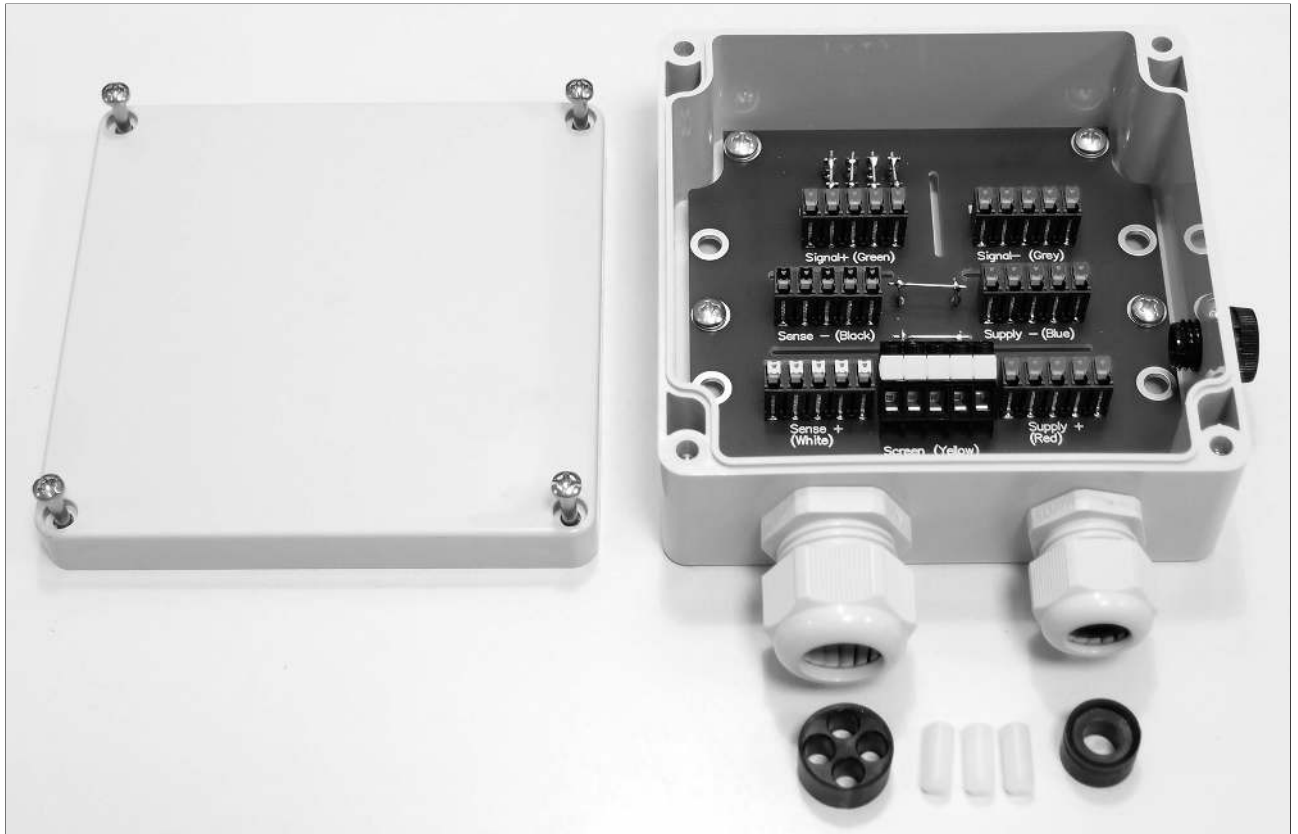


Installation Manual

Cable Junction Box MP 90/04



Foreword

Must be followed!

Any information in this document is subject to change without notice and does not represent a commitment on the part of Minebea Intec unless legally prescribed. This product should only be operated/installed by trained and qualified personnel. In correspondence concerning this product, the type, name, and release number/serial number as well as all license numbers relating to the product have to be cited.

Note

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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

CAUTION

Warning of personal injury.

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 cable junction box is designed for tank and hopper weighing applications.

It cannot be operated in potentially explosive atmospheres.

Product operation, commissioning and maintenance must be performed by trained and qualified personnel who are aware of and able to deal with the related hazards and take suitable measures for self-protection.

The device 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. The use of this product signifies recognition of the stipulations listed above.

The following table shows the load cells that should and should not be used for different applications.

Load cells to be used	Load cells not to be used
PR 6201/..L, /..N, /..D1, /..C3, /..C4, /..C5, /..C6	PR 6201/..LE, /..LA, /..NE, /..D1E, /..C3E, /..C4E, /..C5E, /..C6E
PR 6201/..NDB, /..LDB	PR 6201/..NDBE, /..LDBE
PR 6202/..C1, /..C3, /..C4	PR 6202/..C1E, /..C3E, /..C4E
Inteco®/..D1, /..C3, /..C6	Inteco®/..D1E, /..C3E, /..C6E
	PR 6204 Pendeo® Process
PR 6207/..D1, /..C3	
	PR 6211/..D1
PR 6212/..C1	PR 6212/..C1E, /..LT
	PR 6221/.., all types
	PR 6224 Pendeo® Truck
PR 6241/..D1, /..C3, /..C6	PR 6241/..D1E, /..C3E, /..C6E
	Contego®/..D1, /..D1Ex, /..C3, /..C3Ex
PR 6246/..D1, /..C3, /..C6	PR 6246/..D1E, /..C3E, /..C6E
PR 6251/..L	PR 6251/..LE, /..LA, /..LAC
	Novego®/..D1, /..D1E, /..C3, /..C3E

Load cells to be used	Load cells not to be used
MP 55/..C3MR+	MP 55/..C3MR+E
PR 40/..C3MR	
PR 43/..C3MR	
PR 47/..C3MR	
PR 76/..N, /..C3	
MP 77/..C3MR	MP 77/..C3MR E
MP 79(T)/..C3MR	MP 79(T)/..C3MR E

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 device visually for signs of mechanical damage.

2.5 Repairs and maintenance

2.5.1 General information

Repairs are subject to inspection and must be carried out at Minebea Intec.

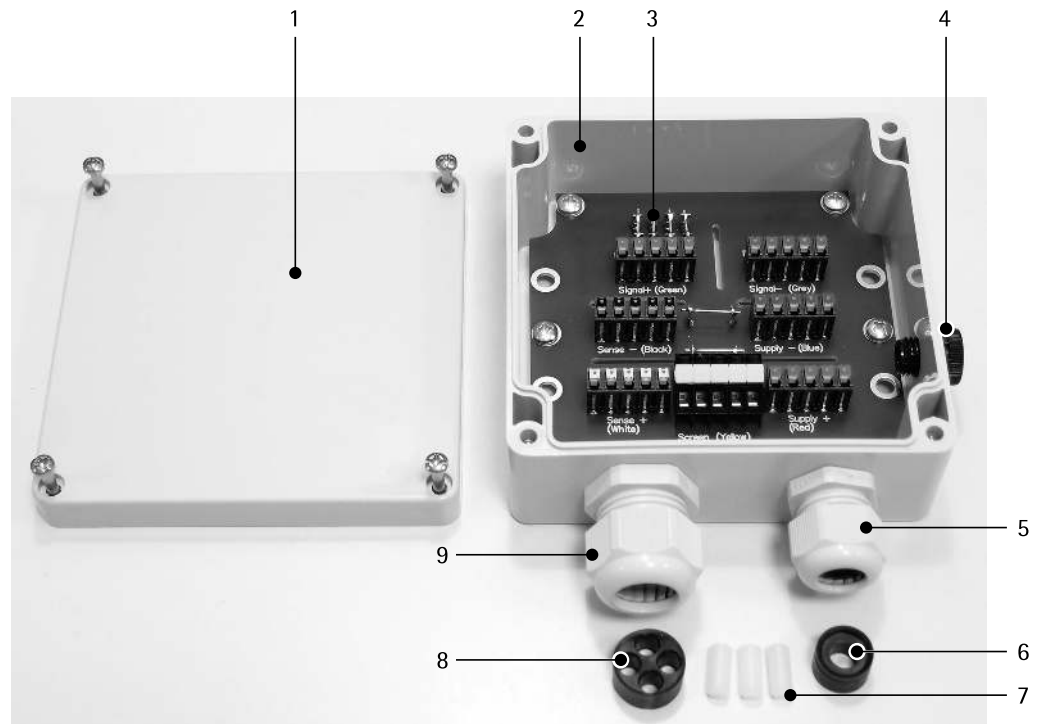
In case of defect or malfunction, please contact your local Minebea Intec dealer or service center for repair.

When returning the device for repair, please include a precise and complete description of the problem.

Maintenance work may only be carried out by a trained technician with expert knowledge of the hazards involved and the required precautions.

3 Specifications

3.1 Equipment supplied



No.	Description
1	Cover
2	Box incl. electronics
3	Jumpers for corner correction resistors
4	Pressure compensation element
5	Cable gland M20
6	Reduction sealing ring M20 (for ≤ 8 mm)
7	Locking pin 6 mm (3x)
8	4-seal insert M25
9	Cable gland M25

The following items are not shown:

10	Drilling template
11	Quick guide

3.2 Technical Data

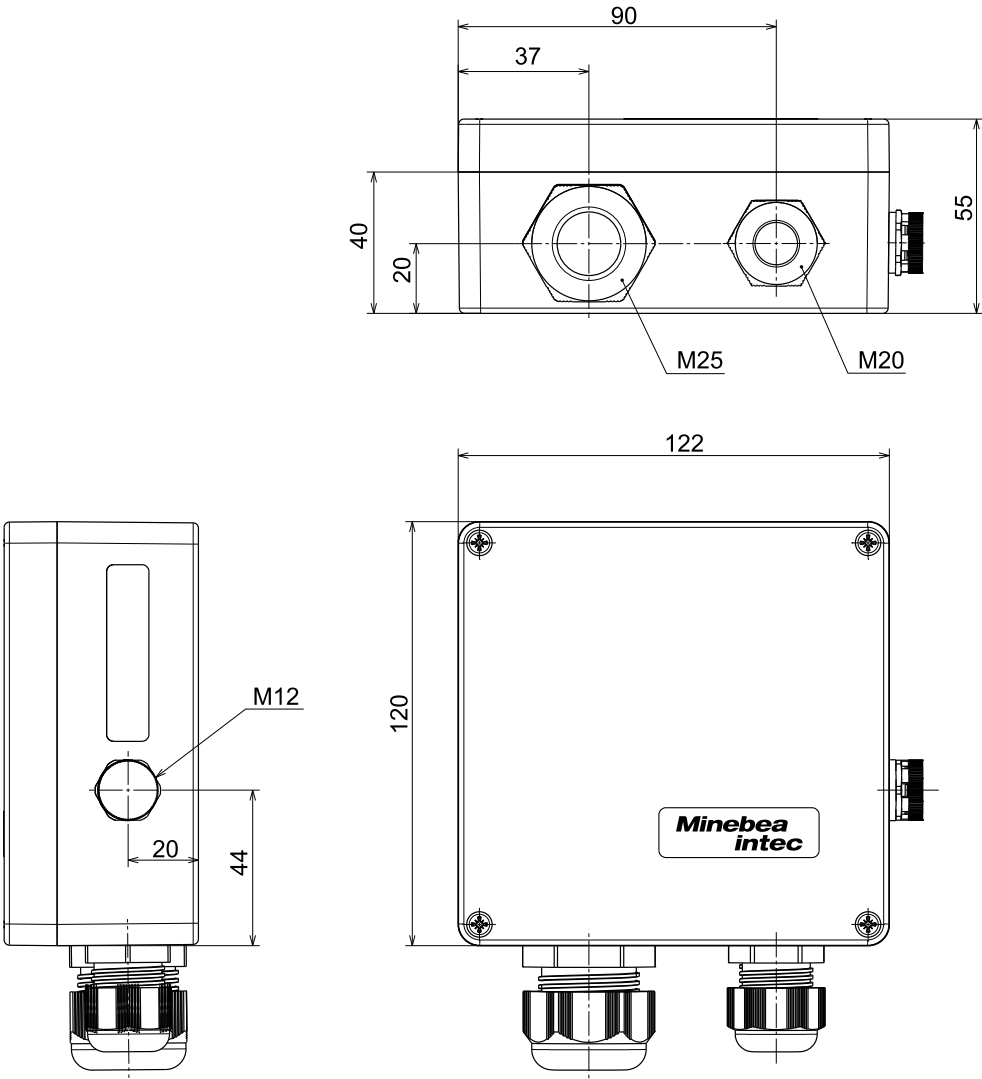
Protection classes	per DIN EN 60529 IP65: Dust-proof and leak-proof against water jets (nozzle) from any angle.
Installation position	Cable entry from below
Quantity of load cells	1...4
Pressure equalization	Plastic pressure equalization element
Material of the junction box	ABS
Color of the junction box	gray, similar to RAL 7035
Net weight	0.65 kg
Shipping weight	0.85 kg
Service temperature area	-30 °C...+70 °C
Storage temperature range	-30 °C...+80 °C
Cable screw connections	Plastic cable screw connections Polyamide PA6 V-2
Insulation impedance (in service temperature range at 95% air humidity and $U_{DC} = 500$ V)	>1000 M Ω

3.3 Electromagnetic Compatibility (EMC)

All data in compliance EN 61326 industrial section

Housing	High frequency electromagnetic fields (80...3000 MHz)	EN 61000-4-3	10 V/m
	Electrostatic discharge (ESD)	EN 61000-4-2	6/8 kV
Signal and control lines	Fast transients (burst)	EN 61000-4-4	1 kV
	Peak voltages (surge) 1.2/50 μ s	EN 61000-4-5	1 kV
	Conducted disturbances by high frequency coupling (0.15...80 MHz)	EN 61000-4-6	10 V

3.4 Dimensions



all dimensions in mm

4 Installation and connection information

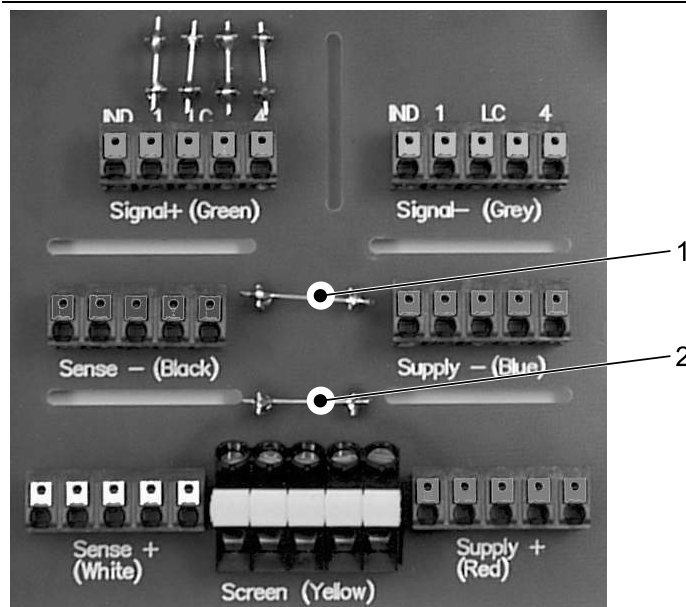
4.1 General information

- Only use the cable glands provided by the manufacturer.
- Install the junction box so that the cable glands are on the bottom.
- Do not open the junction box when connected to the voltage supply.

Note:

At ambient temperatures $>45^{\circ}\text{C}$, cables that are suitable for at least 85°C must be used.

4.2 Terminals and jumpers



Signal +	green	Terminal contacts 1-4	+ measuring voltage (load cells)
		Terminal contact IND	+ measuring voltage (connection cable)
Signal -	gray	Terminal contacts 1-4	- measuring voltage (load cells)
		Terminal contact IND	- measuring voltage (connection cable)
Supply -	blue	Terminal contacts 1-4	- supply voltage (load cells)
		Terminal contact IND	- supply voltage (connection cable)
Sense -	black	Terminal contacts 1-4	- sense (load cells)

		Terminal contact IND	- sense (connection cable)
Sense +	white	Terminal contacts 1-4	+ sense (load cells)
		Terminal contact IND	+ sense (connection cable)
Supply +	red	Terminal contacts 1-4	+ supply voltage (load cells)
		Terminal contact IND	+ supply voltage (connection cable)
Screen	yellow	Terminal contacts 1-4	Screen (load cells)
		Terminal contact IND	Screen (connection cable)
1		Jumper	Connects the load cell supply line to the sense line. Both jumpers must be opened when 6-wire load cell cables are used.
2		Jumper	

4.3 Cable gland

The cable glands each have one sealing ring.

The M20 cable gland can be fitted with a reduction sealing ring if cables ≤ 8 mm are used (see Chapter 4.5).

The M25 cable gland must be fitted with a four-seal insert to be able to feed in up to four load cell cables.

The cable wires are connected to the terminals inside the device.

NOTICE

Property damage is possible.

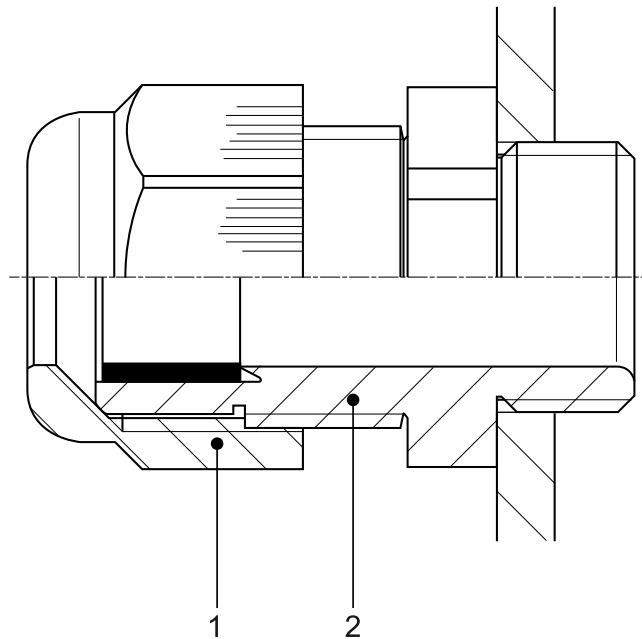
- If a seal insert is not used, it must be sealed with a supplied locking pin.

NOTICE

Property damage is possible.

- Regularly check the fitted cable gland for tightness and re-tighten it, if necessary.

4.4 Attaching the cable gland



1. Remove the parts from the packaging.
2. Screw the cable gland (2) into the cable junction box and tighten at the hex.

Note:

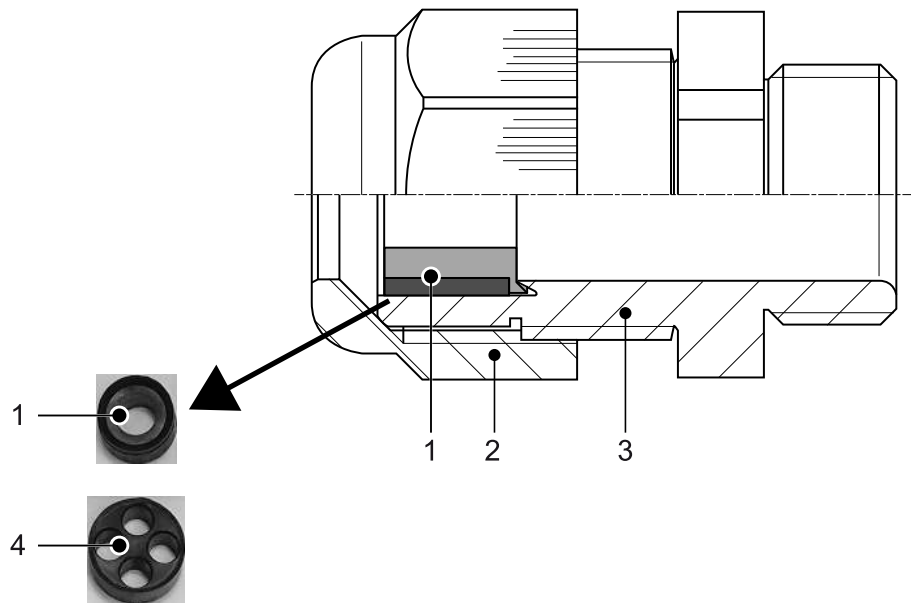
It is essential that the following tightening torques are observed:

M20: 4 Nm

M25: 6 Nm

3. Screw the cap nut (1) onto the cable gland and tighten slightly.

4.5 Fitting the reduction sealing ring/4-seal insert



1. Unscrew the cap nuts (2).
2. Remove the existing sealing ring from the metal sleeve (3).
3. Insert the reduction sealing ring (1) in the M20 cable gland (for cables ≤ 8 mm).

Note:

It is essential to first insert the side with the sealing lip in the metal sleeve!

4. Insert the 4-seal insert (4) in the M25 cable gland.
5. Tighten the cap nuts (2) again.

5 Cable connections

5.1 General information

In order to use the junction boxes for load cells with 6-wire cables, jumpers 1 and 2 must be opened; see Chapter [4.2](#).

Cable entry must be from below.

Fit the wires and screen of the connection cable with wire end ferrules as per DIN 46228-1:

- 0.5 mm² for green, gray, black, and white
- 0.75 mm² for blue and red

This is not necessary for the load cell cables.

Connect the wires to the terminals according to the color coding .

Connect the screens on the other side of the connection cable with the equipotential bonding terminal of the downstream device (see instrument manual) as described in Chapters [5.3](#) and [5.4](#).

5.2 Connecting cables

To connect the junction box to the device, connection cable MP 80/.. must be used; max. length: 300 m.

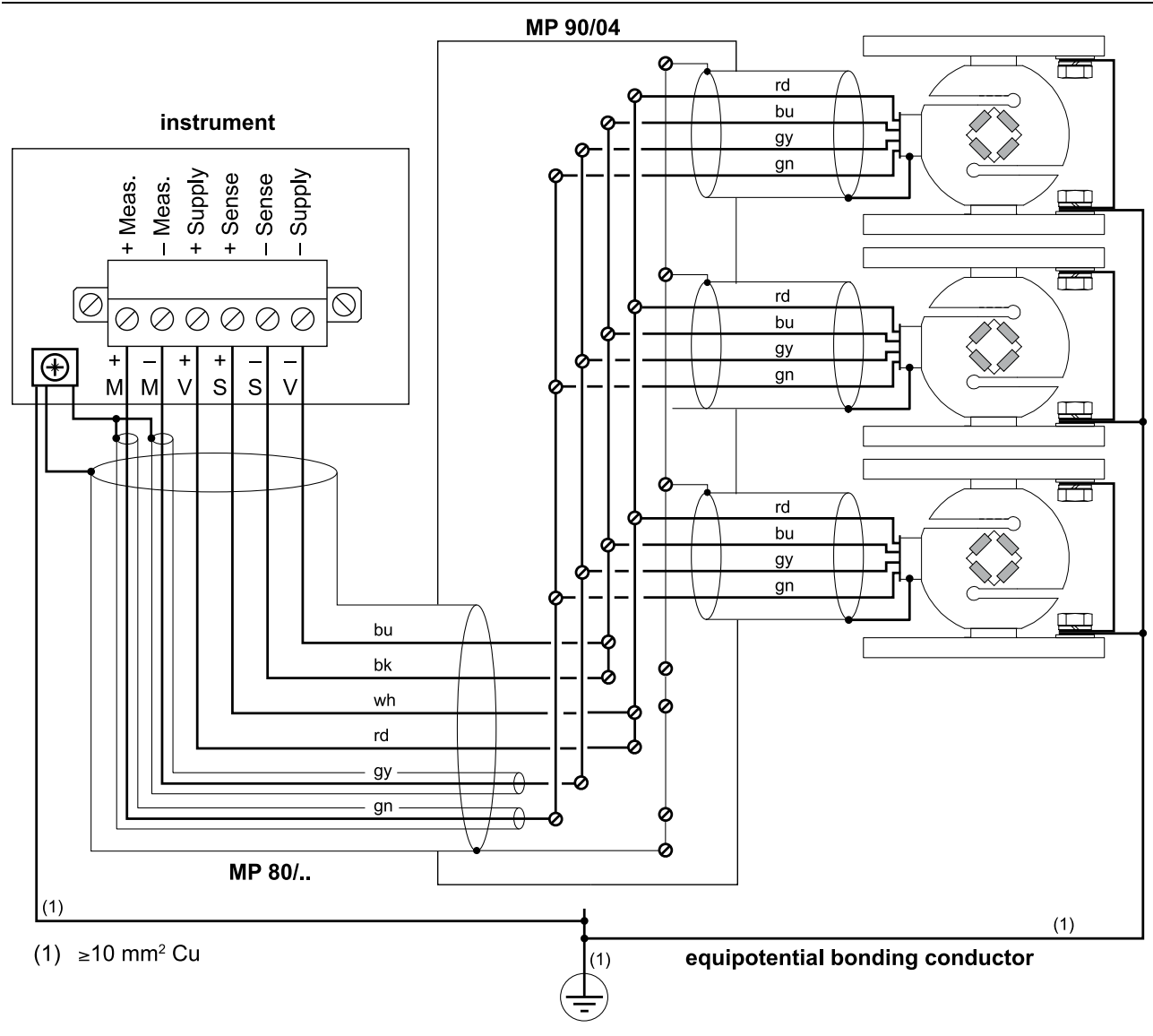
5.3 Cable connections

Note:

All components are only shown schematically.

Color code

bk	=	black
bu	=	blue
gn	=	green
gy	=	gray
rd	=	red
wh	=	white



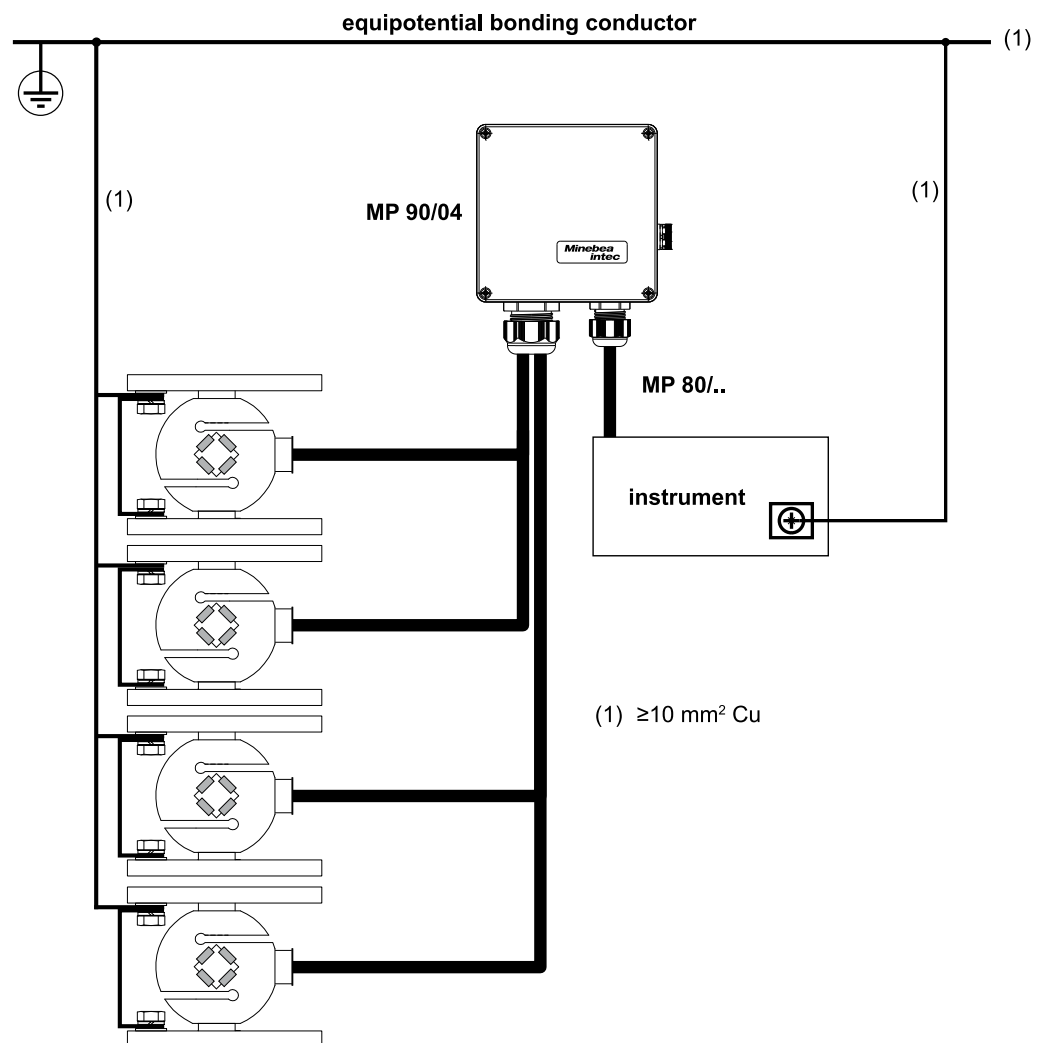
5.4 Equipotential bonding conductor

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.



5.5 Electronic corner correction

5.5.1 General information

Minebea Intec load cells are produced according to high quality standards and have precisely adjusted output values.

Nonetheless, mechanical imbalances can cause impermissible corner load errors to arise, which will need to be offset by soldering in resistors.

The correct installation and accurate alignment of load cells are imperative for good measurement results and significantly affect the behavior with corner loads. Therefore, the installation and alignment of the load cell should always be checked first if a corner error is identified.

If necessary, carry out mechanical height adjustment (see Installation manual of the load cell).

NOTICE

Loss of calibration accuracy

An unstable signal can arise due to contact problems. This results in fluctuating zero points, which lead to the loss of calibration accuracy.

- ▶ Do not use a potentiometer.
- ▶ Only use resistors of 0–5.62 Ω (1%, P70 = 0.6 W) of size MBB0207 (approx. 2.5 × 6.5 mm) or CECC B.

5.5.2 Procedure

Electronic corner correction allows the sensitivity of each individual load cell to be reduced separately.

The resistor required here can be calculated using the following formula:

$$R = \left(\frac{\text{Weight}_{\text{act}}}{\text{Weight}_{\text{set point}}} - 1 \right) \cdot R_0$$

R	Resistor integrated in the output circuit of the load cell (the resistance value is normally <7 Ω).
Weight _{actual}	Weight value on the display
Weight _{set point}	Weight of the placed load
R ₀	Output resistance of the load cell
Example:	
placed load	12,000 kg
Display	12,052 kg
R ₀	1010 Ω (see Installation manual of the load cell)
Calculated resistance	4.38 Ω

The following steps are necessary to minimize corner load errors:

1. Select the load cell with the lowest displayed load as the reference cell.
2. In the junction box, remove the jumper from the relevant measurement cable (Signal +) and solder in a resistor according to the abovementioned formula (in the example 4.38Ω).

This aligns the load cells with the displayed value of the reference cell.

Note:

The soldering studs are factory short-circuited for the resistances.

3. After that, recalibrate the scale.

6 Maintenance/repairs/soldering work/cleaning

6.1 Maintenance

Maintenance work may only be carried out by a trained technician with expert knowledge of the hazards involved and the required precautions.

6.2 Repairs

Repairs are subject to inspection and must be carried out at Minebea Intec.

In case of defect or malfunction, please contact your local Minebea Intec dealer or service center for repair.

When returning the device for repair, please include a precise and complete description of the problem.

6.3 Soldering work

Soldering work is permitted on the device for corner correction.

6.4 Cleaning

NOTICE

Property damage caused by unsuitable cleaning utensils/agents.

Damage to the device.

- ▶ Prevent moisture from penetrating the interior.
- ▶ Do not use aggressive cleaning agents (solvents or similar agents).
- ▶ For use in the food industry, use a cleaning agent suitable for that particular working environment.
- ▶ Use soft sponges, brushes and cloths.

1. Unplug device from mains supply, disconnect any data cables.
2. Clean the device with a cloth lightly moistened with a soap solution.
3. Wipe down the device with a soft, dry cloth after cleaning.

7 Disposal

If the packaging is no longer required, please take it to your local waste disposal facility and/or a reputable disposal company or collection point. The packaging largely consists of environmentally friendly materials which can be used as secondary raw materials.

It is not permitted—even for small businesses—to dispose of this product with the regular household waste or at collection points run by local public waste disposal companies.

EU legislation requires its Member States to collect electrical and electronic equipment and dispose of it separately from other unsorted municipal waste so that it can then be recycled.

Before disposing of or scrapping the product, any batteries should be removed and taken to a suitable collection point.

Please see our T&Cs for further information.

Service addresses for repairs are listed in the product information supplied with the product and on our website (www.minebea-intec.com).

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

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

Minebea Intec GmbH

Repair center

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