

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 unit 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.

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.

Information in accordance with UL60335-1

- ▶ 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 supply system. This unit is intended for permanent connection to a heating water circuit, and may not be connected using hose sets.
- ▶ The water network needs to include safety measures to prevent the danger of overpressure.
- ▶ This unit is not intended to be accessible to the general public. The water network needs to include safety measures to prevent the danger of overpressure.

2.2 Limits of operation and use

Operating limits		
Min./max. water temperature	°C/°F	4-80 / 39 - 176
Min./max. air intake temperature	°C/°F	6-40 / 43-104
Min./max. air humidity	%	20-60
Min. operating pressure	bar/kPa	-
Max. operating pressure	bar/kPa/psi	16/1600/232
Min./max. glycol content	%	0-50

Tab. 1: Operating limits

Operating voltage	115 V/ 60 Hz
Power/Current consumption	On the typeplate

Tab. 2: Operating voltage

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

Water quality		
pH value (at 20 °C/68°F)		8-9
Conductivity (at 20 °C/68°F)	µS/cm / ppm	<700 / <350
Oxygen content (O ₂)	mg/l / (lb/gal)	<0.1 / (<0.00000083)
Hardness	°dH / ppm CaCO ₃	4-8.5 / 0.224-0.476
Sulphur ions		not measurable
Sodium ions (Na ⁺)	mg/l / (lb/gal)	<100 / (<0.00083)
Iron ions (Fe ²⁺)	mg/l / (lb/gal)	<0.1 / (<0.00000083)
Manganese ions (Mn ²⁺)	mg/l / (lb/gal)	<0.05 / (<0.000000415)
Ammonia ions (NH ₄ ⁺)	mg/l / (lb/gal)	<0.1 / (<0.00000083)
Chlorine ions (Cl)	mg/l / (lb/gal)	<100 / (<0.00083)
CO ₂		<50
Sulfate ions (SO ₄ ²⁻)	mg/l / (lb/gal)	<50 / (<0.000415)
Nitrite ions (NO ₂ ⁻)	mg/l / (lb/gal)	<50 / (<0.000415)
Nitrate ions (NO ₃ ⁻)	mg/l / (lb/gal)	<50 / (<0.000415)

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.
- ▶ Carry out all electrical work in accordance with the National Electric Code (NEC and CEC).
- ▶ 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

Specialist knowledge

The installation of this product requires specialist knowledge of heating, cooling, ventilation, installation and electrical engineering. This knowledge, generally learned in vocational 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 vocational training

- ▶ Safety and accident prevention regulations
- ▶ Guidelines and recognised technical regulations, e.g. National Electric Code (NEC) and Canadian Electric Code (CEC).

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.

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 used 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]	23.5 / 24.4	23.5 / 24.4
Length [mm]	47.2 / 48.8	47.2 / 48.8
Height [mm]	6.5	6.5
Weight [kg]	48.5	55.1
Air volume flow [m³/h]	10.83-64.44	19.44-115.28
Internal volume of 2-pipe system [l]	0.26	0.50
Internal volume of 4-pipe system [l] cooling	0.21	0.39
Internal volume of 4-pipe system [l] heating	0.05	0.10
Heat output [W] ³	468-3744	868-9091
Cooling output [W] ⁴	132-1570	243-3050
Sound power level [dB(A)]	21-47	23-50

³ at LPHW 167 / 149 °F, $t_{l1} = 68$ °F

⁴ at LPHW 45 / 54 °F, $t_{l1} = 81$ °F

5 Construction and function

5.1 Overview

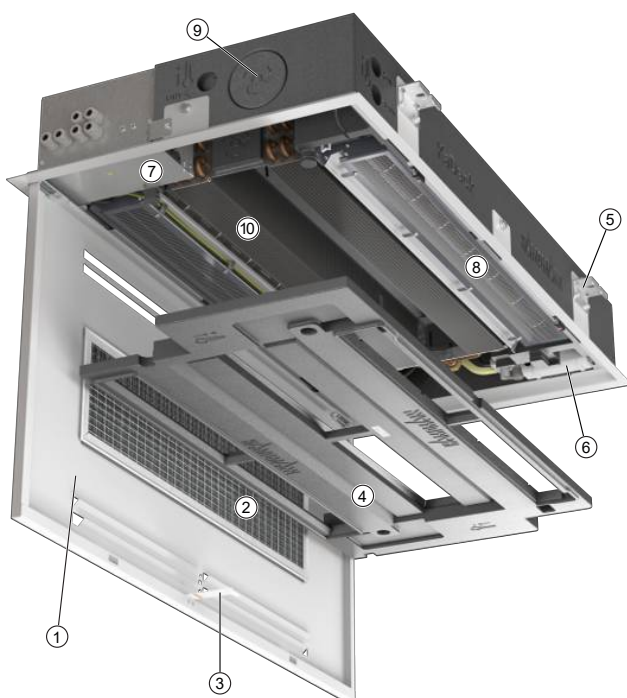


Fig. 1: KaDeck at a glance (example shows two-sided air discharge, wet cooling)

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.

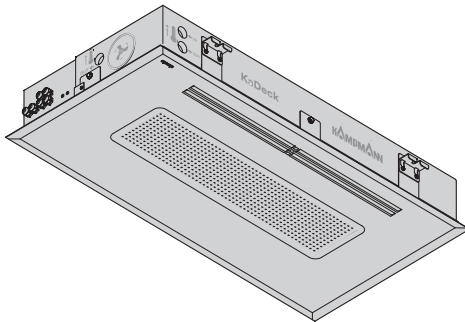
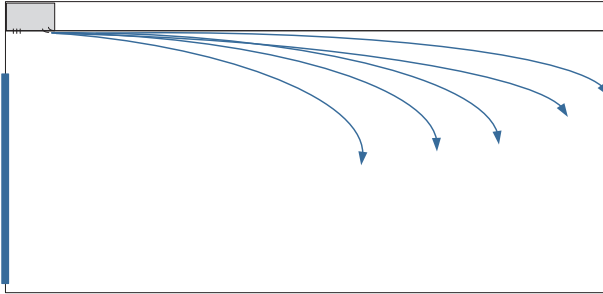
5.3 Wear parts list

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

6 Installation and wiring

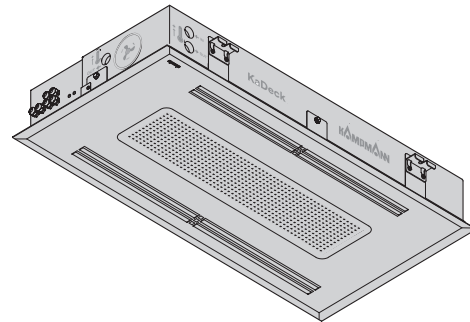
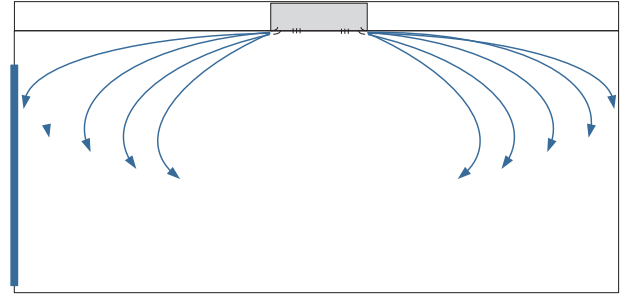
6.1 Defining the installation position

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



Isometrics – one-sided unit

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



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 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 [► 26]).
- ▶ 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.

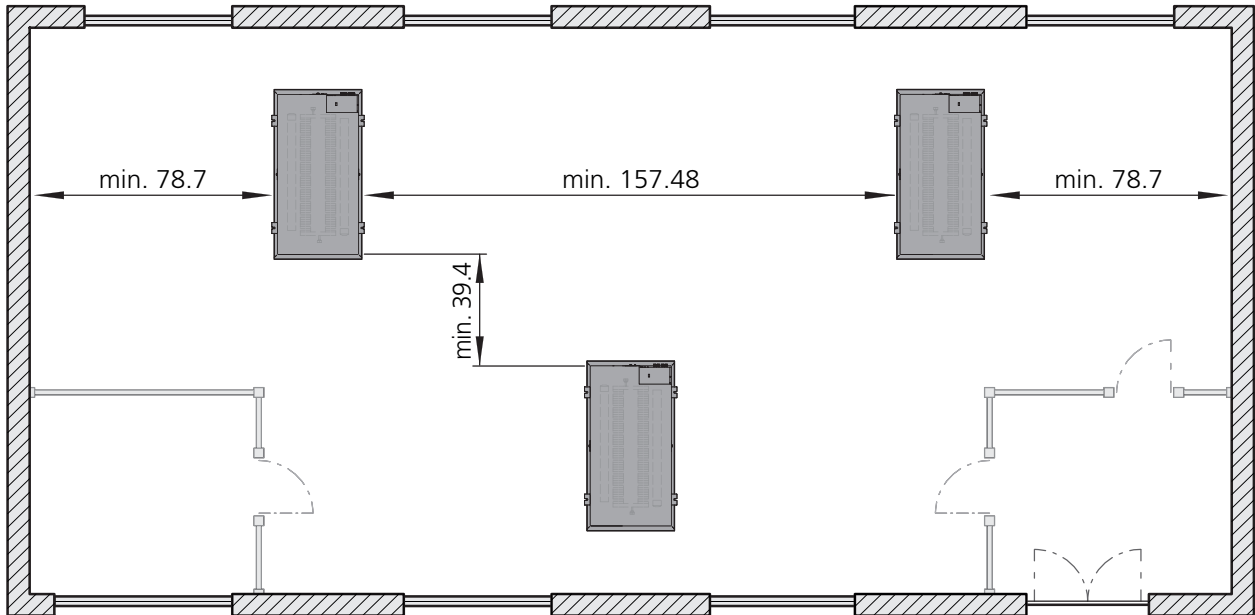
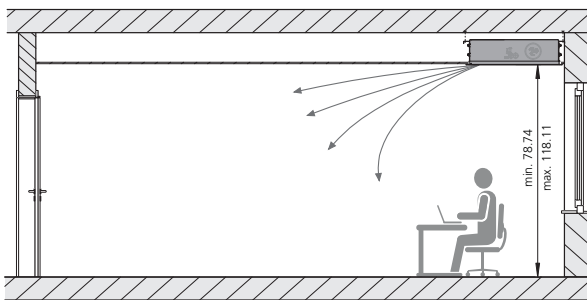
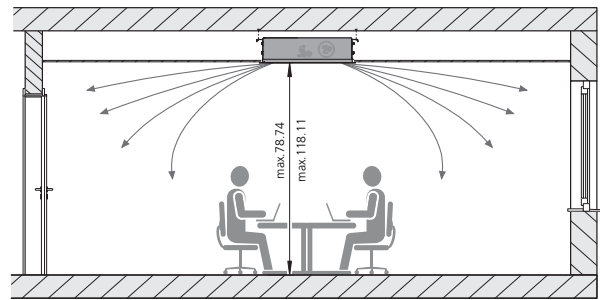


Fig. 2: Minimum distances



Example of one-sided unit



Example of two-sided unit

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.

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6.4 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.

6.4.1 Unit installation dimensions

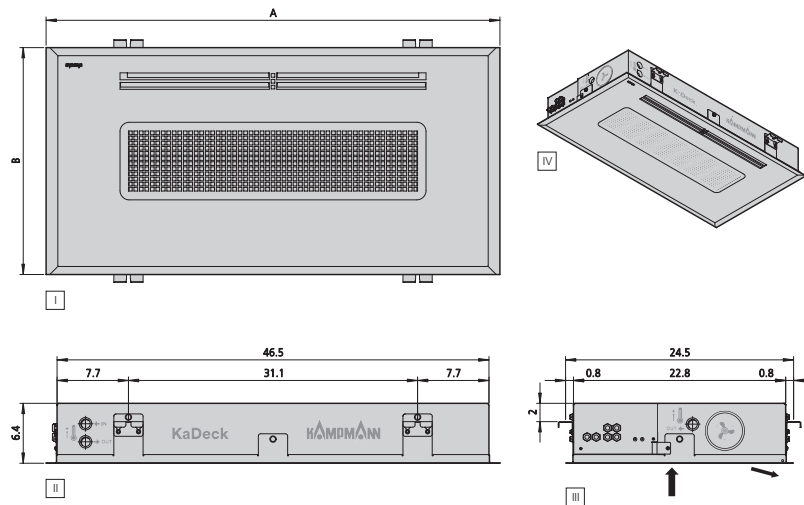


Fig. 3: Dimensions single-sided device

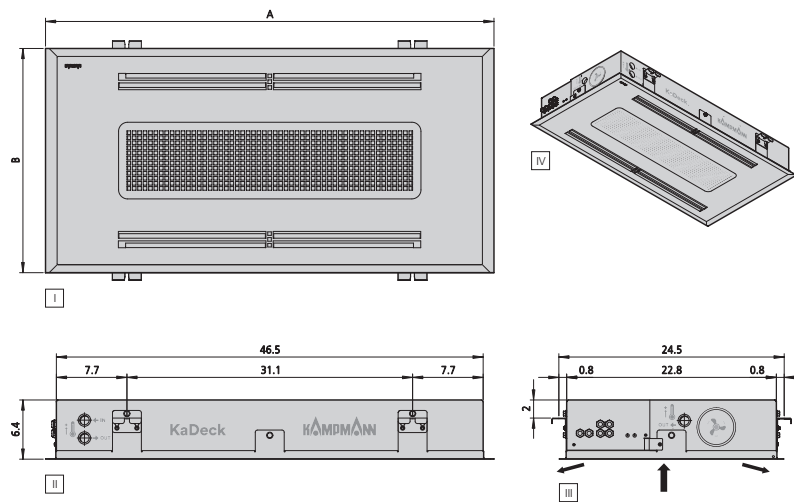


Fig. 4: Dimensions double-sided device

Item no.	System	Grid dimension [inch]	Overall length A [inch]	Width B [inch]	Water content heating [US gal.]	Water content cooling [US gal.]	Weight [lb]
326116211111*	2-pipe	23.6x23.6	47.2	23.5	1	1	48.5
326116261111*							
326116411111*	4-wire	23.6x23.6	47.2	23.5	0.2	0.8	48.5
326116461111*							
326126211111*	2-wire	24.6x24.6	28.8	24.4	1	1	55.1
326126261111*							
326126411111*	4-wire	24.6x24.6	28.8	24.4	0.2	0.8	55.1
326126461111*							

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6.4.2 Installing the unit on the ceiling

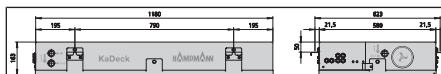


Fig. 5: Drilling positions

- ▶ Drill four fixing holes (refer to drilling spacings) into the load-bearing ceiling, insert dowels and fit the appropriate M8 threaded rods.



Fig. 6: Unit suspended

- ▶ 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).
- ▶ 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.
- ▶ 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).



Fig. 7: Opening the design panel

- ▶ Open the design panel by pulling on the notches.



Fig. 8: Pressing in the retaining plate

- ▶ Push the securing panel inwards to unlock the design panel and open it fully.

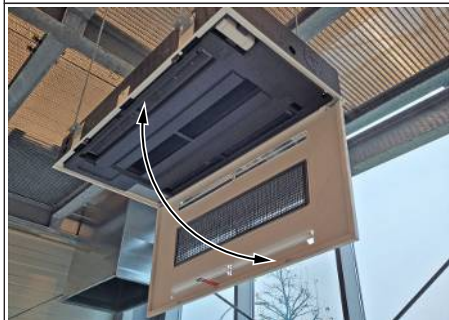


Fig. 9: Design panel open

Release the design panel downwards. **CAUTION:** When opening/removing the design panel, do NOT allow the opening angle to exceed 90° to prevent damage!



Fig. 10: Unlocking hinges

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

6.5 Installation

6.5.1 Connection to the pipe network

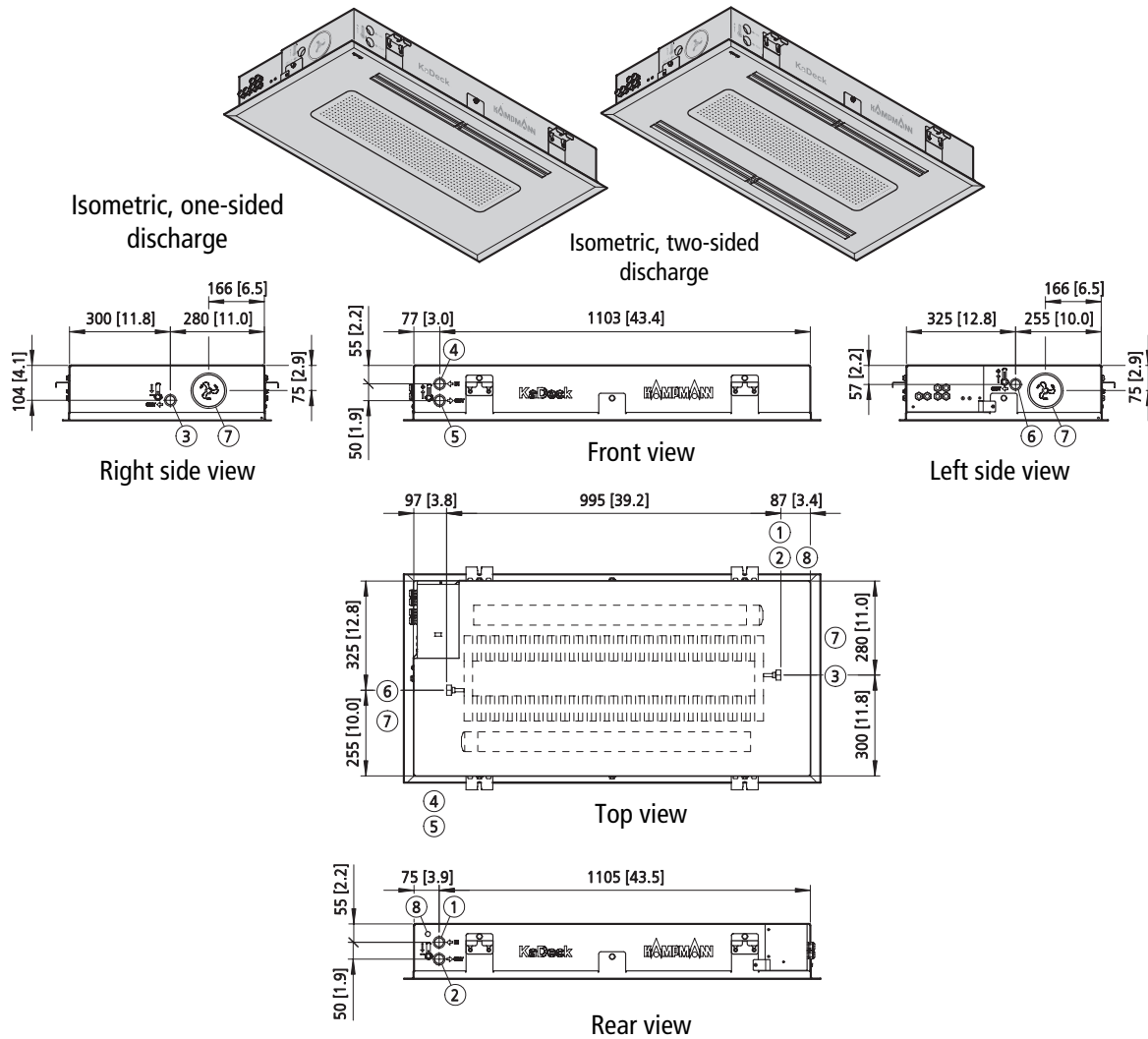


Fig. 11: Pipe connection dimensions

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

6.5.2 Primary air connection

Primary air connection for fresh air supply (optional)

KaDeck can be equipped with up to two primary air outlets. These allow preconditioned primary air to be introduced into the KaDeck and the room. The preconditioned air must be cleaned and supplied at min. 57.2 °F, max. 77 °F. With the maximum primary air volume supplied, the sound power level is max. 30 dB(A).

Maximum air volume per appliance:

- ▶ When using one spigot: 16.66 l/s
- ▶ If both spigots are used: 33.33 l/s

The maximum primary air volume is 16.66 l/s for single-sided appliances and 33.33 l/s for double-sided appliances.

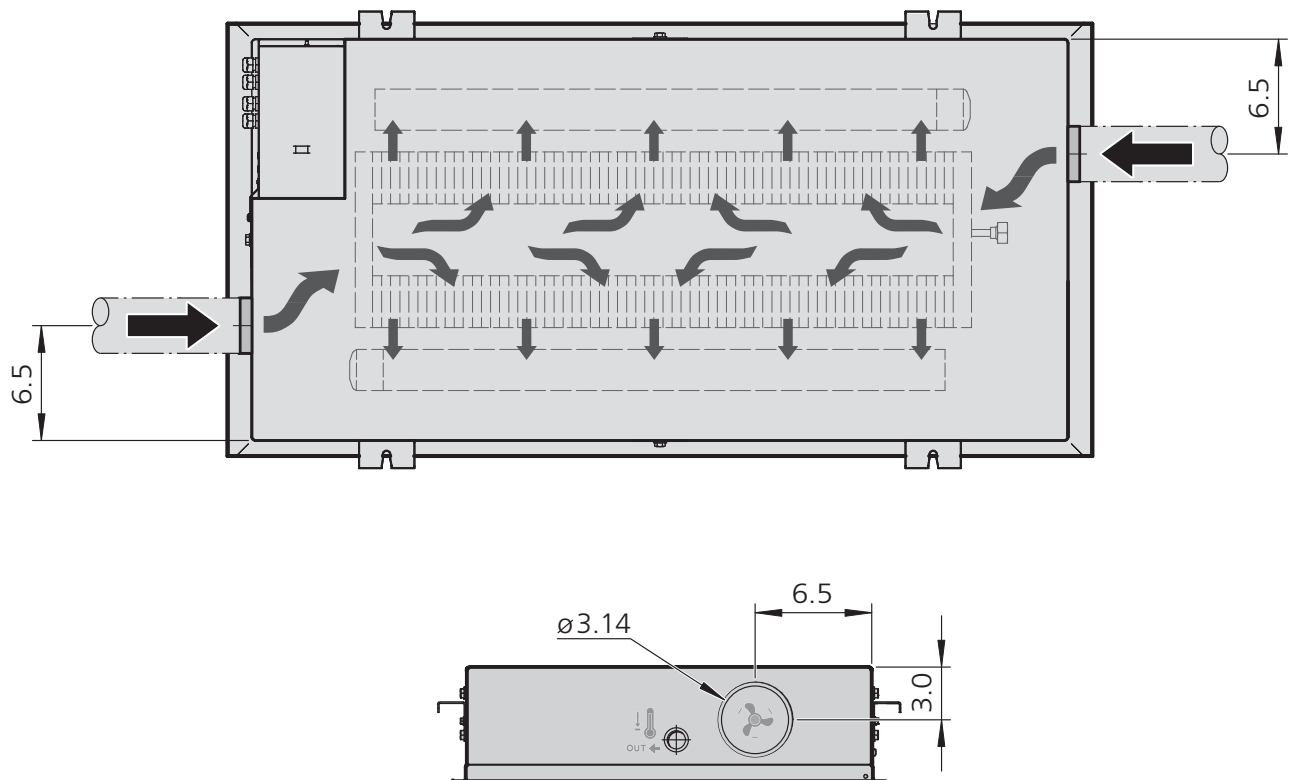


Fig. 12: Primary air spigot dimensions

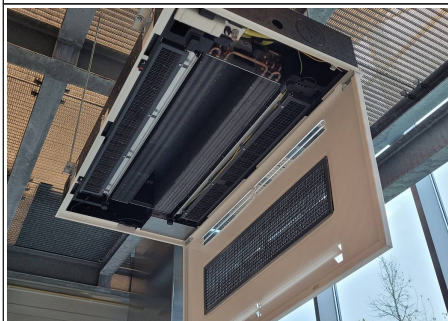
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6.5.3 Connecting the supply lines



- ▶ 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 [▶ 20] depending on the model (2-pipe / 4-pipe) and valve kit fitted (2-way pre-settable or differential pressure-independent).

Fig. 13: KaDeck without condensate tray



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

Fig. 14: 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. 15: Flexible corrugated pipes



Fig. 16: 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. 17: 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.

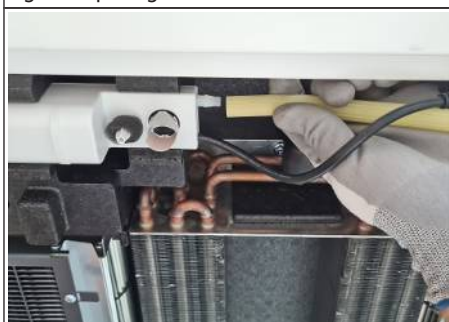


Fig. 18: Fixing the condensate hose to the condensate pump

- ▶ 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.



Fig. 19: 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.

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6.5.4 Connecting the primary air supply (optional)



Fig. 20: Removing the primary air spigot

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



Fig. 21: Sealing the primary air connection spigot

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



Fig. 22: Removing the primary air cover

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

6.5.5 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.

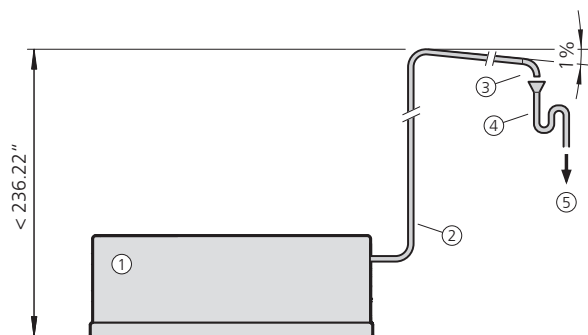


Fig. 23: Condensate drainage diagram

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

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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)

Item number	Rated voltage [VDC]	Rated power [W]	Rated current [A]	Ri analog input [kΩ]	Protection class	Protection class
3261xxx11xxx00	24	12	0.5	100	IP20	III
3261xxx12xxx00	24	21	0.9	50	IP20	III

Tab. 4: Maximum electrical connection values KaDeck

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

Information on cable laying:

The following information on cable types and cable laying must be observed in compliance with National Electric Code.

The installation, operation and maintenance of these devices must comply with the country-specific applicable laws, standards, regulations and directives.

Without *: NYM-J. The required number of cores incl. protective conductor is indicated on the cable. Cross sections are not indicated, as the cable length is included in the calculation of the cross section.

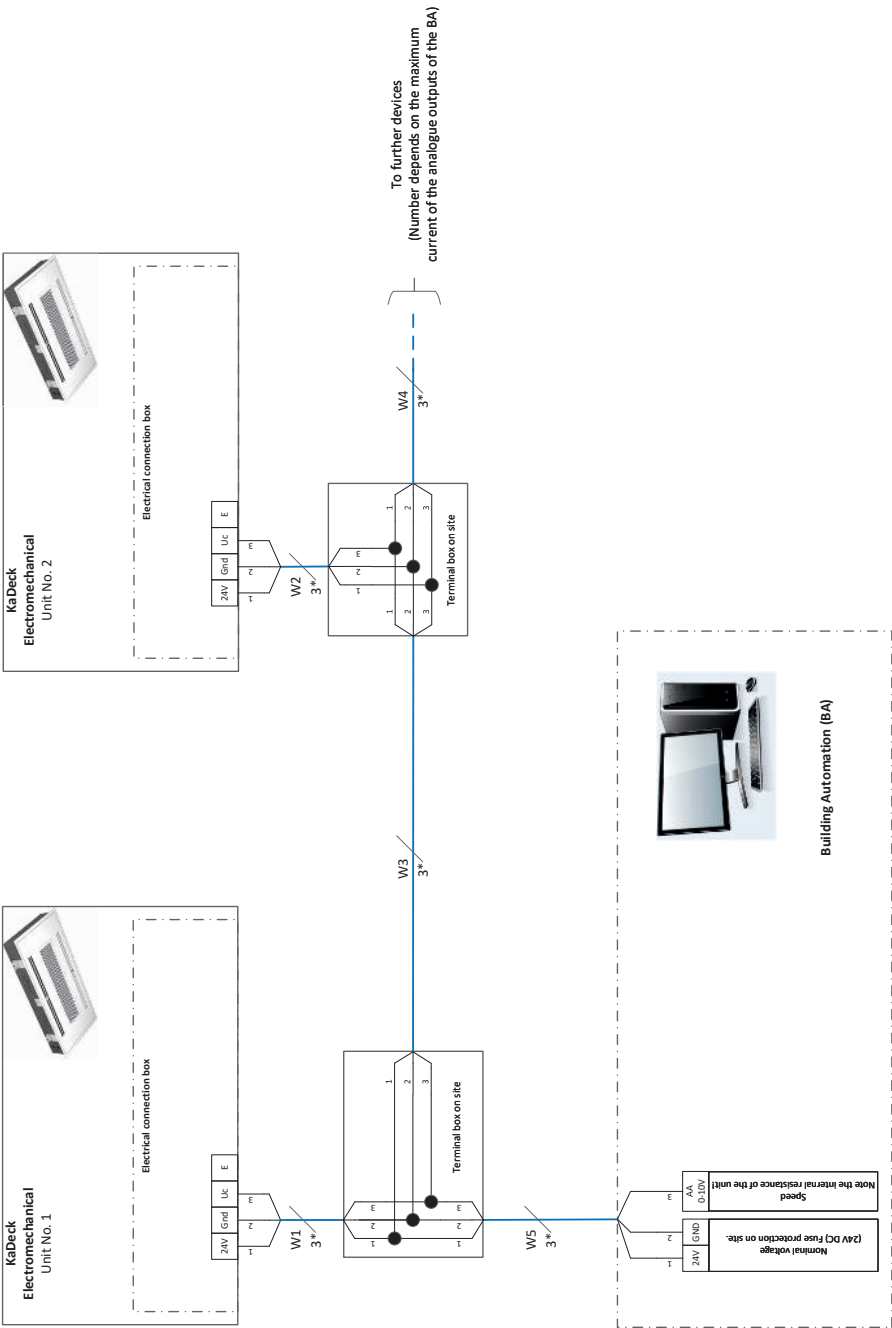
*): Shielded cable, J-Y(STY) 0.8mm. Lay separately from power lines.

**): Shielded cable stranded in pairs, e.g. UNITRONIC® BUS LD 2x2x0.22, UNITRONIC® BUS LD 3x2x0.22. Install separately from power lines.

- If other cable types are used, they must be at least equivalent.

- Lines for data or bus signals are shown with shield connected at one end. Lines for analog signals are shown with the shield not connected. Due to structural or local conditions and depending on the type and level of interference, which can be caused by magnetic and/or electric fields in high and/or low frequency ranges, among other things, a different connection of the shield (connected at both ends or not connected) may be necessary. This must be checked by the customer and, if necessary, carried out deviating from the specifications in the documentation!

	23.04.2024	General Information		1	von	2



	23.04.2024	KaDeck, electromechanical, 24VDC, Control 0-10VDC via DDC/GA	Blatt-Nr.: 2 von 2	 Genau mein Klima.

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 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.

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9 Maintenance

9.1 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.

9.2 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.

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9.3 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 [► 17]".

9.3.1 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. 24: Remove the filter.



Fig. 25: Vacuum the filter and re-fit it after cleaning.

9.3.2 Cleaning the condensate pump



Fig. 26: Dismantling the condensate pump

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



Fig. 27: 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. 28: 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.

9.3.3 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.

10 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 [► 34] provides information on who is authorised to rectify and remedy faults.

10.1 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.
	Heat exchanger dirty.	Clean dirt from the Heat exchanger.

10.2 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.

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