

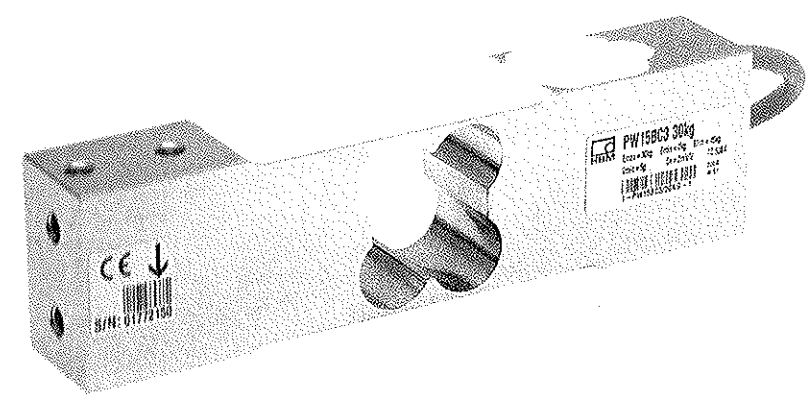
Mounting Instructions

Montageanleitung

Notice de montage

Single point load cells
Plattformwägezellen
Pesons plateforme

PW15B...



A3703-1.0 en/de/fr 7-2003.3703

A3703-1.0 en/de/fr

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English	Page 0 ... 16
Deutsch	Seite 17 ... 30
Français	Page 31 ... 45

Contents	Page
Safety instructions	4
1 Markings used	7
1.1 Symbols on the load cell	7
1.2 The markings used in this document	7
2 Conditions on site	8
2.1 Protection against corrosion	8
2.2 Deposits	8
3 Mechanical installation	9
3.1 Important precautions during installation	9
3.2 Mounting	9
4 Electrical connection	11
4.1 Connection with six-wire configuration	11
4.2 Connection with four-wire configuration	11
4.3 Shortening the cable	12
4.4 Cable extension	12
4.5 Parallel connection (option)	12
4.6 EMC protection	12
5 Specifications	14
6 Dimensions	16

Safety instructions

Proper use

Load cells of the PW15B... type series are designed for technical weighing applications within the load limits detailed in the specifications. Any other use is not the designated use.

The load cells may only be installed by qualified personnel in compliance with the specifications and with the safety requirements and regulations of these mounting instructions. It is also essential to observe the applicable legal and safety regulations for the application concerned. The same applies to the use of accessories.

Load cells are not intended for use as safety components. Please also refer to the section: "Additional safety precautions". Proper and safe operation of the load cells requires proper transportation, correct storage, siting and mounting, and careful operation.

Loading capacity limits

The data in the technical data sheet must be complied with when using the load cells. In particular, the respective maximum loads specified must never be exceeded. The following limits set out in the specifications must not be exceeded, e.g.:

- Limit load
- Limit load at max. eccentricity
- Limit lateral loading
- Breaking loads
- Temperature limits
- Limits of electrical loading capacity

Note that, when several load cells are installed in a scale, there is not always an even distribution of load on the individual load cells.

Use as a machine element

The load cells can be used as machine elements. When used in this manner, it must be noted that, to favor greater sensitivity, the load cell is not designed with the safety factors usual in mechanical engineering. Please refer here to the section "Loading capacity limits" and to the specifications.

Accident prevention

The prevailing accident prevention regulations must be taken into account, even though the maximum capacity values in the destructive range are well in excess of the full scale value.

Additional safety precautions

Load cells cannot (as passive transducers) implement any (safety-relevant) cutoffs. This requires additional components and constructive measures for which the installer and operator of the plant is responsible.

In cases where a breakage or malfunction of the load cells would cause injury to persons or damage to equipment, the user must take appropriate additional safety measures that meet at least the requirements of applicable safety and accident prevention regulations (e.g. automatic emergency shutdown, overload protection, catch straps or chains, or other fall protection).

The layout of the electronics conditioning the measurement signal should be such that measurement signal failure does not cause damage.

Explosion protection version option

The following also apply to the load cells supplied with this option, that are to be used in potentially explosive atmospheres:

- It is essential to comply with the relevant code of practice during installation.
- In the explosion protection version, the connection cable of the single point load cells has free ends (for the cable wire assignment, see section 4.1).
- There must be compliance with the installation conditions cited in the Certificate of Conformity and/or the Type Examination Certificate.

General dangers of failing to follow the safety instructions

Load cells are state-of-the-art and reliable. Transducers can give rise to residual dangers if they are incorrectly operated or inappropriately mounted, installed and operated by untrained personnel. Everyone involved with siting, starting up, operating or repairing a load cell must have read and understood the Mounting Instructions and in particular the technical safety instructions. The load cells can be damaged or destroyed by non-designated use of the load cells or by non-compliance with the mounting and operating instructions, these safety instructions or any other applicable safety regulations (BG safety and accident prevention regulations) when using the load cells. Load cells can break, particularly in the case of overloading. The breakage of a load cell can also cause damage to property or injury to persons in the vicinity of the load cell.

If load cells are not used according to their designated use, or if the safety instructions or specifications in the mounting and operating instructions are ignored, it is also possible that the load cells may fail or malfunction, with the result that persons or property may be affected (due to the loads acting on or being monitored by the load cells).

The scope of supply and performance of the transducer covers only a small area of weighing technology, as measurements with (resistive) sensors presuppose the use of electronic signal processing. In addition, equipment planners, installers and operators should plan, implement and respond to the safety engineering considerations of the weighing technology in such a way as to minimize residual dangers. Pertinent national and local regulations must be complied with.

Conversions and modifications

The transducer must not be modified from the design or safety engineering point of view except with our express agreement. Any modification shall exclude all liability on our part for any damage resulting therefrom.

Maintenance

The PW15B... load cells are maintenance free.

Selling on

If the load cell is sold on, these mounting instructions must be included with the load cell.

Environmental protection, disposal

In accordance with national and local environmental protection and material recovery and recycling regulations, old transducers that can no longer be used must be disposed of separately and not with normal household waste.

If you need more information about waste disposal, please contact your local authorities or the dealer from whom you purchased the product.

Qualified personnel


Qualified personnel means persons entrusted with siting, mounting, starting up and operating the product, who possess the appropriate qualifications for their function.

This includes people who meet at least one of the three following requirements:

- Knowledge of the safety concepts of automation technology is a requirement and as project personnel, you must be familiar with these concepts.
- As automation plant operating personnel, you have been instructed how to handle the machinery. You are familiar with the operation of the equipment and technologies described in this documentation.
- As commissioning engineers or service engineers, you have successfully completed the training to qualify you to repair the automation systems. You are also authorized to activate, ground and label circuits and equipment in accordance with safety engineering standards.

1 Markings used

1.1 Symbols on the load cell

Symbol: 

Meaning: CE mark

The CE mark enables the manufacturer to guarantee that the product complies with the requirements of the relevant EC directives (the Declaration of Conformity can be found on the HBM website at www.hbm.com under Support -> HBMdoc).

1.2 The markings used in this document

The marking below warns of a *potentially* dangerous situation in which failure to comply with safety requirements *can* result in death or serious physical injury.

WARNING

Description of a potentially dangerous situation

Measures to avoid/prevent the danger

The marking below warns of a situation in which failure to comply with safety requirements *could* lead to damage to property.

NOTE

Description of a situation that could lead to damage to property

The marking below draws your attention to important information about the product or about handling the product.

Important

Important information

2 Conditions on site

The PW15B series load cells are covered with a potting mass to protect the SG (strain gauges) against moisture. The transducers attain protection class IP67 as per DIN EN 60529. Nevertheless, the load cells must be protected against permanent moisture influence.

2.1 Protection against corrosion

The load cells must be protected against chemicals that could attack the transducer body steel or the cable.

NOTE

*Acids and all substances that release ions also attack stainless steels and their welded seams.
Should there be any corrosion, this could cause the transducer to fail. In this case, appropriate protective measures should be implemented.*

2.2 Deposits

Dust, dirt and other foreign matter must not be allowed to accumulate sufficiently to divert some of the measuring force onto the housing, thus invalidating the measured value (force shunt).

3 Mechanical installation

3.1 Important precautions during installation

- Handle the transducer with care.
- Welding currents must not be allowed to flow over the transducer. If there is a risk that this might happen, you must use a suitable low-ohm connection to electrically bypass the transducer. HBM, for example, provides the highly flexible EEK ground cable, which can be screwed on above and below the transducer.
- Make sure that the transducer cannot be overloaded.

⚠ WARNING

There is a danger of the transducer breaking if it is overloaded. This can cause danger for the operating personnel of the system in which the transducer is installed.

Implement appropriate safety measures to avoid overloads or to protect against resulting dangers.

NOTE

Load cells are precision measuring elements and need to be handled carefully. Dropping or knocking the transducer may cause permanent damage. Make sure that the transducer cannot be overloaded, even while it is being mounted.

3.2 Mounting

Attach the load cells at the mounting holes and apply the load to the other end. The screws and tightening torques to be used are given in the following table:

Maximum capacities	Thread	Min. property class	Tightening torque ^{*)}
7.5 ... 150 kg	M6	10.9	14 N·m
200 kg	M8	10.9	33 N·m

^{*)} Recommended value for the specified property class. Please comply with the screw manufacturer's instructions with regard to screw dimensions

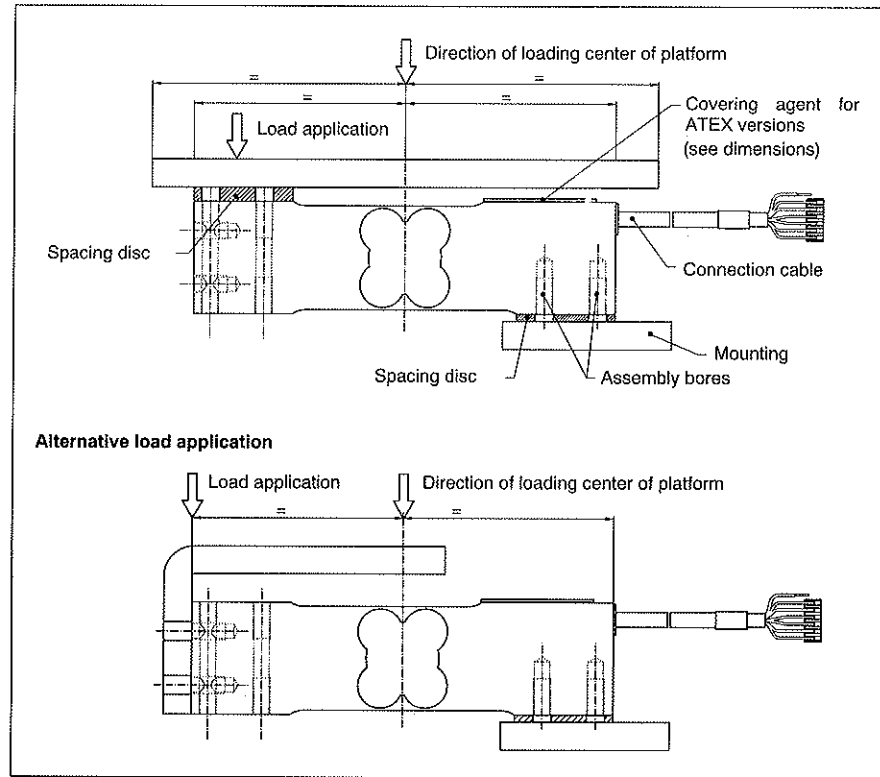


Fig. 3.1: Load application and installation



Important

Load must not be applied to the side where the cable connection is located, as this would cause a force shunt.

4 Electrical connection

The following can be connected for measurement signal conditioning:

- Carrier-frequency amplifier
- DC amplifier

designed for strain gauge measurement systems.

The transducers are supplied in the standard version with a 3m cable and 6-pin Pancon connector in a six-wire configuration.

4.1 Connection with six-wire configuration

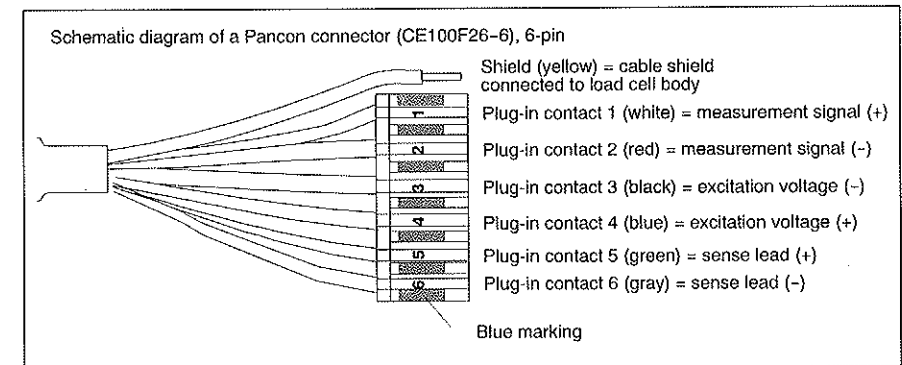


Fig. 4.1: Connection with a 6-wire cable (choice of lengths: 1.5m, 3 m, 6 m or 12 m)

With this cable assignment, the output voltage at the measuring amplifier is positive when the transducer is loaded (see Fig. 3.1).

4.2 Connection with four-wire configuration

When transducers with a six-wire configuration are connected to amplifiers with a four-wire configuration, the sense leads of the transducer must be connected to the corresponding supply leads: identification (+) with (+) and identification (-) with (-), see Fig. 4.1. This measure also reduces the cable resistance of the excitation voltage leads. However, there will be a voltage loss on the supply leads due to the cable resistance that is still present and not compensated for by the six-wire configuration. A large part of this loss can be eliminated by a calibration, however, the temperature-dependent part remains. The TKc value given in the specifications for the transducer therefore does

not apply for the cable and transducer combination when connection is with four-wire configuration, the cable percentage must be added.

4.3 Shortening the cable

If the transducer is connected to an amplifier with a six-wire configuration, the transducer cable can be shortened as required, without adversely affecting the measurement accuracy.

4.4 Cable extension

Only use shielded, low-capacitance measurement cables for extension. Ensure that connection is perfect, with a low contact resistance.

The cable of a six-wire transducer can be extended with a cable of the same type.

4.5 Parallel connection (option)

Only load cells with an aligned output (nominal (rated) sensitivity and output resistance) are suitable for parallel connection. Type PW15B load cells are available with this option.

4.6 EMC protection



Important

The load cells with shielded, round cables are EMC-tested in accordance with EC directives and identified by CE certification. However, you must connect the shield of the connection cable on the shielding electronics enclosure in order to achieve EMC protection for the measuring chain.

Electrical and magnetic fields often induce interference voltages in the measuring circuit. Therefore:

- Use shielded, low-capacitance measurement cables only (HBM cables fulfill both conditions).
- Do not route the measurement cables parallel to power lines and control circuits. If this is not possible, protect the measurement cable with e. g. steel conduit.

- Avoid stray fields from transformers, motors and contact switches.
- Do not ground the transducer, amplifier and indicator more than once.
- Connect all devices in the measurement chain to the same grounded conductor.

5 Specifications

Type	PW15B...										
Accuracy class ¹⁾	C3MR										
Number of scale intervals	n_{LC}		3000								
Nominal (rated) load	E_{max}	kg	7.5	15	20	30	50	75	100	150	200
Minimum load cell verification interval	V_{min}	g	0.5	1	2	2	5	5	10	10	20
Temperature coefficient of zero signal per 10K	TK_0	% of C_n	±0.0093	±0.0093	±0.0140	±0.0093	±0.0140	±0.0093	±0.0140	±0.0093	±0.0140
Maximum platform size		mm	500 x 400								
Nominal (rated) sensitivity	C_n	mV/V	2.0 ± 10% (Option 6: 2.0 mV/V ± 0.1%)								
Zero signal error			± 0.1								
Temperature coefficient of the sensitivity per 10K ²⁾ in the temperature range +20 ... +40 °C -10 ... +20 °C	TK_C	% of C_n	± 0.0175 ± 0.0117								
Linearity error ²⁾	d_{lin}		± 0.0166								
Relative reversibility error ²⁾	d_{hy}		± 0.0166								
Minimum dead load output return	$MDLOR$		± 0.0166								
Off-center load error ³⁾			ppm	≤ 233							
Input resistance	R_{LC}	Ω	380 ± 15								
Output resistance	R_0		359 ± 5 (Option 6: 359 ± 0.2)								
Reference excitation voltage	U_{ref}	V	5								
Nominal (rated) range of the excitation voltage	B_U		1 ... 12								
Maximum excitation voltage			15								
Insulation resistance at 100 V _{DC}	R_{is}		GΩ	> 1							
Nominal (rated) temperature range	B_T	°C	-10 ... +40								
Operating temperature range	B_{tu}		-10 ... +50								
Storage temperature range	B_{tl}		-25 ... +70								
Limit load at maximum 160mm eccentricity	E_L	% of E_{max}	150								
Limit lateral loading, static	E_{lq}		300								
Breaking load	E_d		300								

Specifications, continued

Nominal (rated) load	E_{max}	kg	7.5	15	20	30	50	75	100	150	200
Nominal (rated) displacement ⁴⁾ , approx.	S_{nom}	mm	0.21	0.2	0.2	0.2	0.18	0.17	0.17	0.17	0.17
Weight, approx.	G	kg	1								
Degree of protection per EN 60529 (IEC 529)			IP67								
Cable length (standard)		m	3								
Material:											
Measuring body			Steel 1.4545 ⁵⁾								
Cover			Silicone rubber								
Cable sheath			PVC								

¹⁾ As per OIML R60, with $P_{LC} = 0.7$.

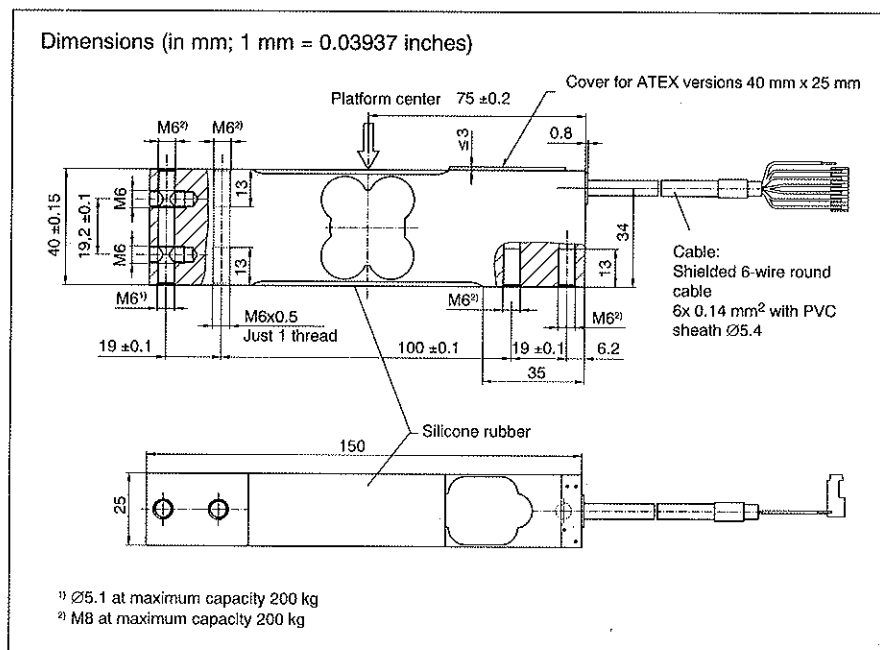
²⁾ The values for non-linearity (d_{lin}), relative reversibility error (d_{hy}) and temperature coefficient of sensitivity (TK_C) are recommended values. The sum of these values is within the cumulative error limits laid down by OIML R60.

³⁾ As per OIML R76.

⁴⁾ Loading with E_{max} and center of gravity in center of load cell.

⁵⁾ As per EN 10088-1.

6 Dimensions



Inhalt

Seite

Sicherheitshinweise	18
1 Verwendete Kennzeichnungen	22
1.1 Auf der Wägezelle angebrachte Symbole	22
1.2 In dieser Anleitung verwendete Kennzeichnungen	22
2 Bedingungen am Einbauort	23
2.1 Korrosionsschutz	23
2.2 Ablagerungen	23
3 Mechanischer Einbau	24
3.1 Wichtige Vorkehrungen beim Einbau	24
3.2 Montage	24
4 Elektrischer Anschluss	26
4.1 Anschluss in Sechsheiter-Technik	26
4.2 Anschluss in Vierleiter-Technik	26
4.3 Kabelkürzung	27
4.4 Kabelverlängerung	27
4.5 Parallelschaltung (Option)	27
4.6 EMV-Schutz	27
5 Technische Daten	29
6 Abmessungen	30