

RECESSED VERSION

SURFACE VERSION

# LZR<sup>®</sup> - FLATSCAN REV PZ

COMPACT LASER SCANNER FOR THE SAFETY OF REVOLVING DOORS

User's Guide for software version SW 0200 and higher  
(refer to tracking label on product)



## DESCRIPTION

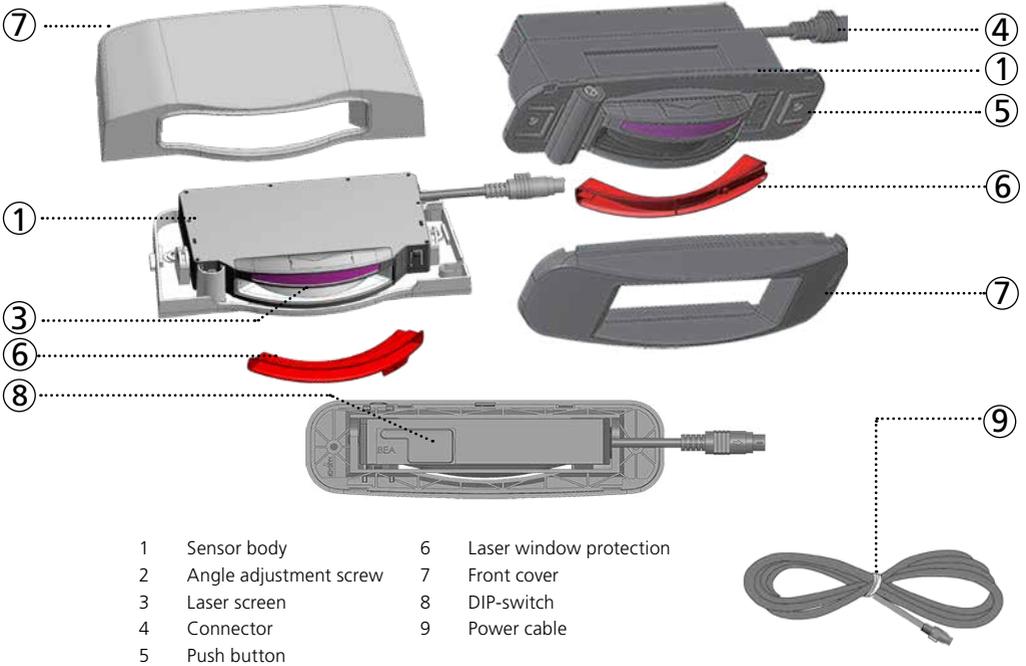
The LZR®-FLATSCAN REV PZ is a safety sensor for automatic revolving doors based on laser technology. When integrated to the fixed ceiling, it secures the area in front of the leading post of the drum wall (pinch zone). When integrated to the rotating ceiling, it secures the area in front of the main closing edge of the revolving leaf of the door (sword zone).



Recessed on the fixed ceiling



Recessed on the moving ceiling



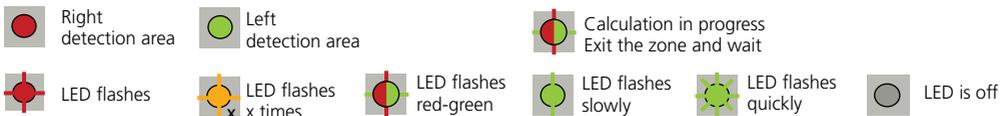
- |   |                        |   |                         |
|---|------------------------|---|-------------------------|
| 1 | Sensor body            | 6 | Laser window protection |
| 2 | Angle adjustment screw | 7 | Front cover             |
| 3 | Laser screen           | 8 | DIP-switch              |
| 4 | Connector              | 9 | Power cable             |
| 5 | Push button            |   |                         |

## ACCESSORY (OPTIONAL, FOR RECESSED VERSION)



Spacer accessory : If the FLATSCAN REV PZ recessed does not entirely fit into your door canopy, use the spacer to hide the prominent part.

## LED-SIGNALS



## SYMBOLS



Caution!  
Laser radiation



Remote control  
sequence



Possible  
remote control  
adjustments



Factory values

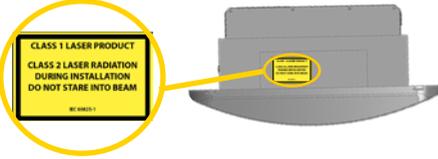


Attention



Note

## SAFETY TIPS

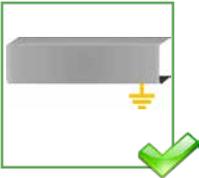


The device emits invisible (IR) and visible laser radiations. The visible laser beams can be activated during the installation process to adjust the position of the detection field.  
Do not stare directly into the visible red beams.  
The visible laser beams are inactive during normal functioning.



### CAUTION!

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



The door control unit and the door cover profile must be correctly earthed.



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

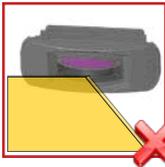


Test the good functioning of the installation before leaving the premises.

## INSTALLATION AND MAINTENANCE



Avoid extreme vibrations.



Do not cover the front screens. Remove the laser window protection before use.



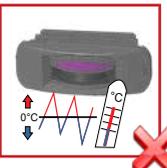
Avoid moving objects and light sources in the detection field.



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



Avoid condensation.



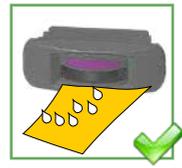
Avoid exposure to sudden and extreme temperature changes.



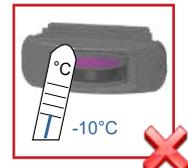
Avoid direct exposure to high pressure cleaning.



Do not use aggressive products to clean the front screen.



When needed, wipe the laser window only with a soft, clean and damp microfibre cloth



Keep the sensor permanently powered in environments where the temperature can drop below  $-10^{\circ}\text{C}$ .



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

## INSTALLATION

### 1 DIP SWITCH

We recommend starting with DIP switch settings since they might be inaccessible when the product is mounted.



	ON	OFF	
<b>DIP 1 OUTPUT CONFIGURATION</b>	NC/NC	NO/NO	
<b>DIP 2 ENVIRONMENT</b>	standard	critical*	Switch to CRITICAL when external disturbances are likely to cause unwanted detections.
<b>DIP 3 BACKGROUND</b>	on	off	Switch to OFF when there is no background (e.g. glass floor).
<b>DIP 4 MONITORING</b>	active low	active high	
<b>DIP 5 (NOT USED)</b>	-	-	

\* When DIP2 is OFF (critical environments), **testbody CB** (DIN 18650-1) and **testbody CB** (EN 16005) & **testbody CC** (DIN 18650-1) might not be detected.



After changing a DIP-switch, the orange LED flashes.  
A LONG push on the push button confirms the settings.

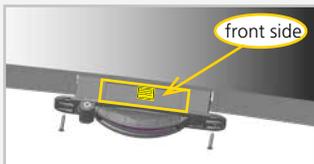
> 3 sec.

### 2 INSTALLATION OF THE SENSOR

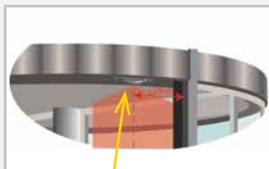
Install the sensor at the right position and fix it with the screws.

#### RECESSED VERSION

##### 1) Recessed on the fixed ceiling

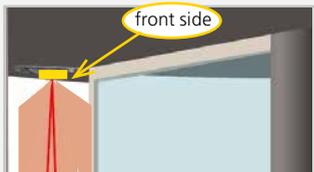


Make sure the front side of the sensor (where you'll find the yellow sticker) faces towards the outside of the door

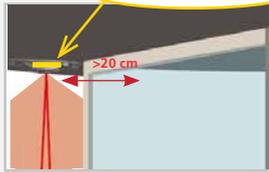


Make sure that the distance between the centre of the sensor and the leading post is not smaller than 20 cm.

##### 2) Recessed on the moving ceiling

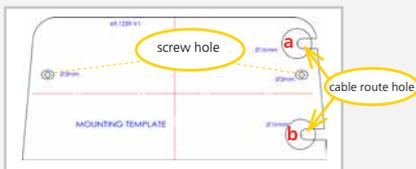


Make sure the front side of the sensor (where you'll find the yellow sticker) faces towards the rotation axis of the door.



Same as above. Also, make sure the detection curtain is positioned directly in front of the main closing edge

#### SURFACE VERSION

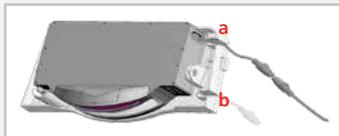


Place the template in the right position. Drill 2 screw holes and 1\* cable route hole to pass the cable.

\* according to the structure of the door on site.



Remove the cover with a screwdriver.

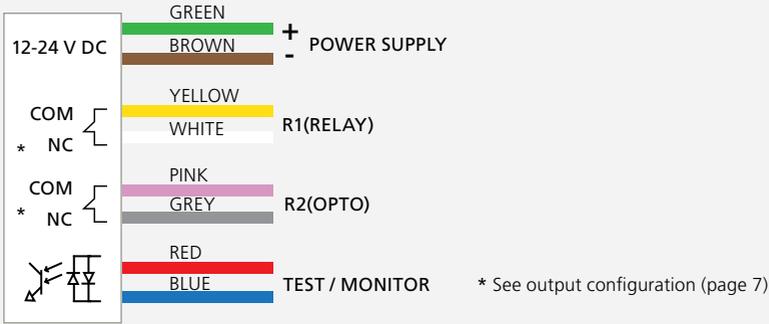


Pass the cable through the cable route hole (a or b).



Firmly screw the sensor to the door frame. If you are installing the sensor on a curved surface, make sure the screws are not too tight.

### 3 WIRING



For compliance with EN 16005 and DIN 18650-1, the door controller test output must be connected and testing the sensor.

### 4 PUSH BUTTONS



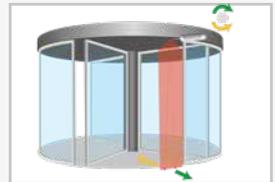
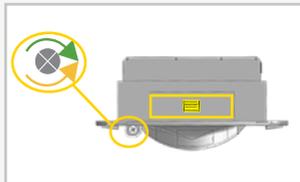
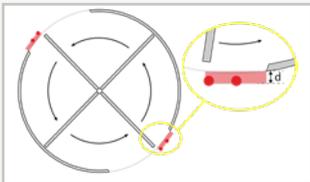
Quickly press twice	to activate or deactivate the visible laser spots
Press for 2 seconds	to launch a teach-in process
Press for 3 seconds	to confirm the setting after changing the DIP switch
Press for 5 seconds	to acknowledge the 6x flashing error message and confirm that you want the sensor to be mounted higher than 4m. Note that the sensor does not comply with DIN 18650-1 and EN 16005 above this height.

## ADJUSTMENTS & SETTINGS

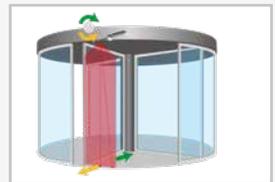
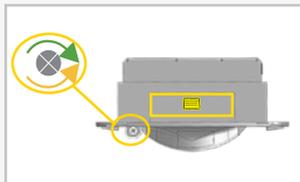
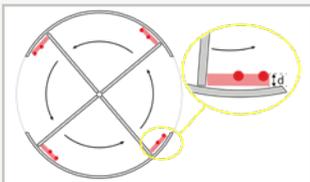
### 1 VISIBLE SPOTS AND CURTAIN ADJUSTMENT

Quickly press the push button twice to activate the visible spots, and then adjust the tilt angle (range: 0 to +5°) with the screwdriver until the visible spots are at the correct position.

#### Pinch zone



#### Sword zone



Recommended position for the visible spots:

**Try to position the red spots as close to the door as possible. Just make sure the door is not detected!**

If 2 m mounting height:  $d \geq 4\text{cm}$       If 3 m mounting height:  $d \geq 5\text{cm}$

If 4 m mounting height:  $d \geq 6\text{cm}$       If 5 m mounting height:  $d \geq 7\text{cm}$



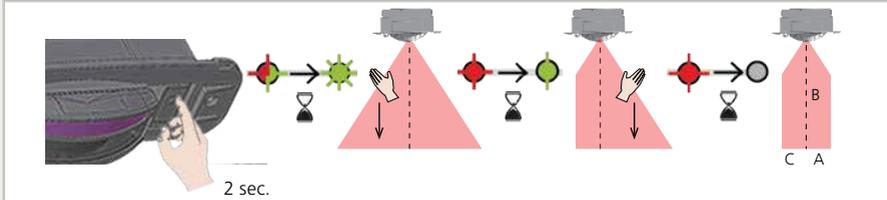
Do not stare into the visible beams !

## 2 DETECTION ZONE SETTING & TEACH-IN

Set the detection range either automatically or with the remote control:

### Automatic teach-in

- To launch a teach-in, press shortly (< 2 sec) the push button (or by remote control  $\text{[Lock]} + \text{[Sensor]} + \text{[0]}$ ). The sensor starts flashing red-green quickly and automatically learns the installation height.
- Wait until the sensor flashes green. Stretch out your arm in front of you and make an up and down movement to define the left/right limit of the detection field. The LED flashes red while calculating.
- Wait until the sensor flashes green again. Stretch out your arm in front of you and make an up and down movement to define the right/left limit of the detection field. The LED flashes red while calculating.
- Once the LED is off, the teach-in is completed.



**!** If the LED blinks orange before the teach-in completion, adjust the tilt angle of the laser curtain and launch a new teach-in.

### With the remote control

Use the remote control to define the left width C and right width A, then launch an environment learning.

( $\text{[Lock]} + \text{[Sensor]} + \text{[1]}$ ). LED goes off after finishing the environment process. No need to define the width of the field with your hand in this mode.

<b>AC</b>	↔	000	001	070	
		no field	001	- 070	cm
<b>BE</b>	↕	000	001	500	
		no field	001	- 500	cm
<b>CE</b>	↔	000	001	070	
		no field	001	- 070	cm

#### Pinch zone (fixed installation) :

$h = \text{installation height}$

- $h < 3.5\text{m}$ , the sensor can detect testbody CA (EN 16005 & DIN 18650-1) and CB (DIN 18650-1).
- $3.5 < h < 4\text{m}$ , the sensor can detect testbody CA (EN 16005 & DIN 18650-1), but the testbody CB (DIN 18650-1) might not be detected.
- $h > 4\text{m}$ , the testbodies CA (EN 16005 & DIN 18650-1) and CB (DIN 18650-1) might not be detected

#### Sword zone (mobile installation) :

- $h < 4\text{m}$ , the sensor can detect testbody CB (EN 16005) & CC (DIN 18650-1).
- $h > 4\text{m}$ , the testbody CB (EN 16005) & CC (DIN 18650-1) might not be detected



## 3 FRONT FACE



Clasp the front cover to finish the installation.



Protect the laser window in case of construction works.



## PARAMETER SETTINGS

**DETECTION FIELD**

WIDTH (right) **A** 0 0 0 0 0 1 0 7 0  
no field 001 - 070 cm

HEIGHT **B** 0 0 0 0 0 1 - 5 0 0  
no field 001 - 500 cm

WIDTH (left) **C** 0 0 0 0 0 1 - 0 7 0  
no field 001 - 070 cm

A new teach-in overwrites these values.

**OUTPUT CONFIGURATION**

In order to change these settings by remote control, adjust DIP-switch 1 to ON.

	1	2	3	4	
R1 (RELAY)	NO	NC	NC	NO	NO POWER
R2 (OPTO)	NC	NO	NC	NO	NO DETECTION
					DETECTION

NO = normally open  
NC = normally closed

**OUTPUT REDIRECTION**

	F1 0	1	2	3	4	5
R1 (RELAY)	Right	Left or right	*	Left	Left or right	Left or right
R2 (OPTO)	Left	*	Left or right	Right	Left	Right

\* Output disabled.  
\*\* The LED is also red when a detection in both areas occurs

**UNCOVERED ZONE**

In order to change these settings by remote control, adjust DIP-switch 2 to ON.

	F2 1	2	3	4	5	6	7	8	9
	2	4	6	8	10	12	14	16	18

cm\*

Uncovered zone: increase in case of snow, dead leaves, etc.  
\*Measured in specific conditions and dependant on application and installation.  
In case of false detection, button 1 and 2 are not recommended.  
When DIP2 is OFF, F2 changes automatically to 5 (10 cm).  
**Note that the uncovered zone reduces the detection field not only at the bottom but also on the left and right. In order to guarantee a detection tightly along the main closing edge, special care should be taken to set the detection field a bit over the main closing edge of the door, by automatic teach-in or otherwise by increasing the size of the detection field with the remote control**

**⚠ When the size of uncovered zone is greater than 6 cm, testbody CB (DIN 18650-1) and testbody CB (EN 16005) & CC (DIN 18650-1) are NOT detected in the uncovered zone.**

**HOLD TIME**

	0	1	2	3	4	5	6	7	8	9
	0.1	0.3	0.5	1	1.5	2	3	5	7	9

sec

FACTORY VALUES

# HOW TO USE THE REMOTE CONTROL



After unlocking, the red LED flashes and the sensor can be adjusted with the 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.

When there are several sensors it is recommended to use a different access code for each sensor in order to avoid changing settings on all of them at the same time.

## ADJUSTING ONE OR MORE PARAMETERS



## CHECKING A VALUE

x = number of flashes = value of the parameter



x = number of flashes = value of the parameter

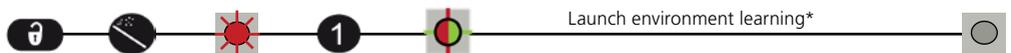
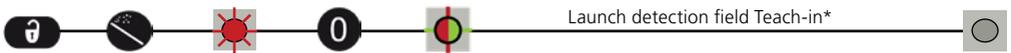


## DETECTION FIELD ADJUSTMENT



increase/decrease the detection field of 1cm.

## TEACH-IN



\* refer to the teach-in process on page 6.

## LED ACTIVATION/DEACTIVATION



enable/ disable the LED when there is a detection.

## VISIBLE SPOTS



turn on/ off the visible spots.

## SERVICE MODE



disable the output and LED for during 15 minutes and can be useful during an installation, a mechanical teach-in of the door or maintenance work.

## RESET TO FACTORY SETTINGS



factory reset of all values.



factory reset of all values except field dimensions, output redirection and configuration.

## TROUBLESHOOTING



In case of unwanted reactions of the door, verify whether the problem is caused by the sensor or the 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 the wiring.



The RED or GREEN LED is ON sporadically or permanently and the door does not react as expected.	Bad teach-in	Launch a new teach-in.
	Unwanted detections (due to environment or external conditions)	1 Make sure the laser curtain at the correct position.
		2 Verify if the laser window is dirty and clean it carefully with a damp and clean microfibre cloth if necessary (attention: the surface of the laser window is delicate).
	3 Switch DIP 2 to off (critical environment).	



The sensor does not react at power-on.	Inverted power supply	Check wiring (green +, brown -).
	Faulty cable	Replace cable
	Faulty sensor	Replace sensor
The sensor does not react when powered.	Test error	Check voltage between red and blue wires.
	The service mode is activated.	Exit the service mode.



It is not possible to adjust a setting with the remote control.	Wrong DIP-switch position.	Adjust the required DIP-switches to ON.
	The sensor is password protected	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.

## TROUBLESHOOTING

	The ORANGE LED is on permanently.	The sensor encounters a memory problem.	Send the sensor back for a technical check-up.
	The ORANGE LED flashes quickly.	DIP-switch setting awaiting confirmation.	Confirm 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.	Cut and restore power supply. 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.
	The ORANGE LED flashes 3 x every 3 seconds.	The sensor signals an internal fault.	Cut and restore power supply. If orange LED flashes again, replace sensor.
	The ORANGE LED flashes 4 x every 3 seconds.	Something close to the sensor is masking part of the detection field.	1 Make sure the laser window is not scratched. If it is, replace sensor.
			2 Remove all masking elements (insects, spider web, flexible tube, laser window protection).
			3 Verify if the laser window is dirty and clean it with compressed air. Then wipe it carefully with a damp and clean microfibre cloth if necessary (attention: the surface of the laser window is delicate)
		The sensor does not see its background.	Switch DIP 3 to off (deactivates background).
	The ORANGE LED flashes 5 x every 3 seconds.	Teach-in error	1 Check whether all teach-in requirements are fulfilled and launch a new teach-in.
			2 Adjust the tilt angle of the laser curtain and launch a new teach-in.
			3 Make sure there are no objects on the ground during teach-in and launch a new teach-in.
	The ORANGE LED flashes 6 x every 3 seconds.	Installation height higher than limitation.	Press the push button during at least 5 seconds to confirm the installation height of sensor is higher than 4m. Note that the sensor does not comply with DIN 18650-1 and EN 16005 above this height.

## TECHNICAL SPECIFICATIONS

<b>Technology</b>	LASER scanner, time-of-flight measurement		
<b>Detection mode</b>	Presence		
<b>Installation height</b>	Min. : 2 m		
	Max. :		
		<u>Pinch zone</u> (fixed installation)	<u>Sword zone</u> (moving installation)
	EN 16005	4 m	4 m
DIN 18650-1	3.5 m	4 m	
	with reflectivity of 8 %	5 m	5 m
<b>Opening angle</b>	90°		
<b>Angular resolution</b>	0.23° (400 spots within 90°)		
<b>Testbody</b>	Testbody CA (EN & DIN) : 700 mm x 300 mm x 200 mm Testbody CB (DIN) : 50 mm cylinder Testbody CB (EN) & CC (DIN) : 300 mm x 100 mm x 65 mm (foot-shaped)		
<b>Optical characteristics</b> IEC/EN 60825-1	Wavelength 905 nm; output power < 0.1 mW ; CLASS 1 Wavelength 635 nm; output power < 1 mW ; CLASS 2 - visible spot		
<b>Supply voltage</b>	12-24V DC ± 15% (The Equipment must be powered by a SELV limited power source ensuring double insulation between primary voltages and the Equipment supply. The supply current should be limited to 1.5 A)		
<b>Power consumption</b>	≤ 2.2 W		
<b>Response time</b>	Max. 90 ms		
<b>Output</b>	1 optocoupler ( galvanic isolation - polarity free ) Max. switching voltage: 42V AC / 60V DC Max. switching current: 100 mA 1 Relay ( free of potential change-over contact ) Max. contact voltage: 42V AC / 60V DC Max. contact current: 1.0A ( resistive ) Max. switching power: 30W ( DC ) / 60VA ( AC )		
<b>LED-signals</b>	1 bi-coloured LED: detection/output status		
<b>Dimensions</b>			
Recessed version	178 mm (L) × 85 mm (H) × 53 mm (D)		
Surface version	168 mm (L) × 93 mm (H) × 42.5 mm (D)		
<b>Material - Colour</b>	PC/ABS - Black / Aluminum		
<b>Tilt angles</b>	0° to +5°		
<b>Protection degree</b>	IP54 (IEC/EN 60529)		
<b>Temperature range</b>	-30°C to +60°C if powered		
<b>Humidity</b>	0-95 % non-condensing		
<b>Vibrations</b>	< 2 G		
<b>Compliance</b>	EN 12978, EN ISO 13849-1 PL "d" / CAT2, IEC/EN 61508 SIL2		
		<u>Pinch zone</u> (fixed installation)	<u>Sword zone</u> (moving installation)
	EN 16005	Testbody CA	Testbody CB
	DIN 18650-1	Testbody CA & CB	Testbody CC

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

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BEA hereby declares that the equipment type Flatscan REV-PZ is in compliance with European Directives 2006/42/EC (Machinery), 2011/65/EU (RoHS) and 2014/30/EU (EMC). The full text of the EU declaration of conformity is available on our website  
Notified Body for EC-type inspection: 0044 - TÜV NORD CERT GmbH, Langemarckstr. 20, D-45141 Essen  
EC-type examination certificate number: 44 205 16129701  
P. Gardier, Angleur, 2018



This product should be disposed of separately from unsorted municipal waste

