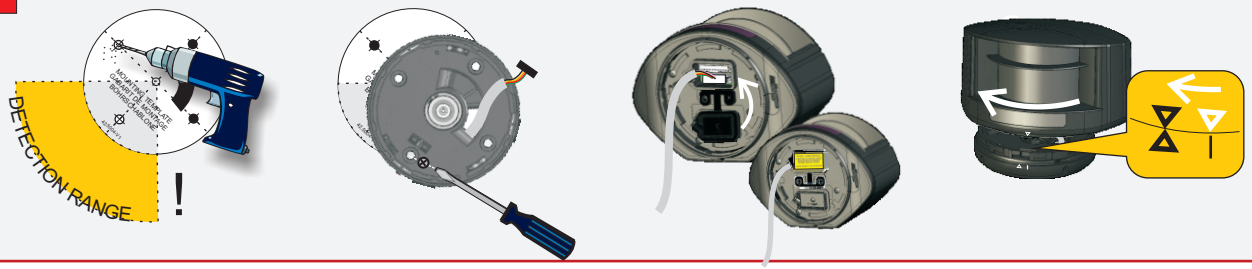
LZR®-I30
QUICK GUIDE

SAFETY SENSOR FOR AUTOMATIC INDUSTRIAL DOORS*

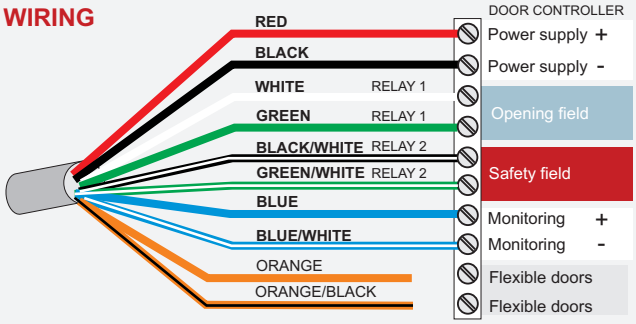
1 MOUNTING

4



2 WIRING

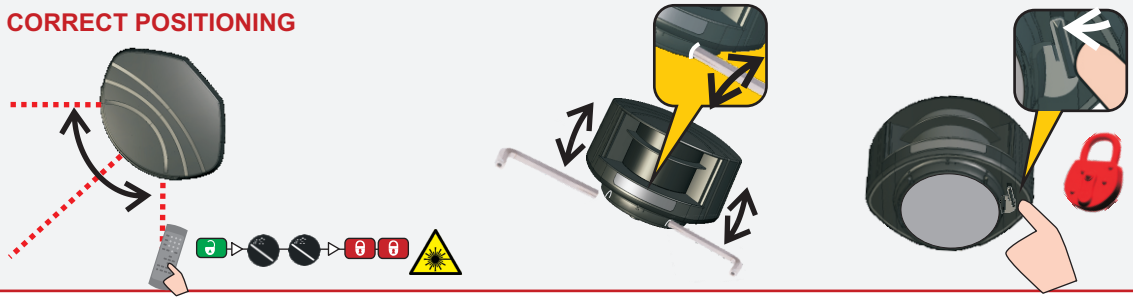
5



Door control without monitoring: BLUE to 0 V
BLUE/WHITE to +12 V - 24 V

3 CORRECT POSITIONING

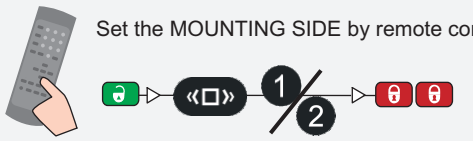
6

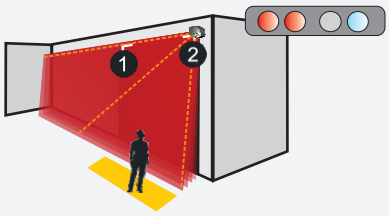


4 MOUNTING SIDE

6

Set the MOUNTING SIDE by remote control.





5 OPENING FIELDS (OPTIONAL)

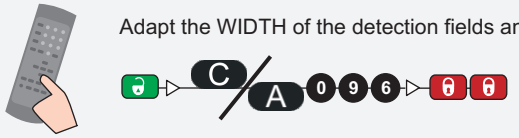
7

Configure the desired opening field if applicable.

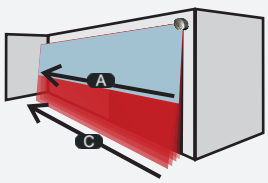
6 FINAL ADJUSTMENTS (OPTIONAL)

8

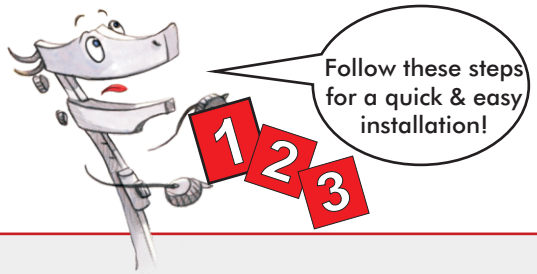
Adapt the WIDTH of the detection fields and/or other parameters by remote control.



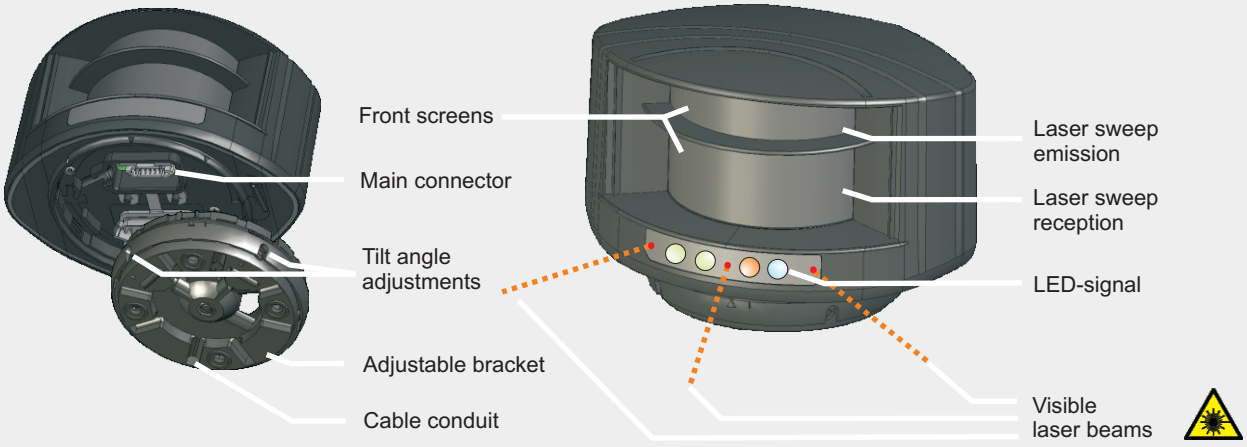
for a field width of 96 in.



SAFETY SENSOR FOR AUTOMATIC INDUSTRIAL DOORS*



DESCRIPTION



USED SYMBOLS

Caution! Exposure to laser radiation.

Factory values

See the indicated page for further information

LED-SIGNAL

GREEN LED
NO DETECTION

RED LED
DETECTION

ORANGE LED
ERROR

BLUE LED
POWER ON

LED FLASHES QUICKLY

LED FLASHES NORMALLY

LED FLASHES SLOWLY

LED OFF

1. Relay 1 - Opening field
2. Relay 2 - Safety field
3. Error
4. Power

SAFETY INSTRUCTIONS

The device contains IR and visible red laser diodes.

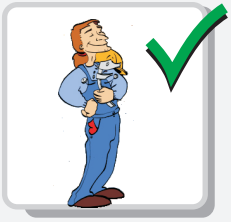
IR laser (CLASS 1):	wavelength 905nm max. output pulse power 75W, 20ns pulse width
Red laser (CLASS 3R):	wavelength 650nm max. output CW power 3mW

Caution! Use of controls, adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

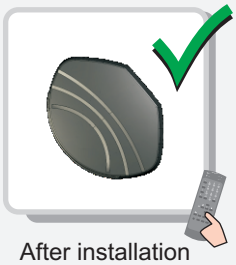
Do not stare into the laser emitter.

Do not stare into the visible red laser beams.

Do not open the sensor. Warranty is void if opened.

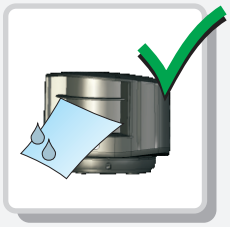


The sensor should only be installed and adjusted by authorized and trained staff.



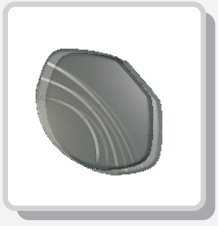
After installation enter an access code to secure the sensor.

INSTALLATION TIPS

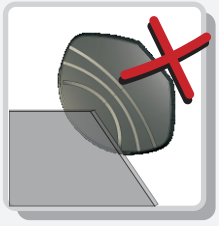


Wipe the front screens regularly with a clean and damp cloth.

Do not use detergents or abrasive cleaning agents to clean the front screens.

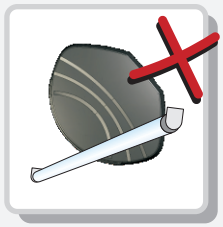


Fasten the sensor firmly to avoid vibrations.



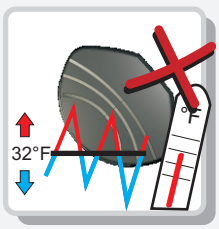
Do not cover the front screens.

Avoid moving objects in the detection field.

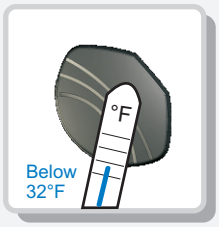


Avoid all types of light sources in the detection field.

Avoid condensation.



Avoid exposing the sensor to sudden and extreme temperature changes.

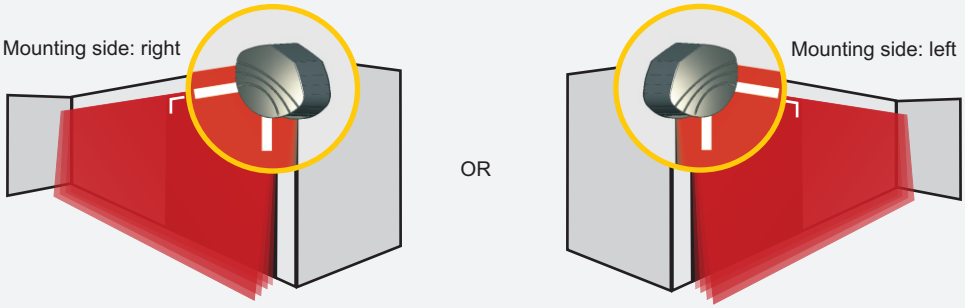


If the sensor is used in environments where the temperature can descend below 32°F, keep the sensor permanently powered.

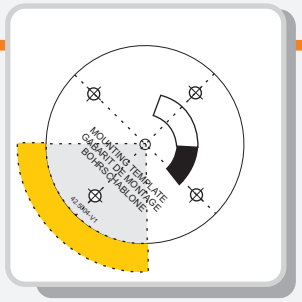
Smoke and fog may cause unwanted detections.

MOUNTING

1



1



Use the adhesive mounting template to position the sensor correctly. The grey area indicates the detection range.

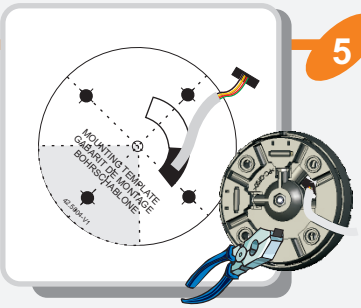
2

Drill 4 holes as indicated on the mounting template.

3

Make a **hole for the cable** if possible.

4



Pass the cable at least 3-4 inches though the **cable opening**. If drilling an opening is not possible, use the cable conduits on the back side of the bracket.

5

Position the **bracket** and **fasten the 4 screws** firmly in order to avoid vibrations.

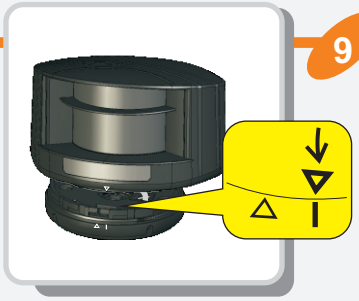
6

Plug the connector and position the cable in the slit.

7

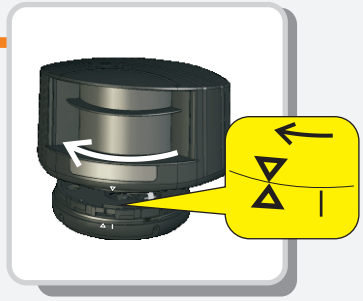
Close the protection sheath and fasten it firmly.

8



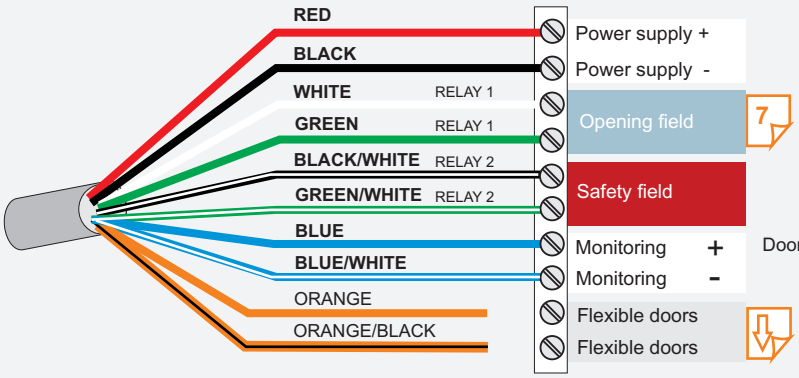
Position the housing on the bracket.

9



Turn the sensor until the two triangles are face to face.

WIRING

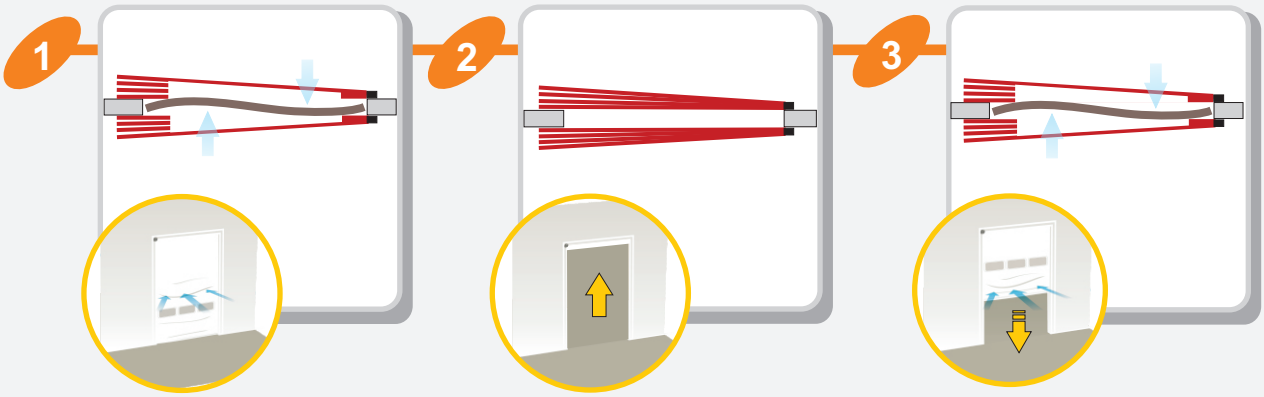


Door control without monitoring: BLUE to 0 V
BLUE/WHITE to +12 V to - 24 V

NOTE: Please refer to “AN011” Application Note 11 for monitoring sequence of operations. BEA recommends the use of monitoring when sensor is used to provide human safety.

FLEXIBLE DOORS

In case of flexible doors, connect the orange and orange/black cables to the corresponding inputs.



The inner curtains will be reduced as indicated to avoid unwanted detections caused by the movement of the door.

When the door is open, the curtains cover the whole door opening again. The sensor scans the area and the door stays open as long as it detects a presence.

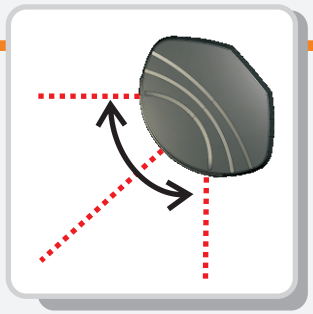
As soon as no presence is detected, the curtains are reduced again and the door closes.

For more information on the use of this function, consult our application note LZR-I30 SPECIAL FUNCTIONS.

CORRECT POSITIONING

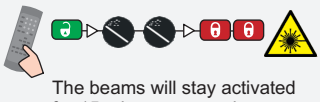
3

1



Adjust the lateral position.

Activate the visible laser beams if you need a visual aid.

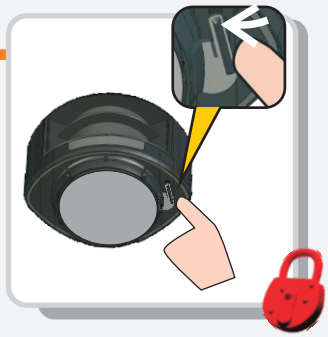


The beams will stay activated for 15 minutes or can be turned off the same way.

2

Adjust the tilt angle of the sensor.

3



Lock the position of the bracket to avoid malfunctioning.
To unlock, use a screwdriver.

MOUNTING SIDE

4

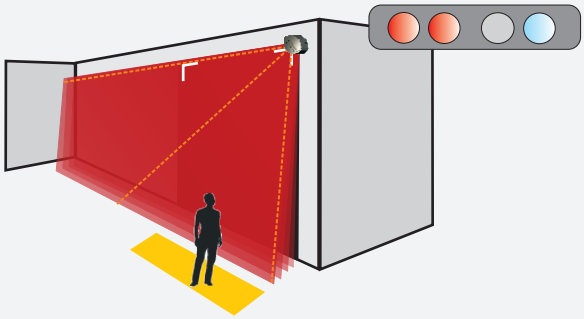
Select the corresponding mounting side with background.

Mounting side	«□»
1	LEFT with background
2	RIGHT with background
3	LEFT without background
4	RIGHT without background
5	MIDDLE without background

By choosing a value with background, the sensor is protected against misuse. The sensor memorizes the reference to the floor and will signal a fault in case the orientation of the sensor is changed.

While the sensor learns its environment, make sure you stay at a distance to avoid disturbances.

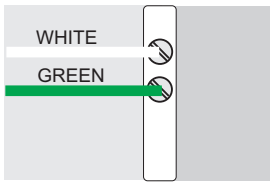
Both RED LEDs flash and the 3 red laser beams automatically light up during 30 seconds.



VIRTUAL PUSH BUTTONS

Install one or two virtual push buttons and configure an activation zone to open the door manually.

1



Make sure the white and green cable are connected to the opening input.

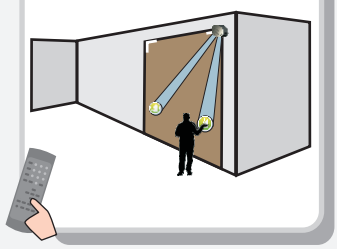
2

Apply the vital push button stickers on or close to the door.

Attention: make sure you place the stickers within the opening field. If the opening field has been adjusted, extend the field width and/or height by remote control.

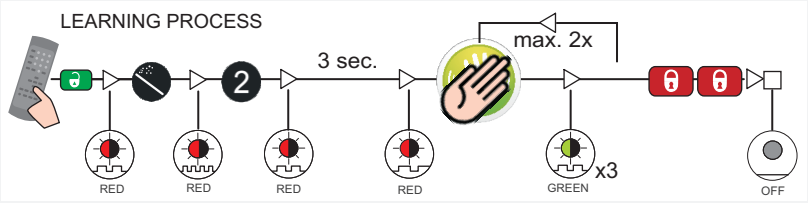
8

3



Configure the detection zones:
1. Activate the learning process by pushing the following remote control sequence.
2. When RED LED flashes, hold your hand in front of the sticker to define the detection zone.
3. The GREEN LED flashes 3x to confirm the selection.
4. The RED LED flashes again. Either learn a second detection zone or lock the session.

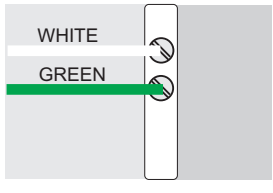
To delete the activation zone(s), repeat the same sequence outside of the detection zone.



SAFETY DURING OPENING

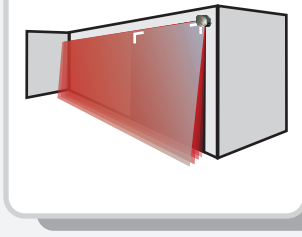
Configure a second detection field to secure the door during opening to avoid accidents.

1



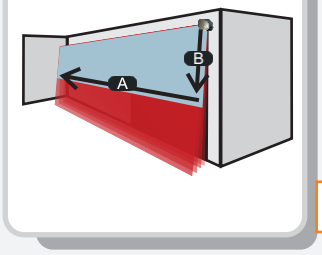
Make sure the white and green cable are connected to the safety-during-opening input.

2



After setting the mounting side, the safety and the opening field will have the same dimensions.

3



Adjust the size of the opening field by remote control (see next page).

8

FIELD DIMENSIONS

SAFETY FIELD

Field width	C
002 - 360	002 in - 360 in
200	200 in

C 0 9 6

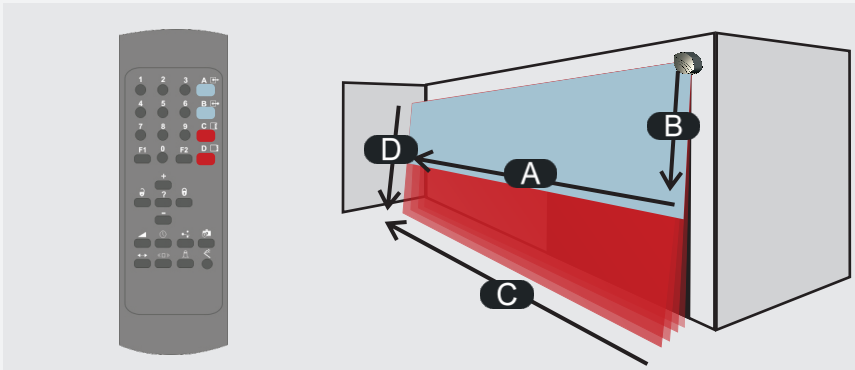
for a field width of 96 in

Field height*	D
000 002 - 360	No safety field 002 in - 360 in
200	200 in

D 1 2 0

for a field height of 120 in

* no adjustment is possible if mounting side is set to 1 or 2



OPENING FIELD

Field width**	A
000 002 - 360	Opening = safety 002 in - 360 in
360	360 in

A 0 9 6

for a field width of 96 in

Field height**	B
000 002 - 360	No opening field 002 in - 360 in
360	360 in

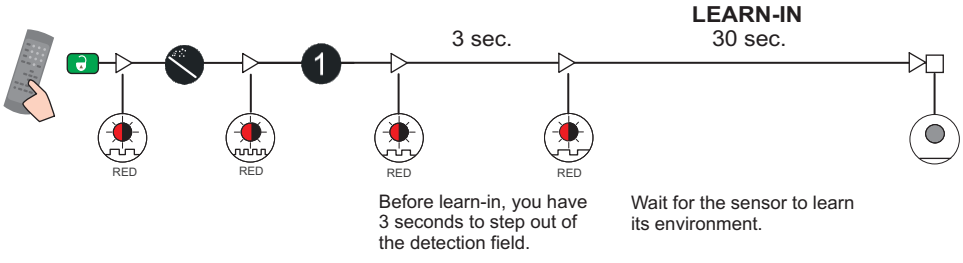
B 1 2 0

for a field height of 120 in

** not available with use of virtual push buttons

LEARN-IN

During the learn-in, the sensor deletes its memory and learns the new reference distances to all objects within its detection zone.

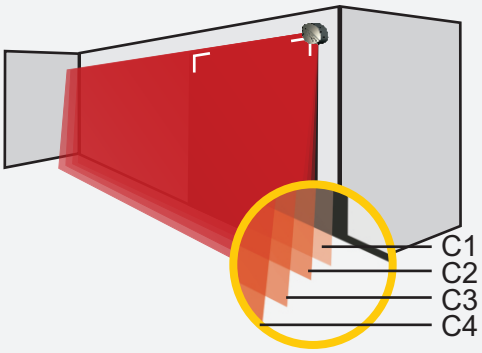


OTHER ADJUSTMENTS

Number of curtains*

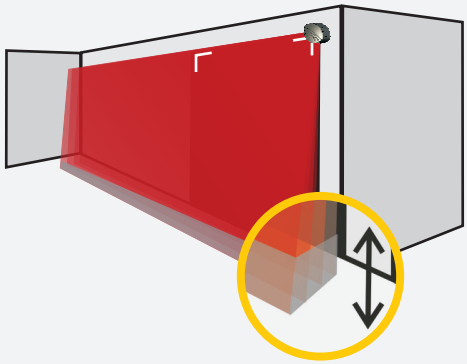
	C1	C2	C3	C4
1	●	○	○	○
2	●	●	○	○
3	●	●	●	○
▟ 4	●	●	●	●
5	○	●	●	●
6	○	○	●	●
7	○	○	○	●
8	○	●	○	○
9	○	○	●	○

*only for safety field



Uncovered zone — F2

▟ 0	2 in	
1	4 in	
2	6 in	recommended in case of snow, leaves etc.
3	8 in	
4	10 in	



Immunity filter

1	Indoor
▟ 2	Outdoor LOW
3	Outdoor MEDIUM
4	Outdoor HIGH

Object size*

0	size filter deactivated
▟ 1	> 2 in
2	> 4 in
3	> 6 in
4	> 8 in

*approximate values, not guaranteed

Relay configuration

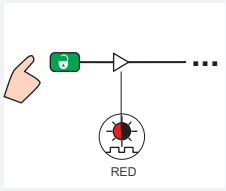
	RELAY 1	RELAY 2
▟ 1	Active - NO	Passive - NC
2	Passive - NC	Active - NO
3	Passive - NC	Passive - NC
4	Active - NO	Active - NO

Relay redirection — F1

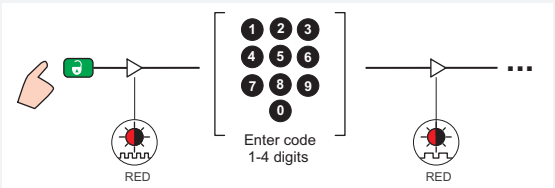
	RELAY 1	RELAY 2
▟ 0	opening field	safety
1	opening or safety	safety

HOW TO USE

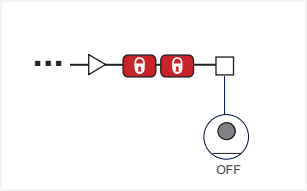
How to enter a remote control session?



After unlocking the red LED flashes and the remote control is accessible.

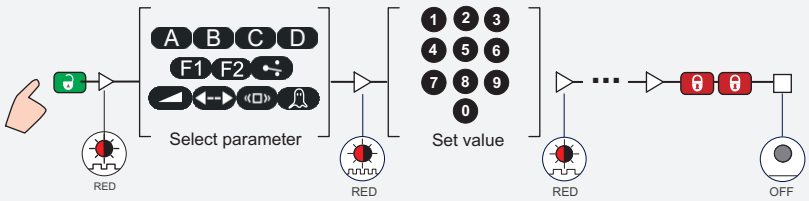


If the red LED flashes quickly after unlocking the sensor, enter an access code. In case you do not know the access code, cut and restore power supply. No code is required to unlock during the first minute after powering.

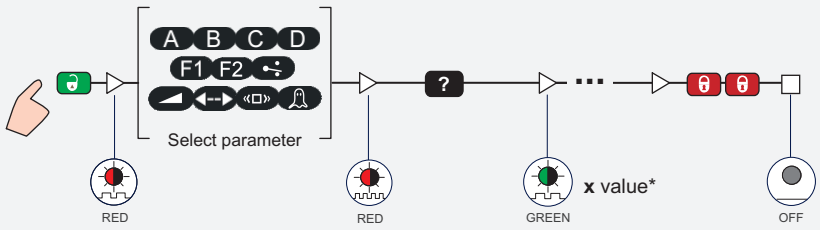


30 minutes after power reset, the sensor locks the access to the remote control session. Cut and restore power supply. The remote control session is accessible again during 30 minutes.

How to adjust one or more parameters?



How to check one or more values?

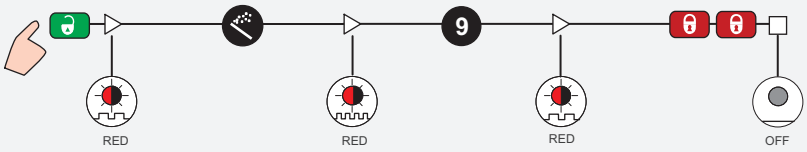


*The number of flashes indicates the value of the chosen parameter.

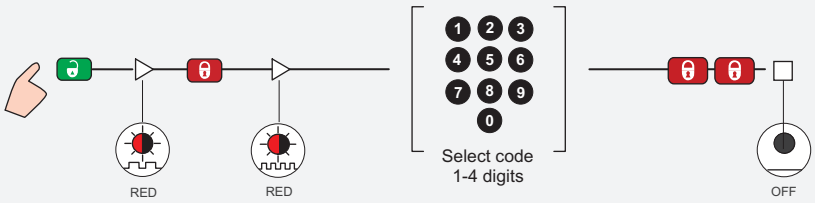
If the detection field width is for example 196 in, the LED sequence will be:
1X green, 1 orange, 9X green, 1 orange, 6X green.

If the orange LED flashes 3X, the corresponding field has been defined by the learn-in function.

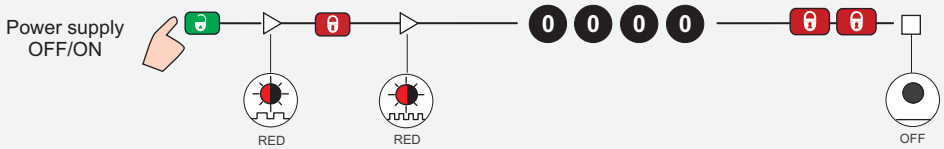
How to reset to factory values?



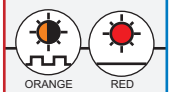
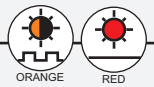
How to save or change an access code?



How to delete an access code?



TROUBLESHOOTING

SYMPTOMS	LED	POSSIBLE CAUSES	CORRECTIVE ACTION
No blue LED		There is no power.	Check cable and connexion.
Only the BLUE LED is ON.		The monitoring input is not connected.	Check wiring. The BLUE and BLUE/WHITE cable have to be connected to the monitoring input.
The detection field LED remains GREEN.		The detection field is too small.	Check the size of the fields.
		The object size is too small.	Modify object size.
The detection field LED remains RED.		You or any other object moves or stays in the field.	Walk out of the field and/or remove the object(s) from the field.
		The field is touching the floor, the wall or the door, which leads to detection.	Activate the 3 red beams and check if the position of the sensor is correct. If not, adjust the hex screws. Verify the field size. Execute a teach-in.
Orange LED is flashing and the detection field LEDs are red.		No background (reference point) is found.	Check the position of the sensor. Check mounting side setting. If there is no background, set the mounting side to value 3 to 5. Launch a new teach-in.
		The sensor is masked.	Verify and clean the front screens.
Orange LED is ON.		The power supply voltage is exceeding the acceptable limits.	Check the power supply voltage.
		The sensor exceeds its temperature limits.	Verify the outside temperature where the sensor is installed. Eventually protect the sensor from sunlight using a cover.
		Internal error	Wait a few seconds. If the LED remains ON, reset the power supply. If the LED turns on again, replace the sensor.
The sensor does not respond to the remote control.		30 minutes after last use of the remote control, the sensor locks the access to the remote control session.	Cut and restore power supply. The remote control session is accessible again during 30 minutes.
		The batteries in the remote control are not installed properly or dead.	Verify or replace the batteries.
		The remote control is badly pointed.	Point the remote control towards the sensor, but with a slight angle. The RC should not be pointed in a right angle in front of the sensor.
		A reflective object is in close proximity to the sensor.	Avoid highly reflective material in proximity to the sensor.
The sensor does not unlock, even after entering the access code.		You have to enter a code or the wrong code was entered. (Maybe it was changed?).	Cut and restore power supply. No code is required to unlock during the first minute after powering.

TECHNICAL SPECIFICATIONS

Technology:	laser scanner, time-of-flight measurement
Detection mode:	presence (EN 12453 Typ. E)
Max. detection range:	30 ft x 30 ft
Remission factor:	> 2 %
Size of target:	< 11.8 in x 7.9 in x 27.5 in @ 30 ft (EN 12445 testbody A)
Emission characteristics:	
IR laser	Wavelength 905 nm; max. output pulse power 75 W, 20ns pulse width
Red visible laser	wavelength 650 nm; max. output CW power 3 mW
Supply voltage:	10-35 V DC @ sensor terminal
Power consumption:	< 5 W
Peak current at power-on:	1.8 A (max. 80 ms @ 35 V)
Cable length:	30 ft
Response time:	typ 20 ms; max. 80 ms
Output:	2 electronic relays (galvanic isolated - polarity free)
Max. switching voltage:	35 V DC / 24 V AC
Max. switching current:	80 mA (resistive)
Switching time:	t_{ON}=5 ms; t_{OFF}=5 ms
Output resistance:	typ 30 Ω
Voltage drop on output:	< 0.7 V @ 20 mA
Leakage current:	< 10 µA
Input:	2 optocouplers (galvanic isolated - polarity free)
Max. contact voltage:	30 V DC (over-voltage protected)
Voltage threshold:	Log. H: >8 V DC
	Log. L: <3 V DC
Response time monitoring input:	< 5 ms
LED-signal:	1 blue LED: power-on status
	1 orange LED: error status
	2 bi-coloured LEDs: detection/output status (green LED: no detection; red LED: detection)
Dimensions:	5 in (D) x 3.75 in (W) x 2.75 in (H)
Material:	PC/ASA
Colour:	black
Mounting angles on bracket:	-45 °, 0 °, 45 °
Rotation angles on bracket:	-5 ° to +5 ° (lockable)
Tilt angles on bracket:	-3 ° to +3 °
Protection degree:	IP65 (avoid direct exposure to high pressure cleaning)
Temperature range:	-22 °F to +140 °F if powered
	+32 °F to +140 °F unpowered
Humidity:	0-95 % non-condensing
Vibrations:	< 2 G
Pollution on front screens:	max. 30 %; homogenous
Expected lifetime:	min. 5 years
Norm conformity:	2006/95/EC: LVD; 2004/108/EC: EMC; 2006/42/EC: MD; 2002/95/EC: RoHS;
	EN 60825-1; EN 60950-1; EN 60529; IEC60825;
	EN 61000-6-2: EMC - Industrial level; EN 61000-6-3: EMC - Commercial Level;
	EN 61496-1 & -3; EN 61508 SILCL1; EN 12978; EN 12445; EN 12453 Typ E;
	EN ISO 13849-1:2008 Performance Level «c» / CAT 2