We open up New Horizons

FALCON & FALCON XL USER'S GUIDE

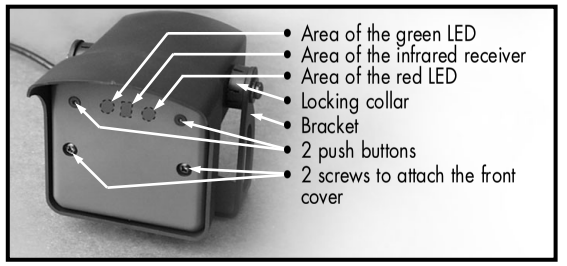
MOTION SENSORS FOR INDUSTRIAL DOORS

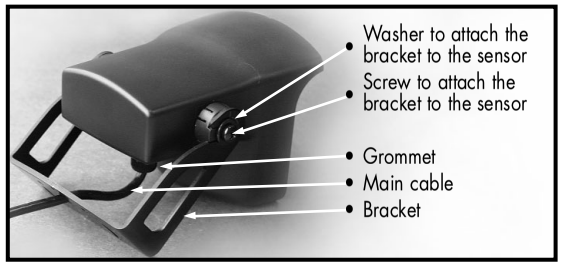
FALCON : for high mounting • **FALCON XL** : for low mounting

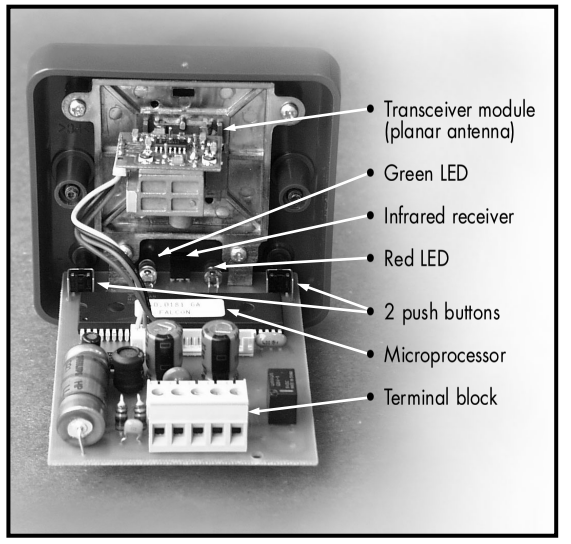
TECHNICAL SPECIFICATIONS

Technology	Microwave and microprocessor
Transmitter frequency	24.125 GHz
Transmitter radiated power	< 20 dBm EIRP
Transmitter power density	< 5 mW/cm^2
Mounting height	
• FALCON	from 3.5 to 7 m
• FALCON XL	from 2 to 3.5 m
Tilt angle	0° to 180° in elevation
Detection zone (typical)	
• FALCON XL	4 m (W) x 2 m (D) for a mounting height of 2.5 m
• FALCON	4 m (W) x 5 m (D) for a mounting height of 5 m
Detection mode	movement
Minimum detection speed	5 cm/s (measured in the sensor axis)
Supply voltage	12 V to 24 V AC ±10% 12 V to 24 V DC +30%/–10%
Mains frequency	50 to 60 Hz
Power consumption	< 2 W
Output relay (free of potential change-over contact)	
• Max contact voltage	42 V AC/DC
• Max contact current	1 A (resistive)
• Max switching power	30 W (DC) / 60 VA (AC)
Hold time	0.5 s to 9 s (adjustable)
Manual adjustment	
• orientation of sensing field (mechanically)	
• multiple functions (by push buttons)	
Remote control adjustments	
• Sensitivity	
• Hold time	
• Detection mode	
• Pedestrian and parallel traffic rejection mode	
• Relay configuration	
Temperature range	–30°C to +60°C
Degree of protection	IP65
Product conformity	R&TTE 1999/5/EC EMC 89/336/EEC
Dimensions	127 mm (D) x 102 mm (W) x 96 mm (H)
Weight	400 g
Plastic of the casing	ABS and Polycarbonate
Bracket	black anodized aluminium
Cable length	10 m
Cable diameter	3 mm (minimum) 6.5 mm (maximum)

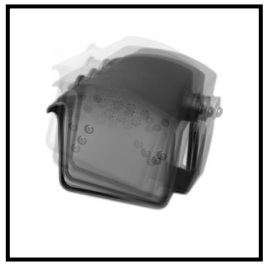
DESCRIPTION OF THE SENSOR





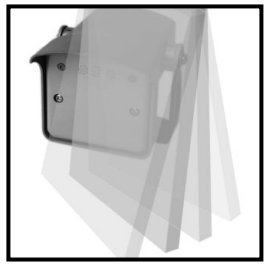


INSTALLATION TIPS



• The sensor must be firmly fastened in order not to vibrate

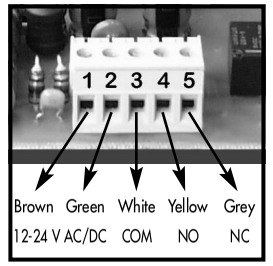
• The sensor must not be placed directly behind a panel or any kind of material

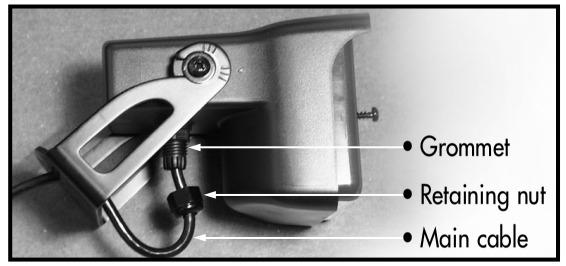


• The sensor must not have any object likely to move or vibrate in its sensing field

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

WIRING



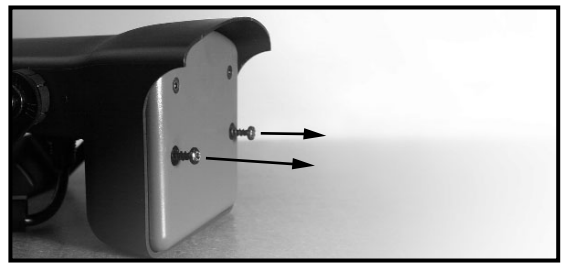


To insert or to remove the cable :

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

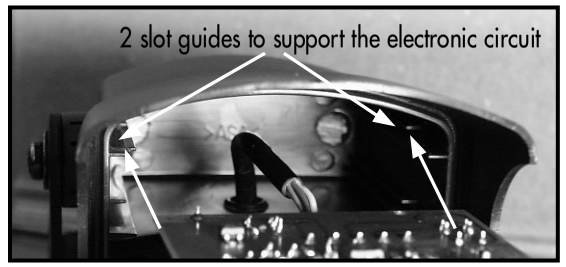
OPENING AND CLOSING THE SENSOR

Opening 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

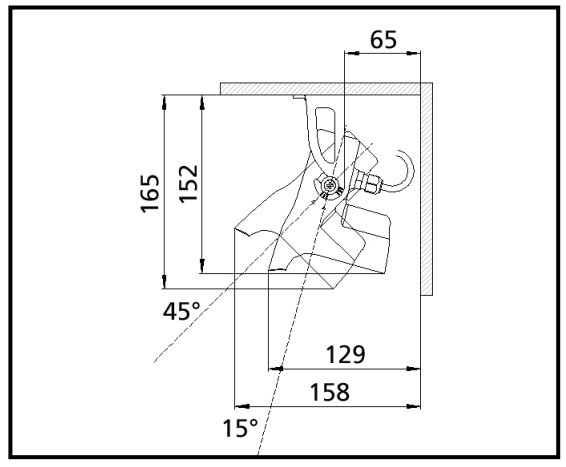
Closing the sensor



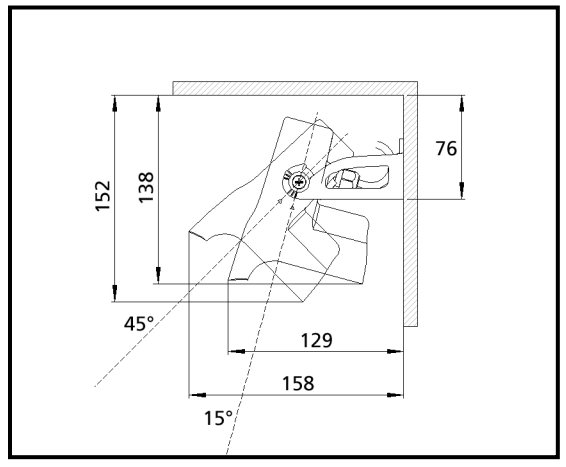
- Connect the quick disconnected terminal block to the main electronic circuit
- Slide the main electronic circuit into the 2 housing slot guides and gently pull the cable through the grommet
- Gently push the front cover and make sure that the external housing is properly seated (front cover must be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

SENSOR DIMENSIONS (mm) AND MOUNTING

Ceiling mounting

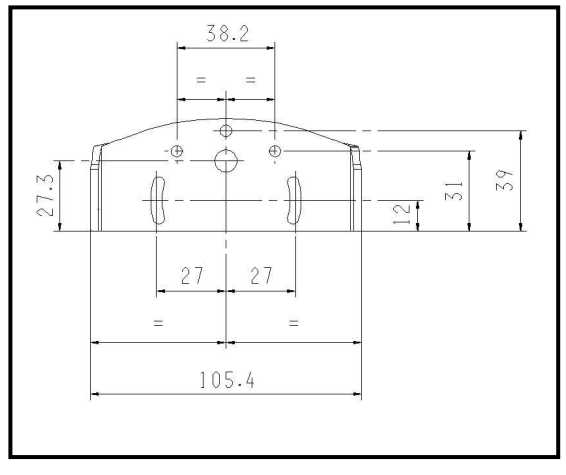


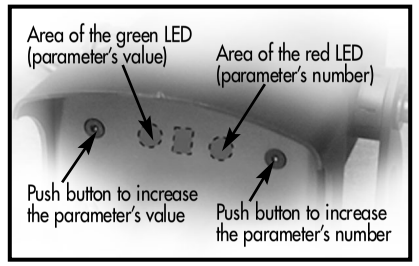
Wall mounting



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

Bracket dimensions





Parameter Number	Parameter	Values	Factory setting
1	Sensitivity	0 - 9	7
2	Hold time	0 - 9	0
3	Relay configuration	1 - 4	1
4	Detection mode	1 - 3	2
5	Rejection mode	1 - 5	1

For example, how to change the sensitivity from 7 to 9 and the rejection mode from "detection of all kinds of target 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 (parameter 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 (parameter 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 (parameter 5 = rejection mode) and the green LED flashes once (detection of all kinds of target 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 (parameter 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.

TROUBLESHOOTING

SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
The door will not open and the red LED does not light up.	The sensor power is off.	Check power supply. Check the supply voltage
The door opens and closes constantly.	The sensor "sees" the door moving.	Increase the tilt angle and/or reduce the sensitivity.
	When closing, the door creates vibrations picked up by the sensor.	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 door opens and closes after a given time for no apparent reason.	The sensor is picking up unintended traffic motion.	Reduce the sensitivity. Reduce the tilt angle.
The sensor is not capable of activation near the door.	The tilt angle is too large.	Reduce the tilt angle.
The sensor does not respond to the remote control.	The batteries are weak.	Check the battery insertion. Change the batteries.
	The access code has been changed.	Press both push buttons simultaneously to reset all the parameters to the factory values. Or switch off the power supply. Within the first minute after the power on, change the access code.

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PARAMETER KEY	USER'S ACTIONS	FACTORY SETTING	LED SIGNAL
DETECTION MODE 	Press the **DETECTION MODE key (7)**. Use the **NUMBER keys 1-3 (1)** to select the required mode : key 1 : bidirectional key 2 : unidirectional forward key 3 : unidirectional backwards DETECTION MODE : 	2 (Uni-directional forward)	The red LED flashes quickly waiting for the value. Once this has been entered, it flashes slowly again.
REJECTION MODE 	Press the **REJECTION MODE key (8)**. **Perturbations immunity** is used to avoid detection due to environmental perturbations (vibrations, rains, etc). **"Pedestrian/parallel traffic rejection"** provides both rejection of pedestrian and rejection of any parallel traffic **simultaneously**. Use the **NUMBER keys 1-5 (1)** to enter the required rejection mode : key 1 : detection of all kinds of target in motion key 2 : detection of all kinds of target in motion + perturbations immunity key 3 : low "Pedestrian/parallel traffic" rejection + perturbations immunity key 4 : mid "Pedestrian/parallel traffic" rejection + perturbations immunity key 5 : 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.	1 (detection of all kinds of target)	The red LED flashes quickly waiting for the value. Once this has been entered, it flashes slowly again.

Mounting height		Recommended key	Tilt angle 15°	30°	45°
FALCON		7 m	3	4	4
		5 m	3	4	4
		3.5 m	4	4	5
FALCON XL		3 m	3	4	4
		2.2 m	4	4	5

FUNCTIONS CONFIGURATION WITH PUSH BUTTONS

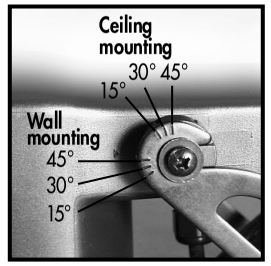
Without remote control all the parameters can be set using the 2 push buttons.
Note : These two buttons are accessible from the sensor front cover with a small point.

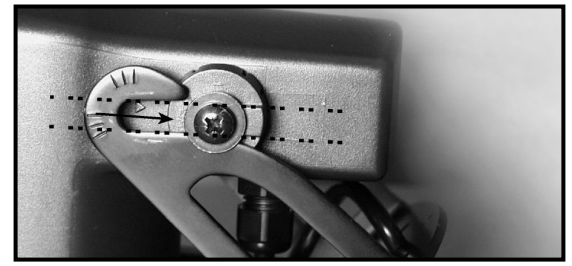
- To adjust the sensor using the buttons :
  Press and hold either push button during 2 seconds (until the LEDs flash) and then release the button.
- To end adjusting the sensor using the buttons :
  Press and hold either push button during 2 seconds (until the LEDs stop flashing) and then release the 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 during 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 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, this will return to its minimum value.

BRACKET MOUNTING

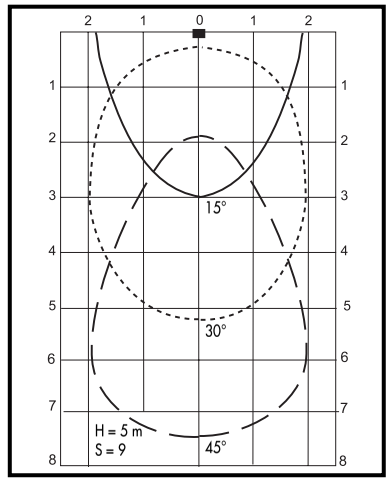




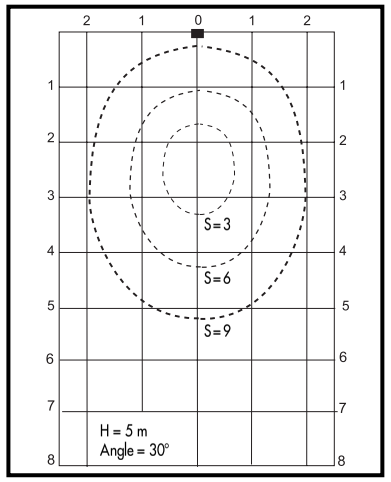
- Check that both locking collars are at the same position
- Align the bracket slot to the locking collar guide as shown

SETTING THE SENSING FIELD DIMENSIONS

FALCON (Mounting height : 5 m)

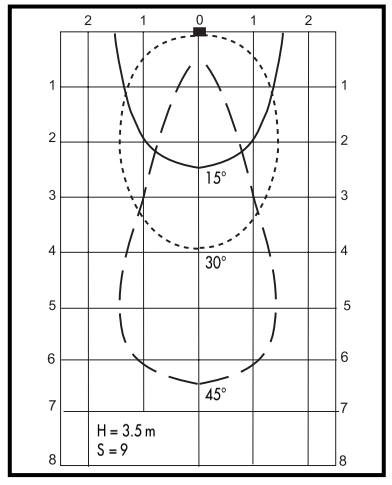


- The sensing fields here on the left correspond to the following adjustments :
  tilt angle :
  15°, 30°, 45°
  sensitivity : 9

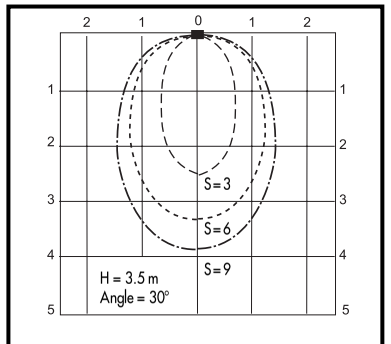


- The sensing fields here on the left correspond to the following adjustments :
  tilt angle :
  30°
  sensitivity :
  9, 6, 3

FALCON (Mounting height : 3.5 m)

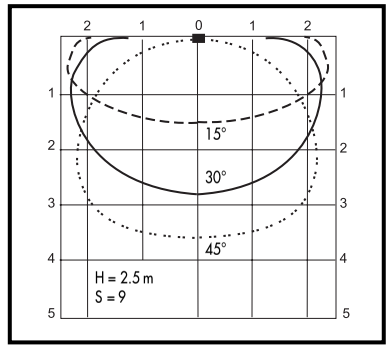


- The sensing fields here on the left correspond to the following adjustments :
  tilt angle :
  15°, 30°, 45°
  sensitivity : 9

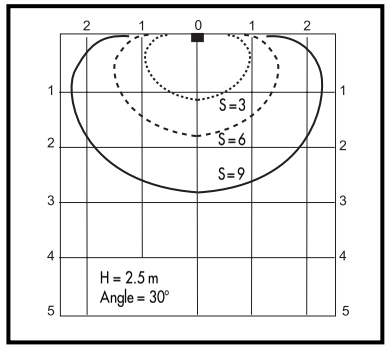


- The sensing fields here on the left correspond to the following adjustments :
  tilt angle :
  30°
  sensitivity :
  9, 6, 3

FALCON XL (Mounting height : 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

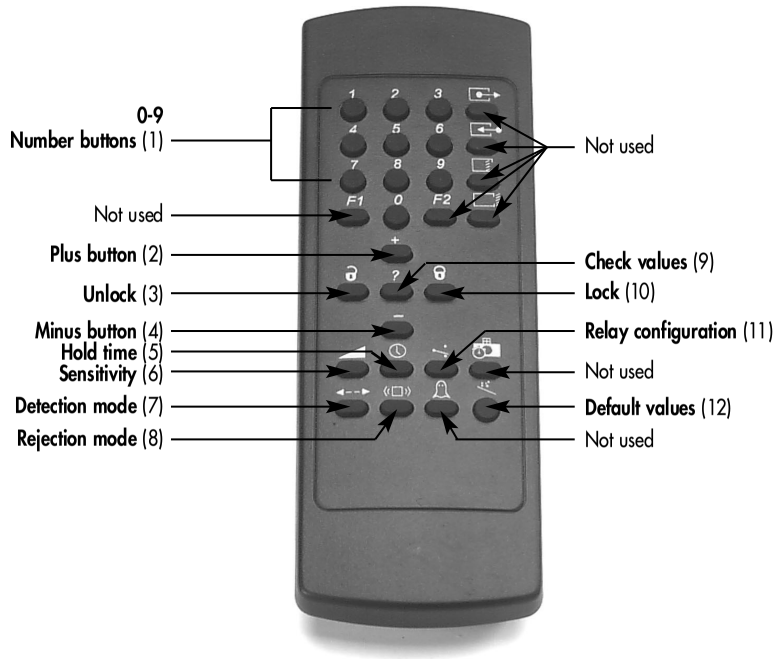
LED SIGNAL

- When the power is turned ON the red and green LEDs 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 next table). The green LED flashes a number of times corresponding to its setting

FUNCTIONS CONFIGURATION WITH REMOTE CONTROL

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 at the sensor before pressing its buttons.

2. CONFIGURATION OF THE SENSOR

Each setting change using the infrared remote control must start by an unlocking and end with a locking of the sensor. It is important to point out that any parameter changed using the remote control supersedes any previous setting.

The table below lists all the parameters, which can be adjusted with the remote control as well as the operations required to adjust them.

PARAMETER KEY	USER'S ACTIONS	FACTORY SETTING	LED SIGNAL
UNLOCK	Press the **UNLOCK key (3)**. Enter your four-digit access code using **NUMBER keys 0-9 (1)**. 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 (3)** (no code required). UNLOCK with code : 0-9 0-9 0-9 0-9 UNLOCK without code	0000	The red LED flashes quickly waiting for the access code. After entering the correct code or if no code is required, the red LED flashes slowly to indicate that the 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 (10)**. If you wish to enter a new access code, use **NUMBER keys 0-9 (1)** to enter the new four-digit code within 20 seconds. If no access code is entered or if you want to keep the current access code, press the **LOCK key (10)** once more. If no remote control key is pressed within 1 minute, the adjustment session is automatically locked. Pressing the **LOCK key (10)** twice within the first minute after the power-on resets automatically the access code to 0000 value. LOCK with code change : 0-9 0-9 0-9 0-9 LOCK without code or code change	0000	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 an adjustment session. The red LED is then flashing slowly.

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

PARAMETER KEY	USER'S ACTIONS
CHECK VALUES	Press the **key (5,6,7,8,11)** corresponding to the parameter to be checked and then press the **CHECK VALUES key (9)**. 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 :** SENSITIVITY key – 7 flashes of the green LED : the sensitivity is set at the value 7. CHECK VALUES : X ?
PLUS	Press the **key (5 or 6)** corresponding to the hold time or sensitivity parameter to be modified and then press the **PLUS key (2)** to increase the value by 1 unit. PLUS : X +
MINUS	Press the **key (5 or 6)** corresponding to the hold time or sensitivity parameter to be modified and then press the **MINUS key (4)** to reduce the value by 1 unit. MINUS : X –

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

PARAMETER KEY	USER'S ACTIONS
DEFAULT VALUES	Press the **DEFAULT VALUES key (12)**, then press the **NUMBER key 1**. All the parameters are reset to the factory values. DEFAULTS VALUES : 1

PARAMETER KEY	USER'S ACTIONS	FACTORY SETTING	LED SIGNAL
SENSITIVITY	Press the **SENSITIVITY key (6)**. Use the **NUMBER keys 0-9 (1)** to enter the sensitivity coefficient required (or adjust this coefficient using the **PLUS (2) or MINUS (4) keys** as explained above). SENSITIVITY : 0-9	7	The red LED flashes quickly waiting for the value. Once this has been entered, it flashes slowly again.
HOLD TIME	Press the **HOLD TIME key (5)**. 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 (2) or MINUS (4) keys** as explained above). HOLD TIME : 0-9	0 (0.5 s)	The red LED flashes quickly waiting for the value. Once this has been entered, it flashes slowly again.
RELAY CONFIGU-RATION	Press the **RELAY CONFIGURATION key (11)**. Use the **NUMBER keys 1-4 (1)** to select the required relay configuration :	1 (Active output)	The red LED flashes quickly waiting for the value. Once this has been entered, it flashes slowly again.

	Active +1	Passive +2	+3	+4
Detection	COM (3) NO (4) NC (5)	COM (3) NO (4) NC (5)	COM (3) NO (4) NC (5)	COM (3) NO (4) NC (5)
No Detection	COM (3) NO (4) NC (5)	COM (3) NO (4) NC (5)	COM (3) NO (4) NC (5)	COM (3) NO (4) NC (5)