



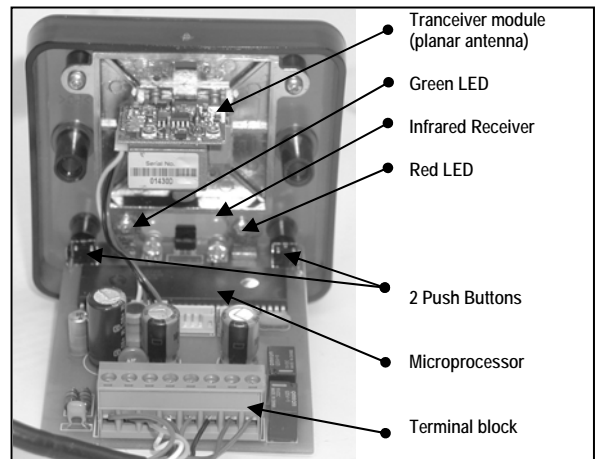
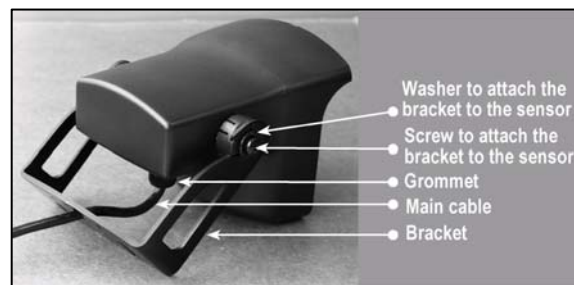
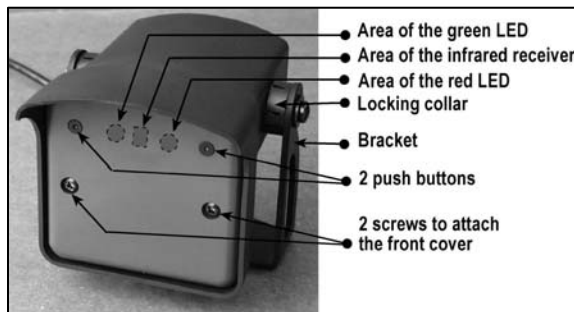
## MOTION SENSORS FOR INDUSTRIAL DOORS

**FALCON DR:** double relay / high mount • **FALCON XL-DR:** double relay / low mount

### TECHNICAL SPECIFICATION

<p><b>Technology</b> : Microwave and microprocessor</p> <p><b>Transmitter frequency</b> : 24.125 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>• FALCON DR : from 11.5' (3.5m) to 23' (7m)</li> <li>• FALCON XL-DR : from 6.5' (2m) to 11.5' (3.5m)</li> </ul> <p><b>Tilt angles</b> : 0° to 180° in elevation</p> <p><b>Detection zone</b></p> <ul style="list-style-type: none"> <li>• FALCON DR (mounting height of 5m) : 13' (W) x 16' (D) 4m (W) x 5m (D)</li> <li>• FALCON XL-DR (mounting height of 2.5m) : 13' (W) x 6.5' (D) 4m (W) x 2m (D)</li> </ul> <p><b>Detection mode</b> : Motion</p> <p><b>Minimum speed</b> : 2 in (5cm)/s (measured in the sensor axis)</p> <p><b>Supply voltage</b> : 12V to 24V AC ±10% 12V to 24V DC +30% / -10%</p> <p><b>Mains frequency</b> : 50 to 60 Hz</p> <p><b>Power consumption</b> : &lt; 2W (VA)</p> <p><b>Two Output relay (free of potential change-over contact)</b></p> <ul style="list-style-type: none"> <li>• Max. contact voltage : 42V AC</li> <li>• Max. contact current : 1A (resistive)</li> <li>• Max. switching power : 30W (DC) / 60VA (AC)</li> </ul>	<p><b>Hold time</b> : 0.5s to 9s (adjustable)</p> <p><b>Temperature range</b> : -22°F to +122°F (-30°C to +60°C)</p> <p><b>Degree of protection</b> : IP65</p> <p><b>Norm conformity</b> : R&amp;TTE 1999/5/EC EMC 89/336/EEC</p> <p><b>Dimensions</b> : 4" (W) x 5" (D) x 3 3/4" (H) 102 mm (W) x 127 mm (D) x 96 mm (H)</p> <p><b>Weight</b> : 0.88 lbs (0.4 kg)</p> <p><b>Material of housing</b> : ABS and polycarbonate</p> <p><b>Material of bracket</b> : Anodized aluminium</p> <p><b>Length of cable</b> : 33' (10m)</p> <p><b>Manual adjustment</b></p> <ul style="list-style-type: none"> <li>• Orientation of sensing field (mechanically)</li> <li>• Multiple functions (by push buttons)</li> </ul> <p><b>Remote control adjustments</b></p> <ul style="list-style-type: none"> <li>• Sensitivity</li> <li>• Hold time</li> <li>• Detection mode</li> <li>• Pedestrian and parallel traffic rejection mode</li> <li>• Output configuration</li> <li>• Security</li> </ul>
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### DESCRIPTION OF THE SENSOR



### INSTALLATION TIPS



The sensor must be firmly fastened to prevent from vibrating.



The sensor must not be placed directly behind a panel or any kind of material.

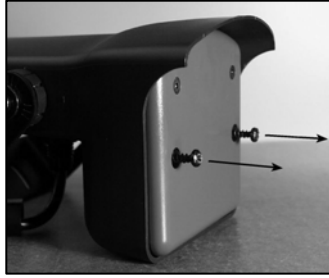


The sensor must not have any object likely to move or vibrate in its sensing field.

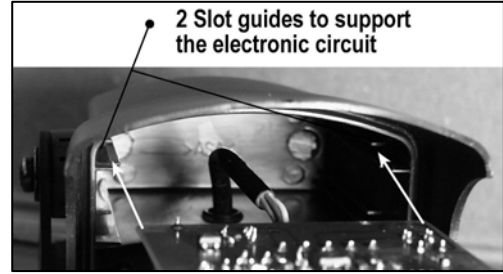


The sensor must not have any fluorescent lighting in its sensing field.

## OPENING AND CLOSING THE SENSOR

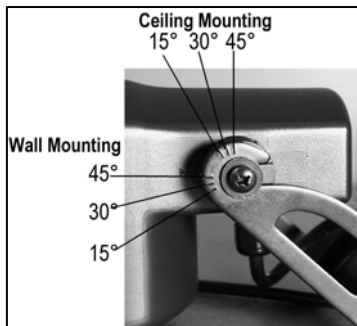


- Loosen the retaining nut until the cable slides easily into the grommet ;
- Partially unscrew the 2 front cover screws ;
- Pull out the front cover with the 2 front cover screws.



- Connect the quick disconnect terminal block to the main electronic circuit ;
- Slide the main electronic circuit into the 2 housing slot guides and pull the main cable gently at the same time ;
- Gently push the front cover and make sure that the external housing is properly seated (front cover must be flush with housing).
  - Screw the 2 front cover screws and tighten the retaining nut.

## BRACKET MOUNTING



- Check that both locking collars are at the same position
- Align the bracket slot to the locking collar guide as shown

## WIRING



BROWN-GREEN	Power supply
YELLOW	COM 1
WHITE	NC 1
PINK	NO 1
BLACK	COM 2
RED	NC 2
BLUE	NO 2

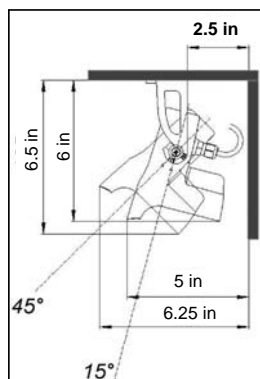


To insert or to remove the cable:

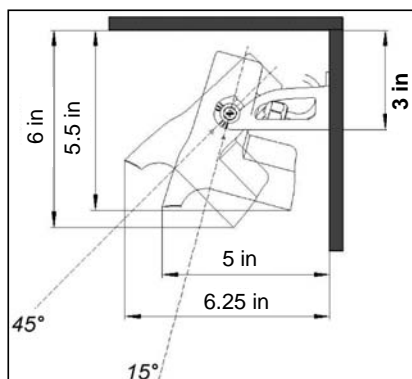
- Unscrew the retaining nut
- Pass the cable through the retaining nut and the grommet
- Screw the retaining nut

## SENSOR DIMENSIONS AND MOUNTING

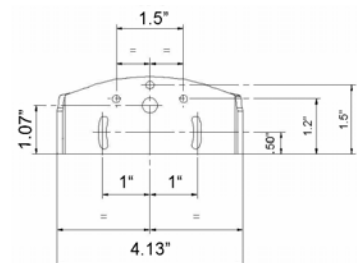
### Ceiling mounting



### Wall mounting

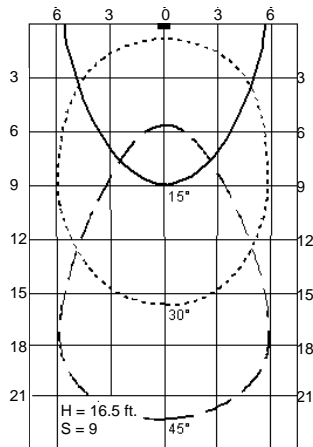


### Bracket dimensions



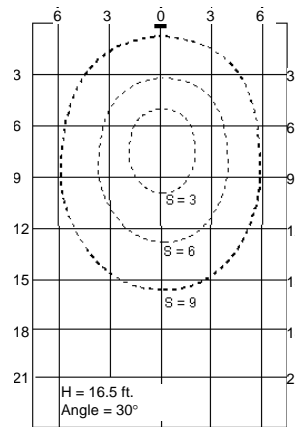
**Note:** The bold-type values give the minimum distance required to be able to fully adjust the sensor.

**FALCON (Mounting height: 16.5' (5m))**



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

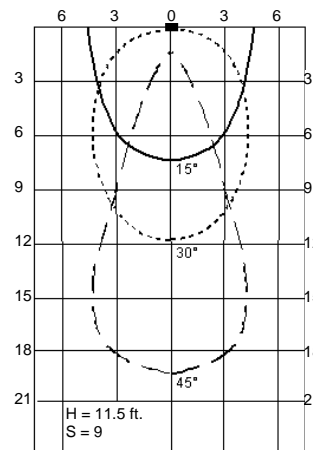
- Tilt angle: 15°, 30°, 45°
- Sensitivity: 9



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

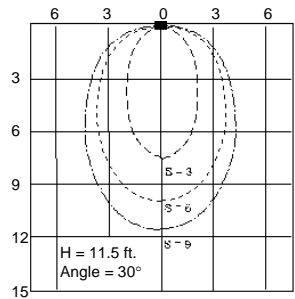
- Tilt angle: 30°
- Sensitivity: 9,6,3

**FALCON (Mounting height: 11.5' (3.5 m))**



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

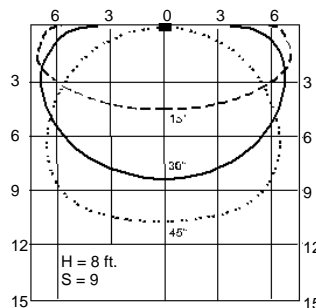
- Tilt angle: 15°, 30°, 45°
- Sensitivity: 9



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

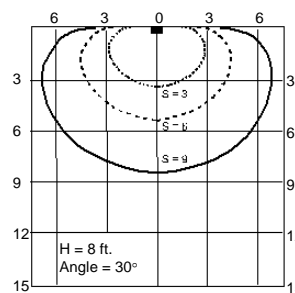
- Tilt angle: 30°
- Sensitivity: 9,6,3

**FALCON XL (Mounting height: 8' (2.5 m))**



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

- Tilt angle: 15°, 30°, 45°
- Sensitivity: 9



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

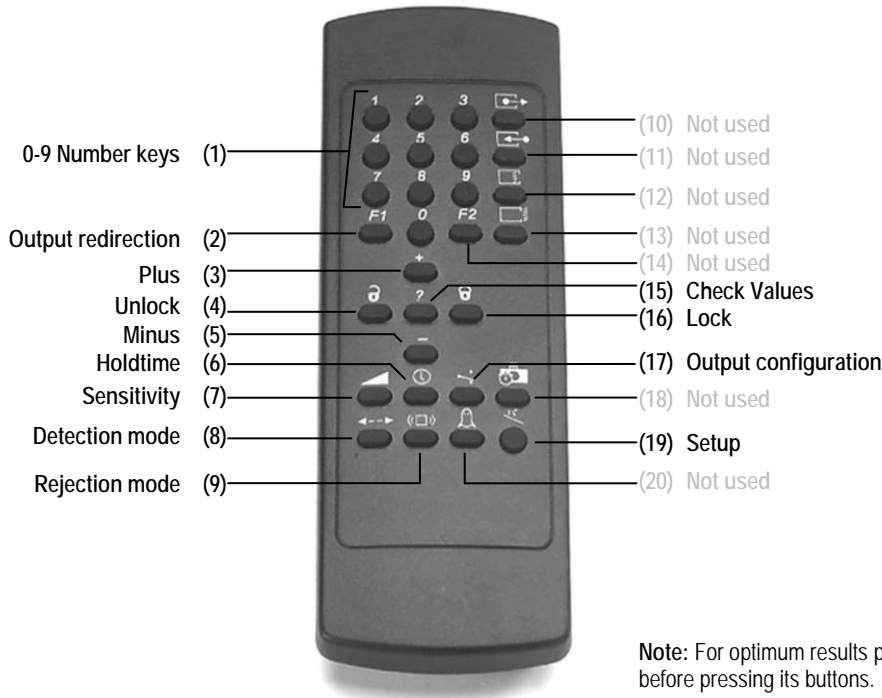
- Tilt angle: 30°
- Sensitivity: 9,6,3

- When the power is turned ON the red and green LED flash for a few seconds.
- During a detection the red LED lights on.
- During configuration the red LED flashes a number of times corresponding to the parameter being changed (see table). The green LED flashes a number of times corresponding to its setting.

## 1. DESCRIPTION OF THE INFRARED REMOTE CONTROL



- 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.

## 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	ACTIONS	LED SIGNAL
<b>UNLOCK</b> 	<p>Press the <b>UNLOCK</b> key (4). Enter your 4-digit access code using <b>0-9 NUMBER</b> keys (1).</p> <p>During the first sensor adjustment or if the access code is reset to the <b>"0000" value (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</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 4-digit 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.






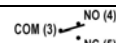
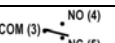
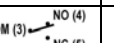
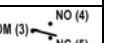
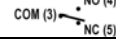
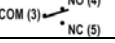
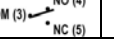
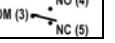




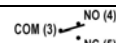
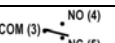
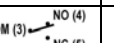
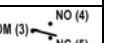
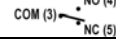
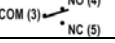
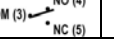
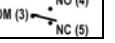




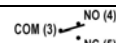
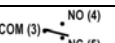
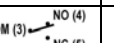
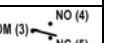
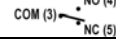
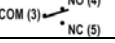
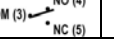
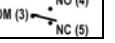
During an adjustment session each parameter may be checked or changed at any time in the following way:

PARAMETERS	ACTIONS
<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 green LED flashes, which corresponds to the value of the checked parameter. No green 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	ACTIONS	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 1-3 (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 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 approaching 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>REJECTION MODE</b> 	Press the <b>REJECTION MODE</b> key (8). <b>Perturbations immunity</b> is used to avoid detection due to environmental perturbations (vibrations, rains, etc). <b>"Pedestrian/parallel traffic rejection"</b> provides both rejection of pedestrian and rejection of any parallel traffic <b>simultaneously</b> .  Use the <b>NUMBER</b> keys 1- 5 (1) to enter the required rejection mode :  <b>Key 1</b> : detection of all kind of targets in motion <b>Key 2</b> : detection of all kind of targets in motion + perturbations immunity <b>Key 3</b> : Low "Pedestrian/parallel traffic" rejection + perturbations immunity <b>Key 4</b> : Mid "Pedestrian/parallel traffic" rejection + perturbations immunity <b>Key 5</b> : High "Pedestrian/parallel traffic" rejection + perturbations immunity	The discrimination between a pedestrian and the different vehicles depends mainly on the mounting height and the microwave module tilt angle. Be careful that the rejection function increases the response time of the sensor. Use the next table as suggestions and do not hesitate to increase or decrease the rejection level to obtain the required rejection. <table border="1" data-bbox="1088 1501 1404 1774"> <thead> <tr> <th colspan="2" rowspan="2"></th> <th rowspan="2">Recommended key</th> <th colspan="3">Tilt angle</th> </tr> <tr> <th>15°</th> <th>30°</th> <th>45°</th> </tr> </thead> <tbody> <tr> <th rowspan="3">Mounting height</th> <th rowspan="3">FALCON</th> <td>23 ft</td> <td>3</td> <td>4</td> <td>4</td> </tr> <tr> <td>16.5 ft</td> <td>3</td> <td>4</td> <td>4</td> </tr> <tr> <td>11.5 ft</td> <td>4</td> <td>4</td> <td>5</td> </tr> <tr> <th rowspan="2">FALCON XL</th> <td>10 ft</td> <td>3</td> <td>4</td> <td>4</td> </tr> <tr> <td>7.5 ft</td> <td>4</td> <td>4</td> <td>5</td> </tr> </tbody> </table>			Recommended key	Tilt angle			15°	30°	45°	Mounting height	FALCON	23 ft	3	4	4	16.5 ft	3	4	4	11.5 ft	4	4	5	FALCON XL	10 ft	3	4	4	7.5 ft	4	4	5
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FALCON XL	10 ft	3	4	4																														
	7.5 ft	4	4	5																														
<b>OUTPUT REDIRECTION</b> 	Press the <b>OUTPUT REDIRECTION</b> key (2) to switch from one mode to another.  <b>Key 0:</b> regular operating mode (standard FALCON).  <b>Key 1:</b> pedestrian or vehicle mode detection Any motion detected activates relay 1. Motion of vehicle triggers relay 2.	Pedestrian or vehicle mode detection only works if pedestrian rejection is enabled (immunity parameter set to 3,4 or 5). Otherwise the sensor does not classify target types and as a consequence is never able to trigger relay 2.																																

<b>OUTPUT REDIRECTION</b> 	<b>Key 2:</b> towards or away mode detection Motion towards the detector triggers relay 1. Motion away from the detector triggers relay 2.	Towards or away mode detection only works if the detection parameter is set to 1 (bi-directional). Otherwise the sensor does not detect any motion anymore. This works also if pedestrian rejection is enabled (immunity parameter set to 3,4 or 5)
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<b>OUTPUT CONFIGURATION</b> 	Press the <b>OUTPUT CONFIGURATION</b> key (17). Use the <b>NUMBER</b> keys 1-4 (1) to select the required output configuration : <table border="1" data-bbox="251 304 922 514" style="margin: 10px auto;"> <tr> <td></td> <td style="text-align: center;">Active</td> <td style="text-align: center;">Passive</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td style="text-align: center;">Detection</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td style="text-align: center;">No Detection</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>		Active	Passive								Detection					No Detection					
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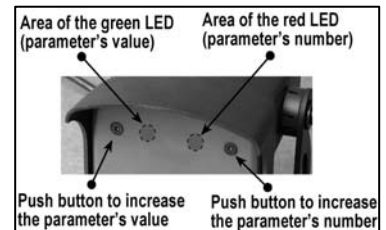
During an adjustment session all parameters may be reset to their factory values in the following way :

<b>PARAMETERS</b>	<b>ACTIONS</b>																								
<b>FACTORY VALUES</b> 	Press the <b>SETUP</b> key (19), then press the <b>NUMBER</b> key 9. All the parameters (except the access code) are reset to the factory values.  <i>FACTORY VALUES :</i>    <b>9</b> <table border="1" data-bbox="467 766 1372 997" style="margin: 10px 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 - 3</td> <td>2</td> </tr> <tr> <td>Rejection mode</td> <td>1 - 5</td> <td>1</td> </tr> <tr> <td>Output redirection</td> <td>0 - 2</td> <td>0</td> </tr> <tr> <td>Output configuration</td> <td>1 - 4</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 - 3	2	Rejection mode	1 - 5	1	Output redirection	0 - 2	0	Output configuration	1 - 4	1
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**CONFIGURATION WITH PUSH BUTTONS**

Without remote control all of the parameters can be set using the 2 push buttons.  
 Note: These two buttons are accessible from the sensor front cover with a small point.

- To **adjust** the sensor using the buttons :  
 Press and hold either push button for 2 seconds (until the LEDs flash) and then release the button ;
- To **end** adjusting the sensor using the buttons :  
 Press and hold either push button for 2 seconds (until the LEDs stop flashing) and then release the button;  
 Note : if no button is pressed within 20 seconds the adjustment session is automatically ended.
- To **reset** all the parameters to the factory values :  
 Press and hold both push buttons simultaneously until the two LEDs switch on for 1 second (after 2 seconds).



During the manual adjustment session the red and green LEDs flash successively and continuously.

- The flashing number of the **red LED** provides the **number of the displayed parameter** (see next table);
- The flashing number of the **green LED** provides the **value of the displayed parameter** ;

Note: no green flashing indicates the zero value.

During the manual adjustment session :

- Each press on the **right button** increases the number of the displayed parameter by one unit ;
- Each press on the **left button** increases the value of the displayed parameter by one unit.

Note: When the maximum value or the highest number of the parameter is reached, it will return to its minimum values.

For **example**, to change the sensitivity from 7 to 9 and the rejection mode from "detection of all kind of targets in motion" to High "Pedestrian/parallel traffic" rejection.

- Press any button for 2 seconds to enter the adjustment session and then release it.
- The red LED flashes once (1 = sensitivity) and the green LED flashes 7 times (sensitivity=7).
- Press the left button twice to increase the sensitivity from 7 to 9.
- The red LED still flashes once (1 = sensitivity) but the green LED flashes 9 times now (sensitivity=9).
- Now press the right button 4 times to move to function 5 (rejection mode).
- The red LED flashes 5 times (5 = rejection mode) and the green LED flashes once (detection of all kind of targets in motion)
- Press the left button 4 times to set the parameter to High "Pedestrian/parallel traffic" rejection.
- The red LED still flashes 5 times (5 = rejection mode) but the green LED flashes 5 times now (High "pedestrian/parallel traffic" rejection).
- Press any button during 2 seconds to end the adjustment session and then release it.



**TROUBLE-SHOOTING**

SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
The door will not open and no red LED lights up.	The sensor power is off.	Check the wiring and the power supply.
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. Ensure that the sensor is correctly fixed. If the rejection mode is set at level 1, set this parameter to level 2. Reduce the sensitivity. Switch to unidirectional mode.
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 on "unlock", then on "lock" and introduce a new access code.
The sensor does not respond to the remote control.	Batteries in the remote control are weak or installed improperly. Remote control is badly pointed.	Check the batteries insertion. Change the batteries. Point the remote control towards to the sensor.

**COMPANY CONTACT**



Do not leave problems unresolved. If a satisfactory solution cannot be achieved after troubleshooting a problem, please call B.E.A., Inc. If you must wait for the following workday to call B.E.A., leave the door inoperable until satisfactory repairs can be made. Never sacrifice the safe operation of the automatic door or gate for an incomplete solution.

The following numbers can be called 24 hours a day, 7 days a week. For more information, visit [www.beasensors.com](http://www.beasensors.com).

**West: 1-888-419-2564**                      **Mid-West: 1-888-308-8843**  
**South-East: 1-800-407-4545**           **North-East: 1-866-836-1863**  
**US and Canada: 1-866-249-7937**        **Canada: 1-866-836-1863**