

# LZR<sup>®</sup>-WIDESCAN

MOTION, PRESENCE & SAFETY SENSOR  
FOR INDUSTRIAL DOORS



User's Guide for product version 0202 and higher  
See product label for serial number

## INSTALLATION & MAINTENANCE TIPS



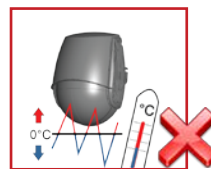
Avoid extreme vibrations.



Do not cover the laser window screens.



Avoid moving objects and light sources in the detection field.



Avoid exposure to sudden and extreme temperature changes.



Keep the protection film during the mounting of the sensor. Remove it before launching a teach-in.



Wipe the laser window with a soft, clean and damp microfiber cloth. We recommend using optical lens cleaner.



Do not use aggressive products or dry towels to clean the optical parts.



Avoid direct exposure to high pressure cleaning.

## SAFETY



The device contains IR and visible laser diodes.  
IR laser: wavelength 905nm; max. output pulse power 75W (Class 1 according to IEC 60825-1)  
Visible laser: wavelength 650nm; max. output CW power 3mW (Class 3R according to IEC 60825-1)

The visible laser beams are inactive during normal functioning.  
The installer can activate the visible lasers if needed.

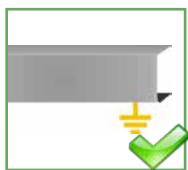


### CAUTION!

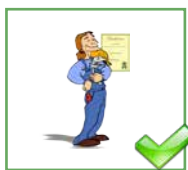
Use of controls, adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.



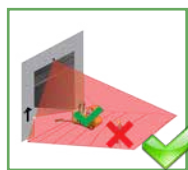
Do not look directly into the laser emitter or the visible red laser beams.



The metal base on which the sensor is mounted, must be correctly earthed.



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



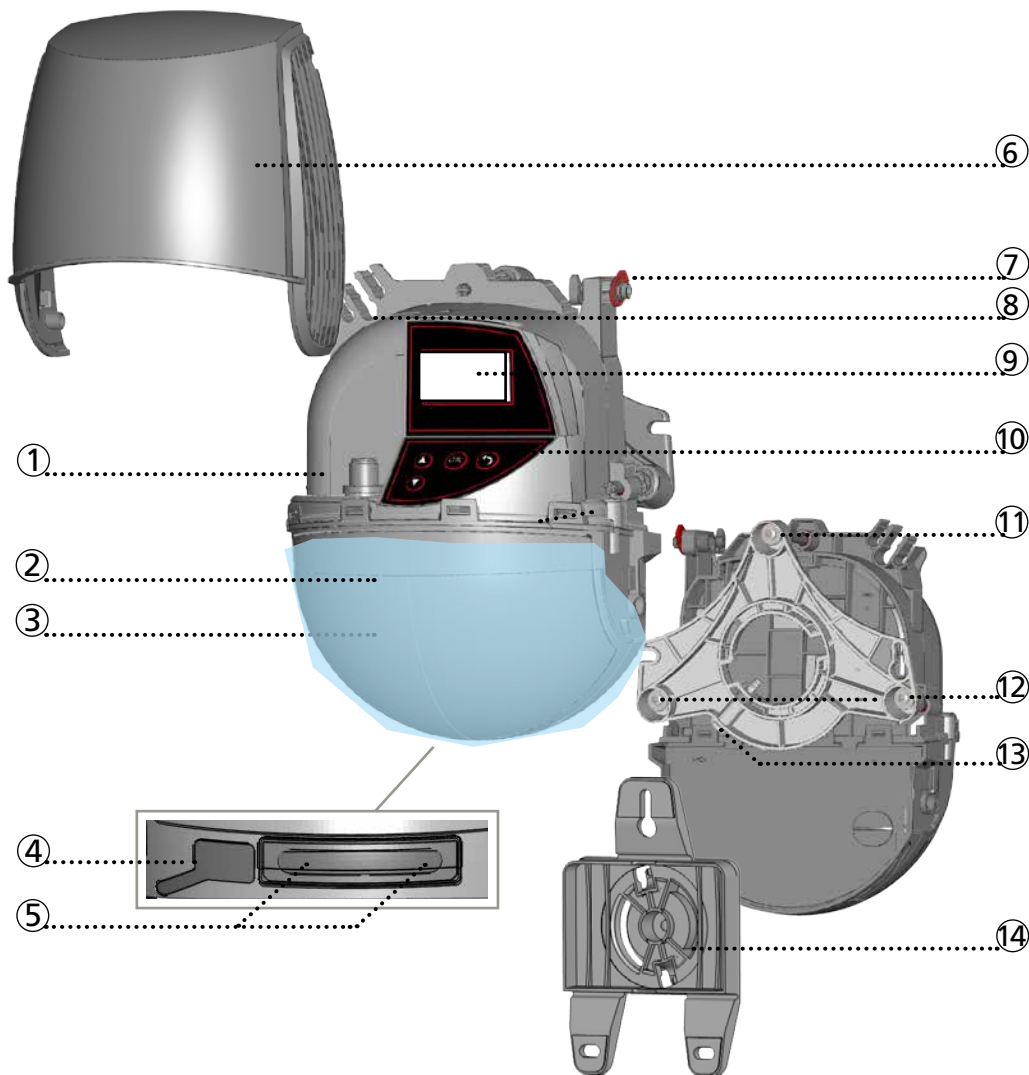
Always test the good functioning of the installation before leaving the premises.



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



- The device cannot be used for purposes other than its intended use. All other uses cannot be guaranteed by the manufacturer of the sensor.
- The manufacturer of the door system is responsible for carrying out a risk assessment and installing the sensor and the door system in compliance with applicable national and international regulations and standards on door safety.
- The manufacturer of the sensor cannot be held responsible for incorrect installations or inappropriate adjustments of the sensor.

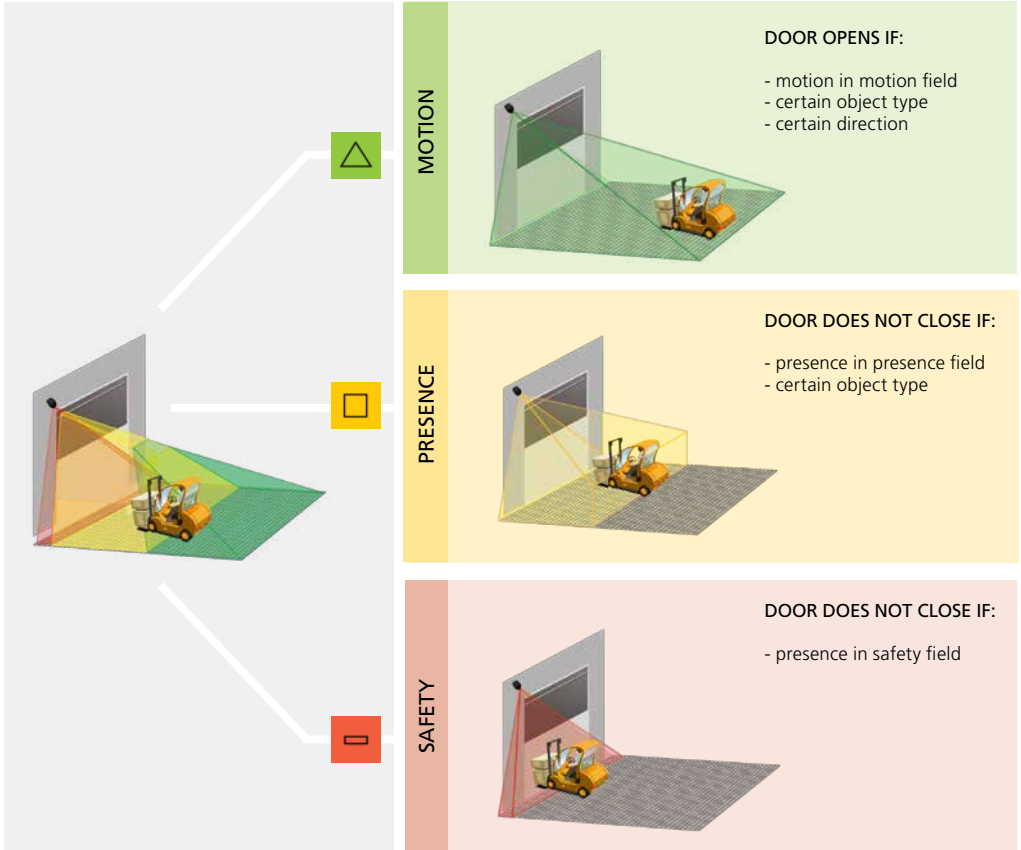


1. main connector
2. protection film
3. laser window
4. USB cap
5. LED-display
6. cover
7. cover lock

8. cable passage
9. LCD-screen
10. keypad
11. tilt angle adjustment screw (1)
12. parallel angle adjustment screw (2)
13. lateral angle lock screw (1)
14. mounting bracket

## BASIC PRINCIPLES: FUNCTIONS & OBJECT

There are 3 main functions that create 3 OVERLAPPING DETECTION FIELDS with certain detection characteristics each:



There are 4 additional opening functions. All detection functions can be combined to trigger a specific output (see output functions on page 13).



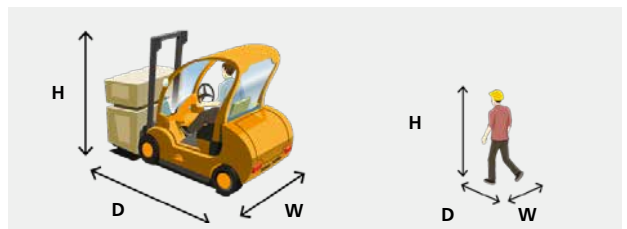
**Motion +:** detection of other moving object type in motion field

**Pullcord:** detection of object in learned pull cord zone

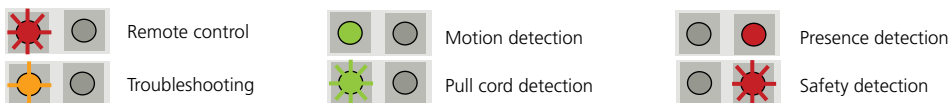
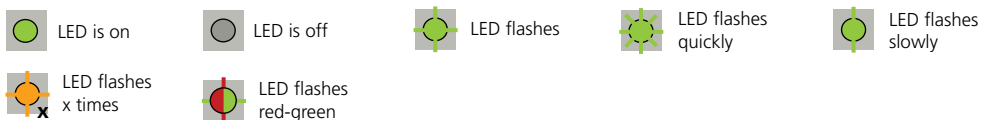
**Speed:** detection of object with a maximum speed

**Height:** detection of object with a minimum height

The sensor carries out a 3D-object analysis and detects depending on the following characteristics: height, width & depth.



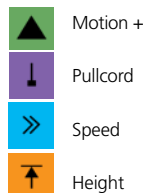
## LED-SIGNAL & SYMBOLS



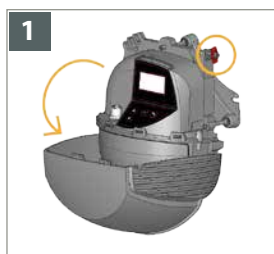
Main functions:



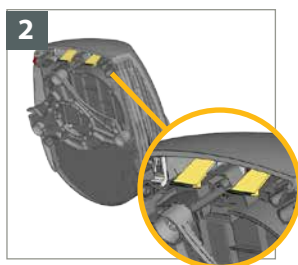
Additional opening functions:



## OPENING THE SENSOR



Before opening the sensor, make sure the cover is **not locked** (red cover lock).

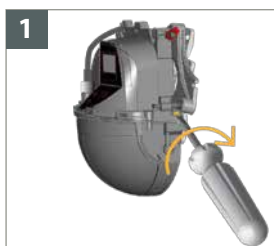


Pull the two legs on top in order to open the cover.

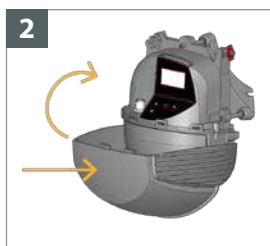


Remove the cover completely before installing the sensor.

## CLOSING THE SENSOR



Lock the sensor position by firmly fastening the angle lock screw.



Reclip the sensor cover **horizontally** and close it as indicated.



Lock the cover by turning the lock screw clockwise.

## HOW TO ADJUST THE SENSOR BY REMOTE CONTROL



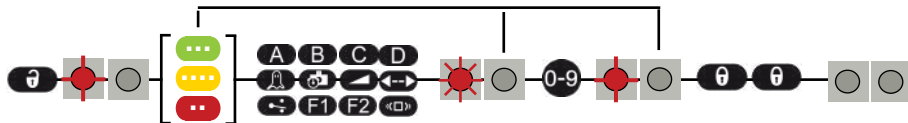
After unlocking, the red LED flashes and the sensor can be adjusted by remote control.



If the red LED flashes quickly after unlocking, enter an access code from 1 to 4 digits. If you do not know the access code, **cut and restore the power supply**. During 1 minute, you can access the sensor without any code.

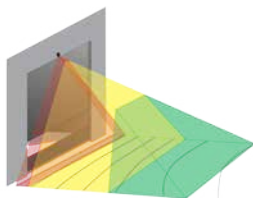


To end an adjustment session, always lock the sensor.



If necessary, select first the corresponding detection field before pushing on the parameter and changing the value. The second LED indicates the detection field.

- ... MOTION
- .... PRESENCE
- .. SAFETY



Activate red spots on floor		
Teach-in: install		0
Teach-in: pull cord	<span style="background-color: #90EE90; border: 1px solid black; border-radius: 50%; padding: 2px 5px;">...</span>	2
Presettings		3/4/5
Restoring to factory values		8/9

## HOW TO ADJUST THE SENSOR BY LCD



Enter the LCD-menu.  
Select a folder, parameter or value.  
Confirm a value and exit edit mode.



Activate red spots on floor.



Launch POSITION WIZARD.



Select to return to previous menu or display.



Scroll up or down the menu items or values.



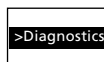
Select your **Language** before entering the first LCD-menu.  
*During the first 30 seconds after power-on of the sensor or later in the diagnostics menu.*



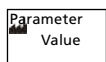
Enter a **Password** if necessary.



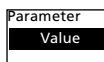
Select **More** to access advanced adjustments.



Select **Diagnostics** to go to the diagnostics menu



Displayed value = factory value



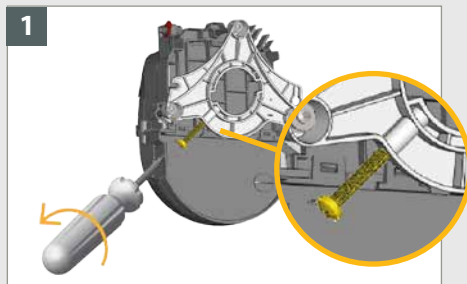
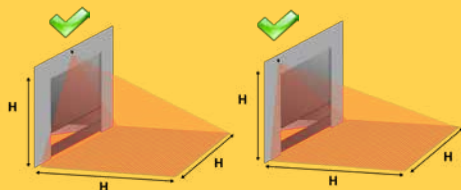
Displayed value = saved value

# 1 MOUNTING & WIRING

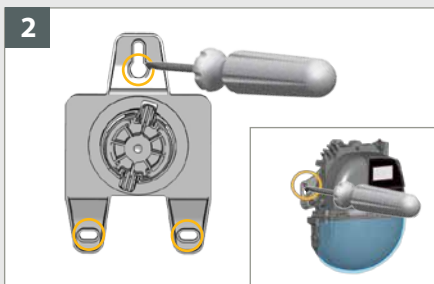


Mounting height: **as high as possible (max. 6 m)**.  
The size of the detection field depends on the mounting height.

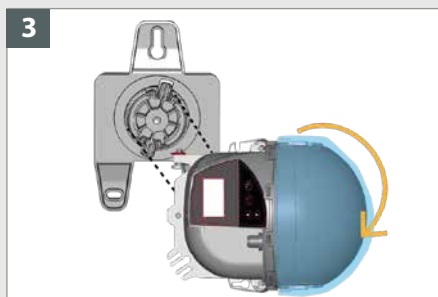
Mounting position: **centre of door or left corner**.  
Mounting on the right side of the door should be avoided.



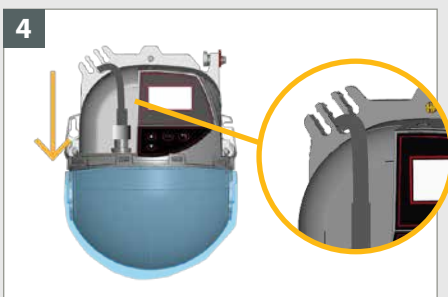
Verify if the angle lock screw is positioned as indicated.  
Unscrew slightly if necessary.



Remove the mounting bracket from the sensor and screw it on the wall. You can also install the sensor directly without using the mounting bracket.



Orientate the sensor horizontally as shown and fix the sensor to the mounting bracket.



Plug the connector and pass the cable through the cable passage without making a loop.

5

		POWER
OUT 1 *		OPENING
OUT 2 *		PRESENCE OR SAFETY
RELAY *		OPTIONAL
		TEST

\*output status powered during non-detection with factory values

Connect the wires accordingly.

The output functions can be configured if necessary, see p. 10 or 13.

5

Teach-in reminder

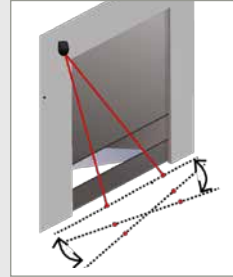
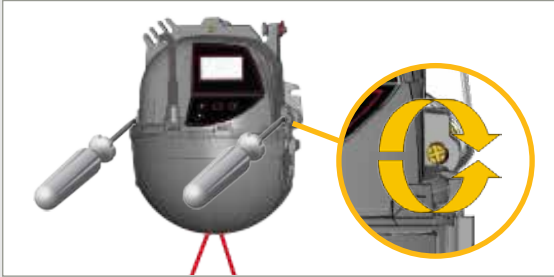
Push OK to return to detection display.

## 2 POSITIONING OF DETECTION FIELD



Remove the blue protection film from the laser window.

### PARALLEL ANGLE

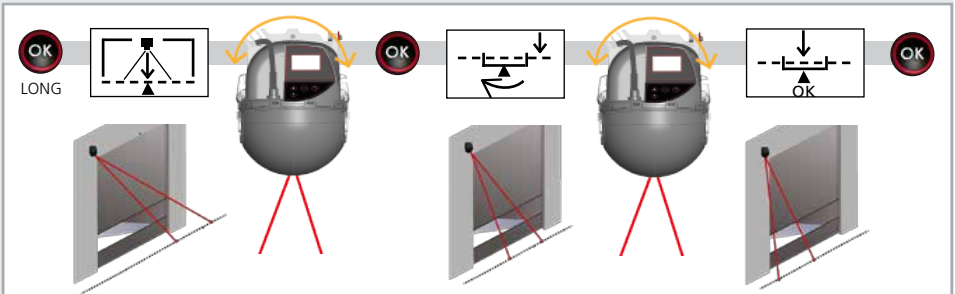


Make sure the curtain is parallel to the door by adjusting one or both screws on the side.

### LATERAL ANGLE

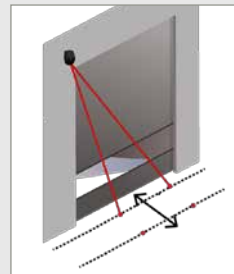
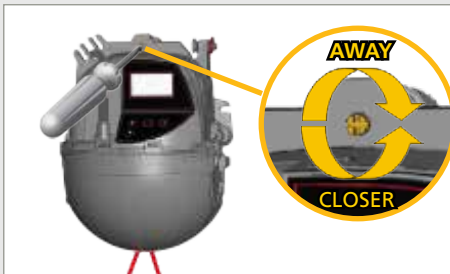


Launch the POSITION WIZARD to position the detection field correctly in front of the door.



1. Push long on OK to launch the POSITION WIZARD.
2. Rotate the sensor in order to align the centre of the red spots with the centre of the door. Push OK.
3. Rotate the sensor until the LCD screen validates the position. Push OK to exit.

### TILT ANGLE



When the safety function is required, the red spots should be as close to the door as possible.

Negative angles reduce the depth of the detection fields.

Position the curtain closer to or further away from the door by turning the screw at the top.



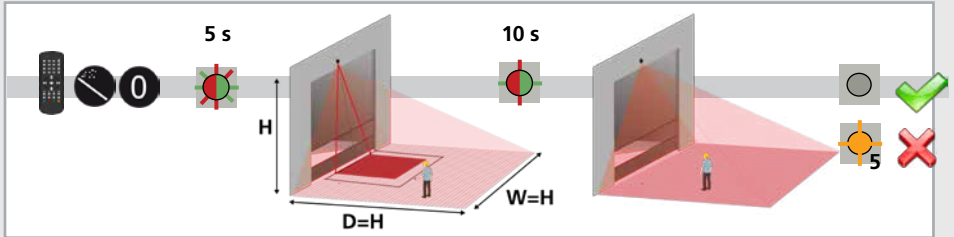
Lock the sensor position by firmly fastening the angle lock screw (see page 5).



### 3 TEACH-IN: INSTALL



- The teach-in zone (square in front of the 2 visible spots) should be completely cleared.
- This teach-in must be launched each time a sensor angle has been changed.
- Make sure the blue protection film is removed!

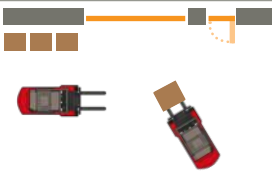


1. Launch a teach-in by remote control, it starts after 5 seconds.
2. Wait while the position, angle and height are learned and the background is analysed.
3. The teach-in ends successfully. If not refer to troubleshooting on page 14.

### 4 PRESETTINGS

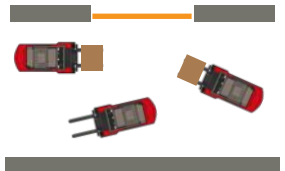
Choose one of the following presettings. They adjust a number parameters automatically according to your application. If necessary, you can also adjust a parameter independently via remote control (see p. 10).

#### STANDARD



- next to pedestrian door
- exterior, large space
- traffic from and to all directions
- storage right and/or left

#### CORRIDOR



- interior, confined space
- traffic from and to all directions
- no storage near door

#### CORNER



- interior or exterior
- no parallel traffic
- storage on one side of door

#### SETTINGS



- width: **max**, depth: **max**
- object type: **vehicle**
- direction: **uni 100%**



- width: **max**, depth: **2 m**
- object type: **vehicle**
- max presence time: **30 min**



- width: **max**, depth: **0.4 m**
- max presence time: **infinite**
- uncovered zone : **15 cm**

OUT1

- motion or pull cord

OUT2

- presence or safety

REL

- motion+ and height trigger

#### SETTINGS



- width: **max**, depth: **max**
- object type: **vehicle**
- direction: **uni 100%**



- width: **max**, depth: **2 m**
- object type: **vehicle**
- max presence time: **infinite**



- width: **max**, depth: **0.4 m**
- max presence time: **10 min**
- uncovered zone: **10 cm**

OUT1

- motion or pull cord or safety

OUT2

- presence or safety

REL

- motion+ and speed trigger

#### SETTINGS



- width: **max**, depth: **max**
- object type: **vehicle**
- direction: **uni**



- width: **max**, depth: **2 m**
- object type: **vehicle**
- max presence time: **30 min**



- width: **max**, depth: **0.4 m**
- max presence time: **10 min**
- uncovered zone: **10 cm**

OUT1

- motion or pull cord or presence

OUT2

- presence or safety

REL

- motion+ and height trigger




# OVERVIEW OF REMOTE CONTROL SETTINGS (OPTIONAL)

		0	1	2	3	4	5	6	7	8	9	
	Teach-in	install										
	Presettings				standard	corridor	corner					
	Service Mode	The service mode deactivates the presence and safety detection during 15 minutes and can be useful during an installation, a mechanical teach-in of the door or maintenance work. Exit the service mode by using the same sequence.										
	Factory Reset				full: complete reset of all values partial: reset of all values except IN/OUT					full	partial	
<b>F1</b>	Out 1 Function	no change	motion	mot or pull	mot/pull/ safe	mot/pull/ pres				Always enter 3 digits for the F1-parameter: • 1st digit refers to output 1 • 2nd to output 2 • 3rd to the relay function (see p. 13 for detailed info)		
<b>F1</b>	Out 2 Function	no change					safety/ pres					
<b>F1</b>	Relay Function	no change						presence	pull cord	mot+ speed	mot+ height	
...	MOTION											
<b>C</b>	Width	0 0 0 - 9 9 9			000 - 999 cm	999 cm						
<b>D</b>	Depth	0 0 0 - 9 9 9			000 - 999 cm	999 cm						
	Object type				vehicle: only vehicles are detected (all types) any: vehicles and pedestrians are detected					vehicle	any	
	Direction		jede	uni 100%				uni inv	uni 100%+		uni	
	Immunity		1	2	3	4						
<b>B</b>	Door zone OFF	0 0 0 - 9 9 9			000 - 999 cm	000 cm						
....	PRESENCE											
<b>C</b>	Width	0 0 0 - 9 9 9			000 - 999 cm	999 cm						
<b>D</b>	Depth	0 0 0 - 9 9 9			000 - 999 cm	200 cm						
	Object type				vehicle: only vehicles are detected (all types) any: vehicles and pedestrians are detected					vehicle	any	
	Max presence time		30 s	1 min	2 min	5 min	10 min	30 min	60 min	120 min	infinite	
	Immunity		1	2	3	4						
<b>B</b>	Door zone OFF	0 0 0 - 9 9 9			000 - 999 cm	000 cm						
..	SAFETY											
<b>C</b>	Width	0 0 0 - 9 9 9			000 - 999 cm	999 cm						
<b>D</b>	Depth	0 0 0 - 9 9 9			000 - 999 cm	040 cm						
	Max presence time		30 s	1 min	2 min	5 min	10 min	30 min	60 min	120 min	infinite	For objects < 50 cm
	Immunity		1	2	3	4	Depending on mounting height, angles and other installation factors, some immunities might exclude conformity with EN 12445.					
<b>F2</b>	Uncovered zone		5 cm	10 cm	15 cm	20 cm	An object < 15 cm is not detected. An object > 15 cm is detected during 10 min (adjustable). An object > 50 cm is detected infinitely (not adjustable).					




FACTORY VALUES

## REMOTE CONTROL SETTINGS (OPTIONAL)

### MOTION

WIDTH    0 0 0 - 9 9 9

000 cm - 999 cm  
(no field)

DEPTH    0 0 0 - 9 9 9

000 cm - 999 cm  
(no field)

OBJECT TYPE   8 9

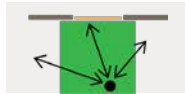
vehicle any

vehicle: only vehicles are detected (all types)  
any: vehicles and pedestrians are detected

DIRECTION   1 2 6 7 9

jede uni 100% uni inv uni 100%+ uni

BIDIRECTIONAL



bidirectional detection  
approaching and going away

1

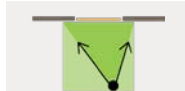
UNIDIRECTIONAL



unidirectional detection  
approaching in any direction  
(distance between object and sensor decreases)

9

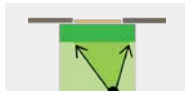
UNI 100%



unidirectional detection  
approaching within the width of the max. field

2

UNI 100% +



unidirectional detection  
approaching within the width of max. field  
+ 1 m of bidirectional detection in front of door

7

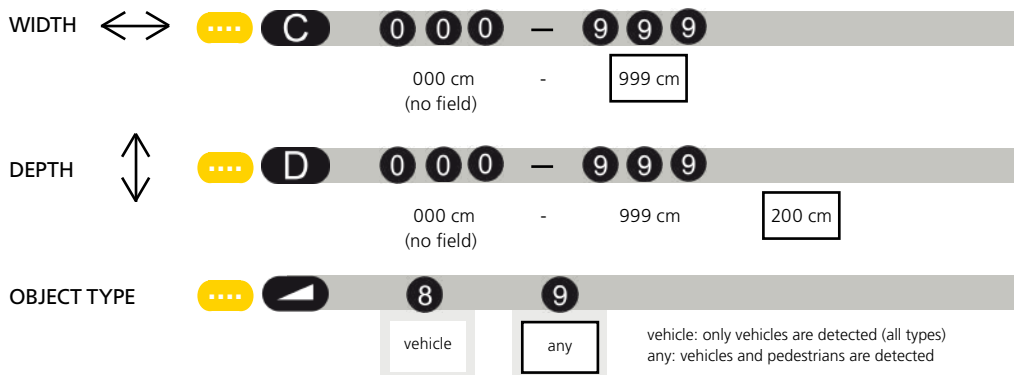
UNI REV



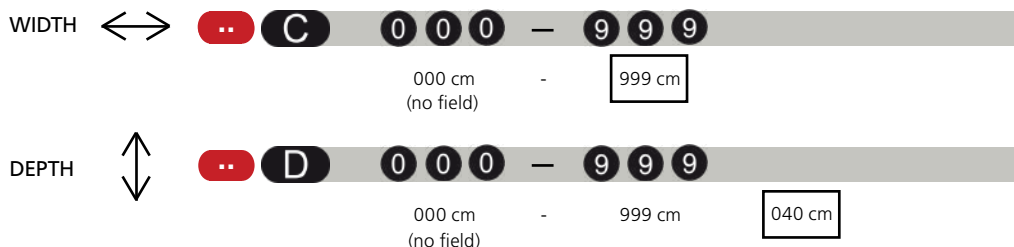
unidirectional detection reverse - going away

6

## PRESENCE



## SAFETY

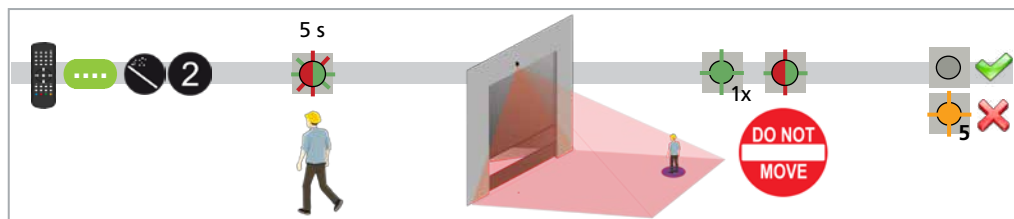


## TEACH-IN: PULL CORD

When an object is detected in the virtual pull cord zone for at least 3 seconds, the door will open.

In order to use this function:

- make sure the corresponding wires are connected to the door activation input (out 1 by default)
- make sure the output or relay function is set to motion or pull cord (factory value) or pull cord.










1. Launch a pull cord teach-in by remote control.
2. Go to the position where you want to activate the door by a virtual pull cord.
3. The learning process starts. The sensor confirms that a person has been seen. Do not move until the LED stops flashing!  
If nobody is seen after 1 minute, the sensor flashes 5x orange (see troubleshooting).  
If motion is detected, the sensor starts a new learning process.
4. The teach-in ends successfully. If not refer to troubleshooting on page 14.






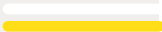














To delete the virtual pull cord zone, simply relaunch a pull cord teach-in (step 1) without standing in the scanning zone. After 1 minute the sensor flashes 5x orange. Push unlock + lock to exit the adjustment mode:

## OUTPUT FUNCTIONS

There are 7 detection functions, 3 main functions and 4 additional opening functions:

	Motion	detection of moving object in motion field - door opens
	Presence	detection of object in presence field - door does not close
	Safety	detection of everything in safety field - door does not close
	Motion +	detection of other type of moving object in motion field - door opens
	Pullcord	detection of object in learned pull cord zone - door opens
	Speed trigger	detection of object with max. speed (< 5 km/h) - door opens
	Height trigger	detection of object with min. height (> 2.25 m) - door opens

These functions can be combined to obtain 9 output functions:

<b>F1</b>	<b>OUT 1</b>	1		Motion	
		2	 	Motion or pull cord	
		3	  	Motion or pull cord or safety	
		4	  	Motion or pull cord or presence	
	<b>OUT 2</b>	5	 	Safety or presence	
	<b>RELAY</b>	6		Presence	
		7		Pull cord	
		8	 	Motion + and speed trigger	
		9	 	Motion + and height trigger	

Always enter 3 digits, 1 for each output:

- 1<sup>st</sup> digit refers to output 1
- 2<sup>nd</sup> digit refers to output 2
- 3<sup>rd</sup> digit refers to the relay function










If you do not want to change the setting of an output, select 0.

Examples:

**F1 3 0 8**      output 1 : motion or pull cord or safety  
 output 2 : no change (safety or presence)  
 relay: motion + & speed

**F1 4 0 7**      output 1 : motion or pull cord or presence  
 output 2 : no change (safety or presence)  
 relay: pull cord

## TROUBLESHOOTING

E1		E1: CPU-XXX	The sensor encounters an internal problem.	! Replace sensor.
E2		E2: XXX PWR	The internal power supply is faulty.	! Replace sensor.
		E2: IN SUPPLY	The power supply is too low or too high.	1 Verify power supply > Diagnostics - LCD.
		E2: TEMP	The internal temperature is too low or too high.	1 Verify the sensor temperature > Diagnostics - LCD. 2 Protect the sensor from direct exposure to heat or cold.
E5	 		The sensor requests a teach-in.	1 Launch teach-in after angle adjustment. All presence/safety-outputs are activated.
		E5: FLATNESS	Faulty teach-in.	1 Make sure the teach-in zone is clear of objects and launch install teach-in.
		E5: TILT	Faulty teach-in because of tilt angle.	1 Adjust tilt angle (max. 15° > Diagnostics - LCD). 2 Launch install teach-in.
		E5: AZIMUTH	Faulty teach-in because of lateral angle.	1 Adjust lateral angle (max. 45° > Diagnostics - LCD). 2 Launch install teach-in.
		E5: HEIGHT	Faulty teach-in because of mounting height.	1 Adjust mounting height (max. 6 m, min. 2 m) 2 Launch install teach-in.
		E5: TIME-OUT	Faulty teach-in.	1 Relaunch install teach-in. Make sure there is no motion detection during at least 5 seconds when the LED starts flashing red-green. 2 Slightly change your position and relaunch a install teach-in.
E6		E6: FQ OUT	Faulty sensor output 1.	! Replace sensor.
E8		E8: ...	Faulty detection engine.	1 If temperature is lower than -20°C, wait until the heating process is completed. 2 If not, replace sensor.
		ORANGE LED is on.	The sensor encounters a memory problem.	! Replace sensor.
		The LED and the LCD-display are off.		1 Check wiring.
		The door does not react.	The service mode is activated.	1 Exit the service mode (see p. 10)
		The product does not react to the remote control.	The sensor is protected by a password.	1 Enter the right password. If you forgot the code, cut and restore the power supply to access the sensor without entering a password during 1 minute.
		The motion detection starts too late.	The sensor has a big negative angle.	1 Reduce the angle of the sensor.

## TECHNICAL SPECIFICATIONS

<b>Technology</b>	LASER scanner, time-of-flight measurement (7 laser curtains)
<b>Detection mode</b>	Motion and presence
<b>Max. detection field</b>	Width: 1.2 x mounting height; Depth: 1.2 x mounting height (adjustable and depending on user settings)
<b>Thickness of first curtain</b>	2 cm / m (mounting height)
<b>Typ. mounting height</b>	2 m to 6 m
<b>Min. reflectivity factor</b>	> 2 % (of floor and object) (measured at max. 6 m in safety field)
<b>Typ. min. object size</b>	15 cm @ 6 m (in proportion to object distance)
<b>Testbody</b>	700 mm x 300 mm x 200 mm
<b>Emission characteristics</b>	IR LASER: Wavelength 905 nm; max. output pulse power 25 W; Class 1 Visible LASER: Wavelength 650 nm; max. output CW power 3 mW; Class 3R
<b>Supply voltage</b>	12 V - 24 V AC +/-10% ; 12 V - 30 V DC +/-10% @ sensor terminal
<b>Power consumption</b>	< 2.5 W (heating: off); < 15 W (heating: eco or auto)
<b>Response time</b>	Typ. 100 ms; max. 500 ms
<b>Output</b>	2 solid-state relays (galvanic isolation - polarity free) 30 V DC (max. switching voltage) - 100 mA (max. switching current) - in switching mode: NO/NC - in frequency mode: pulsed signal (f= 100 Hz +/- 10%) 1 electro-mechanic relay (galvanic isolation - polarity free) 42 V AC (max. switching voltage) - 500 mA (max. switching current)
<b>Input</b>	30 V DC (max. switching voltage) - low < 1 V, high > 10 V (voltage threshold)
<b>LED-signals</b>	2 tri-coloured LED: Output status/ remote control response / error signals
<b>Dimensions</b>	200 mm (H) x 150 mm (W) x 100 mm (D) (approx.)
<b>Material / Colour</b>	PC/ASA / Black
<b>Rotation angles on bracket</b>	45° to the right, 15° to the left (lockable)
<b>Tilt angles on bracket</b>	-10° to +5°
<b>Protection degree</b>	IP65
<b>Temperature range</b>	-30 °C to +60 °C
<b>Vibrations</b>	< 2 G
<b>Norm conformity</b>	EN 61000-6-2; EN 61000-6-3; EN 60950-1; EN 60825-1; EN ISO 13849-1 PL "d"/ CAT2; EN 62061 SIL 2; EN 61496-1 ESPE Type 2; EN 12978; EN 50581

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



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BEA hereby declares that the LZR®-WIDESCAN is in conformity with the basic requirements and the other relevant provisions of the directives EMC 2014/30/EU, LVD 2014/35/EU, MD 2006/42/EC and RoHS2 2011/65/EU.

Angleur, April 2017

Pierre Gardier, authorized representative and responsible for technical documentation



Only for EC countries: According to the European Guideline 2012/19/EU for Waste Electrical and Electronic Equipment (WEEE)