Minebea intec
The true measure

Installation manual

Power supply for digital load cells PR 6024/62S

Translation of original installation manual 9499 053 46200 Edition 2.5.0 01/16/2020

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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

Table of contents

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.

This device has been built and tested in compliance with the safety regulations for measuring and control equipment for protection class I (protective grounding conductor) according to IEC 1010/EN 61010 or VDE 0411.

The device 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 power supply PR 6024/62S is intended for the electrical supply of the digital load cells.

It can also 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.

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.

2.4.1 Installation

The device has to be installed in an EMC-compliant manner.

Mount the device with the cable glands pointing downwards.

To ensure proper cooling of the device, make sure air circulation around the device is not blocked. Avoid exposing the instrument to excessive heat, e.g. from direct sunlight. The ambient conditions must be taken into account at all times.

2.4.2 Opening the device

⚠ WARNING

Working on the device while it is switched on may have life-threatening consequences.

When removing covers or parts using tools, live parts or terminals may be exposed. Please note that capacitors in the device may still be charged even after disconnecting the device from all voltage sources.

▶ Disconnecting the device from the power supply.

This device contains electrostatically sensitive components. For this reason, an equipotential bonding conductor must be connected when working on the open device (antistatic protection).

2.4.3 Supply voltage connection

The device does not have a power switch. It is in operation as soon as the power is connected.

Safe interruption of both supply voltage conductors must be provided for, either by disconnecting the power connector or using a separate switch.

2.4.4 Protective ground connection

The instrument must be connected to a protective ground via a protective grounding conductor (PE) power connector.

The terminal (PE) is connected to the housing.

2.5 RF interference suppression

The device is intended for use in an industrial environment. Operation of this device in a residential environment is likely to cause radio frequency interference, see Chapter 3.4. In this case, the operator may be required to take appropriate measures.

2.6 Failure and excessive stress

If there is any reason to assume that safe operation of the device is no longer ensured, shut it down and make sure it cannot be used.

Safe operation is no longer ensured if any of the following is true:

- The device is physically damaged.
- The device does not function.
- The device has been subjected to stresses beyond the tolerance limits (e.g., during storage or transport).

2.7 Important note

Make sure that the construction of the device is not altered to the detriment of safety. In particular, leakage paths, air gaps (of live parts) and insulating layers must not be reduced.

Minebea Intec cannot be held responsible for personal injury or property damage caused by a device repaired incorrectly by an operator or installer.

2.8 Repairs and maintenance

2.8.1 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.

2.8.2 Electrostatically sensitive parts

This device contains electro-statically sensitive components. Therefore, potential equalization must be provided when working on the device (antistatic protection).

2.8.3 Replacing fuses

⚠ WARNING

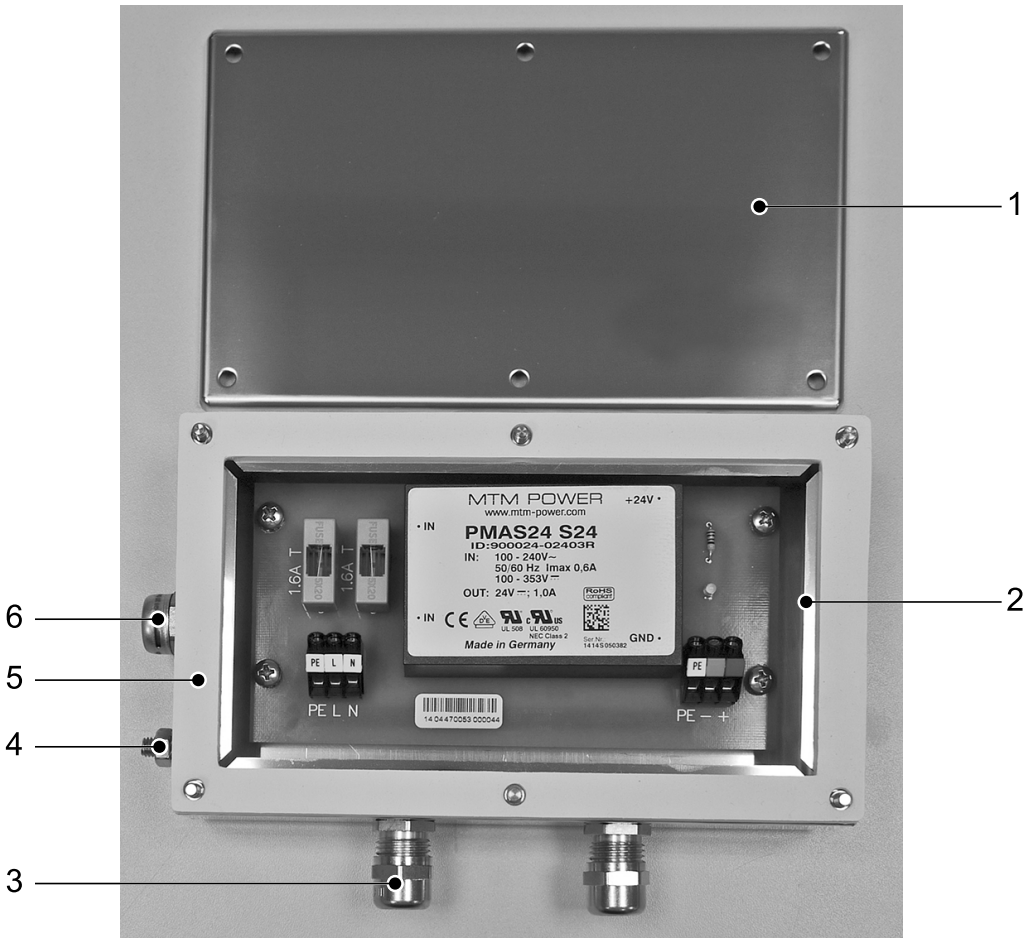
Damage from overheating.

The use of repaired fuses and bypassing the fuse holder is prohibited.

▶ Only the fuses listed in Chapter 3.2 are permissible.

3 Specifications

3.1 Equipment supplied



No.	Description
1	Cover
2	Box incl. electronics
3	Cable gland M16 (2×)
4	Equipotential bonding connection
5	Gasket
6	Pressure compensation element
The following items are not shown:	
7	Drilling template
8	Installation manual

3.2 Technical Data

Protection classes	per DIN EN 60529 **IP68, IP69:** Dust-proof and leak-proof against water, with harmful effects when immersed, (0.5 m water depth, 1,000 h) and water jets (high pressure and temperature). **IP66:** Dust-proof and leak-proof against strong water jets.
Installation position	Cable entry from below
Clamping area screw connection M16	5...9.5 mm
Supply voltage	U_{AC} = 100...240 V ±10 %, 50/60 Hz
Max. power consumption	35 VA
Fuse	2× 1.6 AT
Output voltage	U_{DC} = 24 V
Pressure equalization	Stainless steel pressure equalization element
Material of the junction box	High-grade stainless steel 1.4301 (X5CrNi 18-10) according to EN 10088-3, AISI 304, JIS SUS304
Surface of the junction box	2R according to DIN EN 10088-2 (cold-rolled, bright annealed, flat, blank, reflective)
Net weight	0.97 kg
Shipping weight	1.22 kg
Service temperature area	-30 °C...+80 °C
Service temperature area, in explosion-prone area	-20 °C...+50 °C
Storage temperature range	-30 °C...+80 °C
Cable screw connections	Metal Ex EMC cable screw connections
Ex-connection values	See Chapter 8.1.
Moisture	<95 %, non-condensing (per IEC 68-2)
Seal	EMC seal
Cable length	Supply cable PR 6124/xxP for mains supply PR 6024/62S: max. 200 m Data cable PR 6124/xxD for device: max. 300 m
Service temperature area of cables	Supply cable PR 6124/xxP: -30 °C...+90 °C Data cable PR 6124/xxD: -30 °C...+90 °C

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 µs	EN 61000-4-5	1 kV
	Conducted disturbances by high frequency coupling (0.15...80 MHz)	EN 61000-4-6	10 V
Mains inputs	Fast transient disturbances (Burst)	EN 61000-4-4	2 kV
	Peak voltages (surge) 1.2/50 µs	EN 61000-4-5	1/2 V
	Conducted disturbances by high frequency coupling (0.15...80 MHz)	EN 61000-4-6	10 V
	Voltage dips	EN 61000-4-11	0/40%
	Mains failure link	EN 61000-4-11	20 ms

3.4 RF interference suppression

Interference emission		pursuant to EN 61326, Limit class A, for industrial areas

3.5 Possible marking for the Ex area

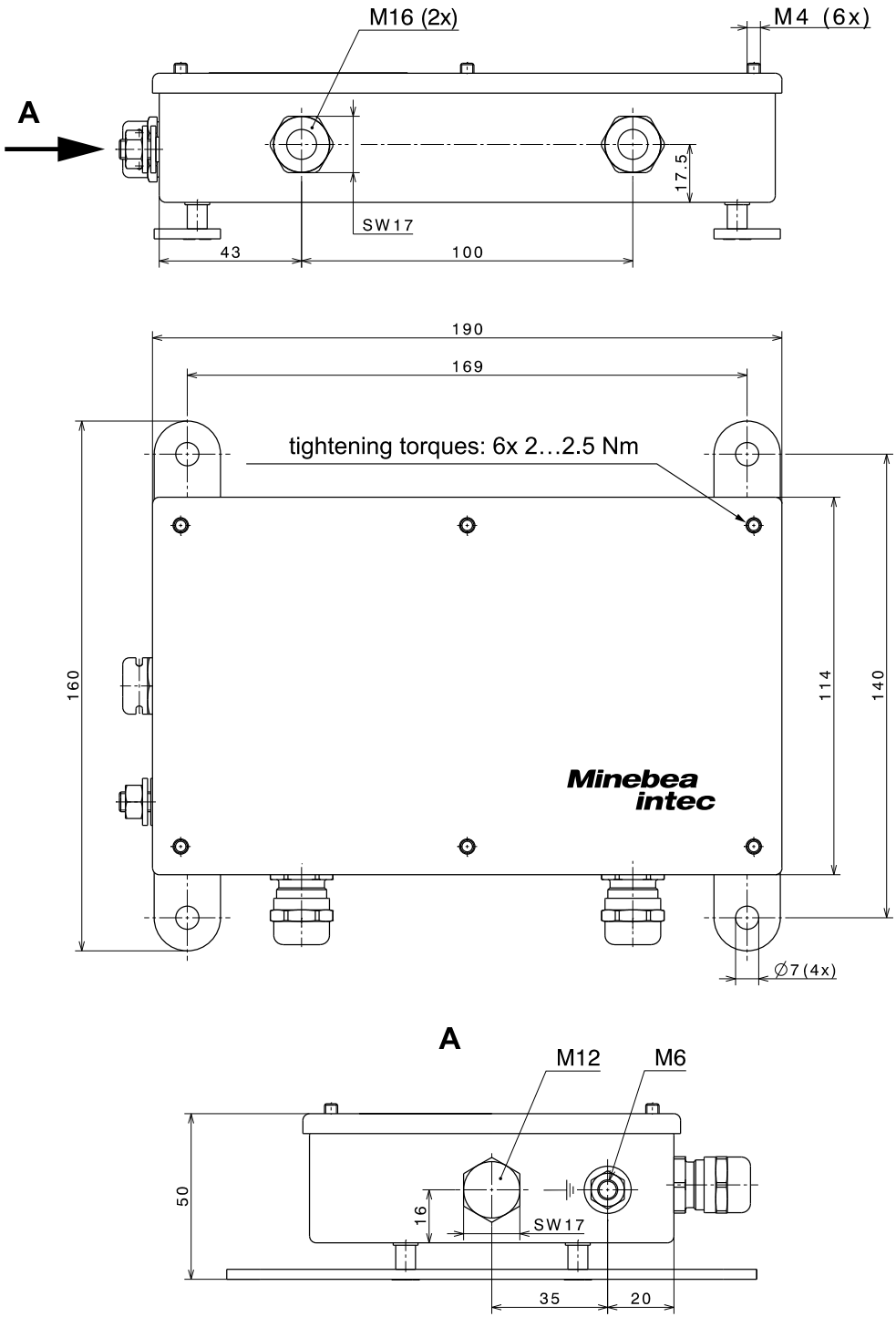
Zone	Marking	Certificate No.
2 and 22	II 3G Ex nA IIC T5 Gc II 3D Ex tc IIIC T90 °C Dc	SWT 12ATEX004 X

NOTICE

Installation in Ex Area

▶ The Ex safety instructions in the appendices must be observed when installing in the Ex area.

3.6 Dimensions



all dimensions in mm

4 Installation and connection information

4.1 General information

- The safety instructions in Chapter 8.1 must be followed!
- Only use the metal EX EMC cable glands provided by the manufacturer.
- Install the power supply so that the cable glands are on the bottom.
- Do not open the power supply when connected to the voltage supply.

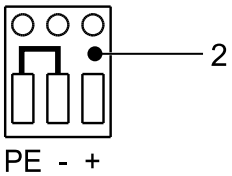
Note:

At ambient temperatures >45°C, cables that are suitable for at least 85°C must be used.

4.2 Terminals

Connection for power supply (1)		Connection for cable junction box PR 6024/68S (2)		
PE	Protective grounding conductor	PE		Screen, connected to protective grounding conductor
L	External conductor	-	blue	- supply voltage (cable junction box)
N	Neutral conductor	+	red	+ supply voltage (cable junction box)

Note:

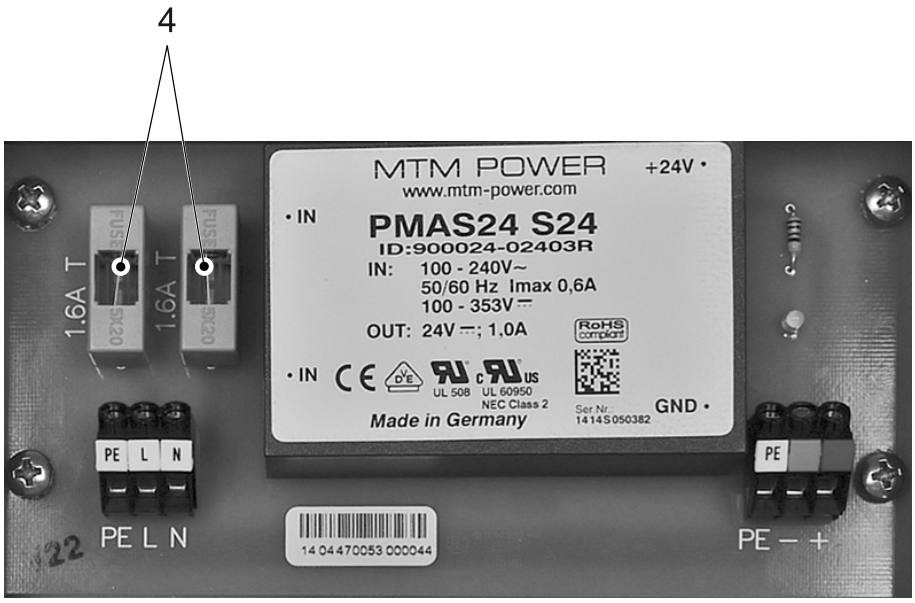


- supply voltage is connected to PE!

4.3 LED

The green LED (3) lights up when the output voltage U_{DC} = 24 V.

4.4 Fuses



The power supply is protected by two time-delayed 1.6 A fuses (4) in fuse holders with protection against contact.

When a fuse has tripped:

- Disconnect the power supply from all power sources.
- Determine and eliminate the cause of the error.
- Replace the fuse.

  Make sure that fuses are replaced only using fuses of the same type, see Chapter 3.2.
- Reconnect the power supply to all power sources.

4.5 Cable gland

The cables have to be fed into the device via glands to ensure leak-tightness. Cable diameters of 5...9.5 mm are suitable for gland M16.

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

NOTICE

Property damage is possible.

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

5 Cable connections

5.1 General information

Cable entry must be from below.

Connect the wires to the terminals according to the color coding (see also Chapter 4.2).

Note:

Chapter 5.3 shows an example of the cabling of 8 load cells via the PR 5510/04 interface and the PR 6024/68S junction box.

5.2 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

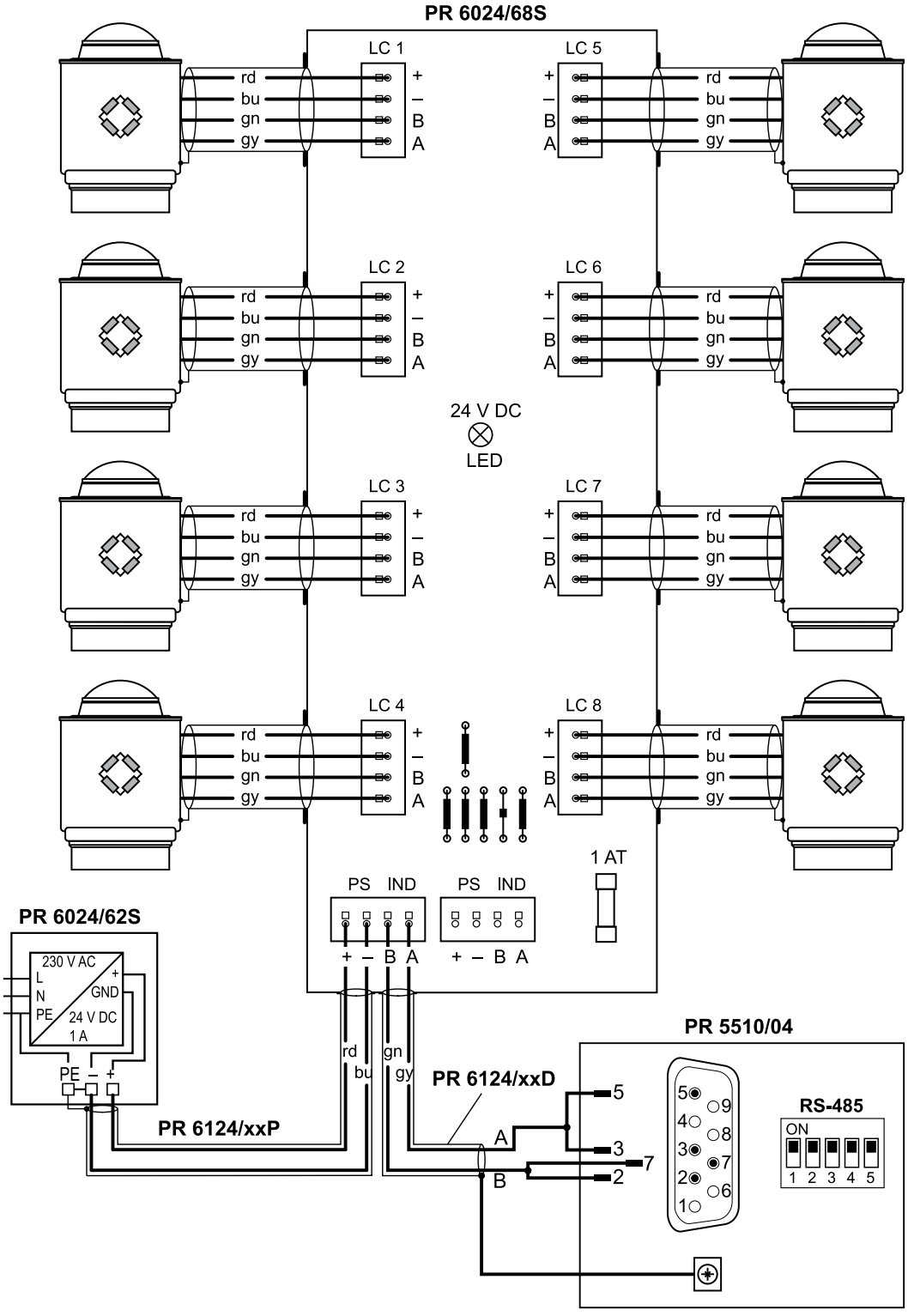
5.3 Cable connections

Note:

All components are only shown schematically.

Color Code

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


PR 6024/68S
LC 1
LC 2
LC 3
LC 4
LC 5
LC 6
LC 7
LC 8
rd
bu
gn
gy
+
–
B
A
24 V DC
LED
1 AT
PS IND
PS IND
+ – B A
PR 6024/62S
230 V AC
L
N
PE
GND
24 V DC
1 A
PE – +
PR 6124/xxP
rd
bu
gn
gy
PR 6124/xxD
A
B
5
3
7
2
PR 5510/04
5
9
4
8
3
7
2
6
1
RS-485
ON
1 2 3 4 5

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 on the device is neither required nor permitted.

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

Meiendorfer Strasse 205 A

22145 Hamburg, Germany

Phone: +49.40.67960.666

service.HH@minebea-intec.com

8 Appendix

8.1 Certificates/safety instructions

Ser. no.	Description	Document no.
1	EU-Declaration of Conformity	MEU17054
2	Declaration of Conformity	MDC17006
3	Manufacturer's Certificate	SWT 12 ATEX004 X
4	Safety Precautions	65835-790-16

Explosion-safe area

Explosion-risk area Zone 2 or Zone 22

Gas: Group II, temperature class T5
Dust: Maximum device surface temperature 90°C

1. Main connection

Connector

Use explosionprotected connector

Protect connector from being disconnected. Make sure the emergency stop works

Alternative ways of connecting device

4

7

9

Power supply
PR6024/62S
Ta: -20°C ... +50°C

1

8

2. Data transfer

only for data transfer, there is no supply voltage going from the connected device to the cable junction box.

6

Indicator

5

8

8

9

Cable junction box
PR6024/64S or PR6024/68S
Ta: -20°C ... +60°C

2

8

This device is also suitable for installation in Zone 2 and Zone 22 if it is rated for category 3G or 3D in accordance with the ATEX directive such as Combics Pro with option Y2

PR6024/64S:
up to **4** digital load cells

PR6024/68S:
up to **8** digital load cells

6

9

Digital load cell
PR6204/..t C. or
PR6224/..t C.
Ta: -20°C ... +70°C

9

Digital load cell
PR6204/..t C. or
PR6224/..t C.
Ta: -20°C ... +70°C

3

	Datum Date	Name	Material		Maßstab / Scale
Erstellt Written by	29.11.18	Schallhorn	Minebea intec The true measure	Benennung / Title: **Safety Precautions**	**1:1**
Geprüft Reviewed by	03.12.18	Hiller			Blatt Sheet **1**
Freigabe Released by	03.12.18	Schallhorn	Ausgabe / Revision **02** / Änderung / Alteration **PA50181110**	Zeichnungs-Nr. / Drawing number **65835-790-16** / Teil Dok Nr./ Part Doc No. **---**	von of **2**

These safety instructions apply to the installation, use, maintenance and repair of the appliance.
The numbers shown in brackets refer to the numbered positions on page 1.

1. The power supply unit (1), cable junction box (2) and the digital load cell (3) may only be used in this constellation in Zone 2 and Zone 22 and not as portable devices.

2. Installation should be performed by an authorized specialist, in accordance with applicable laws, rules and regulations, ordinances and standards. Particular attention should be paid to the European Standards EN 60079-14

3. It is essential that the recommendations on the installation, use, maintenance and repair contained in the manuals supplied are complied with for all equipment.

4. Only use equipment in the temperature ranges indicated. Avoid exposure to inadmissible sources of heat or cold, solar radiation or vibrations. Install the devices in such a way that heat can be sufficiently dissipated on all sides and that external heat sources are located far enough away from the power supply.

5. Protect the mains connecting cable (4) from damage and connect it correctly to the mains power supply (100 – 240 VAC). The power supply is approved for circuits up to 1,500 A. Only use the mains connecting cable in the hazardous area with a suitable and approved explosion-protected plug. Alternatively: Protect connector from being pulled out or directly wire in the cable; if directly wired-in, provide adequate emergency stop option.

6. If not supplied, the mains connection cable (4), supply cable (5) and data cable (6) used must be suitable with respect to the relevant zones they are used in, the manner in which they are laid and their relevant mechanical loads. Cables sourced from other manufacturers are the operator's responsibility.

7. The ATEX-certified cable glands (7) and (8) are only suitable for fixed installation when used in potentially explosive atmospheres, meaning that the equipment installer has to fit the cable behind the cable gland (e.g. using a cable clip). These cable glands can be replaced by those which are ATEX-certified and are suitable for flexibly installed cable.

8. Any connections that are not being used must be sealed in such a way as to assure ingress protection (IP) (e.g. using ATEX-certified locking screws).

9. Any metal parts (casing) must be DC coupled to the potential equalization. To do so, the operator of the system must connect a conductor with a cross-section of at least 4 mm^2 in a suitable place using adequate mounting material (screws). During on-site installation, check if this connection to the equipotential bonding conductor is of low resistance. The equipment operator shall be responsible for preventing any risks caused by static electricity.

10. Before opening the instruments, switch off the supply voltage, or make sure that the area is not potentially explosive. Do not connect or disconnect any live cables inside an explosion-risk area.

11. If the installation does not operate properly, disconnect it from the supply voltage immediately.

12. During installation, take suitable measures to prevent stray electrical interference (e.g. due to magnetic fields).

13. Chemicals that can attack housing gaskets and cable sheathings must be kept away from the instrument. These include oil, vegetable and animal fats, petrol, chlorinated and aromatic solvents, lye and acids, acetone and ozone. If you are uncertain, contact the manufacturer.

14. The installation must be checked for correct function and safety by a trained and qualified person at appropriate intervals.

15. In the event of repair, use only original spare parts supplied by the manufacturer.

16. Any modifications to the instrument (except by persons authorized by Minebea Intec) cause loss of conformity for use in Zone 2 and Zone 22 explosion-risk areas and invalidate all guarantee claims. Similarly, the instrument may only be opened by qualified and authorized persons.

17. Modifications (including by Minebea Intec personnel) are subject to written approval.

18. Any devices used in Zone 22 must be regularly cleared of dust. Dust layers of more than 5 mm are not permitted.

19. These instructions are given in addition to those in the instruction manuals and do not release the operator from his responsibilities for the installation, operation and inspection of the equipment assembly in compliance with the valid standards, directives, ordinances and laws.

	Datum Date	Name	Material		Maßstab / Scale
Erstellt Written by	29.11.18	Schallhorn	.	Benennung / Title: **Safety Precautions**	**1:1**
Geprüft Reviewed by	03.12.18	Hiller	Minebea intec The true measure		Blatt Sheet **2**
Freigabe Released by	03.12.18	Schallhorn	Ausgabe / Revision **02** / Änderung / Alteration **PA50181110**	Zeichnungs-Nr. / Drawing number **65835-790-16** / Teil Dok Nr./ Part Doc No. **---**	von of **2**

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