

# KaDeck

► **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

**DANGER!**

This combination of symbol and signal word indicates an immediately dangerous situation caused by electrical power, which will cause death or serious injury if not avoided.

**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.

## 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

The units are only intended to be used for heating and cooling air in frost-free and dry rooms. Within the room, the unit needs to be connected to the building's heating/cooling/ventilation system and to the building's waste water and power network. The operating limits and limits of use described in Chapter 2.2 [▶ 6] must be observed.



#### **IMPORTANT NOTE!**

Only use the unique after completion of the complete building and system. Site heating is not deemed to be correct and proper 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.
- ▶ The unit is not intended for operation above 2,000 m.a. s.l.
- ▶ This unit is not intended for permanent connection to the drinking water network.
- ▶ This unit is designed to be accessible to the general public.

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

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

## 2.2 Limits of operation and use

Limits of operation		
Min./max. water temperature	°C	4-80
Min./max. air intake temperature	°C	6-40
Min./max. air humidity	%	20-60
Min. operating pressure	bar/kPa	-
Max. operating pressure	bar/kPa	16/1600
Min./max. glycol percentage	%	0-50

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 <sub>2</sub> )	mg/l	< 0.1
Hardness	°dH	4-8.5
Sulphur ions		not measurable
Sodium ions (Na <sup>+</sup> )	mg/l	< 100
Iron ions (Fe <sup>2+</sup> )	mg/l	< 0.1
Manganese ions (Mn <sup>2+</sup> )	mg/l	<0.05
Ammonia ions (NH <sup>4+</sup> )	mg/l	< 0.1
Chlorine ions (Cl)	mg/l	< 100
CO <sub>2</sub>		< 50
Sulfate ions (SO <sub>4</sub> <sup>2-</sup> )	mg/l	< 50
Nitrite ions (NO <sub>2</sub> <sup>-</sup> )	mg/l	< 50
Nitrate ions (NO <sub>3</sub> <sup>-</sup> )	mg/l	< 50

Tab. 3: Water quality



## IMPORTANT NOTE!

### Danger of frost in cooling mode!

There is a risk of the heat exchanger freezing when used in unheated rooms.

- ▶ Make sure that the unit is equipped with a frost protection sensor and/or thermostat in this case.



## 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.



## IMPORTANT NOTE!

### Energy losses due to misuse!

Operating the unit with open windows (or other room openings) can result in significant energy losses.

- ▶ Heating and cooling modes (particularly when operating different units) need to be coordinated with each other.

## 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 expertise in heating, cooling, ventilation, installation and electrical engineering. As this knowledge is normally acquired through professional training in one of the above fields, it is not dealt with further here.

Damage caused by improper installation is the responsibility of the operator or installer. Installers of these units should have adequate knowledge of the following based on their qualifications

- ▶ Safety and accident prevention regulations
- ▶ Guidelines and recognised technical regulations, i.e. VDE regulations (Association of German Electricians, DIN and EN standards).
- ▶ VDI 6022; maintenance personnel must be trained to Category B (possibly Category C) to comply with hygiene requirements (as required).

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.



#### **IMPORTANT NOTE!**

The packaging is also use to protect the product from site dust and dirt. Only remove packaging shortly before assembling the unit.

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## 4 Technical data

Unit	KaDeck	
Design	1-sided	2-sided
Width [mm]	598 - 620	598 - 620
Length [mm]	1198 - 1240	1198 - 1240
Height [mm]	165	165
Weight [kg]	22	25
Air volume flow [m <sup>3</sup> /h]	39-232	70-415
Internal volume of 2-pipe system [l]	1	1.9
Internal volume of 4-pipe system [l] cooling	0.8	1.5
Internal volume of 4-pipe system [l] heating	0.2	0.4
Heat output [W] <sup>1</sup>	468-3744	868-9091
Cooling output [W] <sup>2</sup>	132-1570	243-3050
Sound power level [dB(A)]	21-47	23-50

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<sup>1</sup> at LPHW 75 / 65°C,  $t_{l1} = 20^{\circ}\text{C}$

<sup>2</sup> at CHW 7/12°C,  $t_{l1} = 27^{\circ}\text{C}$ , 48% relative humidity

## 5 Construction and function

### 5.1 Overview

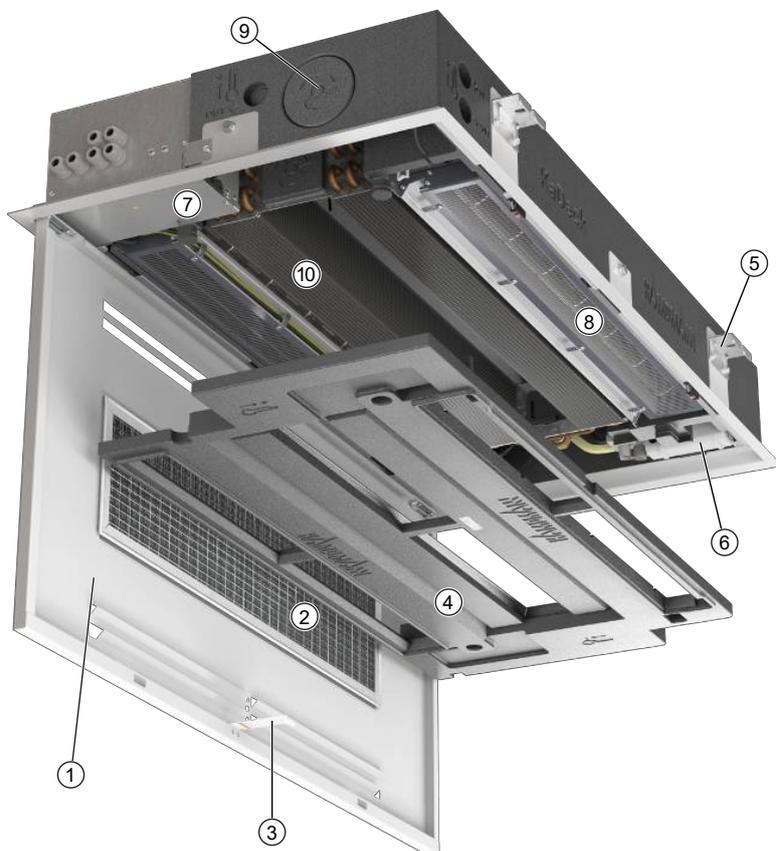


Fig. 1: KaDeck at a glance (example shows two-sided air discharge, wet cooling)

1	Design cover trim	2	Filter
3	Securing panel	4	Condensate tray
5	Suspension bracket	6	Condensate pump
7	Electrical junction box	8	Cross-flow fan
9	Primary air connection	10	Heat exchanger

### 5.2 Brief description

KaDeck are fan-operated ceiling cassettes for ceiling installation for the continuously variable air conditioning of all kinds of buildings and rooms that are to be heated or cooled silently. The units can be positioned at the wall or in the centre of the room and are available as dry or wet cooling models.

### 5.3 Wear parts list

Figure	Article	Properties	For use with	Art. no.
	Replacement filter with frame	1 units	KaDeck	326007010004

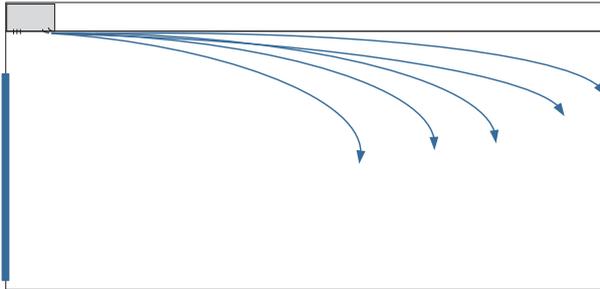
# KaDeck

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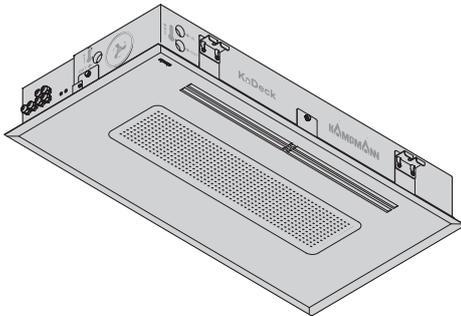
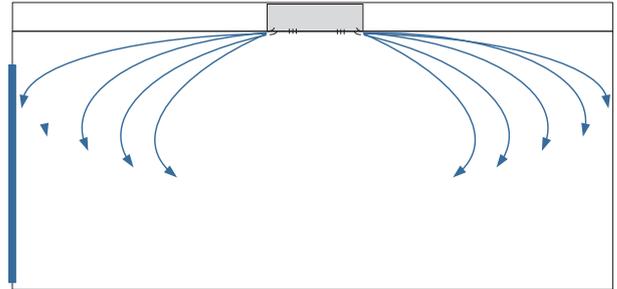
## 6 Installation and wiring

### 6.1 Defining the installation position

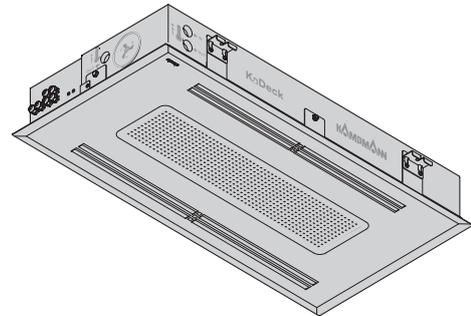
The one-sided arrangement is installed on the window or corridor side.



The two-sided arrangement is installed in the centre of the room.



Isometrics – one-sided unit



Isometrics – two-sided unit

### 6.2 Requirements governing the installation site

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

- ▶ Make sure that the ceiling is sufficiently load-bearing to take the weight of the unit (Technical data [▶ 12]).
- ▶ 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 [▶ 23]).
- ▶ There is a power supply on site (Maximum electrical rating values [▶ 33]).
- ▶ If need be, provide a condensation connection with a sufficient gradient on site.

### 6.3 Minimum clearances

The minimum distance from the air outlet to the wall/window should be 2 m to avoid draughts.

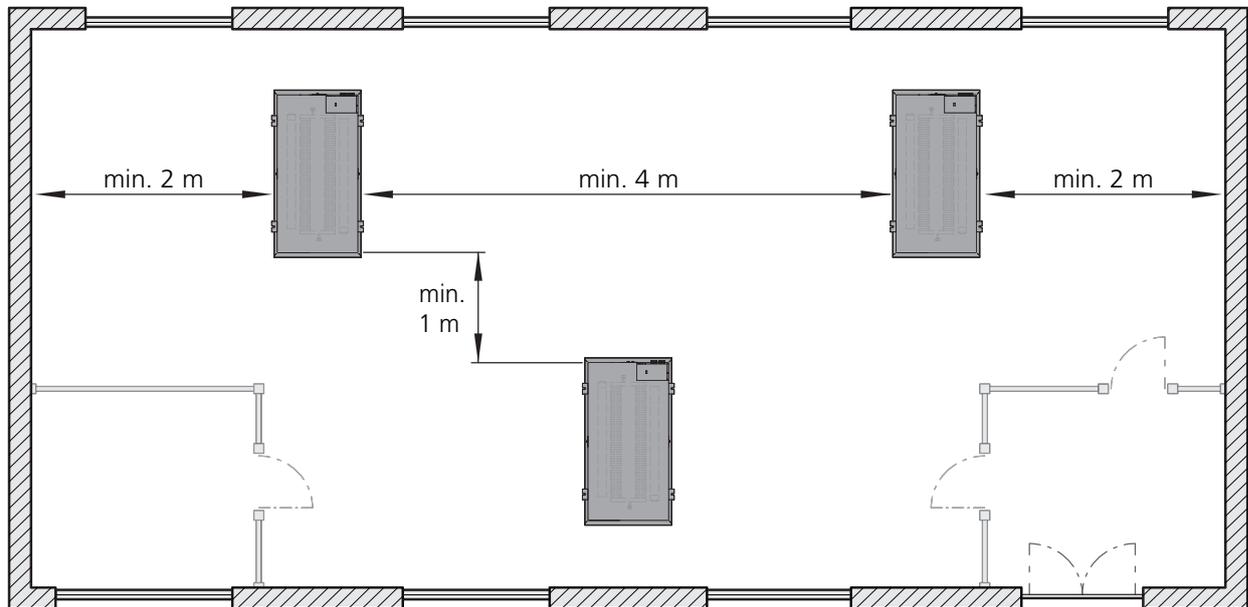
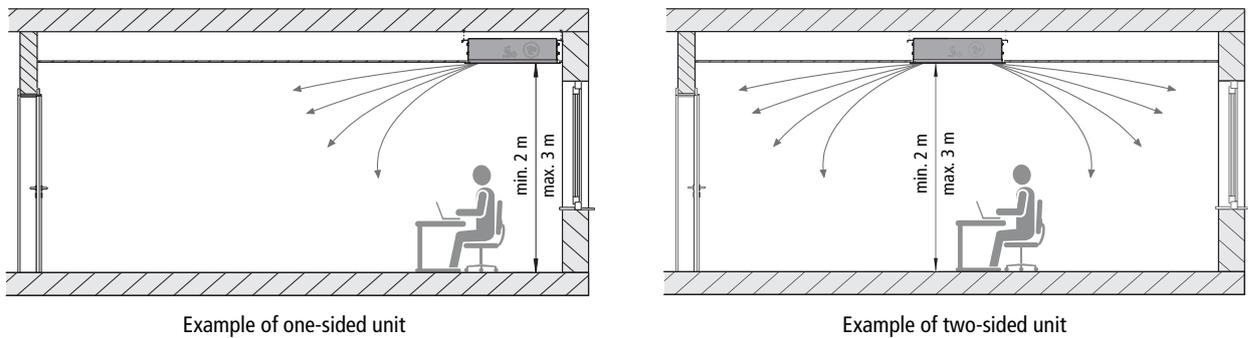


Fig. 2: Minimum distances



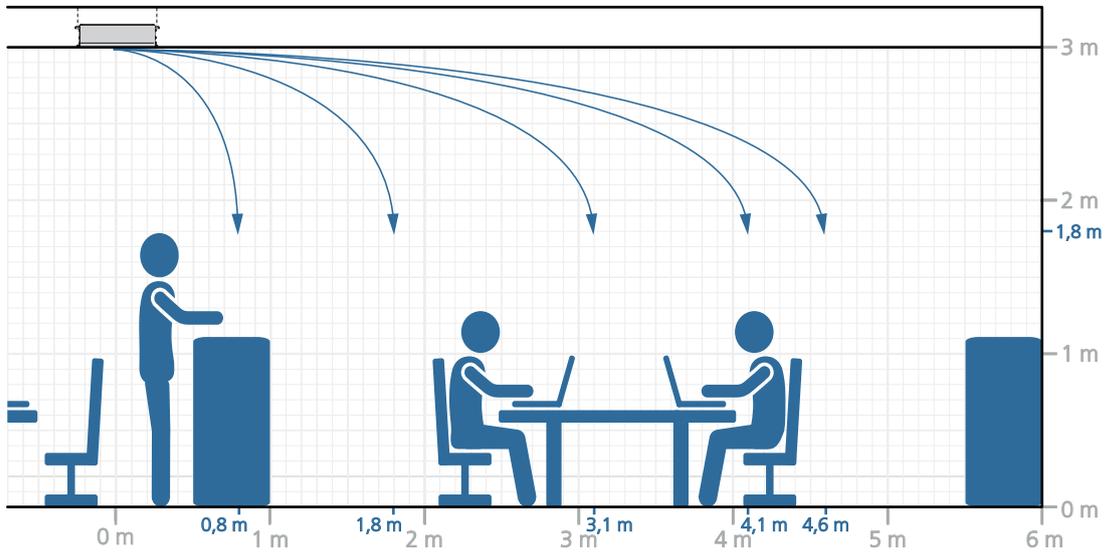
There needs to be a 5-fold minimum air exchange rate when heating with ceiling-mounted KaDeck units. Cold uninsulated floors can result in higher stratification of the room temperatures particularly in older buildings. Circulation may be required through additional measures, such as fans or heaters.

# KaDeck

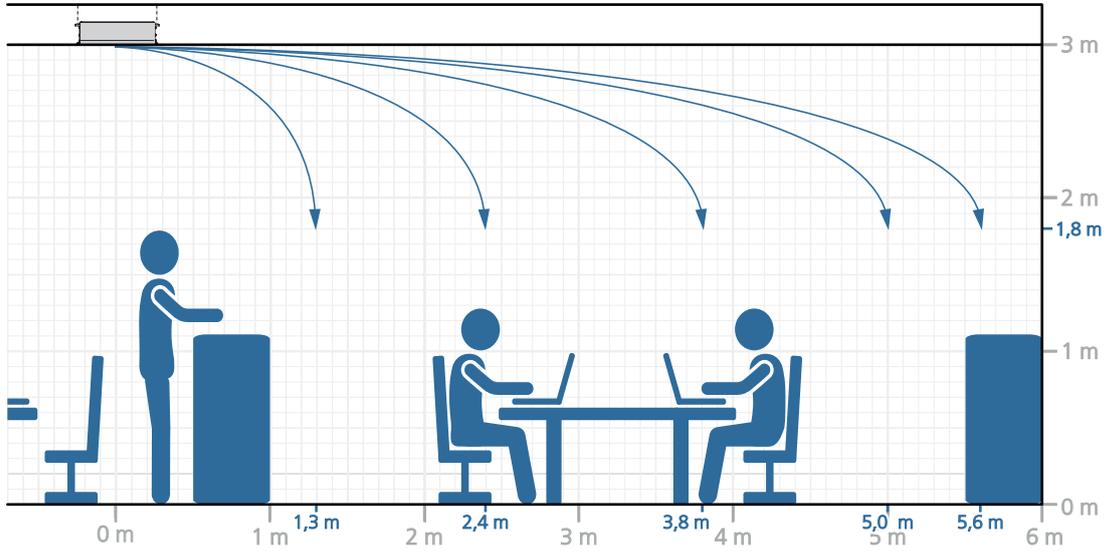
Assembly, installation and operating instructions

## 6.4 Installation height and throws

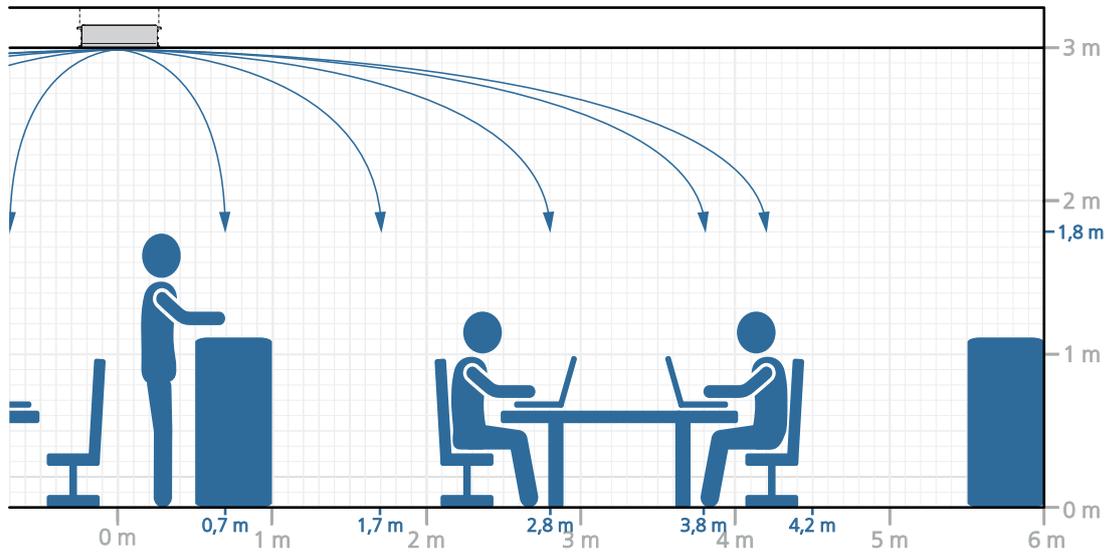
KaDeck one-sided air outlet, 7/ 12/ 27 °C



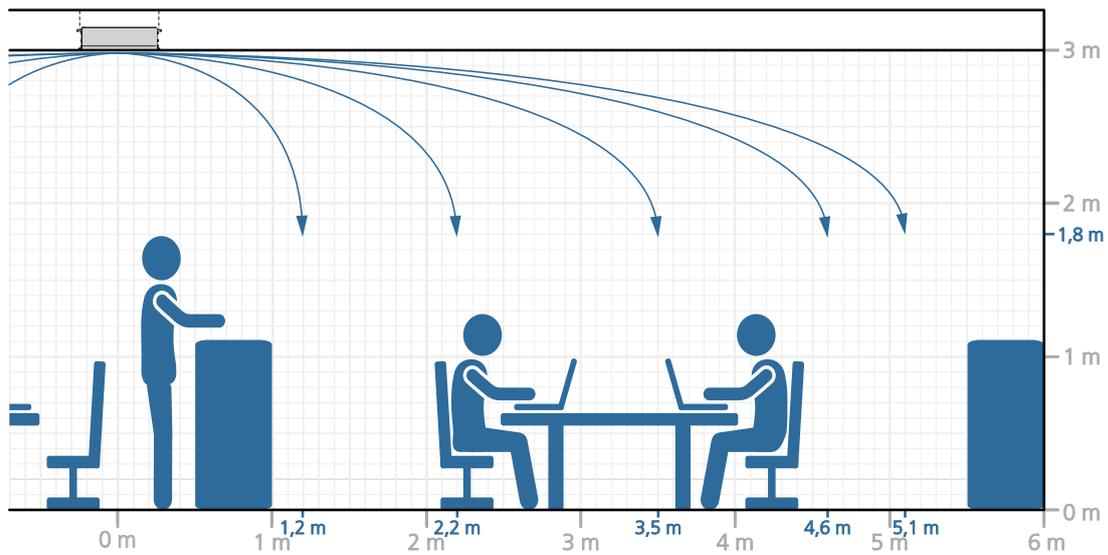
KaDeck one-sided air outlet, 16/ 18/ 27 °C



**KaDeck two-sided air outlet, 7/ 12/ 27 °C**



**KaDeck two-sided air outlet, 16/ 18/ 27 °C**



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## 6.5 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.



### IMPORTANT NOTE!

#### Horizontal installation of units!

When installing the units, ensure that they are completely horizontal to ensure proper operation.



### IMPORTANT NOTE!

#### Avoid draughts!

Consider the occupied zone when installing/suspending the units. Do not expose people to the direct air flow. Position the unit accordingly and adjust the air outlet if required.



### IMPORTANT NOTE!

#### Sound insulation

Provide for sound isolation between the KaDeck and the adjacent building if required.

## 6.5.1 Unit installation dimensions

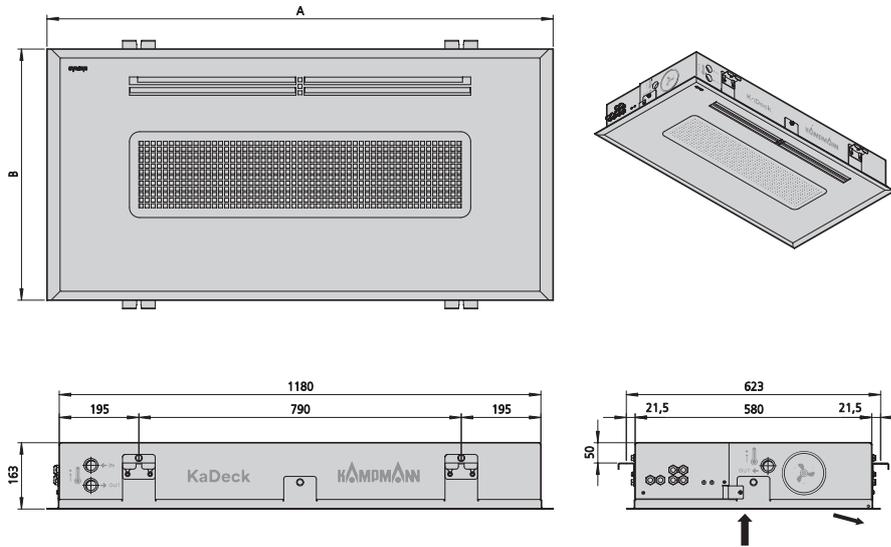


Fig. 3: Dimensions single-sided device

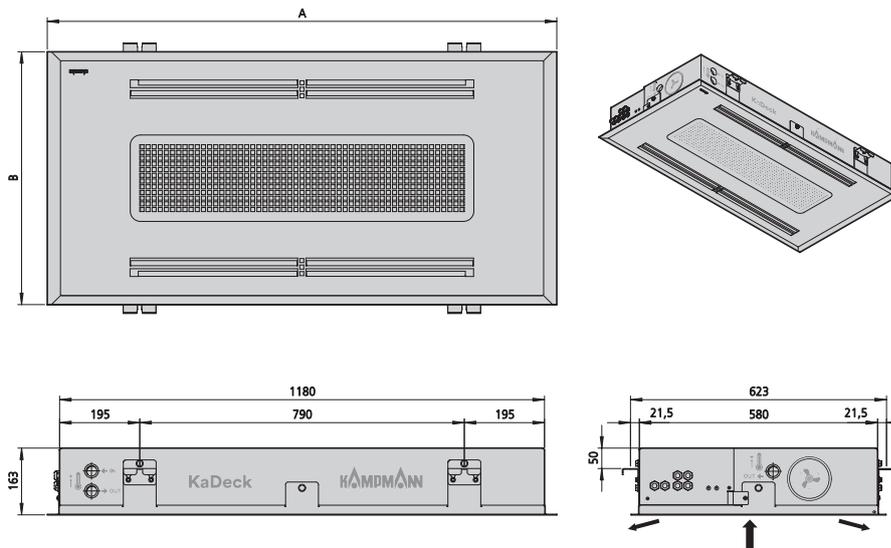


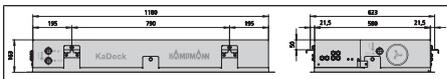
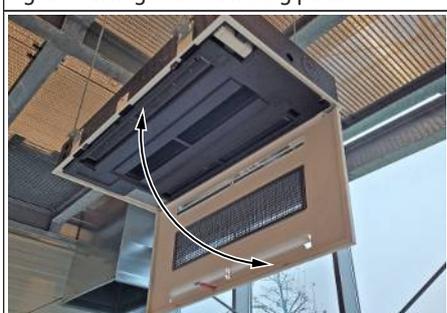
Fig. 4: Dimensions double-sided device

Item no.	System	Grid dimension [ ]	Overall length A [ ]	Width B [ ]	Water content heating [ ]	Water content cooling [ ]	Weight [ ]
326116211111*	2-pipe	600x600	1198	598	1	1	21
326116261111*							
326116411111*	4-wire	600x600	1198	598	0,2	0,8	22
326116461111*							
326126211111*	2-wire	625x625	1240	620	1	1	22
326126261111*							
326126411111*	4-wire	625x625	1240	620	0,2	0,8	22
326126461111*							

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## 6.5.2 Installing the unit on the ceiling

 <p>Fig. 5: Drilling positions</p>	<ul style="list-style-type: none"> <li>▶ Drill four fixing holes (refer to drilling spacings) into the load-bearing ceiling, insert dowels and fit the appropriate M8 threaded rods.</li> </ul>
 <p>Fig. 6: Unit suspended</p>	<ul style="list-style-type: none"> <li>▶ A: Use the fender washer and nut to attach the mounting brackets supplied to the threaded rods and secure them (with a self-locking nut or locknut).</li> <li>▶ Screw the M5 screws supplied halfway into the thread on the KaDeck. Then hook the KaDeck into the mounting brackets and tighten the M5 screws.</li> <li>▶ B: Use the M5 screws to attach the supplied mounting brackets to the KaDeck. Using a fender washer and nut, fasten the threaded rods to the four corresponding mounting brackets on the unit and secure (with self-locking nuts or locknuts).</li> </ul>
 <p>Fig. 7: Opening the design panel</p>	<ul style="list-style-type: none"> <li>▶ Open the design panel by pulling on the notches.</li> </ul>
 <p>Fig. 8: Pressing in the retaining plate</p>	<ul style="list-style-type: none"> <li>▶ Push the securing panel inwards to unlock the design panel and open it fully.</li> </ul>
 <p>Fig. 9: Design panel open</p>	<p>Release the design panel downwards. <b>CAUTION:</b> When opening/removing the design panel, do NOT allow the opening angle to exceed 90° to prevent damage!</p>



▶ Unlock the hinges on the right and left by pulling on them and remove the design panel.

Fig. 10: Unlocking hinges

## 6.6 Installation

### Actuator with 'First Open' function

- ▶ When delivered, the actuator is normally open in a de-energised state, thanks to the First Open function. This enables heating mode to run even if the electric wiring is not yet completed.
- ▶ When subsequently commissioned and with the application of power (for longer than 6 minutes), the First Open function is automatically unlocked so that the actuator becomes fully operational.

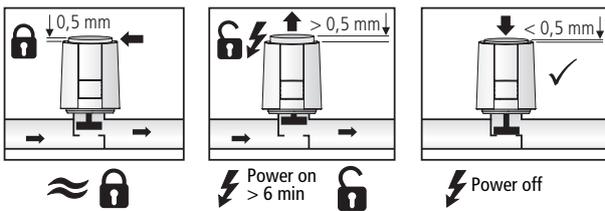
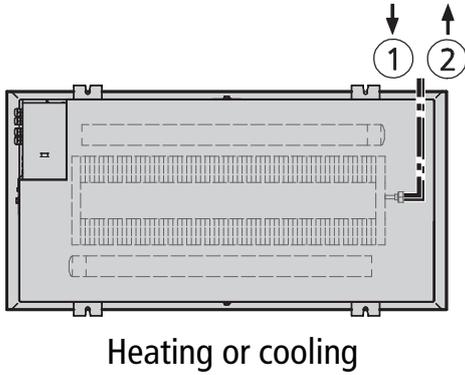


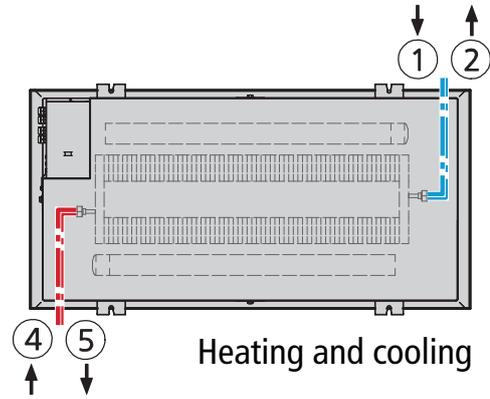
Fig. 11: "First Open" function

## 6.6.1 Connection positions

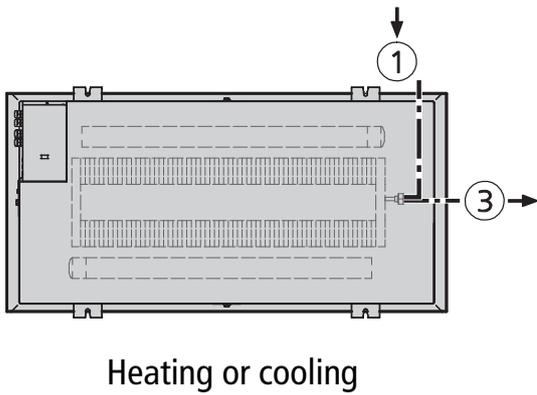
2-way valve and differential pressure-independent valve up to 420 l, 2-pipe



2-way valve and differential pressure-independent valve up to 420 l, 4-pipe



Differential pressure-independent valve greater than 420 l, 2-pipe



Differential pressure-independent valve greater than 420 l, 4-pipe

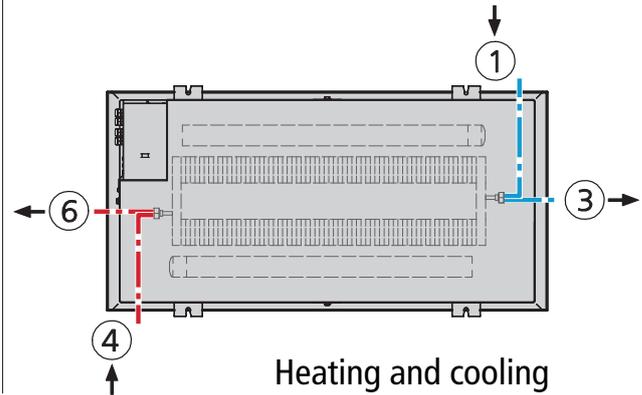


Fig. 12: Connection positions

1	Cooling supply (also heating with 2-pipe systems)	2	Cooling return (also heating with 2-pipe systems)
3	Cooling return (also heating)	4	Heating supply
5	Heating return	6	Heating return

6.6.2 Connection to the pipe network

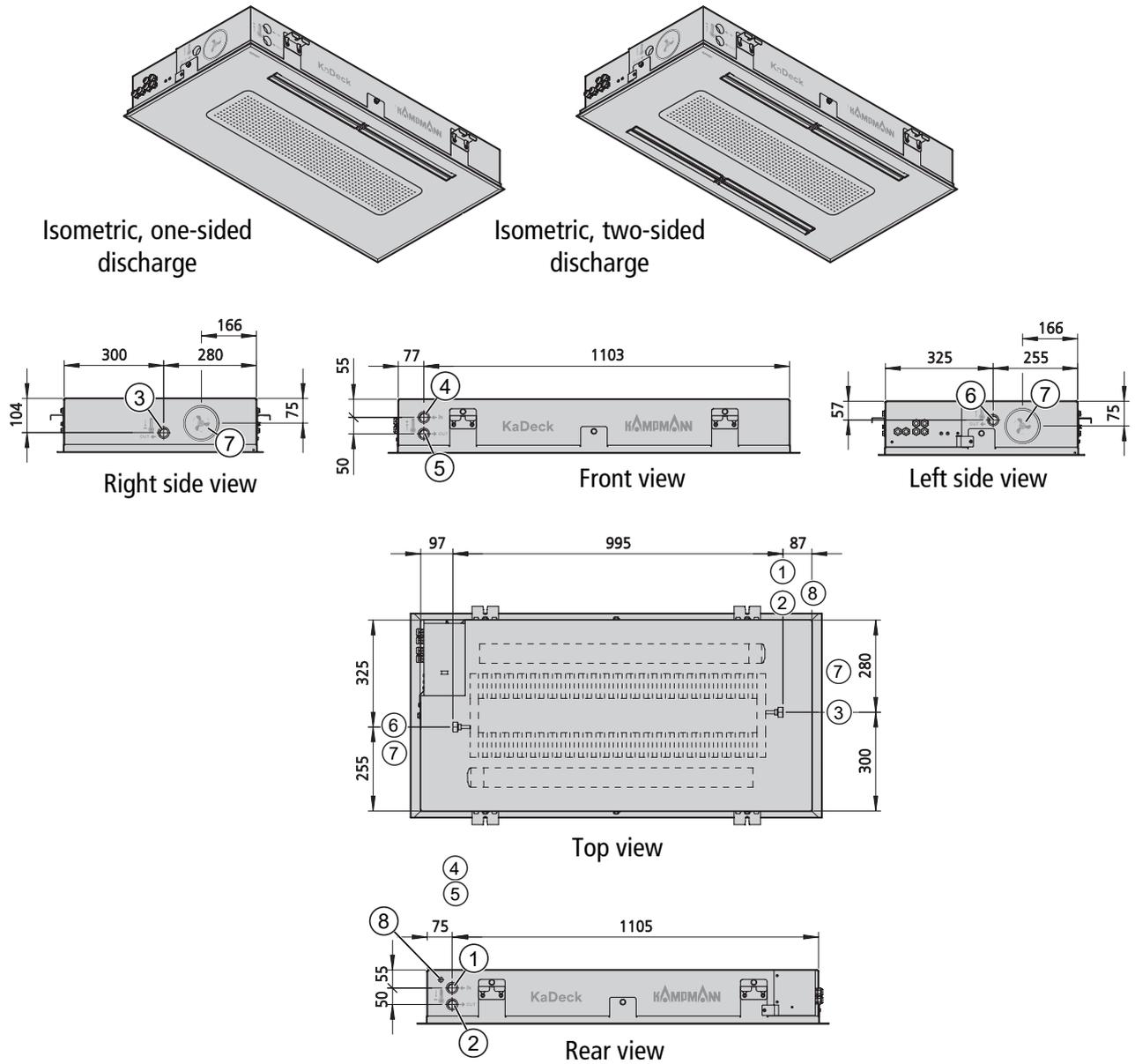


Fig. 13: Pipe connection dimensions

1	Cooling supply (also heating with 2-pipe systems)	2	Cooling return (also heating with 2-pipe systems)
3	Cooling return (also heating)	4	Heating supply
5	Heating return	6	Heating return
7	Optional primary air connection (ø 80 mm)	8	Condensate connection (ø 6 mm), only with wet cooling

## 6.6.3 Primary air connection

### Primary air spigots for the fresh air supply

KaDeck units can be fitted with up to two primary air spigots. They enable pre-conditioned primary air to be fed into the KaDeck and the room. The conditioned air needs to be cleaned and fed into the room at a minimum temperature of 14 °C, and a maximum temperature of 25 °C. The sound power level is max. 30 dB(A) when a maximum primary air volume is fed in.

#### Maximum air volume per unit:

- ▶ When using one spigot: 60 m<sup>3</sup>/h
- ▶ When using both spigots: 120 m<sup>3</sup>/h

The maximum primary volume is 60 m<sup>3</sup> with one-sided units, and 120 m<sup>3</sup> with two-sided units.

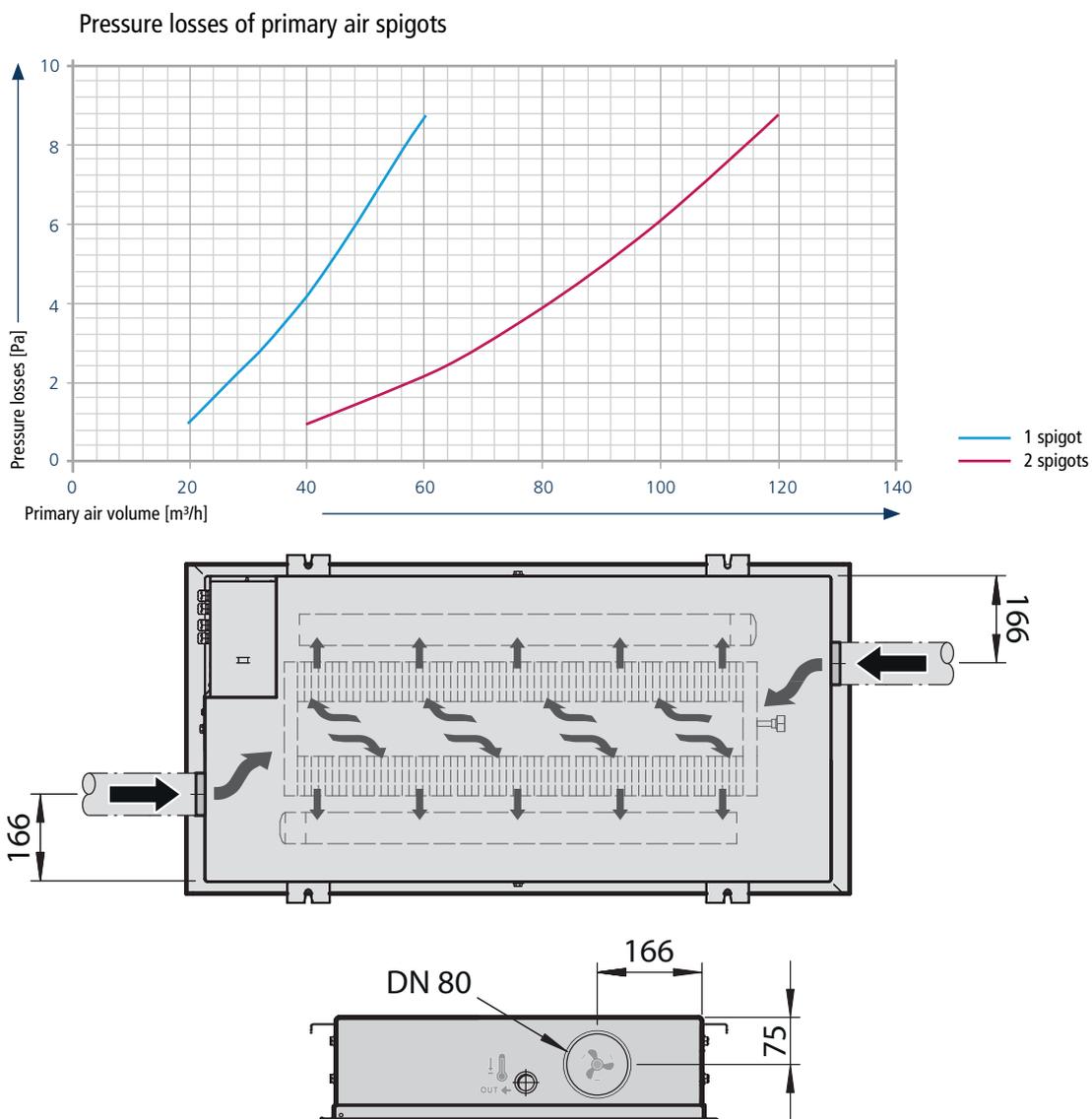
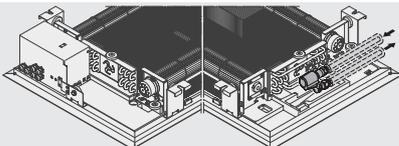
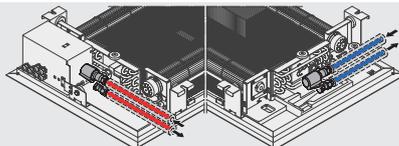
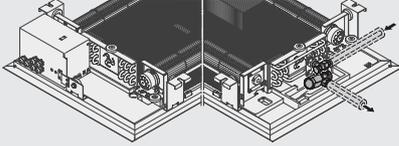
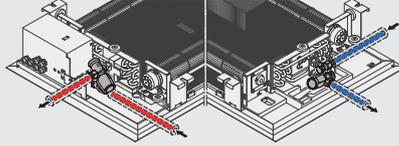


Fig. 14: Dimensions of the primary air spigot

6.6.4 Overview of valve kits

Valve kits	Article	Properties	Dimensions [mm]	For use with	Article no.
	Differential pressure-independent Valve kit	2-pipe, 24 V 2-point actuator 24 V Open/Closed, 50 Hz, supplied separately	180 x 30 x 523	KaDeck fan coils, cooling supply volume (min./max.) 200 - 1050 l/h	326007110005
	Differential pressure-independent Valve kit	4-pipe, 24 V 2-point actuator 24 V Open/Closed, 50 Hz, supplied separately	180 x 30 x 523	KaDeck fan coils, cooling supply volume (min./max.) 200 - 1050 l/h	326007110015
	Differential pressure-independent Valve kit	2-pipe, 24 V 2-point actuator 24 V Open/Closed, 50 Hz, supplied separately	180 x 30 x 523	KaDeck fan coils, cooling supply volume (min./max.) 35 - 420 l/h	326007110003
	Differential pressure-independent Valve kit	4-pipe, 24 V 2-point actuator 24 V Open/Closed, 50 Hz, supplied separately	180 x 30 x 523	KaDeck fan coils, cooling supply volume (min./max.) 35 - 420 l/h	326007110013
	Valve kit	2-pipe, actuator, return shut-off valve and flexible corrugated stainless steel pipe supply and return, pre-settable 2-way valve, 24 V 50 Hz	180 x 30 x 523	KaDeck fan coils	326007110001
	Valve kit	4-pipe, actuator, return shut-off valve and flexible corrugated stainless steel pipe supply and return, pre-settable 2-way valve, 24 V 50 Hz	180 x 30 x 523	KaDeck fan coils	326007110012

Tab. 4: Overview of valve kits

Valve kit	2-pipe	4-pipe
2-way valve and differential pressure-independent valve up to 420 l/h, pre-settable		
Differential pressure-independent valve, from 420 l/h		

Tab. 5: KaDeck valve installation

# KaDeck

Assembly, installation and operating instructions

## 6.6.5 Connecting the supply lines



- ▶ Remove the condensate tray.



- ▶ The connection area of the heat exchanger is accessible once the condensate tray has been removed. The dimensions can be found in Connection to the pipe network [▶ 23] depending on the model (2-pipe / 4-pipe) and valve kit fitted (2-way pre-settable or differential pressure-independent).

Fig. 15: KaDeck without condensate tray



- ▶ Use a screwdriver to remove the plugs to open up the connection holes required.

Fig. 16: Opening up the connection holes



- ▶ Remove the flexible corrugated pipes and insulation from the valve kit. Push the insulation over the corrugated pipes and route through the open connecting holes into the unit.

Fig. 17: Flexible corrugated pipes



Fig. 18: Insulation as far as the thread

- ▶ Make sure that the insulation and corrugated pipes are not damaged. Push on the insulation as far as the thread of the corrugated pipes!



Fig. 19: Routing the actuator cable

- ▶ Place the actuator on the valve. Route the cable to the electrical connection box as per the diagram on the fan.



Fig. 20: Opening the electrical connection box

- ▶ Use a Phillips screwdriver to open the electrical connection box and connect up the valves according to the wiring diagram.



Fig. 21: Fixing the condensate hose to the condensate pump

- ▶ Fasten the condensate hose to the condensate pump with units with condensate pump. Insert the hose through the opening provided on the housing and connect to the drain on site.

# KaDeck

Assembly, installation and operating instructions

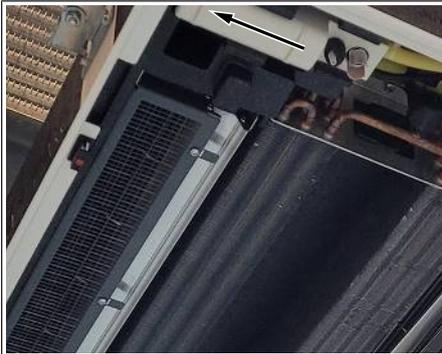


Fig. 22: Correct position of the condensate pump

- ▶ Check the solid position of the condensate pump before installing the condensate tray (once all supply lines have been installed); firmly press it upwards towards the housing to do so.

## 6.6.6 Connecting the primary air supply (optional)



Fig. 23: Removing the primary air spigot

- ▶ If the KaDeck is to be supplied with primary air, remove the relevant spigot from the housing.



Fig. 24: Sealing the primary air connection spigot

- ▶ Apply silicone to the primary air connection spigot (optional accessory) to seal it.



Fig. 25: Removing the primary air cover

- ▶ Remove the primary air cover of the heat exchanger depending on the primary air connection side required.

### 6.6.7 Condensate drainage using a condensate pump

Condensate is only drained by a condensate pump with "wet cooling" versions.

The water is drawn off by the condensate pump and discharged along a hose (supplied loose) connected on the pressure side. Depending on conditions on site, the water can be discharged into drainage lines, possibly with a trap connection.

In the event of a fault with the condensate drain, the water level will continue to rise until the float switch triggers an alarm contact. The contact can be analysed by external signalling devices.

Cooling mode must be automatically terminated, possibly with a shut-off valve, if the alarm contact is triggered to prevent the condensate tray from overflowing.

#### Condensate drain

- ▶ Drainage of condensate from the condensate pump must be along a natural gradient with an adequate cross-section (minimum 1/2"). Increase the cross-section of the line with longer condensate lines.
- ▶ Check whether the condensate line needs to be insulated to prevent the build-up of condensate along the line.
- ▶ Never use a rigid transition to the on-site condensate drain. We would recommend a free overflow into a trap.

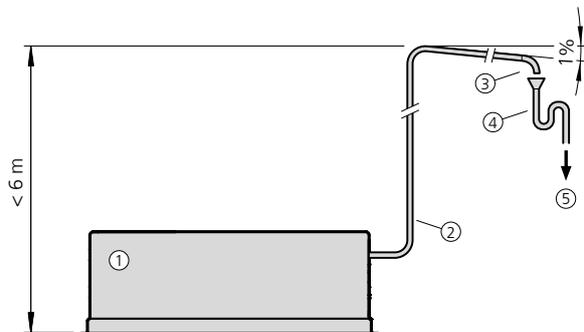


Fig. 26: Condensate drainage diagram

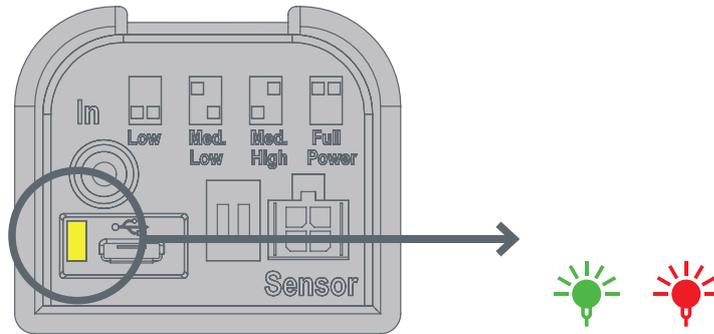
1	KaDeck	2	Condensate line
3	Free outlet (DIN EN 1717)	4	Odour trap
5	Waste water network		

# KaDeck

Assembly, installation and operating instructions

## Condensate pump alarm messages

### LED alarm relay signals



### LED alarm relay operating table

Starting sequence			
		(normally closed)	(normally open)
Pump status	Condensate level	Standard mode	Peripheral mode
Not driven	N/A	NC  COM	NC  COM
Driven	Below the alarm stage	NC  COM	NC  COM
Driven	Alarm activated	NC  COM	NC  COM

### LED displays in operation

<b>No energy</b>		The pump is incorrectly wired or there is no input voltage. The problem with the A/C system or alarm is incorrectly wired.
<b>Start LED sequence (standard mode)</b>		The alternating Red/Green flashes only 5x, then stops and changes to Standby mode.
<b>Start LED sequence (peripheral mode)</b>		The alternating Red/Green flashes only 5x, then stops and changes to Standby mode.
<b>Standby mode - Wait for water</b>		Continuously flashes green.
<b>Water pumps</b>		Mono-coloured green. Runs in low, middle-low, middle-high or high power, normal operation.
<b>High-water mode</b>		Red flashing, running above the high water level.
<b>Alarm mode - Relax activated</b>		Red. The pump cannot keep up with the water feed. To prevent the water from overflowing, disconnect the power supply to the air conditioning system until the water level has gone down.
<b>Reconfigure code</b>		The pump features 3 extra-long running cycles and reconfigures the DIP switches for more capacity.

### Condensate pump connection work

- ▶ Supply power and wire alarm contact (separate cable with plug) as per the wiring diagram.

- ▶ Connect the hose to the condensate drain (separate). Direction of flow: refer to the arrow on the side of the housing

Technical data	
Maximum flow volume	42 l/hour (11 gph)
Maximum delivery height	20 m (65.60 ft.)
Maximum horizontal delivery volume	100 m (330 ft.) at 0 m delivery height and 0 m suction height
Noise level	20 dB(A) at 1 m DIN EN ISO 3741:2011 / DIN EN ISO 3744:2010
Voltage	100 ~ 240 V AC 50/60 Hz with automatic universal power input detection
Output	8 W at maximum operation at 110 V
Alarm relay	7-amp contacts with integrated replaceable 6.3 A fuse 5 × 20 mm
Weight	1,000 g (2.2 lb.)
Discharge star pipe	6.25 mm I.D. (1/4") × 1 m (3.3 ft.)
IP class	Fully cast, IP 44
Operating temperature	Ambient 5°C to 40°C (41°F to 104°F) / water 5°C to 40°C (41°F to 104°F)
Conformity	Conforms to UL: 778 and certified to CSA C22.2 #68

Tab. 6: Technical data for condensate pump

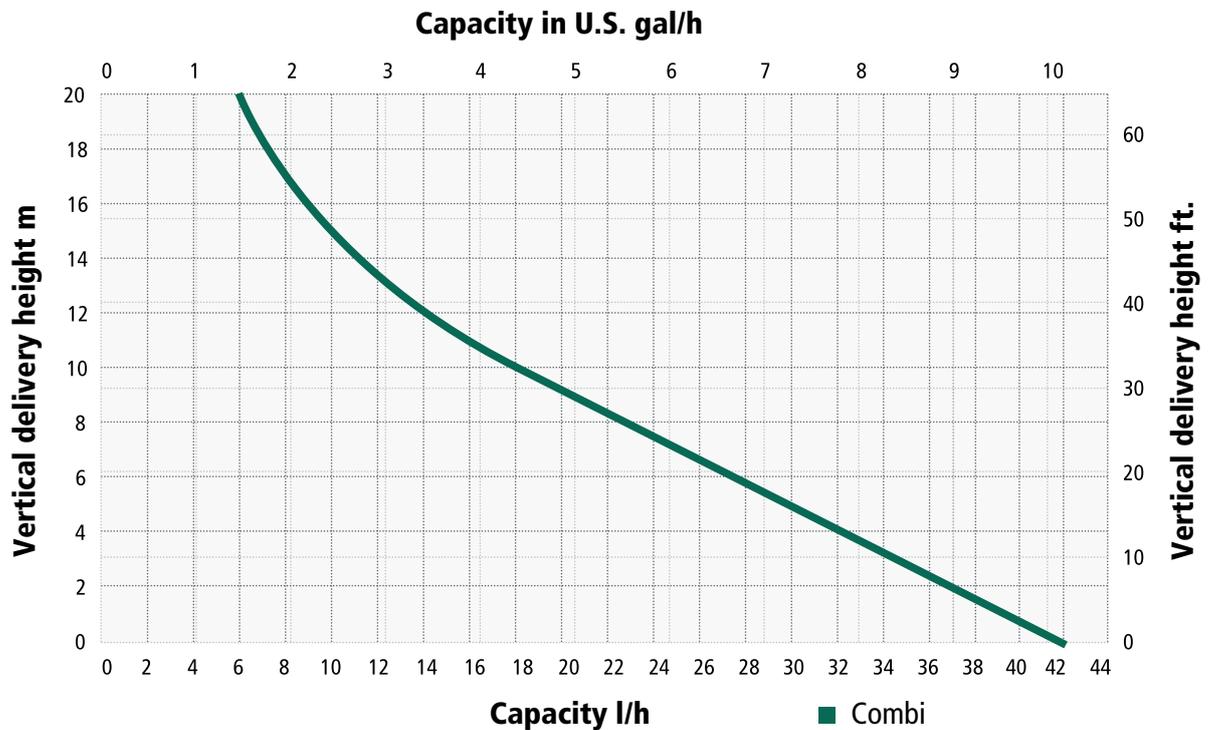


Fig. 27: Capacity diagram

# KaDeck

Assembly, installation and operating instructions

## 6.6.8 Dewpoint monitor

A dewpoint monitor can optionally be fitted with dry cooling units. It measures the relative humidity directly on the surface of the cooled part of the system and so can prevent further condensate formation should the temperature fall below the dewpoint.

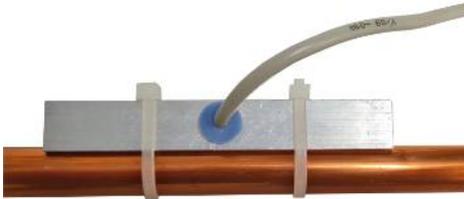
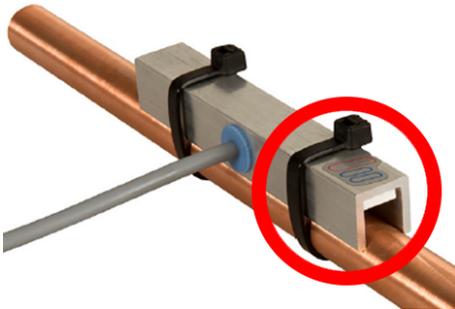


Fig. 28: Dewpoint monitor (installed)

- ▶ Use cable ties to fasten the dewpoint monitor to the cooling water pipe.
- ▶ Arrange the connection cable in such a way that no condensate can run along the cable.
- ▶ Avoid water being allowed to collect in the sensor.
- ▶ Pay attention to minimal heat transfer resistance.
- ▶ Connect the dewpoint monitor according to the wiring diagram.
- ▶ Caution: Preferably rest the sensor element on the cooling water pipework. The opposite side may project out.



Technical data for dewpoint monitor		
Supply voltage:	15...30 V DC / 24 V AC	
Protection class:	IP 65	
Operating temperature range	-20 ... +70 °C	
Switching point at:	90% relative humidity ± 2% relative humidity Hysteresis 3% relative humidity	
<b>Switching output:</b>	Potential-free changeover contact	
Switching voltage	Max. 48 V	
Switching current	Max. 0.5 A	
Switching power	Max. 10 W	
<b>Assignment:</b>		
Supply	Brown – (-)	
	Green + (~)	
Relay output	Blue	N/O
	Pink	N/C
	Grey	COMMON

## 7 Electrical connection



### IMPORTANT NOTE!

#### Condensation formation in the cooling unit!

In the event of on-site valve control, the cooling valve must be closed when the fans are switched off.

### 7.1 Maximum electrical rating values

#### KaDeck, electromechanical version (\*00)

Article number	Nominal voltage [V DC]	Mains frequency [Hz]	Nominal power [W]	Nominal current [A]	Ri analogue input [kΩ]	IP class	Protection class
3261xxx11x xx	230	50	16	0.13	100	IP20	I
3261xxx61x xx	230	50	24	0.20	100	IP20	I
3261xxx12x xx	230	50	27	0.22	50	IP20	I
3261xxx62x xx	230	50	35	0.29	50	IP20	I

Tab. 7: Maximum electrical rating values KaDeck

#### KaDeck, KaControl version (\*C1)

Article number	Nominal voltage [V DC]	Mains frequency [Hz]	Nominal power [W]	Nominal current [A]	Ri analogue input [kΩ]	IP class	Protection class
3261xxx11x xxC1	230	50	18	0.15	20	IP20	I
3261xxx61x xxC1	230	50	26	0.22	20	IP20	I
3261xxx12x xxC1	230	50	29	0.24	20	IP20	I
3261xxx62x xxC1	230	50	37	0.31	20	IP20	I

Tab. 8: Maximum electrical rating values KaDeck

# KaDeck

Assembly, installation and operating instructions

## 7.2 Electromechanical control

### 7.2.1 Connection (\*00)

#### Electrical junction box



Position of electrical junction box (with condensate tray removed)



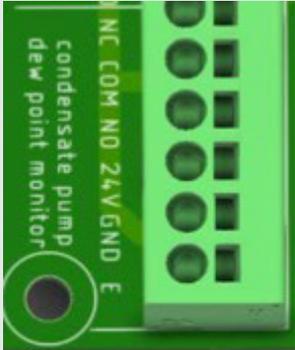
Use a Phillips screwdriver to open the electrical junction box and remove the cover of the junction box.



Control board

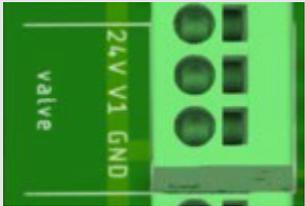
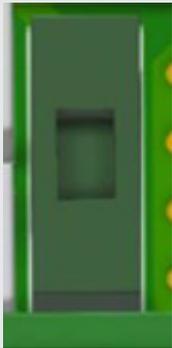
## Circuit description

- ▶ Factory-fitted actuators are wired to the terminals on the control board. If no valve actuators are factory-fitted, appropriate terminals are available for on-site valve actuators.
- ▶ Only 24 V DC valve actuators (Open/Closed or continuous) can be connected.
- ▶ The speed of EC fans used is continuously variably controlled by a 0 – 10 V DC signal. The "intelligent" motor electronics detect any possible motor malfunction and automatically switch off the fan.
- ▶ The cooling valve (V1) is actively closed in the event of a condensate alarm.
- ▶ The motor malfunction signal and condensate alarm are available at the collective fault signal potential-free contact.
- ▶ The control board has various LEDs for the visual display.
- ▶ It also features two micro-fuses.

Section of circuit board	Description
	<p><b>Terminal block X1 (230 V AC feed)</b></p> <ul style="list-style-type: none"> <li>▶ 230 V AC / 50 Hz feed</li> <li>▶ With 2-pipe versions: External valve actuation V1 230 V AC / 50 Hz Open/Closed for heating/cooling</li> <li>▶ With 4-pipe versions: External valve actuation V1 230 V AC / 50 Hz Open/Closed for cooling</li> <li>▶ With 4-pipe versions: External valve actuation V2 230 V AC / 50 Hz Open/Closed for heating</li> </ul>
	<p><b>Terminal block X3 (24 V DC control voltage)</b></p> <ul style="list-style-type: none"> <li>▶ With 2-pipe versions: External valve actuation V1 24 V DC Open/Closed or continuous for heating/cooling</li> <li>▶ With 4-pipe versions: External valve actuation V1 24 V DC Open/Closed or continuous for cooling</li> <li>▶ With 4-pipe versions: External valve actuation V2 24 V DC Open/Closed or continuous for heating</li> <li>▶ 0-10 V DC signal for EC fan speed continuously variable</li> </ul>
	<p><b>Terminal block X3 (fault signal output):</b></p> <ul style="list-style-type: none"> <li>▶ Collective fault signal (motor, condensate)</li> <li>▶ Pot.-free changeover contact 24 V / 2 A (AC1)</li> <li>▶ No fault -&gt; COM/NC contact closed</li> <li>▶ Fault -&gt; COM/NC contact open</li> </ul>
	<p><b>Terminal block X4 (condensate pump/dewpoint monitor):</b></p> <ul style="list-style-type: none"> <li>▶ Supply voltage output 24 V DC for dewpoint monitor</li> <li>▶ Condensate pump / dewpoint monitor fault signal input</li> <li>▶ <b>Note:</b> The cooling valve (V1) is actively closed in the event of a condensate alarm</li> </ul>

# KaDeck

## Assembly, installation and operating instructions

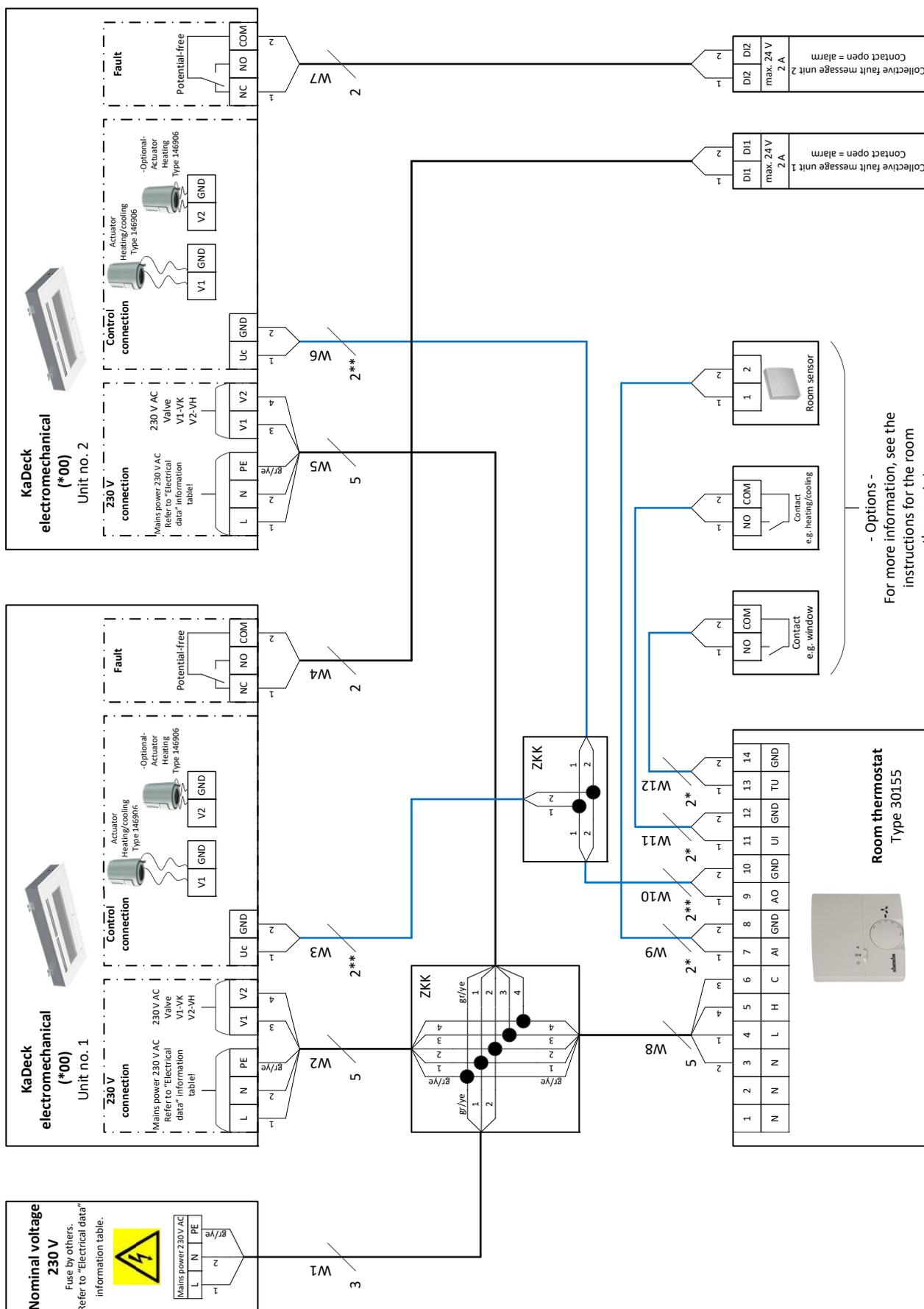
Section of circuit board	Description
	<p><b>Terminal block X5 (valve 1 connection):</b></p> <ul style="list-style-type: none"> <li>▶ Valve actuator V1 24 V DC</li> <li>▶ Open/Closed or continuous valves</li> <li>▶ With 2-pipe versions: Heating/cooling valve</li> <li>▶ With 4-pipe versions: Cooling valve</li> </ul>
	<p><b>Terminal block X6 (valve 2 connection):</b></p> <ul style="list-style-type: none"> <li>▶ Valve actuator V2 24 V DC</li> <li>▶ Open/Closed or continuous valves</li> <li>▶ With 4-pipe versions: Valve, heating</li> </ul>
	<p><b>Terminal block X2 (230 V AC output):</b></p> <ul style="list-style-type: none"> <li>▶ 230 V AC / 50 Hz control voltage output for condensate pump</li> </ul>
	<p><b>Visual display:</b></p> <ul style="list-style-type: none"> <li>▶ LED 1 (red) = motor fault</li> <li>▶ LED 2 (red) = condensate pump / dewpoint monitor fault</li> <li>▶ LED 3 (green) = 24 V supply voltage</li> <li>▶ <b>Note:</b> In the event of a fault, the red fault LEDs are lit constantly.</li> </ul>
	<p><b>Fuse F1:</b></p> <ul style="list-style-type: none"> <li>▶ Fuse 4 A slow-acting</li> <li>▶ 230 V AC</li> </ul>
	<p><b>Fuse F2:</b></p> <ul style="list-style-type: none"> <li>▶ Fuse 2.5 A slow-acting</li> <li>▶ 24 V DC</li> </ul>

Tab. 9: Description of control board (\*00)

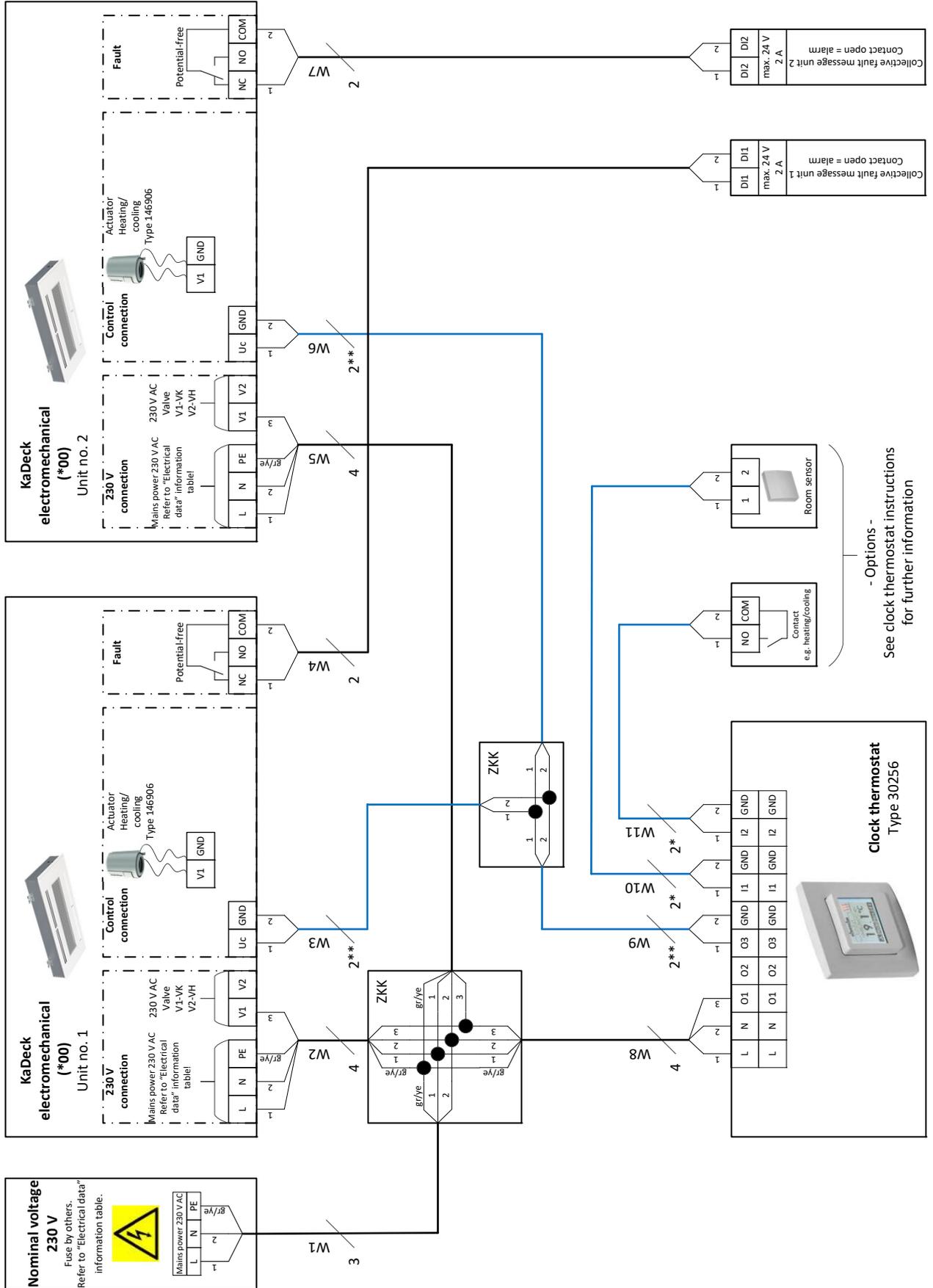
**Refer to these points in the following layout plans with electromechanical control:**

- ▶ Comply with the details on cable types and cabling with due consideration of VDE 0100.
- ▶ Without \*: NYM-J. The requisite number of wires, including PE conductor, 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, max. 50 m. Lay separately from high voltage lines.
- ▶ With \*\*\*: J-Y(ST)Y, 0.8 mm, max. 30 m. Lay separately from high voltage lines.
- ▶ With \*\*\*: J-Y(ST)Y, 0.8 mm, max. 10 m. Lay separately from high voltage lines.
- ▶ With \*\*\*\*: UNITRONIC® BUS LD 2x2x0.22 mm<sup>2</sup>. Lay separately from high voltage 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 mm<sup>2</sup>.
- ▶ All RCCBs used must at least be mixed frequency-sensitive (type F). Refer to the provisions of DIN VDE 0100 Parts 400 and 500 when designing the rated fault current.
- ▶ Note the electrical data when rating the in-situ mains power supply and fuse (C16 A, max. 10 units).

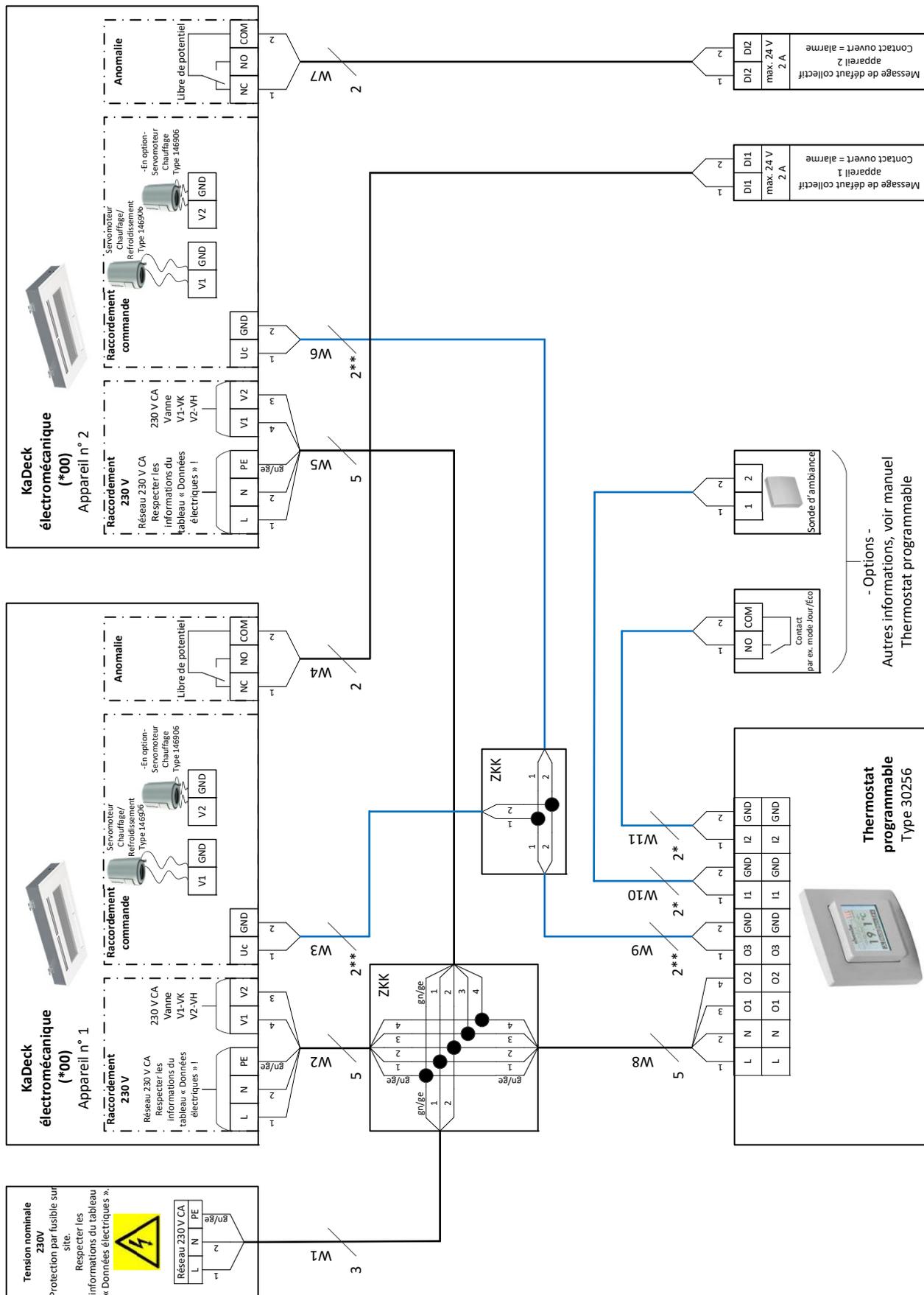
230 V electromechanical, 2- or 4-pipe valve actuator(s) 24 V DC Open/Closed, optional condensate pump, with room thermostat type 30155



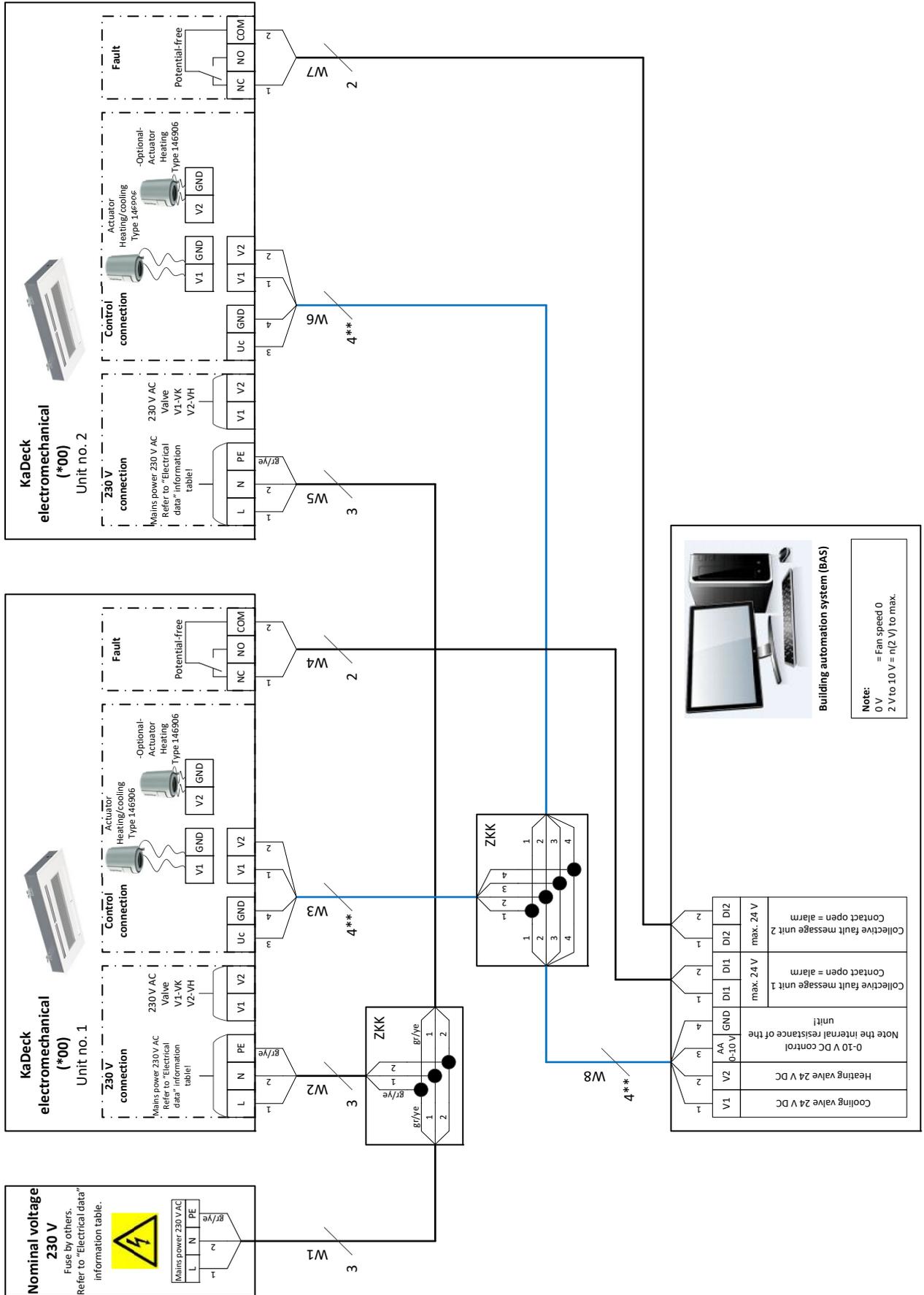
KaDeck EPP, electromechanical, 2-pipe, valve actuator 24 V DC Open/Closed, optional condensate pump, with clock thermostat type 30256



PPE KaDeck, électromécanique, 4 conduites, actionneur de vanne 24 V DC ouvert/fermé, pompe d'eau de condensation en option, avec thermostat programmable type 30256



KaDeck EPP, 230 V electromechanical, 2- or 4-pipe, valve actuator(s) 24 V DC Open/Closed, optional condensate pump, 0-10 V DC control via BAS





## 7.3 KaControl (\*C1)

### 7.3.1 KaController installation

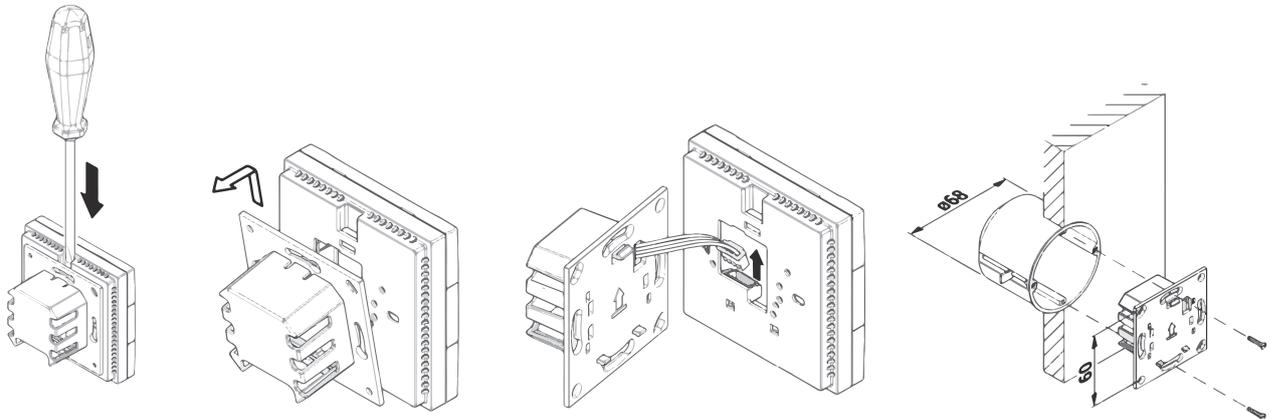


Fig. 29: Installation of flush-mounted back box

	<p><b>Electrical connection</b></p> <ul style="list-style-type: none"> <li>▶ Connect the KaController to the nearest KaControl unit in line with the wiring diagram. The maximum bus length between the KaController and the KaControl master unit is 30 m.</li> <li>▶ The respective KaControl automatically becomes the master unit in the control circuit when a KaController is connected to it.</li> </ul>
	<p><b>DIP switch setting</b></p> <p>The DIP switches on the rear of the KaController should be set according to the illustration:</p> <ul style="list-style-type: none"> <li>▶ DIP switch 1: ON</li> <li>▶ DIP switch 2: OFF</li> </ul>

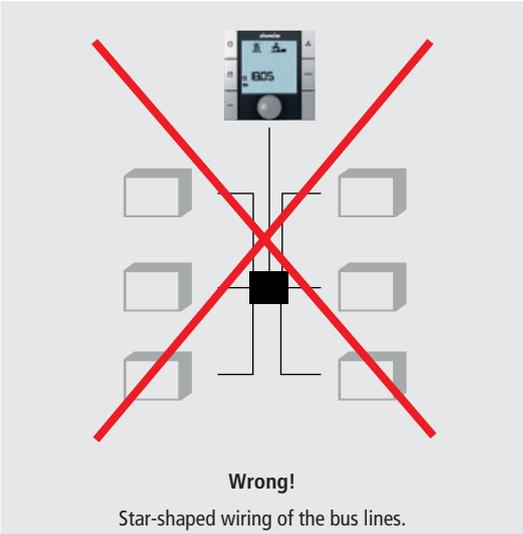
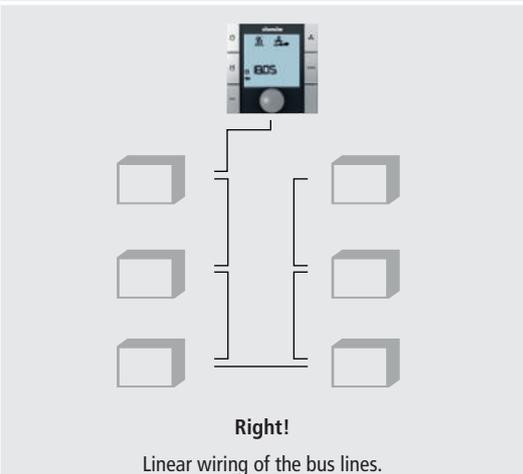
Fig. 30: KaController terminals

Fig. 31: DIP switch setting on KaController

# KaDeck

Assembly, installation and operating instructions

## 7.3.2 Connection (\*C1)

 <p><b>Wrong!</b> Star-shaped wiring of the bus lines.</p>	<p><b>General information</b></p> <ul style="list-style-type: none"><li>▶ Route all low voltage cables along the shortest route.</li><li>▶ Ensure that low-voltage and power cables are separated, using metal partitions on cable harnesses.</li><li>▶ Use only shielded cables as low-voltage and bus cables.</li><li>▶ Lay all BUS cables in a linear pattern. Star-shaped wiring is not permitted.</li><li>▶ The KaController is connected via a bus connection to the respective control PCB on the unit.</li></ul>
 <p><b>Right!</b> Linear wiring of the bus lines.</p>	

Tab. 10: Wiring of bus lines



### IMPORTANT NOTE!

Use shielded, paired cables as bus cables, UNITRONIC® BUS LD 2x2x0.22, but at least of the same value or higher.



### IMPORTANT NOTE!

When laying bus cables, avoid the formation of star points, for instance in junction boxes. Loop the cables through to the units!

## Electrical junction box



Position of electrical junction box (with condensate tray removed)



Use a Phillips screwdriver to open the electrical junction box and remove the cover of the junction box.



Control board

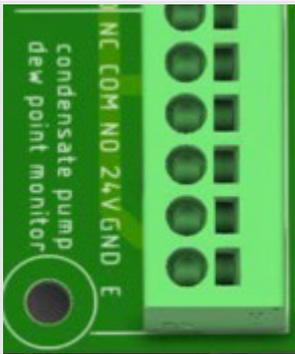
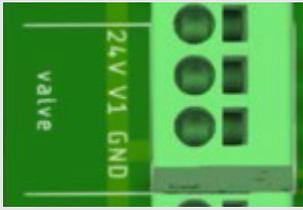
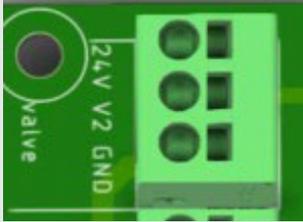
## Circuit description

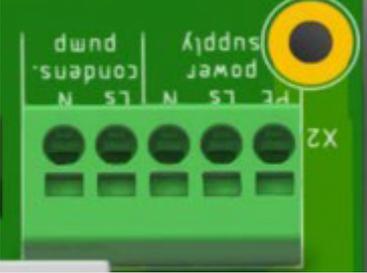
- ▶ Units configured for operation with KaControl are fully wired and fitted with all electrical parts ready for connection (with the exception of optional accessories).
- ▶ The speed of the EC fans used is controlled by a 0-10 V DC signal with KaControl. The "intelligent" motor electronics detect any possible motor malfunction and automatically switch off the fan.
- ▶ The cooling valve (V1) is actively closed in the event of a condensate alarm.
- ▶ With 2-pipe units, a collective fault signal is available potentially loaded at V2 after parametrisation on site.
- ▶ There is also a motor malfunction signal/condensate alarm available at a potential-free contact with 2- and 4-pipe units.
- ▶ Only 24 V DC valve actuators Open/Closed or can be connected!

# KaDeck

Assembly, installation and operating instructions

- ▶ The control board has various LEDs for the visual display.
- ▶ It also features two micro-fuses.

Section of circuit board	Description
	<p><b>Terminal block X1 (230 V AC feed)</b></p> <ul style="list-style-type: none"> <li>▶ 230 V AC / 50 Hz feed</li> </ul>
	<p><b>Terminal block X3 (fault signal output):</b></p> <ul style="list-style-type: none"> <li>▶ Collective fault signal (motor, condensate)</li> <li>▶ Pot.-free changeover contact 24 V / 2 A (AC1)</li> <li>▶ No fault -&gt; COM/NC contact closed</li> <li>▶ Fault -&gt; COM/NC contact open</li> </ul>
	<p><b>Terminal block X4 (condensate pump/dewpoint monitor):</b></p> <ul style="list-style-type: none"> <li>▶ Supply voltage output 24 V DC for dewpoint monitor</li> <li>▶ Condensate pump / dewpoint monitor fault signal input</li> <li>▶ <b>Note:</b> The cooling valve (V1) is actively closed in the event of a condensate alarm</li> </ul>
	<p><b>Terminal block X5 (valve 1 connection):</b></p> <ul style="list-style-type: none"> <li>▶ Valve actuator V1 24 V DC</li> <li>▶ Open/Closed valves</li> <li>▶ With 2-pipe versions: Heating/cooling valve</li> <li>▶ With 4-pipe versions: Cooling valve</li> </ul>
	<p><b>Terminal block X6 (valve 2 connection):</b></p> <ul style="list-style-type: none"> <li>▶ Valve actuator V2 24 V DC</li> <li>▶ Open/Closed valves</li> <li>▶ With 4-pipe versions: Valve, heating</li> <li>▶ <b>Note:</b> With 2-pipe versions: parametrisable potentially loaded collective fault signal 24 V DC 0.5 A (see smartboard instructions)</li> </ul>

Section of circuit board	Description
	<p><b>Terminal block X2 (230 V AC output):</b></p> <ul style="list-style-type: none"> <li>▶ 230 V AC / 50 Hz control voltage output for condensate pump</li> </ul>
	<p><b>Visual display:</b></p> <ul style="list-style-type: none"> <li>▶ LED 1 (red) = motor fault</li> <li>▶ LED 2 (red) = condensate pump / dewpoint monitor fault</li> <li>▶ LED 3 (green) = 24 V supply voltage</li> <li>▶ <b>Note:</b> In the event of a fault, the red fault LEDs are lit continuously.</li> </ul>
	<p><b>Fuse F1:</b></p> <ul style="list-style-type: none"> <li>▶ Fuse 4 A slow-acting</li> <li>▶ 230 V AC</li> </ul>
	<p><b>Fuse F2:</b></p> <ul style="list-style-type: none"> <li>▶ Fuse 2.5 A slow-acting</li> <li>▶ 24 V DC</li> </ul>

Tab. 11: Description of control board (\*C1)

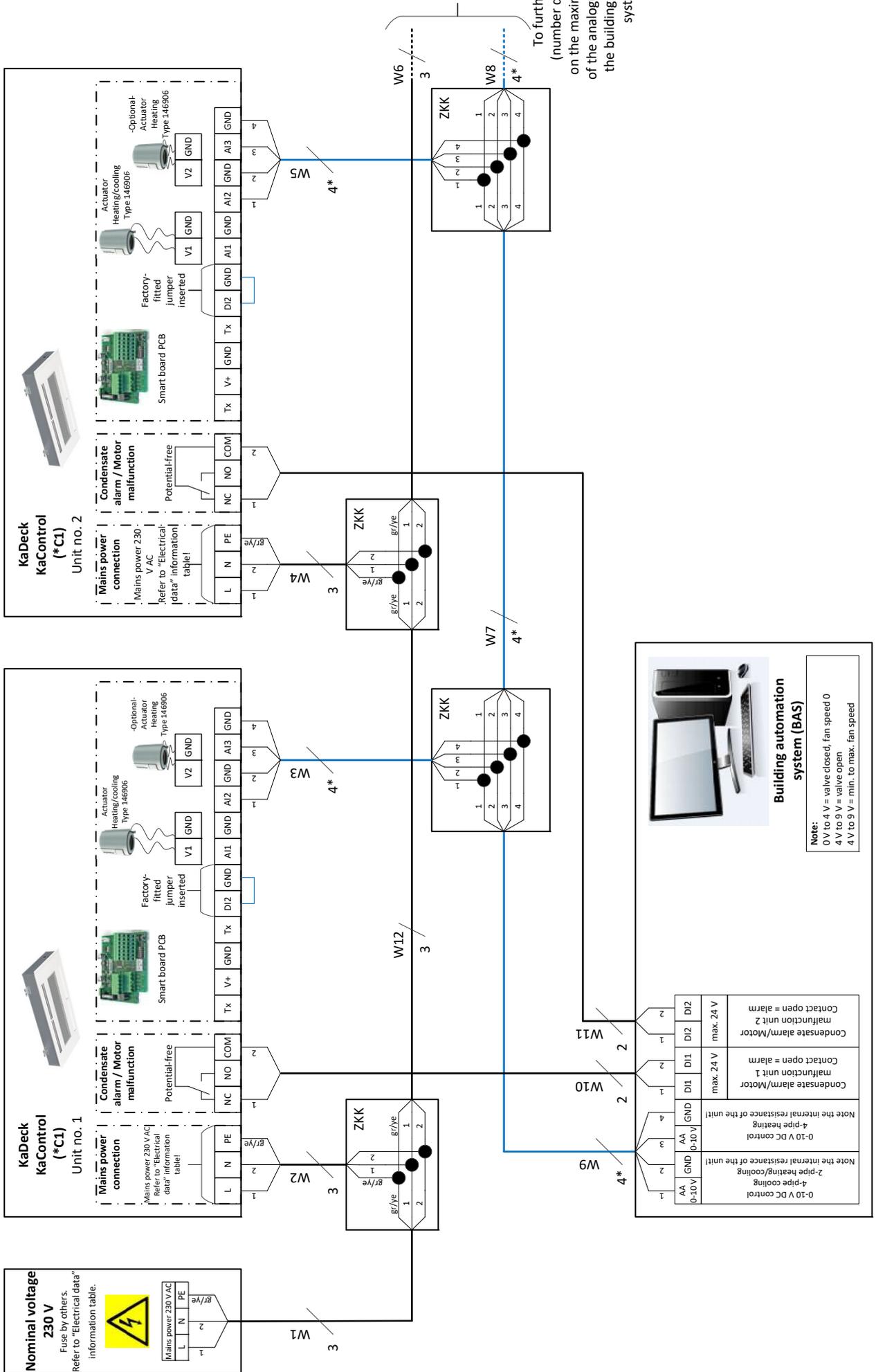
# KaDeck

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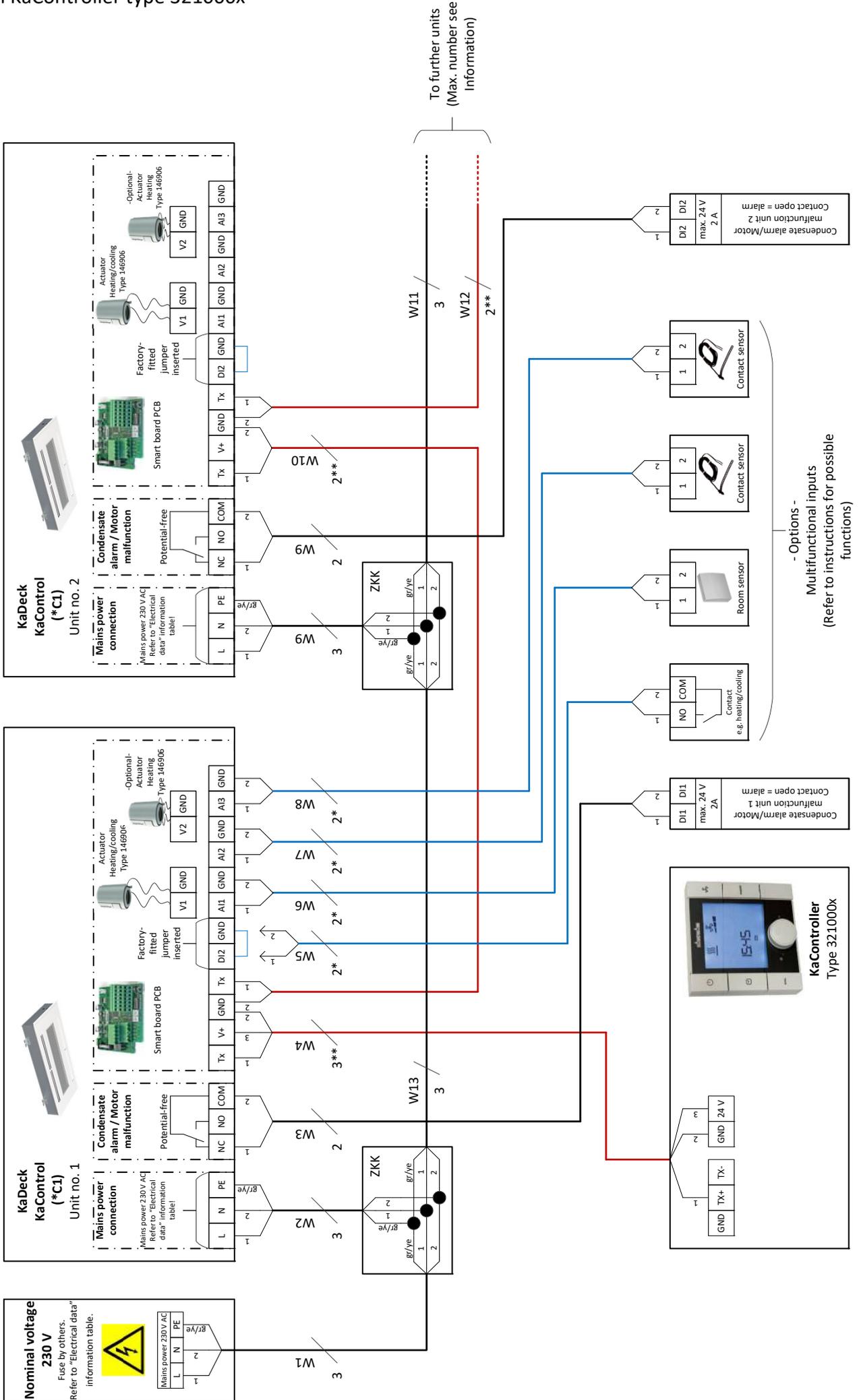
## Observe these points in the following layout plans with KaControl:

- ▶ Comply with the details on cable types and cabling with due consideration of VDE 0100.
- ▶ Without \*: NYM-J. The requisite number of wires, including PE conductor, 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 high voltage lines.
- ▶ With \*\*: Lay UNITRONIC BUS LD 0.22 mm<sup>2</sup> or similar separately from high voltage lines.
- ▶ If other types of cables are used, they must be at least equivalent.
- ▶ Length of the BUS line from the KaController to unit 1: max. 30 m.
- ▶ Maximum number of parallel units: 6 units. With CANbus card type 3260701 needed for each unit (see accessories) maximum 30 no.
- ▶ Length of bus line from unit 1 to the last unit max. 30 m. The cable length can be increased to maximum 500 m with a CANbus card per unit type 3260701 (see accessories).
- ▶ The terminals on the unit for the mains power supply are suitable for a maximum wire cross-section of 2.5 mm<sup>2</sup>.
- ▶ All RCCBs used must at least be mixed frequency-sensitive (type F). Refer to the provisions of DIN VDE 0100 Parts 400 and 500 when designing the rated fault current.
- ▶ Note the electrical data when rating the in-situ mains power supply and fuse (C16 A, max. 10 units).

KaDeck EPP, KaControl C1, 2- or 4-pipe, valve actuator(s) 24 V DC  
Open/Closed, 0-10 V DC control via BAS



KaDeck EPP, KaControl C1, 2- or 4-pipe, valve actuator(s) 24 V DC Open/Closed, with KaController type 321000x



## 8 Pre-commissioning checks

During initial commissioning, it must be ensured that all necessary requirements are met so that the appliance can function safely and as intended.

### Structural tests

- ▶ Check that the unit is securely standing and fixed.
- ▶ Check the horizontal installation/suspension of the unit.
- ▶ Check the completeness and correct seating of all filters (dirt side).
- ▶ 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 whether the fault signal contacts of the EC fans have been correctly connected (break contacts in series with multiple units).
- ▶ Check all external electrical connections and terminal connections are fixed in place and tighten if necessary.

### 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).

### Air-side checks

- ▶ Check whether there is unimpeded flow at the air inlet and outlet.
- ▶ Check whether the air inlet filter is fitted and dirt-free.

### Condensation water connection

- ▶ Check whether the condensation tray is free of building rubble.
- ▶ Check the condensation drain and operation of the alarm signal on the condensation pump.
- ▶ Check whether the cooling valve switches off in the event of an alarm signal.
- ▶ Check whether the unit is connected leak-free to the on-site condensation connection.
- ▶ Check whether the waste water lines are clean and have a sufficient gradient.
- ▶ Check whether the condensation pump has a working power supply.

Once all checks have been completed, initial commissioning can be carried out in line with Chapter 9 "Operation" [▶ 53].

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## 9 Operation

### 9.1 Operation of electromechanical control



Fig. 32: Room thermostat, type 30155

#### Room thermostat, type 30155

- ▶ Electronic room thermostat with 3-stage automatic function for 2- and 4-pipe applications, surface-mounted wall installation on a flush-mounted box in visually unobtrusive design
- ▶ simple operation using a large rotary dial for temperature setting with mechanical range limitation of the temperature setpoint, operating mode selector switch, Standby, Manual fan, Automatic fan, 3-stage switch for pre-selecting the fan speed when the operating mode selector switch is in the "Manual fan" position
- ▶ 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



Fig. 33: Clock thermostat type 30256

#### Clock thermostat 230 V, type 30256

- ▶ 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 changeover
- ▶ Option for external room sensor
- ▶ 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 2 units is possible



Fig. 34: 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. 35: 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)



Fig. 36: 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. 37: 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)

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Assembly, installation and operating instructions

## 9.2 Operation of the KaController

The following information is limited to the key content on the operation of the KaController and KaControl system. More information is included separately in the KaControl SmartBoard user manual.

### 9.2.1 Function keys, display elements

All menus can be selected and set using the navigator dial.

The LED background lighting is automatically switched off 5 seconds after the KaController is last used. The LED background lighting can be permanently disabled using a parameter setting.

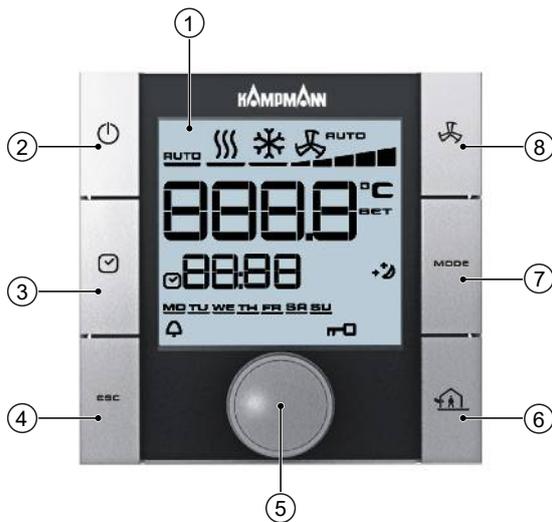


Fig. 38: KaController with function keys, type 3210002

1	Display with LED background lighting	2	ON/OFF key (depending on setting) <ul style="list-style-type: none"> <li>▶ ON/OFF</li> <li>▶ Eco mode/Day mode (factory setting)</li> </ul>
3	TIMER button <ul style="list-style-type: none"> <li>▶ Set time</li> <li>▶ Set timer programs</li> </ul>	4	ESC button <ul style="list-style-type: none"> <li>▶ back to standard view</li> </ul>
5	Navigator dial <ul style="list-style-type: none"> <li>▶ Change settings</li> <li>▶ Call up menus</li> </ul>	6	House symbol <ul style="list-style-type: none"> <li>▶ External ventilation</li> </ul>
7	MODE button <ul style="list-style-type: none"> <li>▶ Set operating modes (disabled with 2-pipe applications)</li> </ul>	8	FAN button <ul style="list-style-type: none"> <li>▶ Set fan control</li> </ul>

 <p>Fig. 39: KaController type 3210001</p>	<p>KaController without operating keys (one-button operation) type 3210001</p> <ol style="list-style-type: none"> <li>1. Display with LED background lighting</li> <li>2. Navigator dial             <ul style="list-style-type: none"> <li>▶ Change settings</li> <li>▶ Call up menus</li> </ul> </li> </ol>
 <p>Fig. 40: KaController black, type 3210006</p>	<p>KaController, black without function keys (one-button operation) type 3210006</p> <ol style="list-style-type: none"> <li>1. Display with LED background lighting</li> <li>2. Navigator dial             <ul style="list-style-type: none"> <li>▶ Change settings</li> <li>▶ Call up menus</li> </ul> </li> </ol>

The symbols shown on the display depend on the application (2-pipe, 4-pipe etc.) and the parameters set.

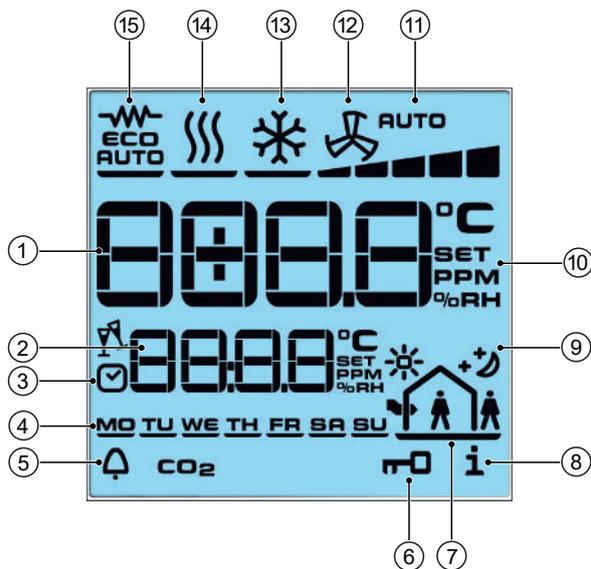


Fig. 41: Display

1	Display of setpoint room temperature	2	Current time
3	Timer program enabled	4	Weekday
5	Alarm	6	Selected function is locked
7	"External ventilation" mode is locked	8	Filter alert
9	Eco mode	10	Setpoint setting enabled
11	Fan control setting Auto-0-1-2-3-4-5	12	Ventilation mode
13	Cooling mode	14	Heating mode
15	Automatic Heating/Cooling changeover mode		

## 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.



#### **WARNING!**

#### **Risk of injury from rotating parts!**

The fan impeller can cause severe injuries.

- ▶ Switch off the unit and prevent it from reconnection before commencing any work on moving components of the fan. Wait until all parts have come to a standstill.

## 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 work
If necessary	Regular visual inspections and acoustic tests for damage, soiling and function.
External filter (with cooling): quarterly External air filter (heating only): every six months Secondary air filter: annually	Check filter for dirt, clean and change filter if necessary.
Humid cooling: every six months Dry cooling: annually	Check and clean appliance components (heat exchanger, condensate tray, condensate pump, condensate drain, float switch).
every six months	Check water-side connections, valves and screw connections for dirt, leaks and function.
annually	Check electrical connections.
annually	Clean air-conducting components/surfaces.
annually	Check dew point sensor for soiling and function. Replace sensor if necessary.

## 10.3 Maintenance work

### Open the design panel before maintenance work!

Open the design panel before maintenance work, as described in "Installing the unit on the ceiling [▶ 20]".

#### 10.3.1 Replacing the filter.



#### CAUTION!

#### Risk of injury from sharp metal housing!

The inner metal of the casing can have sharp edges.

- ▶ Wear suitable protective gloves.

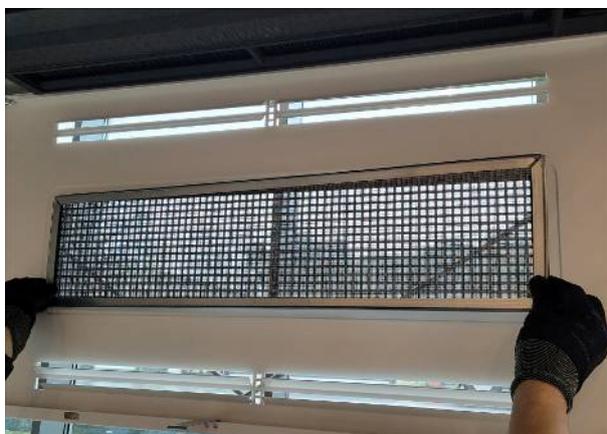


Fig. 42: Remove the filter.

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Fig. 43: Vacuum the filter and re-fit it after cleaning.

## 10.3.2 Cleaning the condensate tray



▶ Remove the condensate tray.



▶ Clean the condensate tray.

## 10.3.3 Cleaning the condensate pump



▶ Remove the hose from the condensate pump and remove the condensate pump to clean it.

Fig. 44: Dismantling the condensate pump

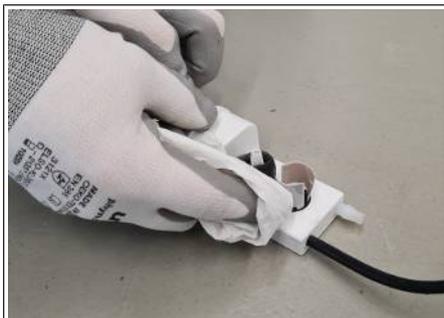


Fig. 45: Cleaning the condensate pump

- ▶ Carefully clean the filling level monitor with a damp cloth. Make sure that the contacts do not bend when cleaning them!



Fig. 46: Cleaning the dirt filter

- ▶ Clean the dirt filter under running water and reinsert it.

### Condensate pump check

Once you have refitted the cleaned condensate pump, reinsert the condensate tray and fill it with water until the filling level monitor is half-filled with water. If it is working properly, the condensate pump should now start operating and drain the water.

#### 10.3.4 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.

## 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 [▶ 62] provides information on who is authorised to rectify and remedy faults.

### 11.1 Fault table

Fault	Possible cause	Remedy
System water leakage	Heat exchanger defect.	Replace heat exchanger if necessary.
	Hydraulic connection not correct.	Check flow and return, retighten if necessary.
Water leakage condensate	Drains of the condensate tray clogged.	Clean condensate drains and check for sufficient slope.
	Cold water pipe not properly insulated.	Check insulation.
	Condensate drain not properly installed.	Check the function of the condensate pump. Check condensate drain, clean if necessary.
	Air-conducting accessory components not properly insulated.	Check insulation.
Unit not heating or cooling sufficiently (LPHW/ CHW)	Fan is not switched on.	Switch on fan at controller.
	Air volume is too low.	Set a higher speed.
	Filter is dirty.	Replace filter.
	No heating or cooling medium.	Switch on heating and/or cooling system, switch on circulation pump, vent unit/system.
	Valves not operating.	Replace faulty valves.
	Water volume too low.	Check pump output, check hydraulics.
	Setpoint temperature on the controller set too low/high.	Adjust temperature setting on the controller.
	Operating unit with integral sensor and/or external sensor is exposed to direct sunlight or positioned over a heat source.	Place operating unit with integral sensor and/or external sensor in a suitable position.
	Air cannot blow out or in freely.	Remove obstacles at the air outlet/air inlet.
	Heat exchanger dirty.	Clean heat exchanger.
Air in the heat exchanger.	Vent heat exchanger.	
Unit too loud	Fan speed too high.	Set a lower fan speed, if possible.
	Air intake / air discharge opening is obstructed.	Free air routes.
	Filter dirty.	Replace filter.
	Rotating parts unbalanced	Clean and/or replace impeller. Make sure that no balancing brackets are removed during cleaning.
	Fan dirty.	Clean dirt from fan.

Fault	Possible cause	Remedy
	dirty.	Clean dirt from the .
No function.	No power supply	Check the voltage. Replace fuse.

## 11.2 KaControl faults

Code	Alarms	Priority
A11	Faulty control sensor.	1
A12	Motor fault.	2
A13	Room frost protection.	3
A14	Condensation alarm.	4
A15	General alarm.	5
A16	Sensor AI1, AI2 or AI3 faulty.	6
A17	Unit frost protection.	7
A18	EEPROM error.	8
A19	Offline slave in the CAN bus network.	9

Tab. 12: KaControl unit alarms

Code	Alarms
tAL1	Temperature sensor in the KaController faulty.
tAL3	Real-time clock in the KaController faulty.
tAL4	EEPROM in the KaController faulty.
Cn	Communication fault with the external control.

Tab. 13: KaController alarms



### IMPORTANT NOTE!

#### Important note!

More information on control settings can be found in the separate KaControl SmartBoard user manual.

## 11.3 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 List of KaControl parameters

### 12.1 Parameter list

Parameter	Function	Standard	Min.	Max.	Unit	KaDeck <sup>11</sup>
P000	Software version	24	0	255	-	24
P001	Basic setpoint for setpoint input $\pm 3K$	22	8	32	°C	22
P002	Switch-on and switch-off hysteresis for valves	3	0	255	K/10	1
P003	Neutral zone in a 4-pipe system (only in automatic mode)	3	0	255	K/10	20
P004	Cooling without fan assistance (natural convection)	0	0	255	K/10	0
P005	Heating without fan assistance (natural convection)	5	0	255	K/10	0
P006	Fan On/Off hysteresis (only in ventilation mode)	5	0	255	K/10	5
P007	P-band, heating	20	0	100	K/10	25
P008	P-band, cooling	20	0	100	K/10	25
P009	Shift to the basic setpoint for setpoint input $\pm 3K$	3	0	10	C	3
P010	Contact sensor: temperature limit value to activate fan stages 1 and 2 in heating mode	26	0	255	°C	26
P011	Contact sensor: temperature limit value to activate fan stages 3 and 4 in heating mode	28	0	255	°C	28
P012	Contact sensor: temperature limit value to activate fan stage 5 in heating mode	30	0	255	°C	30
P013	Contact sensor: hysteresis for limit temperatures P010, P011, P012, P014	10	0	255	K/10	10
P014	Contact sensor: limit value temperature to activate fan stages in cooling mode	18	0	255	°C	18
P015	Function of input AI1	0	0	19	-	0
P016	Function of input AI2	0	0	19	-	0
P017	Function of input AI3	0	0	9	-	0
P018	Temperature increase of cooling setpoint in Eco mode	30	0	255	K/10	30
P019	Temperature reduction of heating setpoint in Eco mode	30	0	255	K/10	30
P020	ADC limit coefficient	6	0	15	-	6
P021	ADC average coefficient	6	0	15	-	6
P022	Activation/deactivation of sun symbol in Comfort mode	0	0	1	-	0
P023	Difference for compensation when cooling	0	-99	127	K/10	0
P024	Coefficient for compensation when cooling	0	-20	20	1/10	0
P025	Difference for compensation when heating	0	-99	127	K/10	0
P026	Coefficient for compensation when heating	0	-20	20	1/10	0
P027	Fan setting: maximum run-time for manual fan mode	0	0	255	min.	0
P028	Rinsing function: fan stage during the rinsing function	2	1	5	-	2
P029	Activation of continuous fan mode	0	0	1	-	0
P030	Ventilation temperature activation	12	0	255	°C	12
P031	Ventilation interval	27	0	255	°C	27
P032	Flushing function: maximum idle time of fan	15	0	255	min.	15
P033	Flushing function: duration of the flushing function	120	0	255	s	120
P034	Flushing function: activation in operating modes	0	0	3	-	3

<sup>11</sup> Parameter key KaDeck , SAP no., dated 10.07.2020

Parameter	Function	Standard	Min.	Max.	Unit	KaDeck <sup>11</sup>
P035	Fan run-on time after an operating mode is switched to stage 1	0	0	255	s	0
P036	Type of setpoint setting	0	0	1	-	0
P037	Display	1	0	7	-	1
P038	Lock/disable function on the control unit	72	0	255	-	72
P039	Function of digital output V2 (in a 2-pipe system)	0	0	3	-	0
P040	Valve control by pulse width modulation	0	0	1	-	0
P041	Reset time of PI controller to activate the fan in automatic fan mode	0	0	20	min.	0
P042	Fan setting: lock and activate fan stages	0	0	127	-	2
P043	Function of digital input DI1	0	0	22	-	12
P044	Function of digital input DI2	0	0	22	-	0
P045	Threshold voltage for potentiometer to switch on the unit	10	0	100	kiloohm	10
P046	Temperature setting corresponds to the minimum resistance value = 10 kiloohm in the potentiometer	18	12	34	°C	18
P047	Temperature setting corresponds to the maximum resistance value = 100 kiloohm in the potentiometer	24	13	35	°C	24
P048	Threshold voltage for potentiometer for starting up the fans	10	0	100	kiloohm	10
P049	Threshold voltage for potentiometer for maximum fan speed	90	0	100	kiloohm	90
P050	Fan setting: max. fan speed	100	0	100	%	100
P051	Fan setting: min. fan speed	0	0	90	%	15
P052	Fan setting: activation of fan speed limit	0	0	1	-	1
P053	Valve activation by pulse width modulation of the valve switching cycle	15	10	30	min.	15
P054	Configuration of bus system	0	0	2	-	0
P055	Display of heating/cooling symbols in automatic mode	0	0	1	-	1
P056	DI2 setting (polarity) when DIP 4 = ON	1	0	1	-	1
P057	Reset setpoint to the value of P01 (after changing an operating program)	0	0	1	-	0
P058	Sensor adjustment: sensor AI1	0	-99	127	K/10	0
P059	Supply air temperature setpoint in heating mode	35	0	50	°C	35
P060	Supply air temperature setpoint in cooling mode	18	0	50	°C	18
P061	Sensor adjustment: sensor in the KaController	0	-99	127	K/10	0
P062	Sensor adjustment: sensor AI2	0	-99	127	K/10	0
P063	Outside temperature <P63 fan increase by P122	0	-99	127	°C	0
P064	Sensor adjustment: sensor AI3	0	-99	127	K/10	0
P065	reserved	-	-	-	-	-
P066	Master/slave assignment in CAN bus	0	0	1	-	0
P067	Serial CAN bus address	1	1	125	-	1
P068	Logic of the hydronic algorithms	0	0	7	-	0
P069	Network address	1	0	207	-	1
P070	Dependence of the hydronic algorithms (on slaves)	0	0	7	-	0
P071	Serial address of slave 1	0	0	207	-	0
P072	Serial address of slave 2	0	0	207	-	0
P073	Serial address of slave 3	0	0	207	-	0
P074	Serial address of slave 4	0	0	207	-	0
P075	Serial address of slave 5	0	0	207	-	0

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Parameter	Function	Standard	Min.	Max.	Unit	KaDeck <sup>11</sup>
P076	Serial address of slave 6	0	0	207	-	0
P077	Serial address of slave 7	0	0	207	-	0
P078	Serial address of slave 8	0	0	207	-	0
P079	Serial address of slave 9	0	0	207	-	0
P080	Serial address of slave 10	0	0	207	-	0
P081	Dependence of the hydronic algorithms, slave 1	0	0	7	-	0
P082	Dependence of the hydronic algorithms, slave 2	0	0	7	-	0
P083	Dependence of the hydronic algorithms, slave 3	0	0	7	-	0
P084	Dependence of the hydronic algorithms, slave 4	0	0	7	-	0
P085	Dependence of the hydronic algorithms, slave 5	0	0	7	-	0
P086	Dependence of the hydronic algorithms, slave 6	0	0	7	-	0
P087	Dependence of the hydronic algorithms, slave 7	0	0	7	-	0
P088	Dependence of the hydronic algorithms, slave 8	0	0	7	-	0
P089	Dependence of the hydronic algorithms, slave 9	0	0	7	-	0
P090	Dependence of the hydronic algorithms, slave 10	0	0	7	-	0
P091	Load default values	0	0	255	-	0
P092	Password management	0	0	255	-	0
P093	Type of pre-comfort (room occupancy)	0	0	3	-	0
P094	Pre-comfort timer	60	1	255	min.	60
P095	Disable DIP switch settings	0	0	1	-	0
P096	Digital outputs continuously activated	0	0	1	-	0
P097	Read off DIP switch	-	0	63	-	-
P098	0..10 V control: valve switch on limit	30	0	100	V/10	40
P099	0..10 V control: min. switch-on limit for fan speed	40	0	100	V/10	40
P100	0..10 V control: max. switch-on limit for fan speed	90	0	100	V/10	90
P101	Valve activation by pulse width modulation of P-band in heating mode	15	0	100	K/10	15
P102	Valve activation by pulse width modulation of P-band in cooling mode	15	0	100	K/10	15
P103	Valve activation by pulse width modulation of PI controller reset time	0	0	20	min.	0
P104	Minimum ON time with PWM valve activation	3	0	20	min.	3
P105	Compensation: max. negative delta setpoint	50	0	150	K/10	50
P106	Compensation: max. positive delta setpoint	50	0	150	K/10	50
P107	Duration of valve open to check water temperature	5	0	255	min.	5
P108	Duration of valve closed	240	35	255	min.	240
P109	Dead zone PI control for 3-way valve	10	0	100	K/10	10
P110	Hysteresis to switch between heating/fan mode	0	0	20	°C	0
P111	Threshold to switch between heating/fan mode	0	0	50	°C	0
P112	reserved	-	-	-	-	-
P113	reserved	-	-	-	-	-
P114	reserved	-	-	-	-	-
P115	reserved	-	-	-	-	-
P116	reserved	-	-	-	-	-
P117	Lock function buttons on the KaController	0	0	7	-	0
P118	On delay time	0	0	255	sec	0

Parameter	Function	Standard	Min.	Max.	Unit	KaDeck <sup>11</sup>
P119	Off delay time	0	0	255	sec	0
P120	reserved	-	-	-	-	-
P121	reserved	-	-	-	-	-
P122	Relative fan speed increase via contact	2	0	5	-	2
P123	Maximum valve running time	150	0	255	sec	150
P124	Minimum P + I output variation for valve movement (0 to 10)	5	0	100	%	5
P125	reserved	-	-	-	-	-
P126	Operating weeks	0	0	255	week	0
P127	Information on operating weeks reached (filter message)	0	52	255	week	0
P128	Reset operating week counter	0	0	1	-	0
P129	Fan speed limiter activation in certain operating modes	0	0	1	-	0
P130	Absolute fan speed increase via contact	2	0	5	-	2
P131	External ventilation, delay time	0	0	255	min.	0
P132	Operating level, master password	22	0	255	-	22
P133	Hysteresis for outside temperature to switch between heating/fan mode	0	0	255	K/10	0
P134	Threshold for outside temperature to switch between heating/fan mode	0	0	50	°C	0
P135	Activate virtual sensor	0	0	1	-	0
P136	Activate external ventilation	0	0	2	-	0

Tab. 14: Parameter key, standard revision 1.024 from 10.07.2020

# KaDeck

Assembly, installation and operating instructions

## 12.2 KaController parameter list

Parameter	Function	Standard	Min.	Max.	Unit	Comment
t001	Serial address	1	0	207	-	Address in Modbus network
t002	Baud rate 0 = Baud rate 4800 1 = Baud rate 9600 2 = Baud rate 19200	2	0	2	-	
t003	Background lighting function 0 = Slow fade in, fast fade out 1 = Slow fade in, slow fade out 2 = Fast fade in, fast fade out	0	0	2	-	
t004	Strong background lighting	4	0	5	-	
t005	Sensor calibration of KaController sensor	0	60	60	°C	
t006	LCD display contrast	15	0	15	-	
t007	BEEP setting 0 = BEEP ON 1 = BEEP OFF	0	0	1	-	
t008	Password for KaController Parameter menu	11	0	999	-	
t009	Minimum settable setpoint temperature	8	0	20	°C	
t010	Maximum settable setpoint temperature	35	10	40	°C	
t011	Interval of setpoint setting 0 = Automatic setting depending on PCB (parameterisable, freely programmable) 1 = Increment of 1°C (parameterisable PCBs) 2 = Increment of 0.5°C (freely programmable PCBs)	0	0	2	-	
t012	Date/Time setting: Year	9	0	99	-	
t013	Date/Time setting: Month	1	1	12	-	
t014	Date/Time setting: Day	1	1	31	-	
t015	Date/Time setting: Weekday	1	1	7	-	
t016	Date/Time setting: Hour	0	0	23	-	
t017	Date/Time setting: Minute	0	0	59	-	

## **13 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:

**KaDeck**

**326\*\*\***

## 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 1397**

**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**

**Wasserübertrager – Wasser-Luft-Ventilator-konvektoren –  
Prüfverfahren zur Leistungsfeststellung**

**Elektromagnetische Verträglichkeit**

**Elektromagnetische Verträglichkeit**

**Elektromagnetische Verträglichkeit**

**Sicherheit elektr. Geräte f. 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**                    **EMV-Richtlinie**  
**2014/35/EU**                    **Niederspannungsrichtlinie**

**Lingen (Ems), den 01.09.2020**

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**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

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<https://www.kampmanngroup.com/hvac/products/fan-coils/kadeck>

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