SELFMONITORED MOTION SENSOR FOR AUTOMATIC ESCAPE DOORS*

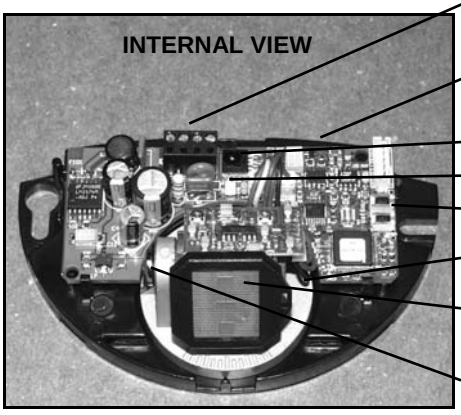
TECHNICAL SPECIFICATION

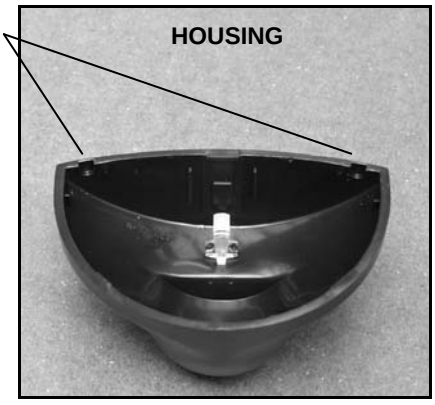
Technology	:	microwave and microprocessor
Transmitter frequency	:	24.150 GHz
Transmitter radiated power	:	<20 dBm EIRP
Transmitter power density	:	< 5 mW/cm²
Mounting height		
• Standard	:	from 1.8 m to 3 m
• High	:	from 3 m to 4 m
Tilt angles	:	0° to 90° vertical -30° to + 30° lateral
Detection area (mounting height = 2.2 m)		
• Wide sensing field	:	4m (W) x 2m (D)
• Narrow sensing field	:	2m (W) x 2.5m (D)
Detection mode	:	motion
Minimum speed	:	5 cm/s (measured in the sensor axis)
Supply voltage	:	12V to 24V AC ±10% 12V to 24V DC +30% /-10%
Mains frequency	:	50 to 60 Hz
Power consumption	:	< 2W (VA)
Output configuration in no detection status (current source ON)		
• Max. open-circuit voltage	:	6.5V
• Output voltage available at 10mA	:	3V min.
• Typical load	:	up to 3 optocouplers connected in series. Free of potential.

Output configuration in detection status (current source OFF)		
• Leakage current	:	< 100µA
• Open-circuit remained voltage	:	< 500mV
Hold time	:	0.5s to 9s (adjustable)
Temperature range	:	-20°C to +55°C
Degree of protection	:	IP54
Norm conformity	:	1999/5/EC; 2004/108/EC; 2006/42/EC
Dimensions	:	120 mm (W) x 80 mm (H) x 50 mm (D)
Weight	:	0.215 kg
Material	:	ABS
Color of housing	:	anthracite gray, aluminum finish or white
Length of cable	:	2.5m
Manual adjustment		
• Sensitivity (by push buttons)		
• Orientation of sensing field (mechanically)		
• Shape of the sensing field (by choice of antenna)		
Remote control adjustments		
• Sensitivity	:	10 levels
• Hold time	:	from 0.5s to 9s in 10 levels
• Detection mode	:	uni-/bidirectional, MTF, reverse mode
• Immunity	:	quasi-presence, normal, increased immunities
• Mounting height	:	standard, high
• Door control	:	automatic, permanently open
• Security	:	1-4 digit access code

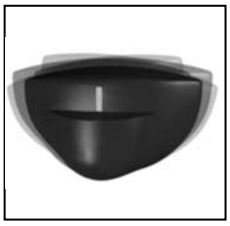
Specifications are subject to changes without prior notice.

DESCRIPTION OF THE SENSOR

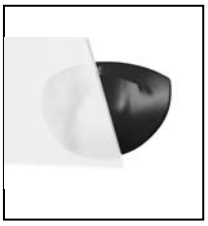




INSTALLATION TIPS



The sensor must be firmly fastened to prevent vibrating.



The sensor must not be placed behind a panel or any other material.

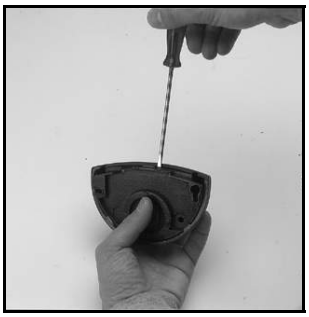
The sensor must not have any object likely to move or vibrate in its sensing field.

The sensor must not have any fluorescent lighting in its sensing field.

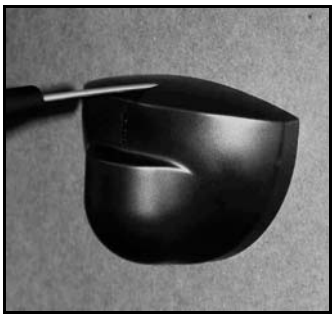
To avoid damage by electrostatic discharges, do not touch the electronic part of the sensor.

* Other use of the device is outside the permitted purpose and cannot be guaranteed by the manufacturer.

OPENING THE SENSOR

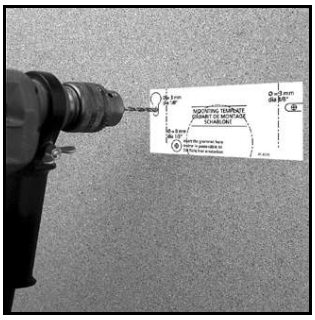


From behind, before installation

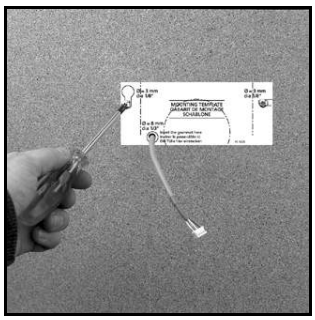


From the front, after installation

PREPARATION FOR MOUNTING THE SENSOR



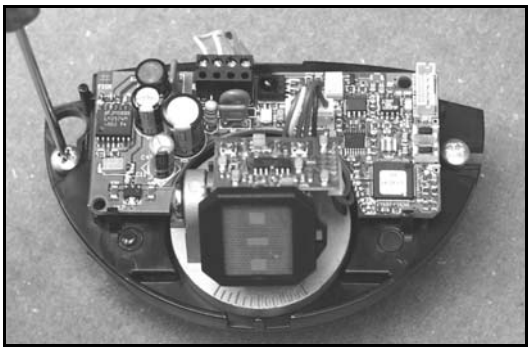
- Paste the template
- Drill as instructed



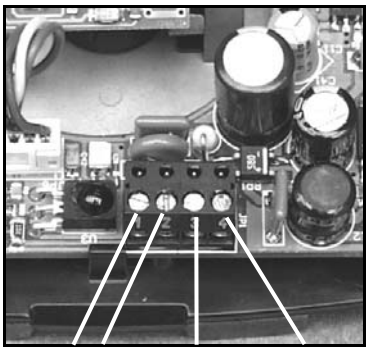
- Insert screws but do not screw them fully home
- Pass the cable where it is supposed to go through.

- Cut one of the footprints for the wire.

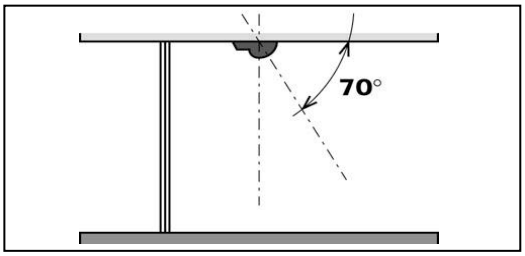
WIRING AND MOUNTING THE SENSOR



Position the sensor and tighten the two screws. Leave wires long enough to reach the terminal block.



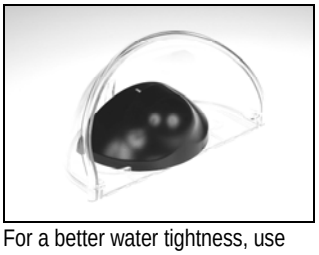
OTHER MOUNTING OPTIONS



This device may be fixed on the ceiling, as long as the spherical part of the sensor is facing in the direction opposite the door, and as long as an angular position of around 70° is chosen for the antenna.

For the mounting on the upper part of the door operator profile, use the EBA support.

For a mounting into the ceiling, use the ECA embedding support.



For a better water tightness, use the ORA protection cap.

MECHANICAL CONFIGURATION

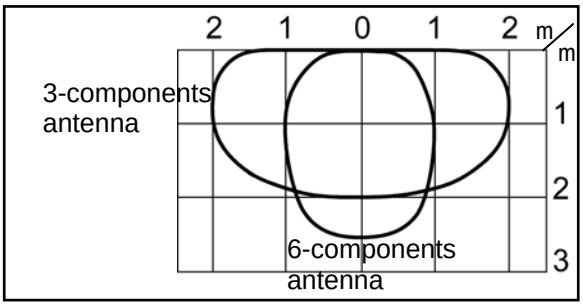
A. WIDTH OF THE SENSING FIELD DEPENDS ON THE CHOICE OF THE PLANAR ANTENNA

To obtain a wide sensing field, use the 3-components antenna

To obtain a narrow sensing field, use the 6-components antenna

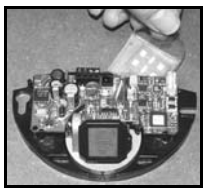
The sensing fields (in meter) here on the right correspond to the following adjustments:

- Vertical angle of antenna : 30° ;
- Sensitivity : 9 ;
- Bidirectional mode ;
- Mounting height : 2.2m.

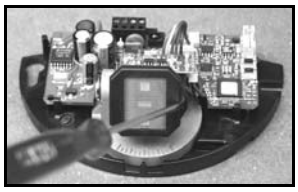


WARNING

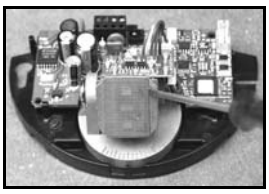
The sensor has to be set up in such a way that the detection field depth equals at least 1.5m to ensure the installation is TÜV compliant.
In addition, a technically trained person has to check at least once a year the integrety of the detection.

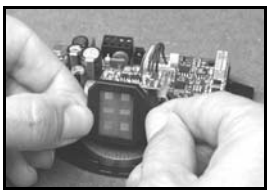


Remove the narrow sensing field antenna from its location.



Carefully remove the clamp of the antenna and the wide sensing field antenna.



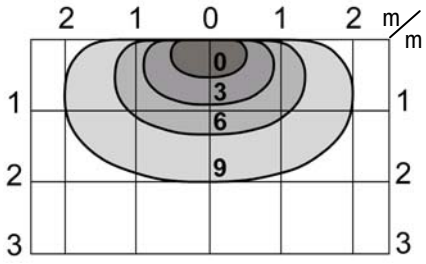


Put the new antenna on its header and fix it with the clamp.

B. DIMENSIONS OF THE SENSING FIELD (WIDTH, DEPTH, DEAD ZONE) ARE DETERMINED BY THE SENSITIVITY SETTING (0 to 9)

The sensing fields here on the right correspond to the following adjustments :

- Wide sensing field antenna ;
- Vertical angle of antenna : 30° ;
- Bidirectional mode ;
- Mounting height : 2.2m.

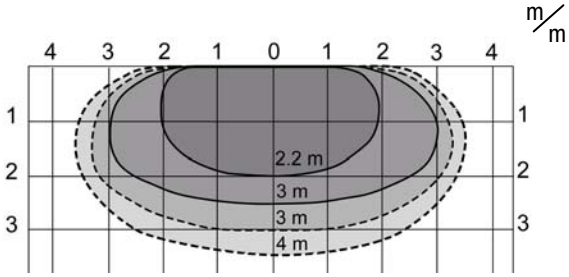


C. DIMENSIONS OF THE SENSING FIELD (WIDTH, DEPTH, DEAD ZONE) ARE DETERMINED BY THE MOUNTING HEIGHT

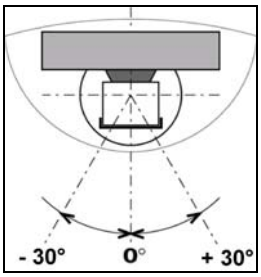
The sensing fields here on the right correspond to the following adjustments :

- Wide sensing field antenna ;
- Vertical angle of antenna : 30° ;
- Bidirectional mode ;
- Sensitivity : 9

Note: For a mounting height from 3m, it is recommended to set the sensor in the “high mounting” mode.

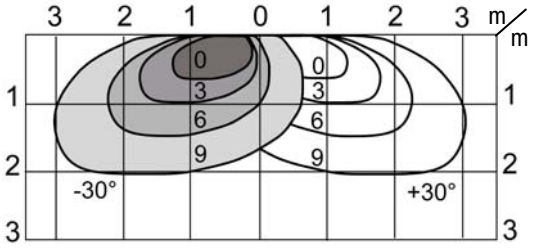


D. POSITION OF THE SENSING FIELD IS DETERMINED BY THE LATERAL ANGLE OF THE PLANAR ANTENNA



The sensing fields here on the right correspond to the following adjustments :

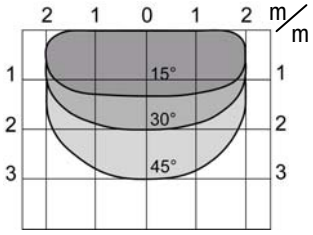
- Wide sensing field antenna;
- Bidirectionnal mode ;
- Lateral angle of the antenna : 30°, - 30°
- Mounting height : 2.2m.

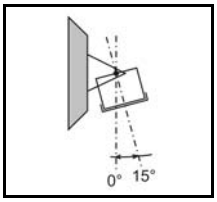


E. POSITION OF THE SENSING FIELD IS DETERMINED BY THE VERTICAL ANGLE OF THE ANTENNA

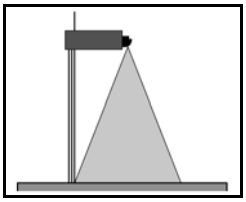
The sensing fields here on the right correspond to the following adjustments :

- Wide sensing field antenna;
- Sensitivity : 9 ;
- Bidirectional mode ;
- Mounting height : 2.2m.

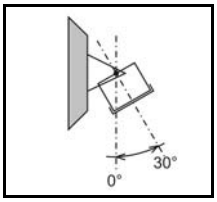




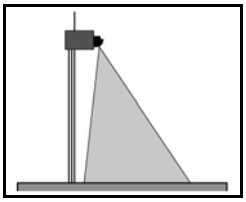
To obtain a sensing field as close to the door as possible, set the antenna at its minimum tilt angle (0° to 15°).



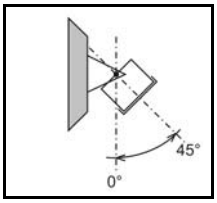
Example of deep-field operator application.



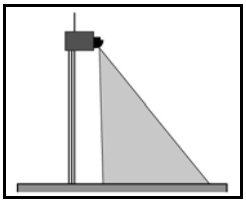
To obtain a sensing field close to the door, set the antenna at a tilt angle of 30°.



Example of standard operator application.



To obtain a sensing field distant from the door, set the antenna at a tilt angle of 45°.

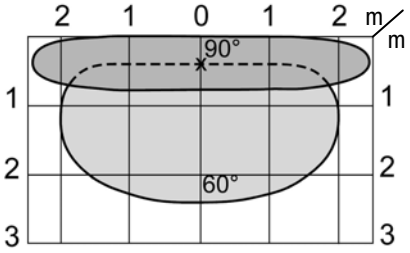


Example of standard operator application (with dead zone)

FOR A CEILING MOUNTING :

The sensing fields here on the right correspond to the following adjustments :

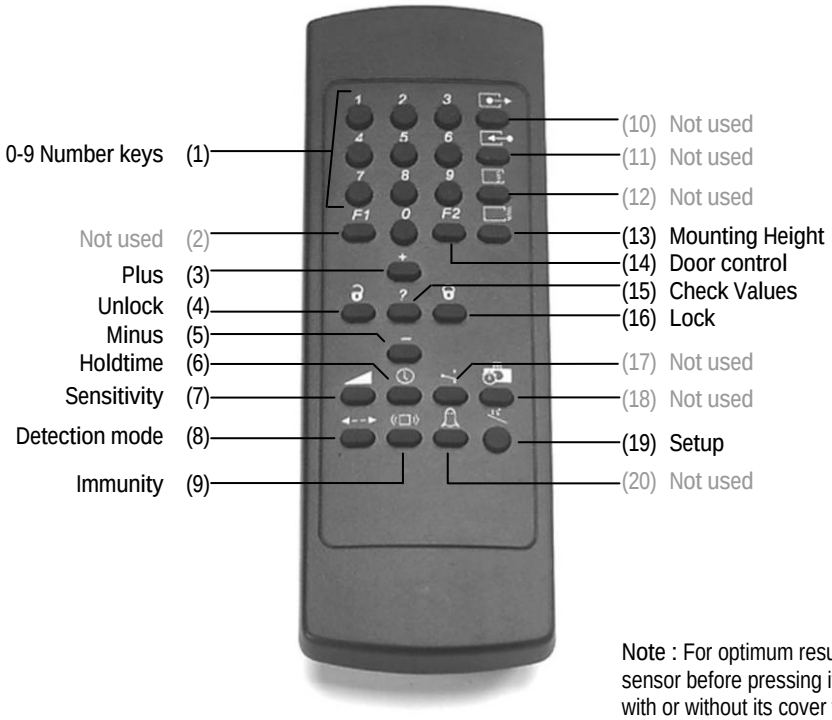
- Wide sensing field antenna ;
- Sensitivity : 9 ;
- Bidirectional mode ;
- Mounting height : 2.2m.



FUNCTIONS CONFIGURATION WITH REMOTE CONTROL

1. INSERTION OF BATTERIES

- Open the battery compartment at the back of the remote control ;
- Insert two AAA batteries supplied with the remote control as shown beside ;
- Close the battery compartment.



Note : For optimum results point the remote control to the sensor before pressing its buttons. The sensor can be adjusted with or without its cover from a distance up to 5m.

2. CONFIGURATION OF THE SENSOR

Every adjustment session using the infrared remote control must start with unlocking and end with a double locking.

The table below lists the parameters able to be adjusted by remote control and the operations required in order to adjust these parameters.

PARAMETERS	OPERATIONS	LED SIGNAL
UNLOCK	Press the UNLOCK key (4). Enter your four-digit access code using 0-9 NUMBER keys (1). The access code can be composed of 1 to 4 digits (factory values or no access code: 0 or 0000) During the first sensor adjustment or if the access code is reset to the "0000" value (factory setting) or during the first minute after the power-on, press only the UNLOCK key (4) (no access code required). *UNLOCK with access code of 4 digits* 🔓 0-9 0-9 0-9 0-9 *UNLOCK with access code of less than 4 digits* 🔓 0-9 🔓 *UNLOCK without access code* 🔓	The red LED flashes quickly waiting for the access code. After entering the correct access code or if no access code is required, the red LED flashes slowly to indicate that unlock is successful and the adjustment session has begun. Note.: 🔊 = Adjustment session ON
LOCK	When all the parameters have been set, press the LOCK key (16). If you wish to enter a new access code, use 0-9 NUMBER keys (1) to enter the new four-figure access code within 1 minute. If no access code is entered or if you want to keep the current access code, press the LOCK key (16) once more. If no remote control key is pressed within 1 minute, the adjustment session is automatically locked. *LOCK with access code change* 🔒 0-9 0-9 0-9 0-9 *LOCK without access code or access code change* 🔒 🔒	The red LED stops flashing to return to its normal function.

Note : All parameters or functions listed in the following tables are only accessible if the sensor is in adjustment session.
The red LED is then slowly flashing.

During an adjustment session each parameter may be checked or changed at any time in the following way :

PARAMETERS	OPERATIONS
CHECK VALUES	Press the key corresponding to the parameter to be checked and then press the CHECK VALUES key (15). Count the number of times the LED flashes, which corresponds to the value of the checked parameter. No LED flash corresponds to the value 0. Repeat this operation to check the value of the other parameters if required. Example: SENSITIVITY key (7) – 7 flashes of the LED : the radar sensitivity is set at the value 7.
PLUS	Press the key corresponding to the sensitivity (7) or holdtime (6) parameter to be modified and then press the PLUS key (3) to increase the value by 1 unit.
MINUS	Press the key corresponding to the sensitivity (7) or holdtime (6) parameter to be modified and then press the MINUS key (5) to reduce the value by 1 unit.

Note about LED signal : The red LED flashes quickly waiting for the value. Once this has been entered, it flashes slowly again.

PARAMETERS	OPERATIONS	DEFINITIONS - ADVICES
SENSITIVITY	Press the SENSITIVITY key (7). Use the NUMBER keys 0-9 (1) to enter the sensitivity required (or adjust this parameter using the PLUS (3) or MINUS (5) keys as explained above)	To increase the **sensitivity** means to increase the sensor capabilities to detect small useful signals. Practically, to increase the sensitivity leads to increase the dimensions of the sensing field.
HOLD TIME	Press the HOLD TIME key (6). Use the NUMBER keys 0-9 (1) to enter the required hold time (0.5 s to 9 s) (or adjust this parameter using the PLUS (3) or MINUS (5) keys as explained above).	The **hold time** allows extended output activation time after a motion detection has stopped. It is recommended to use this parameter instead of the operator's one with the same function (interferences with the sensor)
DETECTION MODE	Press the DETECTION MODE key (8). Use the NUMBER keys 1-5 (1) to select the required mode : Key 1 : Bidirectional mode Key 2 : Unidirectional mode Key 3 : Unidirectional mode with MTF-function Key 4 : Unidirectional mode reverse Key 5 : Unidirectional mode reverse with the MTF function	With the **bidirectional mode**, the approaching and departing target is detected. With the **unidirectional** mode, only the **approaching** target is detected. With the **unidirectional** mode **reverse**, only the **departing** target is detected! Using the MTF (**Motion Tracking Feature**) enables the sensor to automatically switch from the unidirectional mode to bidirectional mode as soon as a target is detected. This function is recommended for applications with elderly people or anyone approaching the door hesitantly.
IMMUNITY	Press the IMMUNITY key (9). Use the NUMBER keys 1-9 (1) to select the required mode : Key 1 : Detection of quasi-presence Key 2 : Normal Key 3 : Increased immunity Key 4-9 : Additional increased immunity 4: lowest level 9: highest level	To **increase the immunity** means to strengthen the resistance to external disturbances such as **rain**, **vibrations**, etc. The **additional increased immunity** modes (4-9) reduce disturbances in highly reflective environments (**airlocks**, **curved and round sliding doors**, **metallic environments** etc.).
MOUNTING HEIGHT	Press the MOUNTING HEIGHT key (13), Use the NUMBER keys 1-2 (1) to select the required mounting height : Key 1 : Standard mounting height (1.8m to 3m) Key 2 : High mounting height (3 to 4m)	The sensor presents an increased sensitivity scale in high mounting mode. This setting should be used for **mounting heights between 3m and 4m** or is recommended when the detection on the field limits is erratic.
DOOR CONTROL	Press the DOOR CONTROL key (14), Use the NUMBER keys 1-2 (1) to select the required mounting height : Key 1 : Automatic mode Key 2 : Door permanently open	In ''door permanently open'' mode, the sensor is continuously detecting. The red LED is continuously ON.

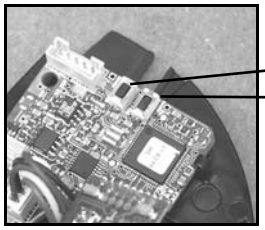
During an adjustment session all parameters may be reset to their factory values in the following way :

PARAMETERS	OPERATIONS
FACTORY VALUES	Press the SETUP key (19), then press the NUMBER key 9. All the parameters (except the access code) are reset to the factory values.

Parameter	Values	Factory setting
Sensitivity	0 - 9	7
Hold time	0 - 9	0
Detection mode	1 - 5	2
Immunity	1 - 9	2
Mounting height	1 - 2	1
Door control	1 - 2	1

SENSITIVITY CONFIGURATION WITH PUSH BUTTONS

If you do not have a remote control, you can only adjust the sensitivity parameter, by means of the push buttons + and - .



+ : press to increase the sensitivity by one unit

- : press to decrease the sensitivity by one unit

The factory default values (except the factory value of the access code) may be restored by pressing the two push buttons together for at least two seconds.

LED SIGNAL

The LED flashes for a few seconds after the power-on, and flashes during the configuration with the remote control.

The LED lights up when the sensor detects motion.

TROUBLE-SHOOTING

SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
The door will not open. Red LED ON.	On-Off switch at door control in wrong position or faulty. Incompatibility between the sensor output and the activation input.	Check to insure On-Off switch for door is in the ON or AUTOMATIC position. See the technical specification.
The door will not close. Red LED OFF	The sensor power is off. Incompatibility between the sensor output and the activation input.	Check the wiring and the power supply. See the technical specification.
The door will not close. Red LED ON. No apparent motion.	The door control is set on ''door permanently open''.	Change the door control setting on each sensor connected to the door operator.
The door will not close. Red LED flashes slowly (slower than the RC flashings)	The power supply is too low or short interruptions on the power supply	Check the power supply. Cut and restore the power supply. If the door stays open, replace the sensor.
The door opens and closes constantly.	The sensor "sees" the door moving.	Increase the tilt angle and/or reduce the sensitivity and/or increase the immunity.
	When closing the door creates vibrations picked up by the sensor.	Make sure that the sensor is correctly fixed. Switch to unidirectional mode. Increase immunity and/or reduce sensitivity.
It rains and the sensor detects for no apparent reason.	The sensor detects the motion of the rain drops.	Use the ORA accessory. Switch to unidirectional mode (without MTF) and increase the immunity.
In airlock vestibules, the sensor sees the opposite door.		Increase immunity.
In airlock vestibules, the sensor sees the movement of the door leaves, despite of an increased immunity.		Make sure that the antenna for the narrow sensing field is used.
In metallic environments, the sensor detects objects outside its detection field.		Increase immunity.

TROUBLE-SHOOTING

The sensor will not unlock when access code is entered.	Improper access code being entered.	Cut and restore power supply. No access code is required to unlock during the first minute after powering. Press “unlock”, then “lock” and introduce a new access code.
The sensor does not respond to the remote control.	Batteries in remote control weak or installed improperly.	Check the batteries insertion. Change the batteries.
	Remote control badly pointed.	Point remote control towards the sensor.

BEA hereby declares that the EAGLE THREE-N is in conformity with the basic requirements and the other relevant provisions of the standards 1999/5/EC, 2004/108/EC and 2006/42/EC.
Notified Body for EC inspection: 0044 - TÜV NORD CERT GmbH, Langemarckstr. 20, 45141 Essen

Liege, December 2009 Yves Borlez, R&D Manager (Authorized representative)

The complete declaration of conformity is available on our website: www.bea.be

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