



PowerKon nano

► Assembly, installation and operating instructions

Keep these instructions in a safe place for future use!

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1 General

1.1 About these instructions

These instructions ensure the safe and efficient handling of this equipment. These instructions form an integral part of the equipment and have to be kept in the direct vicinity of the equipment and available to personnel at all times.

All personnel must have carefully read through these instructions prior to commencing all work on the equipment. A fundamental prerequisite for safe working is compliance with all the stated safety instructions and other instructions contained in this manual.

In addition all local occupational health and safety at work regulations apply, as do general safety provisions governing the use of the equipment.

Illustrations in this guide are intended to provide a basic understanding and may differ from the actual model.

Ongoing tests and further developments may result in small variations between the unit supplied and the instructions.

1.2 Explanation of Symbols



WARNING!

This combination of symbol and signal word indicates a possible hazardous situation.



IMPORTANT NOTE!

It represents a potentially hazardous situation, which could lead to damage to property or for a measure to optimise workflows.



IMPORTANT NOTE!

This symbol highlights useful hints, recommendations and information for efficient and trouble-free operation.

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2 Safety

This section provides an overview of all important safety aspects to ensure optimum protection of personnel as well as safe and trouble-free operation. In addition to the safety instructions in these operating instructions, the valid safety, accident prevention and environmental protection regulations must be observed for the area of use of the unit. It is the duty of the operator to ensure that instructions relating to maintenance (e.g. relating to hygiene) are complied with.

2.1 Correct use

Intended use of the unit also includes adherence to these instructions.

Information in accordance with EN60335-1

- ▶ This unit can be used by children aged 8 years or more and also by people with reduced physical, sensory or mental capabilities or a lack of experience and knowledge, if they are supervised or have been instructed in the safe use of the unit and the resulting dangers. Do not allow children to play with the unit. Do not allow children to clean and maintain the unit without supervision.
- ▶ This unit is not intended for permanent connection to the drinking water supply system.
- ▶ This unit is intended for being accessible to the general public.

Any use beyond or other than the stated intended use is considered as misuse.

Any change to the unit or use of non-original spare parts will cause the expiry of the warranty and the manufacturer's liability.

2.2 Limits of operation and use

Limits of operation		
Min./max. water temperature	°C	15-90
Min./max. air intake temperature	°C	15-40
Min./max. air humidity	%	15-75
Min. operating pressure	bar/kPa	-
Max. operating pressure	bar/kPa	10/1000
Min./max. glycol percentage	%	25-50

Tab. 1: Limits of operation

Operating voltage	
Power/current consumption	On the typeplate

Tab. 2: Operating voltage

We would refer to VDI-2035 Sheets 1 & 2, DIN EN 14336 and DIN EN 14868 with regard to the properties of the medium used to protect the equipment. The following values provide further guidance.

The water used should be free of contamination, such as suspended substances and reactive substances.

Water quality		
pH value (at 20 °C)		8-9
Conductivity (at 20 °C)	µS/cm	< 700
Oxygen content (O ₂)	mg/l	< 0.1
Hardness	°dH	4-8.5
Sulphur ions		not measurable
Sodium ions (Na ⁺)	mg/l	< 100
Iron ions (Fe ²⁺)	mg/l	< 0.1
Manganese ions (Mn ²⁺)	mg/l	<0.05
Ammonia ions (NH ⁴⁺)	mg/l	< 0.1
Chlorine ions (Cl)	mg/l	< 100
CO ₂		< 50
Sulfate ions (SO ₄ ²⁻)	mg/l	< 50
Nitrite ions (NO ₂ ⁻)	mg/l	< 50
Nitrate ions (NO ₃ ⁻)	mg/l	< 50

Tab. 3: Water quality

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IMPORTANT NOTE!

Warning of misuse!

In the event of misuse, as itemised below, there is a danger of limited or failing operation of the unit. Ensure that the airflow can circulate freely.

- ▶ Never operate the unit in humid areas, such as swimming pools, wet areas etc.
- ▶ Never operate the unit in rooms with an explosive atmosphere.
- ▶ Never operate the unit in aggressive or corrosive atmospheres (e.g. sea air).
- ▶ Never operate the unit above electrical equipment (such as switch cabinets, computers or other electrical units, or contacts that are not drip-proof).
- ▶ Never use the unit as a construction site heater.
- ▶ Never operate the unit in areas with a high dust content.

2.3 Risk from electrocution!



DANGER!

Risk of fatal injury from electrocution!

Contact with live parts will lead to fatal injury from electrocution. Damage to the insulation or individual components can lead to a fatal injury.

- ▶ Only permit qualified electricians to work on the electrical system.
- ▶ Immediately disconnect the system from the power supply and repair it in the event of damage to the insulation.
- ▶ Keep live parts away from moisture. This can cause a short circuit.
- ▶ Properly earth the unit.

2.4 Personnel requirements - Qualifications

Expertise

The installation of this product requires specialist knowledge of heating, cooling, ventilation, installation and electrical engineering. This knowledge, generally learned in professional training in one of the fields mentioned above, is not described separately.

Damage caused by improper installation is the responsibility of the operator or installer. The installer of these units should have adequate knowledge of the following gained from specialist professional training

- ▶ Safety and accident prevention regulations
- ▶ Guidelines and recognised technical regulations, i.e. Association of German Electricians VDE regulations, DIN and EN standards.

The installation, operation and maintenance of this unit must comply with the applicable laws, standards, provisions and regulations in the respective country and the current state of the art.

2.5 Personal Protective Equipment

Personal protective equipment is used to protect people from impaired safety and health when working with the unit. The applicable accident prevention regulations at the place of use apply in all cases.

Personnel have to wear personal protective equipment during maintenance and troubleshooting on and with the unit.

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3 Transport, storage and packaging

3.1 General transport instructions

Check on delivery for completeness and transport damage.

Proceed as follows in the event of visible damage:

- ▶ Do not accept delivery or only accept with reservations.
- ▶ Record any transport damage on the transportation documents or on the transport company's delivery note.
- ▶ Submit a complaint to the freight forwarder.



IMPORTANT NOTE!

Warranty claims can only be made within the applicable period for complaints. (More information is available in the T&Cs on the Kampmann website)



IMPORTANT NOTE!

2 people are needed to transport the unit. Wear personal protective clothing when transporting the unit. Only lift the unit on both sides and not by the pipes / valves.



IMPORTANT NOTE!

Material damage caused by incorrect transport!

Units being transported can drop or topple over if transported wrongly. This can cause serious material damage.

- ▶ Proceed carefully when unloading the equipment on delivery and when transporting it on site and note the symbols and instructions on the packaging.
- ▶ Only use the holding points provided.
- ▶ Only remove packaging shortly before assembling the unit.

3.2 Scope of delivery



IMPORTANT NOTE!

Check the scope of delivery!

- ▶ Check the delivery for damage.
- ▶ Check that the articles and type numbers are correct.
- ▶ Is the delivery and number of items delivered correct?

3.3 Storage

Store packaging under the following conditions:

- ▶ Do not store outdoors.
- ▶ Store in a dry and dust-free place.
- ▶ Store in a frost-free place.
- ▶ Do not expose to aggressive media.
- ▶ Protect from direct sunlight.
- ▶ Avoid mechanical vibrations and shocks.



IMPORTANT NOTE!

Under certain circumstances, packages can carry storage instructions that exceed the requirements listed here. Comply with these instructions accordingly.

3.4 Packaging

Handling packaging materials



IMPORTANT NOTE!

Dispose of packaging materials in line with the applicable statutory requirements and local regulations.

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4 Technical data

Unit	PowerKon nano				
Length [mm]	950	1150	1400	1800	2150
Height [mm]	160	160	160	160	160
Depth [mm]	160	160	160	160	160
Weight [kg]	8.4	9.8	11.5	14.2	16.6
Air volume [m ³ /h]	25-75	40-120	50-155	75-230	95-290
Heat output [W] ¹	321-851	497-1317	646-1713	971-2574	1221-3237
Sound power level [dB(A)]	<28-42	<28-44	<28-45	<28-47	<28-48

¹ at LPHW 75 / 65°C, t_{l1} = 20°C

5 Construction and function

5.1 Overview



Fig. 1: PowerKon nano at a glance

5.2 Brief description

PowerKon nano are free-standing decentralised units for room air heating, for use in hotels, offices and business premises, among others. Secondary air is drawn in by the filter and passed through the copper/aluminium heat exchanger. The air is warmed depending on the water temperature and fed back into the room.

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6 Installation and wiring

6.1 Requirements governing the installation site

Only install and assemble the unit if the following conditions are met:

- ▶ Make sure that the unit is securely suspended/standing.
- ▶ Ensure that the airflow can circulate freely.
- ▶ Provide adequate space for appropriately sized flow and return water connections on site (Connection to the pipe network [▶ 20]).
- ▶ There is a power supply on site (Maximum electrical rating values [▶ 21]).

6.2 Installation

2 people are needed to install the unit.



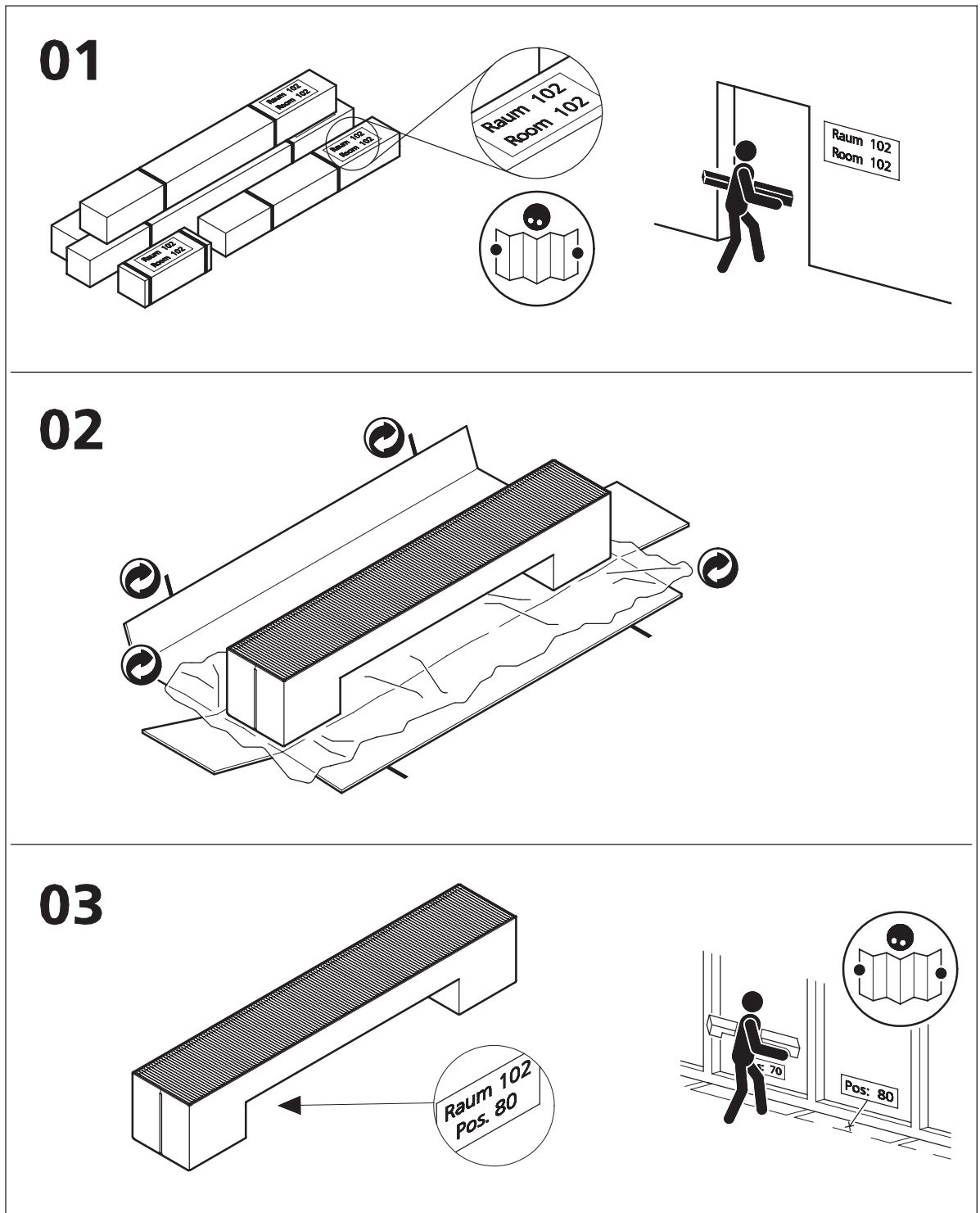
CAUTION!

Risk of injury from sharp metal housing!

The inner metal of the casing can have sharp edges.

- ▶ Wear suitable protective gloves.

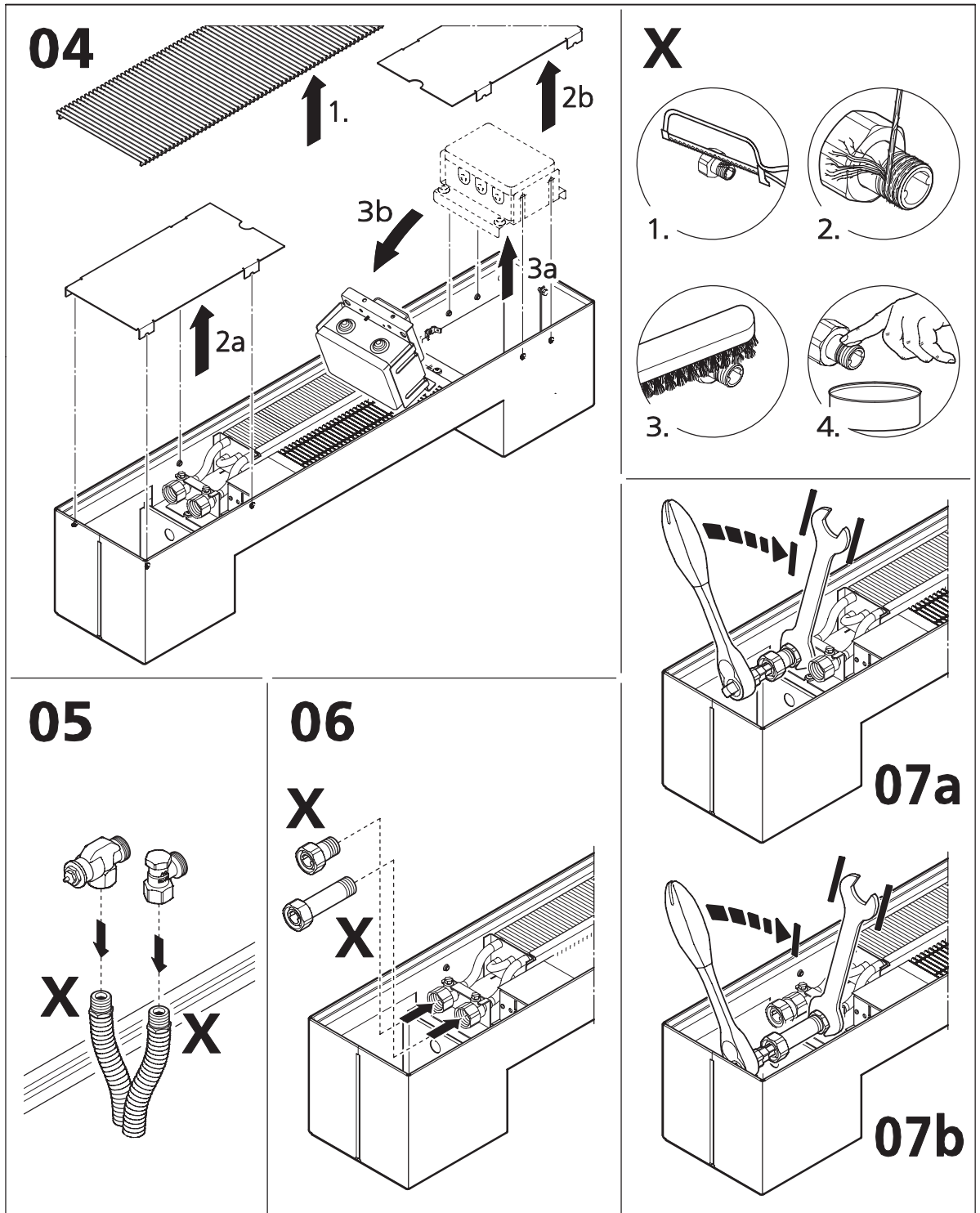
6.3 Installing the unit



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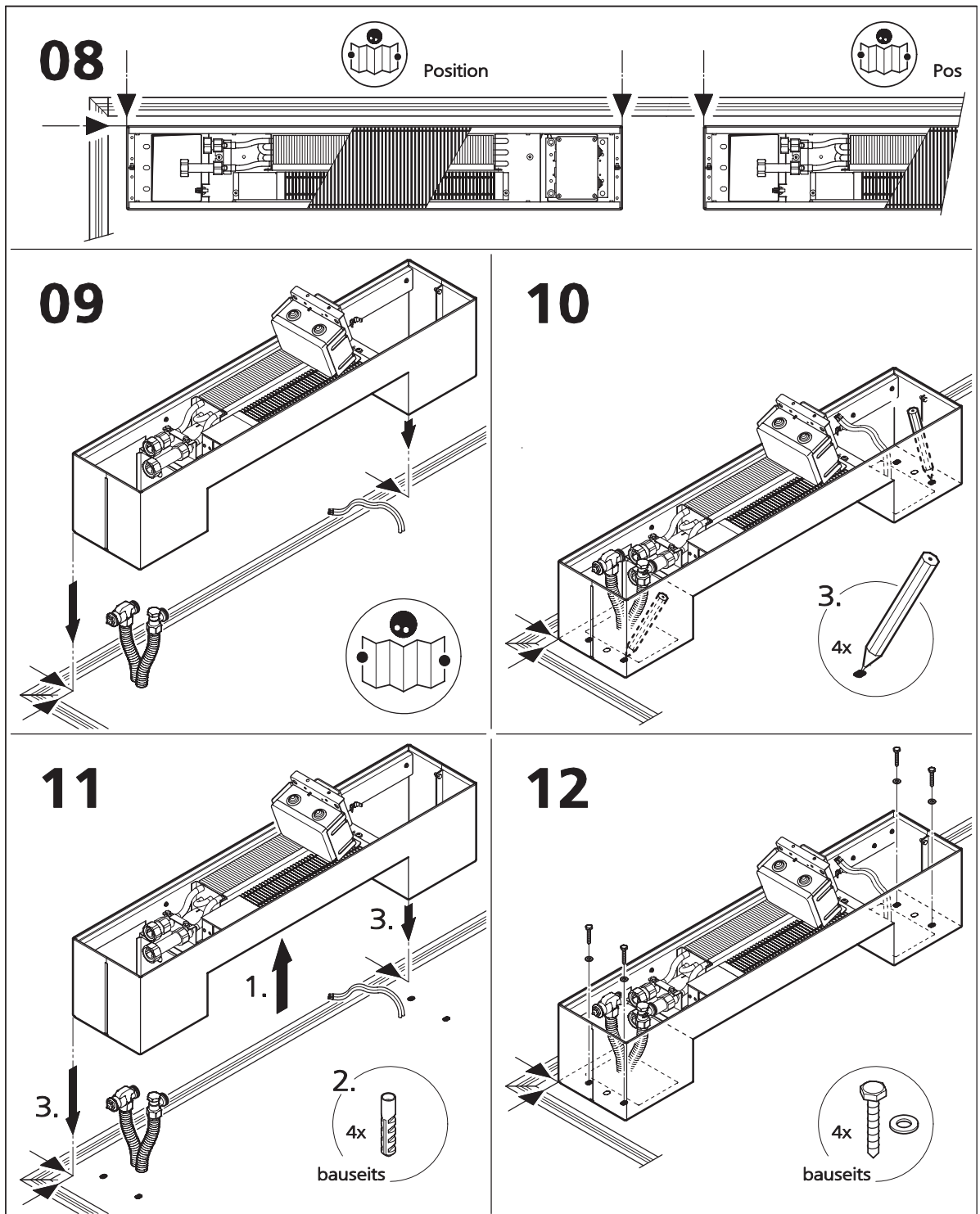
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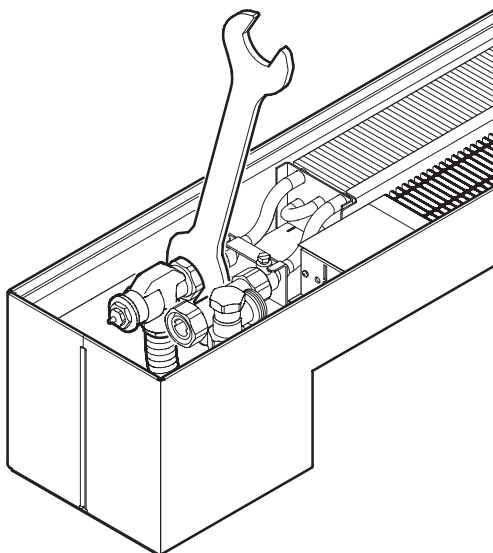


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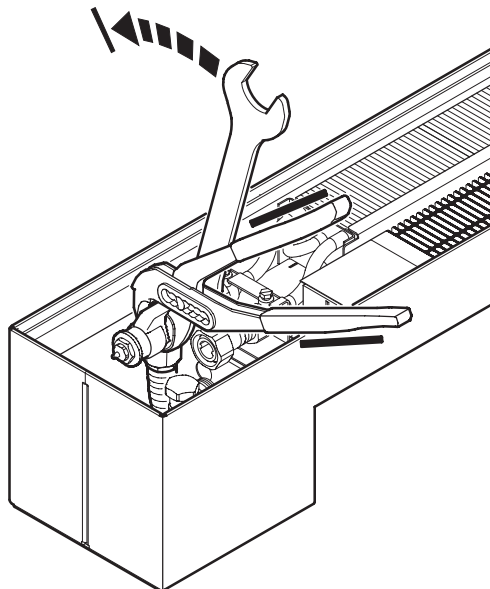
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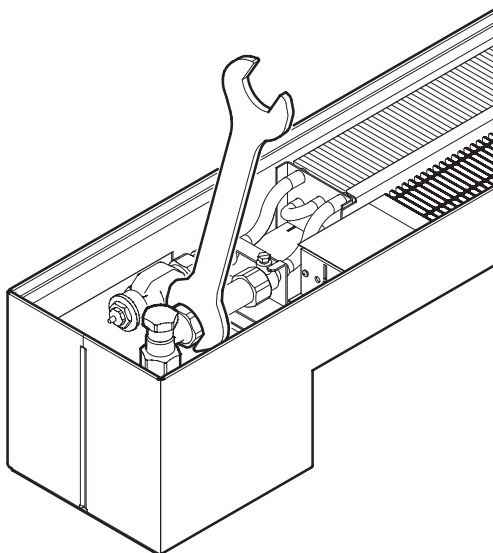
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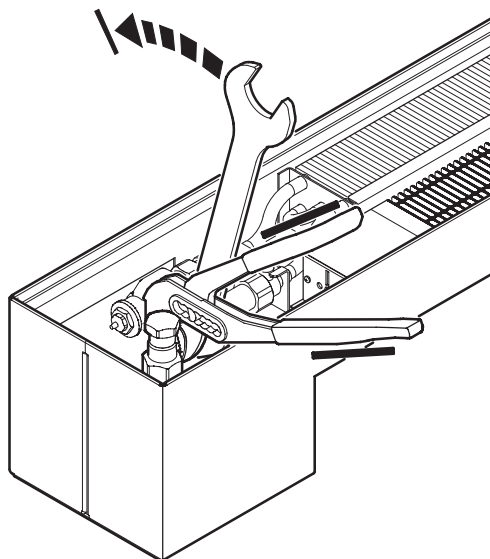
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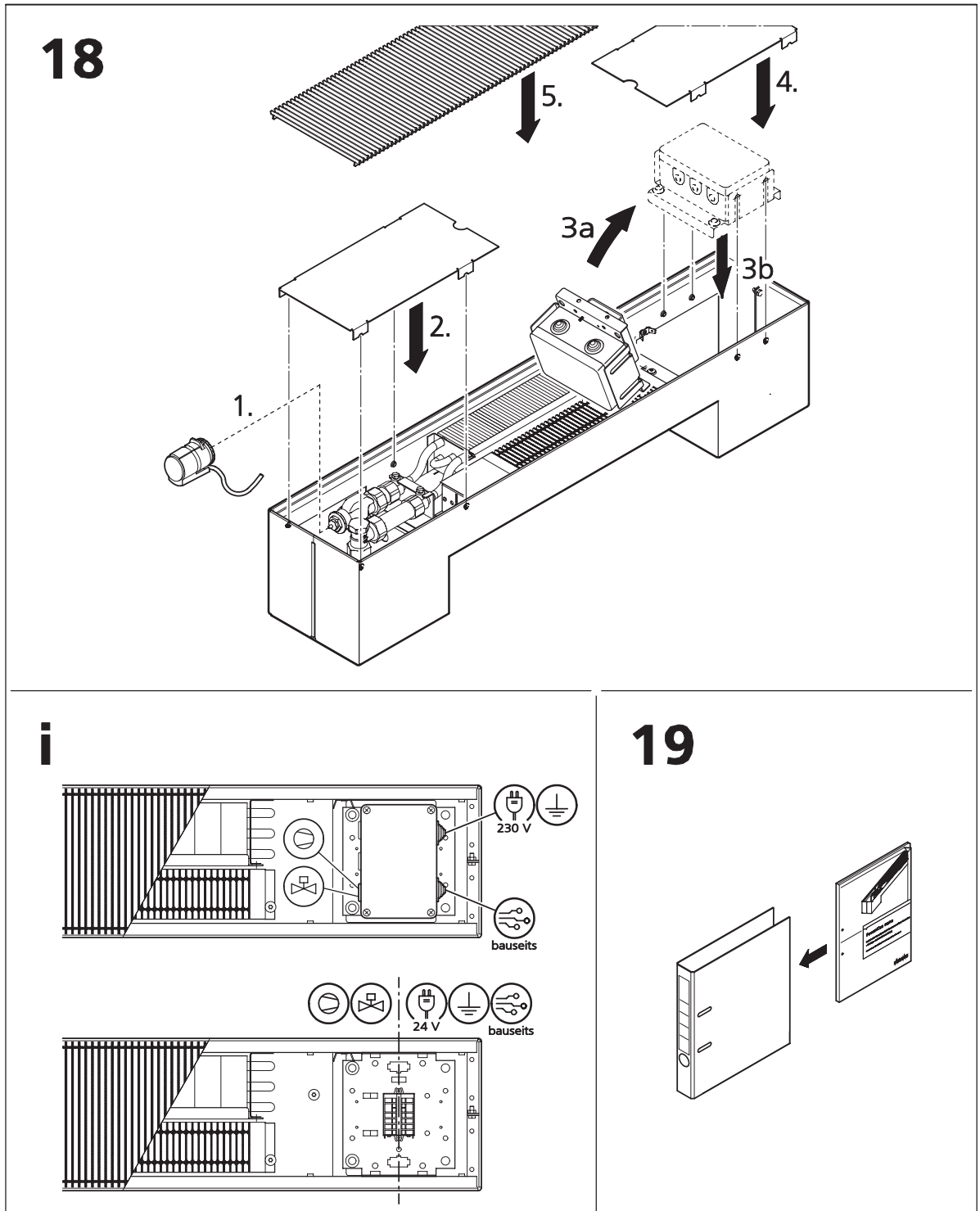
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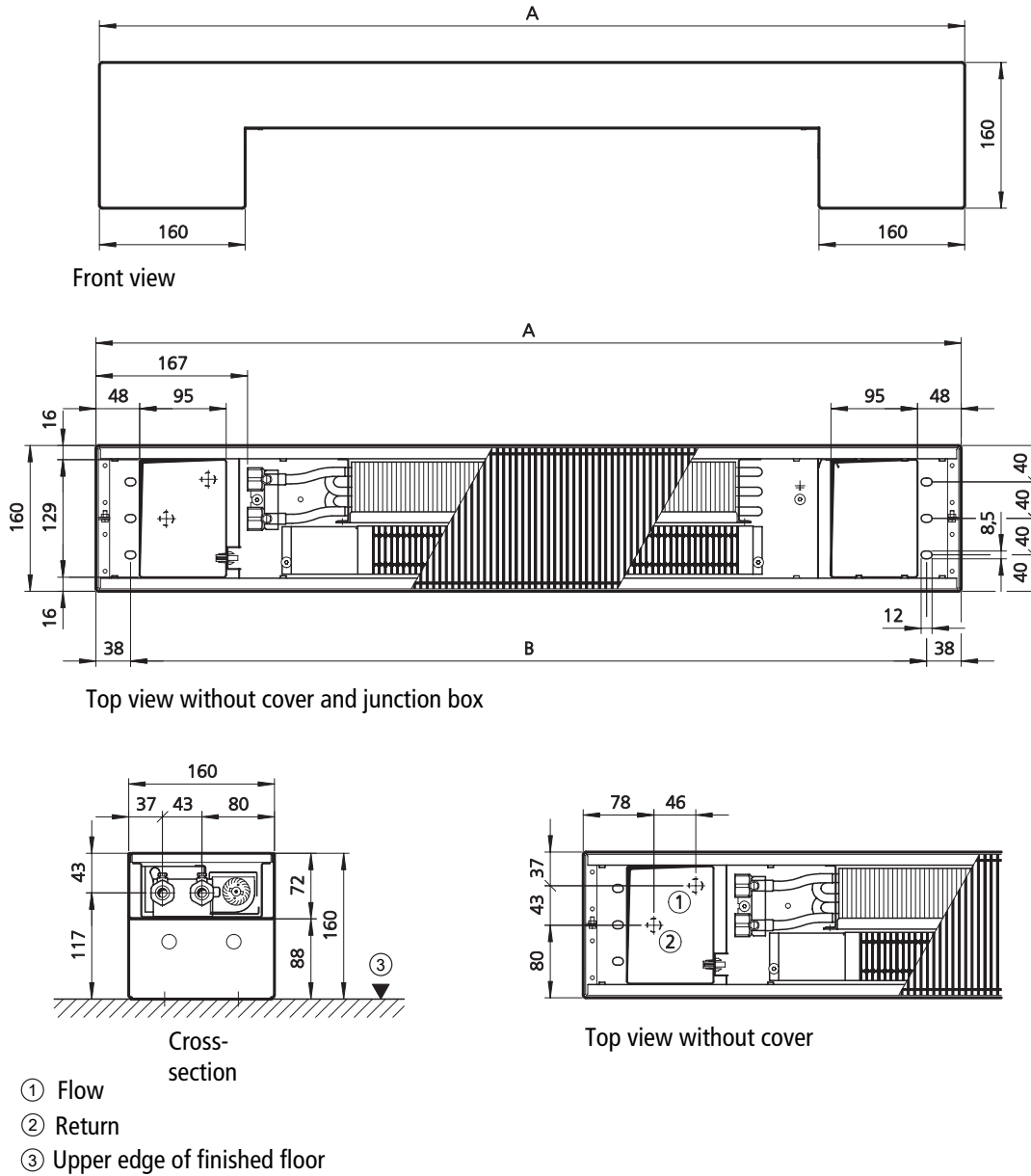
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6.4 Connection to the pipe network

(Dimensions in mm)



Length A	Mounting points B
950	874
1150	1074
1400	1324
1800	1724
2150	2074

7 Electrical connection



IMPORTANT NOTE!

Provide an all-pole mains separator in the electrical installation on site that can be reliably secured to avoid the system being reconnected (e.g. a lockable switch with a contact opening of at least 3 mm up to a rated voltage of 480 V). No protective measures are indicated in the wiring diagrams. These must be provided when installing the system and when connecting the units in accordance with VDE 0100 and the regulations of each energy supply company.

7.1 Maximum electrical rating values

PowerKon nano, electromechanical model 24 V (*24)

Overall length	Fans	Nominal voltage	Mains frequency	Nominal power	Nominal current	Leakage current	Ri analogue input	Protection rating	Protection class
950 mm	D30R4000	24 VDC	-	5 W	0.21 A	< 3.5 mA	200 kΩ	IP21	III
1150 mm	D30R3300	24 VDC	-	6 W	0.22 A	< 3.5 mA	200 kΩ	IP21	III
1400 [mm]	D30R4400	24 VDC	-	6 W	0.23 A	< 3.5 mA	200 kΩ	IP21	III
1800 [mm]	D30R4400	24 VDC	-	7 W	0.26 A	< 3.5 mA	200 kΩ	IP21	III
2150 [mm]	D30R4443	24 VDC	-	8 W	0.33 A	< 3.5 mA	200 kΩ	IP21	III

Tab. 4: Maximum electrical rating values, electromechanical model 24 V

PowerKon nano, electromechanical model 230 V (*00)

Overall length	Fans	Nominal voltage	Mains frequency	Nominal power	Nominal current	Leakage current	Ri analogue input	Protection rating	Protection class
950 mm	D30R4000	230 V AC	50 Hz	5 W	0.21 A	< 3.5 mA	200 kΩ	IP21	I
1150 mm	D30R3300	230 V AC	50 Hz	6 W	0.22 A	< 3.5 mA	200 kΩ	IP21	I
1400 [mm]	D30R4400	230 V AC	50 Hz	6 W	0.23 A	< 3.5 mA	200 kΩ	IP21	I
1800 [mm]	D30R4400	230 V AC	50 Hz	7 W	0.26 A	< 3.5 mA	200 kΩ	IP21	I
2150 [mm]	D30R4443	230 V AC	50 Hz	8 W	0.33 A	< 3.5 mA	200 kΩ	IP21	I

Tab. 5: Maximum electrical rating values, electromechanical model 230 V

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7.2 Electromechanical connection, 24 V (*24)

Wiring (*24)

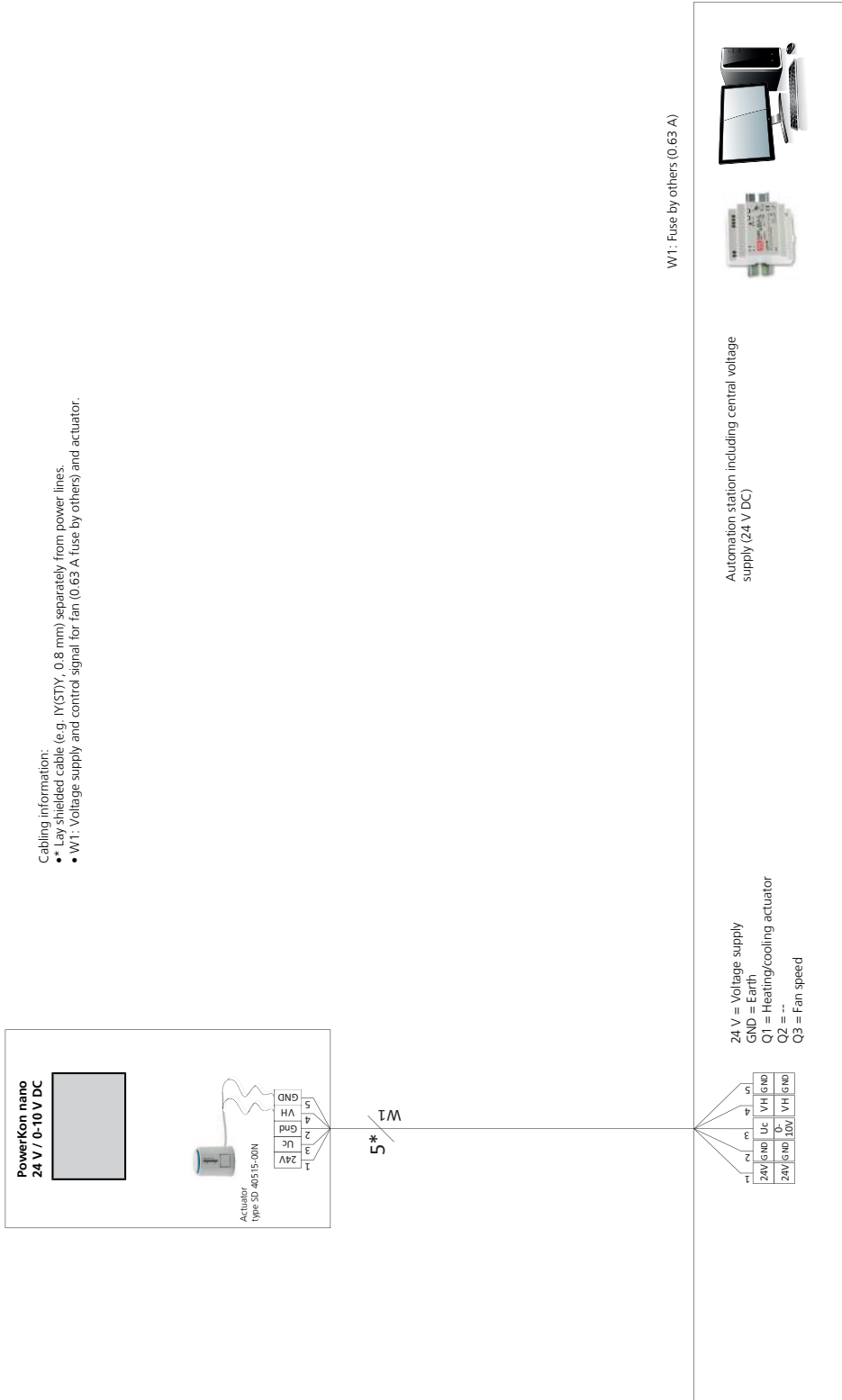
- ▶ All factory-fitted actuators are wired to terminals on the electromechanical model (*24).
- ▶ The operating voltage must be provided by a voltage supply (24 V DC) by others.
- ▶ Kampmann offers several different output classes of switched-mode power supply units (SMPS) as accessories for the voltage supply.
- ▶ The speed of the EC fans used can be continuously variably controlled by a 0-10 V DC signal. In the event of a motor fault, the intelligent motor electronics switches off the fan automatically.

Note these points in the following wiring diagrams with electromechanical control:

- ▶ Comply with the details on cable types and cabling with due consideration for VDE 0100.
- ▶ Without *: NYM-J. The requisite number of wires, including protective earth, is stated on the cable. Cross-sections are not stated, as the cable length is involved in the calculation of the cross-section.
- ▶ With *: J-Y(ST)Y 0.8mm. Lay separately from power lines.
- ▶ If other types of cables are used, they must be at least equivalent.
- ▶ The terminals on the unit are suitable for a maximum wire cross-section of 2.5 mm².
- ▶ The Maximum electrical rating values [▶ 21] need to be respected when rating the in situ mains power supply and fusing.

7.2.1 Cabling of PowerKon nano (*24), 0-10 V DC actuation by BMS

- Cabling information:
- Lay shielded cable (e.g. NYSTY, 0.8 mm) separately from power lines.
 - W1: Voltage supply and control signal for fan (0.63 A fuse by others) and actuator.

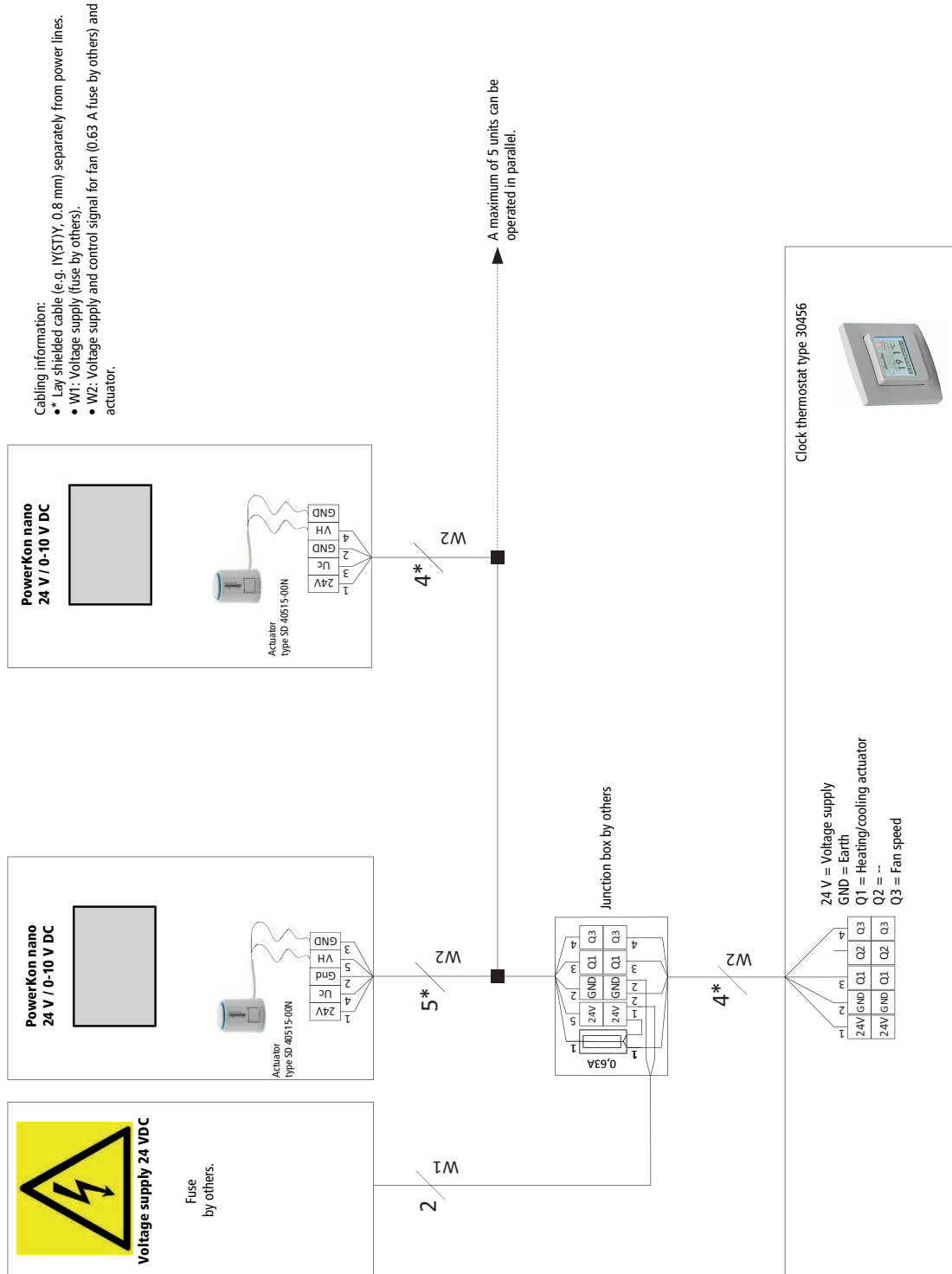


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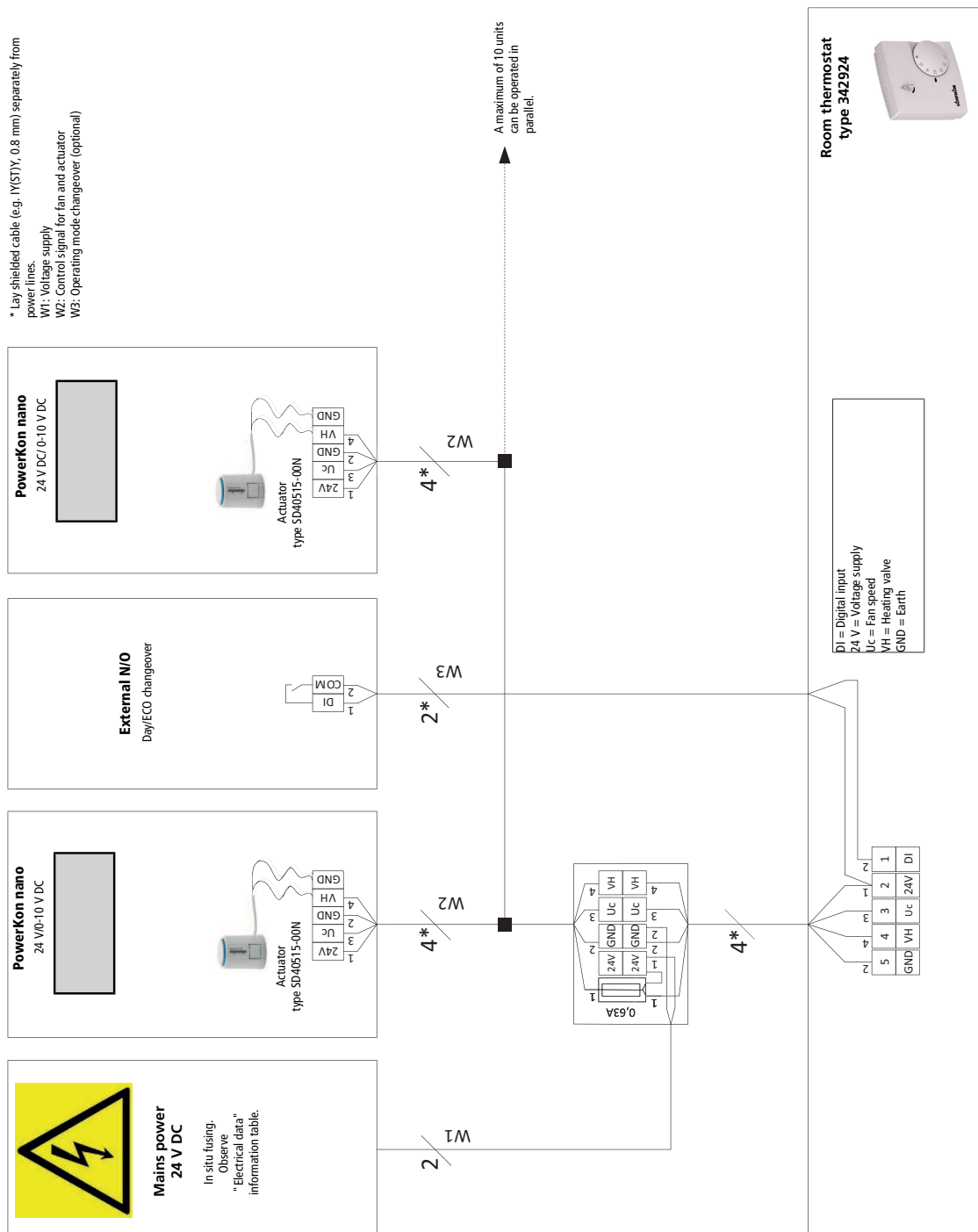
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7.2.2 Cabling of PowerKon nano (*24), actuation by clock thermostat type 30456



7.2.3 Cabling of PowerKon nano (*24), actuation by room thermostat type 342924



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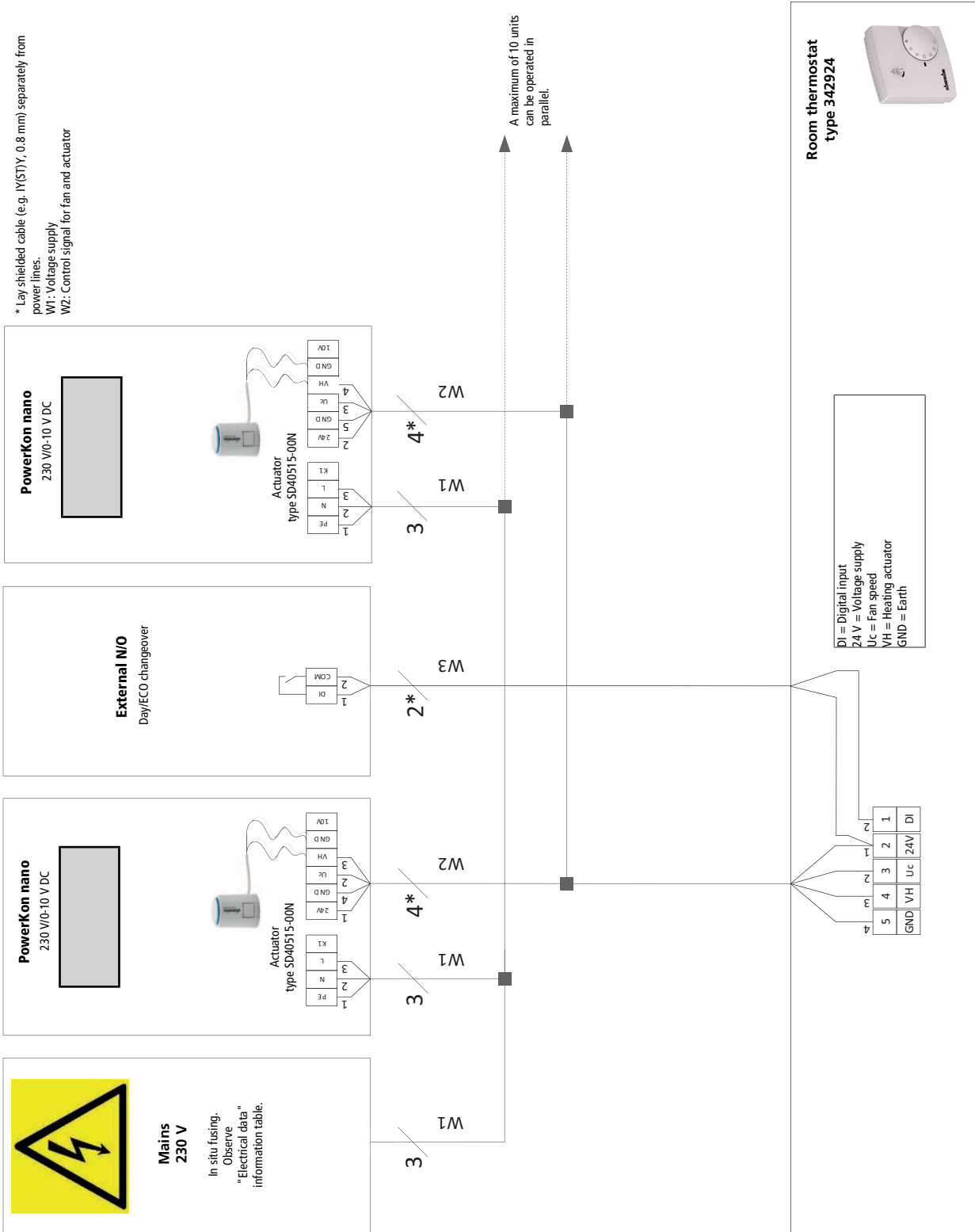
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7.3 Electromechanical connection, 230 V (*00)

Wiring (*00)

- ▶ All factory-fitted actuators are wired to terminals on the electromechanical model (*00).
- ▶ The operating voltage must be provided by a voltage supply (230 V AC) by others.
- ▶ The valves can be actuated by 24 V DC or 230 V AC.
- ▶ The speed of the EC fans used can be continuously variably controlled by a 0-10 V DC signal. In the event of a motor fault, the intelligent motor electronics switches off the fan automatically.

7.3.1 Cabling of PowerKon nano (*00), actuation by room thermostat type 342924

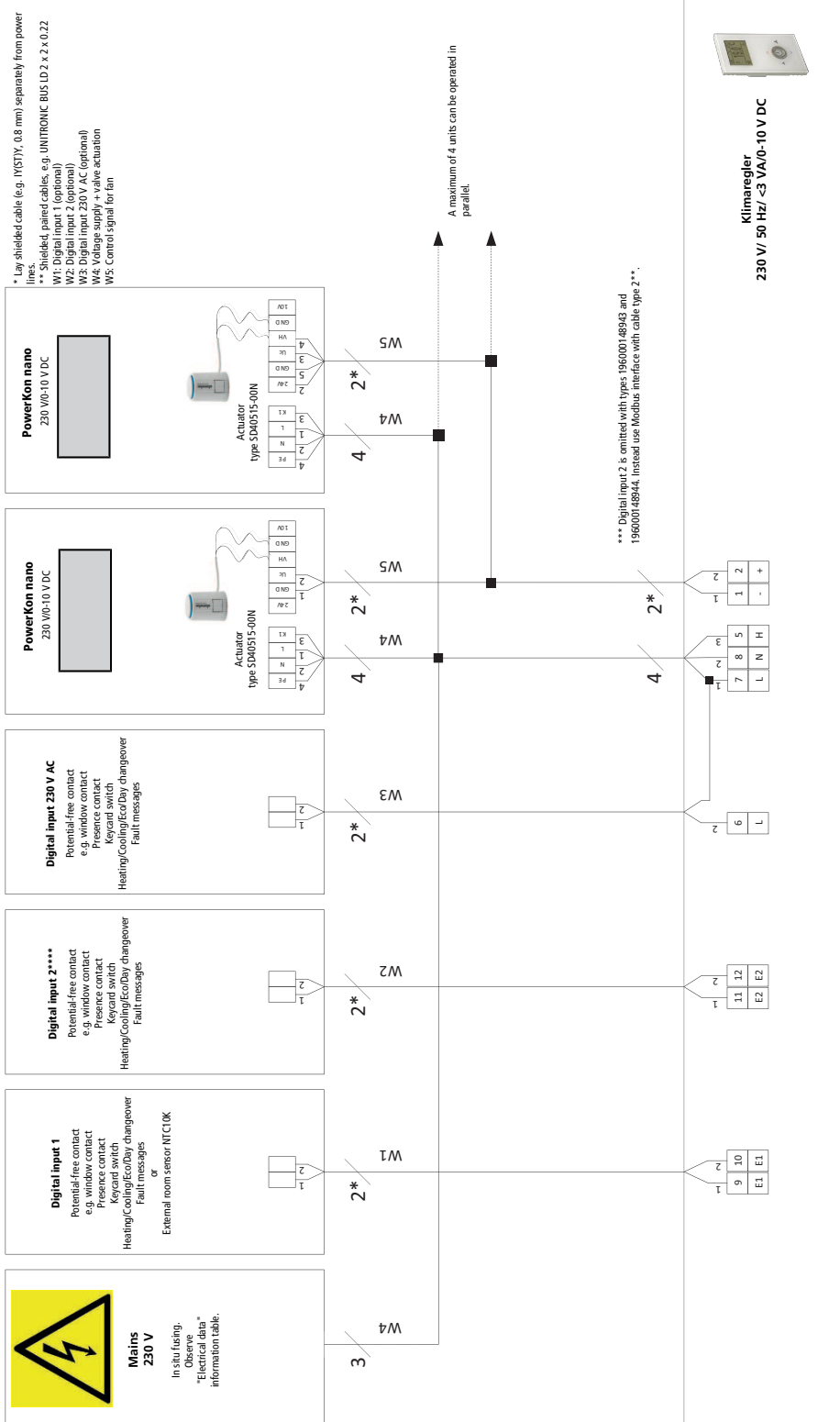


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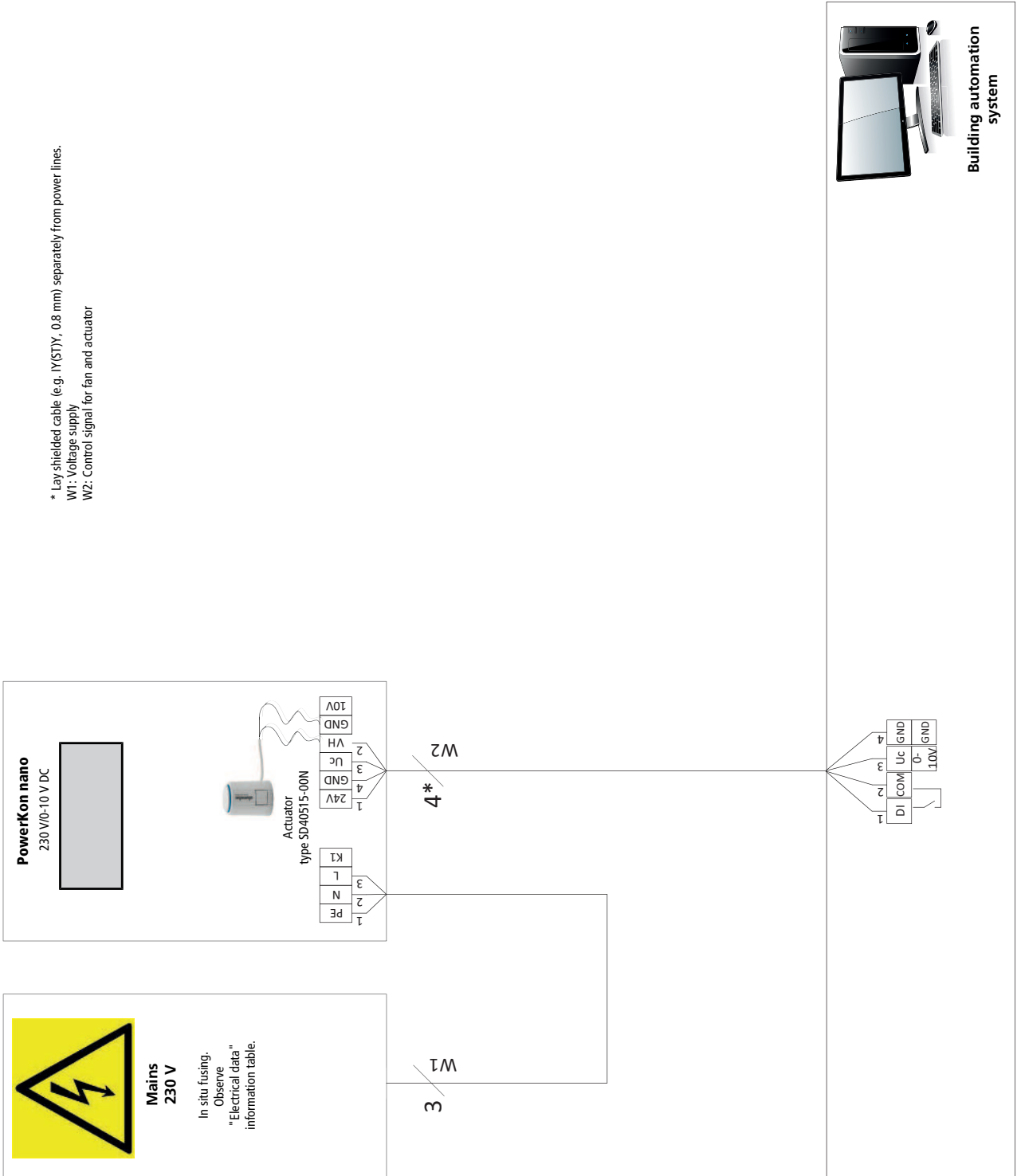
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7.3.2 Cabling of PowerKon nano (*00), actuation by Klimaregler type 14894x



7.3.3 Cabling of PowerKon nano (*00), 0-10 V DC actuation by BMS

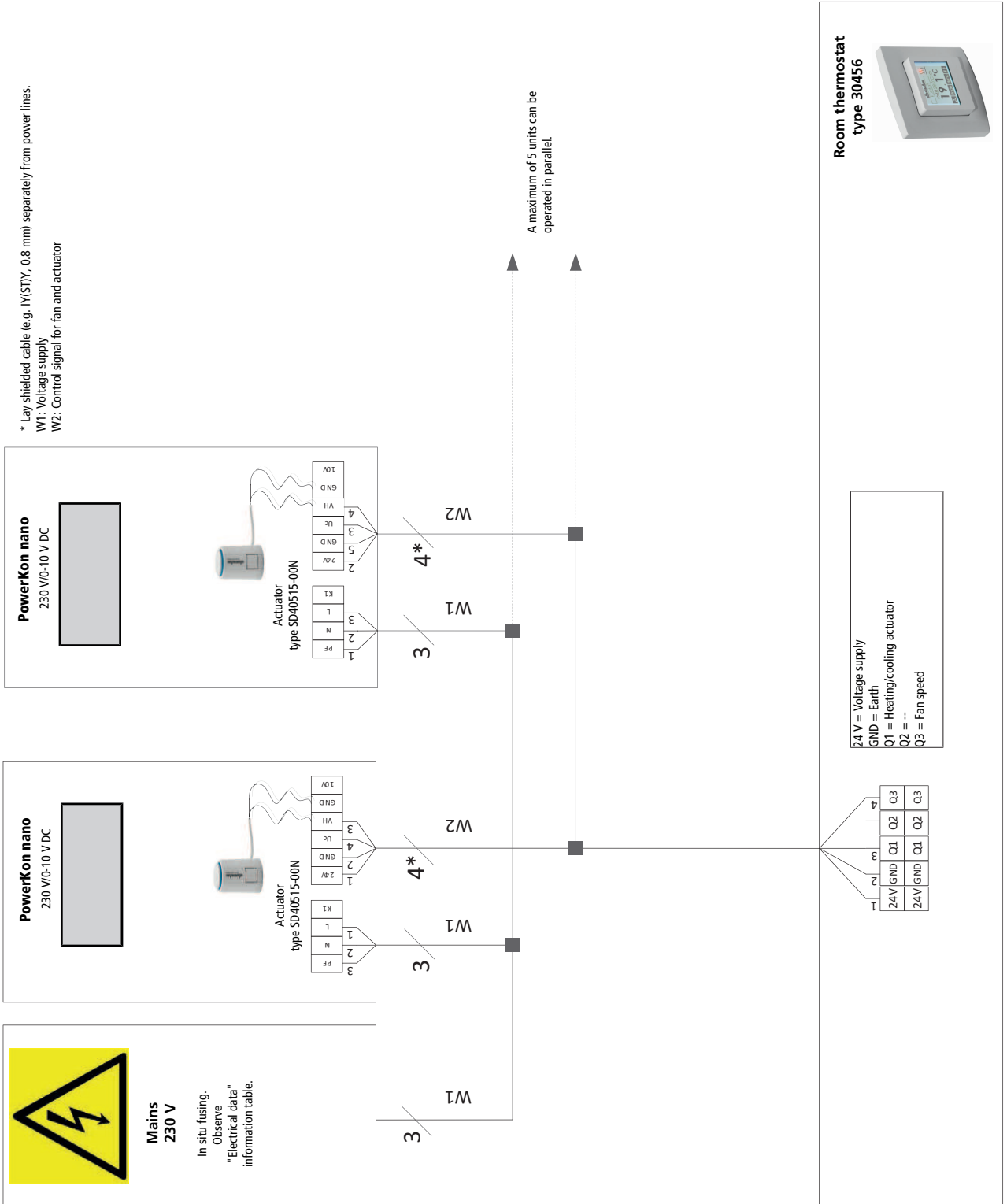


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7.3.4 Cabling of PowerKon nano (*00), actuation by clock thermostat type 30456



8 Pre-commissioning checks

Before initial commissioning, check whether all the necessary conditions have been met so that the unit can function safely and properly.

Structural tests

- ▶ Check that the unit is securely standing and fixed.
- ▶ Check the horizontal installation/suspension of the unit.
- ▶ Check whether all components are properly fitted.
- ▶ Check whether all dirt, such as packaging or site dirt, has been removed.

Electrical tests

- ▶ Check whether all lines have been properly laid.
- ▶ Check whether all lines have the necessary cross-section.
- ▶ Are all wires connected in accordance with the electric wiring diagrams?
- ▶ Is the earth wire connected and wired throughout?
- ▶ Check all external electrical connections and terminal connections are fixed in place and tighten if necessary.
- ▶ Check whether DIP switches have been correctly set in accordance with the wiring diagram.

Water-side checks

- ▶ Check whether all supply and drainage lines have been properly connected.
- ▶ Fill pipes and unit with water and bleed.
- ▶ Check whether all bleed screws are closed.
- ▶ Check leak tightness (pressure test and visual inspection).
- ▶ Check whether the parts carrying water have been flushed through.
- ▶ Check whether any shut-off valves fitted on site are open.
- ▶ Check whether any electrically actuated shut-off valves have been properly connected.
- ▶ Check whether all valves and actuators are working properly (note permitted mounting position).

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9 Operation

9.1 Operation of electromechanical control



Fig. 2: Room thermostat type 194000342924

Room thermostat type 194000342924

- ▶ Electronic room thermostat with continuously variable speed control, supplied as a surface-mounted wall-mounted unit on a flush-mounted box in visually discreet design
- ▶ With thermal feedback, room temperature setting and speed pre-setting using dials
- ▶ Internal temperature sensor NTC
- ▶ Digital input for Day/Eco changeover
- ▶ Parallel operation of 10 units is possible



Fig. 3: Clock thermostat, type 30456

Clock thermostat 24 V, type 30456

- ▶ Electronic clock thermostat for 2- and 4-pipe applications, surface-mounted wall installation on a flush-mounted box in visually unobtrusive design
- ▶ operation using 4 sensor keys
- ▶ timer with automatic summer/winter switch-over
- ▶ option for external room sensor connection
- ▶ control input for heating/cooling changeover with 2-pipe applications
- ▶ digital input can be set to Comfort/ECO or ON/OFF switchover
- ▶ parallel operation of 5 units is possible



Fig. 4: Climate controller type 196000148941

Climate controller, white, type 196000148941

- ▶ for 2- and 4-pipe applications, surface-mounted wall installation on a flush-mounted box with a visually unobtrusive design with 2.5" LCD display and high-quality glass finish with capacitive keys
- ▶ automatic LED backlight
- ▶ parametrisable language: German or English
- ▶ timer program with 3 time channels, each with 4 switch-over points
- ▶ option to connect an external room sensor
- ▶ 3 control inputs (functions parametrisable, e.g. window contact, presence detector, heating/cooling switchover)



Fig. 5: Climate controller type 196000148942

Climate controller, black, type 196000148942

- ▶ for 2- and 4-pipe applications, surface-mounted wall installation on a flush-mounted box with a visually unobtrusive design with 2.5" LCD display and high-quality glass finish with capacitive keys
- ▶ automatic LED backlight
- ▶ parametrisable language: German or English
- ▶ timer program with 3 time channels, each with 4 switch-over points
- ▶ option to connect an external room sensor
- ▶ 3 control inputs (functions parametrisable, e.g. window contact, presence detector, heating/cooling switchover)

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Fig. 6: Climate controller type 196000148943

Climate controller, white, type 196000148943

- ▶ with Modbus interface
- ▶ for 2- and 4-pipe applications, surface-mounted wall installation on a flush-mounted box with a visually unobtrusive design with 2.5" LCD display and high-quality glass finish with capacitive keys
- ▶ automatic LED backlight
- ▶ parametrisable language: German or English
- ▶ timer program with 3 time channels, each with 4 switch-over points
- ▶ Modbus-RTU interface as a slave device
- ▶ option to connect an external room sensor
- ▶ 2 control inputs (functions parametrisable, e.g. window contact, presence detector, heating/cooling switchover)



Fig. 7: Climate controller type 196000148944

Climate controller, black, type 196000148944

- ▶ with Modbus interface
- ▶ for 2- and 4-pipe applications, surface-mounted wall installation on a flush-mounted box with a visually unobtrusive design with 2.5" LCD display and high-quality glass finish with capacitive keys
- ▶ automatic LED backlight
- ▶ parametrisable language: German or English
- ▶ timer program with 3 time channels, each with 4 switch-over points
- ▶ Modbus-RTU interface as a slave device
- ▶ option to connect an external room sensor
- ▶ 2 control inputs (functions parametrisable, e.g. window contact, presence detector, heating/cooling switchover)

10 Maintenance

10.1 Securing against reconnection



DANGER!

Risk of death by unauthorised or uncontrolled restart!

Unauthorised or uncontrolled restarting of the equipment can result in serious injury or death.

- ▶ Before restarting, ensure that all safety devices are fitted and working properly and that there is no hazard to humans.

Always follow the procedure described below to prevent accidental restart:

1. de-energise.
2. Prevent accidental re-connection.
3. Check that the equipment is de-energised.
4. Cover and cordon off adjacent live parts.

10.2 Maintenance Schedule:

The sections below describe maintenance work needed for the proper and trouble-free operation of the equipment.

If there are signs of increased wear during regular checks, shorten the required maintenance intervals to the actual wear and tear. Contact the manufacturer with any questions about maintenance work and intervals.

Interval	Maintenance task	Personnel
As required	Regular visual checks and acoustic checks for damage, dirt and function.	User
every six months	Check the electrical wiring.	Qualified personnel
every six months	Clean components/surfaces that come into contact with air.	Qualified personnel

10.3 Maintenance work

10.3.1 Clean the inside of the unit

Check all elements that come into contact with air (internal surfaces of the unit, outlet elements etc.) for dirt or deposits during maintenance and use a commercially available product to remove.

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11 Faults

The following chapter describes possible causes of faults and the work needed to rectify them. Should faults occur frequently, shorten the maintenance intervals in line with the actual loading on the unit.

Contact the manufacturer with any faults that cannot be rectified using the following information.

Behaviour in the event of faults

The following applies:

1. Immediately switch off the unit with faults that pose an immediate danger to persons or property!
2. Determine the cause of the fault!
3. Switch off the unit and prevent it from being reconnected if rectifying the fault requires work in the hazard area. Immediately advise a supervisor on site about the fault.
4. Either rectify the fault yourself or have it repaired by authorised personnel, depending on the nature of the fault.

The Fault table [► 36] provides information on who is authorised to rectify and remedy faults.

11.1 Fault table

Fault	Possible cause	Remedy
No function.	No power supply.	Check voltage, switch on repair switch.
		Replace fuse.

11.2 Start-up after rectification of fault

After correction of the fault, carry out the following steps for recommissioning:

1. Make sure that all maintenance covers and access openings are sealed.
2. Switch off the unit.
3. Acknowledge the fault on the controller, if necessary.

12 Certificates

EU-Konformitätserklärung

EU Declaration of Conformity

Déclaration de Conformité CE

Deklaracja zgodności CE

EU prohlášení o konformite

Wir (Name des Anbieters, Anschrift):

We (Supplier's Name, Address):

Nous (Nom du Fournisseur, Adresse):

My (Nazwa Dostawcy, adres):

My (Jméno dodavatele, adresa):

KAMPMANN GMBH & Co. KG

Friedrich-Ebert-Str. 128-130

49811 Lingen (Ems)

erklären in alleiniger Verantwortung, dass das Produkt:

declare under sole responsibility, that the product:

déclarons sous notre seule responsabilité, que le produit:

deklarujemy z pełną odpowiedzialnością, że produkt:

deklarujeme, vědomi si své odpovědnosti, že produkt:

Type, Modell, Artikel-Nr.:

Type, Model, Articles No.:

Type, Modèle, N° d'article:

Typ, Model, Nr artykułu:

Typ, Model, Číslo výrobku:

PowerKon nano

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auf das sich diese Erklärung bezieht, mit der / den folgenden Norm(en) oder normativen Dokumenten übereinstimmt:

to which this declaration relates is in conformity with the following standard(s) or other normative document(s):

auquel se réfère cette déclaration est conforme à la (aux) norme(s) ou autre(s) document(s) normatif(s):

do którego odnosi się niniejsza deklaracja, jest zgodny z następującymi normami lub innymi dokumentami normatywnymi:

na který se tato deklarace vztahuje, souhlasí s následující(mi) normou/normami nebo s normativními dokumenty:

DIN EN 16430-1; -2; -3

DIN EN 442-1 ; -2

DIN EN 55014-1 ; -2

DIN EN 61000-3-2 ; -3-3

DIN EN 61000-6-1 ; -6-2 ; -6-3

DIN EN 60335-1 ; -2-40

Gebläseunterstützte Heizkörper, Konvektoren und Unterflurkonvektoren

Radiatoren und Konvektoren

Elektromagnetische Verträglichkeit

Elektromagnetische Verträglichkeit

Elektromagnetische Verträglichkeit

Sicherheit elektr. Geräte für den Hausgebrauch und ähnliche Zwecke

Gemäß den Bestimmungen der Richtlinien:

Following the provisions of Directive:

Conformément aux dispositions de Directive:

Zgodnie z postanowieniami Dyrektywy:

Odpovídající ustanovení směrnic:

2014/30/EU**2014/35/EU****EMV-Richtlinie****Niederspannungsrichtlinie****Lingen (Ems), den 01.09.2020**

Ort und Datum der Ausstellung

Place and Date of Issue

Lieu et date d'établissement

Miejsce i data wystawienia

Místo a datum vystavení

Hendrik Kampmann**Name und Unterschrift des Befugten**

Name and Signature of authorized person

Nom et signature de la personne autorisée

Nazwisko i podpis osoby upoważnionej

Jméno a podpis oprávněné osoby

PowerKon nano

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Assembly, installation and operating instructions

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<https://www.kampmanngroup.com>

Country	Contact
Great Britain	Kampmann UK Ltd.
	Dial House, Govett Avenue
	Shepperton, Middlesex, TW17 8AG
	T +44 1932/ 228592
	F +44 1932/ 228949
	E info@kampmann.co.uk
	W Kampmann.co.uk