

Installation Manual

Digital truck scale load cell Pendeo® Truck PR 6224B



Foreword

Must be followed!

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1 Introduction

1.1 Read the manual

- Please read this manual carefully and completely before using the product.
- This manual is part of the product. Keep it in a safe and easily accessible location.

1.2 This is what operating instructions look like

1. - n. are placed before steps that must be done in sequence.
 - ▶ is placed before a step.
 - ▷ describes the result of a step.

1.3 This is what lists look like

- indicates an item in a list.

1.4 This is what menu items and softkeys look like

[] frame menu items and softkeys.

Example:

[Start]- [Applications]- [Excel]

1.5 This is what the safety instructions look like

Signal words indicate the severity of the danger involved when measures for preventing hazards are not followed.

DANGER

Warning of personal injury

DANGER indicates death or severe, irreversible personal injury which will occur if the corresponding safety measures are not observed.

- ▶ Take the corresponding safety precautions.

WARNING

Warning of hazardous area and/or personal injury

WARNING indicates that death or severe, irreversible injury may occur if appropriate safety measures are not observed.

- ▶ Take the corresponding safety precautions.

CAUTION

Warning of personal injury.

CAUTION indicates that minor, reversible injury may occur if appropriate safety measures are not observed.

- ▶ Take the corresponding safety precautions.

NOTICE**Warning of damage to property and/or the environment.**

NOTICE indicates that damage to property and/or the environment may occur if appropriate safety measures are not observed.

- ▶ Take the corresponding safety precautions.
-

Note:

User tips, useful information, and notes.

1.6 Hotline

Phone: +49.40.67960.444

Fax: +49.40.67960.474

eMail: help@minebea-intec.com

2 Safety instructions

2.1 General notes

NOTICE

Warning of damage to property and/or the environment.

The product was in perfect condition with regard to safety features when it left the factory.

- ▶ To maintain this condition and to ensure safe operation, the user must follow the instructions and observe the warnings in this manual.

2.2 Intended use

The load cell PR 6224B has been designed especially for use in truck scales.

The load cell PR 6224B may be used only for weighing tasks in truck scales as intended.

The dimensions of all mounting and structural components must be calculated so that sufficient overload capacity is ensured for all loads which may occur while taking the relevant standards into account. In particular, upright weighing objects must be safeguarded against the weighing installation turning over or being shifted, thus eliminating danger to people, animals, or goods even in the case of a break in a load cell or mounting element.

Installation and repair work must only be carried out by expert/qualified personnel.

The load cell reflects the state of the art. The manufacturer does not accept any liability for damage caused by third-party system components or due to incorrect use of the product.

2.3 Initial inspection

Check the contents of the consignment for completeness. Check the contents visually to determine whether any damage has occurred during transport. If there are grounds for rejection of the goods, a claim must be filed with the carrier immediately. The Minebea Intec sales or service organization must also be notified.

2.4 Before operational startup

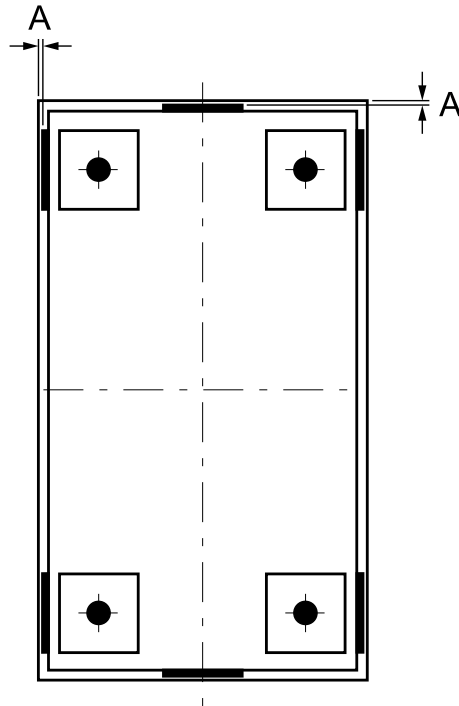
NOTICE

Perform visual inspection.

- ▶ Before operational startup as well as after storage or transport, inspect the load cell visually for signs of mechanical damage.

3 Setup instructions

3.1 Load cell arrangement



Key

| | |
|---|------------------|
| | Load application |
| | Stop |
| A | 5 mm |

- The supporting structure of the scale (and thus the load cells) as well as the weighbridge must be stable enough to withstand the specified loads, horizontal (check with spirit level!) and flat.
- Transverse and/or horizontal forces and torques exceeding the permissible limits are disturbances which can generate measuring errors and, in the worst case, may damage the load cell.
- If stops are used, damage and measuring errors can be prevented without affecting the required space for movement in the direction of the measurement.

The lateral play of the weighbridge must always be restricted to the distance "A" (see figure) in the longitudinal and transverse direction by appropriate stops.

Consideration should be given to the fact that thermal expansion and contractions may constrict the required space for movement of the object to be weighed and could thereby lead to significant falsification of the measuring results.

3.2 Selecting maximum capacity

Forces exceeding the safe load limit E_{lim} in the measuring direction may change the characteristics of the load cell or damage it.

If the safe load limit E_{lim} of the load cell can be exceeded, e.g. by falling loads, then mechanical limiting in load direction is strongly recommended.

If the destructive load E_d of the load cell is exceeded, there is danger of mechanical destruction.

4 Specifications

4.1 Load cells

4.1.1 Equipment supplied with the load cell

| No. | Description |
|-----|--|
| 1 | Load cell |
| 2 | Quick guide |
| 3 | Calibration Certificate |
| 4 | Only with Ex-load cells: Safety information for Ex-load cells |

4.1.2 General information

| | |
|---|---|
| Restoring force | For each mm of displacement that the top of the load cell is shifted from the vertical axis, a horizontal restoring force of 1.55 % of the load resting vertically on the load cell is generated per millimeter deflection (measured at the load cell head). |
| Material for load cell housing | Stainless steel 1.4301 acc. to DIN EN 10088-3 (corresponds to AISI 304, B.S. 304S11/S15) |
| Protection against environmental influences | Hermetically sealed by welding. Filled with inert gas. |
| Protection classes | in compliance with IEC 529 or DIN EN 60529 IP66/IP68/IP69 , in compliance with ISO 20653 IP6K6K/IP6K8/IP6K9K : Dust-proof and leak-tight against water, with harmful effects when immersed, (1.5 m water depth, 10,000 h) and water jets (high pressure and temperature). Explosion: Suitable for explosion subgroup IIC and IIIC. |
| Ambient temperature in the Ex area | $-20^{\circ}\text{C} \leq T_{\text{AMB}} \leq +70^{\circ}\text{C}$ |
| Cable diameter | 5.8 mm |
| Cable length | Standard version: 16.5 m; max. length: 50 m |
| Cable gauge | $4 \times 0.35 \text{ mm}^2$ |
| Cable bend radius | $\geq 30 \text{ mm}$ (fixed installation) $\geq 70 \text{ mm}$ (flexible installation) |
| Cable sheath material | Thermoplastic polyurethane |
| Cable sheath color | black |
| Output signal | Serial interface RS-485 bus system, 2-wire |
| Bus device (load cell) | max. 12 |
| Max. power consumption per load cell | 20 mA |

4.1.3 Possible marking of the load cell for the Ex area

| Zone | Marking | Certificate no. | for |
|------|---------------------------|--------------------------------|--------------|
| 2 | II 3G Ex ec IIC T6 Gc | MIN22ATEX005X MIN22UKEX003X | all PR 6224B |
| 22 | II 3D Ex tc IIIC T80°C Dc | MIN22ATEX005X MIN22UKEX003X | all PR 6224B |

NOTICE

Installation in the Ex area

- For installations in the Ex area, it is imperative to observe the Ex safety instructions in the installation manuals.

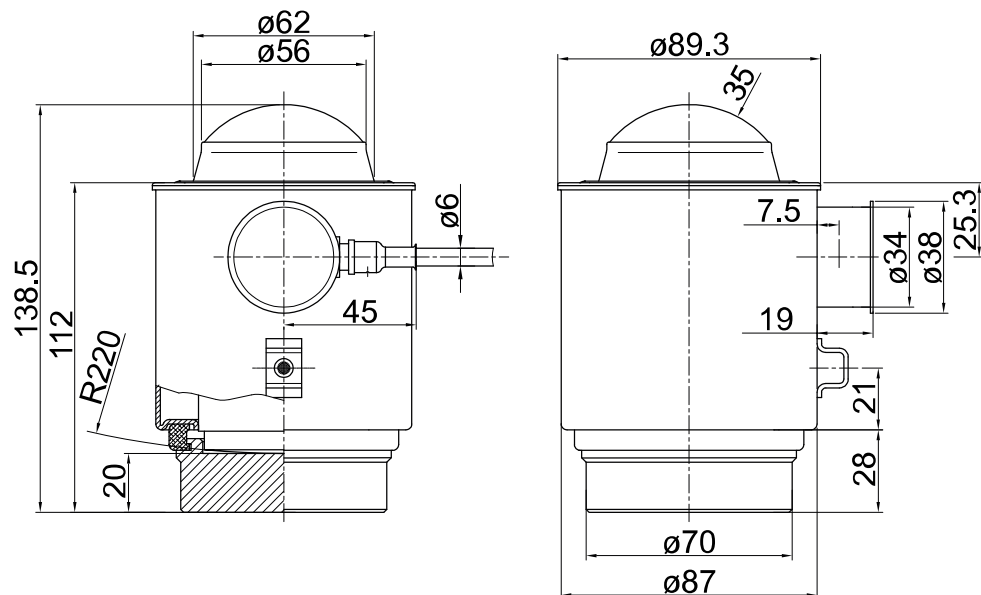
⚠ WARNING

Warning of hazardous area and/or personal injury

When used in a dust ex zone, the risk of electrostatic charging must be minimized.

- Dust layers on the load cell >5 mm are not permitted.
- The load cell must be installed securely.
- When used in protection class "Ex ec" (non-sparking), a transient protective device must be set to a level that does not exceed 140% of the peak voltage of 85 V.

4.1.4 Dimensions



all dimensions in mm

4.1.5 Ordering information

| Model | Max. capacity E _{max} | Type |
|--------------|-----------------------------------|---------|
| PR 6224B/25t | 25 t | ..C3/C6 |
| PR 6224B/50t | 50 t | ..C3/C6 |
| PR 6224B/75t | 75 t | ..C3/C6 |

4.1.6 Technical data

| Designation | Description | Abbr. | C3 | C6 | Unit |
|-----------------------------------|---|------------------|--------------------------------------|--------|--------------------|
| Accuracy class | | | 0.015 | 0.008 | % E _{max} |
| Minimum dead load | lowest limit of specified measuring range | E _{min} | | 0 | % E _{max} |
| Maximum capacity | highest limit of specified measuring range | E _{max} | See Chapter 4.1.5 | | |
| Limit load | Highest load without irreversible damage | E _{lim} | | | |
| | for E _{max} = 25 t, 50 t | E _{lim} | | 150 | % E _{max} |
| | for E _{max} = 75 t | E _{lim} | | 100 | % E _{max} |
| Destructive load | danger of mechanical destruction | E _d | | | |
| | for E _{max} = 25 t, 50 t | E _d | | 300 | % E _{max} |
| | for E _{max} = 75 t | E _d | | 200 | % E _{max} |
| Minimum LC verification | minimum load cell scale interval, v _{min} = E _{max} /Y | Y | 14000 | 20000 | |
| Minimum preload signal recurrence | Recurrence of the minimum preload signal (DR = 1/2 × E _{max} /Z) | Z | 3000 | 8000 | |
| Rated output | relative output at maximum capacity | C _n | standardized to E _{max} (t) | | |
| Tolerance on rated output | permissible deviation from rated output C _n | d _c | | <0.07 | % C _n |
| Zero output signal | load cell output signal under unloaded condition | S _{min} | | 0 ±1.0 | % C _n |
| Repeatability | max. change in load cell output for repeated loading | ε _R | | <0.005 | % C _n |
| Creep | max. change of output signal at E _{max} during 30 minutes | d _{cr} | <0.015 | <0.008 | % C _n |
| Non-linearity ¹⁾ | Deviation from the best straight lines through zero | d _{Lin} | | <0.01 | % C _n |

| Designation | Description | Abbr. | C3 | C6 | Unit |
|---|--|--------------------|--------------------------|--------|------------------------|
| Hysteresis ¹⁾ | max. difference in LC output between loading and unloading | d _{hy} | <0.0165 | <0.008 | % C _n |
| Temperature coefficient of the minimum preload signal | max. change of S _{min} in B _T | TK _{Smin} | <0.01 | <0.007 | % C _n /10 K |
| Temperature effect on C ¹⁾ | max. change of C in B _T | TK _C | <0.01 | <0.005 | % C _n /10 K |
| Insulation impedance | between internal circuit and housing, U _{DC} = 50 V | R _{IS} | >1000 | | MΩ |
| Recommended supply voltage | to hold the specified performance | B _U | 12...28 | | V |
| Nominal ambient temp. range | to hold the specified performance | B _T | -10...+40 | | °C |
| Usable ambient temp. range | permissible for continuous operation without damage | B _{Tu} | -30...+70 | | °C |
| Storage temperature range | without electrical and mechanical stress | B _{Ti} | -40...+95 | | °C |
| Permissible eccentricity | permissible displacement from nominal load line at the head of the load cell | S _{ex} | 5 | | mm |
| Vibration resistance | Resistance against oscillations (IEC 60068-2-6 Fc) | | 20 g, 100 h, 10...150 Hz | | |
| Barometric pressure influence | influence of barometric pressure on output | PK _{Smin} | <420 | | g/kPa |
| Nominal deflection | max. elastic deformation under maximum capacity | S _{nom} | | | |
| | for E _{max} = 25 t | S _{nom} | <0.5 | | mm |
| | for E _{max} = 50 t | S _{nom} | <0.8 | | mm |
| | for E _{max} = 75 t | S _{nom} | <1.1 | | mm |

1) The data for non-linearity (d_{Lin}), hysteresis (d_{hy}) and temperature effect on C (TK_C) are typical values.
For OIML R60 or NTEP approved load cells the sum of these values is within the permissible cumulative error limits.

Definitions acc. to OIML R60

The technical data given are intended solely as a product description and should not be interpreted as guaranteed properties in the legal sense.

4.2 Load disc kits

4.2.1 General notes

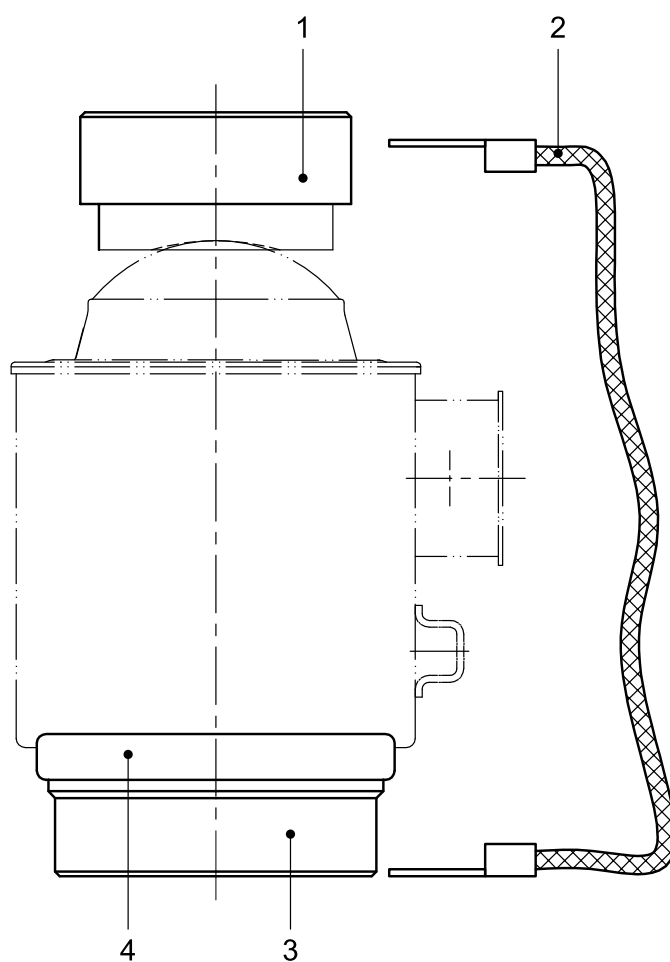
Note:

The load disc kit is **not** included in the equipment supplied with your load cell.

For the order numbers of the load disc kits, please refer to Chapter [11.2.2](#).

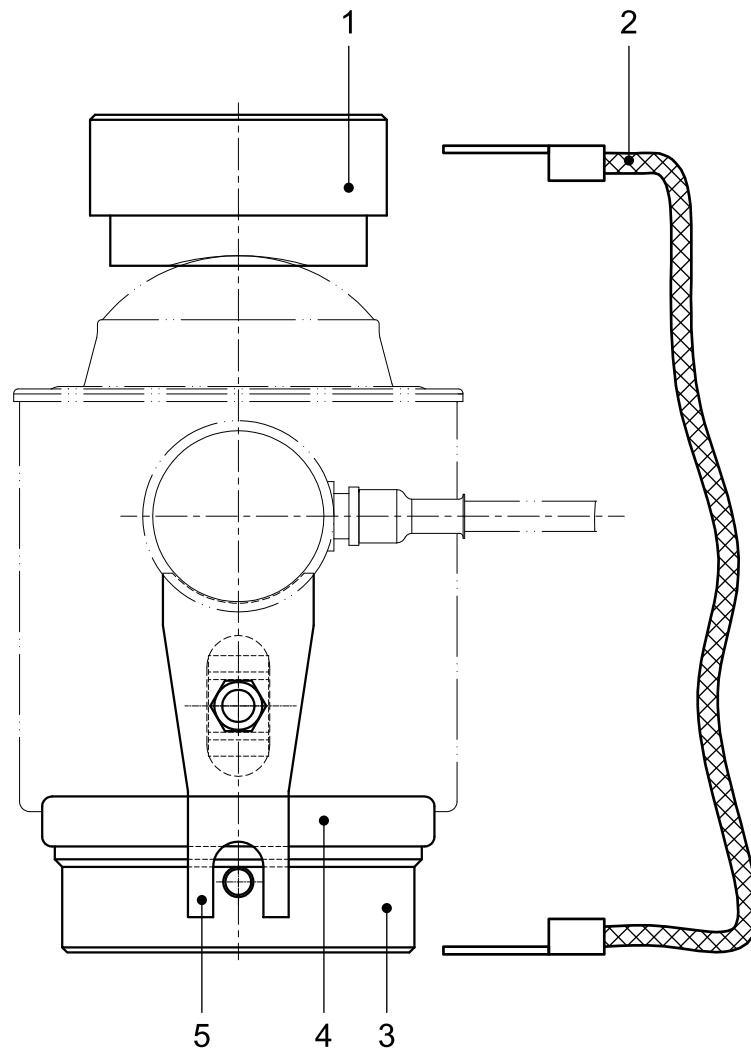
4.2.2 Equipment supplied

4.2.2.1 Load disc kit PR 6021/00N

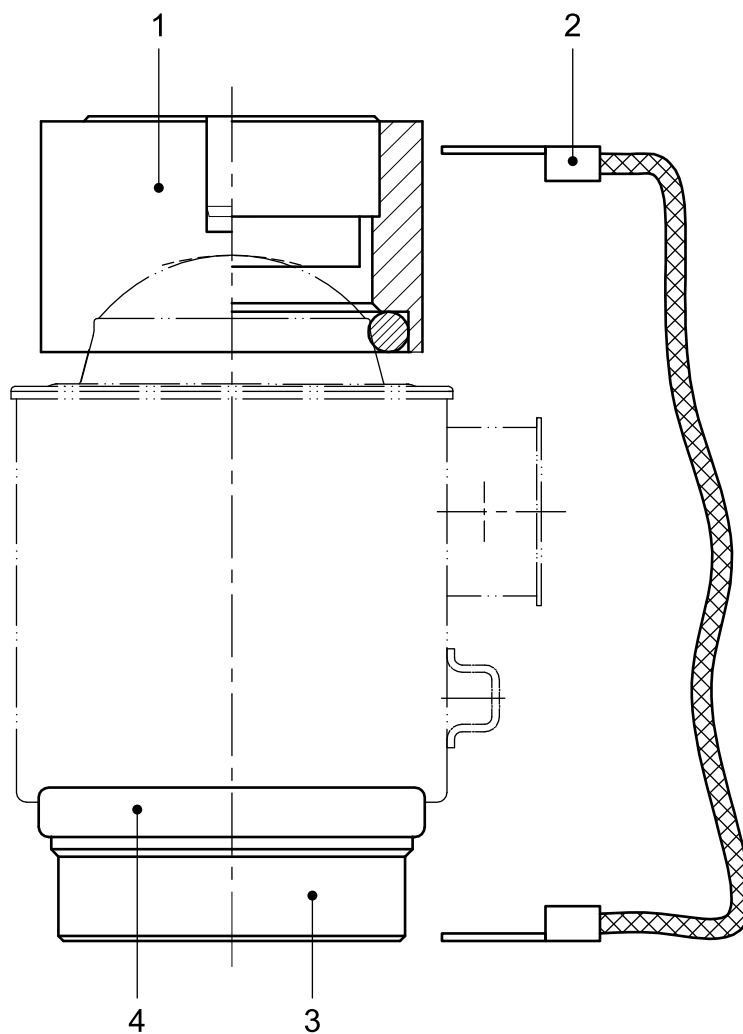


| No. | Description |
|-----|-----------------------|
| 1 | Upper load disc |
| 2 | Flexible copper strap |
| 3 | Lower load disc |
| 4 | Supporting ring |

4.2.2.2 Load disc kit PR 6021/02N

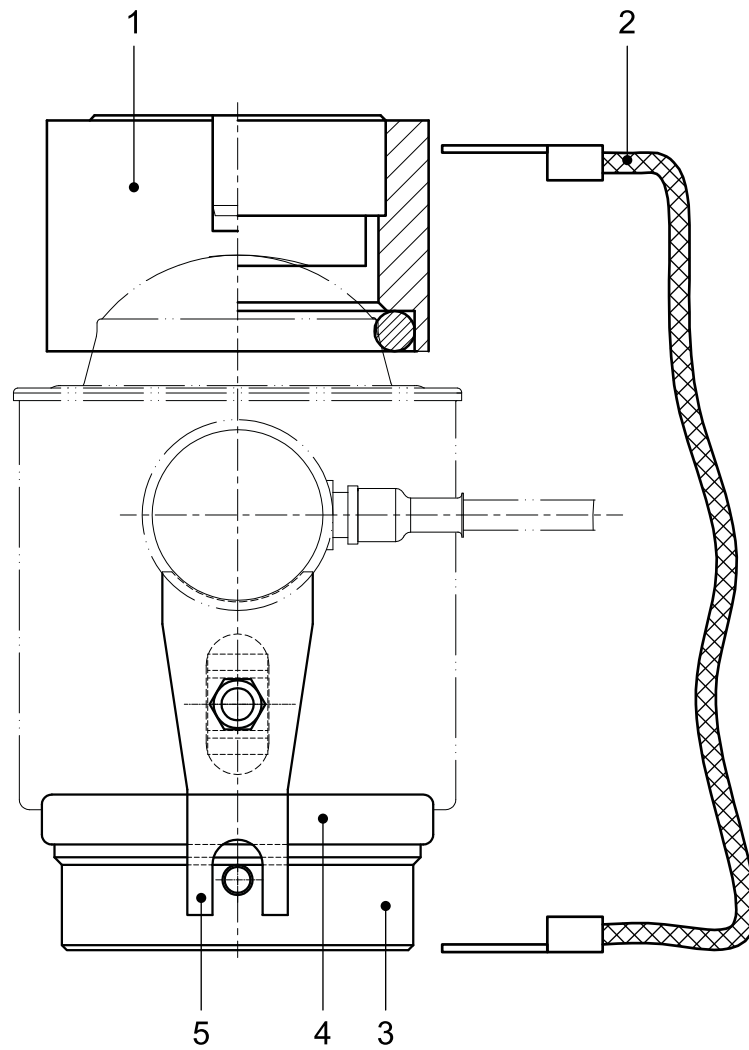


| No. | Description |
|-----|-----------------------|
| 1 | Upper load disc |
| 2 | Flexible copper strap |
| 3 | Lower load disc |
| 4 | Supporting ring |
| 5 | Anti-twist protection |

4.2.2.3 Load disc kit PR 6021/04N

| No. | Description |
|-----|-----------------------|
| 1 | Turbo Load disc |
| 2 | Flexible copper strap |
| 3 | Lower load disc |
| 4 | Supporting ring |

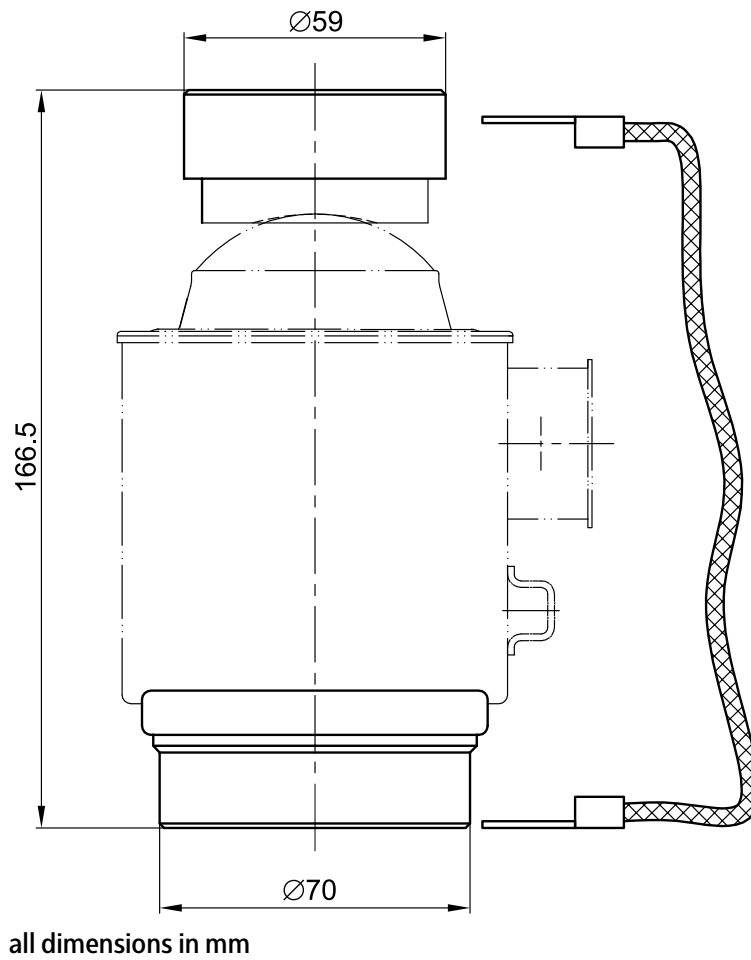
4.2.2.4 Load disc kit PR 6021/06N

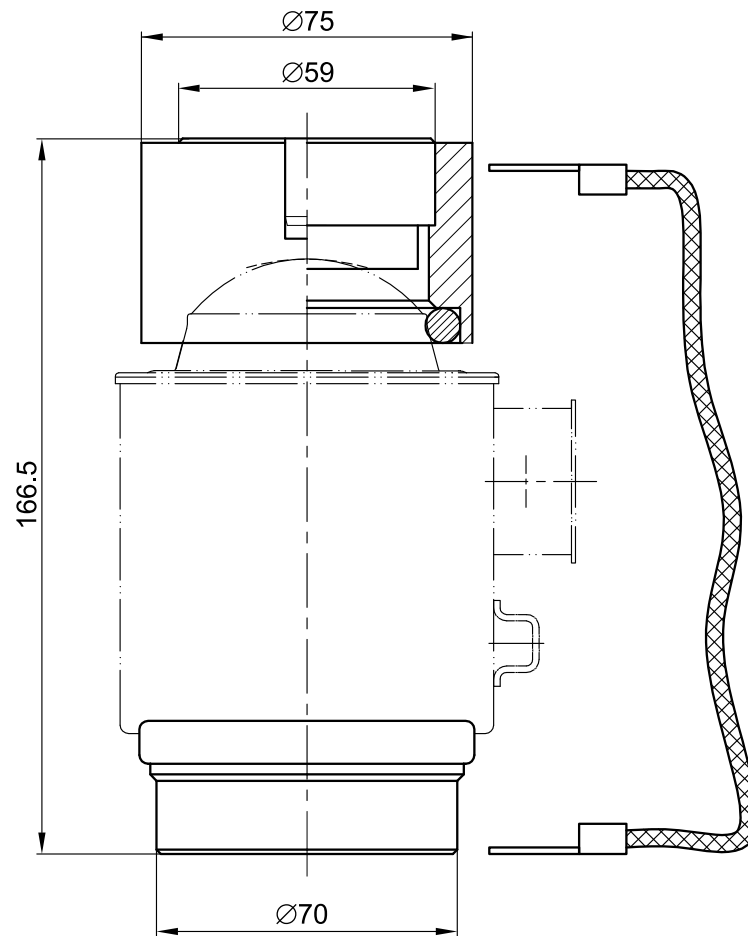


| No. | Description |
|-----|-----------------------|
| 1 | Turbo Load disc |
| 2 | Flexible copper strap |
| 3 | Lower load disc |
| 4 | Supporting ring |
| 5 | Anti-twist protection |

4.2.3 Dimensions

PR 6021/00N, ../02N



PR 6021/04N, ../06N

all dimensions in mm

4.2.4 Technical data**Load disc kits PR 6021/00N, ../02N, ../04N, ../06N**

| | PR 6021/00N | PR 6021/02N | PR 6021/04N | PR 6021/06N |
|-------------------------------|--|--------------------|--------------------|--------------------|
| Max. capacity of load cell | 25–75 t | | 25–75 t | |
| Permissible temperature range | -40°C–+100°C | | -40°C–+100°C | |
| Material | Steel; zinc-plated, chromated, and sealed (RoHS-compliant) | | | |
| Net weight | 1.2 kg | 1.3 kg | 1.8 kg | 2.0 kg |
| Gross weight | 1.3 kg | 1.4 kg | 1.9 kg | 2.1 kg |

Note:

The load disc kits PR 6021/04N and PR 6021/06N do **not** fit into the mounting kits PR 6021/01N and PR 6021/03N. They **only** fit into the mounting kits PR 6021/05N and PR 6021/07N.

5 Installation

5.1 Safety instructions

NOTICE

Welding or lightning strike current flowing through the cell can damage it.

All electrical welding on the weighing system must be finished before mounting the load cells.

- ▶ When installing the load cell, immediately bypass the load cell with the flexible copper strap provided for this purpose (see Chapter 11.1).

During any additional electrical welding work near the load cell:

- Disconnect the load cell cables.
- Bypass the load cell using the flexible copper strap.
- Make sure that the grounding clamp of the welding set is fitted as closely as possible to the welding joint.

The following must be observed during installation:

- Do not lift or transport the load cell by pulling on the cable.
- Avoid shock stress (falling down, hard shocks).
- The load cell must be installed vertically and centrally in the mounting kit.
- Load forces must act in the measuring direction of the load cell.
- The load disc must not be subjected to transverse forces.
- All contact points between load cell and load disc must be adequately greased.
Load cell grease order no., see Chapter 11.1.

NOTICE

Changes of temperature >15 K/h may influence the measuring accuracy.

- ▶ Make sure to protect the load cells from direct heating or cooling effects (sun, wind, heat radiation, fan heaters), e.g., heat protection screens or heat protection housings are to be installed if necessary.

NOTICE

Force shunts may cause measuring errors.

- ▶ All incoming and outgoing lines (hoses, pipes, cables) must be coupled to the measured object as flexibly as possible.

5.2 Aligning the load cell

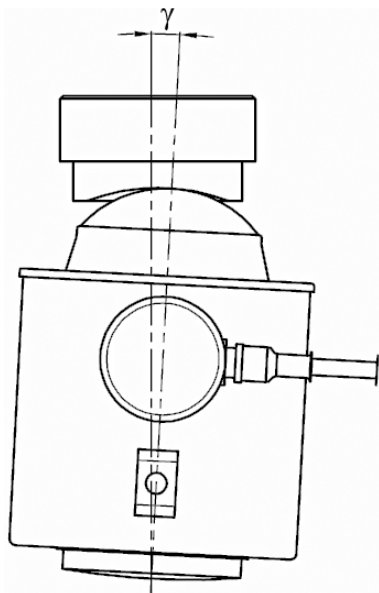
Load cells must be installed so that their axis is vertical when not in use.

Even minor deviations can lead to unexpected effects, particularly during the corner load or shift tests.

If the load cell is installed on a slant accidentally, then this changes its characteristic value.

All load cells must be carefully aligned.

To make it easier to get an exact vertical alignment, the PR 6021/.. mounting kit is equipped with a mounting aid.



$$\gamma \leq 1^\circ$$

The maximum permissible inclination must be strictly observed so that measuring accuracy is not adversely overly affected (see figure).

Note:

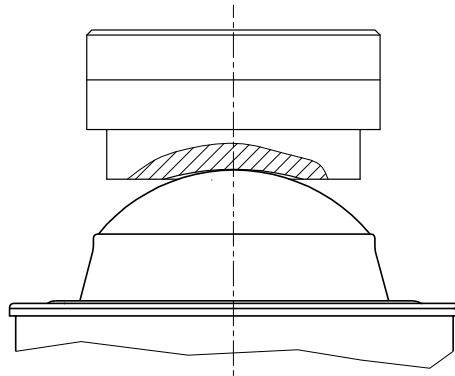
The material properties and the shape of the load cells and load discs are perfectly matched to one another. Always use load discs from Minebea Intec, see also Chapter [4.2.2](#).

Note:

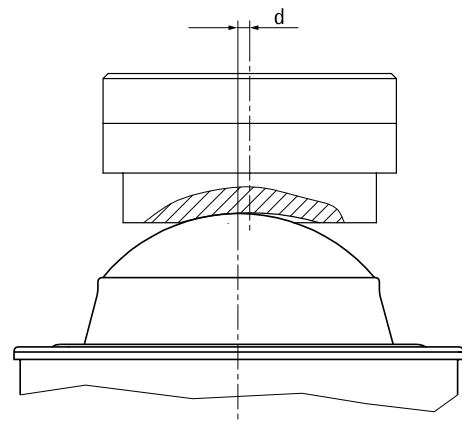
Further installation instructions can be found in the manuals of the respective mounting kits.

5.3 Positioning upper load disc

Center positioning

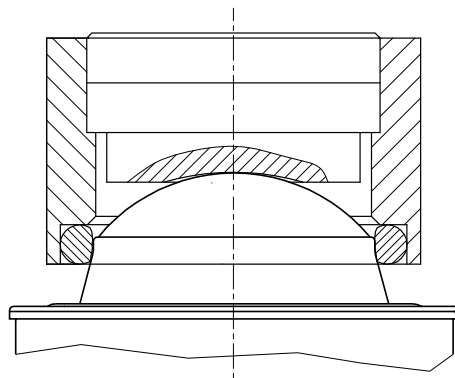


Off-center positioning



It is imperative that the load disc finds exact center positioning on the top of the load cell. Any off-center positioning (d) will cause deviations in the corner load test and lead to errors in the shift test (see Chapter [7.4.2](#)).

Turbo Load disc



In difficult cases, a specially designed upper load disc (Turbo Load disc) can facilitate positioning in the exact center on the top of the load cell. This uses an O-ring to ensure that the load disc is positioned in the exact center on the top of the load cell, see also Chapter [4.2.2](#).

6 Connection

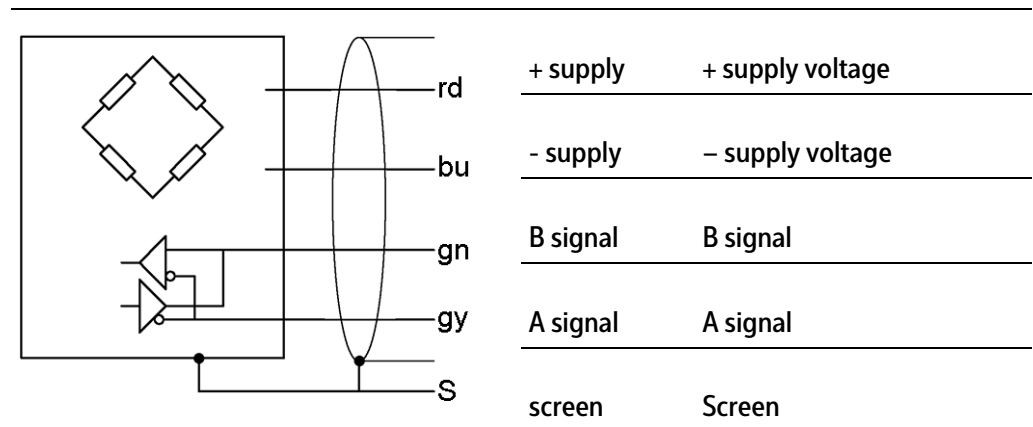
6.1 General information

- Protect the cable ends against contamination. Moisture must not get into the open end of the cable.
- The digital load cell cable may be shortened.
- The screen of the load cell cable is connected to the load cell housing. A PR 6024/68S type cable junction box must be used.
- Keep the load cell cables away from power cables.
- The distance between measurement cables and power cables and/or components under high voltage should be at least 1 m (reference value).
- We recommend laying the load cell cables in separate cable trays or armored steel pipes.
- Power cables should be crossed at right angles while taking into account the minimum distance of 1 m (reference value).

6.2 Load cell

Color Code

| | | |
|----|---|-------|
| rd | = | red |
| gn | = | green |
| bu | = | blue |
| gy | = | gray |



NOTICE

The cable screen is connected to the load cell housing.

- Make sure to use the PR 6024/68S cable junction box (see Chapter [11.2.4](#)).
- The cable junction box is still required even if only 1 load cell is being connected.

NOTICE

The digital load cell will be destroyed if connected incorrectly.

- ▶ Ensure that the load cells are connected in accordance with the connection plans in Chapter [6.6](#).
- ▶ See also the safety instructions in Chapter [12](#).

6.2.1 Load cell cable

The load cell cables are inseparably connected to the load cells in the factory.

The digital load cell cable may be shortened.

The special sheathing material ensures extremely long service life even under difficult operating conditions.

However, despite the robust nature of the materials used, the cable should be protected from excessive chemical and mechanical stresses. Preventing water from penetrating the end of the cable is also important "life insurance" for the system.

6.2.2 Lightning protection

To retain the functionality of the load cells even in the case of lightning strikes near the scale, the cable junction box PR 6024/68S must be used.

NOTICE

Additional lightning protection elements in the measuring circuit compromise the high measuring accuracy of the load cells or the lightning protection.

Always carry out the installation exclusively according to the instructions in order not to void any warranty claims.

- ▶ In particular, the entire installation, including the power supply, must be sufficiently protected against lightning! Simply connecting the protective grounding conductor is not enough!

6.3 Cable junction boxes

The cable junction box PR 6024/68S (see Chapter [11.2.4](#)) must be used to connect the load cells. These boxes have extremely high-quality screw terminals with high contact security and long-term stability along with a special conduit as well as integrated elements for transient overvoltage protection.

The special valve with a GoreTech semi-permeable membrane ensures permanent pressure compensation during fluctuating temperatures and weather conditions, and effectively prevents water from penetrating.

NOTICE

Defective cable junction box due to penetration of water.

- ▶ Special valve must not be removed.

6.4 Power supply

The power supply unit PR 6024/62S (see Chapter [11.2.5](#)) must be used for the power supply of the load cells.

6.5 Data and supply cables

The PR 6124/xxD data cable must be used to connect the PR 6024/68S cable junction box to the device, max. length: 300 m.

The PR 6124/xxP power cable must be used to connect the PR 6024/62S power supply to the PR 6024/68S cable junction box, max. length: 200 m

Note:

For order numbers, see Chapter [11.2.3](#).

6.6 Cable connections

Note:

All components are only shown schematically.

Color Code

| | | |
|----|---|-------|
| rd | = | red |
| gn | = | green |
| bu | = | blue |
| gy | = | gray |

NOTICE

The functionality of the load cells is also threatened by lightning strikes near the scale.

- ▶ Make sure to use cable junction box PR 6024/68S (see Chapter [11.2.4](#)).
 - ▶ For more information, see the cable junction box installation manual.
-

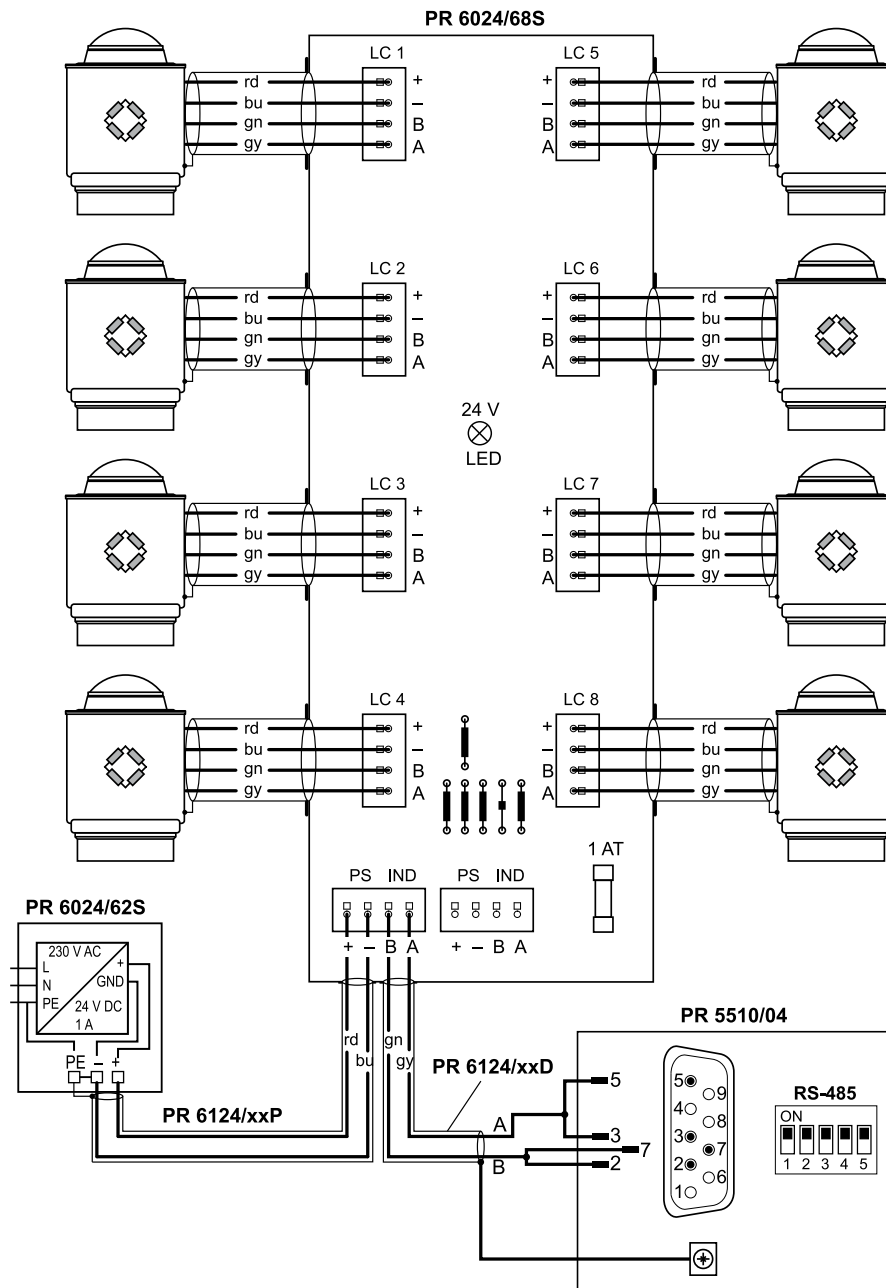
NOTICE

Possible destruction of the load cells

The digital load cell will be destroyed if connected incorrectly.

- ▶ Make the connection as shown in the illustrations.
-

Connection example: Connecting 8 load cells to the PR 5510/04 interface card

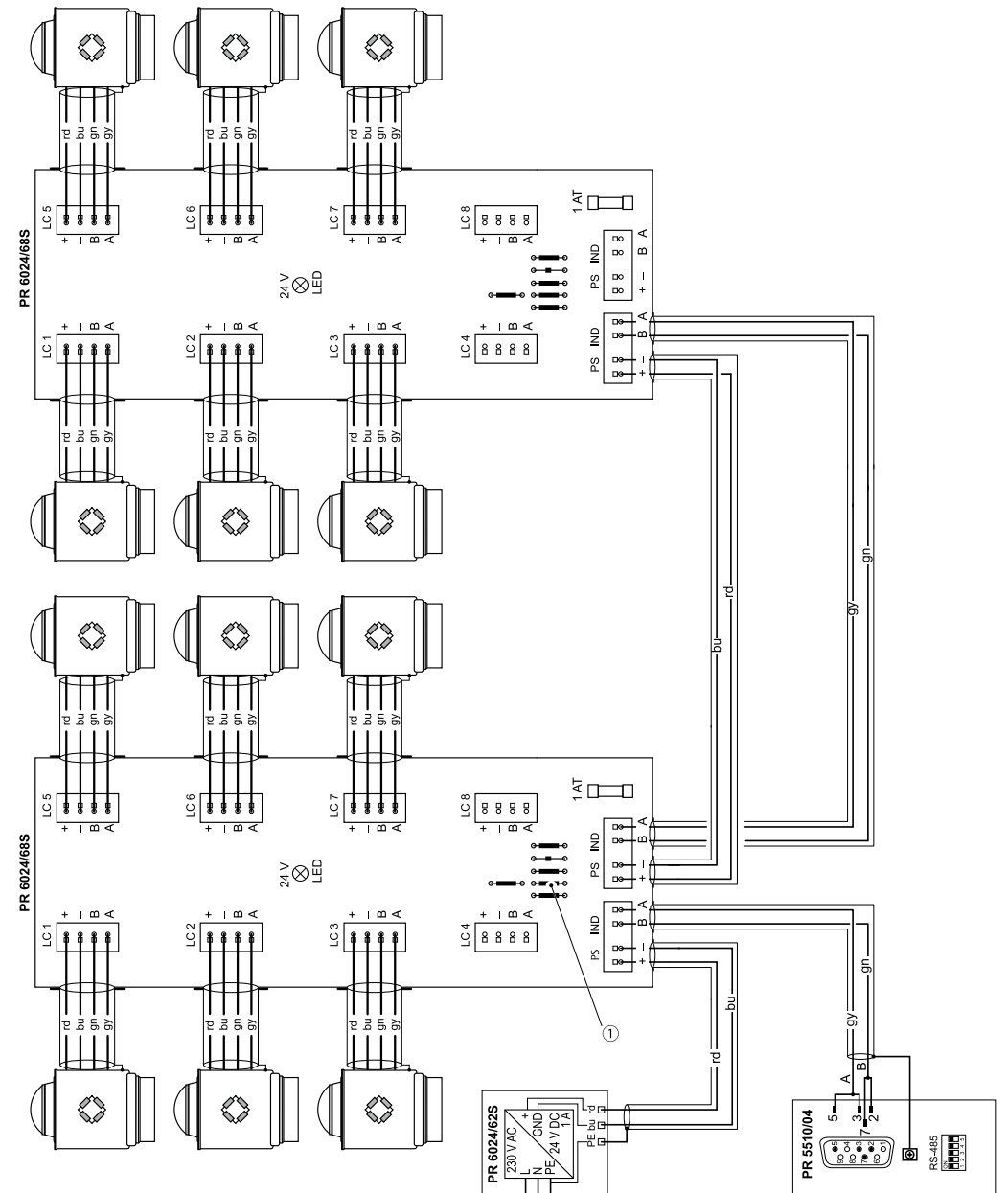


Connection example: Connecting 12 load cells to the PR 5510/04 interface card

NOTICE

The power supply unit is approved to power up to 8 digital load cells in the explosion-prone zone.

► Connecting 12 digital load cells in the explosion-prone zones is not allowed.



① Remove the terminating resistor

6.7 Equipotential bonding conductor

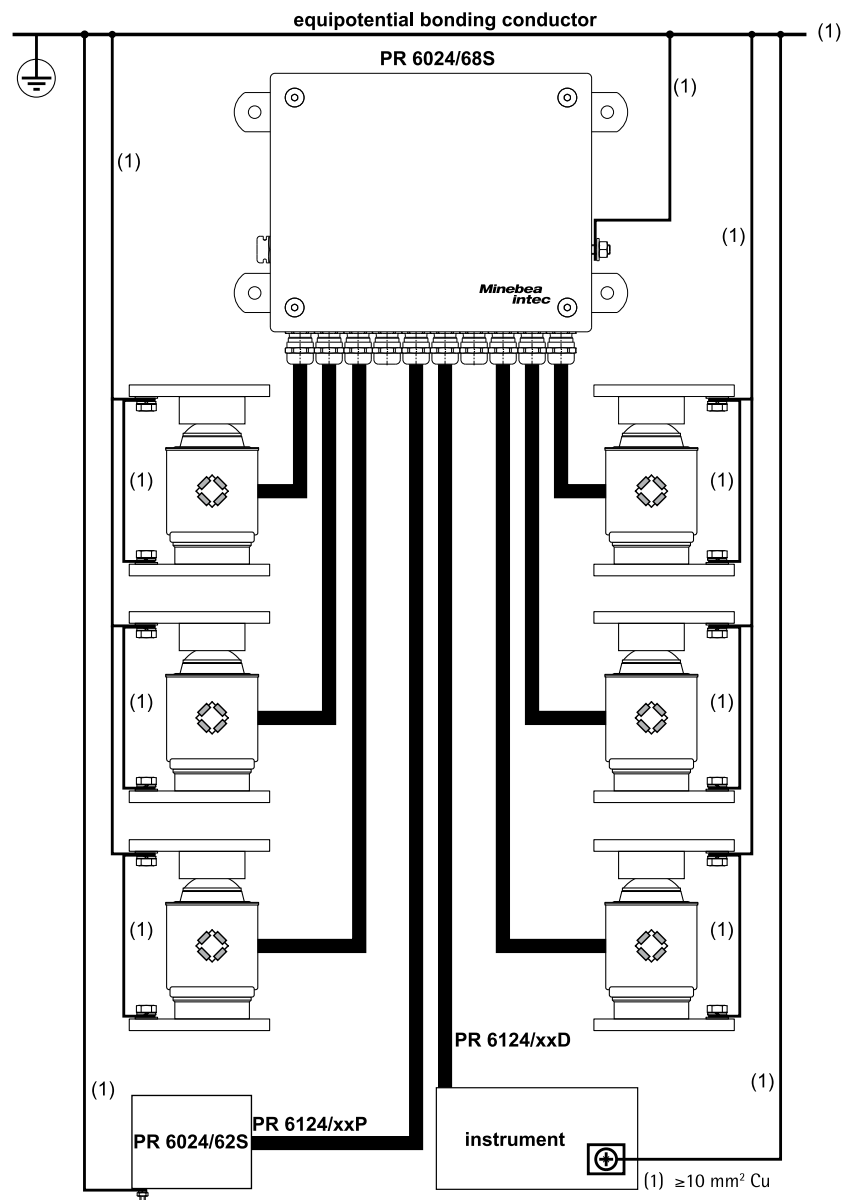
NOTICE

It is especially important that the ground is connected correctly to the components and the cable junction box.

You must also ground the device separately and ensure the power supply is properly shielded against the effects of lightning. Simply connecting the protective grounding conductor is not enough!

- ▶ If the installation is not carried out according to our instructions, this voids the warranty. In particular, the entire installation, including the power supply, must be sufficiently protected against lightning.
- ▶ For further information, see the installation manual relating to the cable junction boxes.

Connection example



7 Preparing for calibration

7.1 General notes

The digital load cells PR 6224B are characterized by the fact that the output signals for each individual load cell come factory-adjusted. All cells provide the same output signal with an equally-divided corner load (e.g. dead load).

In many cases, this minimizes the adjustment effort considerably because only a corner load test is required (see Chapter 7.2) and this can simply be adjusted via the software).

In order to obtain a reproducible load application, however, the scale must be prevented from wobbling.

Note:

For calibration of the measuring system, please refer to the manual of the corresponding indicator.

7.2 Corner load test

- ▶ Connect all load cells to the device via the junction box.
- ▶ Depending on the results of the software-based corner load test (see device manual on the configuration/adjustment of digital load cells), shims must be inserted below so that all load cells carry the corner load (dead load) of the platform equally.
- ▶ Carry out a mechanical corner adjustment; see Chapter 7.3.

7.3 Mechanical corner correction

If the measured signal of the individual load cells does not correspond to the expected dead load, then the load cells must be shimmed with thin plates until they carry the expected load:

- ▶ Lift platform directly adjacent to the load cell with the lowest dead load indication.
- ▶ Place a shim (0.5...2 mm thick) between install plate and scale construction.
- ▶ Load the corners, one after the other.
 - ▷ The same value must always be read-off on the connected device.
- ▶ If this is not the case; first carefully check the vertical alignment of the load cells and ensure that the pressure pieces are seated centrally.

If the signal deviations cannot be resolved by carefully leveling the scale, the software must be calibrated; see the device manual for the evaluation device.

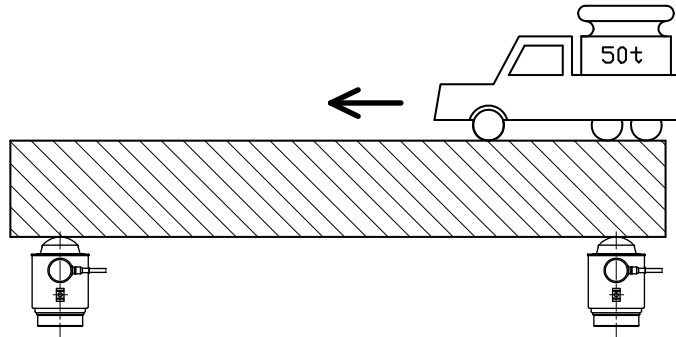
Due to the precision calibration of the cells in production, here only very small corrections should be necessary.

Note:

An excessive deviation almost always means that the scale is tilted or indicates force shunts or a defective load cell.

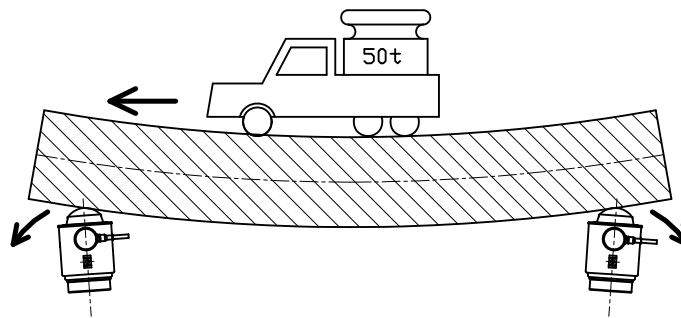
7.4 Full load test and shift test

7.4.1 Full load test



To perform adjustment, load the platform with the maximal capacity (Max).

7.4.2 Shift test

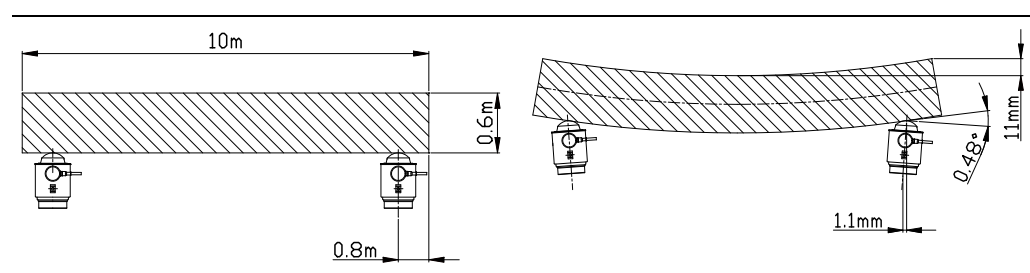


The shift test checks the behavior of the weighing instrument's mechanics and the effects of full bending of the platform.

On some constructions, this can, e.g., cause an undesirable incline of the load cell under loading. For that reason, the load cell is equipped with a special measuring element that sustainably counteracts this effect.

If the construction of the platform has been well designed, the force transmission point of the load cell is located at the "neutral fiber", i.e. the force transmission point does not shift to the horizontal when the platform bends under loading.

If the force transmission point is markedly above or below the neutral fiber, maximum bending of the platform shifts the force transmission point to the center of the platform (supporting point above) or to the edge of the platform (supporting point below). The resulting incline can change the sensitivity and thereby change the weight readout.

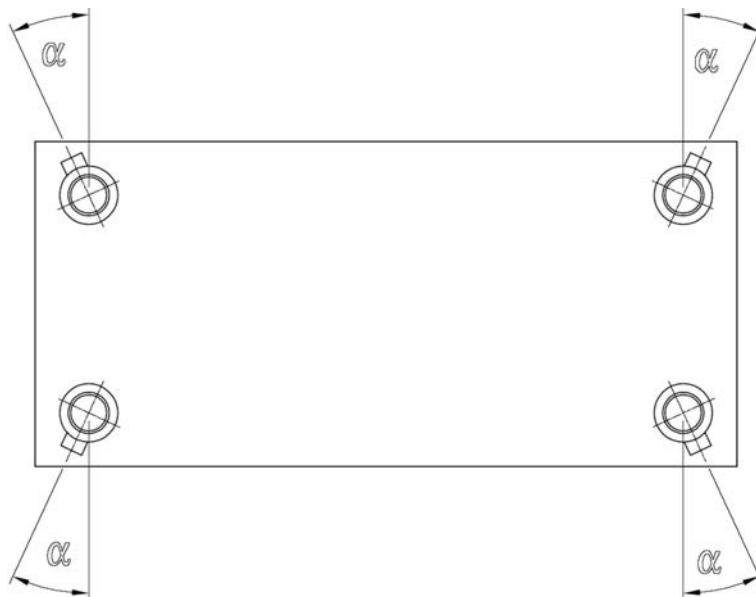


The measuring element is specially constructed to counteract this behavior (within limits) to ensure that even critical constructions maintain calibration error limits. This error can be eliminated almost completely by intentionally turning the load cells as described in the table below (derivation from the measured shift error).

The optionally available positioning device fixates the load cell in the desired position.

In most cases, full bending of the platform causes the load cells to incline outwards. Full bending of the platform and the resulting incline are hardly detectable by the naked eye.

That said, the actions described (see Chapter 7.4.3) will not be successful unless the load cells have been previously aligned vertically and the upper load disc is located in the absolute center on the top of the load cells.



The once-determined alignment will be typical for a particular platform construction; it will now only depend on the manufacturing tolerances of the platform and the care taken during installation (alignment!). This should be written down so that the determined installation position used for installation of this type of platform is optimal right from the beginning.

The effect is designed to enable the load cell to offer two zero crosses when turned around its central axis. When doing so, the sensitivity can be increased or decreased by turning from around the zero point. That means that the shift errors can actually be adjusted to the value of 0.0 kg, depending on the platform's construction. This increases the play for stack and off-center loading errors.

7.4.3 Systematically minimizing shift error

| Result | Recommended action |
|--|---|
| Step 1: | |
| No previous measurement | The load cells are installed in such a way that all adjustment chambers point slightly outwards, i.e. To the longitudinal edge of the weighbridge, $\alpha = +20^\circ$. |
| Step 2: | |
| If, after corner load correction, the first shift test does not produce satisfactory results: | |
| In the center, lower readout than at the beginning and end of the weighbridge. | Rotate all load cells outwards by approx. -20° to position $\alpha = 0^\circ$. |
| In the center, higher readout than at the beginning and end of the weighbridge. | Rotate all load cells by another $+20^\circ$ to position $\alpha = 40^\circ$. |
| Step 3: | |
| If, after repeating the corner load correction, the second shift test still does not produce satisfactory results: | |
| In the center, the readout continues to be lower than at the beginning and end of the weighbridge. | Serious mechanical problems. The platform designed with an overcritical range! |
| In the center, the readout is now higher than at the beginning and end of the weighbridge. | Rotate all load cells back somewhat (to approx. $\alpha = 10^\circ$). |
| In the center, the readout is now lower than at the beginning and end of the weighbridge. | Rotate all load cells back somewhat (to approx. $\alpha = 30^\circ$). |
| In the center, the readout continues to be higher than at the beginning and end of the weighbridge. | Rotate all load cells by another 20° so that all adjustment chambers are in the $\alpha = +60^\circ$ position, i.e. nearly longitudinally along the platform. |

8 Troubleshooting

8.1 General Notes

The following hints will enable a technician to do an initial diagnostic or help in case of incorrect or non-reproducible weighing results after commissioning and calibration.

8.2 Visual inspection

| Component | Possible errors |
|------------------------|--|
| Weighbridges | Are elements with a solid connection to the scale in direct contact with the surroundings? Has friction developed between the weighbridge and its surroundings (e. g. dusty openings, ...)? |
| Cable junction box | Has moisture intruded? Do all soldering and screw connections have secure contact? |
| Mains supply | Has moisture intruded? Is the LED lit? If the LED is not lit, both fuses must be checked. |
| Data and supply cables | Is the sheath damaged? Has moisture intruded? |
| Load cell | Is the load cell vertical? Is the adjustment chamber cover damaged? Is the sheath of the load cell cable damaged? Has moisture penetrated into the load cell cable? |

8.3 Metrological controls

8.3.1 Checking the screen connection

- Insulate the load cell cores.

Screen – housing: 0 Ω

8.3.2 Insulation test of power supply

- Connect data lines A and B (gray and green) to the screen.
- Bring the supply lines (red and blue) together and then perform the insulation measurement against screen.

Max. test voltage: Standard version $U_{DC} = 50 \text{ V}$

Impedance: >1000 $M\Omega$

9 Maintenance/repairs/cleaning

9.1 Maintenance

The load cell PR 6224B is maintenance-free.

Load cell grease must be applied to the contact surfaces between the load cell and load discs. Load cell grease order number, see Chapter [11.1](#).

The load cell can be extensively sprayed with off-shore all-weather protection spray in aggressive environments.

Load cell grease specification

- good water/media resistance
- good corrosion protection properties
- good oxidization and aging stability
- good temperature resistance
- and, where appropriate, good compatibility with foodstuffs

The requirements referred to apply when taking into account the specific operating/usage conditions.

The grease also serves as protection against wear (low friction).

9.2 Repairs

The load cell PR 6224B is designed to be as robust as possible for the required measuring accuracy and is highly reliable.

Should an electrical or mechanical defect nevertheless occur, the load cell must be replaced.

Load cell repair is not possible.

9.3 Cleaning

Dirt on the load cell and movable parts of the scale must be cleaned as quickly as possible

- if it influences weighing, or
- if it is corrosive to the cell or cable material.

NOTICE

Some cleaning agents may not be compatible with the load cell material.

- ▶ When using cleaning agents, ensure that their compatibility with the load cell material has been tested and approved (see Chapter [4.1.2](#)).

10 Disposal

Our products and their packaging should not be disposed of in municipal waste (e.g. garbage can for recyclable packaging, garbage can for paper packaging, etc.). They can either be recycled by the customer themselves, providing this complies with requirements set out by electrical or electronic waste or packaging waste laws, or sent back to Minebea Intec at a charge.

This option of returning the product is intended to provide proper recycling or reuse in a manner that is collected separately from municipal waste.

Before disposing of or scrapping the old products, any single-use or rechargeable batteries should be removed and taken to a suitable collection point. The type of battery used is specified in the technical data.

Please see our General Terms and Conditions for further information.

Service addresses for repair acceptance and collection points can be found on the product information enclosed with the product as well as on our website (www.minebea-intec.com).

Should you have any further questions, please contact your local service representative or our service center.

Minebea Intec GmbH

Repair center

Meiendorfer Strasse 205 A

22145 Hamburg, Germany

Phone: +49.40.67960.333

service.HH@minebea-intec.com

We reserve the right not to accept products that are contaminated with hazardous substances (ABC contamination).

11 Spare parts and accessories

11.1 Replacement parts

| No. | Description | Order no. |
|-----|------------------------------------|----------------|
| 1 | Flexible copper strap, 250 mm long | 5312 321 28056 |
| 2 | Load cell grease 4x 5 g | 5312 390 12001 |

11.2 Accessories

11.2.1 Mounting kits

To install the load cell, the following mounting kits / pivots are recommended:

| No. | Description | Order no. |
|-----|--|----------------|
| 1 | Mounting kit PR 6021/01N (including upper load disc, lower load disc with supporting ring and flexible copper strap 10 mm ² , 250 mm long) | 9405 360 21011 |
| 2 | Mounting kit PR 6021/03N (including upper load disc, lower load disc with supporting ring, anti-twist protection and flexible copper strap 10 mm ² , 250 mm long) | 9405 360 21031 |
| 3 | Mounting kit PR 6021/05N (including upper Turbo Load disc, lower load disc with supporting ring and flexible copper strap 10 mm ² , 250 mm long) | 9405 360 21051 |
| 4 | Mounting kit PR 6021/07N (upper Turbo Load disc, lower load disc with supporting ring, anti-twist protection and flexible copper strap 10 mm ² , 250 mm long) | 9405 360 21071 |

N = steel zinc plated, passivated and sealed (RoHS-compliant)

11.2.2 Load discs

To install the load cell, the following load discs are recommended:

| No. | Description | Order no. |
|-----|---|----------------|
| 1 | Load disc kit PR 6021/00N (upper load disc, lower load disc with supporting ring and flexible copper strap 10 mm ² , 250 mm long) | 9405 360 21001 |
| 2 | Load disc kit PR 6021/02N (upper load disc, lower load disc with supporting ring, anti-twist protection and flexible copper strap 10 mm ² , 250 mm long) | 9405 360 21021 |
| 3 | Load disc kit PR 6021/04N (upper Turbo Load disc, lower load disc with supporting ring and flexible copper strap 10 mm ² , 250 mm long) | 9405 360 21041 |
| 4 | Load disc kit PR 6021/06N (upper Turbo Load disc, lower load disc with supporting ring, anti-twist protection and flexible copper strap 10 mm ² , 250 mm long) | 9405 360 21061 |

N = steel zinc plated, passivated and sealed (RoHS-compliant)

11.2.3 Data and supply cables

The following data and supply cables are recommended:

| No. | Designation | Order no. |
|------------|--------------------------|------------------|
| 1 | Data cable PR 6124/..D | 9405 361 24xx3 |
| 2 | Supply cable PR 6124/..P | 9405 361 24xx4 |

11.2.4 Cable junction boxes

Using the following cable junction box is required:

| No. | Description | Order no. |
|------------|--|------------------|
| 1 | PR 6024/68S (1.4404, 1–8 load cells, IP66, IP68, IP69) | 9405 360 21684 |

11.2.5 Power adapter






The power supply unit is required for the voltage supply:

| No. | Designation | Order no. |
|------------|---|------------------|
| 1 | PR 6024/62S (1.4301, IP 66, IP68, IP69) | 9405 360 24624 |

12 Certificates

| Ser. no. | Description | Document no. | see Chapter |
|-----------------|---------------------------------|----------------------|----------------------|
| 1 | Manufacturer's Certificate | MIN22ATEX005X | 12.1 |
| 2 | Manufacturer's Certificate UKCA | MIN22UKEX003X | 12.2 |
| 3 | EU-Declaration of Conformity | MEU23003 | 12.3 |
| 4 | OIML Certificate (NMI) | R60/2017-A-NL1-23.02 | 12.4 |
| 5 | Test Certificate (NMI) | TC12543 | 12.5 |
| 6 | Evaluation report (NMI) | ER12543 | 12.6 |

12.1 MIN22ATEX005X

| | | |
|---|---|--|
|  | Herstellerbescheinigung Manufacturer's certificate |  |
| Nummer Number | MIN22ATEX005X | |
| Hersteller Manufacturer | Minebea Intec GmbH Meiendorfer Straße 205A 22145 Hamburg, Germany | |
| | erklärt in alleiniger Verantwortung, dass das Produkt <i>declares under sole responsibility that the product</i> | |
| Geräteart Device type Baureihe Type series | Digital Load Cell PR 6224B, PR 6204B | |
| | auf das sich diese Bescheinigung bezieht, mit der/den folgenden Norm(en) oder normativen Dokument(en) übereinstimmt (siehe Seite 2) gemäß den Bestimmungen der „Richtlinie 2014/34/EU des Europäischen Parlaments und des Rates vom 26. Februar 2014 zur Harmonisierung der Rechtsvorschriften der Mitgliedstaaten für Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen“. Das Produkt wird wie folgt gekennzeichnet: <i>to which this certification relates is in conformity with the following standard(s) or other normative document(s) (see page 2) pursuant to the provisions of the "Directive 2014/34/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to equipment and protective systems intended for use in potentially explosive atmospheres". This product is labelled as follows:</i> | |
| Kennzeichnung Marking | II 3G Ex ec IIC T6 Gc II 3D Ex tc IIIC T80°C Dc MIN22ATEX005X | |
| | Minebea Intec GmbH Hamburg, 03.02.2023 | |
| |  ----- Dr. K. Sommer Managing Director |  ----- Dr. A. Böttger CTO |
| | |  ----- Torben Hiller EX Approval Manager |
| | Diese Erklärung bescheinigt die Übereinstimmung mit den genannten EU-Richtlinien, ist jedoch keine Zusicherung von Eigenschaften. Bei einer mit uns nicht abgestimmten Änderung des Produktes verliert diese Erklärung ihre Gültigkeit. Die Sicherheitshinweise der zugehörigen Produktdokumentation sind zu beachten. <i>This declaration certifies conformity with the above mentioned EC Directives, but does not guarantee product attributes. Unauthorized product modifications make this declaration invalid. The safety information in the associated product documentation must be observed.</i> | |
| | 1/2 MIN22ATEX005X Rev. 00 | |



Herstellerbescheinigung Manufacturer's certificate



Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden erfüllt durch Übereinstimmung mit:

Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

**Normen
Standards**

EN IEC 60079-0:2018

Explosionsgefährdete Bereiche – Teil 0: Geräte – Allgemeine Anforderungen
Explosive atmospheres – Part 0: Equipment – General requirements

EN IEC 60079-7:2015/A1:2018

Explosionsgefährdete Bereiche – Teil 7: Geräteschutz durch erhöhte Sicherheit „e“
Explosive atmospheres – Part 7: Equipment protection by increased safety "e"

EN 60079-31:2014

Explosionsfähige Atmosphäre – Teil 31: Geräte-Staubexplosionsschutz durch Gehäuse „t“
Explosive atmospheres – Part 31: Equipment dust ignition protection by enclosure "t"

Diese Bescheinigung wurde auf Basis des folgenden Prüfberichts erstellt:

This certificate was drawn on the basis of the following test report:

**Prüfbericht
Test Report**

MTR22002

Minebea Intec GmbH, Hamburg, Germany

**Sicherheitshinweise
Safety instructions**

65835-790-16

**Umgebungstemperatur
Ambient temperature**

$-20^{\circ}\text{C} \leq T_{\text{AMB}} \leq +70^{\circ}\text{C}$

**Elektrische Daten
Electrical Data**

$U_n = 28 \text{ Vdc}$

$I_n = 500 \text{ mA}$

IP Protection Class

IP66, IP69

Für dieses Produkt gelten folgende besonderen Bedingungen für den sicheren Gebrauch:

For this product the following special conditions for safe use apply:

**besondere Bedingungen
special Conditions**

Beachten Sie die Angaben in den Sicherheitshinweisen.

Follow the instructions given in the safety instructions.

Vermeiden Sie elektrostatische Aufladung.

Avoid electrostatic charging.




Die Wägezellen und Kabel müssen fest verlegt werden.

The load cells and cables must be laid securely (fixed installation).

2/2

MIN22ATEX005X Rev. 00

12.2 MIN22UKEX003X

| | | |
|---------------------|--|--|
| UK CA | Manufacturer's certificate | Minebea intec <small>The true measure</small> |
| Number | MIN22UKEX003X | |
| Manufacturer | Minebea Intec GmbH Meiendorfer Straße 205A 22145 Hamburg, Germany | |
| | declares under sole responsibility that the product | |
| Device type | Digital Load Cell | |
| Type series | PR 6224B, PR 6204B | |
| | to which this certification relates is in conformity with the following standard(s) or other normative document(s) (see page 2) pursuant to the provisions of the Statutory Instrument 2016 No. 1107 of the UK Parliament coming into force on the 8 th of December 2016, "The Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016". This product is labelled as follows: | |
| Marking | II 3G Ex ec IIC T6 Gc II 3D Ex tc IIIC T80°C Dc MIN22UKEX003X | |
| | Minebea Intec GmbH Hamburg, 03.02.2023 | |
| |  ----- Dr. K. Sommer Managing Director |  ----- Dr. A. Böttger CTO |
| | |  ----- Torben Hiller EX Approval Manager |
| | This declaration certifies conformity with the above mentioned UK Directives, but does not guarantee product attributes. Unauthorized product modifications make this declaration invalid. The safety information in the associated product documentation must be observed. | |
| | 1/2 MIN22UKEX003X Rev. 00 | |



Manufacturer's certificate



Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

Standards

EN IEC 60079-0:2018

Explosive atmospheres – Part 0: Equipment - General requirements

EN IEC 60079-7:2015 / A1:2018

Explosive atmospheres – Part 7: Equipment protection by increased safety "e"

EN 60079-31:2014

Explosive atmospheres – Part 31: Equipment dust ignition protection by enclosure "t"

This certificate was drawn on the basis of the following test report:

Test Report

MTR22002

Minebea Intec GmbH, Hamburg, Germany

Safety instructions

65835-790-16

Ambient temperature

$-20^{\circ}\text{C} \leq T_{\text{AMB}} \leq +70^{\circ}\text{C}$

Electrical Data

$U_n = 28 \text{ Vdc}$

$I_n = 500 \text{ mA}$

IP Protection Class

IP66, IP69

For this product the following special conditions for safe use apply:


Special Conditions

Follow the instructions given in the safety instructions.


Avoid electrostatic charging.

The load cells and cables must be laid securely (fixed installation).

12.3 MEU23003



EU-Declaration of Conformity
(in accordance with ISO/IEC 17050-1)
MEU23003 Rev. 0



**Minebea
intec**
The true measure

1. Product model / product number / solely valid for project number:
 1.1 Pendeo® Truck – Digital Weighbridge Load Cell / PR 6224B / ----

2. Name and address of the manufacturer (2.1) and his authorized representative (2.2):
 2.1 Minebea Intec GmbH, Meiendorfer Straße 205 A, 22145 Hamburg, Germany
 2.2 /

3. This declaration of conformity is issued under the sole responsibility of the manufacturer.

4. Object(s) of the declaration:
 4.1 PR 6224B
 4.2 PR 6224B (A.1)

5. The object(s) of the declaration described above is in conformity with the relevant Union harmonization legislation:

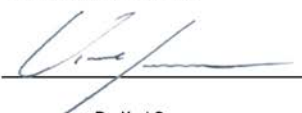
| | (4.1) | (4.2) |
|----------------|-------|-------|
| 5.1 2014/30/EU | (6.1) | (6.1) |
| 5.2 2011/65/EU | (6.2) | (6.2) |
| 5.3 2014/34/EU | (6.3) | (6.3) |

6. References to the relevant harmonized standards used or references to the other technical specifications in relation to which conformity is declared:
 6.1 2014/30/EU EN 61326-1:2013
 6.2 2011/65/EU EN IEC 63000:2018
 6.3 2014/34/EU EN IEC 60079-0:2018, EN IEC 60079-7:2015/A1:2018, EN 60079-31:2014

7. The notified body w performed x and issued the certificate y relevant for z:


| | w | x | y | z |
|-------|---|----------------------------|---------------|-------|
| 7.1 / | | Manufacturer's certificate | MIN22ATEX005X | (4.2) |

Minebea Intec GmbH
Hamburg, 09. Feb. 2023




Dr. Karl Sommer
COO

p.p.a



Dr. Axel Böttger
CTO

i.A.



Oliver Freitag
CE Certification

1/6



MEU23003 Rev. 0

EU-Declaration of Conformity

(in accordance with ISO/IEC 17050-1)



A. Additional information on ():

A.1 (7.1) Marking



II 3G Ex ec IIC T6 Gc
II 3D Ex tc IIIC T80°C Dc
MIN22ATEX005X



EU-Declaration of Conformity
(in accordance with ISO/IEC 17050-1)



MEU23003 Rev. 0

български (bg)
Декларация за съответствие
1. Модел на продукта / Номер на продукта / валидно само за номера на проекта:
2. Наименование и адрес на производителя (2.1) и на неговия упълномощен представител (2.2):
3. Настоящата декларация за съответствие е издадена на отговорността на производителя.
4. Предмет(и) на декларацията:
5. Предмет(и) (ите) на декларацията, описан(и) по-горе отговаря(т) на съответното законодателство на Съюза за хармонизиране.
6. Позоваване на приложимите хармонизирани стандарти или позоваване на други технически спецификации, по отношение на които се декларира съответствие:
7. Нотифицираният орган в извършил x и издаде сертификата y, относно се за z:
A. Допълнителна информация за ():
A.1 Маркировка

čeština (cs)
Prohlášení o shodě
1. Model výrobku / číslo výrobku / platné pouze pro číslo projektu:
2. Jméno a adresa výrobce (2.1) a jeho způsobilého zástupce (2.2):
3. Toto prohlášení o shodě se vydává na výhradní odpovědnost výrobce.
4. Předmět(y) prohlášení:
5. Výše popsaný předmět / Výše popsané předměty prohlášení je/ jsou ve shodě s příslušnými harmonizačními právními předpisy Únie.
6. Odkazy na příslušné harmonizované normy, které byly použity, nebo na jiné technické specifikace, na jejichž základě se shoda prohlašuje:
7. Oznamovaný subjekt v provedl x a vydal certifikát y relevantní z hlediska z:
A. Další informace o ():
A.1 Označení

dansk (da)
Overensstemmelseserklæring
1. Produktmodel / produktnummer / gælder kun for projektnummer:
2. Fabrikantens (2.1) og dennes bemyndigede repræsentants (2.2) navn og adresse:
3. Denne overensstemmelseserklæring udstedes på fabrikantens ansvar.
4. Genstand(ene) for erklæringen:
5. Genstand(ene) for erklæringen, som beskrevet ovenfor, er i overensstemmelse med den relevante EU-harmoniseringslovgivning:
6. Referencer til de relevante anvendte harmoniserede standarder eller til de andre tekniske specifikationer, som der erklæres overensstemmelse med:
7. Det bemyndigede organ w har foretaget x og udstedt attesten y, der gælder for z:
A. Supplerende oplysninger om ():
A.1 Mærkning

Deutsch (de)
Konformitätserklärung
1. Produktmodell / Produktnummer / gilt ausschließlich für Projekt-Nr.:
2. Name und Anschrift des Herstellers (2.1) und seines Bevollmächtigten (2.2):
3. Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller.
4. Gegenstände der Erklärung:
5. Die oben beschriebenen Gegenstände der Erklärung erfüllen die einschlägigen Harmonisierungsrechtsvorschriften der Union; Normen oder der anderen technischen Spezifikationen, die der Konformitätserklärung zugrunde gelegt wurden:
7. Die notifizierte Stelle w hat x und die für z relevante Bescheinigung y ausgestellt:
A. Zusatzangaben zu ():
A.1 Kennzeichnung

Ελληνικά (el)
Δήλωση συμμόρφωσης
1. Μοντέλο προϊόντος / αριθμός προϊόντος / ισχύει μόνο για τον αριθμό του έργου:
2. Ονομα και διεύθυνση του κατασκευαστή (2.1) και του εξουσιοδοτημένου αντιπροσώπου του (2.2):
3. Η παρούσα δήλωση συμμόρφωσης εκδίδεται με αποκλειστική ευθύνη του κατασκευαστή.
4. Στόχος της δήλωσης:
5. Ο στόχος της δήλωσης που περιγράφεται παραπάνω είναι σύμφωνα με τη σχετική ενωσιακή νομοθεσία εναρμόνισης.
6. Παραπομπές στα σχετικά εναρμονισμένα πρότυπα που χρησιμοποιήθηκαν ή παραπομπές στις λοιπές τεχνικές προδιαγραφές σε σχέση με τις οποίες δηλώνεται η συμμόρφωση:
7. Ο κοινοποιημένος οργανισμός w διεξήγαγε x και εξέδωσε το πιστοποιητικό y όπως απαιτείται για z:
A. Πρόσθετες πληροφορίες σχετικά με ():
A.1 Σήμανση

español (es)
Declaración de conformidad
1. Modelo de producto/número de producto / únicamente válido para el número de proyecto:
2. Nombre y dirección del fabricante (2.1) y de su representante autorizado (2.2):
3. La presente declaración de conformidad se expide bajo la exclusiva responsabilidad del fabricante.
4. Objeto(s) de la declaración:
5. El/Los objeto(s) de la declaración descritos anteriormente son conformes con la legislación de armonización pertinente de la Unión Europea:
6. Referencias a las normas armonizadas pertinentes utilizadas o referencias a las otras especificaciones técnicas respecto a las cuales se declara la conformidad:
7. El organismo notificado W ha efectuado X y expedido el certificado Y relevante para Z:
A. Información adicional en ():
A.1 Marcado



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eesti keel (et)

Vastavusdeklaratsioon

1. Tootemudel / tootenumber / kehtib vaid järgmise projekti puhul:
 2. Tootja nimi ja aadress (2.1) ning tema volitatud esindaja (2.2):
 3. Käesolev vastavusdeklaratsioon on välja antud tootja ainuvastutusel.
 4. Deklareeritav toode:
 5. Ülakirjeldatud deklareeritav toode on kooskõlas asjaomaste liidu tihlustamisaktidega või viited muudele tehnilistele spetsifikatsioonidele, millele vastavust deklareeritakse:
 7. Teavitatud asutus on teostas x ja andis välja tõendi z, mis on asjakohane y-le:
- A. Lisateave järgmise kohta () :
A.1 Märgistus

français (fr)

Déclaration de conformité

1. Modèle / numéro de produit / valable uniquement pour le numéro de projet:
 2. Nom et adresse du fabricant (2.1) et de son mandataire (2.2):
 3. La présente déclaration de conformité est établie sous la seule responsabilité du fabricant.
 4. Objet(s) de la déclaration :
 5. Le ou les objets de la déclaration décrite ci-dessus est/sont conforme(s) à la législation d'harmonisation de l'Union applicable :
 6. Références des normes harmonisées pertinentes appliquées ou des autres spécifications techniques par rapport auxquelles la conformité est déclarée :
 7. L'organisme notifié w a effectué x et a établi l'attestation y applicable à z :
- A. Informations complémentaires relatives à () :
A.1 Marquage

hrvatski (hr)

Izjava o sukladnosti

1. Model proizvoda / broj proizvoda / vrijedi samo za broj projekta:
 2. Naziv i adresa proizvođača (2.1) i njegovog ovlaštenog zastupnika (2.2):
 3. Za izdavanje ove izjave o sukladnosti odgovoran je isključivo proizvođač.
 4. Predmet(i) izjave:
 5. Predmet(i) navedene izjave je/su u skladu s mjerodavnim zakonodavstvom Unije o usklađivanju:
 6. Pozivanja na relevantne primjenjene uskladeni norme ili pozivanja na ostale tehničke specifikacije u vezi s kojima se izjavljuje sukladnost:
 7. Prijavljeno tijelo w provelo je x i izdalo certifikat y koji je relevantan za z:
- A. Dodatne informacije o proizvodu () :
A.1 Označavanje

magyar (hu)

Megfelelőségi nyilatkozat

1. Termékmodell / termékszám / kizárólag az alábbi projektszámhoz érvényes:
 2. A gyártó (2.1) vagy adott esetben meghatalmazott képviselőjének (2.2) neve és címe:
 3. Ezt a megfelelőségi nyilatkozatot a gyártó kizárólagos felelősége mellett adják ki.
 4. A nyilatkozat tárgya(i):
 5. A fent ismertetett nyilatkozat tárgya megfelel a vonatkozó uniós harmonizációs jogszabályoknak:
 6. Az alkalmazott harmonizált szabványokra való hivatkozás vagy az azokra az egyéb műszaki leírásokra való hivatkozás, amelyekkel kapcsolatban megfelelőségi nyilatkozatot tettek:
 7. A(z) w bejelentett szervezet elvégezte a(z) x eljárást, és kiállította a(z) z kapcsolódó y tanúsítványát:
- A. További információk () :
A.1 Jelölés

italiano (it)

Dichiarazione di conformità

1. Modello di prodotto / numero di prodotto / valido unicamente per numero di progetto:
 2. Nome e indirizzo del fabbricante (2.1) e del relativo rappresentante autorizzato (2.2):
 3. La presente dichiarazione di conformità è rilasciata sotto la responsabilità esclusiva del fabbricante.
 4. Oggetto/i della dichiarazione:
 5. L'oggetto o gli oggetti della dichiarazione di cui sopra sono conformi alla pertinente normativa di armonizzazione dell'Unione:
 6. Riferimento alle pertinenti norme armonizzate utilizzate o riferimenti alle altre specifiche tecniche in relazione alle quali è dichiarata la conformità:
 7. L'organismo notificato w ha effettuato x e rilasciato il certificato y pertinente a z:
- A. Informazioni aggiuntive su () :
A.1 Marcatura

Latvian kalba (lt)

Atbilstības deklarācija

1. Gaminio modelis / gaminio numeris / galioja tik projekto numerui:
 2. Gamintojo (2.1) ir jo įgaliotojo atstovo (2.2) pavadinimas ir adresas:
 3. Ši atbilstības deklarācija izdocta tik gamintojo atsakomybe.
 4. Deklarācijas objekts (objekti):
 5. Pirmian aprašytas deklarācijas objektas (objekti) atitinka susijusius derinamuosius Sąjungos teisės aktus:
 6. Susijusių taikytų darnųjų standartų nuorodos arba kitų techninių specifikacijų, pagal kurias buvo deklaruota atitiktis, nuorodos:
 7. Notifikuoti įstaiga w atliko x ir išdavė sertifikatą y dėl z:
- A. Papildoma informacija () :
A.1 Ženklinimas



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latviešu valoda (lv)

Atbilstības deklarācija
1. Produkta modeļa / produkta numurs / derīgais projekta Nr.:
2. Ražotāja (2.1.) un tā pilnvarotā pārstāvja (2.2.) nosaukums un adrese:
3. Šī atbilstības deklarācija ir izdota vienīgi uz ražotāja atbildību.
4. Deklarācijas priekšmets vai priekšmeti:
5. Iepriekš aprakstītais deklarācijas priekšmets vai priekšmeti atbilst attiecīgajam Savienības saskaņošanas tiesību aktam:
6. Atsauces uz attiecīgajiem izstrādājumiem saskaņotajiem standartiem vai uz citām tehniskajām specifikācijām, attiecībā uz ko tiek deklarēta atbilstība:
7. Pazinotā struktūra w ir veikusi x un izsniegusi sertifikātu y, kas attiecas uz z:
A. Papildu informācija par ():
A.1. Marķējums

malta (mt)

Dikjarazzjoni ta' konformità
1. Mudell tal-prodott / numru tal-prodott / validu biss għan-numru tal-progett:
2. L-isem u l-indirizz tal-manifattur (2.1) u tar-rappreżentant awtorizzat tiegħu (2.2):
3. Din id-dikjarazzjoni ta' konformità tinhareg taht ir-responsabbiltà unika tal-manifattur.
4. L-għan(ijiet) tad-dikjarazzjoni:
5. L-għan(ijiet) tad-dikjarazzjoni deskritt(i) hawn fuq huwa(huma) konformi mal-legislazzjoni ta' armonizzazzjoni rilevanti tal-Unjoni:
6. Ir-referenzi għall-istandards armonizzati rilevanti li nużaw, jew ir-referenzi għall-ispeċifikazzjonijiet tekniċi l-oħra li skomhom qed tigi ddikjarata l-konformità:
7. Il-korp notifikat w wettaq x u hareg iċ-certifikat y rilevanti għal z:
A. Informazzjoni addizzjonali fuq ():
A.1 Immarkar

nederlands (nl)

Conformiteitsverklaring
1. Productmodel / productnummer / uitsluitend geldig voor projectnummer:
2. Naam en adres van de fabrikant (2.1) en zijn gemachtigde (2.2):
3. Deze conformiteitsverklaring wordt verstrekt onder volledige verantwoordelijkheid van de fabrikant.
4. Voorwerp(en) van de verklaring:
5. Het (de) hierboven beschreven voorwerp(en) is (zijn) in overeenstemming met de desbetreffende harmonisatiewetgeving van de Unie:
6. Vermelding van de toegepaste relevante geharmoniseerde normen of van de overige technische specificaties waarop de conformiteitsverklaring betrekking heeft:
7. De aangemelde instantie w heeft een x uitgevoerd en het certificaat y verstrekt dat relevant is voor z:
A. Aanvullende informatie over ():
A.1 Markering

poľski (pl)

Deklaracja zgodności
1. Model produktu / numer produktu / ważny wyłącznie dla projektu o numerze:
2. Nazwa i adres producenta (2.1) oraz jego upoważnionego przedstawiciela (2.2):
3. Niniejsza deklaracja zgodności wydana zostaje na wyłączną odpowiedzialność producenta.
4. Przedmiot (-y) deklaracji:
5. Wymieniony powyżej przedmiot (lub przedmioty) niniejszej deklaracji jest zgodny z odnośnymi wymaganiami unijnego prawodawstwa harmonizacyjnego:
6. Odwołania do odnośnych norm zharmonizowanych, które zastosowano, lub do innych specyfikacji technicznych, w stosunku do których deklarowana jest zgodność:
7. Jednostka notyfikowana w przeprowadziła x i wydała certyfikat y odpowiedni dla z:
A. Informacje dodatkowe o ():
A.1 Oznakowanie

português (pt)

Declaração de conformidade
1. Modelo do produto / número do produto / somente válido para o número de projeto:
2. Nome e endereço do fabricante (2.1) e do seu mandatário (2.2):
3. A presente declaração de conformidade é emitida sob a exclusiva responsabilidade do fabricante.
4. Objeto(s) da declaração:
5. O(s) objeto(s) da declaração acima descrito(s) está(ão) em conformidade com a legislação aplicável de harmonização da União:
6. Referências às normas harmonizadas aplicáveis utilizadas ou às outras especificações técnicas em relação às quais é declarada a conformidade:
7. O organismo notificado w realizou x e emitiu o certificado y relevante para z:
A. Informações complementares relativa a ():
A.1 Marcação

română (ro)

Declarație de conformitate
1. Modelul de produs / Număr produs / valabil numai pentru numărul proiectului:
2. Denumirea și adresa producătorului (2.1) și a reprezentantului său autorizat (2.2):
3. Prezenta declarație de conformitate este emisă pe răspunderea exclusivă a producătorului.
4. Obiectul (obiectele) declarației:
5. Obiectul (obiectele) declarației descrise mai sus sunt în conformitate cu legislația relevantă de armonizare a Uniunii:
6. Trimiteri la standardele armonizate relevante folosite sau trimiteri la celelalte specificații tehnice în legătură cu care se declară conformitatea:
7. Organismul notificat w a efectuat x și a emis certificatul y corespunzător pentru z:
A. Informații suplimentare despre ():
A.1 Marcă



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slovenščina (sk)

Vyhlasenie o zhode
1. Model výrobu / číslo výrobu / platné len pre číslo projektu:
2. Meno/názov a adresa výrobcu (2.1) a jeho splnomocneného zástupcu (2.2):
3. Toto vyhlásenie o zhode sa vydáva na vlastnú zodpovednosť výrobcu.
4. Predmet(-y) vyhlásenia:
5. Uvedený predmet či uvedené predmety vyhlásenia sú v zhode s príslušnými harmonizačnými právnymi predpismi Únie:
6. Odkazy na príslušné použité harmonizované normy alebo odkazy na iné technické špecifikácie, v súvislosti s ktorými sa zhoda vyhlasuje:
7. Notifikovaný orgán v vykonal x a vydal certifikát y relevantný pre z:
A. Doplňujúce informácie o ():
A.1 Označenie

slovenščina (sl)

Izjava o skladnosti
1. Model proizvoda / serijska številka proizvoda / veljavno samo za številko projekta:
2. Ime in naslov proizvajalca (2.1) ter njegovega pooblaščenega zastopnika (2.2):
3. Za izdajo te izjave o skladnosti je odgovoren izključno proizvajalec.
4. Predmet(i) izjave:
5. Predmet(i) navedene izjave je (so) v skladu z ustreznimi zakonodajo Unije o harmonizaciji:
6. Sklicevanja na uporabljene ustrezne harmonizirane standarde ali sklicevanja na druge tehnične specifikacije v zvezi s skladnostjo, ki je navedena v izjavi:
7. Priglašeni organ w je izvedel x in izdal certifikat y, pomemben za z:
A. Dodatne informacije o ():
A.1 Oznaka




suomi (fi)

Vaativäitteenmukaisuvaakaus
1. Tuotemalli / tuotenumero / koskee vain projektinumeroa:
2. Valmistajan (2.1) ja valtuutetun edustajan (2.2) nimi ja osoite:
3. Tämä vaatimustenmukaisuusvaakaus on annettu valmistajan yksinomisella vastuulla.
4. Vaakuksen kohde (kohteet):
5. Edellä kuvattu (kuvatut) vaakuksen kohde (kohteet) on (ovat) asiaa koskevan unionin yhdenmukaistamislainsäädännön vaatimusten mukainen (mukaisia):
6. Viittaus mihin asiaa koskeviin yhdenmukaistettuihin standardeihin, joita on käytetty, tai viittaus muihin teknisiin eritelmiin, joiden perusteella vaatimustenmukaisuusvaakaus on annettu:
7. Ilmoitettu laitos w suoritti x ja antoi todistuksen y liittyen z:
A. Lisätietoja ():
A.1 Merkintä

svenska (sv)

Försäkran om överensstämmelse
1. Produktmodell / produktnummer / gäller endast för projektnummer:
2. Tillverkarens namn och adress (2.1) och dess auktoriserade representant (2.2):
3. Denna försäkran om överensstämmelse utfärdas på tillverkarens eget ansvar.
4. Föremål för försäkran:
5. Föremålet/föremålen för försäkran ovan överensstämmer med den relevanta harmoniserade unionslagstiftningen:
6. Hänvisningar till de relevanta harmoniserade standarder som använts eller hänvisningar till de andra tekniska specifikationer enligt vilka överensstämmelsen försäkras:
7. Det anmälda organet w har utfört x och utfärdat intyget y relevant för z:
A. Ytterligare information om ():
A.1 Märkning

12.4 R60/2017-A-NL1-23.02

| | | | |
|--|---|--|---|
|  | | OIML Certificate | |
| OIML Member State The Netherlands | | Number R60/2017-A-NL1-23.02 revision 0 Project number 3458015 Page 1 of 3 | |
| Issuing authority | NMI Certin B.V. Person responsible: M.Ph.D. Schmidt | | |
| Applicant and Manufacturer | Minebea Intec GmbH Meiendorfer Strasse 205 A D-22145 Hamburg Germany | | |
| Identification of the certified type | A compression load cell , with strain gauges, equipped with electronics. | | |
| | Registered trade name | : Minebea Intec GmbH | |
| | Type | : PR 6224B | |
| Characteristics | See next page | | |
| This OIML Certificate is issued under scheme A. | | | |
| This Certificate attests the conformity of the above identified Type (represented by the sample(s) identified in the OIML Test Report) with the requirements of the following Recommendation of the International Organization of Legal Metrology (OIML): | | | |
| OIML R 60-1:2017 for accuracy class C | | | |
| This Certificate relates only to the metrological and technical characteristics of the type of measuring instrument covered by the relevant OIML International Recommendation above-identified. This Certificate does not bestow any form of legal international approval. | | | |
| <i>Important note:</i> Apart from the mention of the Certificate's reference number and the name of the OIML Member State in which the Certificate was issued, partial quotation of the Certificate and of the associated OIML Test Report(s) is not permitted, although either may be reproduced in full. | | | |
| Issuing Authority | NMI Certin B.V., OIML Issuing Authority NL1 22 May 2023 | | |
| | Certification Board | | |
| NMI Certin B.V. Thijsseweg 11 2629 JA Delft The Netherlands T +31 88 6362332 certin@nmi.nl www.nmi.nl | This document is issued under the provision that no liability is accepted and that the applicant shall indemnify third-party liability. | This document is digitally signed and sealed. The digital signature can be verified in the blue ribbon on top of the electronic version of this certificate. | |
| | The notification of NMI Certin B.V. as Issuing Authority can be verified at www.oiml.org |  |  |



OIML Certificate

OIML Member State
The Netherlands

Number R60/2017-A-NL1-23.02 revision 0
Project number 3458015
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The conformity was established by the results of tests and examinations provided in the associated OIML Type Evaluation Reports:

- No. NMI-3458015-01 dated 19 May 2023 that includes 17 pages;
- No. NMI-3458015-03 dated 19 May 2023 that includes 61 pages.

Characteristics of the load cell:

| | |
|---|---|
| Characterization of load cell capabilities | Digital load cell with data processing |
| Maximum capacity (E_{max}) | 20000 kg up to and including 75000 kg |
| Minimum dead load | 0 kg |
| Accuracy Class | C |
| Maximum number of load cell intervals (n) ⁽¹⁾ | 6000 |
| Ratio of minimum LC Verification interval ⁽¹⁾ $Y = E_{max} / V_{min}$ | 20000 |
| Ratio of minimum dead load output return ⁽¹⁾ $Z = E_{max} / (2 * DR)$ | 8000 |
| Temperature range | -10 °C / + 40 °C |
| Fraction p_{LC} | 0,7 |
| Humidity Class | CH |
| Safe overload | 20 t: 187 % of E_{max} 50 t: 150 % of E_{max} 25 t: 150 % of E_{max} 60 t: 125 % of E_{max} 30 t: 250 % of E_{max} 75 t: 100 % of E_{max} |
| Recommended excitation | 12-28V DC supplied by 100-240V AC power supply |
| Transducer material | Stainless steel |
| Number of counts for E_{max} | $\geq Y * 5 / p_{LC}$ |
| Atmospheric protection | Hermetically welded |
| Electromagnetic environment class | E2 |
| Software identification | Version number: 01.01.01 |

Remark:

1. The characteristics for n_{max} , Y and Z can be reduced separately.

Each load cell produced is provided with an accompanying document with information about its characteristics.

The above identified Type (represented by the sample(s) identified in the OIML Test Report) have been found to comply with the additional national requirements established by the United States of America (NIST Handbook 44 and NCWM Publication 14), included in the Utilizer Declaration:

- R 60 OIML-CS rev.2 Additional requirements from the United States Accuracy class III L;
- R 60 OIML-CS rev.2 Additional requirements from the United States Marking requirements.



OIML Certificate



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Revision History

| Revision | Date | Change(s) |
|----------|-------------|----------------|
| 0 | 22 May 2023 | Initial issue. |

12.5 TC12543

| | | | |
|---|--|---|--|
|  | | Test Certificate Parts Certificate | |
| | | Number TC12543 revision 0 Project number 3458015 Page 1 of 1 | |
| Issued by | NMI Certin B.V. | | |
| In accordance with | WELMEC 8.8 2017, WELMEC 2.4 2021, OIML R 60 (2021), EN 45501:2015, WELMEC 7.2, 2021. | | |
| Producer | Minebea Intec GmbH Meiendorfer Strasse 205 A D-22145 Hamburg Germany | | |
| Measuring instrument | A compression load cell , with strain gauges, equipped with electronics, tested as a part of a weighing instrument. | | |
| | Registered trade name : Minebea Intec GmbH Designation : PR 6224B | | |
| | Further properties are described in the annexes: - Description TC12543 revision 0; - Documentation folder TC12543-1. | | |
| | An overview of performed tests is given in the annex: - Description TC12543 revision 0. | | |
| Initially issued | 22 May 2023 | | |
| Issuing Authority | NMI Certin B.V. 22 May 2023 | | |
| | Certification Board | | |
| NMI Certin B.V. Thijssseweg 11 2629 JA Delft The Netherlands T +31 88 6362332 certin@nmi.nl www.nmi.nl | This document is issued under the provision that no liability is accepted and that the producer shall indemnify third-party liability. | | Reproduction of the complete document only is permitted. This document is digitally signed and sealed. The digital signature can be verified in the blue ribbon on top of the electronic version of this certificate. |
| | | |  |



Description

Number **TC12543** revision 0
 Project number 3458015
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1 General information about the load cell

All properties of the load cell, whether mentioned or not, shall not be in conflict with the standards mentioned in this certificate.

This certificate is the positive result of the applied voluntary, modular approach, for a component of a measuring instrument, as described in WELMEC 8.8. The complete measuring instrument must be covered by relevant metrological certification that is valid in the country where the instrument is put into use.

1.1 Essential parts

| Number | Pages | Description | Remark |
|------------|-------|-------------------------------|---------------------------------|
| 12543/0-01 | 1 | Outline drawing | Mechanical |
| 12543/0-02 | 2 | Measuring element | - |
| 12543/0-03 | 3 | SDLC_TOP electronics board | Electrical, PCB with parts list |
| 12543/0-04 | 3 | SDLC_BOTTOM electronics board | Electrical, PCB with parts list |

Cable:

- The cable is shielded; the shield is connected to the load cell.

EMI protection measures:

- A/D board is located inside the metal load cell enclosure.



Description

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1.2 Essential characteristics

| | | |
|---|--|--|
| Characterization of load cell capabilities | Digital load cell with data processing | |
| Maximum capacity (E_{max}) | 20000 kg up to and including 75000 kg | |
| Minimum dead load | 0 kg | |
| Accuracy Class | C | |
| Maximum number of load cell intervals (n) ⁽¹⁾ | 6000 | |
| Ratio of minimum LC Verification interval ⁽¹⁾ $Y = E_{max} / V_{min}$ | 20000 | |
| Ratio of minimum dead load output return ⁽¹⁾ $Z = E_{max} / (2 * DR)$ | 8000 | |
| Temperature range | -10 °C / + 40 °C | |
| Fraction p_{LC} | 0,7 | |
| Humidity Class | CH | |
| Safe overload | 20 t: 187 % of E_{max} 25 t: 150 % of E_{max} 30 t: 250 % of E_{max} | 50 t: 150 % of E_{max} 60 t: 125 % of E_{max} 75 t: 100 % of E_{max} |
| Recommended excitation | 12-28V DC supplied by 100-240V AC power supply | |
| Transducer material | Stainless steel | |
| Number of counts for E_{max} | $\geq Y * 5 / p_{LC}$ | |
| Atmospheric protection | Hermetically welded | |
| Electromagnetic environment class | E2 | |
| Software identification | Version number: 01.01.01 | |

Remark:

1. The characteristics for n_{max} , Y and Z can be reduced separately.

List of legally relevant functions:

- Linearity compensation: linearization based on a polynomial approximation;
- Zero offset correction and scaling;
- Creep and span compensation;
- Temperature compensation of zero, span and creep;
- The software seal uses a CRC 32 on the firmware and parameters checksum.

Software:

- The identification number can be displayed using the device that displays the primary indications, with the xBPI command 0x1805;
- Firmware and parameter CRC32 checksum can be requested with the xBPI command 0x1804;
- The load cell has embedded software (OIML R 76-1 (2006));
- Software specification (WELMEC 7.2):
 - Software type P;
 - Risk Class B;
 - Extension T.



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Data transmission:

The load cell is equipped with one of the following protective interfaces that have not to be secured:

- RS485.

Adjustment procedure:

- The load cell can only be adjusted in the factory and after that it is sealed by a CRC 32 checksum.

1.3 Essential shapes

| Number | Pages | Description | Remark |
|------------|-------|-------------------|------------|
| 12543/0-01 | 1 | Outline drawing | Mechanical |
| 12543/0-02 | 2 | Measuring element | - |

The descriptive markings plate is secured against removal by sealing or will be destroyed when removed and contains at least the information and markings as described in OIML R 60 (2021) and:

- This certificate number TC12543 (in the countries where it is mandatory);
- Producers name or mark.

1.4 Conditional parts

- Power supply for digital load cells type PR 6024/625 100-240V AC to 24 V DC;
- Junction box for digital load cells type PR 6024/685.

2 Seals

This load cell can only be used in combination with an indicator that does not allow changing of the adjustment data of the load cell using any interface.

It is not necessary to seal the connecting cable of the load cell or the junction box. The load cells are paired to the indicator by software and serial number at the time of putting into use. Firmware and parameter settings are sealed by a CRC32 checksum.

3 Conditions for conformity assessment

Each load cell produced is provided with an accompanying document with information about its characteristics, including the CRC32 checksum value.

The compatibility of load cells and indicator is established by the manufacturer by means of the compatibility of modules form, contained in EN45501:2015 clause F.5, at the time of putting into use.

Other parties may use this certificate without the written permission of the producer.

When the PR 6024/625 power supply is not used, the load cell equipped with electronics may be powered from the 12-28 V DC power supply of an indicator or terminal. For the weighing instrument the voltage interruptions, short voltage reductions, voltage transients and surges on the power supply lines shall be considered.






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4 Reports

An overview of performed tests is given in the evaluation report ER12543 revision 0.

12.6 ER12543

| | | |
|---|---|--|
|  | | Evaluation report |
| | | Number ER12543 revision 0 Project number 3458015 Page 1 of 2 |
| Issued by | NMI Certin B.V. | |
| Relevant document | WELMEC 8.8 General and Administrative Aspects of the Voluntary System of Modular Evaluation of Measuring instruments under the MID. | |
| Producer | Minebea Intec GmbH Meiendorfer Strasse 205 A D-22145 Hamburg Germany | |
| Measuring instrument | A Load cell Type : PR 6224B | |
| Result | <p>This Evaluation Report has been issued in support of certificate TC12543 revision 0, demonstrating that the measuring instrument has been tested and approved in accordance with the harmonized standards or normative documents as mentioned above and on the following pages.</p> <p>The executed evaluations, reference documents and reports used during the examination are described on the following pages.</p> | |
| Issue Date | 22 May 2023 | |
| |  E. van der Grinten Team leader Weighing | |
| | NMI Certin B.V. Thijsseweg 11 2629 JA Delft The Netherlands T +31 88 6362332 certin@nmi.nl www.nmi.nl | This document is issued under the provision that no liability is accepted and that the producer shall indemnify third-party liability. |
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Evaluation report

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1 Harmonized standards, normative documents and / or recommendations

The load cell is examined in accordance with the relevant document listed in this Evaluation Report, page 1.

The following harmonized standards, normative documents and / or recommendations are applied:

- OIML R 60 (2021) Metrological regulation for load cells;
- EN 45501:2015 Metrological aspects of non-automatic weighing instruments;
- WELMEC 2.10 2021 Technical Implementation of The Modular Evaluation for Non-Automatic Weighing and Automatic Weighing Instruments.
- WELMEC 7.2 2022 Software Guide;
- R 60 OIML-CS rev.2 Additional requirements from the United States Accuracy class IIII;
- R 60 OIML-CS rev.2 Additional requirements from the United States Marking requirements.

2 Reports

The conformity was established by the results of tests and examinations provided in the associated reports:

| Test | Part / Type | Report | Remarks |
|--------------------------------------|------------------------|----------------|-----------------|
| Disturbance tests | Model: PR 6224B/30t C6 | NMi-3458015-01 | - |
| Complete evaluation (including NTEP) | Model: PR 6224B/20t C6 | NMi-3458015-03 | - |
| Software | Model: PR 6224B | NMi-3458015-06 | WELMEC 7.2 2022 |

A report can be a test report, an evaluation report, a type evaluation report and/or a pattern evaluation report.

3 Additional Evaluations

This Evaluation Report is supplemented by the following additional evaluations:

| Test | Part / Type | Document | Remarks |
|------------------|--|--------------------------|---------|
| Load cell family | Specifications included without testing $20 t \leq E_{max} \leq 75 t$ | R 60-2 (2021) clause 2.4 | - |

4 Revision History

| Project no. | Rev. | Date | Report / Document | Description / Remarks |
|-------------|------|------------|---|-----------------------|
| 3458015 | 0 | 2023-05-22 | TC12543-1 NMi-3458015-01 NMi-3458015-03 NMi-3458015-06 | Initial issue |

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