



KaDius

► Assembly, installation and operating instructions

Keep these instructions in a safe place for future use!

Table of contents

1 General	5
1.1 About these instructions	5
1.2 Explanation of Symbols.....	5
2 Safety.....	6
2.1 Correct use.....	6
2.2 Limits of operation and use.....	6
2.3 Risk from electrocution!.....	8
2.4 Personnel requirements - Qualifications	9
2.5 Personal Protective Equipment	9
3 Transport, storage and packaging.....	10
3.1 General transport instructions	10
3.2 Scope of delivery	10
3.3 Storage	11
3.4 Packaging	11
4 Technical data.....	12
5 Construction and function	13
5.1 Overview.....	13
5.2 Brief description	13
6 Installation and wiring	14
6.1 Requirements governing the installation site.....	14
6.2 Minimum clearances.....	14
6.3 Installation height and throws	15
6.4 Installation	15
6.4.1 Unit installation dimensions	16
6.4.2 Installing the unit on the ceiling	18
6.5 Installation	20
6.5.1 Connection to the pipe network	20
6.5.2 Connecting the supply lines.....	21
6.5.3 Venting the heat exchanger	21
6.5.4 Condensate drainage using a condensate pump	21
7 Electrical connection.....	25
7.1 Maximum electrical rating values	25
7.2 Electromechanical control.....	25
7.2.1 Connection (*00).....	25

8 Pre-commissioning checks	35
9 Operation.....	36
9.1 Operation of electromechanical control	36
10 Maintenance	39
10.1 Securing against reconnection	39
10.2 Maintenance Schedule:.....	39
10.3 Maintenance work	39
10.3.1 Replacing the filter.	41
10.3.2 Cleaning the condensate tray	42
10.3.3 Cleaning the condensate pump	43
10.3.4 Clean the inside of the unit	43
11 Faults	44
11.1 Fault table.....	44
11.2 Start-up after rectification of fault	44
12 Disposal	45
13 Certificates.....	46
13.1 360_EU_Konformitätserklärung_KaDius.pdf	47

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	4-75
Min./max. air intake temperature	°C	6-35
Min./max. air humidity	%	20-60
Min. operating pressure	bar/kPa	-
Max. operating pressure	bar/kPa	10/1000
Min./max. glycol percentage	%	0-50

Tab. 1: Limits of operation

Operating voltage	230 V/ 50/60 Hz
Power/current consumption	On the typeplate

Tab. 2: Operating voltage

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

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

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

Tab. 3: Water quality



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.

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



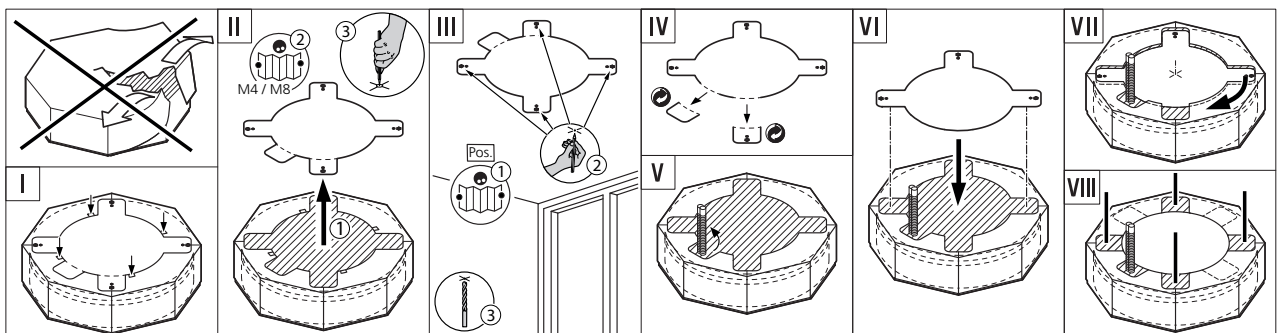
IMPORTANT NOTE!

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.



Once the suspension points have been marked, reattach the drilling template to the packaging as shown in the figure. The packaging is used as a transport aid as well as dust and installation protection. Do not properly remove the packaging until shortly before commissioning.

KaDius

Assembly, installation and operating instructions

4 Technical data

Unit	KaDius
Diameter [mm]	852
Height [mm]	208
Weight [kg]	26
Air volume flow [m³/h]	263-867
Internal volume [l]	1.8
Heat output [W] ¹	2003-5654
Cooling output [W] ²	2014-5539
Sound power level [dB(A)]	34-62

Tab. 4: Technical data KaDius

¹ at LPHW 45/40°C, $t_{l1} = 20^{\circ}\text{C}$

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

5 Construction and function

5.1 Overview

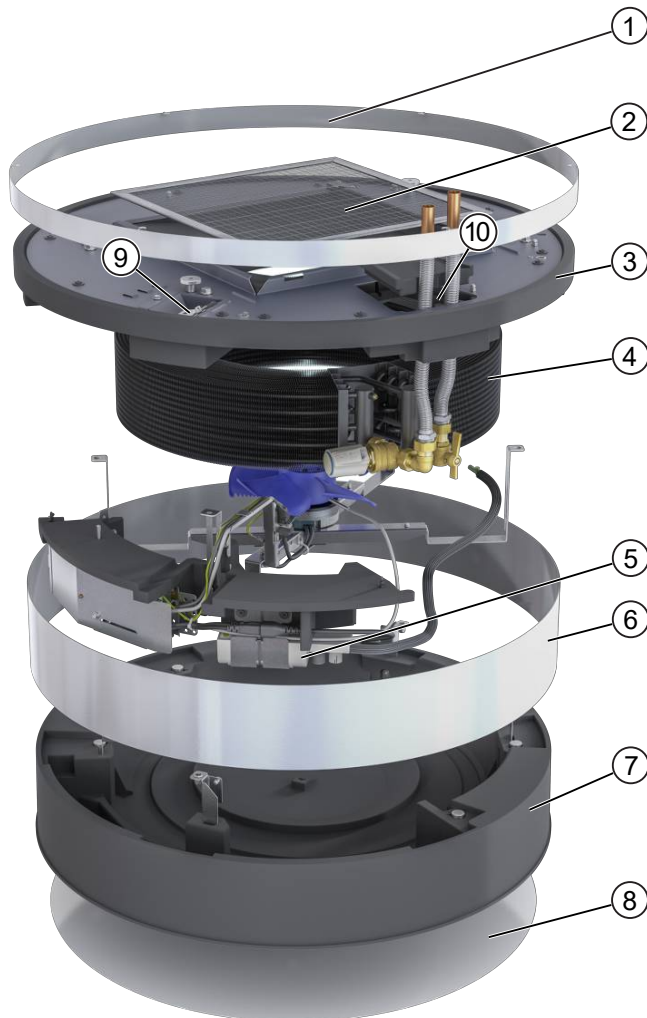


Fig. 1: KaDius at a glance (with casing)

1	Upper casing ring	2	ISO Coarse filter
3	Functional unit	4	Heat exchanger
5	Condensate pump	6	Lower casing ring
7	Lower unit segment	8	Panel
9	Repair switch	10	Water connection area

5.2 Brief description

KaDius are fan-operated ceiling-mounted units 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 are suitable for wet cooling. Horizontal air discharge behaviour under the ceiling with simultaneous suction on the top of the unit results in low flow velocities and thus a high level of comfort in the occupied zone.

6 Installation and wiring

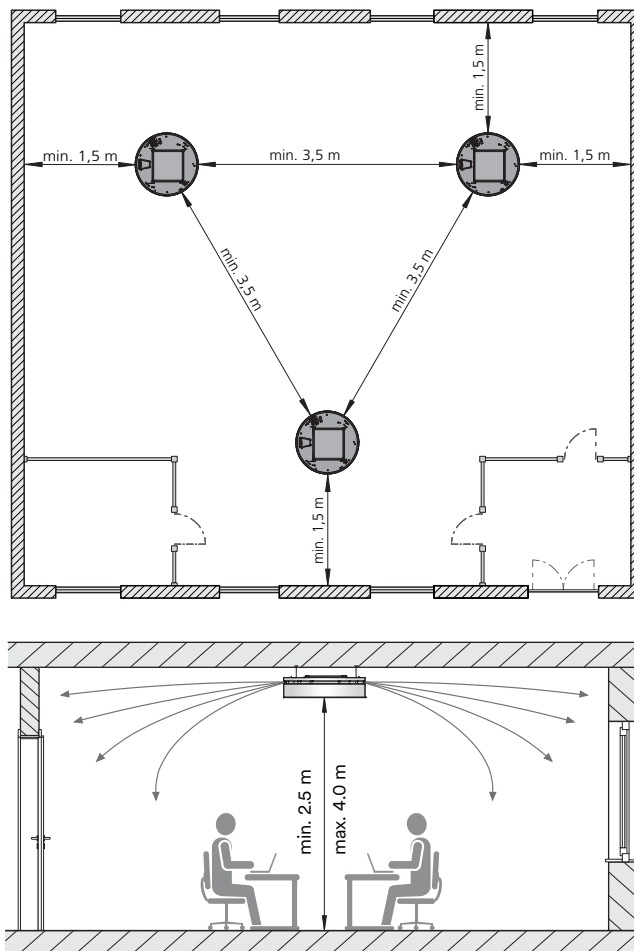
6.1 Requirements governing the installation site

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

- ▶ Ensure that the unit is securely suspended.
- ▶ Make sure that the ceiling is sufficiently load-bearing to take the weight of the unit (Technical data [► 12]).
- ▶ 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 [► 25]).
- ▶ If need be, provide a condensation connection with a sufficient gradient on site.

6.2 Minimum clearances

The minimum distance from the air outlet to the wall/window should be 1.5 m to avoid draughts. The minimum distance between the top of the unit and the ceiling must be 100 mm. The discharge area under the ceiling should be as free of objects as possible. It could negatively affect the air flow if these distances cannot be achieved.



6.3 Installation height and throws

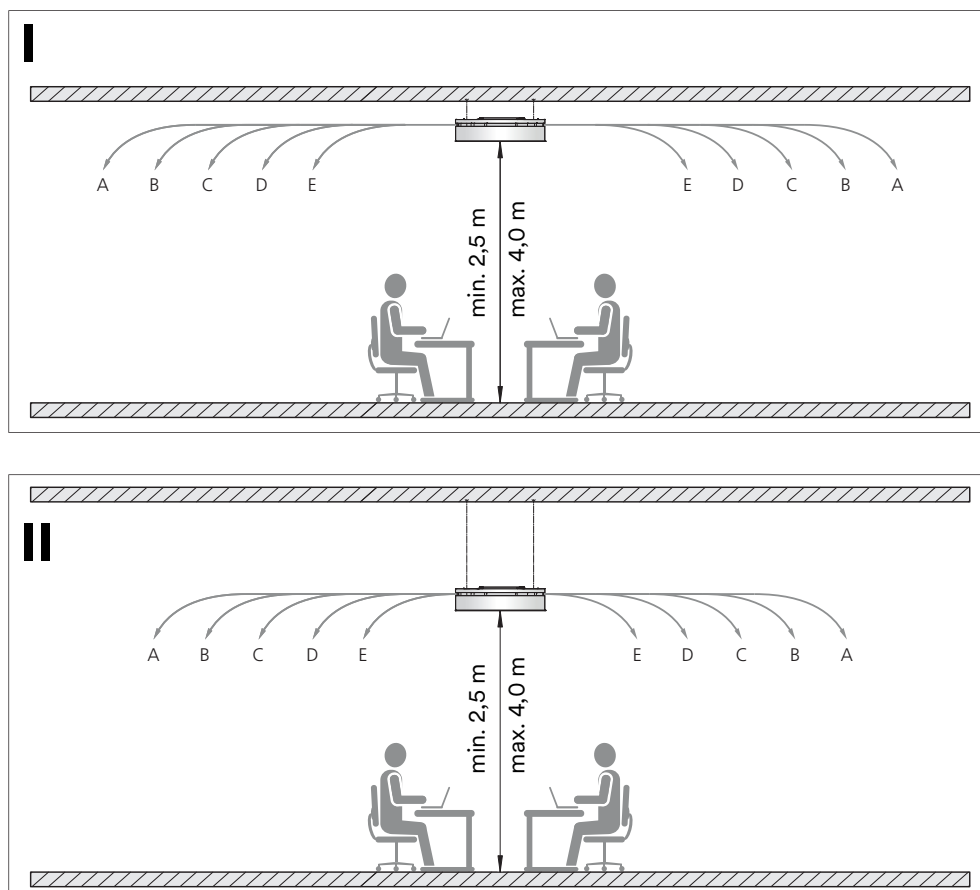


Fig. 2: KaDius throws

I	Air volume flow [%]	Throw [m]
A	100	3.25
B	80	2.75
C	60	2.25
D	40	1.75
E	20	1.25

II	Air volume flow [%]	Throw [m]
A	100	2.75
B	80	2.25
C	60	1.75
D	40	1.25
E	20	0.75

KaDius

Assembly, installation and operating instructions

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.

6.4.1 Unit installation dimensions

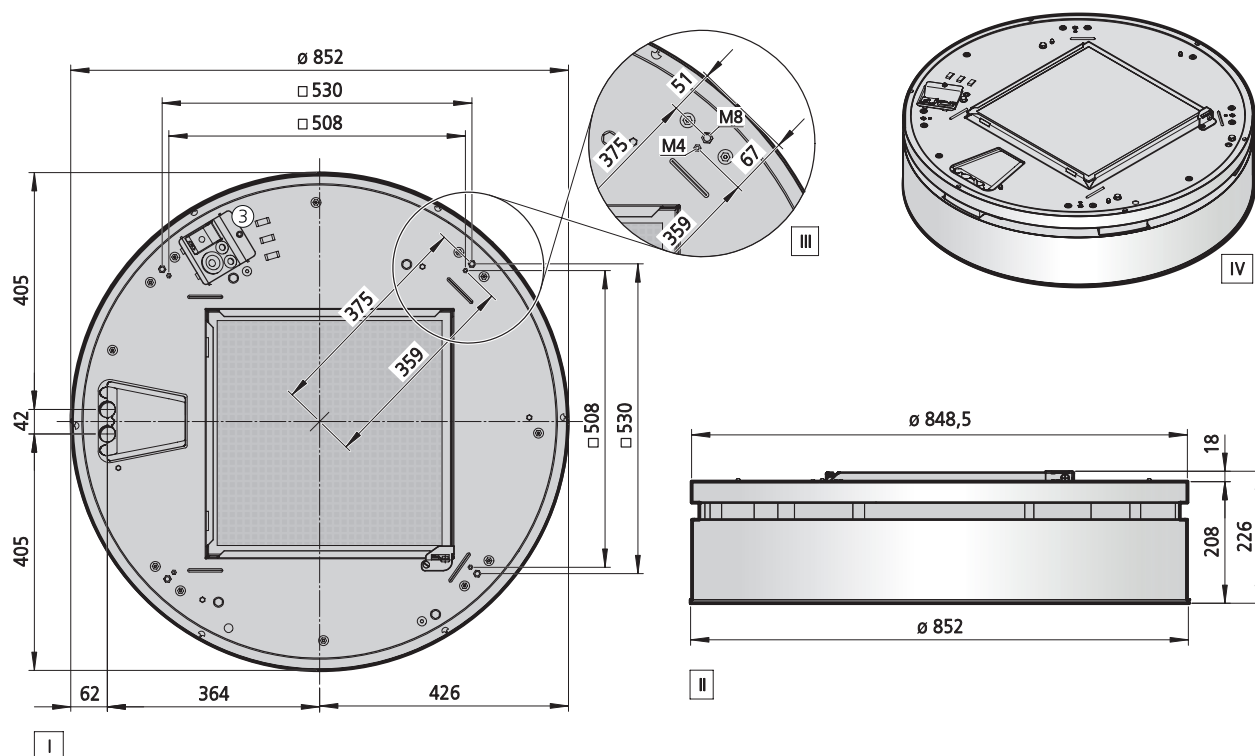


Fig. 3: KaDius dimensions

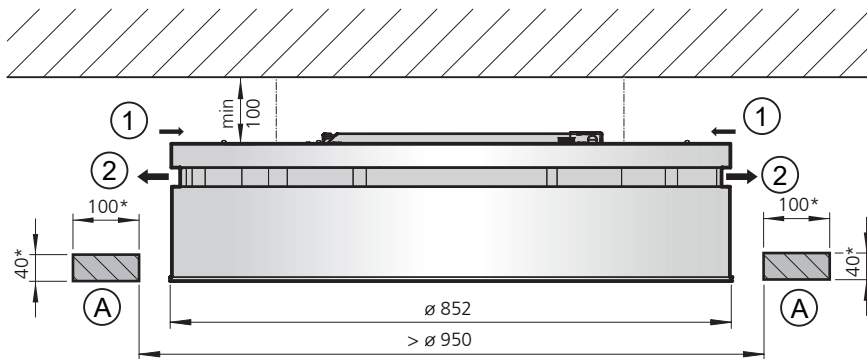
Dimensions [mm]	
Diameter [mm]	852
Height [mm]	208
Weight [kg]	26
Water content [l]	1.8

KaDius

Assembly, installation and operating instructions

Installation note

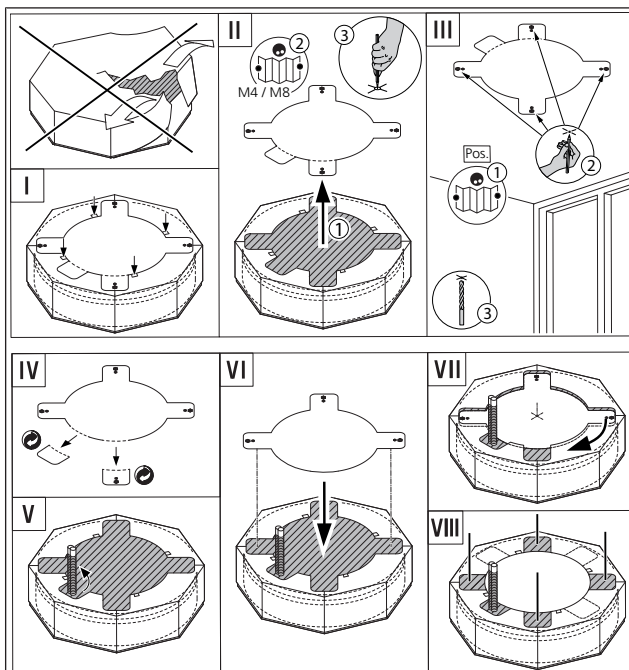
KaDius Devices can be suspended on site in conjunction with design elements such as ring lights. However, these must not be fixed to the KaDius. To ensure proper functioning and maintenance of the device, ring lights must have an internal diameter of at least 950 mm and a maximum material thickness of 40 mm. Larger dimensions require the design elements to be removed or lowered to ensure proper (barrier-free) maintenance on the KaDius.



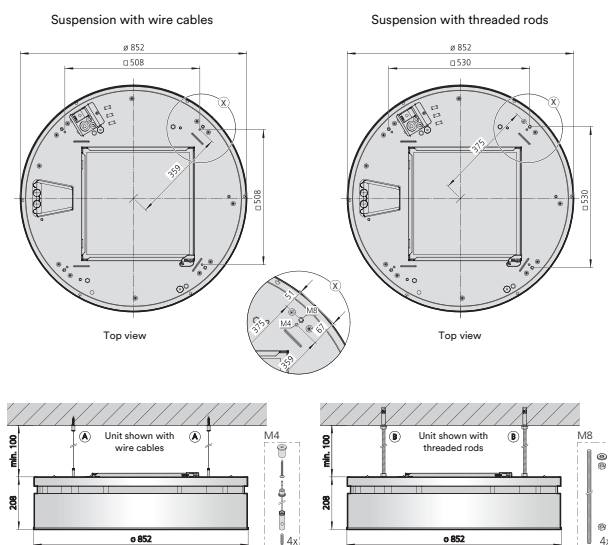
* For larger dimensions, it must be ensured that the external component can be removed or lowered to allow proper maintenance on the KaDius.

- ① Air intake
- ② Air outlet
- Ⓐ External component (e.g. light, acoustic module, ...)

6.4.2 Installing the unit on the ceiling



- Use a drilling template to mark the suspension points and then use it again to protect the product from site dust and dirt.
- Use threaded rods or wire cables to suspend the unit by the 4 installation points.



Drill four fixing holes (refer to drilling spacings) into the load-bearing ceiling and fit the appropriate suspension (threaded rod or wire cable). Use the drilling template of the outer packaging for this purpose (see Packaging [► 11]).

Fig. 4: KaDius suspension points



Fig. 5: KaDius suspended

KaDius must be suspended with wire cables (optionally available as accessories) or threaded rods (provided by the customer) from the ceiling.

6.5 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.

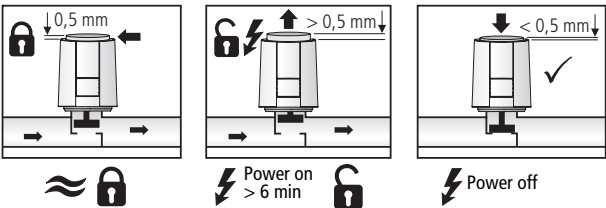


Fig. 6: "First Open" function

6.5.1 Connection to the pipe network

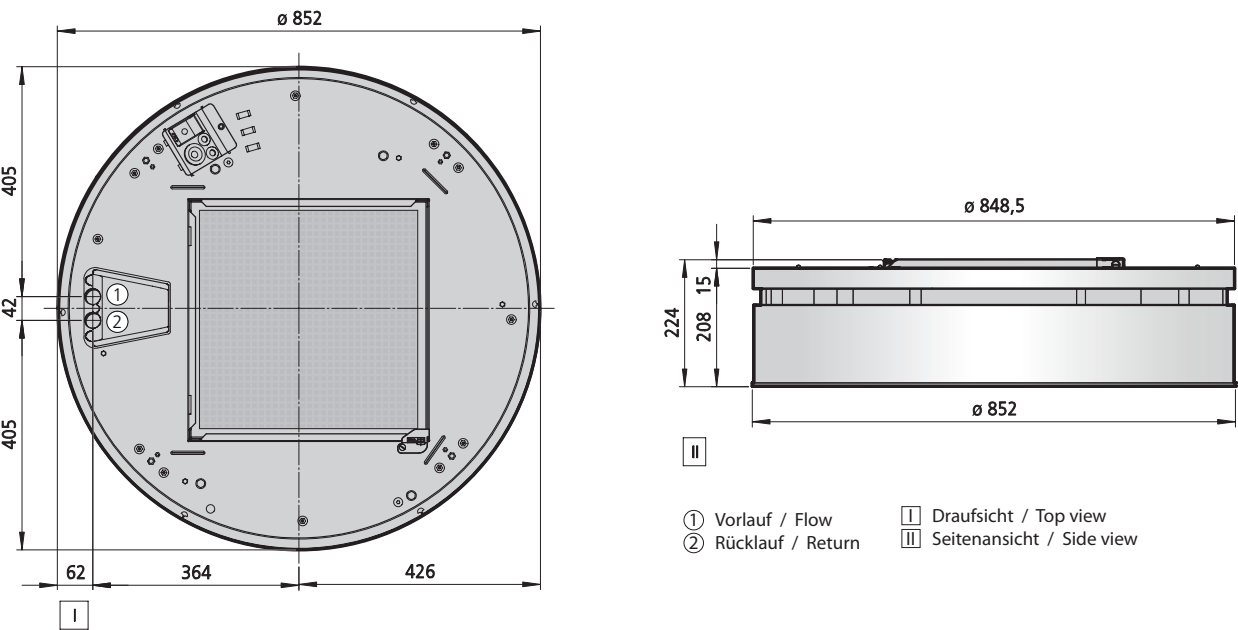


Fig. 7: Pipe connection dimensions

1	Supply	2	Return
---	--------	---	--------

Note the following points when connecting the unit's hydraulic side:

- ▶ Lay on-site pipework in such a way that the unit remains accessible for maintenance and repair work.
- ▶ Remove protective caps from the supply and return.
- ▶ Use suitable insulating material (diffusion-proof) and insulate as far as the unit.

6.5.2 Connecting the supply lines



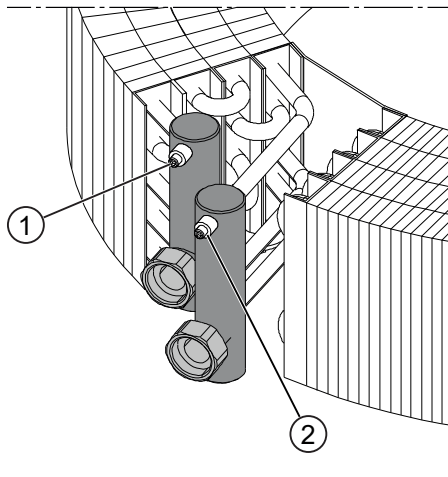
Fig. 8: Supply lines

- ▶ Connect the supply lines to corrugated stainless steel pipes (copper connector 18 x 1 mm).
- ▶ Pay attention to the correct connection of supply and return (instructions immediately in front of the corrugated stainless steel pipes).
- ▶ Use suitable diffusion-proof insulating material.

6.5.3 Venting the heat exchanger

Venting the heat exchanger

- ▶ Switch off the unit. Prepare the tool and provide access to the vent screw.
- ▶ Unscrew the screw and allow air to escape until water continuously escapes.
- ▶ Tighten the screw hand-tight.
- ▶ Switch on the unit and check for leak-tightness and proper operation.
- ▶ Repeat if necessary, if there is still air in the system.



1	Supply vent screw	2	Return vent screw
---	-------------------	---	-------------------

6.5.4 Condensate drainage using a condensate pump

The water is drawn off by the condensate pump and discharged via a hose to be connected on the pressure side. Depending on the conditions on site, the water can be introduced into drain lines, e.g. with a siphon connection.

In the event of a fault in the condensate drain, the water level will continue to rise until the capacitive resistance sensor actuates an alarm contact. The contact can be evaluated by external signal devices.

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

Condensate drain

- ▶ Ensure that drainage of condensate from the condensate pump runs along a natural gradient with an adequate cross-section (minimum 1/2"). In the case of long condensate lines, the cross-section should be enlarged accordingly.
- ▶ Check whether the condensate line must be insulated to prevent condensation from forming along the line.
- ▶ Never use a rigid transition to the on-site condensate drain. A free overflow into a siphon is recommended.

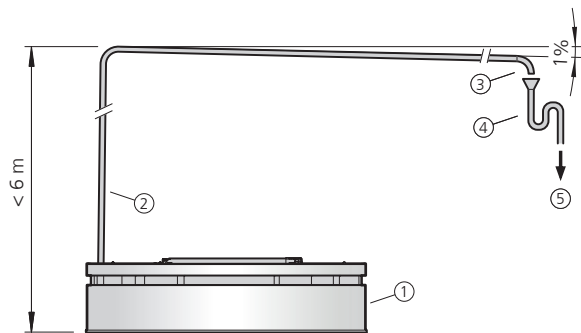
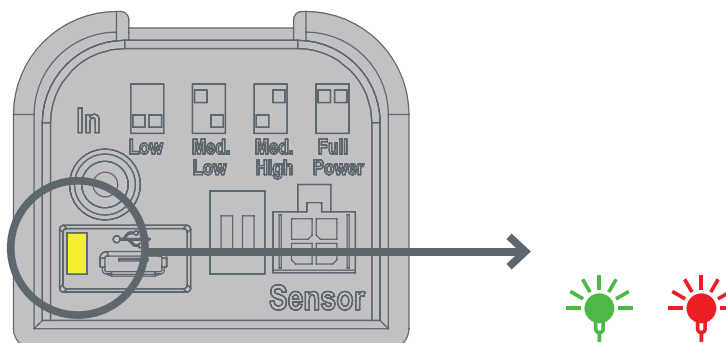


Fig. 9: Condensate drainage diagram



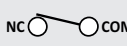
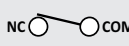
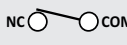
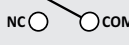
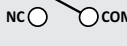
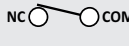
1	KaDius	2	Condensate line
3	Free outlet (DIN EN 1717)	4	Odour trap
5	Waste water network		

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		
Driven	Below the alarm stage		
Driven	Alarm activated		

LED displays in operation

No energy		The pump is incorrectly wired or there is no input voltage. The problem with the A/C system or alarm is incorrectly wired.
Start LED sequence (standard mode)		The alternating Red/Green flashes only 5x, then stops and changes to Standby mode.
Start LED sequence (peripheral mode)		The alternating Red/Green flashes only 5x, then stops and changes to Standby mode.
Standby mode - Wait for water		Continuously flashes green.
Water pumps		Mono-coloured green. Runs in low, middle-low, middle-high or high power, normal operation.
High-water mode		Red flashing, running above the high water level.
Alarm mode - Relax activated		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.
Reconfigure code		The pump features 3 extra-long running cycles and reconfigures the DIP switches for more capacity.

KaDius

Assembly, installation and operating instructions

Connecting the condensate pump (if provided)

- ▶ Connect the power supply and alarm contact (enclosed cable with plug) according to the enclosed wiring diagram.
- ▶ Connect the hose for condensate drainage (enclosed). Flow direction: see arrow on the side of the housing

Technical data	
Maximum flow rate	42 l/h (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 VAC 50/60 Hz with automatic detection of the universal power input
Power 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 tube	6.25 mm I.D. (1/4") × 1 m (3.3 ft.)
IP class	Completeness potted, 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. 5: Technical data of the condensate pump

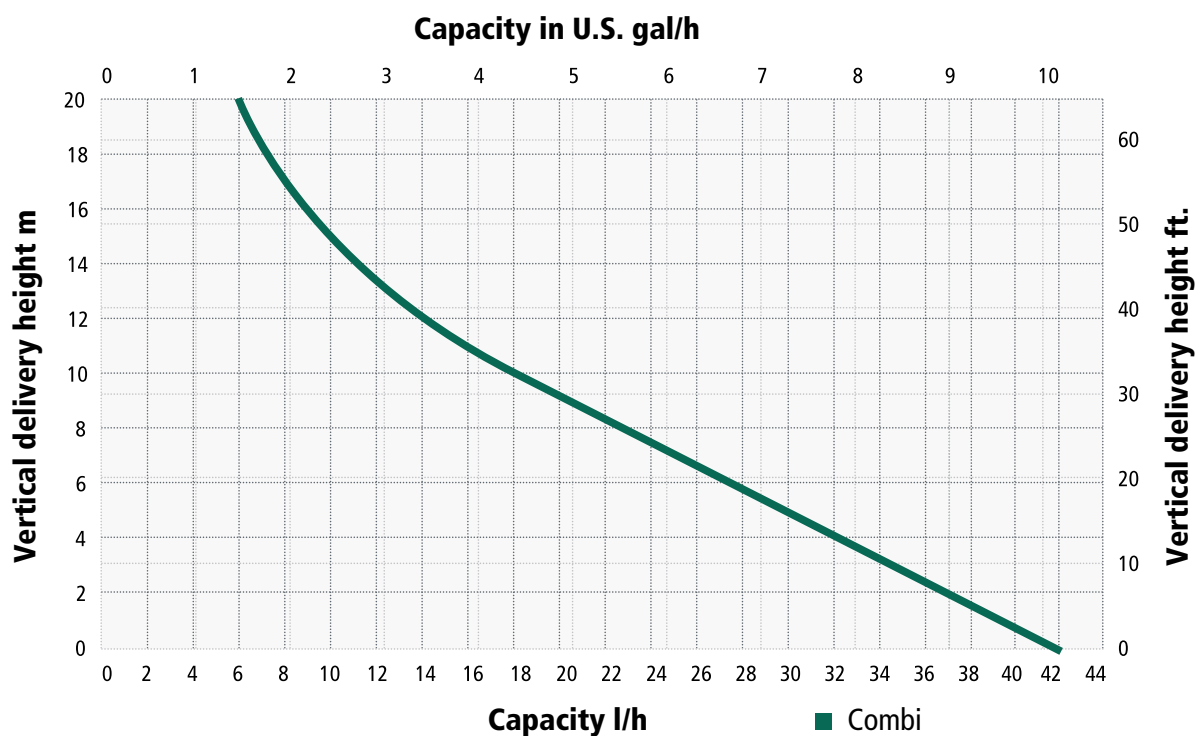


Fig. 10: Capacity diagram

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

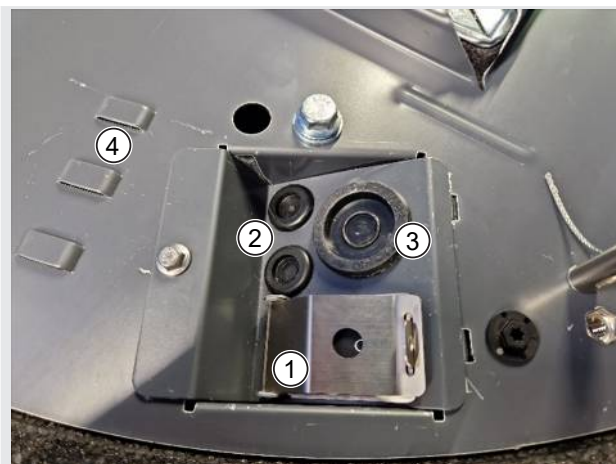
KaDius, electromechanical model

Article number	Nominal voltage [V AC]	Mains frequency [Hz]	Nominal power [W]	Nominal current [A]	Leakage current [mA]	Maximum pre-fuse [A]	Ri analogue input [kΩ]	IP class	Protection class
360xxxxx xxxx00	230	50	47.5	0.41	ca. < 3.5	B 16	100	IP20	I

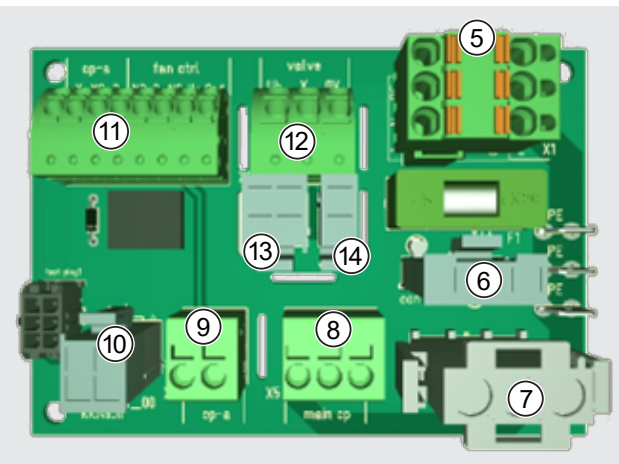
Tab. 6: Maximum electrical connection values KaDius

7.2 Electromechanical control

7.2.1 Connection (*00)



Line entry (top side of unit)



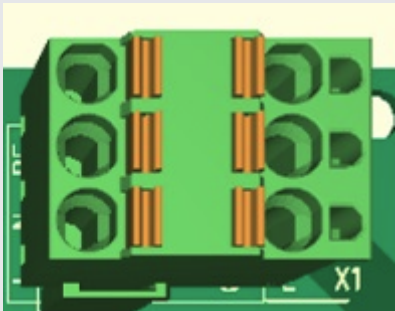
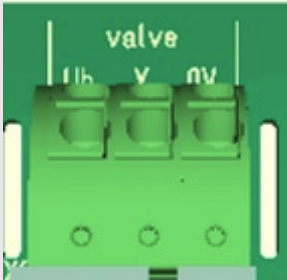


Patch board

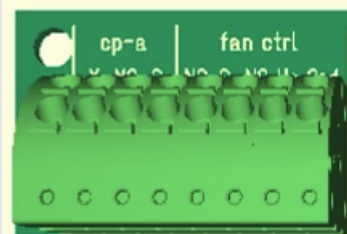





1	Lockable repair switch	2	230 V line entry
3	Data cable entry	4	Cable strain relief
5	Power supply 230 V	6	Repair switch connection
7	Fan power supply connection	8	Condensate pump power supply connection
9	Condensate pump condensate alarm connection	10	Fan control signal connection
11	Potential-free condensate alarm, 0 – 10 V fan control and potential-free motor fault alarm	12	Valve actuator control, (230 V Open/Closed, 24 V AC/DC Open/Closed or 24 V AC/DC continuous
13	Valve actuator connection, 24 V AC/DC continuous	14	Valve actuator connection 230 V or 24 V AC/DC Open/ Closed

Circuit description

- ▶ All units need a 230 V/50 Hz power supply.
- ▶ An accessible lockable repair switch is located on the top of the unit.
- ▶ Factory-fitted actuators are connected to the patch board via plugs.
- ▶ The appropriate terminals for controlling the actuators are available on the patch board.
- ▶ The speed of the EC fans can be infinitely controlled via a 0 – 10 V DC signal. The internal motor electronics detects any possible motor malfunction and automatically switches off the fan.
- ▶ A potential-free "motor fault signal" contact is also available on the patch board.
- ▶ A potential-free "condensate alarm" contact is available on the patch board.
- ▶ The patch board also features a micro-fuse.

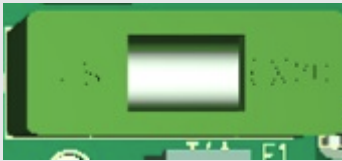

Description of the patch board RP_Kds_00

Section of the printed circuit board	Description
	<p>Terminal block X1 (230 V AC supply)</p> <ul style="list-style-type: none"> ▶ 230 V/50 Hz supply ▶ Push-in terminals (max. cross-section 2.5 mm²) <p>2x PE 2x N 2x L</p>
	<p>Terminal block X2 (valve control Y1)</p> <ul style="list-style-type: none"> ▶ External valve control Y1 <p>Depending on the valve actuator and on-site control:</p> <ul style="list-style-type: none"> ▶ 230 V AC/50 Hz Open/Closed for heating/cooling (terminals Y/0V) ▶ 24 V AC/DC Open/Close for heating/cooling (terminals Y/0V) ▶ 24 V AC/DC continuous for heating/cooling (terminals Ub/Y/0V)
	<p>Con2 connection (actuator connection)</p> <ul style="list-style-type: none"> ▶ Molex connector, 2-pin <p>Depending on the valve actuator and on-site control:</p> <ul style="list-style-type: none"> ▶ 230 V AC/50 Hz Open/Closed for heating/cooling ▶ 24 V AC/DC Open/Close for heating/cooling <p>Con2 and Con3 may not be connected in parallel!</p>
	<p>Con3 connection (actuator connection)</p> <ul style="list-style-type: none"> ▶ Molex connector, 4-pin ▶ 24 V AC/DC continuous for heating/cooling <p>Con2 and Con3 may not be connected in parallel!</p>

Section of the printed circuit board	Description
	<p>Terminal block X3 (control voltage/fault alarm):</p> <p>Fan control:</p> <ul style="list-style-type: none"> ▶ UC/GND 0 – 10 V DC signal for EC fan speed continuously variable ▶ NO/C/NC potential-free motor alarm contact 30 V DC/1 A ▶ No fault -> relay not energised <p>Cp-a:</p> <ul style="list-style-type: none"> ▶ NC/C potential-free condensate alarm contact 30 V DC/1 A ▶ X free terminal ▶ No fault -> contact closed
	<p>Con4 connection (fan control)</p> <ul style="list-style-type: none"> ▶ 4-pin plug ▶ (1/2) motor fault ▶ (3/4) 0 – 10 V signal
	<p>Terminal block X4 (condensate alarm connection)</p> <ul style="list-style-type: none"> ▶ Cp-a: (NC/C) condensate pump alarm input
	<p>Terminal block X5 (condensate pump power supply connection)</p> <ul style="list-style-type: none"> ▶ Main cp: PE/N/L – 230 V AC/50 Hz
	<p>Con5 connection (fan power supply connection)</p> <ul style="list-style-type: none"> ▶ 3-pin plug ▶ 230 V AC/50 Hz
	<p>Con1 connection (repair switch connection)</p> <ul style="list-style-type: none"> ▶ 4-pin plug

KaDius

Assembly, installation and operating instructions

Section of the printed circuit board	Description
	<p>Fuse F1:</p> <ul style="list-style-type: none">▶ Fuse 4 A slow-acting▶ 230 V AC▶ Dimensions: 5 x 20 mm
	<p>Repair switch</p> <ul style="list-style-type: none">▶ A lockable repair switch is always fitted and connected to the unit.

Tab. 7: Description of the patch board RP_Kds_00

Information on cable laying:

The following information on cable types and cable laying must be observed in compliance with VDE 0100.

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(ST)Y 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.

- The connection terminals on the device are suitable for a maximum wire cross-section of 2.5 mm², the mains plug for max. 4.0 mm².

- When using residual current circuit breakers, these must be at least mixed frequency sensitive (type F). For the design of the rated residual current, the specifications from DIN VDE 0100 Parts 400 and 500 must be observed.

- For the design of the on-site mains supply and fuse protection (C16A, max. 10 devices), the electrical data in the table below must be observed.


- 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!

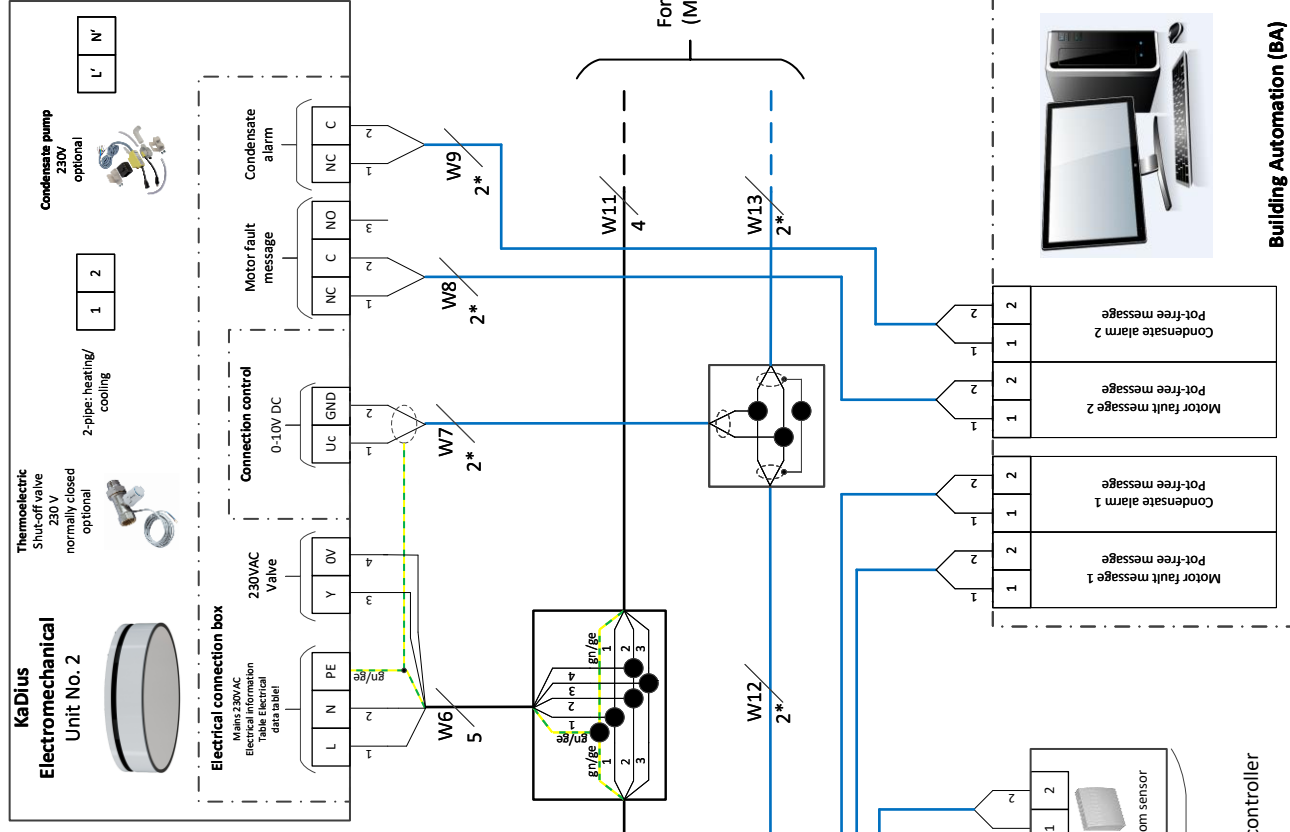
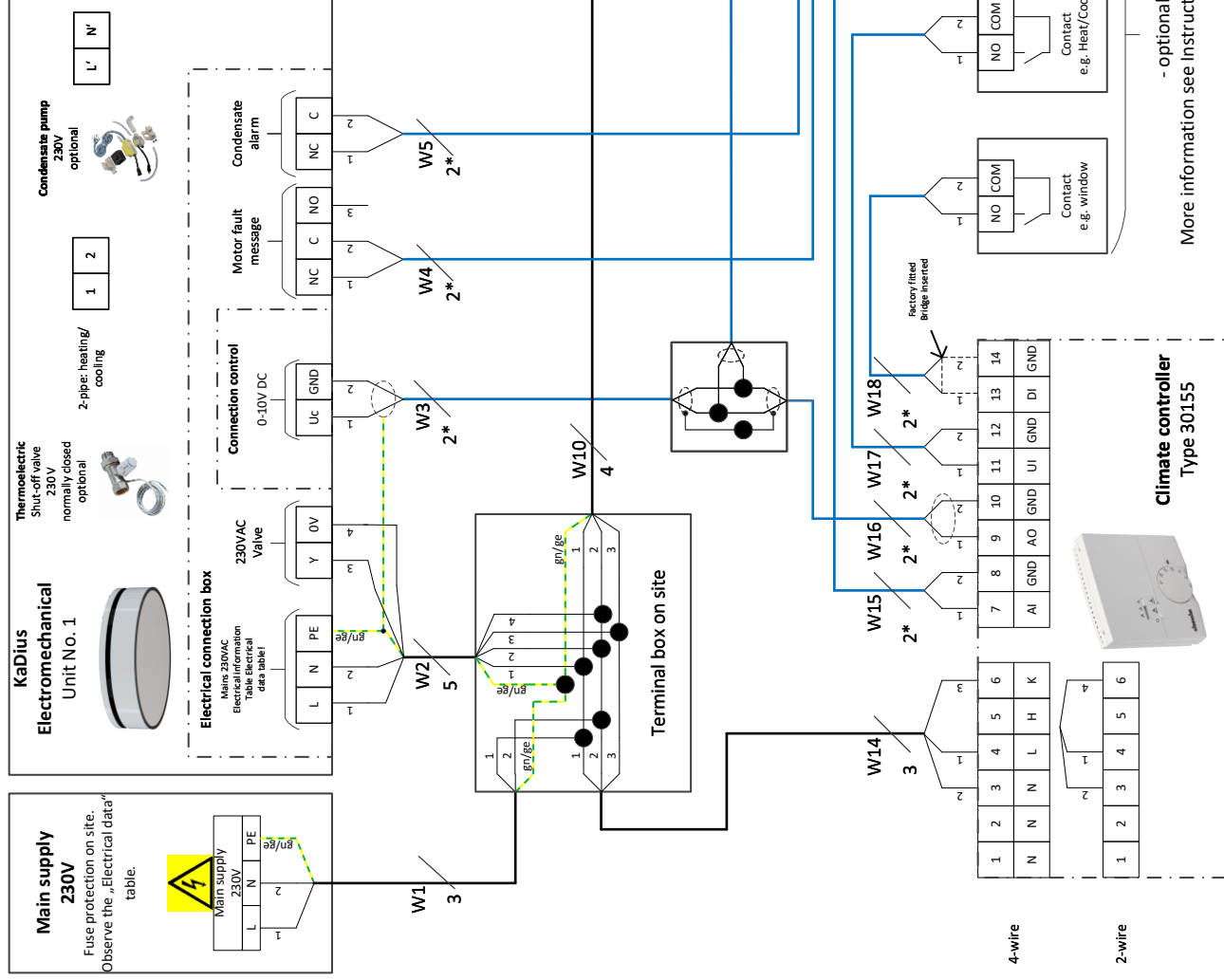
Electromechanical:

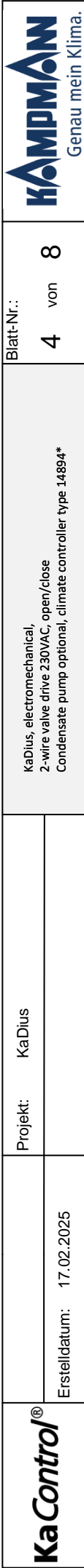
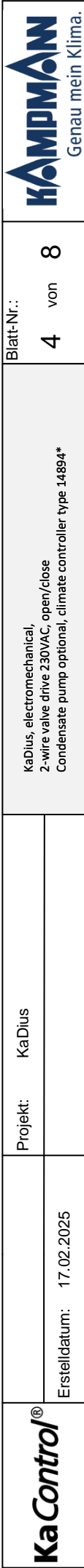
- Cable length between speed controller and the last device: maximum 100 m, from 20 m connect shield on one side.

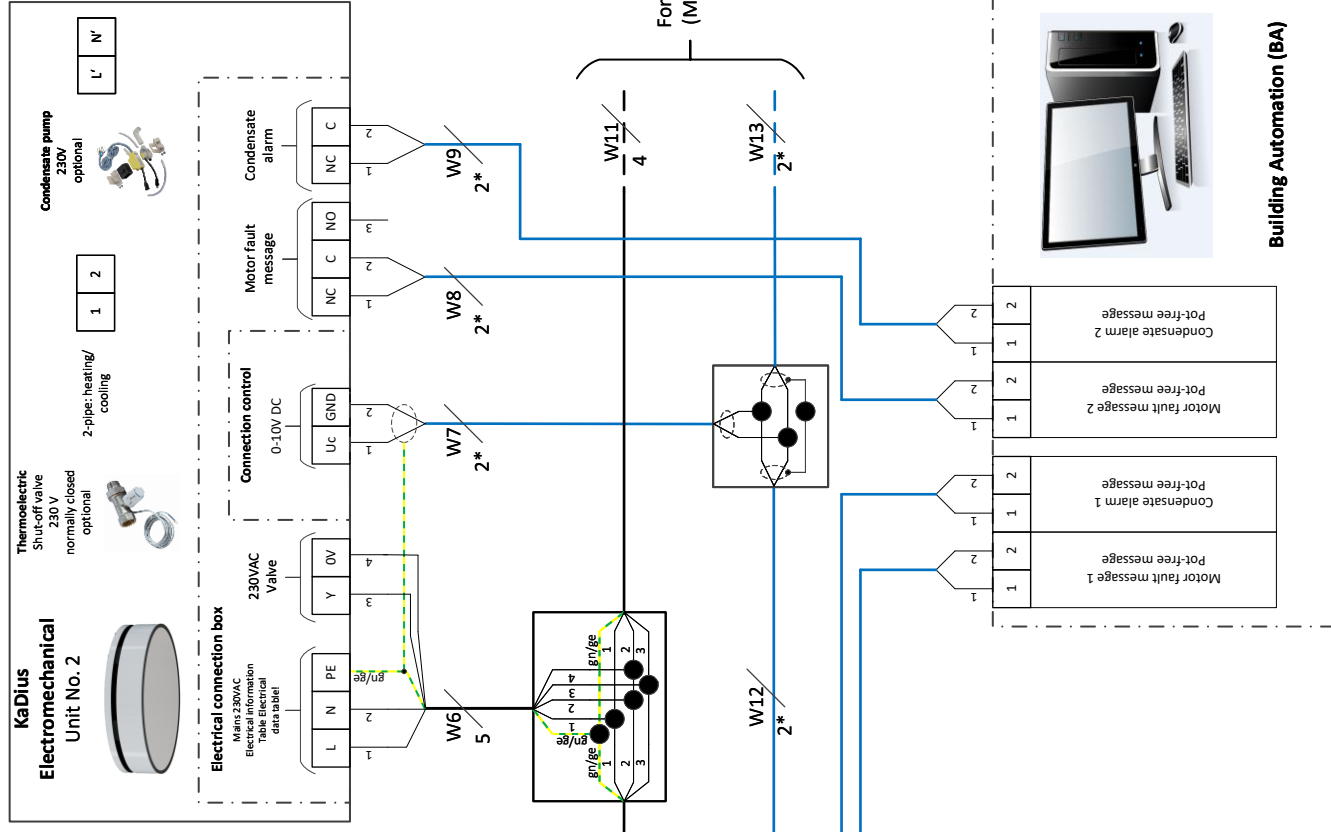
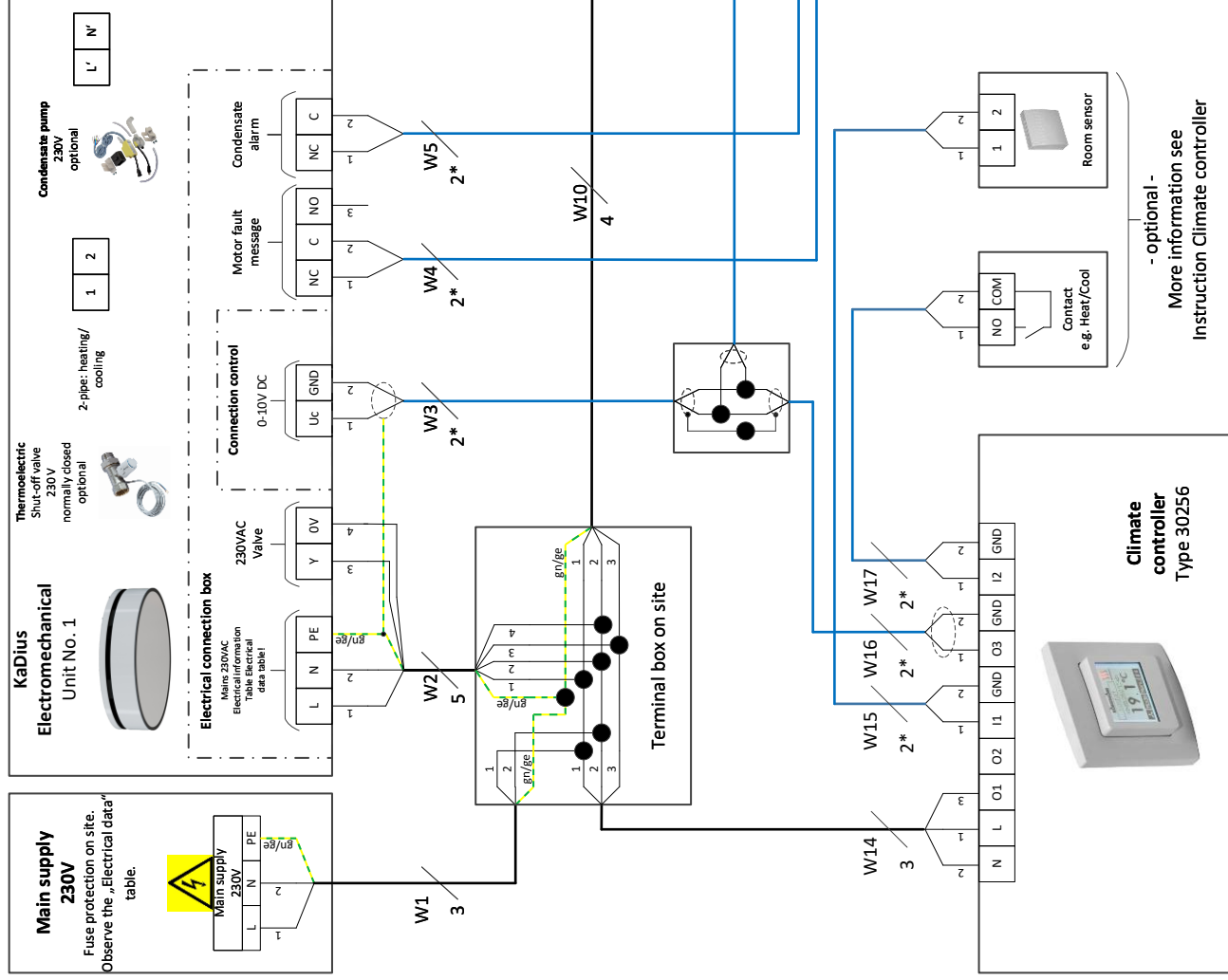
- Cable length between room thermostat and temperature sensor or switch contact: maximum 50 m.

- Cable length between speed controller and temperature sensor or switching contact: maximum 100 m.

KaControl®	Projekt: KaDius		General Information	Blatt-Nr.: 2 von 8	 Genau mein Klima.
	Erstelldatum: 17.02.2025				







Main supply
230V

Fuse protection on site.
Observe the „Electrical data“ table.

PE	1
N	2
L	3

KaDius
Electromechanical
Unit No. 1

Thermoelectric shut-off valve
24V/230V AC/DC
normally closed
optional

2-pipe: heating/cooling

Condensate pump
230V
optional

Electrical connection box

Main: 230V AC
Electrical information
Table: Electrical data table!

L	1	N	2	PE	3
Y	4	OV	5		

Connection control
0-10V DC

UC	1	GND	2
----	---	-----	---

Motor fault message

NC	1	C	2	NO	3
----	---	---	---	----	---

Condensate alarm

NC	1	C	2
----	---	---	---

KaDius
Electromechanical
Unit No. 2

Thermoelectric shut-off valve
24V/230V AC/DC
normally closed
optional

2-pipe: heating/cooling

Condensate pump
230V
optional

Electrical connection box

Main: 230V AC
Electrical information
Table: Electrical data table!

L	1	N	2	PE	3
Y	4	OV	5		

Connection control
0-10V DC

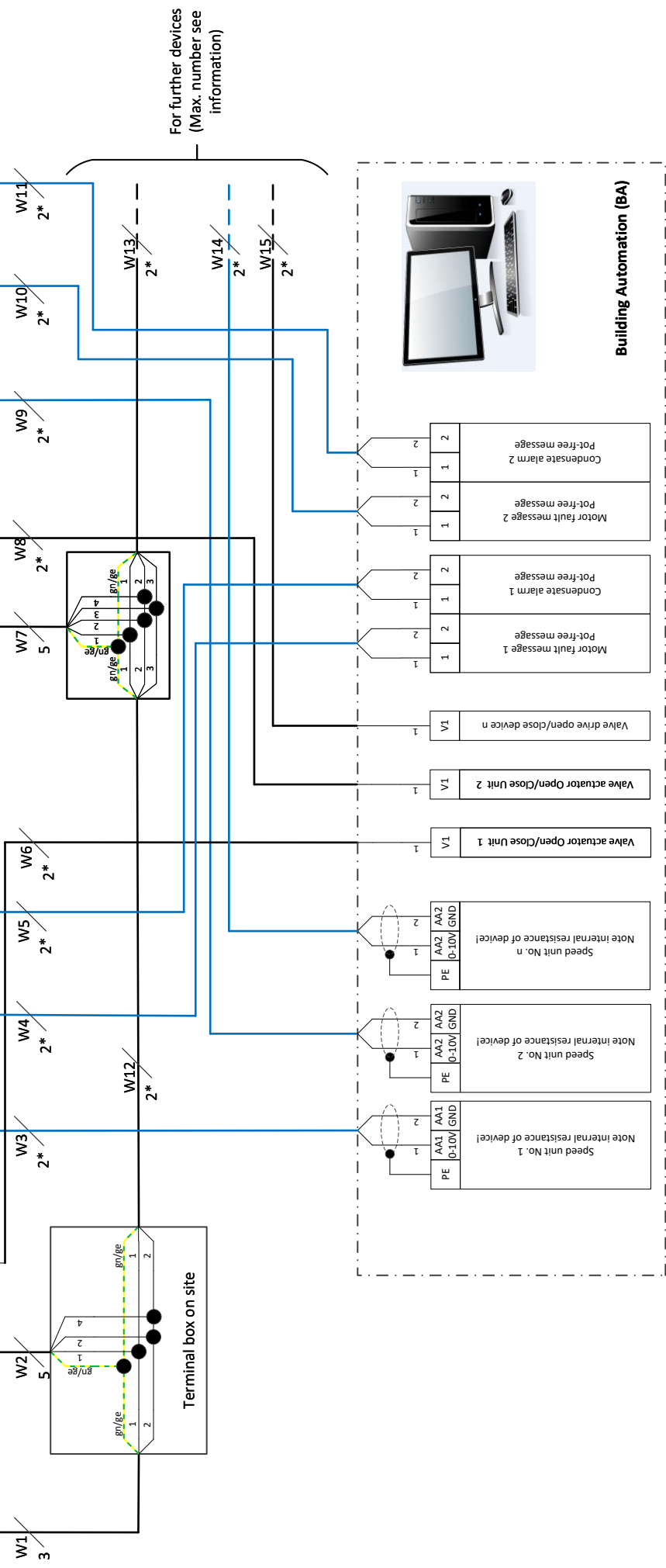
UC	1	GND	2
----	---	-----	---

Motor fault message

NC	1	C	2	NO	3
----	---	---	---	----	---

Condensate alarm

NC	1	C	2
----	---	---	---



Main supply
230V
Fuse protection on site.
Observe the „Electrical data“ table.

KaDius
Electromechanical
Unit No. 1

Thermoelectric shut-off valve
24V DC
normally closed
optional

2-pipe: heating/cooling

Condensate pump
230V
optional

Electrical connection box
Main: 230V AC
Electrical information
Table: Electrical data table

24V/DC Ventil: Ub, Y, 0V

Connection control: 0-10V DC: Uc, GND

Motor fault message: NC, C, NO

Condensate alarm: NC, C

Terminal box on site

KaDius
Electromechanical
Unit No. 2

Thermoelectric shut-off valve
24V DC
normally closed
optional

2-pipe: heating/cooling

Condensate pump
230V
optional

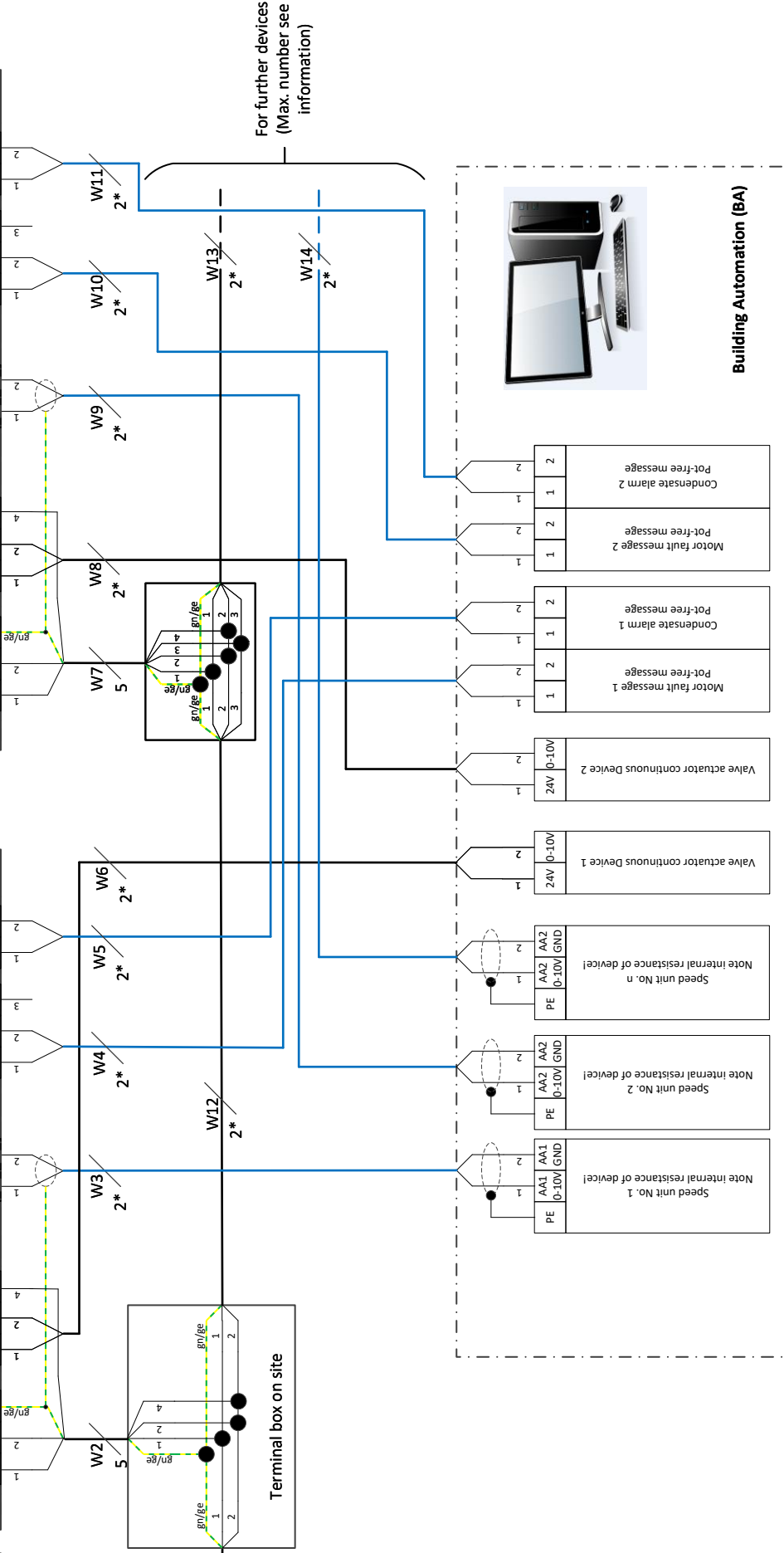
Electrical connection box
Main: 230V AC
Electrical information
Table: Electrical data table

24V/DC Ventil: Ub, Y, 0V

Connection control: 0-10V DC: Uc, GND

Motor fault message: NC, C, NO

Condensate alarm: NC, C



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.

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.

9 Operation

9.1 Operation of electromechanical control



 <p>A white, rectangular room thermostat with a large rotary dial on the right side. The dial has numbers from 15 to 30. Above the dial are three small buttons labeled 'MAN', 'AUTO', and 'ON'. The brand name 'KAMPMANN' is visible at the bottom left.</p>	<p>Room thermostat, type 30155</p> <ul style="list-style-type: none"> ▶ 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
 <p>A white, square clock thermostat with a digital display in the center. The display shows 'KAMPMANN komfort', a target temperature of '28.0°C', and a current temperature of '19.1°C'. Below the display are four small buttons labeled 'Mode', 'Menu', 'On', and 'Off'.</p>	<p>Clock thermostat 230 V, type 30256</p> <ul style="list-style-type: none"> ▶ 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. 11: Room thermostat, type 30155

Fig. 12: Clock thermostat type 30256



Fig. 13: 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. 14: 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. 15: 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. 16: Climate controller type 196000148944

Climate controller, black, type 196000148944

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

10 Maintenance

10.1 Securing against reconnection



DANGER!

Risk of death by unauthorised or uncontrolled restart!

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

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

Always follow the procedure described below to prevent accidental restart:

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



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.
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 the ISO Coarse filter for dirt, clean and change the filter if necessary.

10.3 Maintenance work

Before carrying out maintenance work, lower the unit base.

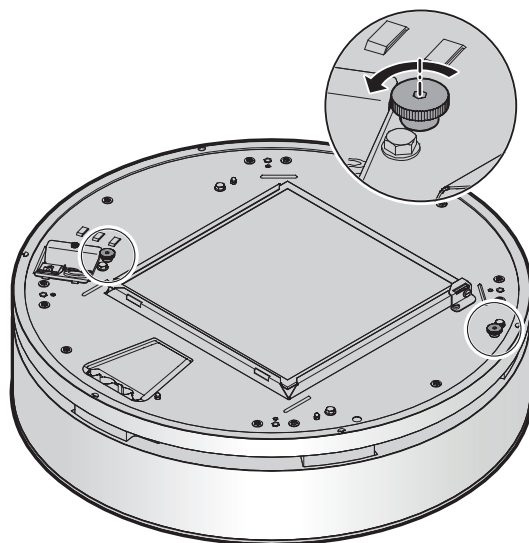
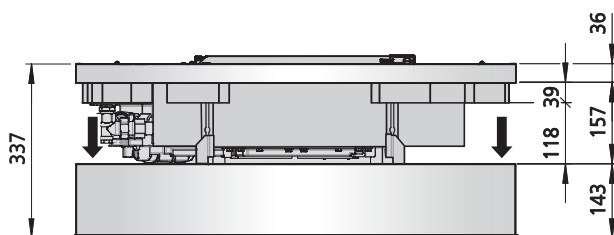
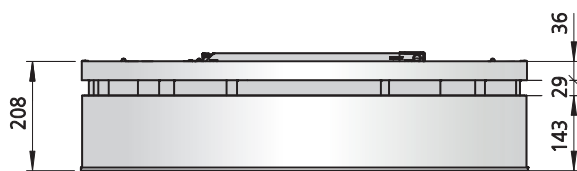


Fig. 17: Lower the unit base.

- ▶ Loosen and unscrew the M6 knurled screws with a hexagon key.
- ▶ Lower the unit base.

Note: To lower the unit base, do not use the area marked in yellow, only the outer EPP ring.



Fig. 18: Do not use this area to lower the unit base!

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.



- ▶ To unlock the filter lock, turn the lock clockwise using a flat-blade screwdriver.



- ▶ Turn the latch to the left so that the filter is freely accessible.



- ▶ Remove the filter.



- ▶ Vacuum the filter.
- ▶ If there is a large amount of dirt, clean the filter with water.

Tab. 8: Cleaning the filter

KaDius

Assembly, installation and operating instructions

10.3.2 Cleaning the condensate tray

Important: Only disassemble the base with 2 people to avoid an uncontrolled fall of the unit base!



- ▶ Important: When lowering the unit base, make sure **not** to pull down the area marked in yellow. This can cause mechanical damage to the unit!
- ▶ Only the outer EPP ring is suitable for pulling down the lower unit segment.



- ▶ Pull down the lower unit segment with both hands until the holding magnets come loose.
- ▶ Lower the lower unit segment.



- ▶ Push the guide rails inwards until the screw of the bracket no longer runs in the rail.
- ▶ Carry out this process on all 4 brackets so that the lower unit segment can be removed.



- ▶ Remove the lower unit segment.



- ▶ Clean the condensate tray.

10.3.3 Cleaning the condensate pump



- ▶ Loosen the screws of the retaining plate for the condensate pump.
- ▶ Dismantle the condensate pump with retaining plate.



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

Fig. 19: Cleaning the condensate pump



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

Fig. 20: Cleaning the dirt filter

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

11.1 Fault table

Fault	Possible cause	Remedy
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.
Condensate water outlet	Chilled water line not insulated properly.	Check the insulation.
	Condensate drain not installed properly.	Check the function of condensate pump. Check the condensate drain and clean, if necessary.
	Accessory components carrying air not properly insulated.	Check the insulation.

11.2 Start-up after rectification of fault

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

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

12 Disposal

Electrical and electronic appliances

Waste electrical and electronic equipment must be disposed of separately from unsorted municipal waste. This is indicated by the crossed-out wheeled garbage can symbol. If the old appliance contains batteries or accumulators, these must generally be removed from the old appliance before it is handed in at a collection point.

As a manufacturer of electrical and electronic appliances, we offer the option of returning old appliances. Owners of old appliances from private households can return them free of charge to the collection points of the public waste disposal authorities or to the collection points set up by manufacturers or distributors.

Old appliances may contain sensitive personal data. The end user is responsible for deleting the data on the old appliances to be disposed of.

KaDius

Assembly, installation and operating instructions

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:

KaDius

360***

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****2009/125/EG****ErP-Richtlinie****2016/2281 EU****Durchführungsverordnung für Luftheizungsprodukte,
Kühlungsprodukte, Prozesskühler mit hoher Betriebstemperatur und
Gebläsekonvektoren****Frank Bolkenius****Lingen (Ems), 07.02.2025****Ort und Datum der Ausstellung**

Place and Date of Issue

Lieu et date d'établissement

Miejsce i data wystawienia

Místo a datum vystavení

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

Table

Tab. 1	Limits of operation	7
Tab. 2	Operating voltage	7
Tab. 3	Water quality.....	7
Tab. 4	Technical data	12
Tab. 5	Technical data of the condensate pump.....	24
Tab. 6	Maximum electrical connection values	25
Tab. 7	Description of the patch board	26
Tab. 8	Cleaning the filter	41

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

Land	Kontakt
Germany	Kampmann GmbH & Co. KG
	Friedrich-Ebert-Str. 128 - 130
	49811 Lingen (Ems)
	T +49 591/ 7108-660
	F +49 591/ 7108-173
	E export@kampmann.de
	W Kampmann.eu

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