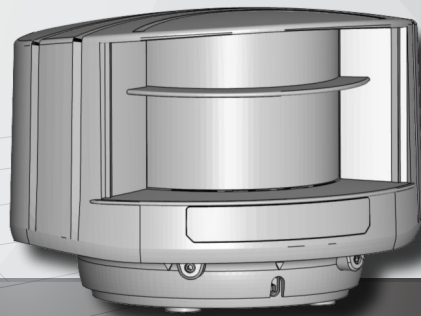




EN



# LZR<sup>®</sup> - RS300

SAFETY SENSOR  
FOR EXTERNAL RAILWAY DOORS

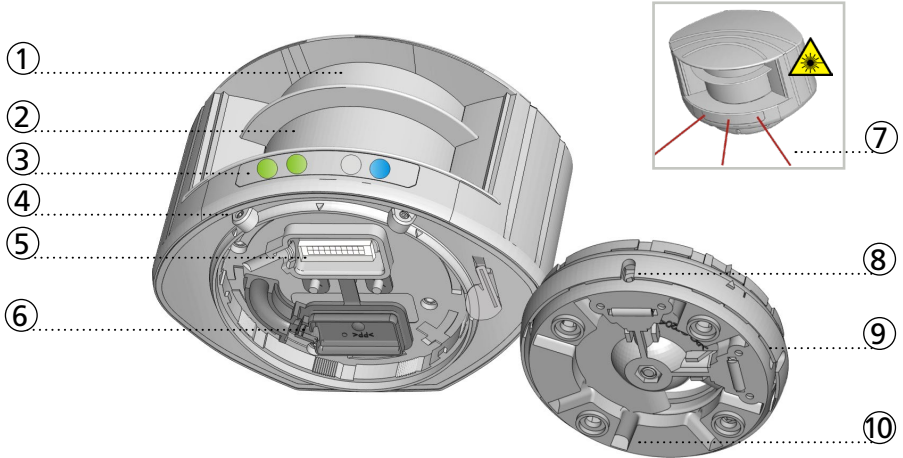
User's Guide for product version 0700 and more



## SAFETY SENSOR FOR EXTERNAL RAILWAY DOORS

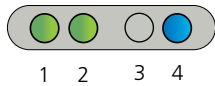
Other use of the device is outside the permitted purpose and can not be guaranteed by the manufacturer.  
The manufacturer cannot be held responsible for incorrect installations or inappropriate adjustments of the sensor.

### DESCRIPTION



- |                                |  |
|--------------------------------|--|
| 1. laser sweep emission        | 6. protection cover                    |
| 2. laser sweep reception       | 7. visible laser beam (3)              |
| 3. LED-signal (4)              | 8. notch for tilt angle adjustment (2) |
| 4. screw for position lock (2) | 9. adjustable bracket                  |
| 5. connector                   | 10. cable conduit (4)                  |

### LED-SIGNAL



1. Detection LED: relay 1 - not used
2. Detection LED: relay 2 - safety field
3. Error LED
4. Power LED



LED flashes quickly



LED flashes



LED flashes slowly



LED is off

#### DETECTION LEDs



detection



no detection

#### ERROR LED



error



no error

#### POWER LED



power



no power

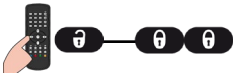
**TIP!** The LEDs can be switched off by remote control:



### SYMBOLS



Caution!  
Laser radiation



Remote control  
sequence

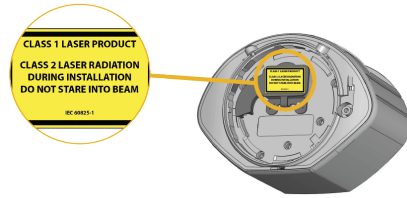


Possible  
remote control  
adjustments



Factory values

## SAFETY



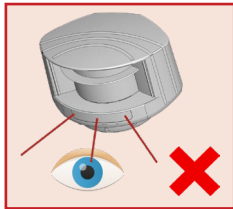
The device emits invisible IR and visible laser radiations.  
IR laser: wavelength 905nm; output power 0.10mW (Class 1 according to IEC 60825-1)  
Visible laser: wavelength 635nm; output power 0.95mW (Class 2 according to IEC 60825-1)

The visible laser beams are inactive during normal functioning. Do not stare into the visible red laser beams.  
The installer can activate the visible lasers if needed.

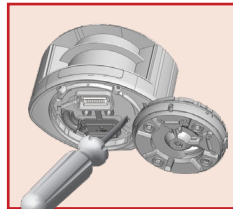


### CAUTION!

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



Do not look into the visible red laser beams.



The warranty is void if unauthorized repairs are made or attempted by unauthorized personnel.

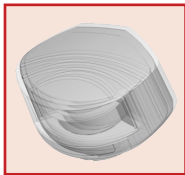


Only trained and qualified personnel may install and adjust the sensor.

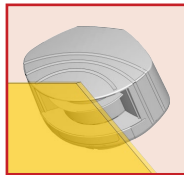


Test the good functioning of the installation before leaving the premises.

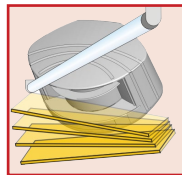
## INSTALLATION AND MAINTENANCE



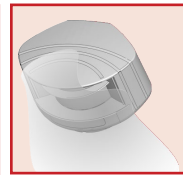
Avoid extreme vibrations.



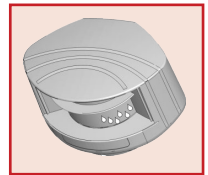
Do not cover the front screens.



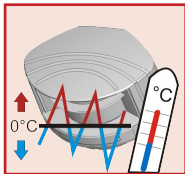
Avoid moving objects and light sources in the detection field.



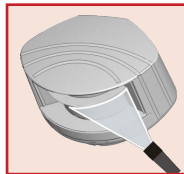
Avoid the presence of smoke and fog in the detection field.



Avoid condensation.



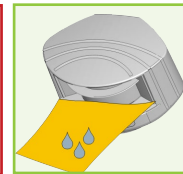
Avoid exposure to sudden and extreme temperature changes.



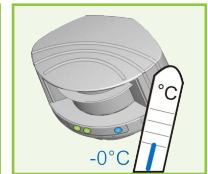
Avoid direct exposure to high pressure cleaning.



Do not use aggressive products to clean the front screens.

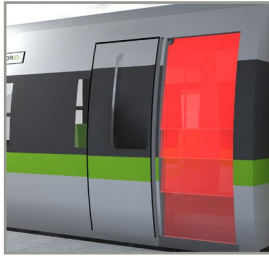


Wipe the front screens regularly with a clean and damp cloth.



Keep the sensor permanently powered in environments where the temperature can descend below 0°C.

## APPLICATIONS



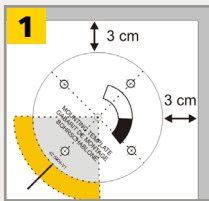
CURVED DOORS - 4 curtains



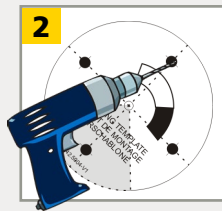
FLAT DOORS - 1 curtain

## INSTALLATION STEPS

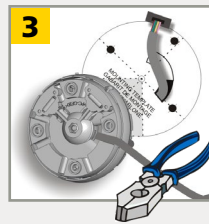
### 1 MOUNTING



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



Drill 4 holes as indicated on the mounting template. Make a hole for the cable if possible.



Pass the cable +/- 10 cm through the cable opening.

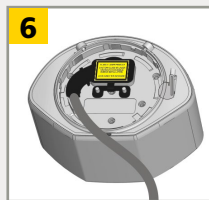
If drilling an opening is not possible, use the cable conduits on the back side of the bracket.



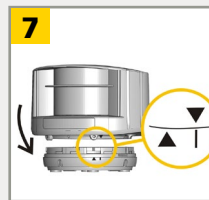
Position the bracket and fasten the 4 screws firmly.



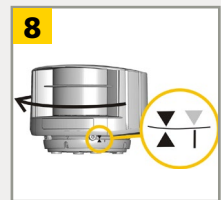
Open the protection cover, plug the connector and position the cable in the slit.



Close the protection cover and fasten it firmly.

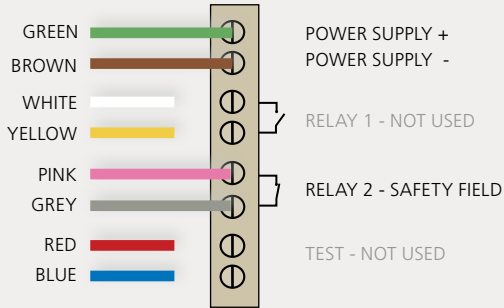


Position the housing on the bracket.



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

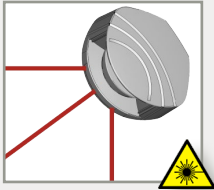
## 2 WIRING



## 3 POSITIONING

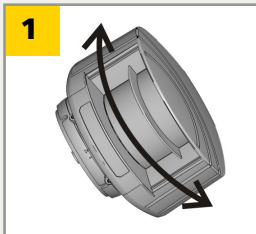


Unlock the sensor and activate the visible laser beams.

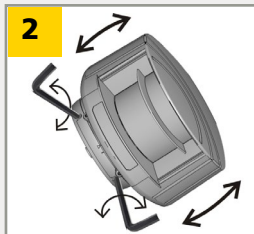


The visible laser beams indicate approximately the position of the first curtain and limit the angle of the detection field.

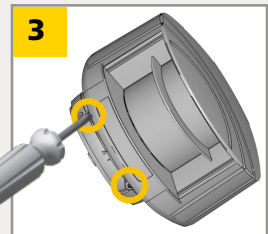
The visible laser beams stay activated for 15 minutes or can be turned off the same way they were activated.



Adjust the **lateral position** of the detection field.



Adjust the **tilt angle** of the detection field with the hex key.



**Lock the position** of the mounting bracket to avoid malfunctioning in case of extreme vibrations.

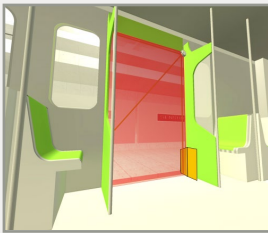
# 4

## MOUNTING SIDE

Select the corresponding mounting side.

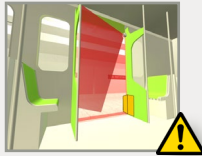
The sensor then learns its environment and automatically determines the detection field(s). Both red LEDs flash slowly and the 3 visible laser beams automatically light up during 30 seconds.

Stay outside of the detection field to avoid disturbances.



### WITH BACKGROUND

The sensor memorizes the floor as reference point and signals a fault when its orientation is changed.



### WITHOUT BACKGROUND

No reference point, no signal.

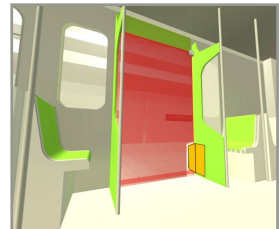
**IMPORTANT:** Test the good functioning of the installation before leaving the premises.

## TEACH-IN

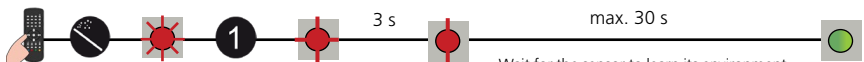
Launch a teach-in

- after changing the sensor position
- when new objects are added to or changed in the detection zone.

During teach-in, the sensor learns its surroundings and adapts the detection field shape to these. Objects in the detection field will be cut out.



Stay outside of the detection field to avoid disturbances.



Wait for the sensor to learn its environment or lock it by remote control.

## REMOTE CONTROL ADJUSTMENTS (OPTIONAL)

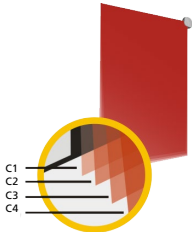
FIELD WIDTH

**C**  0 5 - 5 0 0 0  
 0.5 m **5 m** no safety field

FIELD HEIGHT

**D**  0 5 - 5 0  
 0.5 m **5 m**

DETECTION CURTAINS



**C**       
 CURTAIN C1 C2 C3 C4

- 0** deactivate curtain
- 2** activate curtain

EX: **C**    **2** **2**  
 C1 + C2 are deactivated  
 C3 + C4 are active

**C**       
 Only C1 is active.

The distances between the curtains depend on the mounting height and side. When mounted on the left, the distance between the first and the last curtain is approximately 10 cm for every meter (mounting height).

**Example:** at 5 m the distance is 50 cm.

UNCOVERED ZONE

**F2** 0 1 2 3 4  
**5** 10 15 20 25 cm

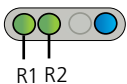
IMMUNITY FILTER

**I**  1 2 3 4 5 6 7 8  
 indoor outdoor low outdoor med outdoor high indoor outdoor low outdoor med outdoor high  
 Increased immunity to rain, snow, fog... Increased sensitivity (detection of black objects, ...)

MIN. OBJECT SIZE  
 approximate values

**M**  0 1 2 3 4  
 off **5** 10 15 20 cm

OUTPUT CONFIGURATION



**O**  1 2 3 4  
 R1 permanent A - NO P - NC P - NC A - NO  
 R2 P - NC A - NO P - NC **A - NO**  
 A = active  
 P = passive

DETECTION TIME DELAY  
 approximate values

**T** 0 1 2 3 4 5 6 7 8 9  
**off** 100 200 300 400 500 600 700 800 900 ms

The relays are triggered when the detection duration  $\geq$  the selected time.



## HOW TO USE THE REMOTE CONTROL



After unlocking, the red LED flashes and the sensor can be adjusted by remote control.

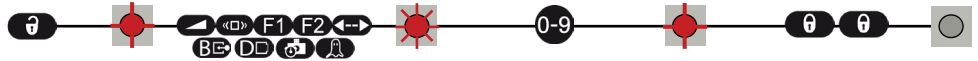


If the red LED flashes quickly after unlocking, you need to enter an access code from 1 to 4 digits.

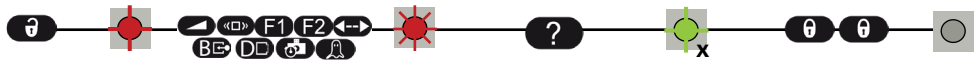


To end an adjustment session, always lock the sensor.

### ADJUSTING ONE OR MORE PARAMETERS



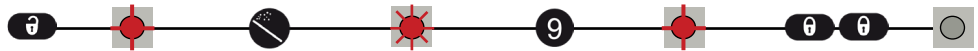
### CHECKING A VALUE



= field width: 4.2 m

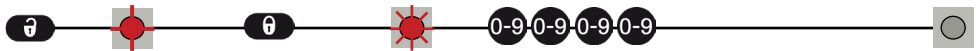
= field width is defined by teach-in

### RESTORING TO FACTORY VALUES

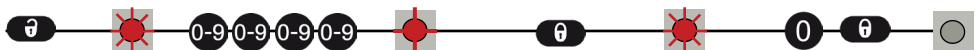


### SAVING AN ACCESS CODE

The access code is recommended for sensors installed close to each other.



### DELETING AN ACCESS CODE









Enter the existing code



X = THE NUMBER OF FLASHES INDICATES THE VALUE OF THE PARAMETER.

## TROUBLESHOOTING

	No blue LED	There is no power.	<b>1</b> Check cable and connexion.
		The polarity of the power supply is inverted.	<b>1</b> Check the polarity of the power supply.
	The detection LED remains green.	The detection field is too small or deactivated.	<b>1</b> Check the size of the fields. <b>2</b> Launch a teach-in.
		The object size is too small.	<b>1</b> Decrease the min. object size.
	The detection LED remains red.	Someone or something is in the detection field.	<b>1</b> Step out of the field and/or remove the any object(s) from the field.
		The field is touching the floor, the wall or the door, which leads to detection.	<b>1</b> Activate the 3 red beams and check if the position of the sensor is correct. If not, adjust the hex screws. <b>2</b> Verify the field size. <b>3</b> Launch a teach-in.
 	The orange LED is flashing and the detection LEDs are red.	No background (reference point) is found.	<b>1</b> Check the position of the sensor. <b>2</b> Check the mounting side setting. If there is no background, set the mounting side to value 3 to 5. <b>3</b> Launch a new teach-in.
		The sensor is masked.	<b>1</b> Verify and clean the front screens with a damp cloth.
	The orange LED is on.	The power supply voltage is exceeding the acceptable limits.	<b>1</b> Check the power supply voltage.
		The sensor exceeds its temperature limits.	<b>1</b> Verify the outside temperature where the sensor is installed. Eventually protect the sensor from sunlight using a cover.
		Internal error	<b>1</b> 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.	<b>1</b> 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.	<b>1</b> Verify or replace the batteries.
		The remote control is badly pointed.	<b>1</b> 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.	<b>1</b> Avoid highly reflective material in proximity to the sensor.
	The sensor does not unlock.	You have to enter a code or the wrong code was entered.	<b>1</b> Please contact SENSORIO.

## TECHNICAL SPECIFICATIONS

Technology:	laser scanner, time-of-flight measurement
Detection mode:	motion and presence
Detection range:	5 m x 5 m @ 2% remission factor
Remission factor:	> 2 %
Angular resolution:	0,3516 °
Min. detected object size (typ.):	2,1 cm @ 3 m ; 3,5 cm @ 5 m (in proportion to object distance)
Emission characteristics:	
IR laser:	wavelength 905 nm; output power 0.10 mW (CLASS 1)
Visible laser:	wavelength 635 nm; output power 0.95 mW (CLASS 2)
Supply voltage:	10-35 V DC @ sensor side*
Power consumption:	< 5 W
Peak current at power-on:	1.8 A (max. 80 ms @ 35 V)
Cable length:	2 m
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 <sub>ON</sub> =5 ms; t <sub>OFF</sub> =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: no detection; red: detection)
Dimensions:	125 mm (D) x 93 mm (W) x 70 mm (H) (mounting bracket + 14 mm)
Weight:	310 g (mounting bracket: + 60 g)
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
Temperature range:	-30 °C to +60 °C if powered; -10 °C to +60 °C unpowered
Humidity:	0-95 % non-condensing
Vibrations:	< 2 G
Pollution on front screens:	max. 30 %; homogenous
Conformity:	2014/35/EU: LVD; 2011/65/EU: RoHS 2; 2014/30/EU: EMC; EN 50155; EN 60529; IEC 60825-1; EN 60950-1; EN 61000-6-2; EN 61000-6-3; IEC 61496-1; EN 61496-3 ESPE Type 2; EN 62061 SIL 2

Specifications are subject to changes without prior notice.  
All values measured in specific conditions.

\* The Equipment must be powered by an approved Class II SELV limited power source.  
This requirement consists of the need for double insulation between primary voltages and the Equipment supply



BEA hereby declares that the LZR®-RS300 is in conformity with the basic requirements and the other relevant provisions of the directives 2014/35/EU, 2011/65/EU and 2014/30/EU.  
The complete declaration of conformity is available on our website



This product should be disposed of separately from unsorted municipal waste

