

PL.HRP.EX

HIGH RESOLUTION PLATFORMS

USER MANUAL

IMMU-310-01-12-19-EN














RADWAG BALANCES AND SCALES
ADVANCED WEIGHING TECHNOLOGIES

DECEMBER 2019

PRECAUTIONS

Prior to installation, use or maintenance activities, carefully read this user manual. Use the PL.*.HRP.EX.* platform only as intended. This user manual must be at a reach of the operator's hand in the course of device operation.

	Symbol marking sections that are crucial with regard to explosion safety.
	The device must be applied in accordance with the intended use only.
	Prior to installation and start, it is necessary to analyse whether the device complies with the usage requirements regarding particular hazardous area.
	In case of any sign of damage, it is necessary to disconnect the device from the mains immediately. The damaged component must be replaced or repaired by RADWAG service directly.
	While installing the device, it is necessary to follow strictly this user manual requirements. Not adhering to the requirements, results with loss of explosion safety.
	The PL.*.HRP.EX.* platform can be connected exclusively to certified intrinsically safe devices characterised with respective intrinsically safe parameters (more information on the parameters further down this user manual). Connection method must be accordant with this user manual requirements. Connecting other than intrinsically safe or certified device, results with loss of explosion safety of the complete set.
	The PL.*.HRP.EX.* platform may be used as a component of a device/set intended for operation in hazardous area. The manufacturer of such a device/set is obliged to carry out analysis of the complete device/set in order to confirm compliance with respective standards.
	The device must be connected to the grounding permanently.
	It is not allowed to use the device in places, where mechanisms causing electrostatic charges greater than those caused by rubbing the surface by hand, occur.
	Do not apply protection shields.
	Technical condition of the platform must be tested and inspected by a trained personnel, in accordance with this user manual, at least once every three months.

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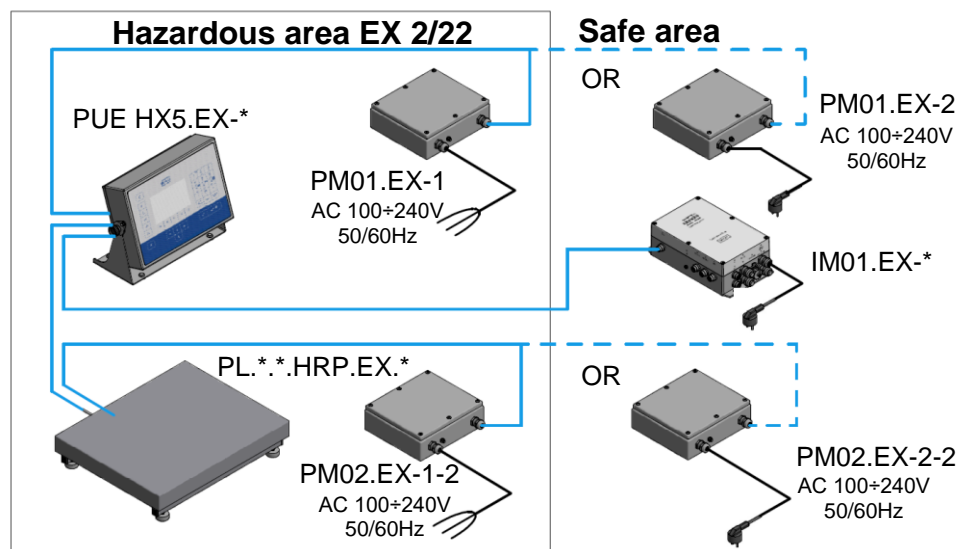
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1. INTENDED USE

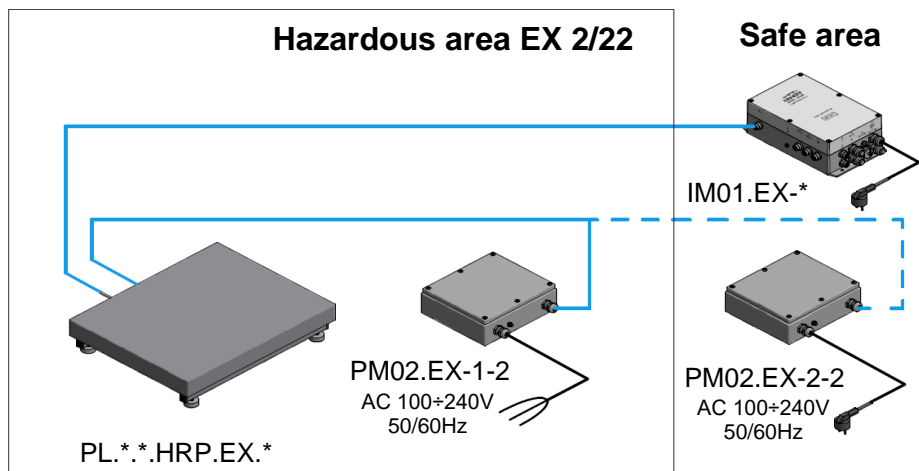
The series of PL.*.HRP.EX.* high resolution platforms has been designed to allow fast and precise measurement of mass. Integration between the platform and the PUE HX5.EX-* indicator, makes the platform a perfect solution for numerous industrial applications. The platform design complies with 2014/34/EU directive and IECEx certification system. Depending on the construction, the device can be used in environment filled with explosive gases and dusts, classified as zones: 2 and 22.

The platform is equipped with an intrinsically safe interface, RS485, enabling communication with intrinsically safe devices, especially with the PUE HX5.EX-* indicator and IM01.EX-* communication module, both manufactured by Radwag.

The platform can be connected to the mains only via an intrinsically safe power supply, PM02.EX-1-2 or PM02.EX-2-2.



Installation of PL..HRP.EX.* platform with PUE HX5.EX-* indicator*



*Installation of PL.**.HRP.EX.* platform with IM01.EX-* communication module*

	<i>A device communicating with the PL.**.HRP.EX.* platform forms the EX system that can operate in an environment filled with explosive gases and dust, classified as zones: 2 and 22. Operation of such a system in zones 0, 20, 1, 21 is disallowed.</i>
	<i>Not all PL.**.HRP.EX.* models are intended for operation in dust atmospheres. Detailed list of platforms and their protection level is to be found further down this user manual.</i>
	<i>The PL.**.HRP.EX.* platform may be used as a component of a system operating in hazardous area. The manufacturer is obliged to carry out analysis of such system in order to confirm compliance with the standards.</i>

The PL.**.HRP.EX.* platform is a device intended to be permanently fixed at the place of use. It is forbidden to operate the platform in the course of relocation.

2. CONDITIONS OF USE

2.1. Electrostatic Charges Hazard

In order to minimize electrostatic charges hazard it is necessary to:

- make sure that the device is permanently grounded in the course of operation,
- follow cleaning-relevant recommendations that are to be found in section 6 of this user manual.

2.2. Ambient Temperature Range

- In accordance with ATEX and IECEx certificates, the ambient temperature range, guaranteeing compliance with safety requirements, is: $-10^{\circ}\text{C} \leq T_a \leq +40^{\circ}\text{C}$.
- In order to ensure correct measurement, the PL.*.HRP.EX.* platform must operate within $10^{\circ}\text{C} \div 40^{\circ}\text{C}$ temperature range. Before start of the measuring processes, it is necessary to wait until the platform becomes thermally stable.
- Platforms stored in much lower temperatures than the workroom temperature, before being plugged to the mains (e.g. during winter period, etc.), must be subjected to thermal stabilisation. The thermal stabilisation period takes about 8 hours. Measurement results recorded in the course of thermal stabilisation may contain greater errors.
- Potential workroom temperature change shall be insignificant and occur slowly.

2.3. Device for Permanent Installation

PL.*.HRP.EX.* platform is a device intended to be fixed permanently. It is not a portable device and as such cannot be operated while transferred from one place to another. Connection cables must be protected against damage.



3. WARRANTY CONDITIONS

- A. RADWAG feels obliged to repair or exchange all elements that appear to be faulty by production or by construction.
- B. Defining defects of unclear origin and means of their elimination can only be realized with the assistance of manufacturer and user representatives.
- C. RADWAG does not bear any responsibility for damage or losses resulting from misuse, or unauthorized use or servicing.
- D. The warranty does not cover:
 - mechanical damage caused by inappropriate exploitation, damage of thermal and chemical origin, and damage caused by lightning, overvoltage in the power grid or other random event,
 - inappropriate cleaning habits.
- E. Loss of warranty takes place if:
 - a repair is carried out outside RADWAG authorized service point,
 - service claims intrusion into mechanical or electronic construction by unauthorized people,
 - the device does not bear security seal stickers.
- F. For detailed warranty conditions read the warranty certificate.
- G. Contact with the central authorized service: +48 (48) 386 64 16.

4. SAFETY REQUIREMENTS

Prior to the first use, carefully read this user manual. Use the weighing device only as intended. Depending on the construction, the PL.*.HRP.EX.* platforms may be used in:

- zone 2 where there is a risk of explosion due to mixture of air with vapour, mist or gas, classified as explosion group IIC, IIB and IIA and as temperature class T1, T2, T3, T4,
- zone 22 where there is a risk of explosion due to mixture of air with dust, flammable fibres and volatile fuels, classified as explosion group IIIC, IIIB and IIIA.

	<i>Not all platform models are intended for operation in dust atmospheres. Detailed list of platforms and their protection level is to be found further down this user manual.</i>
	<i>Any device connected to PL.*.HRP.EX.* platform interfaces must be a device of intrinsic safety protection level „ia” or „ib” or „ic”.</i>

Explosion safety of PL.*.HRP.EX.* platforms is ensured by:

- Intrinsically safe design of the PL.*.HRP.EX.* platform, adhering to regulations of: EN IEC 60079-0, EN 60079-11 standards.
- EU-type examination certificate OBAC 19 ATEX 0214X, and IECEx OBAC 19.0011X certificate.
- Not exposing the platform to static electricity. Functional grounding cables which level the potentials must always be connected to the marked terminals. Disconnecting the functional grounding cables is forbidden. Disconnecting the potential equalizing cable (e.g. when there is a need to place the device elsewhere) is allowed only if there is no risk of explosive atmosphere.
- **Adhering to this user manual guidelines.**

4.1. ATEX Marking – Symbols Meaning



II 3 G Ex ic IIC T4 Gc

Equipment group:
I - to be used
in mines where there's
risk of mine gas explosion
II - to be used
in places where there's
risk of explosion of gases
other than mine gases

Types of
group II devices:

- 1 - equipment providing
very high protection
level,
- for operation in zone
0,1,2
- 2 - equipment providing
high protection level,
- for operation in zone
1,2
- 3 - equipment providing
standard protection
level,
- for operation in zone 2

Explosive atmosphere:

- G - caused by mixture
of air with vapour,
mist or gas
- D - caused by mixture
of air with dust.

Electrical equipment
corresponding with one
or several anti-
explosion mechanical
designs

Symbol of used
explosion proof
mechanical design:

- mb - hermetic, for operation
in zone 1,2,
- tb - protection via housing
for operation in zones
1,2,
- e - increased safety
- ia - intrinsically safe design
for operation in zone
0,1,2,
- ib - intrinsically safe design
for operation in zone 1,2,
- ic - intrinsically safe design
for operation in zone 2.

Gas explosion group,
examples:

- IIA: propane (T1)
benzene (T3)
butane (T2)
ethanol (T2)
- IIB: ethylene (T2)
- IIC: acetylene (T2)
hydrogen (T1)

or dust, examples:

- IIIA: volatile fuels
- IIIB: non-conductive dust
- IIIC: conductive dust

Max surface temperature:
- for gases it is specified as
temperature class
determining max
surface temperature
of device components
that are in touch with
explosive mixture:

- T1: 450°C
- T2: 300°C
- T3: 200°C
- T4: 135°C
- T5: 100°C
- T6: 85°C

- for dusts it is
specified as max
measured temp,
e.g.: T60°C

Protection class,
gas atmosphere:

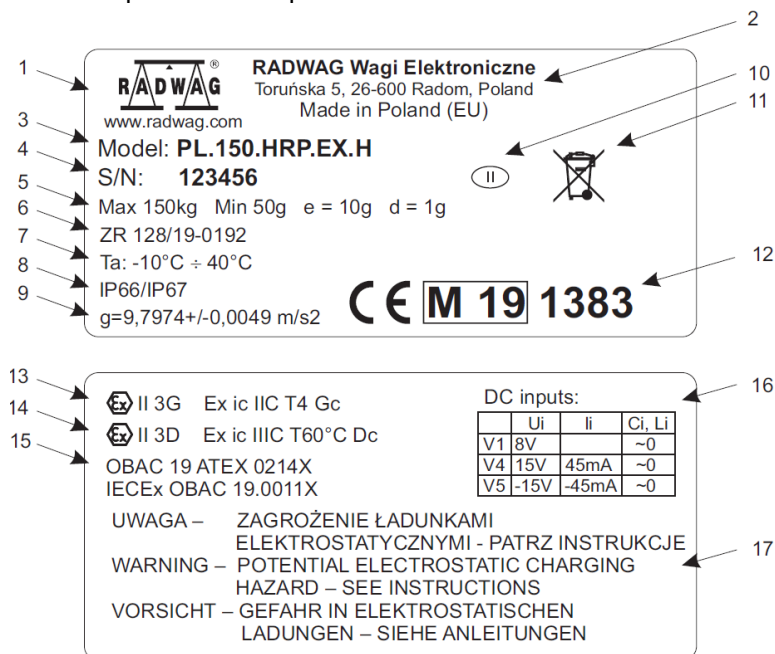
- Ga
- Gb
- Gc

dust atmosphere:

- Da
- Db
- Dc

4.2. Data Plates

PL.*.HRP.EX.* platform data plates:



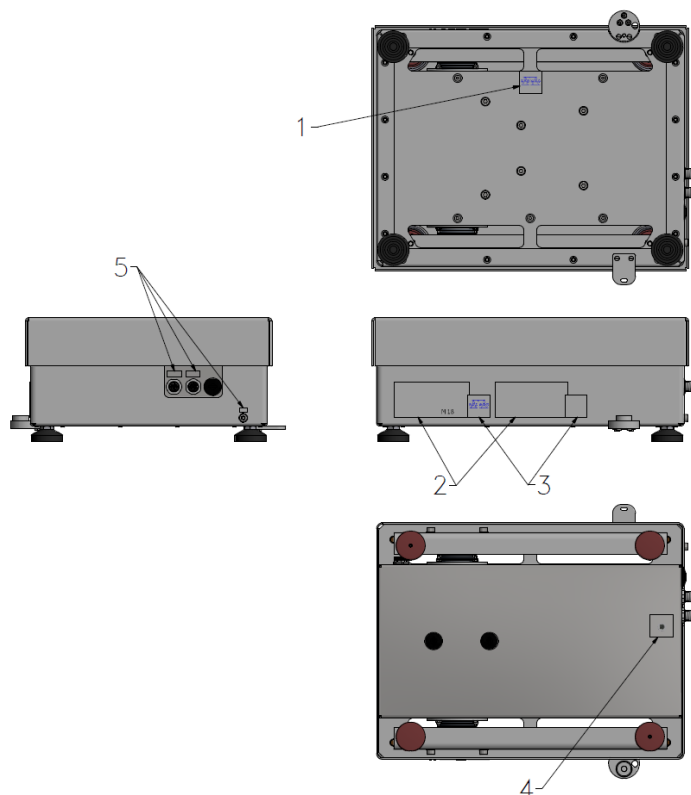
1	Manufacturer's logo
2	Manufacturer's name and address
3	Platform type
4	Serial no.
5	Metrological parameters
6	Metrological approvals no.*
7	Ambient temperature range, at operation.
8	IP ingress protection
9	Geographically relevant data, i.e.: gravitational acceleration, or latitude and altitude*
10	Accuracy class*
11	WEEE symbol
12	CE mark + M* + year* + notified body no. (NAWI directive)*
13	Ex mark: gases
14	Ex mark: dusts
15	Number of ATEX and IECEx certificates with „X” symbol - special conditions of use
16	Power supply

17	Warning against danger with regard to electrostatic charges, written in Polish, English, German, other
* - for verified scales exclusively	

4.3. Information Stickers Arrangement

Arrangement of information stickers is conditioned by platform type.

Arrangement of data plates and security stickers for PL.**.HRP.EX.* platform of type A



1 - cover's security seal

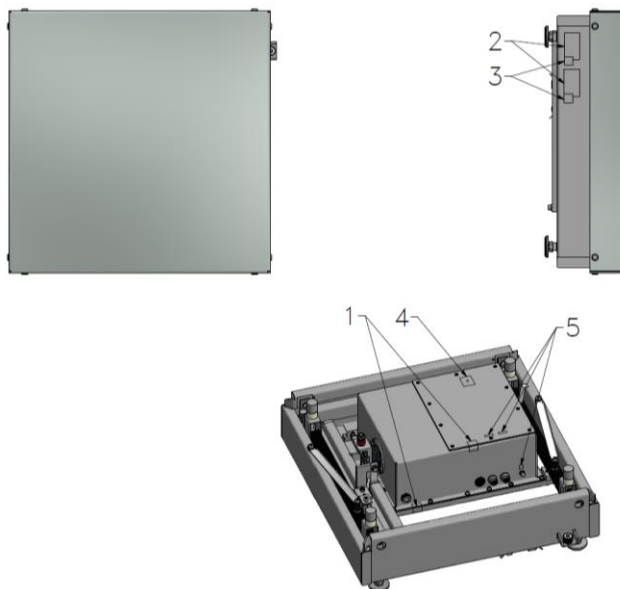
2 - data plates

3 - data plates' security seals (in case of data plates of void seal type, the security seals are not used)

4 - sticker protecting against access to factory settings

5 - stickers marking the connectors

Arrangement of data plates and security stickers for PL.**.HRP.EX.* platform of type B



- 1 - cover's security seal
- 2 - data plates
- 3 - data plates' security seals (in case of data plates of void seal type, the security seals are not used)
- 4 - sticker protecting against access to factory settings
- 5 - stickers marking the connectors

5. TECHNICAL CONDITION INSPECTION



The technical condition of the PL.**.HRP.EX.* platform operated in the hazardous area must be tested and inspected by a trained personnel (familiar with this user manual content) at least once every three months.




In the course of inspection check:

- functional grounding condition:
 - connection to platform construction,
 - connection resistance – Max. 100Ω,
- electrical connections – any sign of cable damage, cutting, abrasion impermissible,


- cable glands, connectors – loose wires impermissible,
- hole plugs condition – any unused connectors and ports must be covered,
- sealing bellows condition – any sign of damage, cutting impermissible,
- security stickers and data plates condition – they must be complete (not broken/damaged etc.); either damage or lack of security stickers or data plates is impermissible, this results with loss of warranty and makes the manufacturer no longer responsible for the device safety.

6. MAINTENANCE

Prior to maintenance it is necessary to disconnect the platform from the mains, and to check grounding connection and condition. You can clean the indicator using regular household cleaners.

	<i>Clean the indicator when there is no risk of occurrence of explosive atmosphere.</i>
	<i>Clean the housing using a wet cloth. It is especially important if the scale is operated in a room where there is dry air. Moisture protects against accumulation of electrostatic charges.</i>
	<i>It is not allowed to clean the power supply using compressed air.</i>

7. SERVICE AND REPAIR

	<i>In case of any sign of damage, it is necessary to disconnect the device from the mains immediately. The damaged component must be replaced or repaired by RADWAG service immediately.</i>
-------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

In case of any problems with correct operation of the device, contact the closest manufacturer's service point.

In case of defects, deliver the faulty product to the manufacturer's service point. If the product cannot be delivered to the manufacturer's service point, call the service and report the defect. Repair scope and method will be set up.



It is NOT ALLOWED to carry out any kind of repair of the device on one's own. Any attempt of scale modification, repair etc., by unauthorized persons, will result with loss of validity of manufacturer-issued certificates, declarations and warranty.

8. RECYCLING

PL.**.HRP.EX.* platforms must be recycled, they are not to be treated as a regular household waste. Platforms to be decommissioned must be decommissioned in accordance with valid legal regulations.



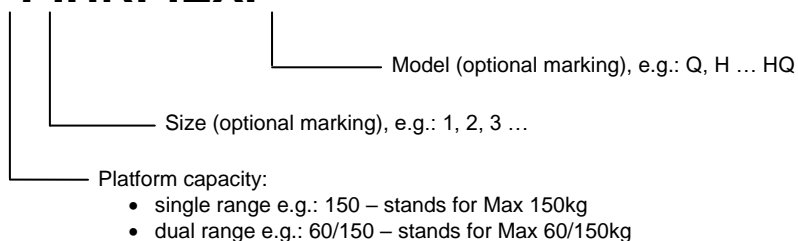
9. PL.**.HRP.EX.* PLATFORM MECHANICAL DESIGN

PL.**.HRP.EX.* platforms are equipped with an electromagnetic weighing module, connected with a load carrier. There are two platform types, they differ by a method of connection of the load carrier and the weighing module:

- Platform of type A – direct connection of the load carrier and a weighing module.
- Platform of type B – load carrier connected to the weighing module through a system of levers and leverage.

9.1. PL.**.HRP.EX.* Platform Symbol

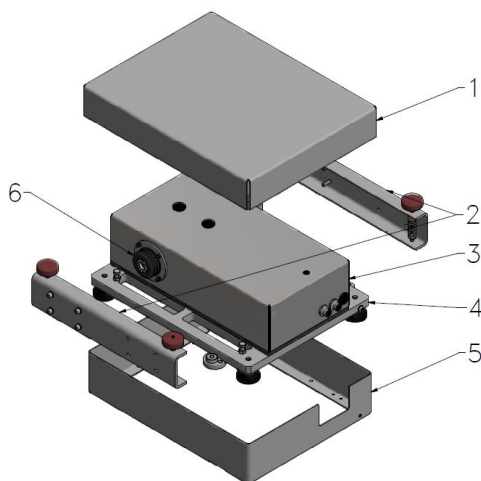
PL..HRP.EX.***



9.2. PL.*.*.HRP.EX.* Platform of Type A

Platform of type A – direct connection of the load carrier and a weighing module. The type A platform is intended for measurement of up to several dozen kilogram mass. It is equipped with a stainless steel weighing pan (load carrier) and either stainless steel or powder-coated base, wherein the base type is conditioned by the usage.

9.2.1. Main Components of PL.*.*.HRP.EX.* Platform (Type A)



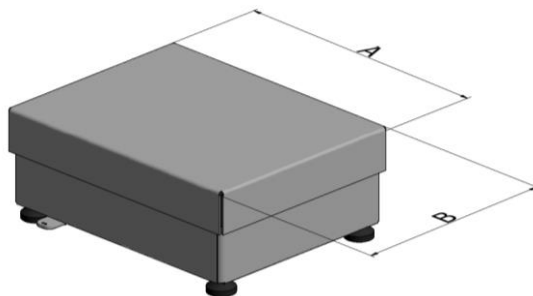
Main components of PL..*.HRP.EX.* platform (type A)*

- 1. Weighing pan
- 2. Cross
- 3. Weighing module
- 4. Base
- 5. Shield
- 6. Gasket

9.2.2. PL.**.HRP.EX.* Platforms of Type A




PL.**.HRP.EX.* platforms of type A have been classified as follows.

Symbol	Model	Weighing pan dimensions AxB	Material
PL.16.HRP.EX	PL	360x280	stainless steel galvanized steel, aluminium
PL.32.HRP.EX		360x280	
PL.**.HRP.EX.Q		310÷410x230÷330	
PL.16.HRP.EX.H	PL.H	360x280	stainless steel
PL.32.HRP.EX.H		360x280	
PL.**.HRP.EX.HQ		310÷410x230÷330	
**. – non-standard platform capacity and dimensions			



*Dimensions of PL.**.HRP.EX.* platform of type A*

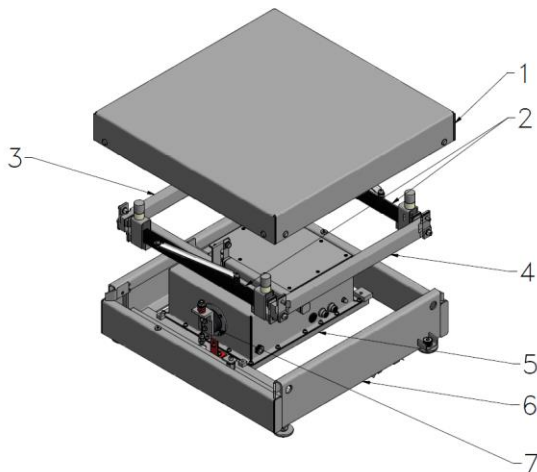
Platform type determines whether a particular scale can be operated in a given hazardous area or not. The below table presents a list of zones where the given platform can be used.

Symbol	Model	Zone		EX marking
		Gases	Dusts	
PL.16.HRP.EX	PL	2	-	 II 3G Ex ic IIB T4 Gc
PL.32.HRP.EX				
PL.**.HRP.EX.Q				
PL.16.HRP.EX.H	PL.H	2	22	 II 3G Ex ic IIC T4 Gc
PL.32.HRP.EX.H				
PL.**.HRP.EX.HQ				 II 3D Ex ic IIIC T60°C Dc
**. – non-standard platform capacity and dimensions				

9.3. PL.**.HRP.EX.* Platforms of Type B

Platform of type B – load carrier connected to the weighing module through a system of levers and leverage. Intended for measurement of large masses. The platform, depending on a scale model, is made either of stainless steel or powder-coated steel. The platform mechanical design can be customized to particular needs (ramp platform, embedded platform, etc.).

9.3.1. Main Components of PL.**.HRP.EX.* Platform (Type B)



*Main components of PL.**.HRP.EX.* platform (type B)*

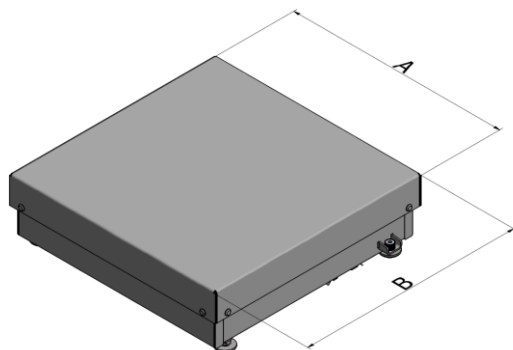
- 1. Weighing pan*
- 2. Weighing pan lever*
- 3. Leverage 1*
- 4. Leverage 2*
- 5. Weighing module*
- 6. Frame*
- 7. Gasket*

9.3.2. PL.**.HRP.EX.* Platforms of Type B

PL.**.HRP.EX.* platforms of type B have been classified as follows.

Symbol	Model	Weighing pan dimensions AxB	Material
PL.16.1.HRP.EX	PL	500x500	stainless steel, powder-coated steel, aluminium
PL.32.1.HRP.EX		500x500	
PL.62.HRP.EX		500x500	
PL.62.1.HRP.EX		800x600	
PL.120.HRP.EX		500x500	
PL.120.1.HRP.EX		800x600	
PL.150.HRP.EX		800x600	
PL.150.1.HRP.EX		1000x800	
PL.300.HRP.EX		800x600	
PL.300.1.HRP.EX		1000x800	
PL.600.HRP.EX		1000x800	
PL.600.1.HRP.EX		1250x1000	
PL.1100.HRP.EX		1000x800	
PL.1100.1.HRP.EX		1250x1000	
PL.2000.HRP.EX		1250x1000	
PL.2000.1.HRP.EX		1500x1250	
PL.3000.HRP.EX		1250x1000	
PL.3000.1.HRP.EX		1500x1250	
PL.5000.HRP.EX		1500x1250	
PL.5000.1.HRP.EX		1500x1500	
PL.**.HRP.EX.Q		300+3000x230+3000	
PL.16.1.HRP.EX.H	PL.H	500x500	stainless steel
PL.32.1.HRP.EX.H		500x500	
PL.62.HRP.EX.H		500x500	
PL.62.1.HRP.EX.H		800x600	
PL.120.HRP.EX.H		500x500	
PL.120.1.HRP.EX.H		800x600	
PL.150.HRP.EX.H		800x600	
PL.150.1.HRP.EX.H		1000x800	
PL.300.HRP.EX.H		800x600	
PL.300.1.HRP.EX.H		1000x800	
PL.600.HRP.EX.H		1000x800	

PL.600.1.HRP.EX.H	PL.H	1250x1000	stainless steel
PL.1100.HRP.EX.H		1000x800	
PL.1100.1.HRP.EX.H		1250x1000	
PL.2000.HRP.EX.H		1250x1000	
PL.2000.1.HRP.EX.H		1500x1250	
PL.3000.HRP.EX.H		1250x1000	
PL.3000.1.HRP.EX.H		1500x1250	
PL.5000.HRP.EX.H		1500x1250	
PL.5000.1.HRP.EX.H		1500x1500	
PL.**.HRP.EX.HQ		300÷3000x230+3000	
PL.600.1.HRP.EX.HZ	PL.HZ	1250x1000	stainless steel
PL.1100.1.HRP.EX.HZ		1250x1000	
PL.2000.HRP.EX.HZ		1250x1000	
PL.2000.1.HRP.EX.HZ		1500x1250	
PL.3000.HRP.EX.HZ		1250x1000	
PL.3000.1.HRP.EX.HZ		1500x1250	
PL.5000.HRP.EX.HZ		1500x1250	
PL.5000.1.HRP.EX.HZ		1500x1500	
PL.**.HRP.EX.HZQ		800÷3000x800+3000	
PL.600.1.HRP.EX.HZD		PL.HZD	
PL.1100.1.HRP.EX.HZD	1250x1000		
PL.2000.HRP.EX.HZD	1250x1000		
PL.2000.1.HRP.EX.HZD	1500x1250		
PL.3000.HRP.EX.HZD	1250x1000		
PL.3000.1.HRP.EX.HZD	1500x1250		
PL.5000.HRP.EX.HZD	1500x1250		
PL.5000.1.HRP.EX.HZD	1500x1500		
PL.**.HRP.EX.HZDQ	800÷3000x800+3000		
*. – non-standard platform capacity and dimensions			





*Dimensions of PL. *. *.HRP.EX. * platform of type B*

Platform type determines whether a particular scale can be operated in a given hazardous area or not. The below table presents a list of zones where the given platform can be used.

Symbol	Model	Zone		EX marking
		Gases	Dusts	
PL.16.1.HRP.EX	PL	2	-	
PL.32.1.HRP.EX				
PL.62.HRP.EX				
PL.62.1.HRP.EX				
PL.120.HRP.EX				
PL.120.1.HRP.EX				
PL.150.HRP.EX				
PL.150.1.HRP.EX				
PL.300.HRP.EX				
PL.300.1.HRP.EX				
PL.600.HRP.EX				
PL.600.1.HRP.EX				
PL.1100.HRP.EX				
PL.1100.1.HRP.EX				
PL.2000.HRP.EX				
PL.2000.1.HRP.EX				
PL.3000.HRP.EX				
PL.3000.1.HRP.EX				
PL.5000.HRP.EX				
PL.5000.1.HRP.EX				
PL. *. *.HRP.EX.Q				

PL.16.1.HRP.EX.H	PL.H	2	22	<div>Ex II 3G Ex ic IIC T4 Gc</div> <div>Ex II 3D Ex ic IIIC T60°C Dc</div>
PL.32.1.HRP.EX.H				
PL.62.HRP.EX.H				
PL.62.1.HRP.EX.H				
PL.120.HRP.EX.H				
PL.120.1.HRP.EX.H				
PL.150.HRP.EX.H				
PL.150.1.HRP.EX.H				
PL.300.HRP.EX.H				
PL.300.1.HRP.EX.H				
PL.600.HRP.EX.H				
PL.600.1.HRP.EX.H				
PL.1100.HRP.EX.H				
PL.1100.1.HRP.EX.H				
PL.2000.HRP.EX.H				
PL.2000.1.HRP.EX.H				
PL.3000.HRP.EX.H				
PL.3000.1.HRP.EX.H				
PL.5000.HRP.EX.H				
PL.5000.1.HRP.EX.H				
PL.**.HRP.EX.HQ	PL.HZ	2	-	<div>Ex II 3G Ex ic IIB T4 Gc</div>
PL.600.1.HRP.EX.HZ				
PL.1100.1.HRP.EX.HZ				
PL.2000.HRP.EX.HZ				
PL.2000.1.HRP.EX.HZ				
PL.3000.HRP.EX.HZ				
PL.3000.1.HRP.EX.HZ				
PL.5000.HRP.EX.HZ				
PL.5000.1.HRP.EX.HZ				
PL.**.HRP.EX.HZQ	PL.HZD	2	22	<div>Ex II 3G Ex ic IIC T4 Gc</div> <div>Ex II 3D Ex ic IIIC T60°C Dc</div>
PL.600.1.HRP.EX.HZD				
PL.1100.1.HRP.EX.HZD				
PL.2000.HRP.EX.HZD				
PL.2000.1.HRP.EX.HZD				
PL.3000.HRP.EX.HZD				
PL.3000.1.HRP.EX.HZD				
PL.5000.HRP.EX.HZD				
PL.5000.1.HRP.EX.HZD				
PL.**.HRP.EX.HZDQ				
*. – non-standard platform capacity and dimensions				

9.4. Technical Specification of PL.**.HRP.EX.* Platform

Ex marking		II 3G Ex ic IIB T4 Gc or
		II 3G Ex ic IIC T4 Gc II 3D Ex ic IIIC T60°C Dc
Certificates	OBAC 19 ATEX 0214X IECEx OBAC 19.0011X.	
Construction	Stainless steel, powder-coated steel	
IP ingress protection by EN 60529	IP66/IP67	
Relative humidity	15÷80% RH, non-condensing conditions	
Ambient temperature *	-10°C ≤ Ta ≤ +40°C.	
Power supply	Intrinsically safe (ic protection level - minimum) **	
Interface	Intrinsically safe RS485 ***	

*) – see section 2 of this manual



***) - Intrinsically safe power supply

DC Inputs				
Circuit	Ui	Ii	Pi	Li, Ci
V1	8 V	insignificant	insignificant	negligible
V4	15 V	45 mA	insignificant	negligible
V5	-15 V	45 mA	insignificant	negligible

****) - Intrinsically safe interface

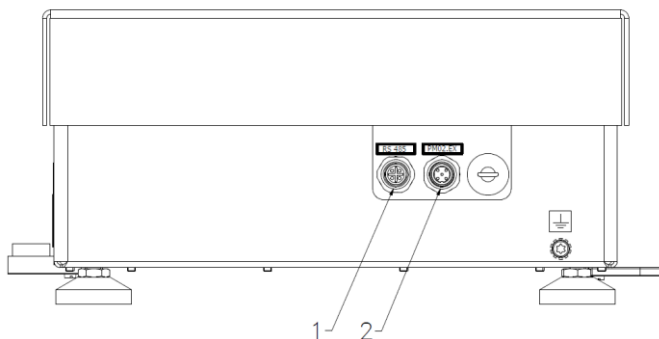
RS485							
Uo [V]	Io [mA]	Lo [mH]	Co μF]	Ui [V]	Ii [mA]	Pi	Li, Ci
3.5	39	50	3.5	6	71	insignificant	negligible
		10	7.5				
		1	13				
		0.1	25				

9.5. Connectors Arrangement

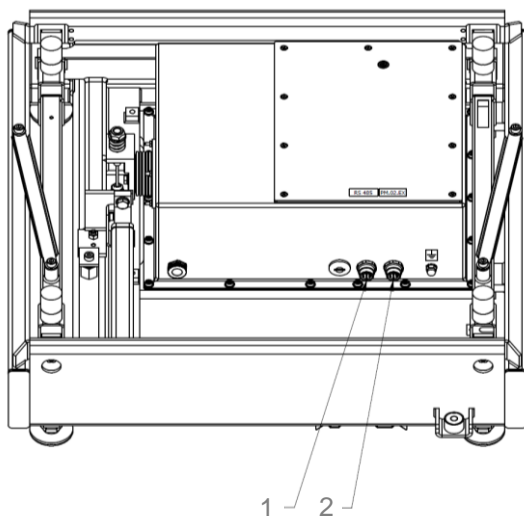
	Since the platform is intended for operation in hazardous area, its communication interfaces have been equipped with hermetic intrinsically safe connectors.
	Unused connectors and ports must be covered with hole plugs.



The PL..HRP.EX.* platform can be connected only to intrinsically safe devices, described in this document, or to certified instruments characterised with respective intrinsically safe parameters. Connection method must be accordant with this user manual requirements. Connecting other than intrinsically safe or certified device, results with loss of explosion safety of the complete set.**



*Arrangement of connectors of PL.**.HRP.EX.* platform of type A*



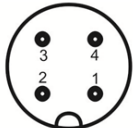
*Arrangement of connectors of PL.**.HRP.EX.* platform of type B*

1. RS485: connector of RS485 interface,
2. DC INPUTS: connector of intrinsically safe power supply V1, V4, V5.

9.5.1. DC INPUTS Connector

PL.**.HRP.EX.* platform must be supplied with power from three intrinsically safe voltages of common ground, minimum ic protection level, and parameters matching input parameters of the platform. Particular circuits powering the platform, marked as V1, V4, V5, are fed through DC INPUTS connector.


DC INPUTS pin assignment

	Pin1 – V1 circuit voltage Pin2 – V4 circuit voltage Pin3 – V5 circuit voltage Pin4 – GND	DC INPUTS connector M12 4P (female type)
-----------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------	-----------------------------------------------------------

Intrinsic Safety Parameters

Power supply connector, DC INPUTS marking					
Circuit mark	U _i	I _i	P _i	C _i	L _i
Pin 1-4 (V1)	8 V	insignificant	insignificant	negligible	negligible
Pin 2-4 (V4)	15 V	45 mA	insignificant	negligible	negligible
Pin 3-4 (V5)	-15 V	-45 mA	insignificant	negligible	negligible

9.5.2. RS485 Interface

	<i>Any device connected to RS485 interface of PL.**.HRP.EX.* platform must be a device of intrinsic safety protection level „ia” or „ib” or „ic”.</i>
------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------

Pins Assignment

	Pin1 – A Pin3 – B	RS485 connector M12 4P (male type)
-------------------------------------------------------------------------------------	----------------------	-----------------------------------------------------


Intrinsic Safety Parameters

RS485 interface, connector marked as RS485, Pin 1-3								
Uo [V]	Io [mA]	Lo [mH]	Co [μF]	Ui [V]	Ii [mA]	Pi	Li	Ci
3,5	39	50	3,5	6	71	insignificant	negligible	negligible
		10	7,5					
		1	13					
		0,1	25					

10. PL.*.*HRP.EX.* PLATFORM INSTALLATION

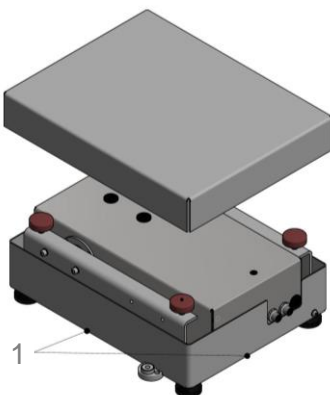
Prior to the first use, carefully read this user manual. Use the device only as intended.

RADWAG does not bear any responsibility for damage or losses resulting either from improperly carried out installation or misuse.

	<p><i>Prior to installation and start, it is necessary to analyse whether the device complies with the usage requirements regarding particular hazardous area. The analysis must be carried out by a qualified personnel.</i></p>
-----------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

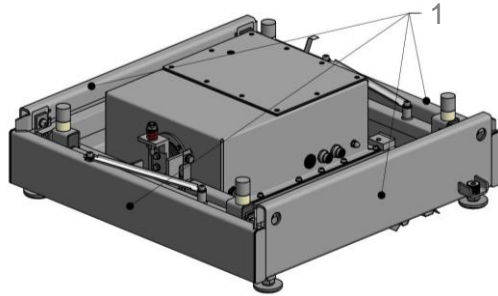
10.1. Unpacking

- The PL.*.*HRP.EX.* platform must be unpacked in safe area.
- Open the box, take the platform and the components out of it, install them.
- To take type A platform out, catch base 1.

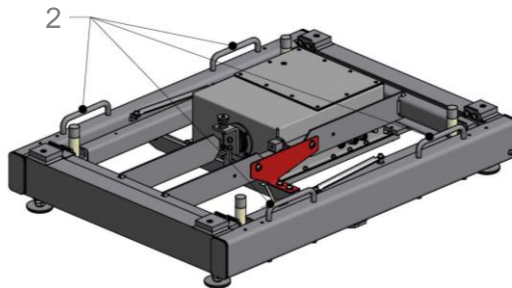


Grip points - PL..*HRP.EX.* platform of type A with 360x280 weighing pan.*

- To take type B platform out, catch either frame 1 or dedicated transport grips 2.

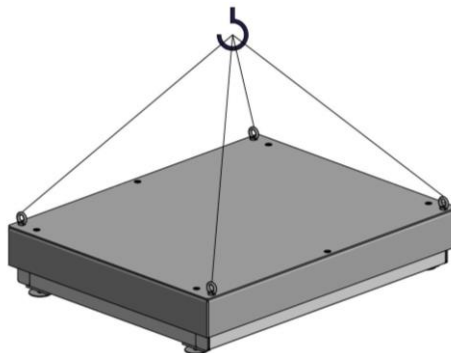


Grip points - PL..HRP.EX.* platform of type B with 500x500 weighing pan.*



Grips - PL..HRP.EX.* platform of type B with 800x600 and 1000x800 weighing pan.*

- To take type B platform with 1250x1000 weighing pan out, replace its corner bolts with ring-screws. Take the platform out using a crane.



Grip method - PL..HRP.EX.* platform of type B with 1250x1000 weighing pan.*

- Dispose of foil, foam, tapes, etc., protecting the device during transport.
- Be particularly careful while unpacking the device and installing its components so as not to cause any damages to the platform mechanism.

10.2. Installation

- Select place for platform installation.
- Remove the transport lock.
- Set the platform at the workstation.
- Level the platform.
- Check resistance of all metal components.
- Ground the platform.
- Connect the cooperating device(s).
- Connect the platform to the mains.



Set, assembly and install the platform, and connect the cooperating devices and the grounding when there is no risk of explosive atmosphere occurrence.

10.2.1. Place of Use

Features of the platform operation place:

- Dry, even, horizontal surface.
- Ambient temperature range: $-10^{\circ}\text{C} \div +40^{\circ}\text{C}$.



In order to ensure correct measurement, the PL.*.HRP.EX.* platform must operate within $10^{\circ}\text{C} \div 40^{\circ}\text{C}$ temperature range.

- Humidity not greater than 80%.
- No heat source in a close vicinity, no risk of intense temperature variation.
- No exposure of platform to drafts.
- No mechanical shocks and vibrations.
- No exposure of platform to mechanical or chemical hazard.
- The workstation must be located in a considerable distance from processes where mechanisms causing electrostatic charges greater than those caused by rubbing the surface by hand, occur.
- No exposure of platform to sunlight.
- At the workstation there must be MEB (main equipotential bonding) installed.
- The workstation must be able to carry weight of the platform along with the measured load.

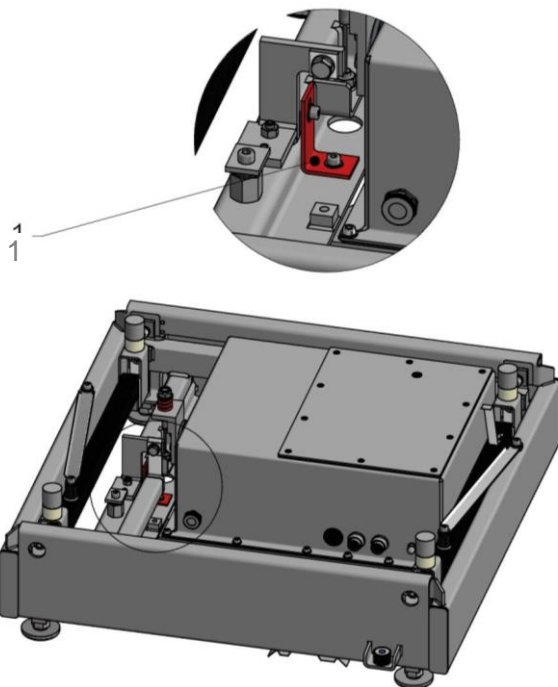
10.2.2. Installation at the Place of Use

PL.*.HRP.EX.* platform is a device intended to be permanently fixed at the place of use. It is forbidden to operate the platform in the course of its transfer from one workstation to another.

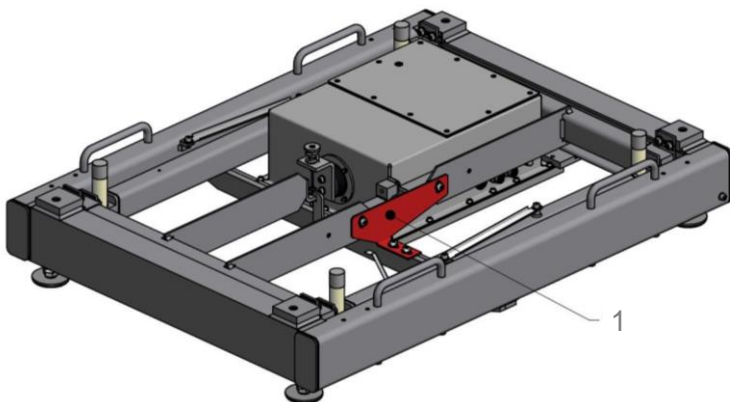
Connection cables must be arranged in a way protecting them from damage.

Procedure:

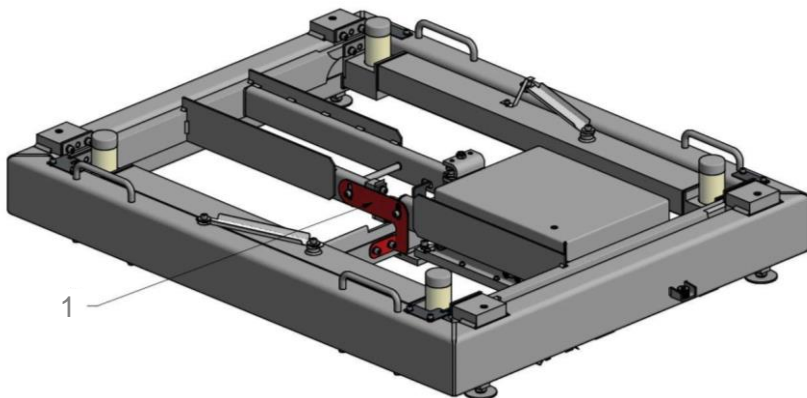
- Upon unpacking, place the platform at the workstation and remove the transport lock 1, see the figures below:



Transport lock of the PL..HRP.EX.* platform with 500x500 weighing pan*

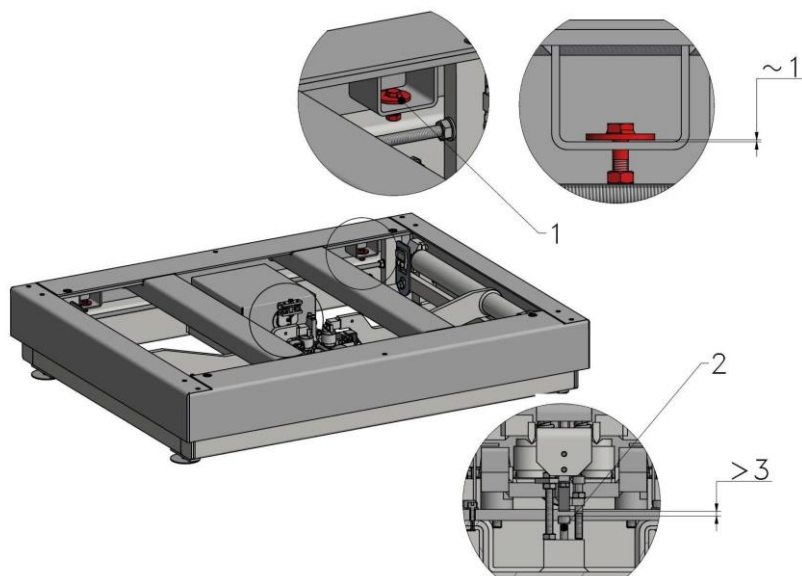


Transport lock of the PL..HRP.EX.* platform with 800x600 weighing pan*



Transport lock of the PL..HRP.EX.* platform with 1000x800 weighing pan*

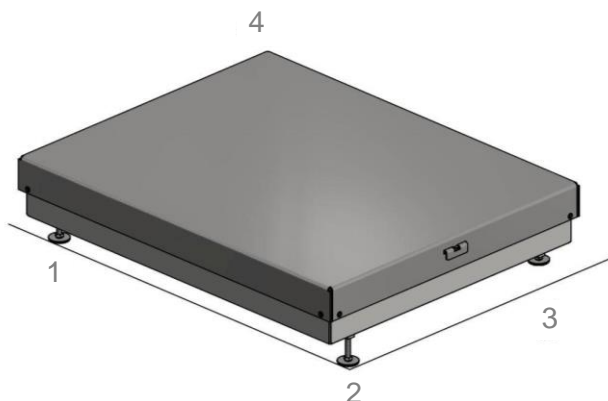
- In case of platform of type B with 1250x1000 weighing pan, set transport protection 1 (in platform corners) and protection 2, keep dimensions accordant with the below figure.



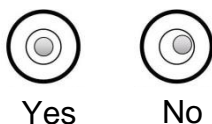
Transport lock 1 and 2 of the PL..HRP.EX.* platform with 12500x1000 weighing pan*

- Install the weighing pan onto the pins - platform of type A.
- Put weighing pan pins into lever seats, install the weighing pan onto the pins – platforms of type B with 500x500, 800x600 and 1000x800 weighing pan.
- Apply a weighing pan plate, fix it to the frame using 10 screws – platforms of type B with 1250x1000 weighing pan.

10.2.3. Platform Levelling



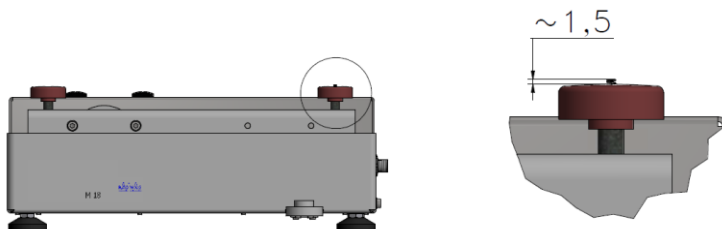
- Screw foot no. 3 in so that feet no. 1, 2, 4 form a plain surface on which platform frame is based.
- Level the platform using feet no. 1, 2 and 4 until the air bubble takes central position.



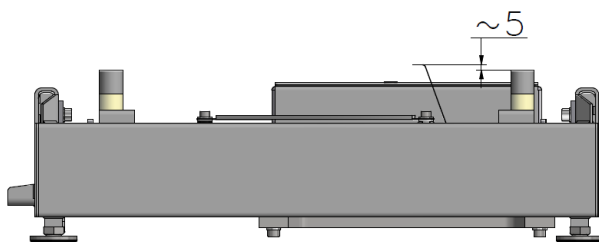
- Unscrew foot no. 3 so that it rests on the ground. Mind not to exert any stress onto the platform frame and do not change the level of the platform (the air bubble has to remain in central position).

10.2.4. Checking Metal Components Resistance

- Check grounding connectors' condition. The grounding connectors guarantee discharge of weighing pan's electrostatic charges. Springs must jut out ~1,5mm, for PL.*.*HRP.EX.* platform of type A, and ~5mm, for PL.*.*HRP.EX.* platform of type B, above shock absorber surface.

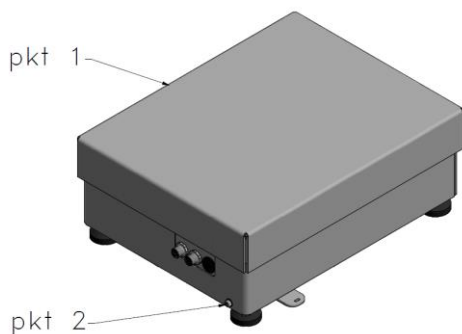


Grounding connectors – PL..*HRP.EX.* of type A*

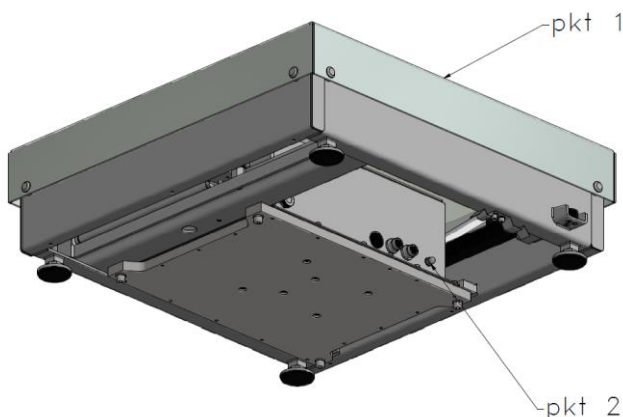


Grounding connectors – PL..*HRP.EX.* of type B*

- Install the weighing pan and check resistance between point 1 – weighing pan, and point 2 – grounding terminal. Permissible resistance must be of value lower than 100 Ω .



Resistance measurement – PL..HRP.EX.* of type A*



Resistance measurement – PL..HRP.EX.* of type B*



It is NOT ALLOWED to use the platform without a weighing pan installed on.

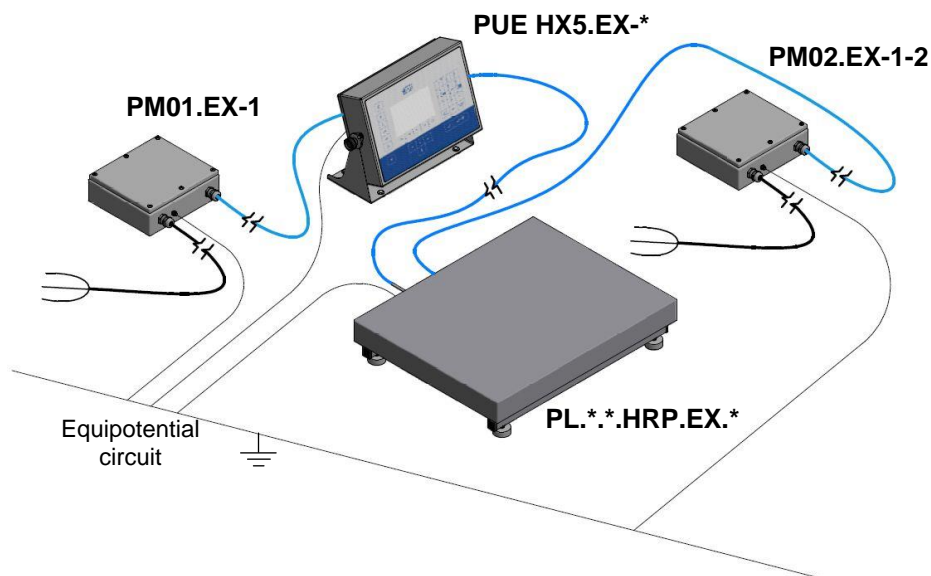
10.2.5. Grounding



In order to remove electrostatic charges it is necessary to ground the platform. Spots marked with „ \perp ” symbol are intended for the functional grounding cable.

- Prepare the functional grounding cable.
 - Use grounding cable of 4 mm² cross-section with yellow-green shield.
 - The functional grounding cable must be terminated with ring, of 5.2 mm diameter, enabling you to couple the cable to the platform.
 - Use either toothed clamping washer or lock washer in order to keep the ring pressed tightly against the housing.
- Connect the functional grounding cable to the equipotential bonding and to the platform.
- Permissible resistance between the grounding terminal and the equipotential bonding is lower than 100 Ω.


	<i>PL.**.HRP.EX.* platform's grounding and grounding of the cooperating devices must be connected to the same "equipotential circuit".</i>
	<i>Connect the grounding when there is no risk of explosive atmosphere occurrence.</i>




*PL.**.HRP.EX.* platform grounding*

10.2.6. External Devices Connection

PL.**.HRP.EX.* platforms can connect with peripheral devices via an intrinsically safe RS485 interface.

	<i>The PL.**.HRP.EX.* platform can be connected only to intrinsically safe devices, described in this document, or to certified instruments characterised with respective intrinsically safe parameters. Connection method must be accordant with this user manual requirements. Connecting other than intrinsically safe or certified device, results with loss of explosion safety of the complete set.</i>
	<i>Connect all devices operating in hazardous area when there is no risk of explosive atmosphere occurrence.</i>
	<i>Prior to connection and installation of any device integrating with the PL.**.HRP.* platform, it is necessary to read the user manual of the given device and to follow all provided guidelines.</i>

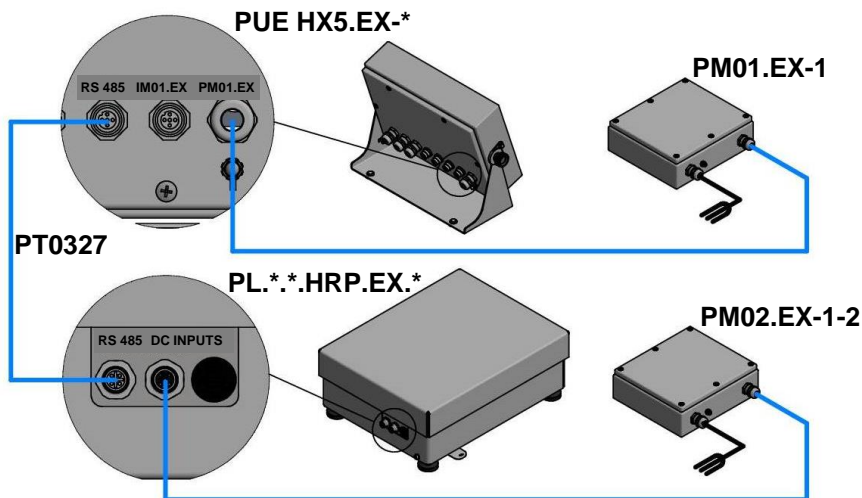
Connecting the PUE HX5.EX-* indicator

	<i>The PUE HX5.EX-* indicator communicating with the PL.**.HRP.EX.* platform forms the EX system that can operate in an environment filled with explosive gases and dust, classified as zones: 2 and 22. Operation of such a system in zones 0, 20, 1, 21 is disallowed.</i>
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Connect the PUE HX5.EX-* indicator to the PL.**.HRP.EX.* platform using a dedicated **PT0327** cable.

Connect one cable end to RS485 connector installed at the back of the PUE HX5.EX-* indicator, next connect the second cable end to RS485 connector of the PL.**.HRP.EX.* platform.

Connect the devices following the below diagram.



Connection of the PUE HX5.EX- indicator to the PL.*.HRP.EX.* platform*

Connecting the IM01.EX-* communication module

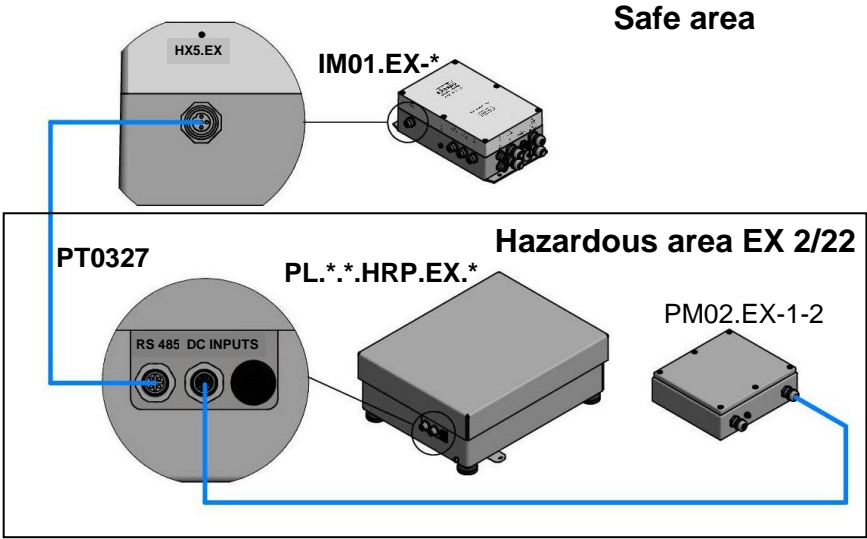
IM01.EX-* communication module is an associated facility intended for operation outside hazardous area, it is equipped with intrinsically safe circuits which may be placed in zones endangered with explosion. Separated non-intrinsically safe circuits of the module, and its power supply circuit, can integrate with non-intrinsically safe circuits of devices, voltage of which is $U_m = 250 \text{ V AC}$.

The IM01.EX-* communication module can be connected via an intrinsically safe interface with a PL.*.HRP.EX.* platform, placed in the hazardous area.

Connect the IM01.EX-* communication module to the PL.*.HRP.EX.* platform via a dedicated **PT0327** cable.

Connect one cable end to a HX5.EX connector installed at a side of the IM01.EX-* indicator, next connect the second cable end to RS485 connector of the PL.*.HRP.EX.* platform.

Connect the devices following the below diagram.



Connection of the PL.**.HRP.EX.* platform to the IM01.EX-* module

10.2.7. Connecting Power Supply

	Connect/disconnect the PL.**.HRP.EX.* platform with the power supply when there is no risk of explosive atmosphere occurrence.
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PL.**.HRP.EX.* platform must be supplied with power from three intrinsically safe voltages of common ground, minimum ic protection level, and parameters matching input parameters of the platform. Particular circuits powering the platform, marked as V1, V4, V5, are fed through DC INPUTS connector.

DC INPUTS pin assignment

	Pin1 – V1 circuit voltage Pin2 – V4 circuit voltage Pin3 – V5 circuit voltage Pin4 – GND	DC INPUTS connector M12 4P (female type)
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Intrinsic Safety Parameters

Power supply connector, DC INPUTS marking					
Circuit mark	U _i	I _i	P _i	C _i	L _i
Pin 1-4 (V1)	8 V	insignificant	insignificant	negligible	negligible
Pin 2-4 (V4)	15 V	45 mA	insignificant	negligible	negligible
Pin 3-4 (V5)	-15 V	-45 mA	insignificant	negligible	negligible

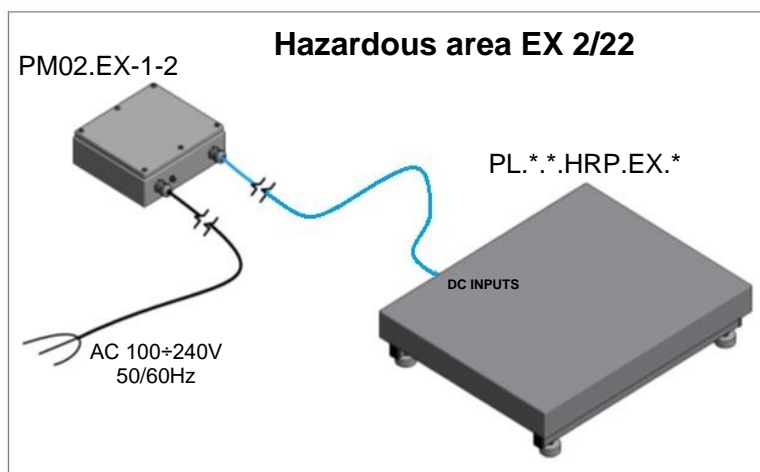
Powering the platform using PM02.EX-*-2 power supply

The PL.**.HRP.EX.* platform can be connected to the mains only via a certified, RADWAG-manufactured, intrinsically safe power supply, the PM02.EX-*-2 (one of two versions):

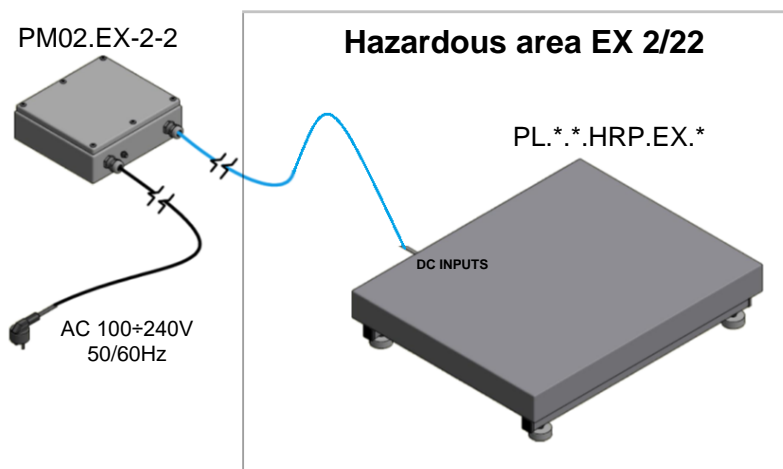
- **PM02.EX-1-2** power supply intended for operation in hazardous area:
 - zone 1 and 2 where there is a risk of explosion due to mixture of air with vapour, mist or gas, classified as explosion group IIC, IIB and IIA and as temperature class T1, T2, T3, T4.
 - zone 21 and 22 where there is a risk of explosion due to mixture of air with dust, flammable fibres and volatile fuels, classified as explosion group IIIC, IIIB and IIIA.
- **PM02.EX-2-2** power supply intended for operation outside hazardous area (in safe area), it is equipped with intrinsically safe circuits which may be placed in:
 - zone 1 and 2 where there is a risk of explosion due to mixture of air with vapour, mist or gas, classified as explosion group IIC, IIB and IIA and as temperature class T1, T2, T3, T4.
 - zone 21 and 22 where there is a risk of explosion due to mixture of air with dust, flammable fibres and volatile fuels, classified as explosion group IIIC, IIIB and IIIA.

	<i>Prior to connection of the PM02.EX-*-2 power supply to PL.**.HRP.EX.* platform read the user manual of the power supply.</i>
	<i>Prior to connection/disconnection of the PM02.EX-*-2 power supply cable to/from the platform, it is necessary to disconnect the power supply from the mains first.</i>
	<i>The PM02.EX-1-2 power supply connected to the PL.**.HRP.EX.* platform forms EX system that can operate exclusively in an environment filled with explosive gases and dust, classified as zones: 2 and 22. Operation of such a system in zones 0, 20, 1, 21 is disallowed.</i>

Connecting the PM02.EX-1-2 or PM02.EX-2-2 power supply to the PL.*.*.HRP.EX.* platform is carried out by connecting the intrinsically safe circuit of the PM02.EX-1-2 or PM02.EX-2-2 power supply to the platform connector marked as DC INPUTS.



Connection of the PM02.EX-1-2 power supply to the PL..*.HRP.EX.* platform.*



Connection of the PM02.EX-2-2 power supply to the PL..*.HRP.EX.* platform.*

11. INTEGRATION WITH PUE HX5.EX-* INDICATOR


Upon connection of the PL.*.HRP.EX.* platform and the PUE HX5.EX-* indicator it is necessary to set communication parameters, with this the weighing result can be displayed on the indicator screen.

Such platform-indicator set operates as a complex weighing device offering the functionality of the indicator.



For detailed information concerning indicator's program and its configuration read „PUE HX5.EX Indicator Software Manual”.

11.1. PUE HX5.EX-* Indicator Start-Up

- Press  key, it is to be found at the top of the operation panel.
- Upon completed start-up, the home screen is displayed automatically.
- The scale is ready for operation.

11.2. Home Screen

The home screen features 4 sections:

- top bar,
- weighing result window,
- workspace,
- pictograms.




Home screen view:



11.2.1. Top Bar



The top bar displays the following information:

 Weighing	Working mode name and symbol.
PUE HX5.EX	Device name.
	Printer connection on.
	PC communication on.

11.2.2. Weighing Result Window

Weighing result window provides all weighing-related data.



11.2.3. Workspace

The workspace is to be found underneath the weighing result window.

Product:	Tare: 0.000 kg
User:	Sum: 0.000 kg

The workspace comprises 4 programmable widgets. Each working mode features default home screen widget set. You can customize the screen. For detailed information concerning the workspace read section 'Display'.

11.2.4. Pictograms

The pictograms assigned to operation panel keys are to be found underneath the workspace.



You can define on-screen pictograms individually for each working mode.




For detailed information concerning the on-screen pictogram defining, read „PUE HX5.EX Indicator Software Manual”.

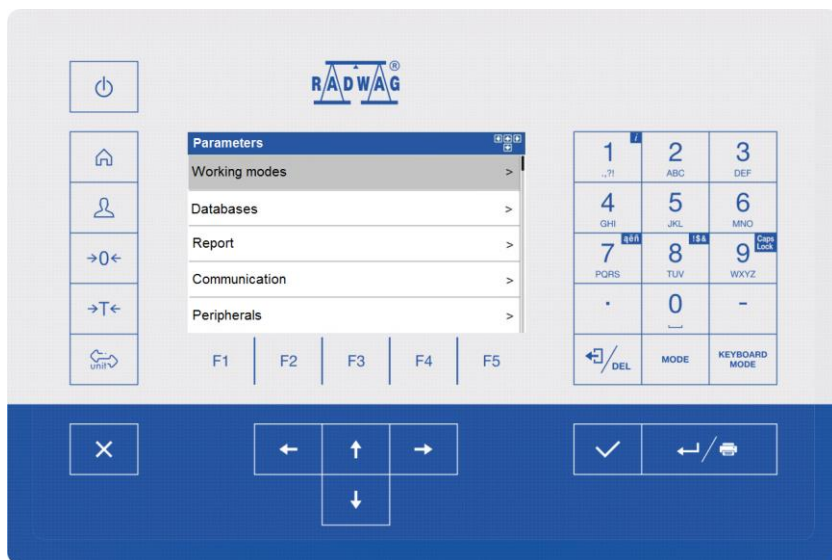
11.3. Operating the Menu

In order to navigate the program menu, use the operation panel.











11.3.1. Entering the Menu

In order to enter the menu press  key. Background colour of the first menu entry differs from the remaining ones. In order to navigate the program menu use the keys that operate as arrow keys.

Menu view



11.3.2. Menu Keys


	Press to enter the main menu. Press to go to the home screen.
	Press to go back, or to discard entering parameter modifications.
	Press to go back. Press to delete a character when editing numeric and text values.
	Press to change keyboard mode when editing numeric and text values.
	Press to select/change working mode.
	Press to confirm/accept modifications.
	Press to go back, or to discard entering parameter modifications.
	Press to go up the menu, or to edit parameter value and change it by one digit up.
	Press to select parameter group that you want to operate. The first parameter of the selected parameter group is displayed.
	Press to go down the menu, or to edit parameter value and change it by one digit down.

11.3.3. Entering Numbers / Text

Depending on a type of data entered to scale memory, the software offers two different edit boxes:



- numerical box (for entering part mass values, tare values, etc.).
- text box (for entering printout template, universal variable value, etc.).

Button functions change depending on the edit box type.







	<i>For detailed instruction on numbers/text entering read „PUE HX5.EX Indicator Software Manual”.</i>
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11.3.4. Return to the Weighing Mode


Introduced modifications are automatically recorded upon return to the home screen. To return to the home screen:

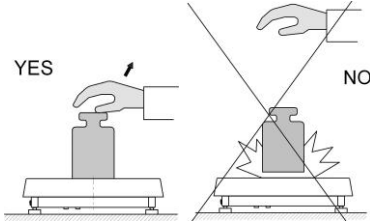
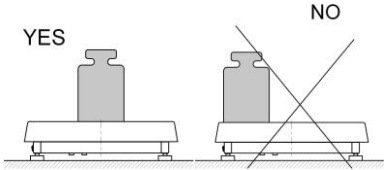
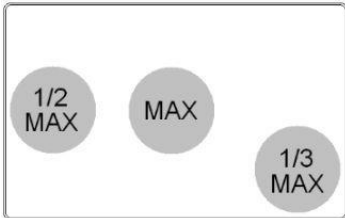
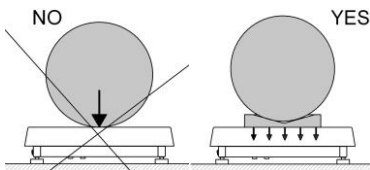
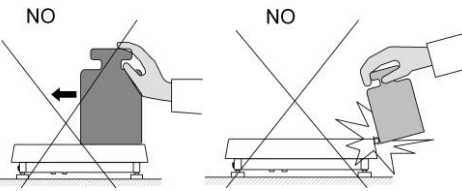
- press  button repeatedly, keep pressing the button until you see the home screen,
- press  key, the home screen is displayed immediately.

11.4. Error Messages

	Max weighing threshold exceeded Unload the weighing pan
	Min weighing threshold exceeded Install weighing pan
	Zeroing out of range Press tarring button or restart the balance
	Tarring out of range Press zeroing button or restart the balance
	Start mass out of range Install weighing pan
	Zeroing/tarring time out of range Weighing indication unstable

12. WEIGHING

Load the weighing pan. Read the result when  stability marker is displayed. To assure long-term operation and correct mass measurements, follow the rules presented below:

<p>Load the weighing pan steadily, avoid applying mechanical shocks.</p>	
<p>Place weighed loads centrally on the weighing pan (eccentricity errors are specified by EN 45501 standard, point 3.6.2.).</p>	
<p>In case of eccentric loading make sure that: a) the weight of loads placed close to one of the pan edges does not exceed $\frac{1}{2}$ of the max capacity, b) the weight of loads placed in the pan corner does not exceed $\frac{1}{3}$ of the max capacity.</p>	
<p>Do not apply concentrated force (total load in one point).</p>	
<p>Avoid side loading, in particular side shocks.</p>	

13. CONNECTION CABLES

<p>PT0327</p>	<p>Cable: PL.*.*.HRP.EX.* platform – PUE HX5.EX-* indicator.</p>
	<p>Cable: PL.*.*.HRP.EX.* platform – IM01-* communication module.</p>

14. STANDARDS

The device is manufactured in accordance with the following standards:

1. EN 61326-1:2013-06 *Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements.*
2. EN 61010-1:2011 *Safety requirements for electrical equipment for measurement, control and laboratory use - Part 1: General requirements.*
3. EN IEC 60079-0:2018 *Explosive atmospheres - Part 0: Equipment - General requirements.*
4. EN 60079-11:2012 *Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i".*
5. EN 60529:2003 + A2:2014-07 *Degrees of protection provided by enclosures (IP Code).*



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