DRAFT LZR®-FLATSCAN SW

SAFETY SENSOR
FOR AUTOMATIC SWING DOORS

EN 16005

DIN 18650

TÜV NORD
Zertifizierung
Baumuster geprüft

User's Guide for product version 0200 and higher
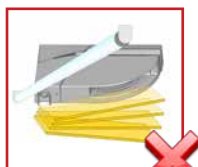See product label for serial number

INSTALLATION

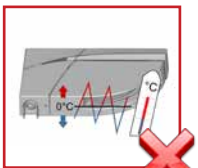Avoid vibrations.

Do not cover the front screens.

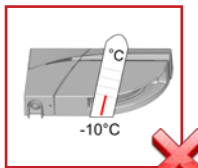Avoid moving objects and light sources in the detection field.

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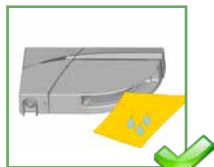
Avoid condensation.

Avoid exposure to sudden and extreme temperature changes.

Keep the sensor permanently powered in environments where the temperature can descend below -10°C.

MAINTENANCE

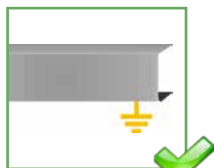When needed, wipe the laser screen with a soft, clean and damp microfibre cloth.

Do not use aggressive products to clean the optical parts.

Avoid direct exposure to high pressure cleaning.

SAFETY

The door control unit and the door cover profile 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.

DESCRIPTION
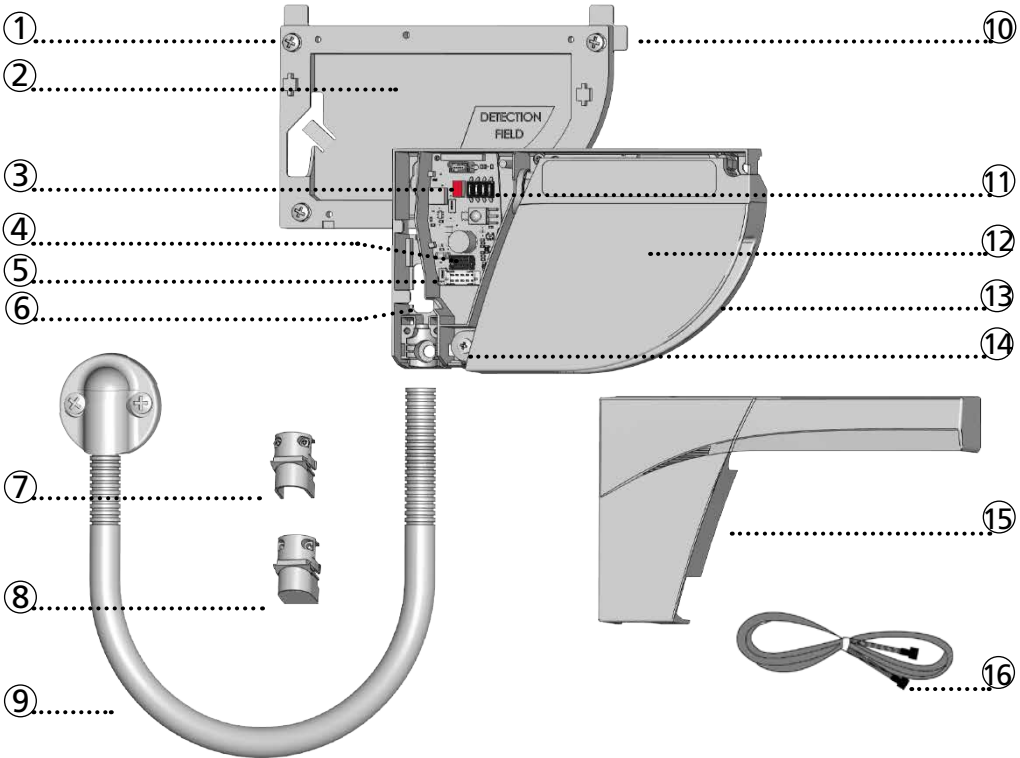
1. fixation screws (3)
2. mounting base
3. push button
4. master-slave connector
5. main connector
6. hole for master-slave cable
7. clamp (with flexible kit)
8. plug (without flexible kit)
9. flexible kit
10. positioning aids
11. DIP-switch
12. laser head
13. laser window
14. angle adjustment screw
15. cover
16. master-slave cable
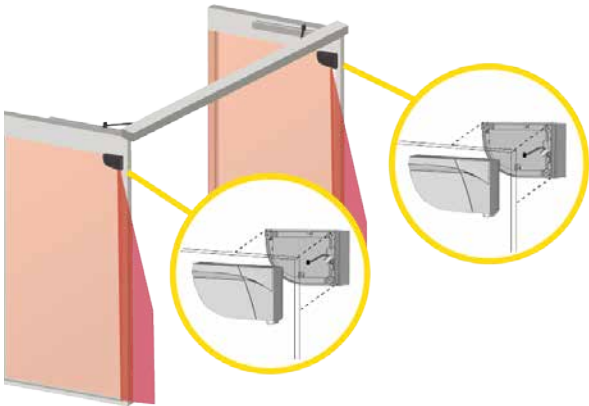
For optimum safety, install 1 module on each door wing side and interconnect them via the master-slave cable.

LED-SIGNALS

🔴 Relay 1	🟢 Relay 2	Calculation in progress / Exit the zone and wait
LED flashes	LED flashes x times	LED flashes red-green	LED flashes slowly	LED flashes quickly	LED is off

3

1 MOUNTING

⚠ For optimum safety, install 1 module on each door wing side and interconnect them via the master-slave cable.

1
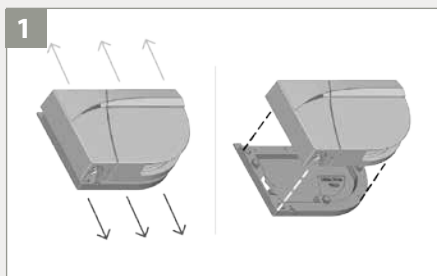
Remove the mounting base.

2
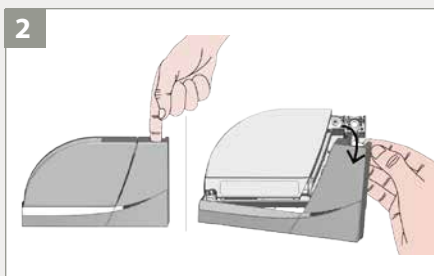
Remove the cover.
Do not hesitate to pull, the cover is very resistant.

3

5 mm

⊕PZ2
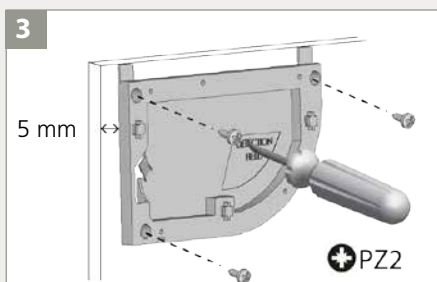
⚠ The base has to be attached firmly.

Fix the mounting base using the 3 screws.

Make sure the sensor does not collide with any objects during the door movement.

4

Ø 10 mm
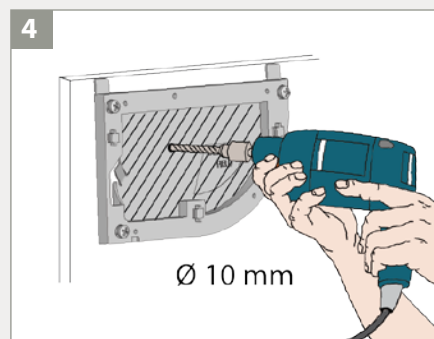
If necessary, drill a hole for the master-slave cable in the striped zone.

5
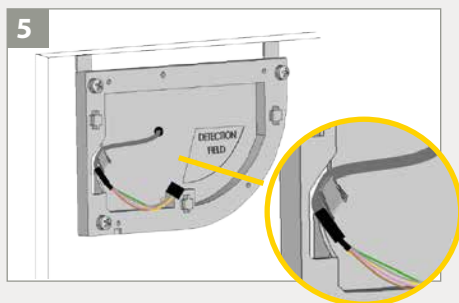
Pull the master-slave cable through the hole and position it as shown.

6
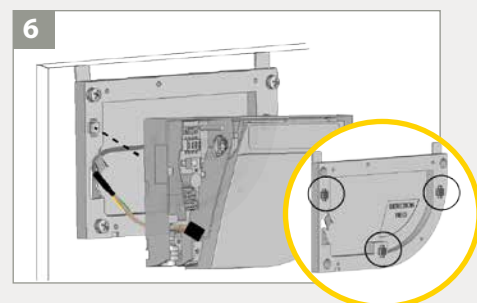
Position the sensor in front of the base and pull the connector through. Then fit the sensor onto the base by entering the cross-shaped parts into the cross-shaped holes.

7
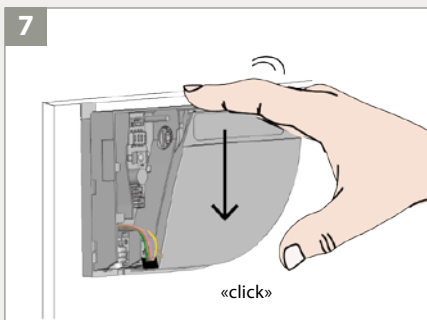
«click»

Fasten the sensor on the base by sliding the sensor downwards until it clicks.

8

⊕ PZ1
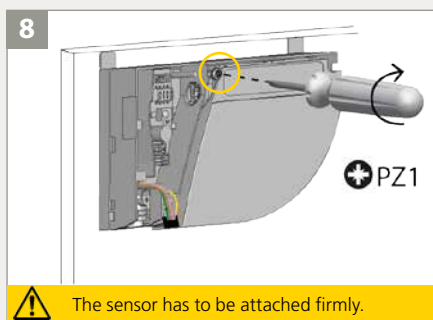
⚠ The sensor has to be attached firmly.

Lock the sensor onto the mounting base by fastening the screw.

9 SLAVE = connected to the master module

«click»
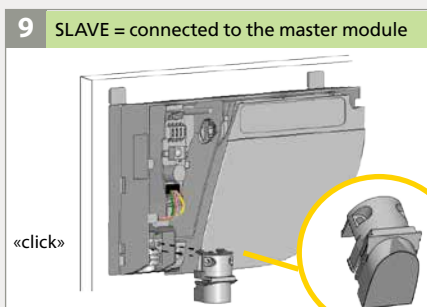
On the SLAVE module, plug the connector and clip on the plug to cover the hole.

10 MASTER = connected to the door controller
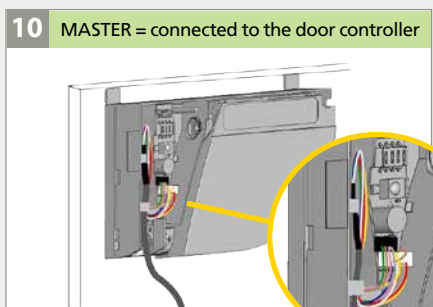
On the MASTER module, plug both connectors. Position the cable wires as shown in order to prevent water infiltration and crushing of the wires.

11 MASTER = connected to the door controller

⊕ PZ2

⊕ PZ1
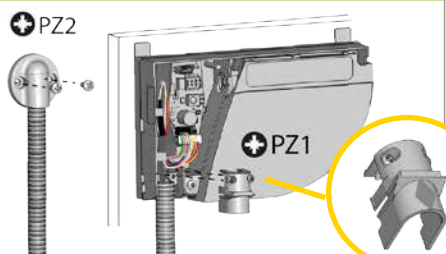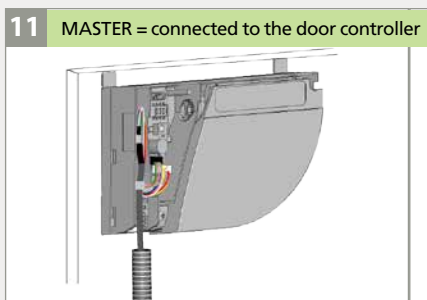
⚠ The flexible tube should not hang in the pinch zone, because it could cause unwanted detections.

1. Cut the flexible tube if necessary.

2. Insert the cable into the flexible tube.

3. Position the flexible tube, clip on the clamp and fasten the screws.

4. Fasten the flexible tube on the other end as shown. Make sure the flexible tube is not detected.

2 WIRING

12-24 V DC			
	GREEN	**+**	POWER SUPPLY
	BROWN	**-**	
COM	YELLOW	STOP	**STOP IMPULSE**
* NC	WHITE		Opening side of the door
COM	PINK	REOPEN	**REOPENING IMPULSE**
* NC	GREY		Closing side of the door
	RED		
	BLUE		**TEST**
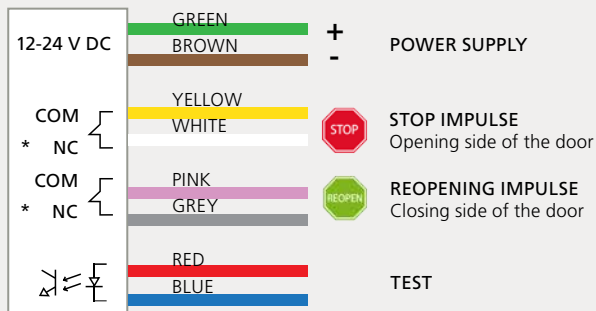
* Output status when sensor is operational.

⚠️ All wires must be connected. For compliance with EN 16005 and DIN 18650, the door controller test output must be connected and able to test the sensor.

3 DIP-SWITCH ADJUSTMENTS

Adjust DIP 1 according to the door side on which the module is mounted.
Adjust the other DIP-settings only if needed.

☐ FACTORY VALUE

	1 DOOR SIDE	2 ENVIRONMENT	3 BACKGROUND	4 PINCH ZONE
ON	RELAY 1 STOP	STANDARD	ON	ON
OFF	RELAY 2 REOPEN	CRITICAL	OFF	OFF

LED during detection:
R1 = RED
R2 = GREEN

Switch to CRITICAL when external disturbances are likely to cause unwanted detections (min. obj size, immunity and uncovered zone are increased).

Switch to OFF when there is no background (glass floor, footbridge...).

Switch to OFF when the hinge area does not need to be secured and objects can cause unwanted detections.

⚠️ In order to change these settings by remote control, adjust the corresponding DIP-switches to ON.

⚠️ ORANGE — GREEN **X** OFF — After changing a DIP-switch, the orange LED flashes. A LONG push on the push button confirms the settings. Afterwards, a number of green flashes (x) indicates the number of connected modules.

4 ANGLE ADJUSTMENTS

PZ1

A B
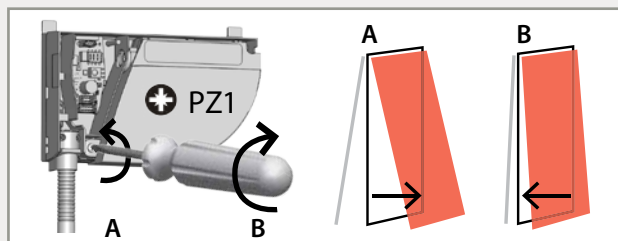
Adjust the angle of the laser curtain if needed.

Make sure that the standing testbody is always detected.
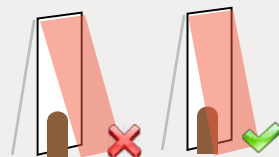
⚠️ Always launch a teach-in after changing the angle of the sensor.

5 SERVICE MODE
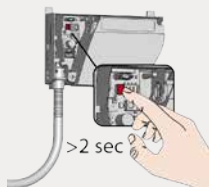
The service mode deactivates the safety detection during 15 minutes and can be useful during an installation, a mechanical teach-in of the door or maintenance work.

To enter the service mode, push on the button for at least 2 seconds.
To exit the service mode, push again for at least 2 seconds.

The service mode is deactivated automatically when launching a teach-in.

6 TEACH-IN

⚠️ Before launching a teach-in, make sure that:
- the door is closed (use the service mode if needed).
- both relays are connected to the door controller and the master-slave cable is connected between the modules.
- the detection field is free of snow buildups, heavy rain, snowfall, fog or other moving objects or people.

Launch a teach-in on the MASTER module by push button or remote control*.
1. Wait until the LED flashes green, then **indicate the edge of the door wing with your hand**.
2. Wait until the LED flashes green again and **activate an opening and closing cycle of the door**.
3. Wait until the LED goes out.

During the teach-in the sensor learns its environment. If an object is positioned permanently near the door, the field size will be adapted accordingly. Launch a teach-in after changing the environment or the sensor position or angle.

* A teach-in on the MASTER configures both the MASTER and the SLAVE. A teach-in on the SLAVE only configures the SLAVE.

7 FINAL STEPS
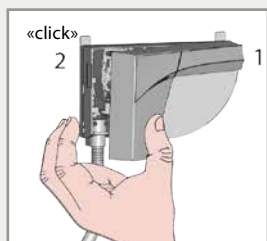
Close the cover starting on the narrow side. Do not hesitate to push.
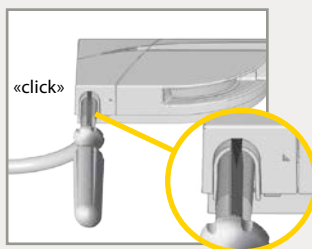
To open the sensor again, position a screwdriver in the slot and push until the cover comes loose.
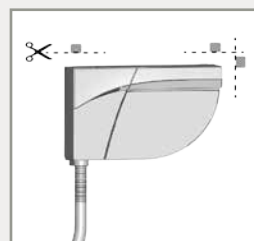
Remove the positioning aids from the base.

⚠️ ALWAYS TEST THE GOOD FUNCTIONING OF THE INSTALLATION BEFORE LEAVING THE PREMISES.

DIMENSIONS DOOR WING SAFETY

C⊡ ↔	0 0 0	0 0 1 – 4 0 0
	no field	0.01 – 4.00 m

D⊡ ↕	0 0 0	0 0 1 – 4 0 0
	no field	0.01 – 4.00 m

A teach-in overwrites these values automatically.

D

C

DIMENSIONS PINCH ZONE SAFETY

A⊡ ↔	0 0 0	0 0 1 – 1 5 0
	no field	0.01 – 1.50 m

B⊡ ↕	0 0 0	0 0 1 – 4 0 0
	no field	0.01 – 4.00 m

A teach-in overwrites these values automatically.

B

↔ A

DIP 4 = ON

MIN. OBJECT SIZE

	0	1	2	3	4	5	6	
DOOR WING	1	1	2	2	2	3	3	spots
HINGE AREA	1	2	2	3	4	5	6	spots

This parameter defines the minimum object size to be detected. Its size is represented by the number of spots it covers in the safety field.

DIP 2 = ON
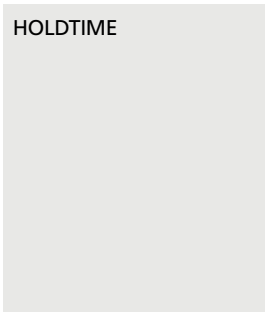
HOLDTIME

| 🕐	0	1	2	3	4	5	
STANDARD	0.3	1	2	2	2	2	sec
EXTENDED	off	off	off	15	30	60	sec

The standard holdtime maintains the output active for 0.3, 1 or 2 seconds.
When the extended holdtime is chosen, the sensor extends the holdtime during 15, 30 or 60 seconds in case of short detections during the opening of the door.

REMOTE CONTROL SETTINGS (OPTIONAL)

OUTPUT CONFIGURATION

	1	**2**	**3**	**4**
STOP R1	NO	NC	NC	NO
REOPEN R2	NC	NO	NC	NO

	NO	NC
NO POWER		
NO DETECTION		
DETECTION		

NO = normally open / NC = normally closed

ANTIMASKING & BACKGROUND

	0	**1**	**2**	**3**
ANTIMASKING	OFF	OFF	ON	ON
BACKGROUND	OFF	ON	OFF	ON

DIP 3 = ON

Antimasking: protective function which ignores an unwanted object nearby the laser window masking the vision field.
Background: reference point in the detection field of the sensor.
If no background is present, switch to off.

IMMUNITY FILTER

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
low	>	>	>	>	>	>	>	high

DIP 2 = ON

Increase to filter out external disturbances.
The reaction time increases significantly between value 5 and 9.

UNCOVERED ZONE

F2

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	
2	4	6	8	10	12	14	16	18	cm*

DIP 2 = ON

Increase in case of snow, dead leaves, etc.
* measured in specific conditions and dependant on application and installation.

GENERAL

0	**8**	**9**
teach-in	full reset	partial reset
See page 7	Factory reset of all values	Factory reset of all values exept field dimensions and output configurations

FACTORY VALUE

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. If you do not know the access code, **cut and restore the power supply**. During 1 minute, you can access the sensor without introducing any access code.

To end an adjustment session, always lock the sensor.

⚠️ It is recommended to use a different access code for each module in order to avoid changing settings on both modules at the same time.

SAVING AN ACCESS CODE

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

DELETING AN ACCESS CODE
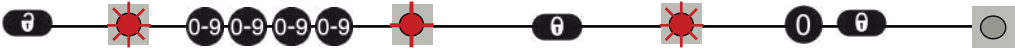
Enter the existing code

ADJUSTING ONE OR MORE PARAMETERS
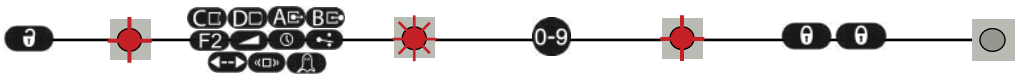
CHECKING A VALUE

x = number of flashes = value of the parameter

2x 1x 3x 1x 5x   = field width: 2.35 m

RESTORING TO FACTORY VALUES

8   /   9

full reset / partial reset

10

TROUBLESHOOTING

In case of unwanted reactions of the door, verify whether the problem is caused by the sensor or the door controller.
To do so, activate the service mode (no safety) and launch a door cycle.
If the door cycle is completed successfully, check the sensor. If not, verify the door controller or wiring.

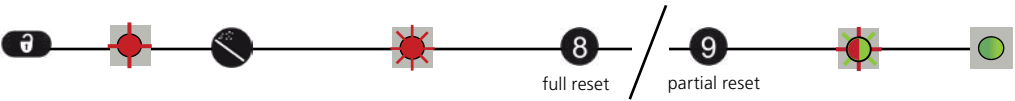| LED indication	Problem	Solution
The RED or GREEN LED is ON sporadicly or permanently.	Bad teach-in	**1** Launch a new teach-in (closed door).
	Unwanted detection	**1** Deactivate pinch zone (DIP 4 off) to check which detection zone causes the detections. **2** Make sure the flexible cable does not cause detections. **3** Check changes in the environment.
The sensor does not react at power-on.	Inverted power supply	**1** Check wiring (green +, brown -).
The sensor does not react.	Test error	**1** Check tension between red and blue wires.
	The service mode is activated.	**1** Press the push button during at least 2 seconds to exit the service mode.
The ORANGE LED is on permanently.	The sensor encounters a memory problem.	**1** Send the sensor back for a technical check-up.
The ORANGE LED flashes quickly.	DIP-switch setting awaiting confirmation.	**1** Corfirm the DIP-switch setting: long push on the push button.
The ORANGE LED flashes 1 x every 3 seconds.	The sensor signals an internal fault.	**1** Cut and restore power supply. **2** If orange LED flashes again, replace sensor.
The ORANGE LED flashes 2 x every 3 seconds.	Power supply is out of limit.	**1** Check power supply (tension, capacity). **2** Reduce the cable length or change cable.
	Internal temperature is too high.	**1** Protect the sensor from any heat source (sun, hot air...)
The ORANGE LED flashes 3 x every 3 seconds.	Communication error	**1** Check wiring between master and slave modules. **2** Check wiring between interface card and laser head.
The ORANGE LED flashes 4 x every 3 seconds.	No laser beam is coming back to the sensor.	**1** Change background setting if necessary (DIP 3).
	An object close to the sensor is masking part of the detection area.	**1** Make sure the window is not scratched. **2** Remove all masking objects. **3** Change anti-masking setting if necessary. **4** Clean window with damp cloth.
The ORANGE LED flashes 5 x every 3 seconds.	Teach-in error	**1** Check whether all teach-in requirements are fulfilled. **2** Launch a new teach-in (closed door).
The ORANGE LED flashes 6 x every 3 seconds.	Faulty measurements of door position.	**1** Normally the door will try to close. **2** Activate and deactivate service mode and launch a door opening cycle. **3** Cut power supply and restore it once the door is fully closed.
It is not possible to adjust a setting by remote control.	Wrong DIP-switch position.	**1** Adjust the required DIP-switches to ON.
The remote control does not react.	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.

11

TECHNICAL SPECIFICATIONS

Technology	LASER scanner, time-of-flight measurement
Detection mode	Presence
Max. detection range	4 m (diagonal) with reflectivity of 2% (i.e. : at W = 1.5m -> max. H = 3.7 m)
Opening angle	Door wing safety: 90° / Pinch zone safety: 16°
Angular resolution	Door wing safety: 1.3°/ Pinch zone safety: 0.2°
Typ. min. object size Door wing safety Pinch zone safety	 10 cm @ 4m (in proportion to object distance) 2 cm @ 4m (in proportion to object distance)
Testbody	700 mm × 300 mm × 200 mm (testbody A according to EN 16005 & DIN 18650)
Emission characteristics IR LASER	 Wavelength 905 nm; max. output pulse power 25 W; Class 1
Supply voltage	12 - 24 V DC ± 15 %
Power consumption	≤ 2 W
Response time	Door wing safety: max. 50 ms / Pinch zone safety: max. 90 ms
Output Max. switching voltage Max. switching current	2 electronic relays (galvanic isolation - polarity free) 42V AC/DC 100 mA
LED-signals	1 bi-coloured LED: detection/output status
Dimensions	142 mm (L) × 85 mm (D) × 23 mm (H) (mounting bracket + 7 mm)
Material - Colour	PC/ASA - Black - Aluminium - White
Tilt angles	+2° à +10° (without mounting bracket)
Protection degree	IP54
Temperature range	-30°C to +60°C if powered
Humidity	0-95 % non-condensing
Vibrations	< 2 G
Min. door wing speed	2°/sec
Norm conformity	2006/95/EC: LVD; 2011/65/EU: RoHS 2; 2004/108/EC: EMC; 2006/42/EC: MD; EN 12978:2009; EN ISO 13849-1:2008 Pl "d"/ CAT2; EN 60529:2001; IEC 60825-1:2014; EN 60950-1:2013; EN 61000-6-2:2005; EN 61000-6-3:2011; EN 62061:2012 SIL 2; DIN 18650-1:2010 Chapter 5.7.4 (testbody A); EN 16005:2012 Chapter 4.6.8 (testbody A)

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