parameterization on sensor (available on option):
- Service- / Flash programmer FPC 902 (recommended)
- Electronic BDE-D
- Easy-Programmer EPC 903

Connect with the control unit. Additional information can be found in the FPC 902 manual (No. 102-902108554, 102-902109444).

4.2 Setting parameters



→ **5.4**



*Parameter access with menu item **Service sensor**. If sensors are connected to the bus but not listed, the setting of the DIP switches must be checked.*

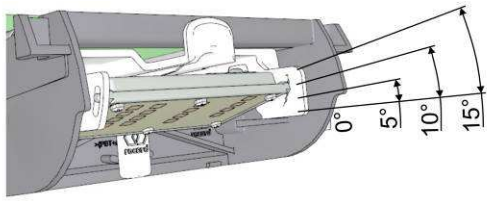
***Simultaneous parameter** settings for*

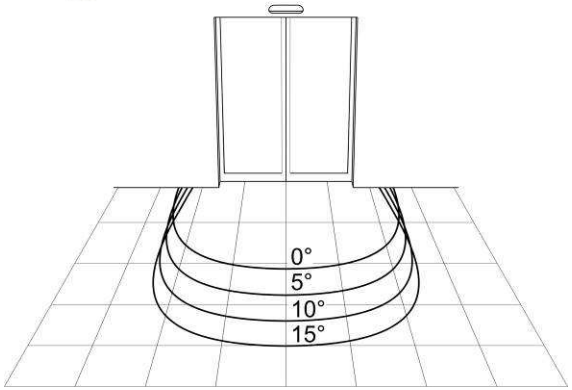
- Learning sensors
- Default settings
- Factory settings

*Select in **SERVICE SENSOR** menu the item **All sensors**.*

5 SETTINGS RADAR MOTION DETECTOR “RAD”
Adjust angle of inclination to position the activating detection zone

→ 4.1

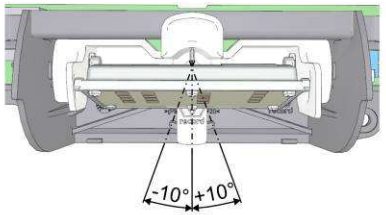


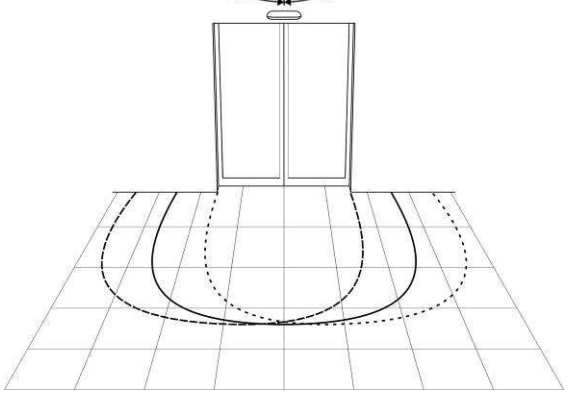


Locks in four 5° angle positions. Release of the position pin by gently pressing the right side clip outwards.

Adjust mechanical settings before programming.

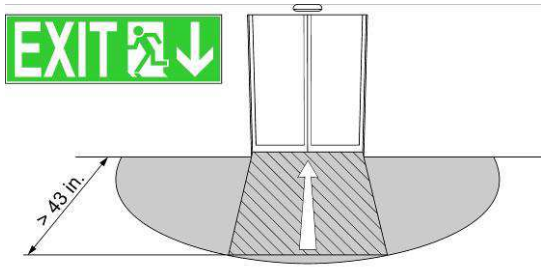
5.1 Lateral field adjustment of the antenna

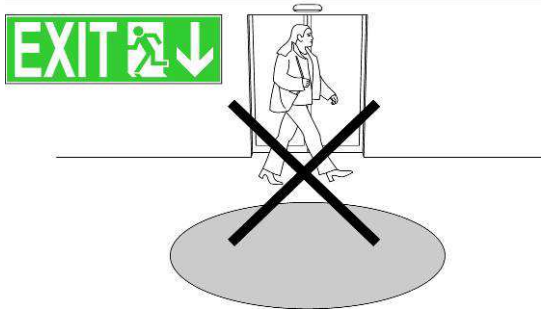




Locks in three 10° angle positions. Release of the pivot frame by gently pulling the clip below.

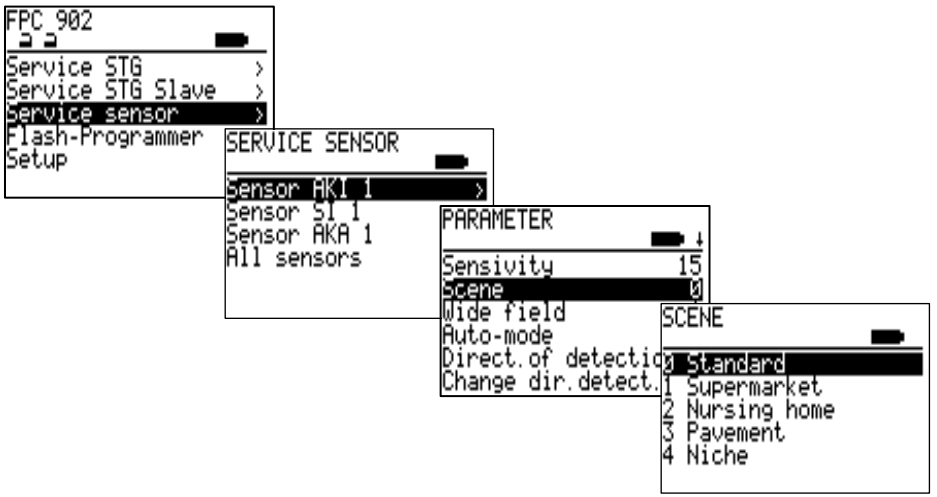
5.2 Field depth in exit routes





*For emergency exits the detection field must begin min. **43 in.** in front of the door.*

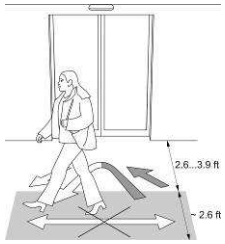
5.3 Quick parameter settings with scene selection



5.4 *Pre-programmed scenes for radar motion detector "RAD"*

RAD 

BDE-D, FPC 902: *Values in brackets ( )*

No.	*Scene*		*Passage width*	*Installation height*	*Install. position*	*Antenna angle*	*Remarks*
1 *(0)*	*Standard*		***< 6'7"***	***7*** *up to* ***8'6"***	*Surface mounted*	*5 -10°*	*Installation height >* ***8'6"*** *change to narrow field characteristic*
2 *(1)*	*Supermarket*		***> 6'7"***	***7*** *up to* ***8'6"***	*Surface mounted*	*5 -10°*	*Installation height >* ***8'6"*** *change to narrow field characteristic*
3 *(2)*	*Nursing home*		*as required*	***7*** *up to* ***8'6"***	*as required*	*5 -10°*	*Installation height >* ***8'6"*** *change to narrow field characteristic*
4 *(3)*	*Pavement*		*as required*	***7'***	*as required*	*5 -10°*	
5 *(4)*	*Niche*		*as required*	***7'***	*Surface mounted*	*0°*	

5.5 *Sensor learning with FPC 902*

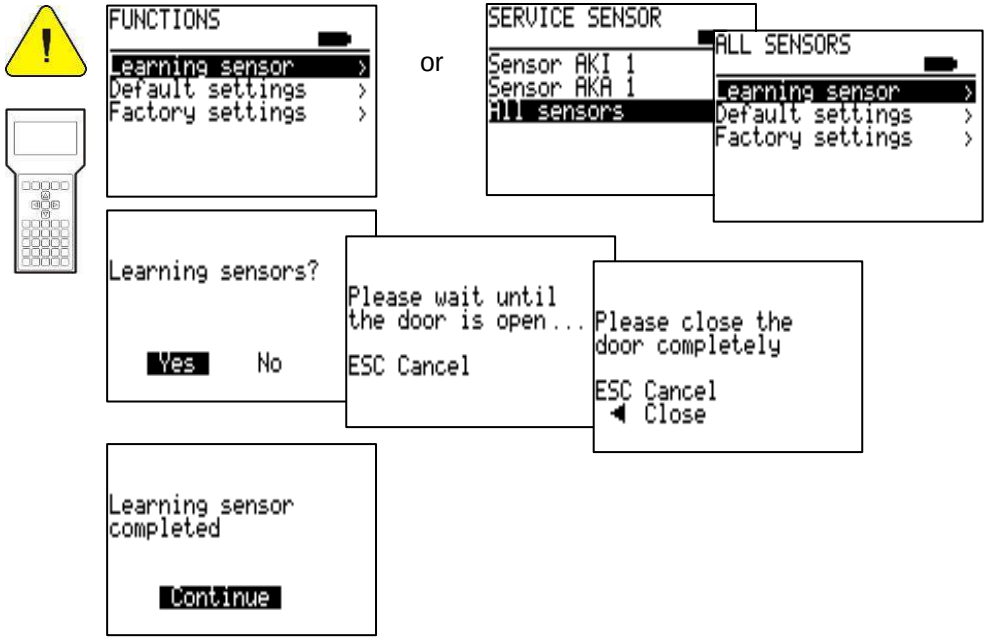
*If the sensor learning has not yet taken place, the status message **No running parameter** is displayed.*

It is possible either to learn an individual sensor or all sensors together.

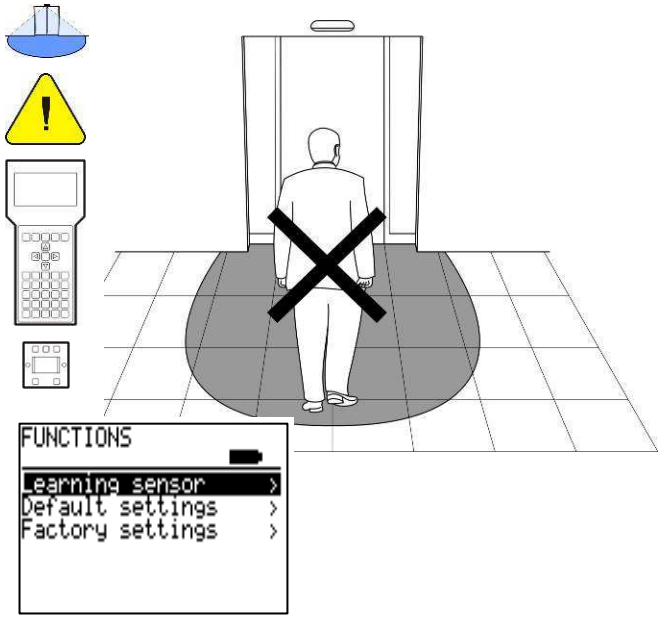
***RAD**: Learning the door movements.*

***AIR**: Learning the background.*

5.6 *Procedure for sensor learning with FPC 902*



5.7 RAD: *Sensor learning (Menu FUNCTIONS)*



*During the closing cycle the **radar sensor** is learning the door leave movements. Movements in the radar field during the sensor learning disturb the measuring and shall be prevented.*
The sensor learning must be repeated, if settings of the sensor or of the door have been modified or if people moved in the detection field during the learning.

Activate door leaf learning and leave sensing field. The learning is completed when the LED stops flashing.

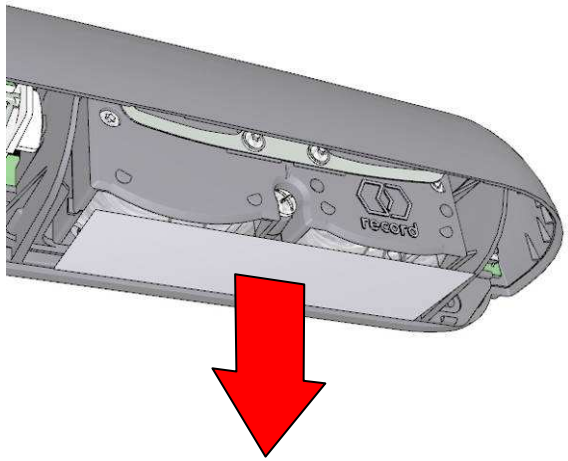
Recommendation: Activate sensor learning only if door leaf masking has been enabled.

Changes on the AIR sensor don't require any repetition of this sensor learning.

6 SETTINGS ON PRESENCE DETECTOR “AIR”

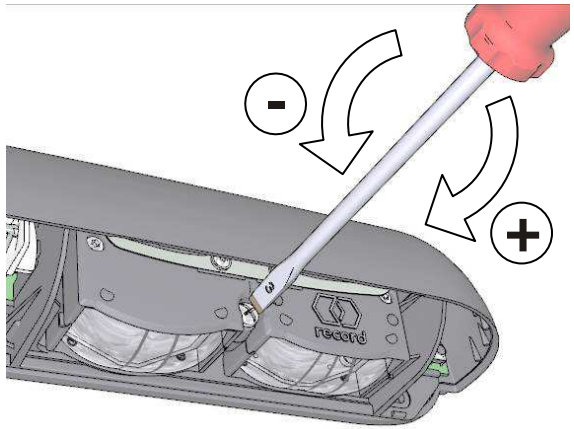
- *One has to make sure that the adjustments selected comply with the standard in force applied.*
- *The presence detector features a permanent **test function**, with which its flawless operating can be controlled several times during every cycle by means of the bus-connection to the system 20 door control.*

6.1 Remove protection film on AIR optic module

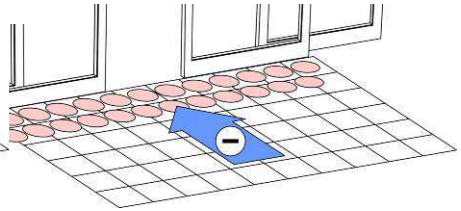


Remove the protection film from the AIR optic module.
Do not touch or soil the lenses with the fingers!

6.2 Adjust the angle of inclination of the optic module AIR



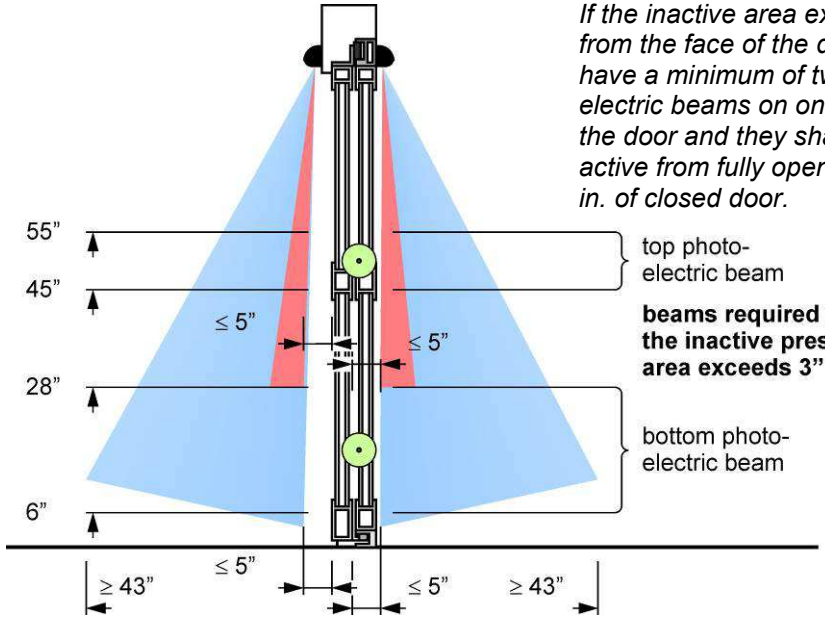
→ 6.6



The inclination angle of the AIR optic module has a setting range from -5° to +10°.
Factory setting: 0°

Adjust light curtain as near as possible to the moving door leaves.
Please note the background is modified through this operation and needs to be learnt again.

6.3 ANSI 156.10-2011: Sensor application on sliding doors



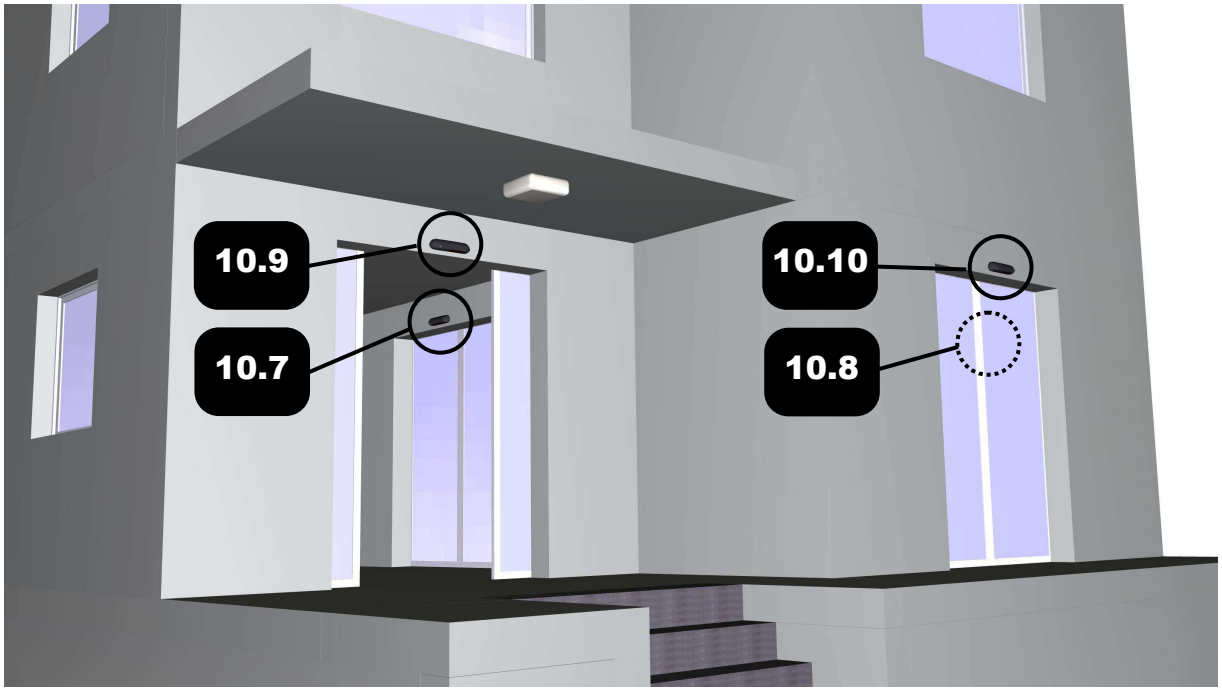
If the inactive area exceeds 3 in. from the face of the door, it shall have a minimum of two photo electric beams on one side of the door and they shall remain active from fully open to within 6 in. of closed door.

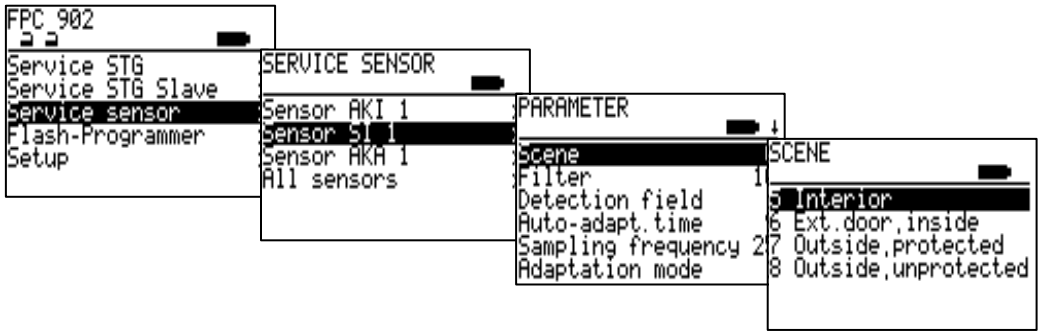
6.4 *Pre-programmed scenes for presence detector "AIR"*

AIR 

BDE-D, FPC 902: *Values in brackets ( )*

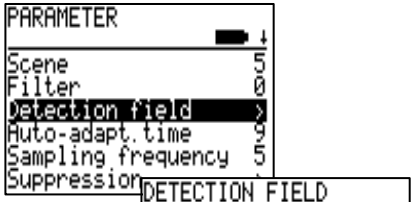
No.	*Scene*	*Filter*	*Auto adaptation time*
1 *(5)*	*Interior door*	*0 (exact single evaluation)*	*9 (60 s)*
2 *(6)*	*Inside, exterior door*	*20 (single eval. and footprints)*	*9 (60 s)*
3 *(7)*	*Outside, protected exterior door*	*30 (groups of 2 spots each)*	*9 (60 s)*
4 *(8)*	*Outside, unprotect-ed exterior door*	*30 (groups of 2 spots each, in-creased tolerance)*	*6 (30 s)*

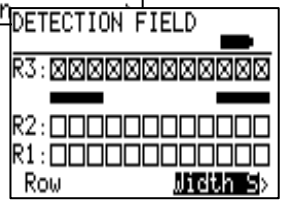


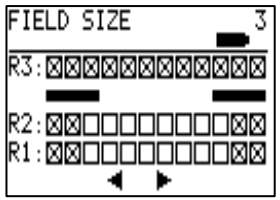


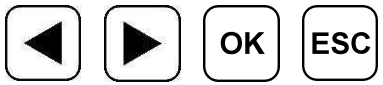
6.5 *Width of the presence detection field*

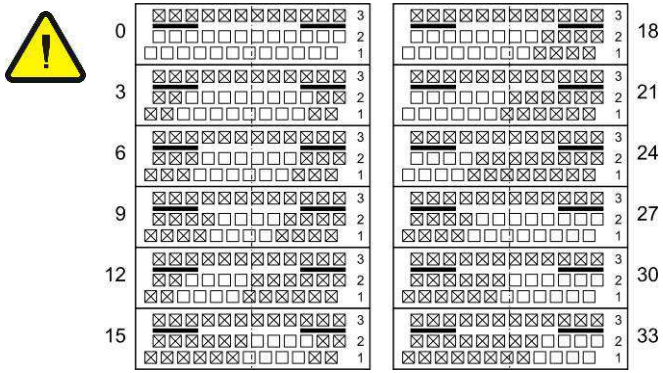
→ 6











Spot active without detection

Spot active with detection

Spot inactive

*Select in the **SERVICE SENSOR** menu for ex. identified **sensor SI 1** / **Parameter** the parameter **Detection field** (FPC 902) or **Field size** (BDE-D).*

On the FPC 902 the field width is graphically displayed:

*2 rows (R1-R2) with **12 spots** each are located on the fitting side of the sensor.*

Row R3 is not available.

The proper field width/position can be selected out of 12 predefined patterns with the left/right arrow key.

The relevant parameter value is displayed on the top right end of the screen.

OK: confirm entry
ESC: quit menu, escape

12 predefined patterns
(parameter value 0 - 33)

ANSI 156.10 (8.1.1)

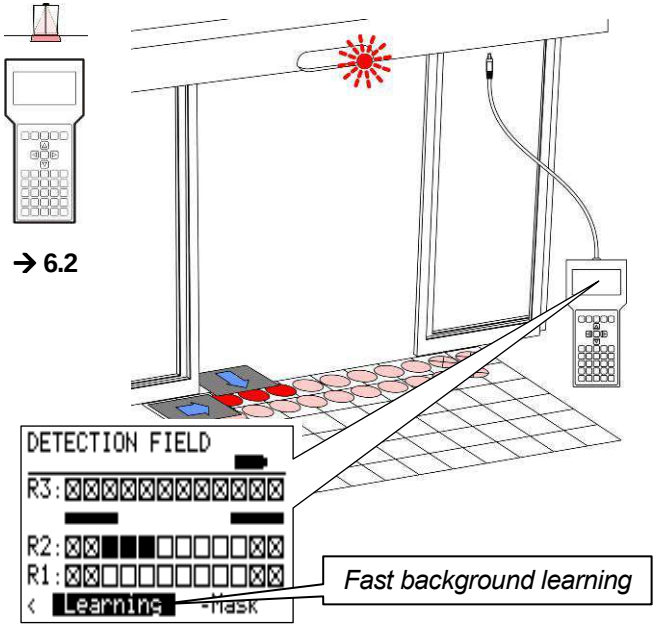
Width of detection field = min. passage width/clear door opening

Parameter / Detection field / Width / Set up with predefined patterns 1-12

Default: 0

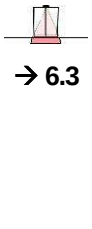
6.6 Testing field settings with FPC

→ 6.2

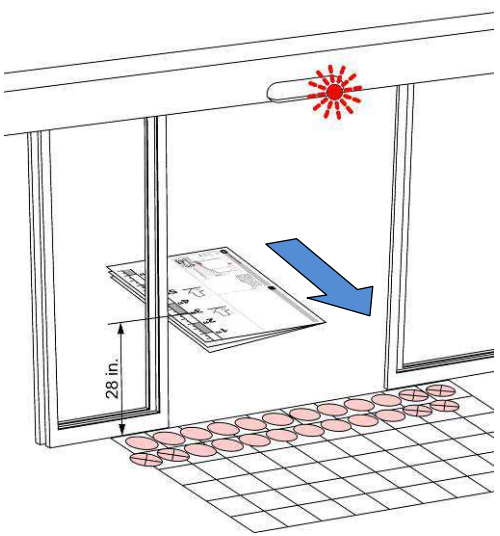


With open door, test the position using a paper sheet, e.g. A4 landscape format, and observe the red LED. For a good detection, select a high contrast to the background.

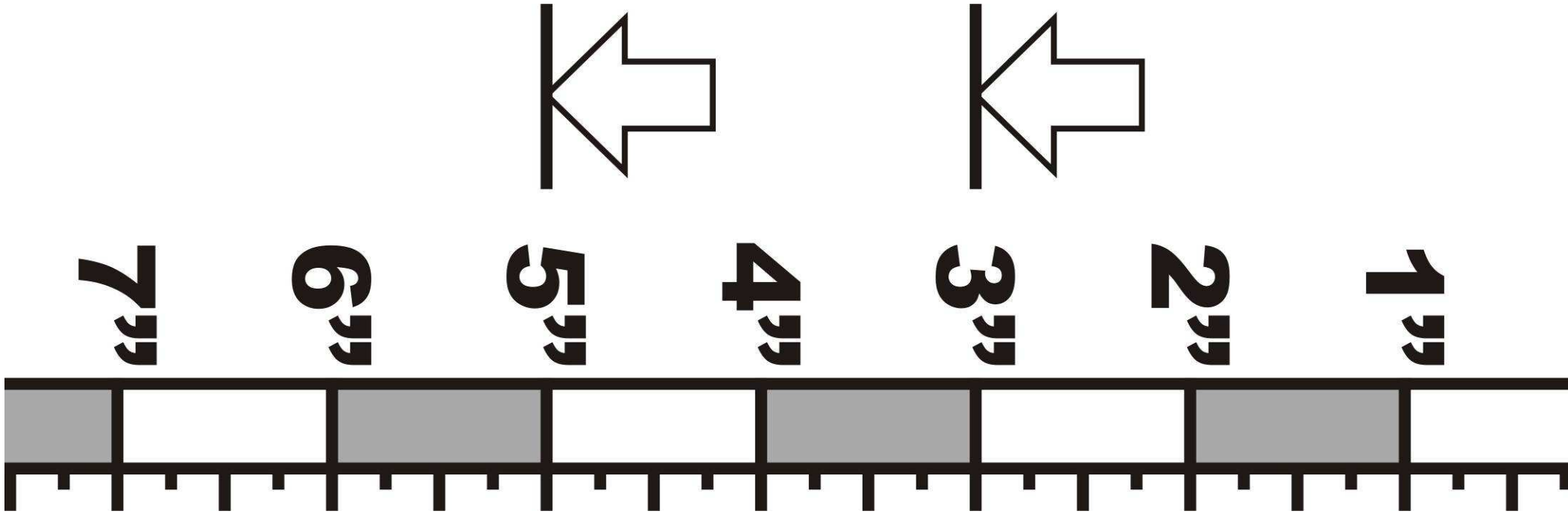
6.7 Testing field position with scale



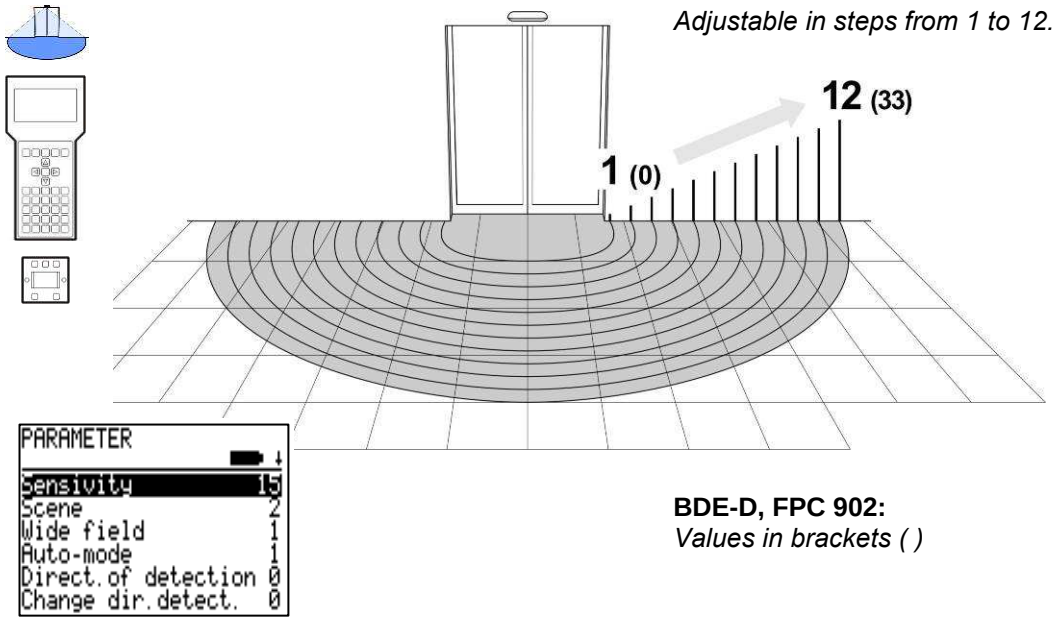
→ 6.3



With open door, test the position using the scale on this page of the manual and observe the red LED.

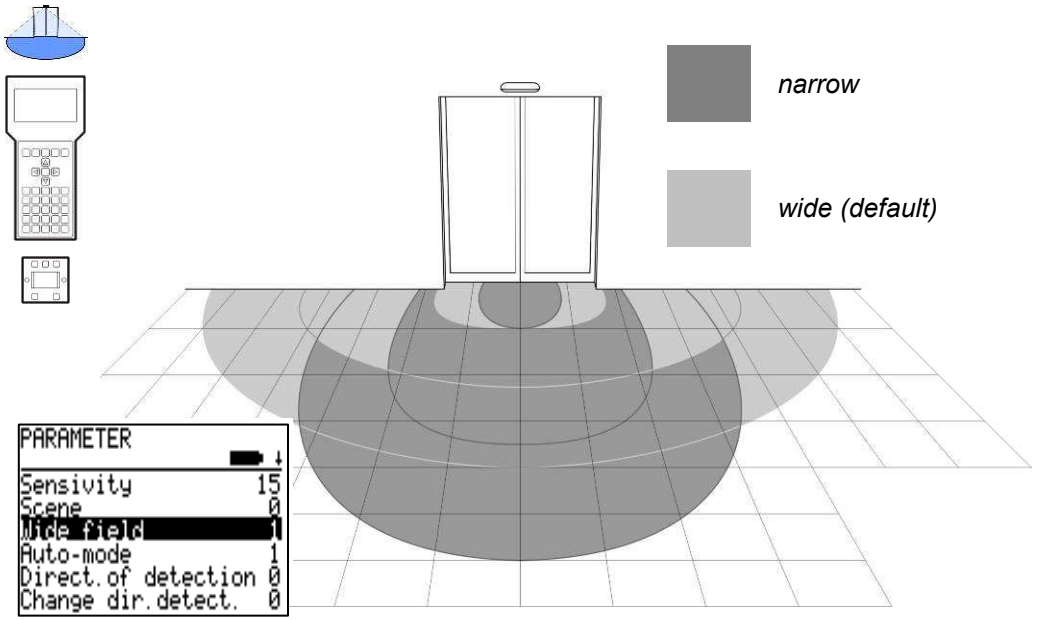


7 DETAILS PARAMETER MOTION DETECTOR “RAD”
Changing sensitivity

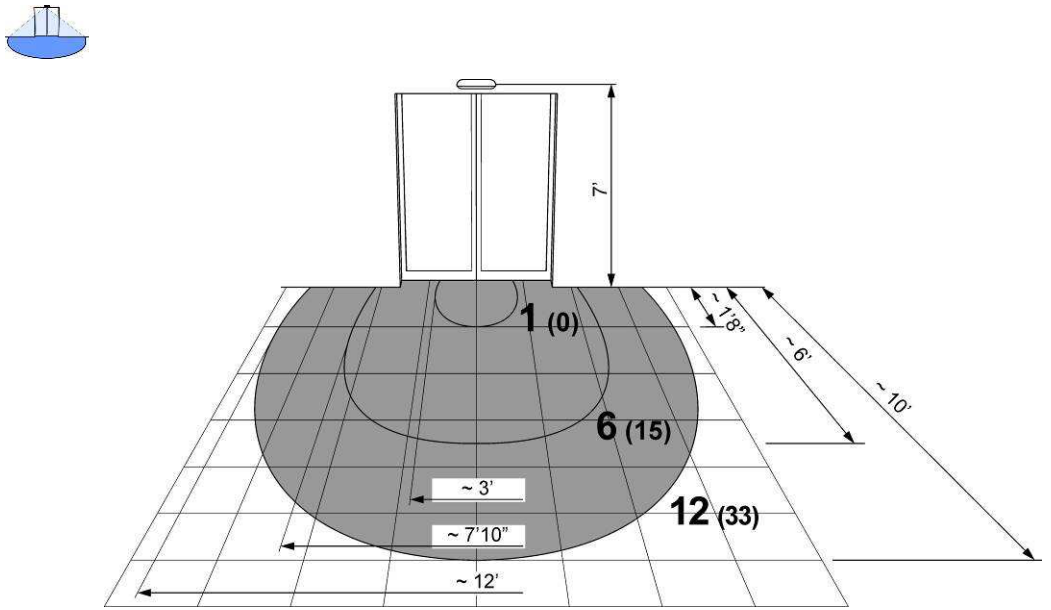


BDE-D, FPC 902:
Values in brackets ( )

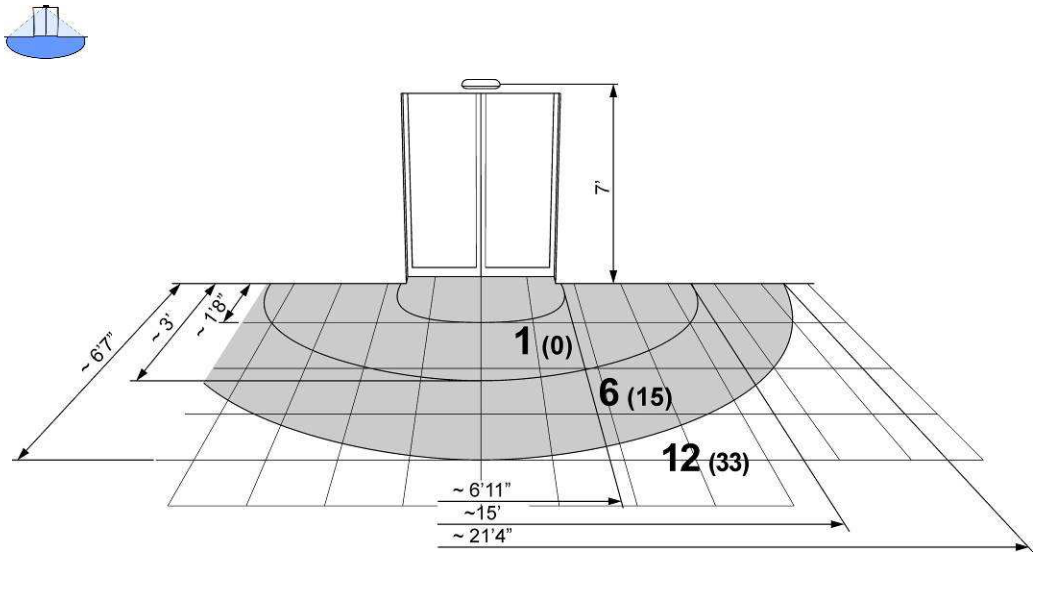
7.1 Characteristics of the sensing field



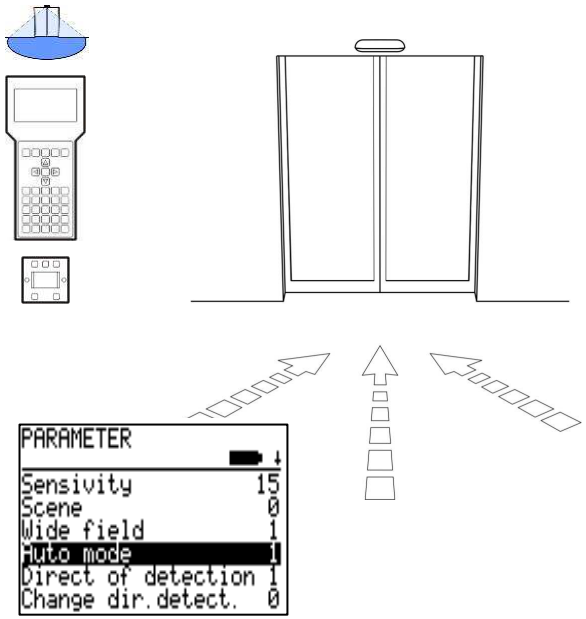
7.2 Sensitivity + narrow sensing field



7.3 Sensitivity + wide sensing field



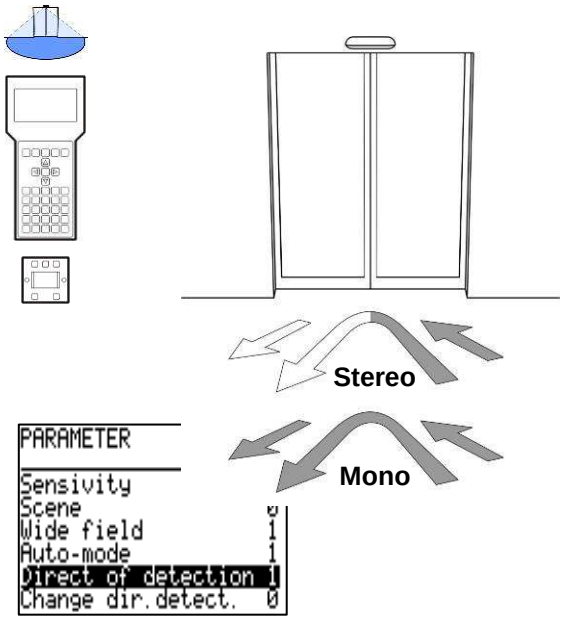
7.4 Auto-mode, Slow-motion



Detection of slow movements in the range of the sensing field. Normally enabled.

Default: 1 (Auto-mode ON)

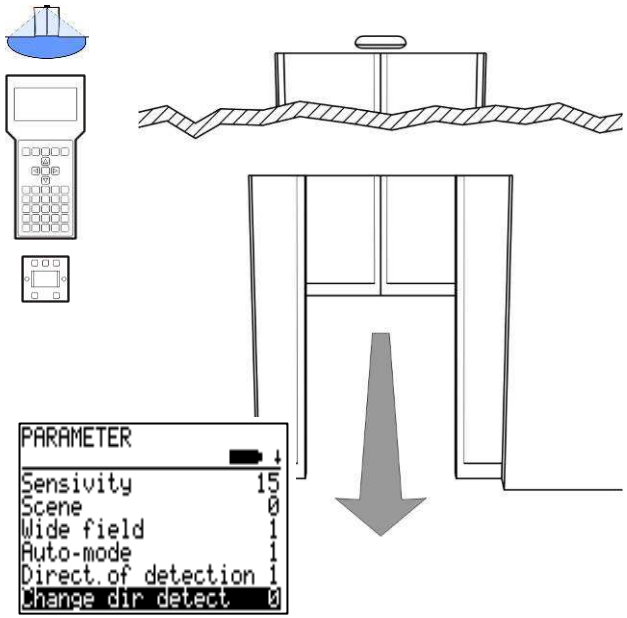
7.5 Detection of movement directions (stereo/mono)



***Stereo*: Detects only movements towards the radar. Movements away from the radar are not detected.**
***Mono**: Detects all movements*

Default: 1 (Stereo)

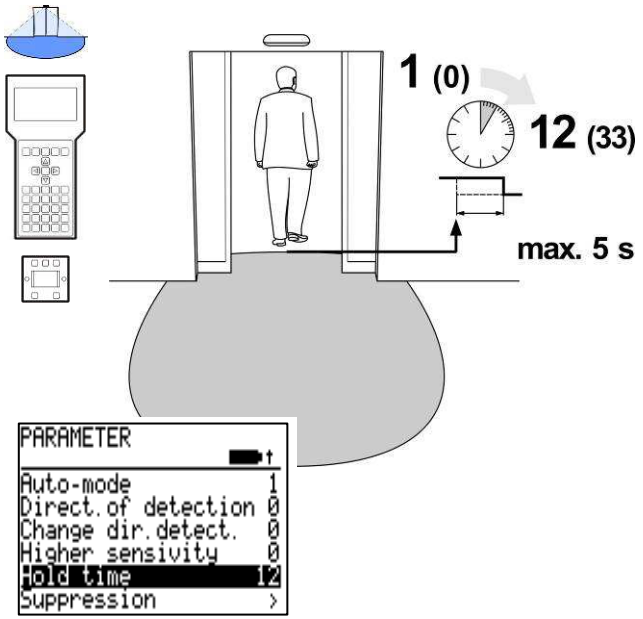
7.6 Direction reversal



Detects movements away from the radar.
*(**only in "stereo" mode, not available for AKI on redundant door controls**).*

Default: 0 (disabled)

7.7 Hold time

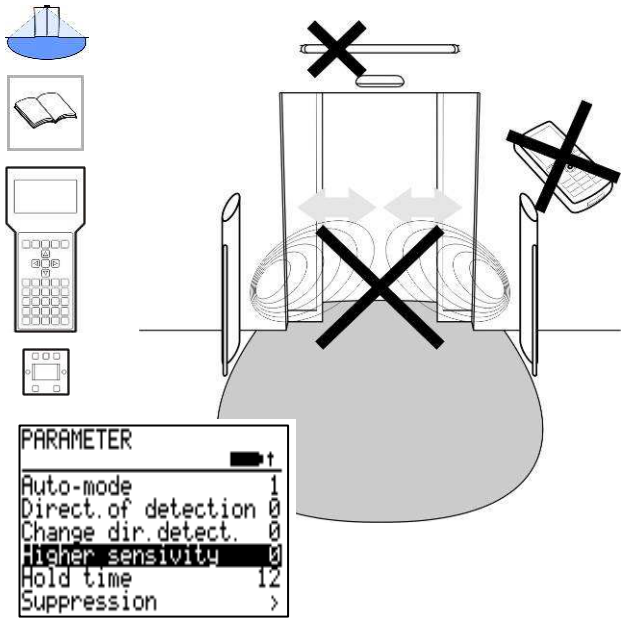


Retarded disconnection of output signal after leaving the sensing field. Adjustable in steps from 1 to 12.

ANSI 156.10: 1.5 s (15)

Default: 0.6 s (3)

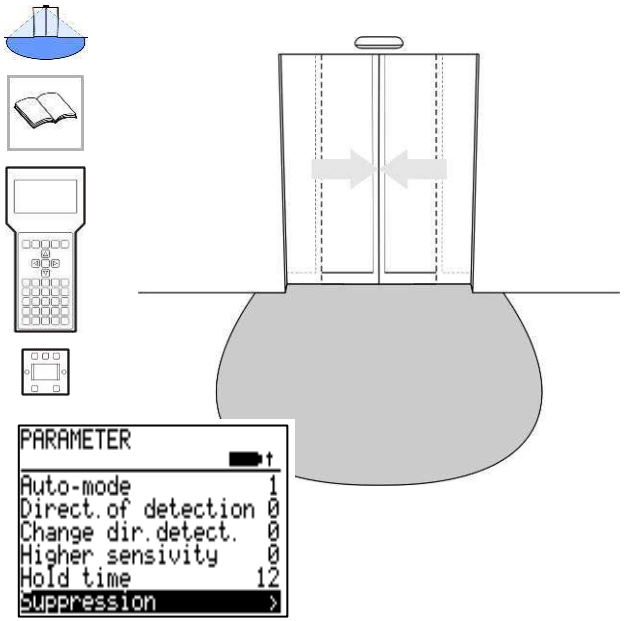
7.8 Higher sensitivity



Resistance to external interfering factors is reduced.
Only recommended for surrounding conditions FREE of interference.

Default: 0 (disabled)

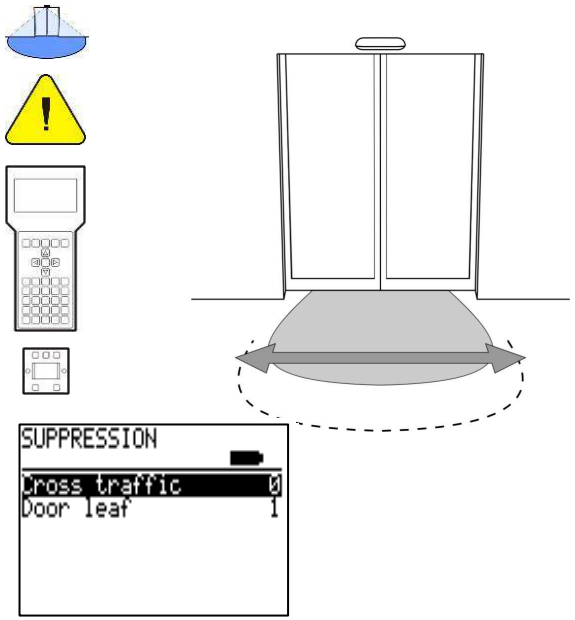
7.9 Door leaf masking



The movement of the door leaf is picked up during the sensor learning and is blinded to avoid any ghosting.
Factory setting: Door leaf masking enabled.

Default: 1 (enabled)

7.10 Cross traffic suspension

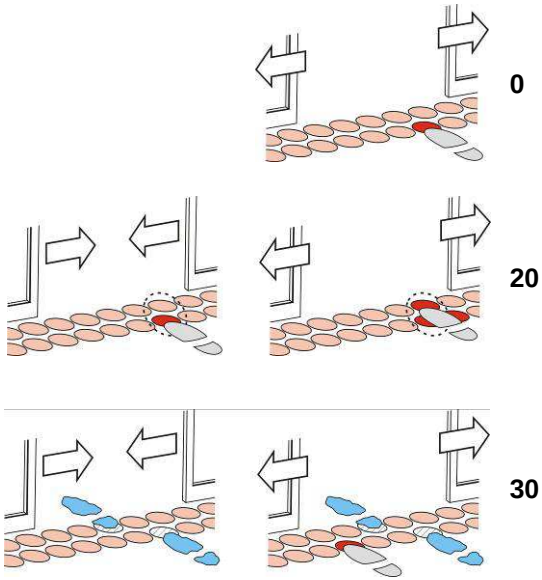


The size of the detection field becomes smaller.
For a better detection of toddlers the combination with the detection of slow movements is recommended.

Default: 0 (disabled)

8 DETAILS PARAMETER PRESENCE DETECTOR "AIR"

Filter functions



There are 5 stages (0 - 40) to set up filters.

In case of IR-spot groups all spots must be activated so that the door opens.

0 Exact single evaluation

10 Single + increased tolerance

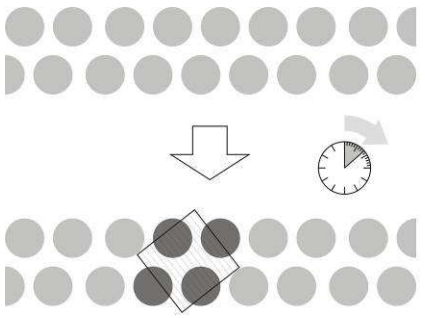
20 Single evaluation + foot prints (individual active spots are memorized after a short time)

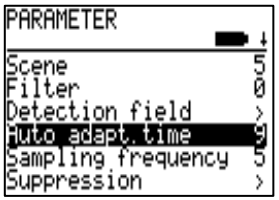
30 Groups of 2 spots each

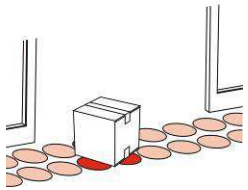
40 Groups of 2 spots each, increased tolerance

Default: 0

8.1 Auto-adaptation time







There are 9 stages (0 - 24) to set up the auto-adaptation time.

ANSI 156.10: 30 s (6)

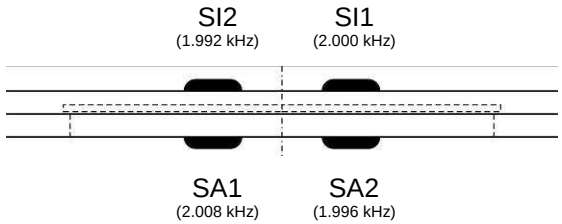
Any change in the background or detection of an object activates a new teach-in phase. After expiration of the programmed teach-in time the background is taught in.

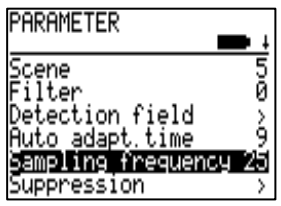
The background can also be taught in manually. ***→ 12.3***

Stage 1	*5 s*	*(0)*	*Stage 5*	*2 min*	*(12)*
Stage 2	*15 s*	*(3)*	*Stage 6*	*5 min*	*(15)*
Stage 3	*30 s*	*(6)*	*Stage 7*	*15 min*	*(18)*
Stage 4	***60 s***	***(9)***	*Stage 8*	*30 min*	*(21)*
			Stage 9	*60 min*	*(24)*

Default: 60 s (9)

8.2 Sampling frequency





There are 6 values (0 - 25) to set up the sampling frequency.

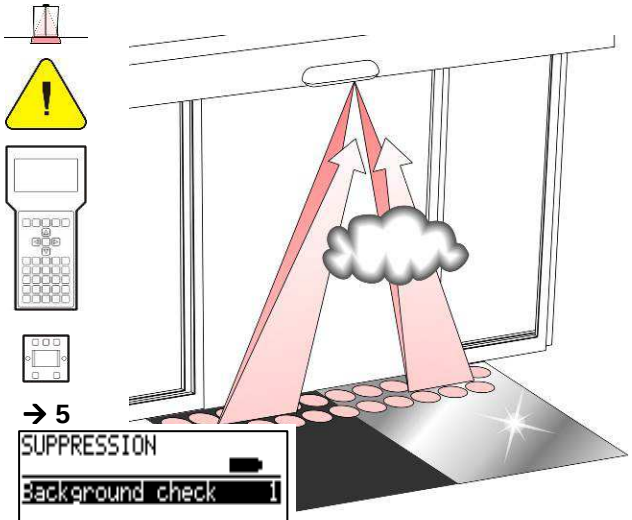
If several sensors are installed side by side, different sampling frequencies must be set. The frequency is automatically assigned thanks to the adjustment of DIP-switches.

The sampling frequency is only reset in case of loading the factory settings.

f1	*2 kHz*	*(0)*	*(*SI1)*
f2	*1.992 kHz*	*(5)*	*(*SI2)*
f3	*2.008 kHz*	*(10)*	*(*SA1)*
f4	*1.996 kHz*	*(15)*	*(*SA2)*
f5	*2.004 kHz*	*(20)*	
auto*		***(25)***	

Default: auto (25)

8.3 Background check



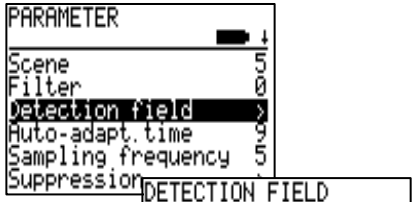
Regardless of filter settings the background check can be switched on or off.
The IR-light reflected gives information about the composition of the background (floor) and the distances.

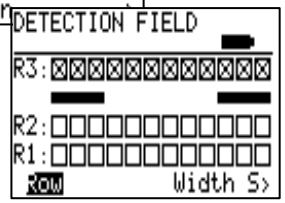
Negative influencing factors:
- floor reflects too strongly
- background absorbs too much energy
- installation height up to 9'10"
- dirty filter discs/lenses
- fog, smoke, particularly dusty air

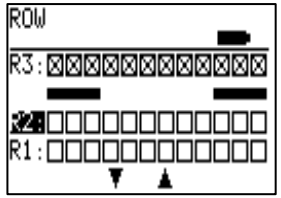
Default: active

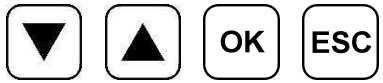
8.4 *Depth of the presence detection field*

→ 6









*Select in the **SERVICE SENSOR** menu for ex. identified **sensor SI 1** / **Parameter** the parameter **Detection field** (FPC 902) or **Row** (BDE-D).*

On the FPC 902 the status of the IR-rows are graphically displayed:

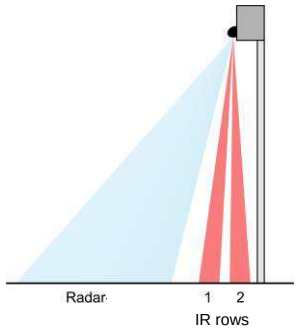
***2 rows** (R1-R2) with **12 spots** each are located on the fitting side of the sensor.*

Row R3 is disabled.

It is possible to select one single row with the arrow keys up and down.

The name of the row selected is displayed inverted.

OK: enable/disable
ESC: quit menu, escape



ANSI 156.10:

Detection field: rows 1 + 2 active
Parameter / Detection field / Row / R1 + R2 active

*The light curtain has to be adjusted to within **3”** of the face of the active door leaf without safety beams.*
With two sets of safety beams the curtain has to be within 5” of the face of the active door leaf.

Spot active without detection

Spot active with detection

Spot inactive

Default: R1 + R2

9 FUNCTIONS: Sensor learning with SFT

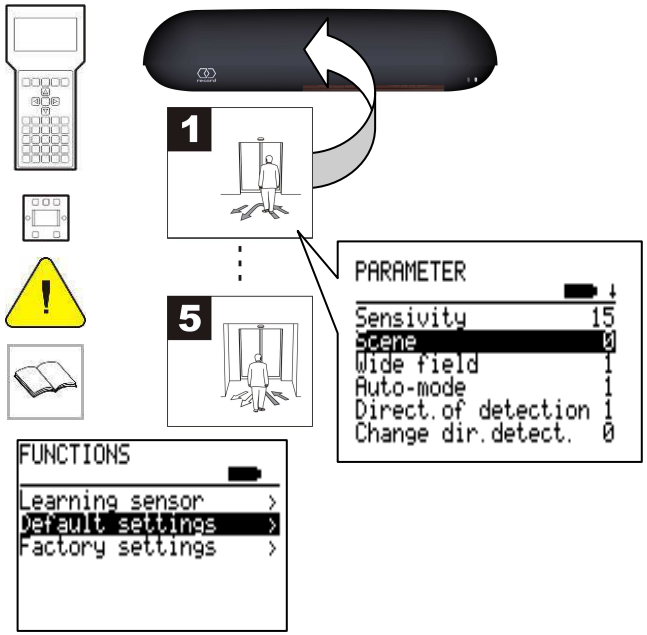
→ 11.2

		*Mode of operation* ***Hold open***
SFT		*2nd light pulse:* ***Learning sensor*** *for single sensor.*
		Movements in the radar field during the sensor learning disturb the measuring and shall be prevented. The sensor learning must be repeated, if settings of the sensor or of the door have been modified or if people moved in the detection field during the learning.
		*Mode of operation* ***Automatic***
		While the door is closing the sensor is learning the door moving. When the door closes thoroughly and the LED of the sensor stops flashing, the sensor learning is completed.

9.1 Learning sensor with BDE-D or EPC 903

		*Mode of operation* ***Hold open***
SFT		*4th light pulse: Configuration mode (technical level)*
+ 	E  record	***Learning sensor*** *for single sensor*
 C		*Exit the menu*
		*Mode of operation* ***Automatic***
		While the door is closing the sensor is learning the door moving. When the door closes thoroughly and the LED of the sensor stops flashing, the sensor learning is completed.

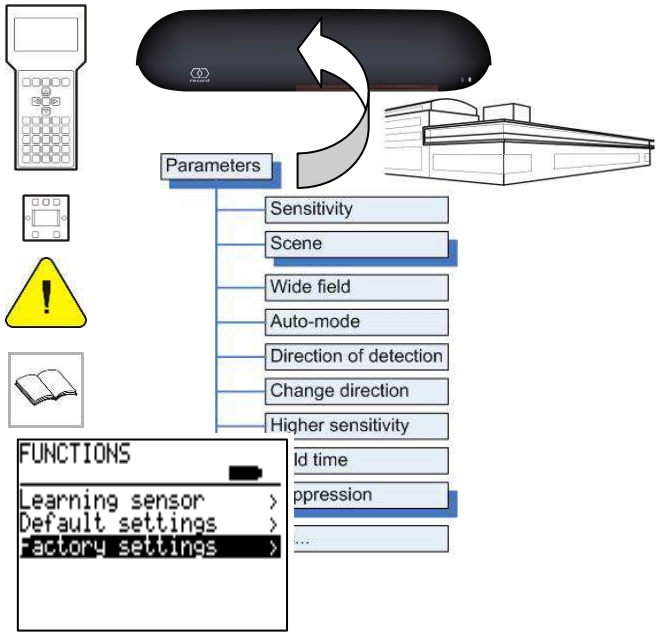
9.2



Default parameter loading of preselected scene.

All the parameters of the preselected scene are overwritten in the process.
This function cannot be reverted!

9.3



Factory settings of programming.

All the parameters of the sensor are overwritten in the process.
This function cannot be reverted!

10 OVERVIEW OF ALL PRE-PROGRAMMED SCENES

RAD

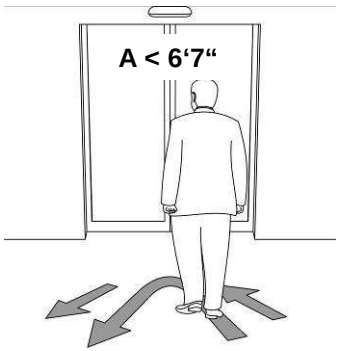
No.	Scene	Antenna angle	Field width	Mode	Automode	Sensitivity	Hold time	Suspension
1 (0)	Standard	5-10°	wide	Stereo	ON	6 (15)	0.5 s (6)	OFF
2 (1)	Supermarket	5-10°	wide	Mono	ON	9 (24)	0.5 s (6)	OFF
3 (2)	Nursing home	5-10°	wide	Mono	ON	8 (21)	0.8 s (12)	OFF
4 (3)	Pavement	5-10°	narrow	Stereo	ON	6 (15)	0.5 s (6)	ON
5 (4)	Niche	0°	narrow	Stereo	ON	3 (6)	0.5 s (6)	OFF

AIR

No.	Scene	Filter	Auto adaptation time
1 (5)	Interior door	0	60 s (9)
2 (6)	Inside, exterior door	20	60 s (9)
3 (7)	Outside, protected exterior door	30	60 s (9)
4 (8)	Outside, unprotected exterior door	30	30 s (6)

BDE-D, FPC 902: *Values in brackets ( )*

10.1 Normal operation

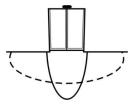


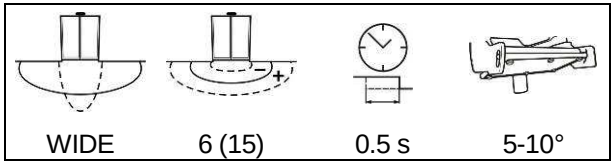
Surface-mounted

for medium - large-sized field

Height of installation: ***7’…***

> 8’6” →



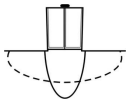


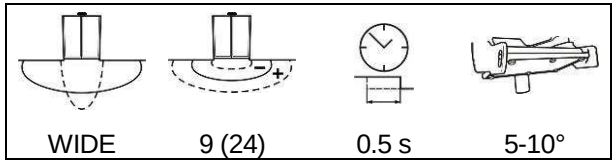
10.2 Supermarket

Surface-mounted

Height of installation: ***7’…***

> 8’6” →

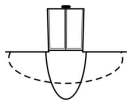




10.3 Nursing home

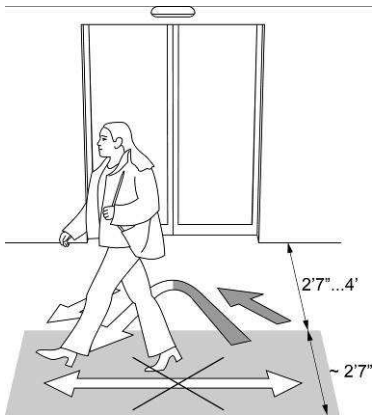
Height of installation: ***7'…***

> 8'6" →



WIDE	8 (21)	0.8 s	5-10°

10.4 Pavement



Height of installation: ***7'***

NARROW	6 (15)	0.5 s	5-10°

10.5 Niche

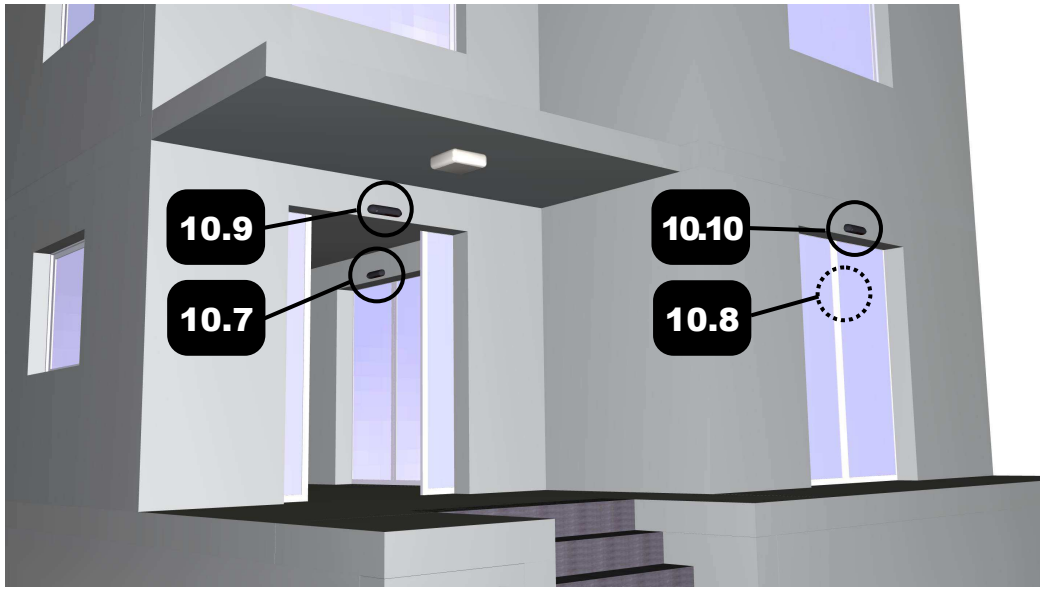
Surface-mounted
for medium - large-sized field

Height of installation: ***…7'***

NARROW	3 (6)	0.5 s	0°

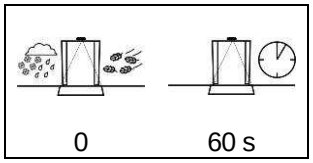
Notes

10.6 *Pre-programmed scenes*



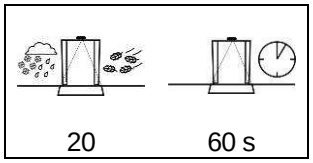
10.7 *Interior door*

Interior door protected from climatic influences with unproblematic ambient conditions.



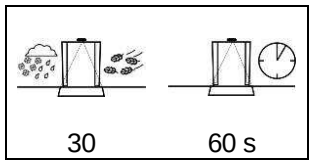
10.8 *Exterior door, installation inside*

Protected from climatic influences, occasional alteration due to wet and dirty foot prints.



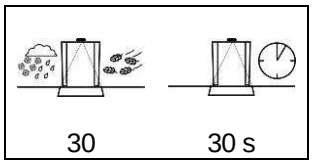
10.9 *Outside, protected exterior door*

Outside installation protected from climatic influences, e.g. with awning.

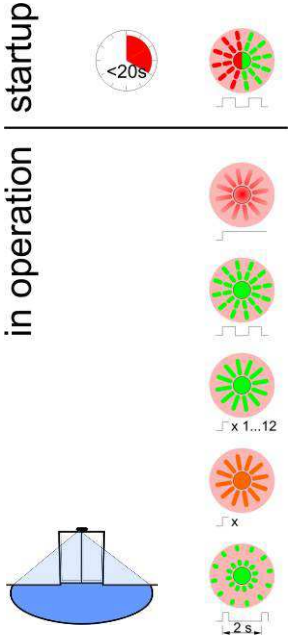


10.10 *Outside, unprotected exterior door*

Outside installation exposed to climatic influences, with solar radiation or rainfall.



11 LED SIGNALS
Radar motion detector RAD



Self-test
< 20 s
(green)

Sensor is powered, lights up faintly
(red)

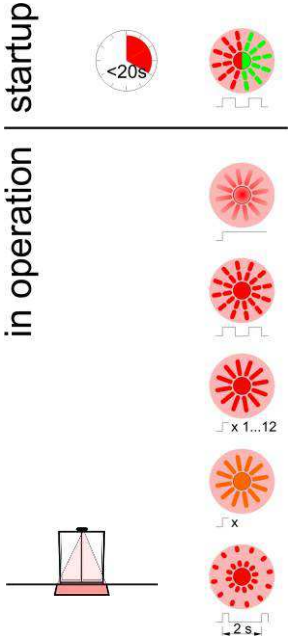
The radar detects an object
(green)

Return information of the current value
(green)

Error
(orange)

Programming mode
(green)

11.1 Presence detector AIR



Self-test
< 20 s
(red)

Sensor is powered, lights up faintly
(red)

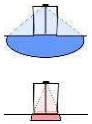
Presence sensor detects/is learning
(red)

Return information of the current value
(red)

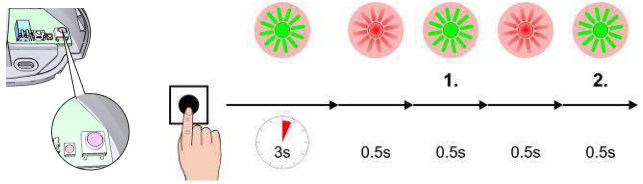
Error
(orange)

Programming mode
(red)

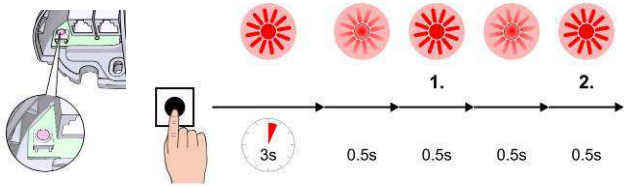
11.2 RAD: Sensor function key SFT (button 2)
AIR: Sensor function key SFT (button 1)



RAD



AIR

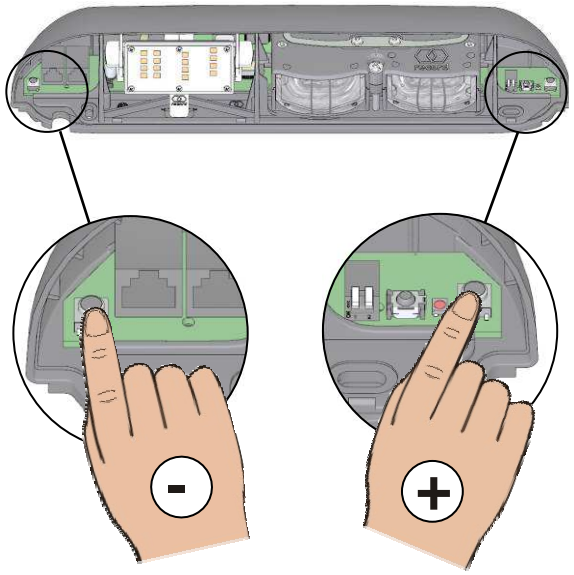


Functions are selected using the close-by control-LED.
*Press switch **longer than 3 seconds**, until LED starts blinking.*

Light pulse		***Function***	
2.		*Learning single sensor (RAD only)*	
4.		*Configuration mode (technical level)*	
8.		*Default parameter loading locally*	
9.		*Factory settings locally*	

11.3 Adjust sensitivity with SFT

→ 7



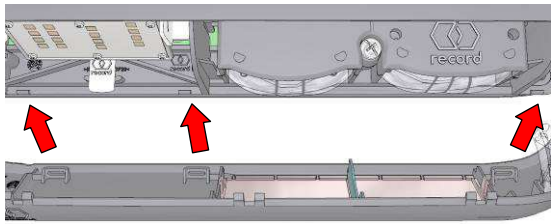
Adjustable in steps from 1 to 12.

*Press the push-buttons **+** or **–** to adjust the sensitivity.*
Numbers of light pulses = steps of sensitivity.

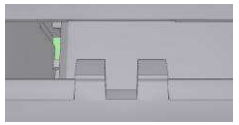
- 1...12 +

Default 6 (15)

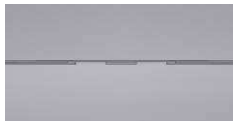
12 FINISH: Mounting of lower part of case



Position on rear side and click into place with a slight pressure at the front.

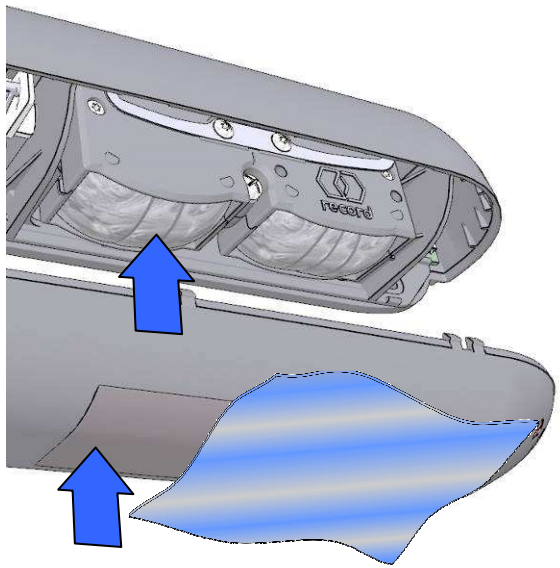
a 

open

b 

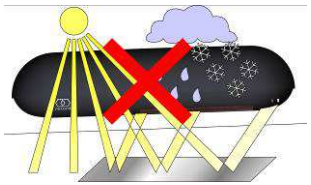
closed

13 MAINTENANCE: Cleaning optical components

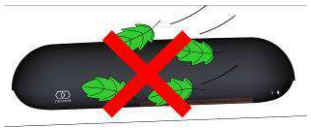


Clean soiled filter disc (and lenses) with water and mild washing-up liquid if necessary. Dry them afterwards with a soft cloth or paper.

14 POSSIBLE INTERFERENCES



Weather



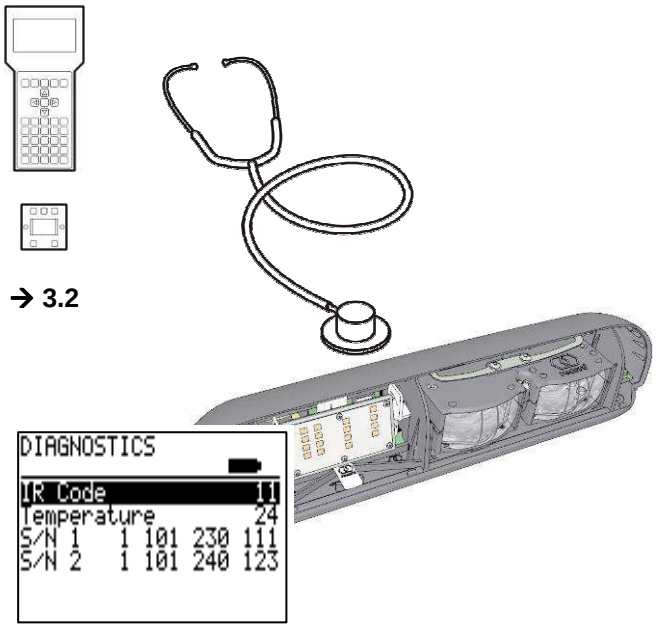
Leaves

Covering

Lighting

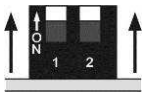
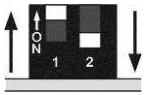
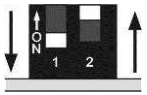
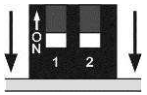
Vibrations

15 DIAGNOSTICS



→ 3.2

*Releasing **IR code** depending on DIP switch settings.*

RIC #	DIP switch setting	Device	Output signal	IR-Code
1		**AKI 1**	Actuating “inside"	1
		SI 1	Safety “inside”	11
2		**AKI 2**	Actuating “inside"	2
		SI 2	Safety “inside”	12
3		**AKA 1**	Actuating "outside"	3
		SA 1	Safety "outside"	13
4		**AKA 2**	Actuating "outside"	4
		SA 2	Safety "outside"	14

Remote control: Enabling of the IR interface with IR code (1…14) of the sensor.

Information about sensors, such as temperature and serial numbers, can be read.

15.1 Error elimination

Symptom / error	Possible cause	Remedy
The door does not open, LED does not function:	Sensor is not powered.	Check connections.
	Sensor is defective.	Replace the sensor.
The door keeps opening and closing (green LED flashes):	Motion sensor «picks up» movement of door leaves.	Repeat the door learning cycle / enable door leaf masking.
The door opens and closes after a certain time, without reason:	Motion sensor detects vehicle movement outside pedestrian detection range.	Adjust angle of inclination or sensitivity.
The door doesn’t close. Sensor is permanent active: (red LED flashes)	Light curtain in sliding range of door leaves.	Readjust light curtain to the moving door leaves. (→ 6.2)
	Problematic environment conditions (→ 8.3).	Adjust the filter settings or disable background test. Note conformance of settings! (→ 6)
LED flashes orange:	Hardware defect of the sensor.	Replace the sensor.

15.2 Error display of additional units on CAN bus (only with FPC)

Those error numbers consist of 4 digits as follows:

- *Digits 1 + 2 indicate the reason of the error*
- *Digits 3 + 4 specify the name of the unit*

*Example: error number **1616** means that sensor AKI 1 does not have any teaching parameter and a teach-in run has to be performed.*

Digits 1+2	Digits 3+4	Display text	Comments	Possible troubleshooting
11	--	CAN node not found	CAN connection interrupted	Control connection
12	--	CAN connect.(SEND)	Send CAN connection	Control connection
13	--	CAN connect.(RECV)	CAN connection received	Control connection
14	--	EEPROM defective	EEPROM faulty	Load factory settings. Replace unit
15	--	EEPROM void	EEPROM empty	Load factory settings. Replace unit
16	--	No running parameter	No teaching parameters available	Perform teach-in run
17	--	HW defective	Hardware faulty	Replace unit
18	--	Redundancy path	Redundant radar sensor faulty	Reset or restart control unit
19	--	Background check	The background is not appropriate for this sensor or installation is too high, or weak IR light intensity	Check/reduce installation height, disable function. Error in IR part, replace unit.
20	--	Software error	An error has arisen in the software of the external unit.	Carry out a new start. If the error is still active after this, the unit must be replaced.
21	--	CAN connection blocked	The anti-burglary protection has responded and locked the CAN connection to the external unit.	If the door is locked, no external units, such as BDE-D, FPC and FEMx, may be connected to the CAN bus. Unlock door, briefly press MFT key or actuate the EMERGENCY STOP switch.
22	--	SAFETY_LEVEL	The AKI sensor is not allowed for the security level required by the RED door controller.	Replace sensor with an appropriate redundant sensor.
23	--			
24	--			
--	**08**	SENS SI 1	SI 1 Presence detector inside 1	
--	**09**	SENS SI 2	SI 2 Presence detector inside 2	
--	**10**	SENS SA 1	SA 1 Presence detector outside 1	
--	**11**	SENS SA 2	SA 2 Presence detector outside 2	
--	**12**	SENS SL	SL Side surveillance left	
--	**13**	SENS SR	SR Side surveillance right	
--	**16**	SENS AKI 1	AKI 1 Actuating device inside 1	
--	**17**	SENS AKI 2	AKI 2 Actuating device inside 2	
--	**18**	SENS AKA 1	AKA 1 Actuating device outside 1	
--	**19**	SENS AKA 2	AKA 2 Actuating device outside 2	
--	**32**	FPC		Service unit FPC902
--				
--				

***In general**:*

Supply voltage:	*11...31 VDC*
Connected load:	*< 2 W*
Installation height max.:	*9'10"*
outstanding of the standards:	*< 13'1"*
Max. fuse protection if separately supplied:	*2.5 A*
Protection class:	*IP 54*
Temperature range:	*–4...+ 122 °F*
Cable length (102-020808406):	*8'2"*

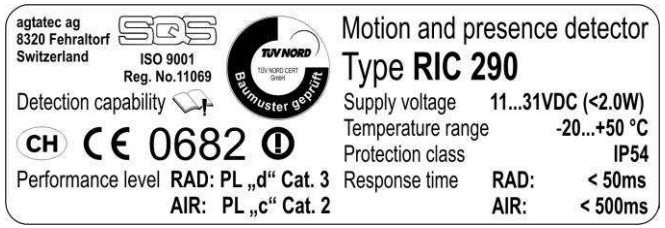
Motion detector RAD

Frequency (K-Band):	*24.125 GHz*
Power output:	*< 10 mW*
Detection capability:	*28" min. high person moving at a rate of 2 in. per s min.*
Performance level:	*PL „d", Cat. 3*
Response time, max.	*< 50 ms*

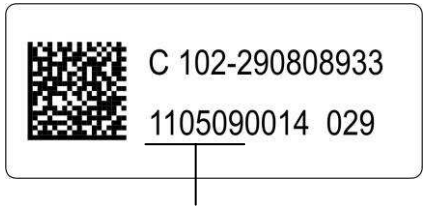
Presence detector AIR

Wavelength infrared:	*870 nm*
Detection capability:	*stationary 8" min. high object for a min. of 30 s*
Performance level:	*PL „c", Cat. 2*
Response time, max.	*< 500 ms*

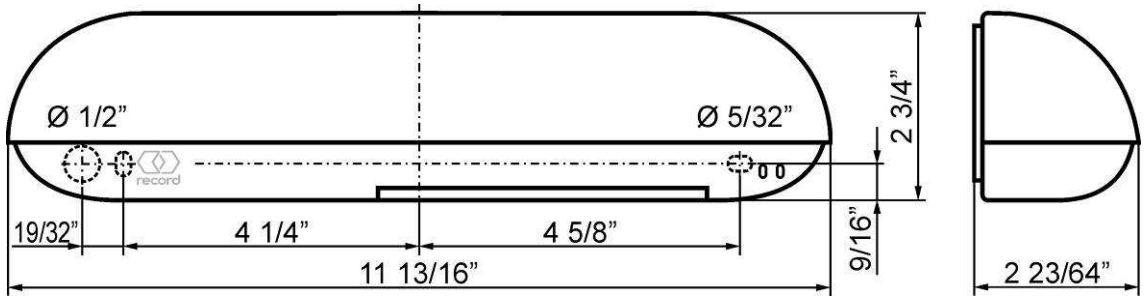
Type label



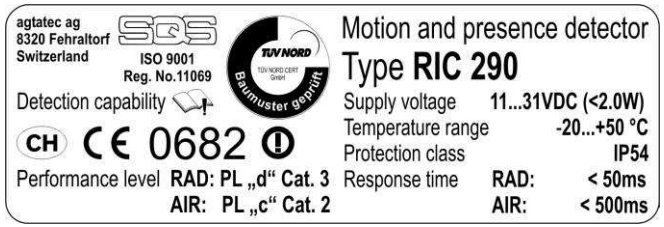
Year of manufacture



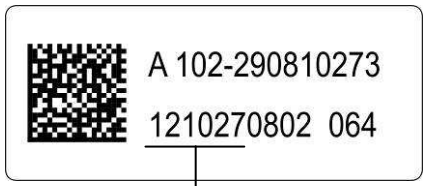
Dimensions



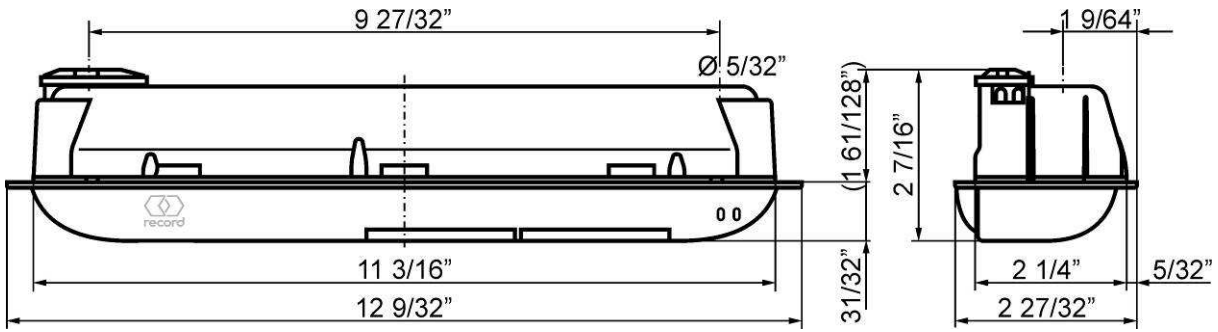
Type label

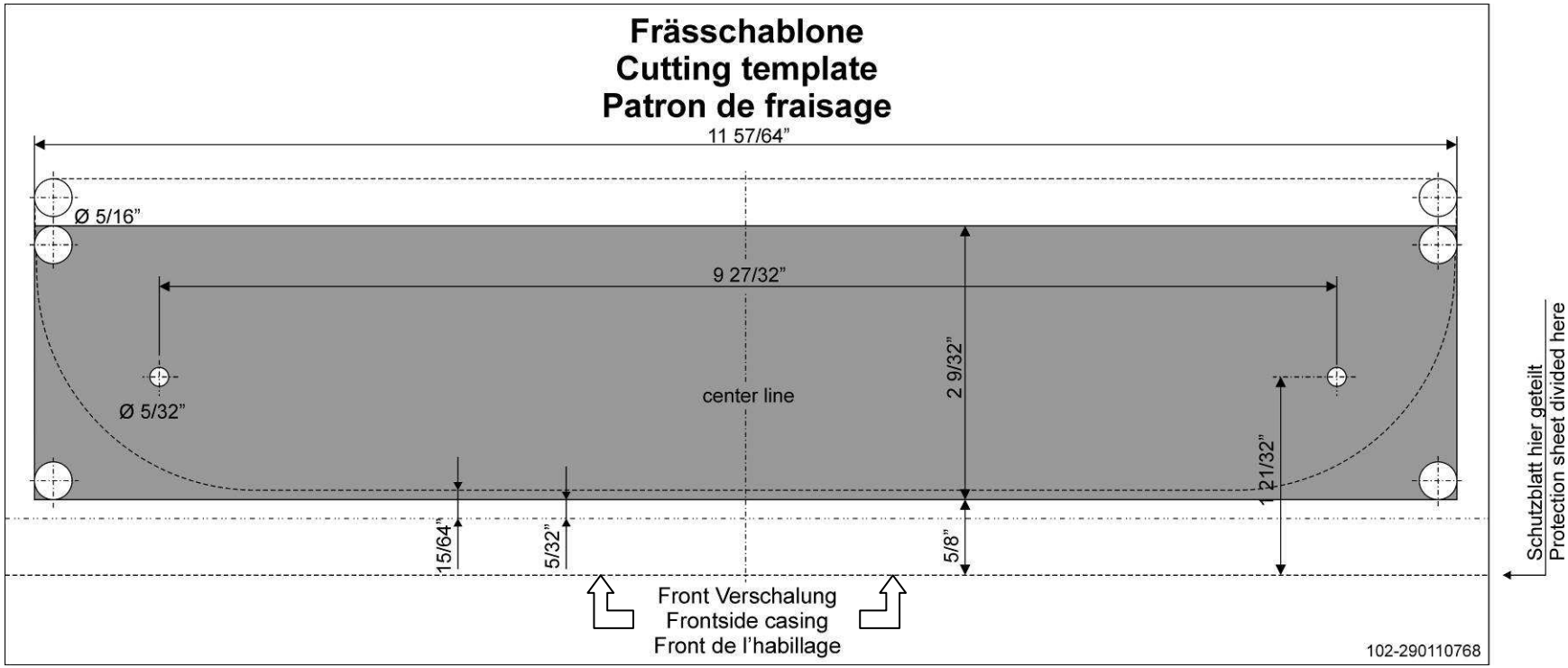


Year of manufacture



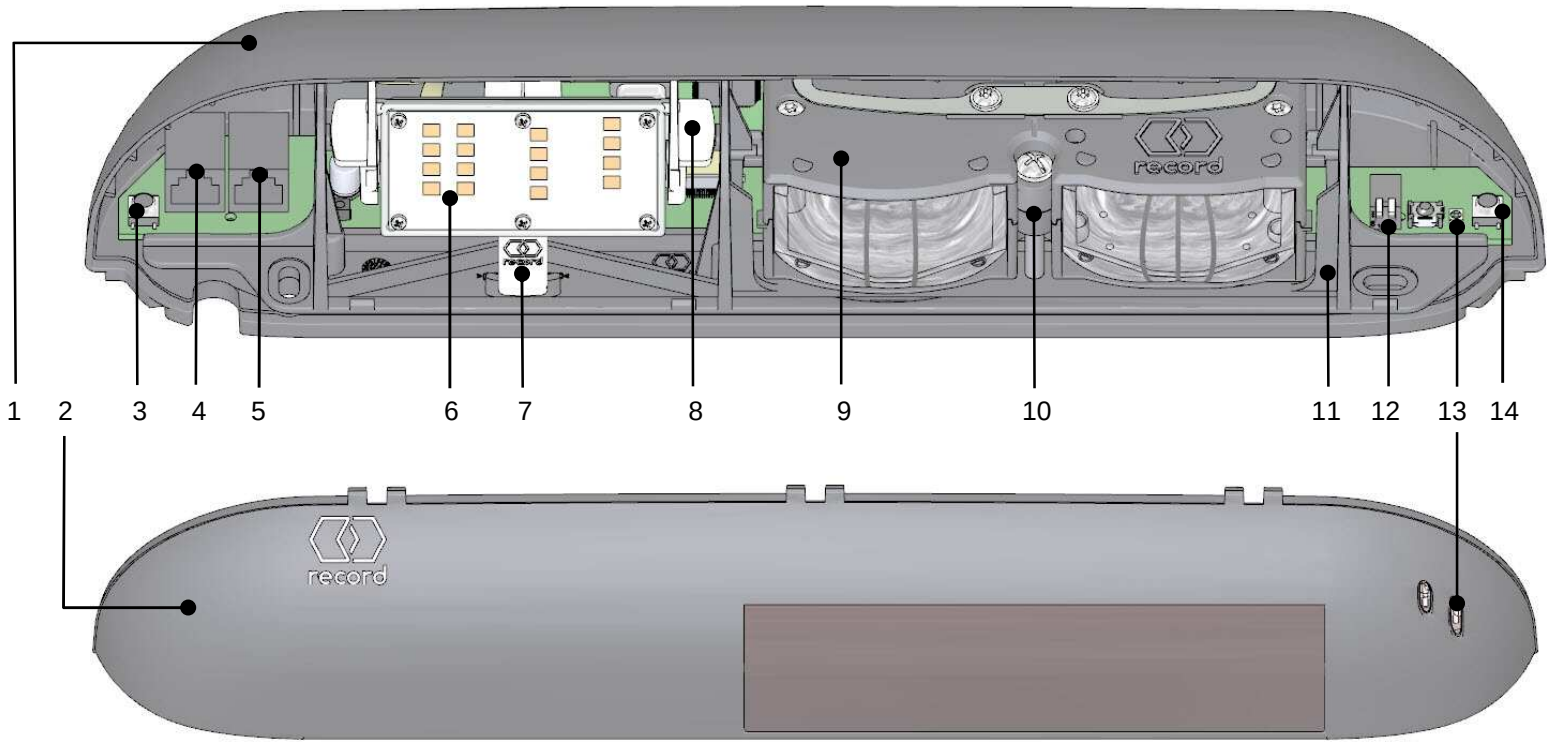
Dimensions RIC 290 G



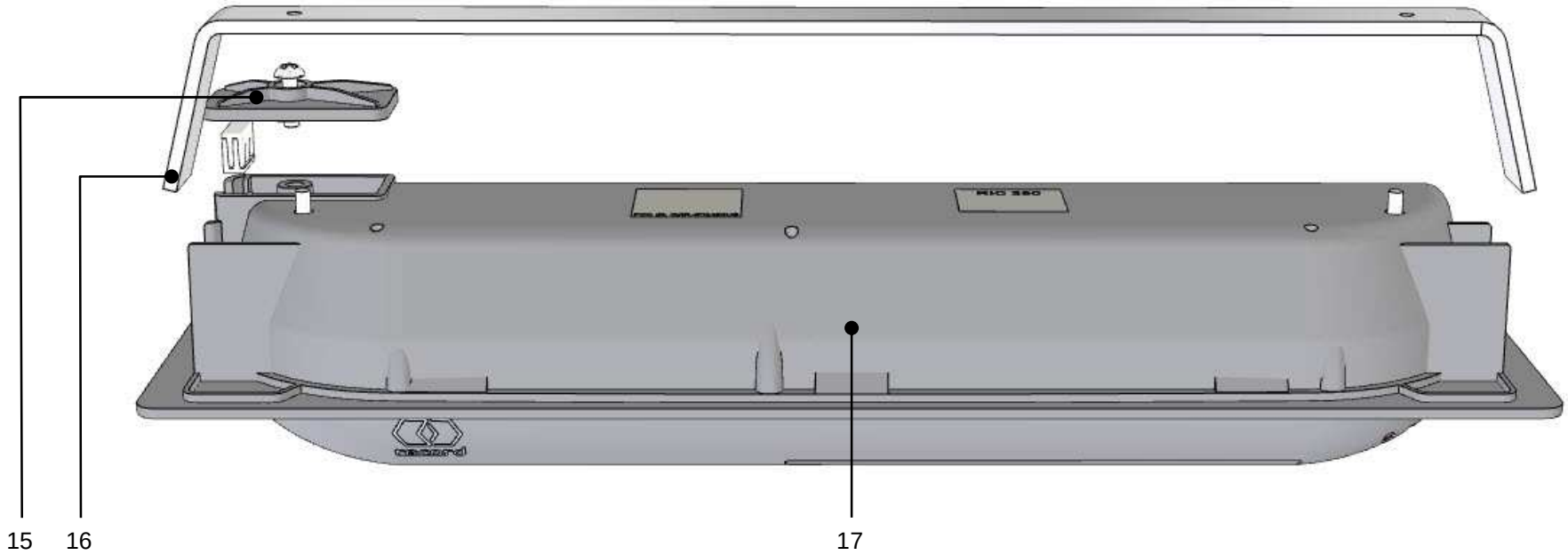


16.2 DESCRIPTION
RIC 290 A

1 *Upper part of case*
2 *Lower part of case*
3 *Button 1 (-) / SFT AIR*
4 *Connector CAN enter*
5 *Connector CAN exit*
6 *Microwave module (MWM) with antenna*
7 *Lateral field adjustment of the MWM*
8 *Angle of inclination of the MWM*
9 *Optic module AIR*
10 *Angle of inclination AIR*
11 *Assembly frame*
12 *DIP switch*
13 *Controlling LED*
14 *Button 2 (+) / SFT RAD*
15 *Cover with cable clamp*
16 *Clamping bracket*
17 *Built-in housing*



16.3 *DESCRIPTION RIC 290 G*



16.4 *Accessories*

18	*Mounting plate for fixing to surfaces*	*(102-290808868)*
19	*Bracket for ceiling installation*	*(102-290808867)*
20	*Weather shield, alu raw*	*(102-290808866)*
	alu anodized	*(102-290808880)*