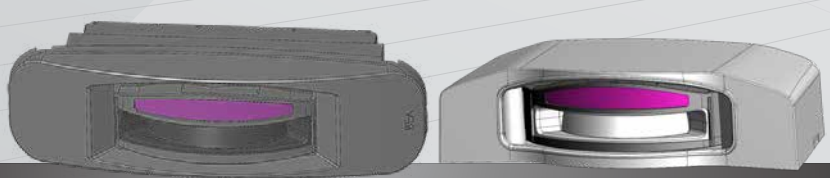
EN



RECESSED VERSION SURFACE VERSION

LZR®- FLATSCAN REV PZ

COMPACT LASER SCANNER FOR THE SAFETY OF REVOLVING DOORS

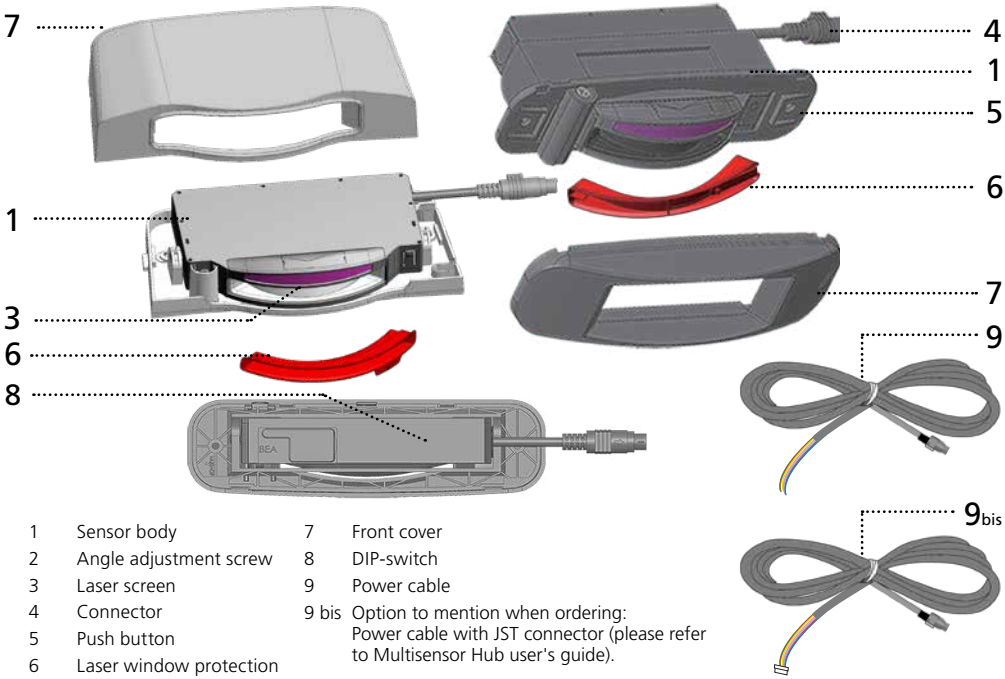
User's Guide for software version SW 0200 and higher
(refer to tracking label on product)

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	7	Front cover
2	Angle adjustment screw	8	DIP-switch
3	Laser screen	9	Power cable
4	Connector	9 bis	Option to mention when ordering: Power cable with JST connector (please refer to Multisensor Hub user's guide).
5	Push button		
6	Laser window protection		

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

Right detection area

Left detection area

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

SYMBOLS

Caution!
Laser radiation

Remote control sequence

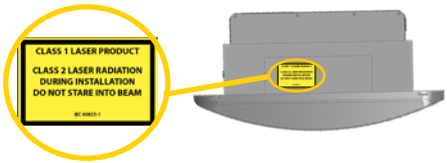
Possible remote control adjustments

Factory values

Attention

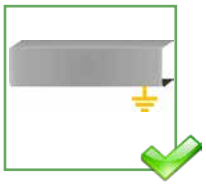
Note

SAFETY TIPS

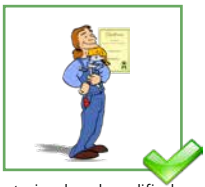


The device emits invisible (IR) and visible laser radiations. The visible laser beams can be activated during the installation process to adjust the position of the detection field.
Do not stare directly into the visible red beams.
The visible laser beams are inactive during normal functioning.

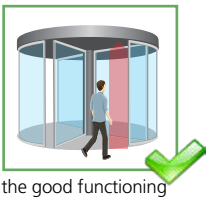
CAUTION!
Use of controls, adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.



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



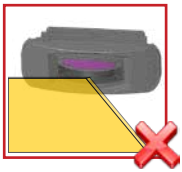
Only trained and qualified personnel may install and adjust the sensor.



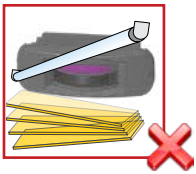
Test the good functioning of the installation before leaving the premises.

INSTALLATION AND MAINTENANCE

Avoid extreme vibrations.



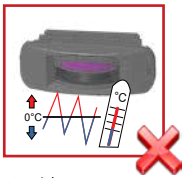
Do not cover the front screens. Remove the laser window protection before use.



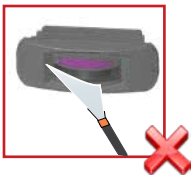
Avoid moving objects and light sources in the detection field.

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

Avoid condensation.

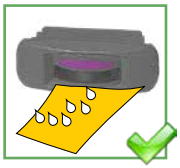


Avoid exposure to sudden and extreme temperature changes.

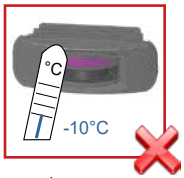


Avoid direct exposure to high pressure cleaning.

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

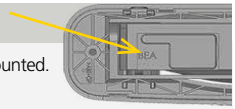


Keep the sensor permanently powered in environments where the temperature can drop below -10° C.

- The sensor cannot be used for purposes other than its intended use.
- The manufacturer of the door system incorporating the sensor is responsible for compliance of the system to applicable national and international regulations and safety standards.
- The installer must read, understand and follow the instructions given in this manual. Improper installation can result in improper sensor operation.
- The manufacturer of the sensor cannot be held responsible for injury or damage resulting from incorrect use, installation or inappropriate adjustment of the sensor.

INSTALLATION

1 DIP SWITCH



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

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

* 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.

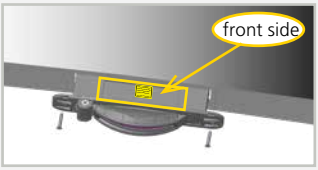
2 INSTALLATION OF THE SENSOR

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

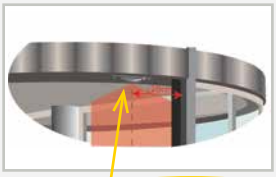
Mount the sensor securely.

RECESSED VERSION

1) Recessed on the fixed ceiling

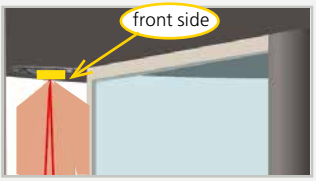


Make sure the front side of the sensor (where you'll find the yellow sticker) faces towards the outside of the door

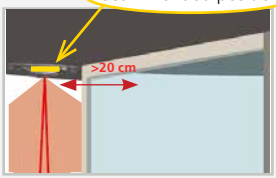


Make sure that the distance between the centre of the sensor and the leading post is not smaller than 20 cm.

2) Recessed on the moving ceiling

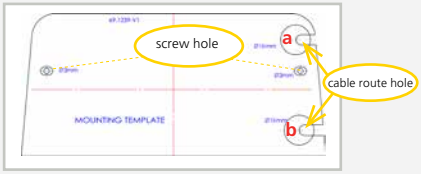


Make sure the front side of the sensor (where you'll find the yellow sticker) faces towards the rotation axis of the door.



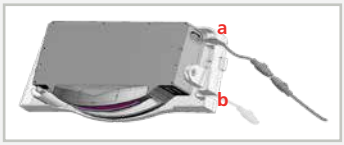
Same as above. Also, make sure the detection curtain is positioned directly in front of the main closing edge

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.*

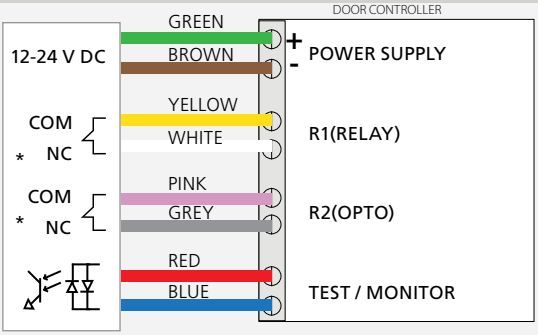


Pass the cable through the cable route hole (a or b).

Remove the cover with a screwdriver.

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



* See output configuration (page 7)

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

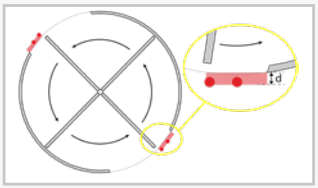
ADJUSTMENTS & SETTINGS

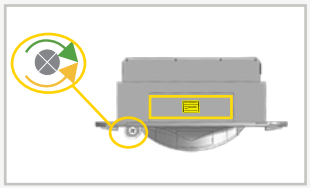
1 VISIBLE SPOTS AND CURTAIN ADJUSTMENT

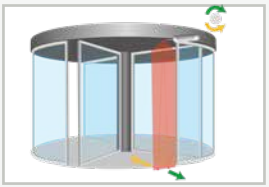
Quickly press the push button twice to activate the visible spots, and then adjust the tilt angle (range: 0 to +5°) with the screwdriver until the visible spots are at the correct position.

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**≥4cm If 3 m mounting height: **d**≥5cm
If 4 m mounting height: **d**≥6cm If 5 m mounting height: **d**≥7cm

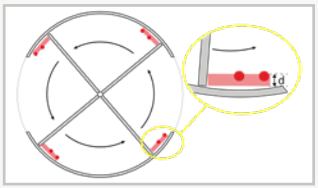
Pinch zone

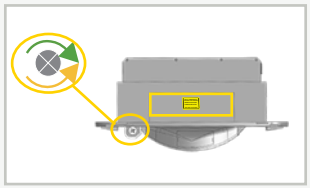


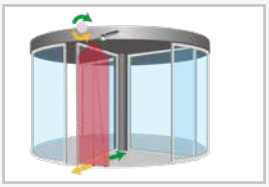




Sword zone







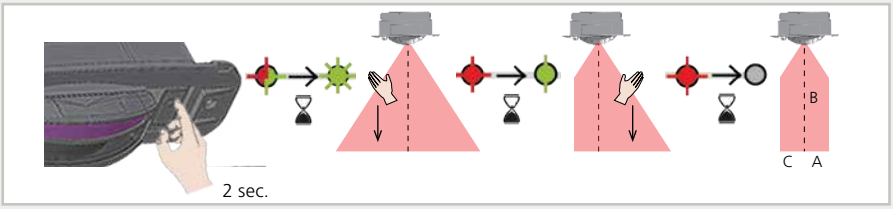
Do not stare into the visible beams !

2 DETECTION ZONE SETTING & TEACH-IN

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

Automatic teach-in

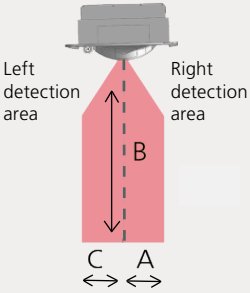
1. To launch a teach-in, press shortly (< 2 sec) the push button (or by remote control). The sensor starts flashing red-green quickly and automatically learns the installation height.
2. Wait until the sensor flashes green. Stretch out your arm in front of you and make an up and down movement to define the left/right limit of the detection field. The LED flashes red while calculating.
3. 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.
4. 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. (+ +). LED goes off after finishing the environment process. No need to define the width of the field with your hand in this mode.



AC ↔	000	001	070		
	no field	001	-	070	cm
BC ↕	000	001	–	500	
	no field	001	-	500	cm
CC ↔	000	001	–	070	
	no field	001	-	070	cm

h = **installation height**

Pinch zone (fixed installation) :
- h < 3.5m, the sensor can detect testbody CA (EN 16005 & DIN 18650-1) and CB (DIN 18650-1).
- 3.5 < h < 4m, the sensor can detect testbody CA (EN 16005 & DIN 18650-1), but the testbody CB (DIN 18650-1) might not be detected.
- h > 4m, the testbodies CA (EN 16005 & DIN 18650-1) and CB (DIN 18650-1) might not be detected

Sword zone (mobile installation) :
- h < 4m, the sensor can detect testbody CB (EN 16005) & CC (DIN 18650-1).
- h > 4 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

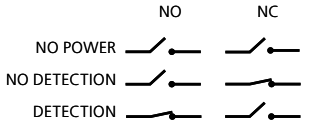
A new teach-in overwrites these values.

WIDTH (right)	A	000	001	070	
		no field	001	- 070	cm
HEIGHT	B	000	001	– 500	
		no field	001	- 500	cm
WIDTH (left)	C	000	001	– 070	
		no field	001	- 070	cm

OUTPUT CONFIGURATION

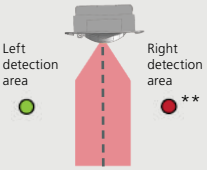
In order to change these settings by remote control, adjust DIP-switch 1 to ON.

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



NO = normally open
NC = normally closed

OUTPUT REDIRECTION

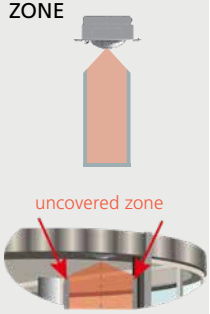


F1	0	1	2	3	4	5
R1(RELAY)	Right	Left or right	*	Left	Left or right	Left or right
R2(OPTO)	Left	*	Left or right	Right	Left	Right

* 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

①	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

= field width: 2.35 m

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.		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.		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

Technology	LASER scanner, time-of-flight measurement
Detection mode	Presence
Installation height	Min. : 2 m Max. : Pinch zone (fixed installation) / Sword zone (moving installation) EN 16005: 4 m / 4 m DIN 18650-1: 3.5 m / 4 m with reflectivity of 8 %: 5 m / 5 m
Field of view	90°
Angular resolution	0.23° (400 spots within 90°)
Testbody	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)
Optical characteristics (IEC/EN 60825-1:2014)	Wavelength 905 nm; output power < 0.1 mW ; CLASS 1 Wavelength 635 nm; output power < 1 mW ; CLASS 2 - visible spot
Supply voltage*	12-24V DC ± 15%
Power consumption	≤ 2.2 W
Response time	Max. 90 ms
Output*	1 optocoupler (galvanic isolation - polarity free) Max. switching voltage: 42V DC/AC peak Max. switching current: 100 mA 1 Relay (free of potential change-over contact) Max. contact voltage: 42V DC/AC peak Max. contact current: 1.0A (resistive)
LED-signals	1 bi-coloured LED: detection/output status
Dimensions	
Recessed version	178 mm (L) x 85 mm (H) x 53 mm (D)
Surface version	168 mm (L) x 93 mm (H) x 42.5 mm (D)
Material - Colour	PC/ABS - Black / Aluminum
Tilt angles	0° to +5°
Protection degree	IP54 (IEC/EN 60529)
Temperature range	-30°C to +60°C if powered
Humidity	0-95 % non-condensing
Vibrations	< 2 G
Safety standards	EN 12978, EN ISO 13849-1 PL "d" / CAT2, IEC/EN 61508 SIL2 Pinch zone (fixed installation) / Sword zone (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.

* External electrical sources must be within specified voltages, max 15W and ensure double insulation from primary voltages.

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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

This product should be disposed of separately from unsorted municipal waste