

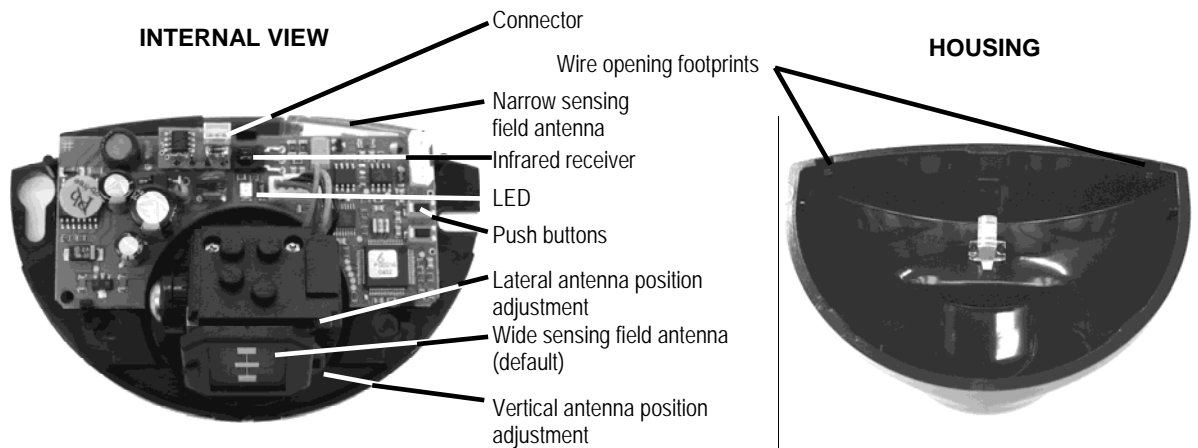
# GC 304 SF

SELFMONITORED MOTION SENSOR FOR AUTOMATIC ESCAPE ROUTE DOORS

## TECHNICAL SPECIFICATION

<p><b>Technology</b> : microwave and microprocessor</p> <p><b>Transmitter frequency</b> : 24.150 GHz</p> <p><b>Transmitter radiated power</b> : &lt;20 dBm EIRP</p> <p><b>Transmitter power density</b> : &lt; 5 mW/cm<sup>2</sup></p> <p><b>Mounting height</b></p> <ul style="list-style-type: none"> <li>• Standard : from 1.8 m to 3 m</li> <li>• High : from 3 m to 4 m</li> </ul> <p><b>Tilt angles</b> : 0° to 90° vertical -30° to + 30° lateral</p> <p><b>Detection area</b> (mounting height = 2.2 m)</p> <ul style="list-style-type: none"> <li>• Wide sensing field : 4m (W) x 2m (D)</li> <li>• Narrow sensing field : 2m (W) x 2.5m (D)</li> </ul> <p><b>Detection mode</b> : motion</p> <p><b>Minimum speed</b> : 5 cm/s (measured in the sensor axis)</p> <p><b>Supply voltage</b> : 12V to 24V DC +30% /-10%</p> <p><b>Power consumption</b> : &lt; 2W (VA)</p> <p><b>Output</b></p> <ul style="list-style-type: none"> <li>• Transistor : optocoupled transistor requiring external pull-down resistor</li> <li>• Max output current (Transistor ON) : 100 mA</li> <li>• Leakage current (Transistor OFF) : &lt; 200 µA</li> <li>• Frequency in no detection status : f<sub>OUT</sub> = 120Hz +/- 20%</li> <li>• Frequency in detection status or in error : f<sub>OUT</sub>= &lt; 96Hz or f<sub>OUT</sub>= &gt; 144Hz</li> </ul>	<p><b>Hold time</b> : 0.5s to 9s (adjustable)</p> <p><b>Temperature range</b> : -20°C to +55°C</p> <p><b>Degree of protection</b> : IP54</p> <p><b>Norm conformity</b> : EMC 2004/108/EC EN ISO 13849-1:2006</p> <p><b>Dimensions</b> : 120 mm (W) x 80 mm (H) x 50 mm (D)</p> <p><b>Weight</b> : 0.215 kg</p> <p><b>Material</b> : ABS</p> <p><b>Color of housing</b> : anthracite gray</p> <p><b>Length of cable</b> : 5 m</p> <p><b>Manual adjustment</b></p> <ul style="list-style-type: none"> <li>• Sensitivity (by push buttons)</li> <li>• Orientation of sensing field (mechanically)</li> <li>• Shape of the sensing field (by choice of antenna)</li> </ul> <p><b>Remote control adjustments</b></p> <ul style="list-style-type: none"> <li>• Sensitivity : 10 levels</li> <li>• Hold time : from 0.5s to 9s in 10 levels</li> <li>• Detection mode : uni-/bidirectional, MTF, reverse mode</li> <li>• Immunity : quasi-presence, normal, increased immunities</li> <li>• Mounting height : standard, high</li> <li>• Door control : automatic, permanently open</li> <li>• Security : 1-4 digit access code</li> </ul>
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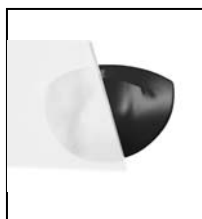
## DESCRIPTION OF THE SENSOR



## 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.

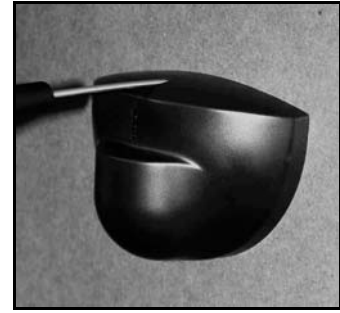


To avoid damage by electrostatic discharges, do not expose the electronic parts of the sensor.

## OPENING THE SENSOR

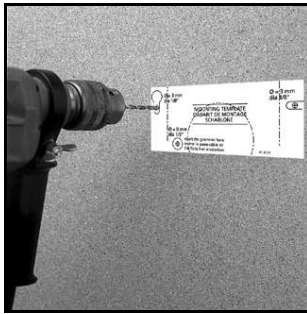


From behind, before installation

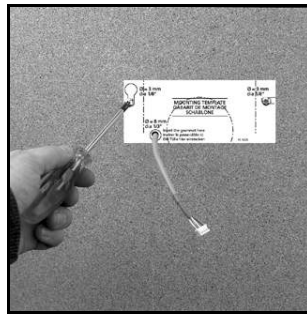


From the front, after installation

## 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.

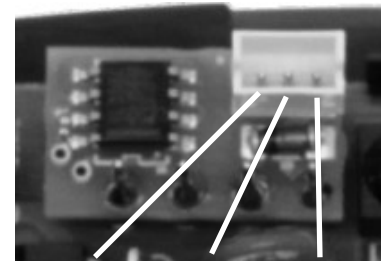


- Cut one of the footprints for the wire.

## WIRING AND MOUNTING THE SENSOR

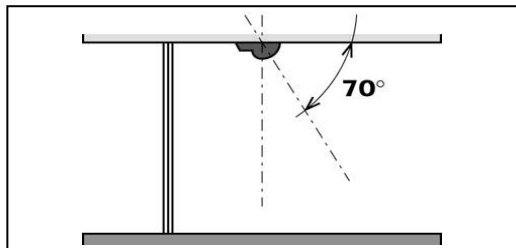


Position the sensor and tighten the two screws. Leave wires long enough to reach the terminal block.

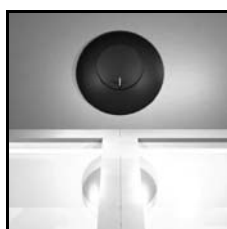


GREEN OUT  
BROWN 24V  
WHITE GND

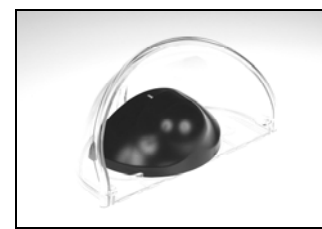
## OTHER MOUNTING OPTIONS



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.

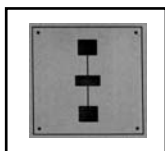


For a mounting into the ceiling, use the ceiling accessory Id. No. 130653.

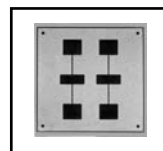


For a better water tightness, use the rain accessory Id. No. 130654.

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



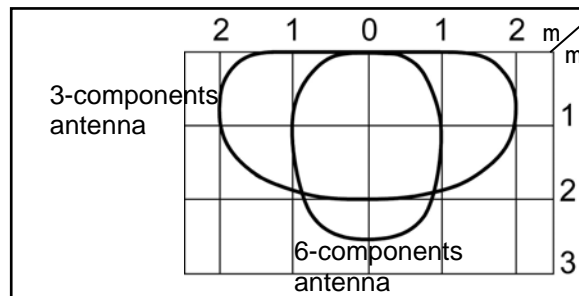
To obtain a wide sensing field, use the 3-components antenna



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

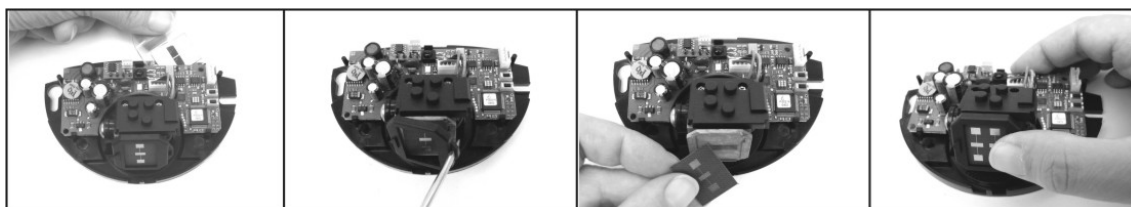
The sensing fields (in meter) here on the right correspond to the following adjustments:

- 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 integrity of the detection.



Remove the narrow sensing field antenna from its location.

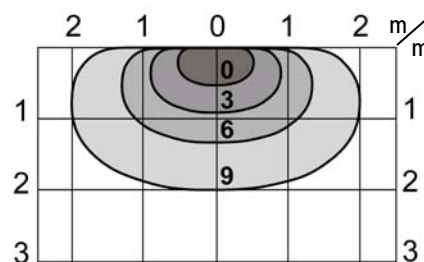
Carefully remove the clamp of the antenna and the wide sensing field antenna.

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.

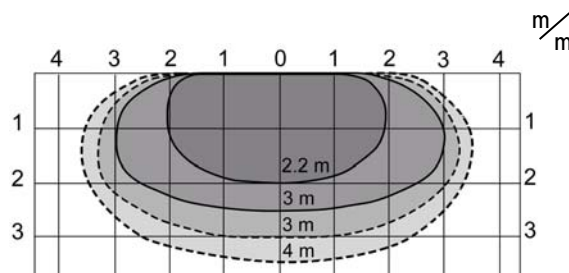


**C. DIMENSIONS OF THE SENSING FIELD (WIDTH, DEPTH, DEAD ZONE) ARE DETERMINED BY THE MOUNTING HEIGHT**

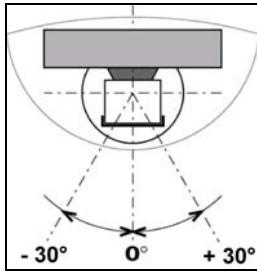
The sensing fields here on the right correspond to the following adjustments :

- 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.

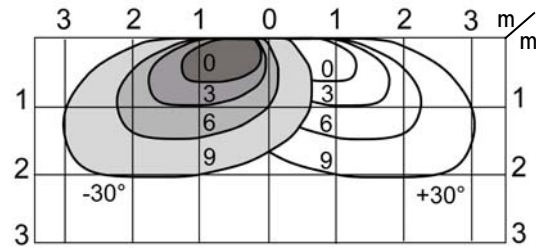


**D. POSITION OF THE SENSING FIELD IS DETERMINED BY THE LATERAL ANGLE OF THE PLANAR ANTENNA**



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

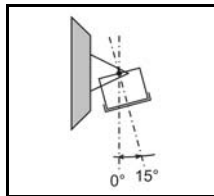
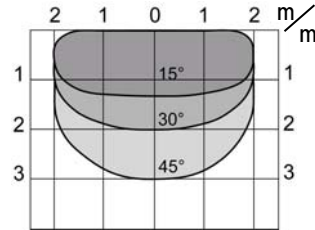
- Wide sensing field antenna;
- Bidirectional mode ;
- Lateral angle of the antenna :  $30^\circ, -30^\circ$
- Mounting height : 2.2m.



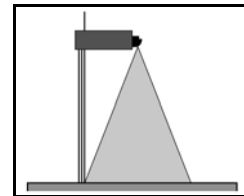
**E. POSITION OF THE SENSING FIELD IS DETERMINED BY THE VERTICAL ANGLE OF THE ANTENNA**

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

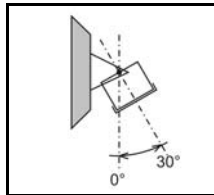
- Wide sensing field antenna;
- Sensitivity : 9 ;
- Bidirectional mode ;
- Mounting height : 2.2m.



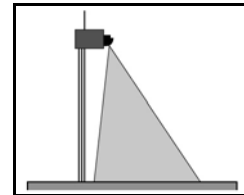
To obtain a sensing field as close to the door as possible, set the antenna at its minimum tilt angle ( $0^\circ$  to  $15^\circ$ ).



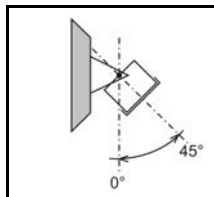
Example of deep-field operator application.



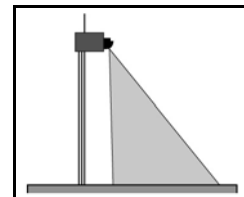
To obtain a sensing field close to the door, set the antenna at a tilt angle of  $30^\circ$ .



Example of standard operator application.



To obtain a sensing field distant from the door, set the antenna at a tilt angle of  $45^\circ$ .

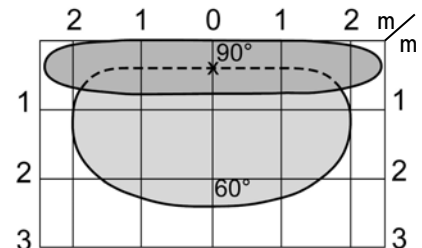


Example of standard operator application (with dead zone)

**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.

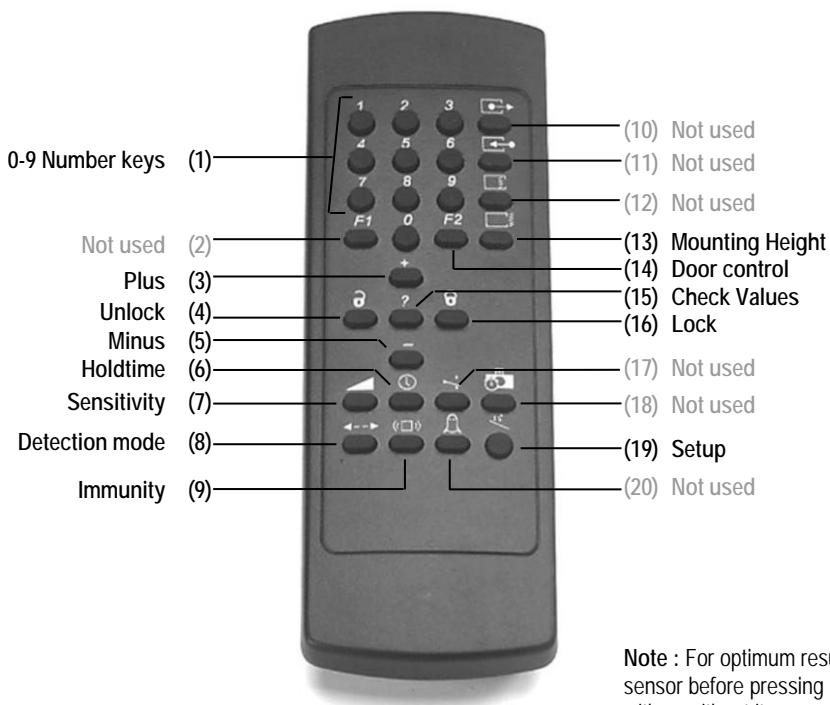


## 1. INSERTION OF BATTERIES



Remote Control, Id. No. 100061

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

**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
<b>CHECK VALUES</b> 	Press the key corresponding to the parameter to be checked and then press the <b>CHECK VALUES</b> 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 : <b>SENSITIVITY</b> key (7) – 7 flashes of the LED : the radar sensitivity is set at the value 7.  <i>CHECK VALUES :</i>   
<b>PLUS</b> 	Press the key corresponding to the sensitivity (7) or holdtime (6) parameter to be modified and then press the <b>PLUS</b> key (3) to increase the value by 1 unit.  <i>PLUS :</i>   
<b>MINUS</b> 	Press the key corresponding to the sensitivity (7) or holdtime (6) parameter to be modified and then press the <b>MINUS</b> key (5) to reduce the value by 1 unit.  <i>MINUS :</i>   

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

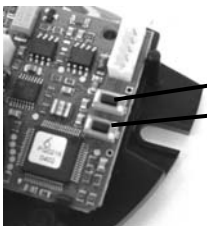
PARAMETERS	OPERATIONS	DEFINITIONS - ADVICES
<b>SENSITIVITY</b> 	Press the <b>SENSITIVITY</b> key (7). Use the <b>NUMBER</b> keys 0-9 (1) to enter the sensitivity required (or adjust this parameter using the <b>PLUS</b> (3) or <b>MINUS</b> (5) keys as explained above)  <i>SENSITIVITY :</i>   	To increase the <b>sensitivity</b> 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.
<b>HOLD TIME</b> 	Press the <b>HOLD TIME</b> key (6). Use the <b>NUMBER</b> keys 0-9 (1) to enter the required hold time (0.5 s to 9 s) (or adjust this parameter using the <b>PLUS</b> (3) or <b>MINUS</b> (5) keys as explained above).  <i>HOLD TIME :</i>   	The <b>hold time</b> 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)
<b>DETECTION MODE</b> 	Press the <b>DETECTION MODE</b> key (8). Use the <b>NUMBER</b> keys 1-5 (1) to select the required mode : <b>Key 1 :</b> Bidirectional mode <b>Key 2 :</b> Unidirectional mode <b>Key 3 :</b> Unidirectional mode with MTF-function <b>Key 4 :</b> Unidirectional mode reverse <b>Key 5 :</b> Unidirectional mode reverse with the MTF function  <i>DETECTION MODE :</i>   	With the <b>bidirectional mode</b> , the approaching and departing target is detected. With the <b>unidirectional mode</b> , only the <b>approaching</b> target is detected. With the <b>unidirectional mode reverse</b> , only the <b>departing</b> target is detected!  Using the <b>MTF (Motion Tracking Feature)</b> 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.
<b>IMMUNITY</b> 	Press the <b>IMMUNITY</b> key (9). Use the <b>NUMBER</b> keys 1-9 (1) to select the required mode : <b>Key 1 :</b> Detection of quasi-presence <b>Key 2 :</b> Normal <b>Key 3 :</b> Increased immunity <b>Key 4-9 :</b> Additional increased immunity 4: lowest level 9: highest level  <i>IMMUNITY :</i>   	To <b>increase the immunity</b> means to strengthen the resistance to external disturbances such as <b>rain, vibrations</b> , etc.  The <b>additional increased immunity</b> modes (4-9) reduce disturbances in highly reflective environments ( <b>airlocks, curved and round sliding doors, metallic environments</b> etc.).
<b>MOUNTING HEIGHT</b> 	Press the <b>MOUNTING HEIGHT</b> key (13), Use the <b>NUMBER</b> keys 1-2 (1) to select the required mounting height : <b>Key 1 :</b> Standard mounting height (1.8m to 3m) <b>Key 2 :</b> High mounting height (3 to 4m)  <i>MOUNTING HEIGHT :</i>   	The sensor presents an increased sensitivity scale in high mounting mode. This setting should be used for <b>mounting heights between 3m and 4m</b> or is recommended when the detection on the field limits is erratic.
<b>DOOR CONTROL</b> 	Press the <b>DOOR CONTROL</b> key (14), Use the <b>NUMBER</b> keys 1-2 (1) to select the required mounting height : <b>Key 1 :</b> Automatic mode <b>Key 2 :</b> Door permanently open  <i>DOOR CONTROL :</i>   	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																								
<b>FACTORY VALUES</b> 	Press the <b>SETUP</b> key (19), then press the <b>NUMBER</b> key <b>9</b> . All the parameters (except the access code) are reset to the factory values.  <b>FACTORY VALUES :</b>    <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="3">Factory Values Table</th> </tr> <tr> <th>Parameter</th> <th>Values</th> <th>Factory setting</th> </tr> </thead> <tbody> <tr> <td>Sensitivity</td> <td>0 - 9</td> <td>7</td> </tr> <tr> <td>Hold time</td> <td>0 - 9</td> <td>0</td> </tr> <tr> <td>Detection mode</td> <td>1 - 5</td> <td>2</td> </tr> <tr> <td>Immunity</td> <td>1 - 9</td> <td>2</td> </tr> <tr> <td>Mounting height</td> <td>1 - 2</td> <td>1</td> </tr> <tr> <td>Door control</td> <td>1 - 2</td> <td>1</td> </tr> </tbody> </table>	Factory Values Table			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
Factory Values Table																									
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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.	Programming switch at door control in wrong position or faulty. Incompatibility between the sensor output and the activation input.	Check to insure that programming switch for door is in the correct position (closing time or automatic). 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. Check to insure that programming switch is in the correct position (night, closing time or automatic). 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.  When closing the door creates vibrations picked up by the sensor.	Increase the tilt angle and/or reduce the sensitivity and/or increase the immunity. 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 rain 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.
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. Remote control badly pointed.	Check the batteries insertion. Change the batteries. Point remote control towards the sensor.

**Germany**

GEZE GmbH  
Niederlassung Süd-West  
Tel. +49 (0) 7152 203 594  
E-Mail: leonberg.de@geze.com

GEZE GmbH  
Niederlassung Süd-Ost  
Tel. +49 (0) 7152 203 6440  
E-Mail: muenchen.de@geze.com

GEZE GmbH  
Niederlassung Ost  
Tel. +49 (0) 7152 203 6840  
E-Mail: berlin.de@geze.com

GEZE GmbH  
Niederlassung Mitte/Luxemburg  
Tel. +49 (0) 7152 203 6888  
E-Mail: frankfurt.de@geze.com

GEZE GmbH  
Niederlassung West  
Tel. +49 (0) 7152 203 6770  
E-Mail: duesseldorf.de@geze.com

GEZE GmbH  
Niederlassung Nord  
Tel. +49 (0) 7152 203 6600  
E-Mail: hamburg.de@geze.com

GEZE Service GmbH  
Tel. +49 (0) 1802 923392  
E-Mail: service-info.de@geze.com

**Austria**

GEZE Austria  
E-Mail: austria.at@geze.com  
www.geze.at

**Baltic States**

GEZE GmbH Baltic States office  
E-Mail: office-latvia@geze.com  
www.geze.com

**Benelux**

GEZE Benelux B.V.  
E-Mail: benelux.nl@geze.com  
www.geze.be  
www.geze.nl

**Bulgaria**

GEZE Bulgaria - Trade  
E-Mail: office-bulgaria@geze.com  
www.geze.bg

**China**

GEZE Industries (Tianjin) Co., Ltd.  
E-Mail: chinasaes@geze.com.cn  
www.geze.com.cn

GEZE Industries (Tianjin) Co., Ltd.  
Branch Office Shanghai  
E-Mail: chinasaes@geze.com.cn  
www.geze.com.cn

GEZE Industries (Tianjin) Co., Ltd.  
Branch Office Guangzhou  
E-Mail: chinasaes@geze.com.cn  
www.geze.com.cn

GEZE Industries (Tianjin) Co., Ltd.  
Branch Office Beijing  
E-Mail: chinasaes@geze.com.cn  
www.geze.com.cn

**France**

GEZE France S.A.R.L.  
E-Mail: france.fr@geze.com  
www.geze.fr

**Hungary**

GEZE Hungary Kft.  
E-Mail: office-hungary@geze.com  
www.geze.hu

**Iberia**

GEZE Iberia S.R.L.  
E-Mail: info@geze.es  
www.geze.es

**India**

GEZE India Private Ltd.  
E-Mail: office-india@geze.com  
www.geze.in

**Italy**

GEZE Italia S.r.l  
E-Mail: italia.it@geze.com  
www.geze.it

GEZE Engineering Roma S.r.l  
E-Mail: roma@geze.biz  
www.geze.it

**Poland**

GEZE Polska Sp.z o.o.  
E-Mail: geze.pl@geze.com  
www.geze.pl

**Romania**

GEZE Romania S.R.L.  
E-Mail: office-romania@geze.com  
www.geze.ro

**Russia**

OOO GEZE RUS  
E-Mail: office-russia@geze.com  
www.geze.ru

**Scandinavia – Sweden**

GEZE Scandinavia AB  
E-Mail: sverige.se@geze.com  
www.geze.se

**Scandinavia – Norway**

GEZE Scandinavia AB avd. Norge  
E-Mail: norge.se@geze.com  
www.geze.no

**Scandinavia – Denmark**

GEZE Danmark  
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www.geze.dk

**Singapore**

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www.geze.ch

**Turkey**

GEZE Kapı ve Pencere Sistemleri  
E-Mail: office-turkey@geze.com  
www.geze.com

**Ukraine**

LLC GEZE Ukraine  
E-Mail: office-ukraine@geze.com  
www.geze.ua

**United Arab Emirates/GCC**

GEZE Middle East  
E-Mail: gezeme@geze.com  
www.geze.ae

**United Kingdom**

GEZE UK Ltd.  
E-Mail: info.uk@geze.com  
www.geze.com

