

KaDeck UC ceiling cassette

► Installation and operating instructions

Keep these instructions in a safe place for future use!

3.26 KaDeck UC

Versatile air conditioning for offices and administration buildings

Installation and operating instructions

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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 unit and must be kept in the direct vicinity of the unit 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.

1.2 Explanation of symbols

Important notes



DANGER!

This combination of symbol and signal word indicates an immediately dangerous situation, which will cause death or injuries if not avoided.



IMPORTANT NOTE!





This combination of symbol and signal word indicates a possible dangerous situation, which can cause material and environmental damage if not avoided.



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

Other labels

The following labels are used in this manual to highlight instructions, results, listings, references and other elements:

Label	Explanation
	Step-by-step instructions
	Results of actions
	Reference to sections of the manual and other applicable documents
	Lists without specified sequence
[Button]	Operating element (e.g. button, switch), display element (e.g. indicator light)
"Display"	Display elements (e.g. buttons, assignment of function keys)

1.3 Copyright protection

The contents of this manual are protected by copyright. Their use is permitted when using the product. Any further use is not permitted without written permission from the manufacturer.

1.4 Customer service

Our Customer Service team is available for technical information:

Address	Kampmann GmbH & Co. KG Friedrich-Ebert-Str. 128–130 49811 Lingen (Ems), Germany
Phone	+49 591 7108 670
Fax	+49 591 7108 360
Email	service@kampmann.de
Website	www.kampmann.de

We are always interested in receiving information and experiences relating to the use of our products which could be of value for improving our products.

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2 Safety

This section provides an overview of all important safety aspects to ensure optimum protection of personnel as well as safe and trouble-free operation. Additional order-related safety information is contained in the sections covering the individual phases of the product's life.

2.1 Intended 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.

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

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

2.2 Limits of operation and use

Limits of operation		
Min./max. water temperature	°C	5 – 80
Min./max. air intake temperature	°C	15 – 40
Min./max. air humidity	%	15 – 75
Max. operating pressure	bar	8
Min./max. glycol percentage	%	25 – 50
Max. relative air humidity	60 % at 27 °C ambient temperature	

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* ¹		8 – 9
Conductivity* ¹	µS/cm	< 700
Oxygen content (O ₂)	mg/l	< 0.1
Hardness	°dH	4 – 8.5
Sulphur ions (S)		not measurable
Sodium ions (Na ⁺)	mg/l	< 100
Iron ions (Fe ²⁺ , Fe ³⁺)	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	ppm	< 50
Sulphate ions (SO ₄ ²⁻)	mg/l	< 50
Nitrite ions (NO ₂ ⁻)	mg/l	< 50
Nitrite ions (NO ₃ ⁻)	mg/l	< 50



WARNING!

Warning of misuse!

- 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 rooms with a high dust content.
- Never operate the unit in rooms that contain high-temperature gases.
- 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 operate the unit outdoors.
- Keep windows closed during operation.
- Only operate the unit fully assembled and connected to the relevant supply networks (waste water, heating/cooling, electricity).
- Never operate the unit beyond its technical specification (↪ Chapter 2 "Technical data" on page 6).
- Install the unit away from heaters or other heating equipment.
- Ensure that the airflow can circulate freely.
- Never place any objects on the unit.
- Never cover the unit.
- Always note the requirements for the installation site (↪ Chapter 6.1 "Requirements governing the installation site" on page 24).

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2.3. Fundamental dangers

The following section lists residual risks that can be generated by the unit even when operated as intended.

Observe the following safety instructions and the safety information in the other sections of this manual to reduce the risk of injury and damage to property and avoid dangerous situations.

2.3.1 Danger from electrical energy

Electric current



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 electrics.
- Immediately disconnect the system 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 Responsibility of the operator

Duties of the operator

The unit is operated in the commercial sector. The operator of the unit is therefore subject to the legal obligations concerning occupational health and safety.

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.

The following applies in particular:

- The operator must be aware of the applicable health and safety regulations and determine in a risk assessment other hazards that may arise from the special working conditions at the site of operation. He then has to implement this in the form of operating instructions for the operation of the unit.
- The operator must regulate and specify the responsibilities for installation, operation, troubleshooting, maintenance and cleaning.
- The operator must ensure that all staff who work on the unit have read and understood these instructions. In addition, he must also train personnel and inform them of the possible dangers at regular intervals.
- It is the responsibility of the operator to provide maintenance and repair personnel with the necessary personal protective equipment and advise them of the necessity to wear it.

Furthermore, the operator is responsible for ensuring that the equipment is always in perfect condition. The following therefore applies:


- The operator must ensure that the maintenance intervals described in this manual are adhered to.

Hygiene requirements

The operator must comply with the specifications in line with the pertinent legal standards and guidelines relating to hygiene applicable at the installation site. This includes ensuring that

- fresh and waste water are hygienically separated,
- the pertinent maintenance and test intervals are complied with,
- the requirements for air ducts and diffusers are complied with,
- the predefined filter grades are complied with,
- when using, please comply with the applicability of VDI 6022 and the corresponding guidelines.

2.5 Instruction

The manufacturer offers training for users. For contact details please refer to  Chapter 1.4 "Customer service" on page 5.

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2.6 Personnel requirements

2.6.1 Qualifications

Only permit personnel to carry out work if they can be expected to carry out this work reliably. People with impaired reactions, possibly due to drugs, alcohol or medication, are not permitted to carry out work.

Qualified electrician

Qualified electricians have been trained for the specific environment in which they work and understand the pertinent standards and regulations.

Installation personnel

This training provides installation personnel with the technical knowledge and experience, as well as knowledge of the pertinent regulations, needed to carry out the assigned tasks and independently recognise possible dangers. Installation personnel have all the necessary equipment and tools.

Caretakers/users

Caretakers/users have been instructed by the manufacturer in the tasks assigned to them and possible dangers of improper conduct. Caretakers/users are only permitted to carry out tasks that go beyond normal operation if this is specified in this manual.

VDI 6022

Maintenance personnel must be trained to Category B (possibly Category C) to comply with hygiene requirements

2.7 Personal protective equipment

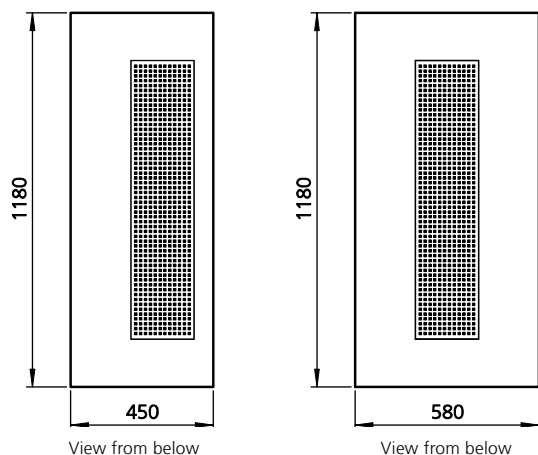
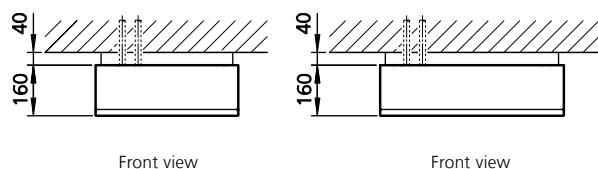
Personal protective equipment is used to protect people from impaired safety and health when working with the unit. The applicable accident prevention regulations at the place of use apply in all cases.

Personnel have to wear personal protective equipment, about which specific mention is made in certain sections of this manual, during maintenance and troubleshooting work on and with the unit.

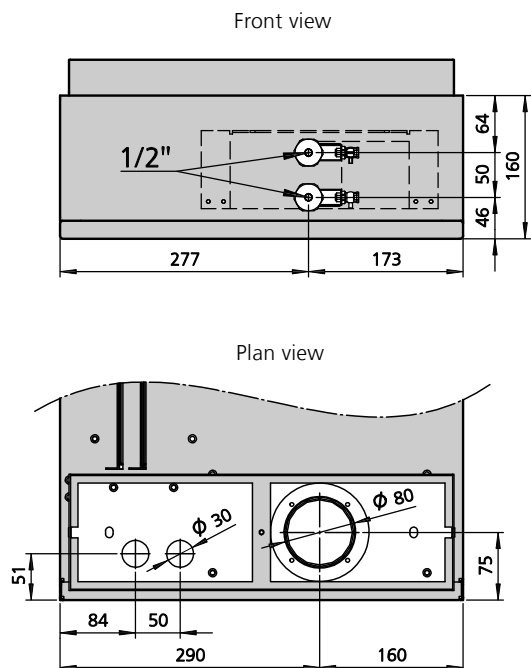
3 Technical data

3.1 Main dimensions of under-ceiling unit (dry cooling)

one- and two-sided discharge (dimensions in mm)

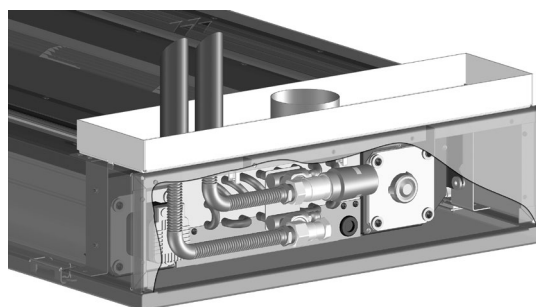


Under-ceiling unit, one-sided discharge



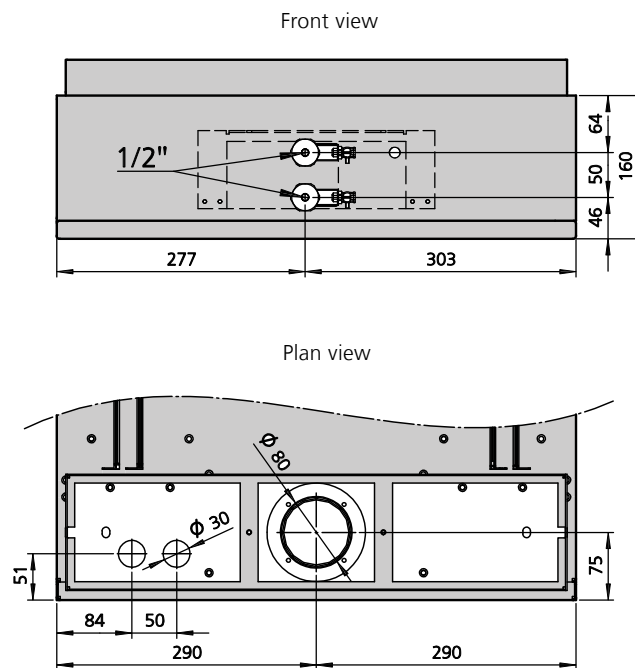
Weights	
Connections, female thread	
Eurokonus, same end, connections on right	
Unit design	Unit
Weight	[kg]
one-sided discharge	32
two-sided discharge	42

Waterside connections



The cable openings are on the opposite side

Under-ceiling unit, two-sided discharge

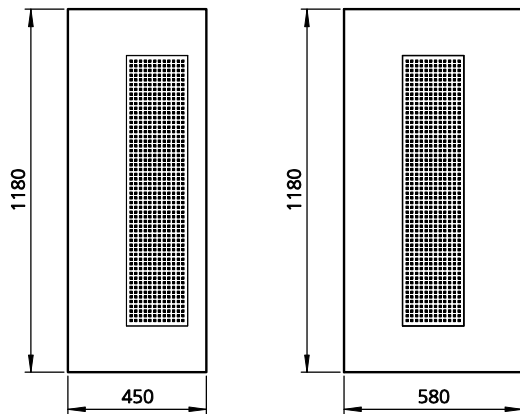
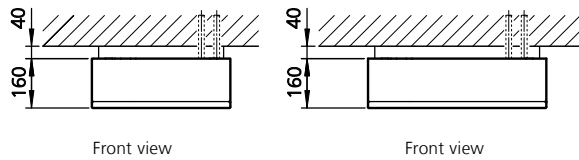


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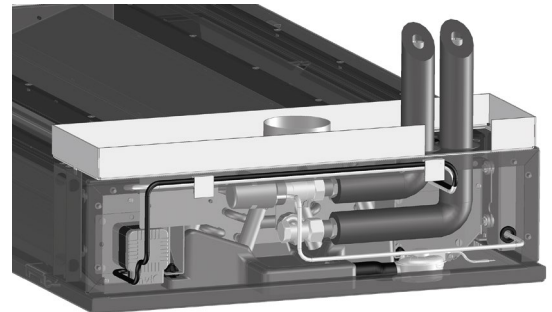
Installation and operating instructions

3.2 Main dimensions of under-ceiling unit (wet cooling) one- and two-sided discharge (dimensions in mm)



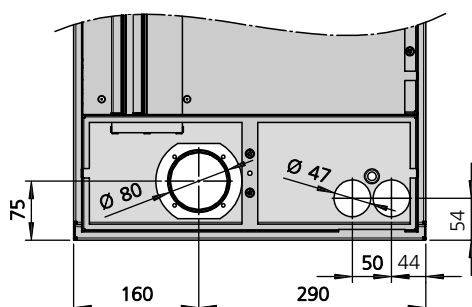
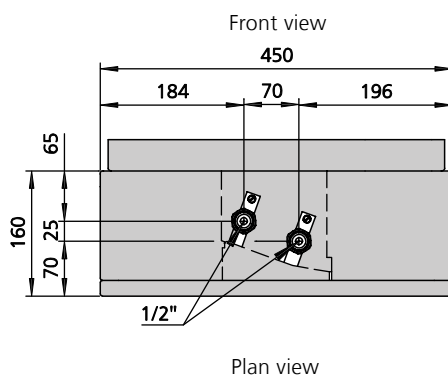
Weights	
Connections, female thread Eurokonus, same end, connections on right	
Unit design	Unit
Weight	[kg]
one-sided discharge	32
two-sided discharge	42

Waterside connections

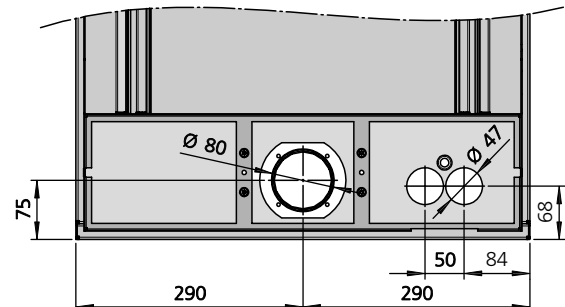
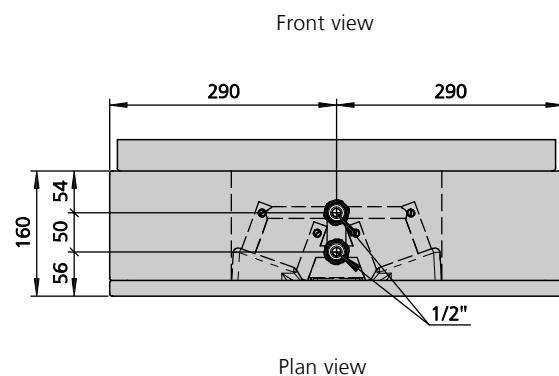


The cable openings are on the opposite side. Isolate pipelines vapour diffusion-tight up to above the condensation tray.

Under-ceiling unit, one-sided discharge



Under-ceiling unit, two-sided discharge



3.3 Operating data

Version: one-sided discharge for under-ceiling installation

One-sided discharge		Dry cooling model ¹⁾					Wet cooling model ²⁾				
Speed range		Maximum	Medium ⁵⁾				Maximum	Medium ⁵⁾			
Control voltage	[V]	10	8	6	4	2	10	8	6	4	2
Air volume	V[m³/h]	337	278	221	163	106	196	157	119	81	42
Power consumption	P[W]	20	17	9	5	4	20	17	9	5	4
Speed	n [rpm]	1100	925	750	575	400	1100	925	750	575	400
Sound pressure level ⁴⁾	L _{WA} [dB(A)]	37	33	29	25	20	35	33	27	23	<20
Sound power level	L _{PA} [dB(A)]	45	41	37	33	28	43	41	35	31	<28
Cooling mode											
Cooling output	Q _k [W]	999	837	672	498	314	1609	1392	1157	891	588
Outlet air temperature	t _{L2} [°C]	17.6	17.3	17.1	16.8	16.5	12.4	11.9	11.2	10.5	9.4
Water volume	V[l / h]	430	360	289	214	135	277	239	199	153	101
Pressure loss	dP [kPa]	29	21.2	14.4	8.5	3.8	8	7	5	3	1.2
Heating mode ³⁾											
Heat output	Q _H [W]	4176	3495	2807	2077	1308	2936	2493	2024	1515	961
Water volume	V[l / h]	223	188	152	113	72	154	132	107	81	52
Pressure loss	dP [kPa]	7.7	5.7	3.9	2.3	2.31	3	2	1	1	1

Version: two-sided discharge for under-ceiling installation

One-sided discharge		Dry cooling model ¹⁾					Wet cooling model ²⁾				
Speed range		Maximum	Medium ⁵⁾				Maximum	Medium ⁵⁾			
Control voltage	[V]	10	8	6	4	2	10	8	6	4	2
Air volume	V[m³/h]	635	525	418	308	199	369	297	225	152	79
Power consumption	P[W]	30	27	14	7	5	30	27	14	7	5
Speed	n [rpm]	1100	925	750	575	400	1100	925	750	575	400
Sound pressure level ⁴⁾	L _{WA} [dB(A)]	40	36	32	28	23	38	35	30	26	21
Sound power level	L _{PA} [dB(A)]	48	44	40	36	31	46	43	38	34	29
Cooling mode											
Cooling output	Q _k [W]	1718	1465	1203	921	607	3114	2650	2153	1598	979
Outlet air temperature	t _{L2} [°C]	18.6	18.3	17.9	17.5	17	11.2	10.6	10	9.3	8.4
Water volume	V[l / h]	738	630	517	396	261	535	456	370	275	168
Pressure loss	dP [kPa]	75.3	56.9	40.2	25.2	12.1	55	41	29	17	7
Heating mode ³⁾											
Heat output	Q _H [W]	7185	6124	5028	3850	2533	5339	4465	3554	2578	1530
Water volume	V[l / h]	379	324	268	206	137	286	240	192	140	84
Pressure loss	dP [kPa]	19.6	14.9	10.6	6.7	3.3	15	10	7	4	2

1) with LPHW 16 / 18 °C, t_{L1} = 27 °C

2) with CHW 7 / 12 °C and t_{L1} = 27 °C, 48% relative humidity

3) with LPHW 75 / 65 °C, t_{L1} = 20 °C

4) The sound pressure levels were calculated with an assumed room insulation of 8 dB(A).

This corresponds to a distance of 2 m, a room volume of 100 m³ and a reverberation time of 0.5 s (in accordance with VDI 2081)

5) Recommended speed range of fans for optimum energy efficiency and comfort

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4 Construction and function

4.1 Brief description

The KaDeck is a decentralised unit for heating, cooling and filtering air, including in hotels, offices and business premises. Thanks to the efficient, extremely quiet fan, the individual comfort temperature is quickly reached.

Operating mode

Secondary air is drawn into the central part of the ceiling panel. The air is routed first through the air intake grille to the optional filter, which removes dust from the secondary air, protecting the downstream components from dirt.





The air is drawn in by the fan, located directly downstream of the filter and passes through the copper-aluminium heat exchanger. Depending on the temperature at which the medium flows through the heat exchanger, the air is either cooled or heated in the exchanger.

The air then passes through the outlet air slats into the room.

Condensation can be produced at the heat exchanger when cooling with low water temperatures. Two different versions of the KaDeck are available. Should the water temperature lie below the dew point, the "wet cooling" version with condensation tray and pump must be installed.

If the temperatures lie above the dew point, the "dry cooling" version can be selected. An optional dew point monitor should be selected or an on-site monitoring system installed to prevent the temperature from falling below the dew point.








4.2 Accessories

Figure	Article	Properties	Suitable for	Art. no.
Valves/Return shut-off valves				
	Valve body	angled, ½" connection	all KaDecks	194000100970
		angled, ½" connection, pre-settable		194000346910
	Adjustment key	pre-settable		194000346915
	Return shut-off valve	angled, ½" connection		194000155953
Other				
	Fresh air connection fitting	for the connection of primary air	suspended ceiling units	326007010103
	Air filter	for installation in the air intake area	all KaDecks	326007010002
Valve actuators				
	Thermoelectric actuator	24 V AC/DC	all KaDecks	194000146906
KaControl accessories				
	KaController room control unit with one-key operation	room control unit, wall-mounted, in a high-quality design, plastic housing, colour similar to RAL 9010, large LCD multifunctional display, integrated room temperature sensor, communication interface to Kampmann T-LAN bus system, automatically switching LED backlight, press/turn dial with click stop function, individually adjustable basic display, integrated day, night and week program, password-protected parameter level for C1 control option	all models	196003210021
	KaController room control unit with side operating keys	for quick access to fan setting, operating modes, Eco mode, time and timer program, otherwise as art. no. 196003210001	all models	196003210022
	KaController without function keys, black	room control unit for wall mounting, high-quality design, plastic housing, traffic black (similar to RAL 9017), otherwise as art. no. 196003210001	all models	196003210026
Control accessories, electro-mechanical				
	Universal clock-room temperature controller	<p>combined flush-mounted room and clock thermostat. Pure white cover panel and frame (similar to RAL 9010). Large, graphically illuminated display; operating panel with four variably assignable sensor keys. Integrated room temperature sensor and integrated weekly programme, with optionally four operating programmes.</p> <p>- 24 V AC/DC operating voltage - 24 V AC/DC output signal for valves and 0 – 10 V output signal for fan control</p>	all models	196000030456
				more »

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Figure	Article	Properties	Suitable for	Art. no.
KaControl accessories				
	KaControl SEL panel without BACnet	KaControl electronics housed in a surface-mounted wall housing, wired ready-for-use, including KaControl operating unit for the central control of Kämpmann products via a serial bus communication (Modbus); for integration of a maximum of 24 units (Modbus subscribers) (optionally with a maximum of 6 BACnet objects in a BACnet/IP network)	all models	196003232122
	KaControl SEL panel with BACnet			196003232123
	Dew point monitor to monitor the formation of condensation	standard rail installation, only in conjunction with dewpoint sensor and KaControl version	included with all KaDeck units with KaControl and dew point monitor	---
	Dewpoint monitor	only in conjunction with a dewpoint monitor, cable length 10 m	included with all KaDeck units with KaControl and dew point monitor	---
	KaControl Room temperature sensor	wall-mounted, IP30 surface-mounted, colour white RAL 9010, alternative to the temperature sensor in the KaController	all models	196003250110
	Intake air sensor	to record the air inlet temperature, probe length 50 mm, probe diameter 4 mm, cable length 1000 mm, NTC sensor 10 K 25°C 83435	included with all KaDeck units with KaControl	000001066759
	Serial CANBus card	to increase the number of units in a single-circuit control system	all models	196003260301
	Serial Modbus card	for connection to Modbus networks	all models	196003260101

5 Transport, packaging and storage

5.1 Safety information for transport

Risk of injury



WARNING!

Risk of injury from sharp edges or broken transport elements!

Improper use of parts of the unit to carry the equipment can lead to personal injury and material damage.

- 2 people are needed to transport the unit.
- Wear personal protective clothing when transporting the unit.
- Only lift the unit on both sides and only by the basic unit (not by the valves).
- Use suitable transport equipment to transport the unit to prevent damage to health and the equipment.

Incorrect transport



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 attach lifting equipment to the unit. Ensure that the weight is evenly distributed.
- Only remove packaging shortly before assembling the unit

5.2 Packing units

Scope of delivery

The size of the packaging is based on the unit supplied:

	L	W	H
	[mm]	[mm]	[mm]
KaDeck for under-ceiling installation, one-sided discharge	1383	445	200

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5.3 Transport inspection

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.
- Lodge a complaint with the freight forwarder.



Lodge a complaint about all defects and faults as soon as they are detected. Claims for damages can only be made within the applicable period for complaints.

5.4 Packaging

Packaging information

The individual items are packaged in accordance with the transport conditions expected.

The packaging is intended to protect the individual components from damage during transit, corrosion and other damage before they are assembled. Therefore do not destroy the packaging and only remove shortly before installation.

Handling packaging materials

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



IMPORTANT NOTE!

Environmental hazard from incorrect disposal!

Packaging materials are valuable raw materials and, in many cases, can be reused or sensibly reconditioned and reused. Incorrect disposal of packaging materials can present a hazard to the environment.

- Dispose of packaging materials in an environmentally-friendly manner.
- Note the locally applicable regulations governing disposal. You may wish to consider contracting a specialist company to dispose of the materials.

5.5 Storage

Storing packaging

Store packaging under the following conditions:

- Do not store outdoors.
- Store in a dry and dust-free place.
- Do not expose to aggressive media.
- Protect from direct sunlight.
- Avoid mechanical vibrations and shocks.
- Storage temperature: 15 to 35°C.
- Relative air humidity: max. 60%.



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

6 Installation and connection

6.1 Requirements governing the installation site

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

- The installation site can bear the weight of the unit (→ Chapter 3 "Technical data" on page 11 ff).
- The load-proof and vibration-free position of the unit is guaranteed (possibly call in the services of an architect or structural engineer, also in connection with openings to be made through walls and ceilings).
- Comply with the minimum clearances from the unit to the wall/ceiling/floor.
- Ensure that the airflow can circulate freely.
- Make sure that drilling positions for installing the unit are free from electrical wiring or pipes.
- Provide for adequate space for floor and return water connections on site.
- Ensure that the unit can be installed without mechanical torsion or tension when installed.
- There is a power supply on site.

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6.2 Selection of the installation site

Note the following when positioning the unit:

Air discharge direction

Position the air outlet to avoid the creation of draughts.

The throw diagrams can help with this.

Select and position the unit taking into account where people will be standing and sitting.

If the distance from the wall to the air outlet is less than 3 metres, this can produce draughts at higher fan speeds. Make sure that the air always flows lengthways along the space.

Choice of the installation site:

maximum installation height 3.5 m

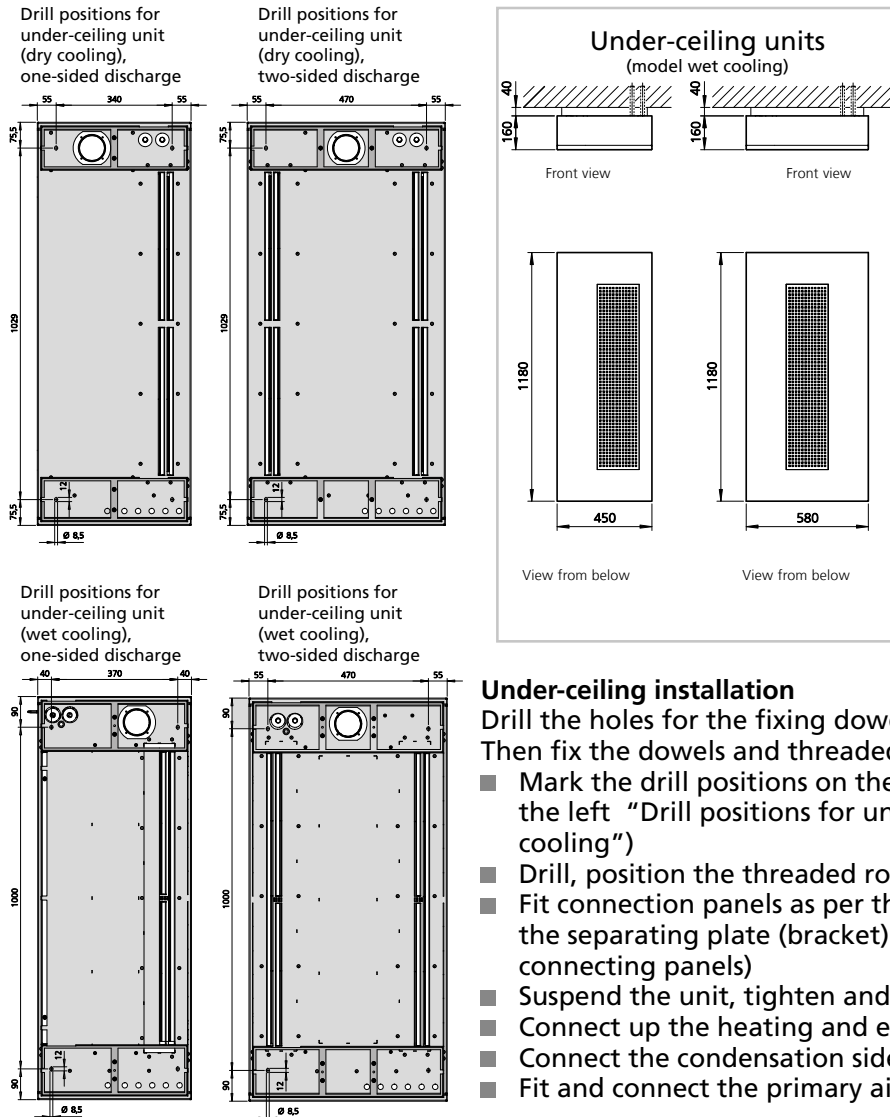
(the maximum room height can be significantly lower, depending on the room shape, type of ceiling, use of the room and system temperatures, with under-ceiling units that are also used for heating!)

Avoid:

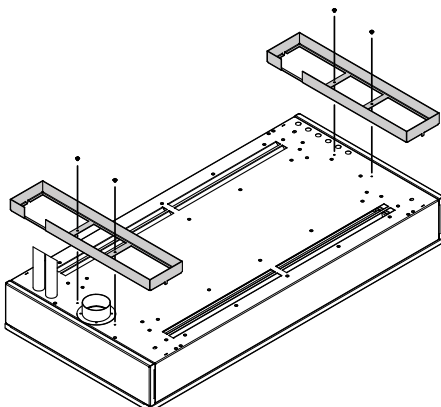
- Impairing the free circulation of air with lamps, furniture etc.
- Obstacles to air distribution and air intake.
- Electronic appliances below the KaDeck.

6.3. Suspending the unit

Important: Only ask 2 people to suspend the unit due to heavy loads!



Drilling positions with under-ceiling installation



Fitting the connection covers

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6.4 Wet and dry cooling model

Distinction

A distinction is made between two basic models of KaDeck – dry and wet cooling.

Never connect dry cooling units to an on-site water system in which the temperature could fall below the dew point!

KaDeck dry cooling models configured for KaControl can be fitted with a factory-fitted dewpoint monitor, which monitors the heat exchanger. If the temperature falls below the dew point on the heat exchanger, the dew point monitor switches off the cooling valve.

The dew point monitor does not act as a controller and even if a dew point sensor is used, the on-site water network has to be operated above the dew point!

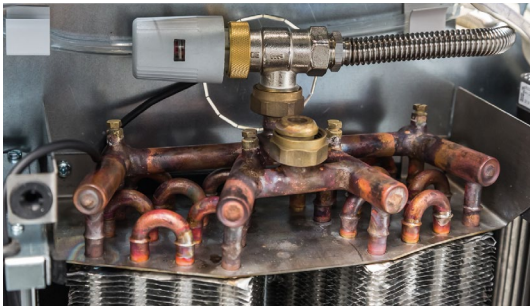
The following table provides an overview of the equipment on the KaDeck units depending on the model.

KaDeck	Dry cooling	Wet cooling
Heat exchanger optimised for dry cooling mode	yes	no
Heat exchanger optimised for wet cooling mode	no	yes
Dewpoint monitor, factory-fitted	optionally available with KaControl configuration	no
Condensation tray	no	yes
Condensation pump	no	yes
Housing vapour-tightly insulated against condensation	no	yes

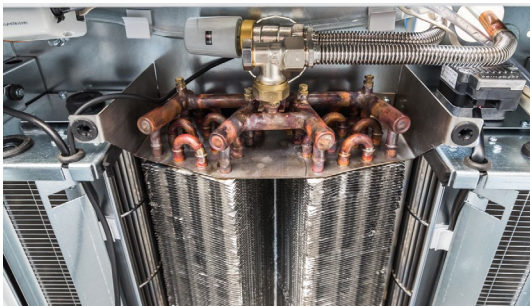
6.5 Water connection with wet cooling

We recommend using Kampmann-side accessories to provide the heat exchanger connections with the valves and on-site pipework. Coordinate valves, hoses etc. to the available space and requirements of the KaDeck.

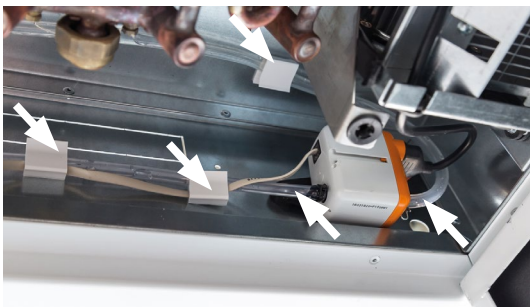
Remove the condensation tray to connect up the water connection. First check whether there is water in the tray or the pipework. Dismantle the tray, as described under section 8.3.3.



First fit the flexible hose to the angle valve (including sealing work) and then the angle valve to the KaDeck. Screw the thermostat valve and the return shut-off valve using an appropriate sealant (e.g. NEO Fermit) to the Eurokonus connections on the convector. Now the actuator can be fitted and the cable routed to the electrical connection area. Use the clamps on the fan for this purpose.



Now fit the components for the return in the same order and route the flexible connections to the required outlet on the unit. Connect up the on-site water network and insulate the pipes and flexible hoses as far as the valve. Use vapour-impermeable insulation for this. Make sure that any condensation that forms drips from the pipework and the insulation into the condensation tray.



Check whether the hoses have been damaged or bent by the work and are still in the fixing clamps before fitting the tray.

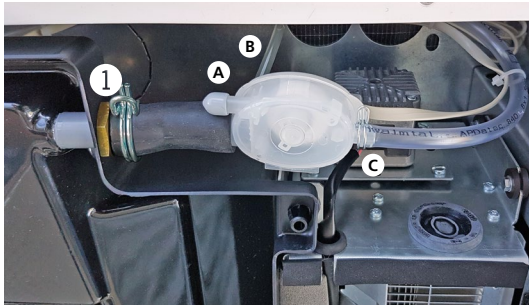


Insert the condensation tray into the fixings provided for this purpose and check whether the tray is fitted horizontally.

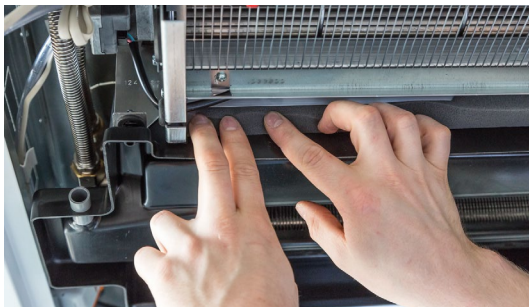
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- 1 Tighten the nut and check that the hose clamp is sitting correctly.
Attach the condensation pump.
- 3 Check whether the plug **A**, the hose **B**, and the air vent **C** are fitted and sufficiently tightened.



Check whether the foam tape provides a seal between the fan and fan unit. It may be necessary to press it into place a little.



IMPORTANT NOTE!

Check the condensation drain and check that the fault alert is switched off each time the unit is assembled or dismantled!

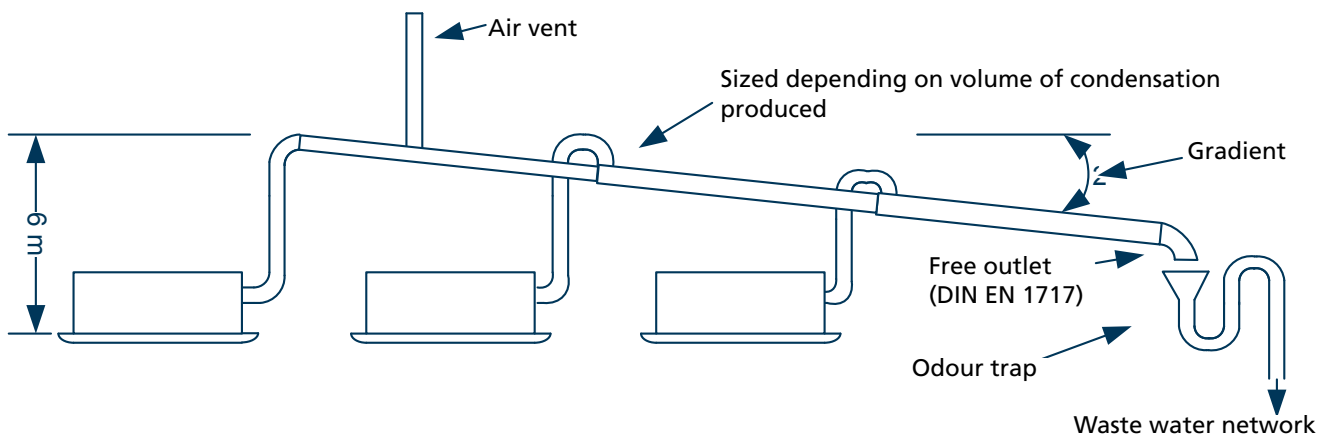


IMPORTANT NOTE!

Isolate pipelines vapour diffusion-tight up to above the condensation tray!

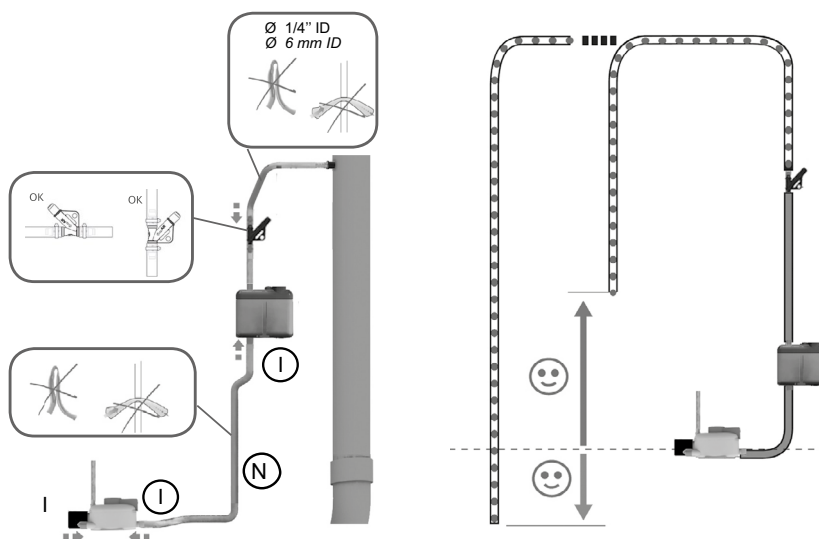
Condensation drain

The wet cooling model of the KaDeck includes a built-in condensation pump with float switch to drain away any condensation formed. The maximum delivery height of the pump is 6 m. The condensation that is produced from the condensation pump hose has to be drained from the unit with gradient according to DIN EN 12056. The condensation has to be collected in a pool pump on site if it has to be drained higher than the integrated pump allows.



A ventilation valve (see photo) is fitted on the pump's condensation hose. The on-site condensation connection can be connected here. The diameter of the hose is 6 mm. Secure the hose with a hose clamp.

Refer the the diagram below for installation to ensure that correct and long-lasting operation of the pump.



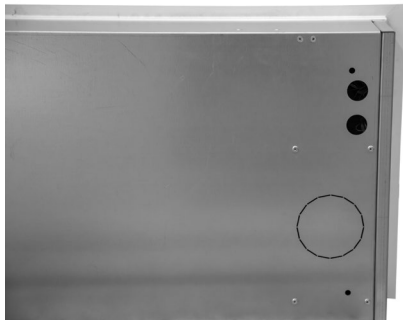
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6.6 External fresh air supply

Primary air spigots for the fresh air supply



The ceiling cassettes can be fitted with a primary air spigot, which permits pre-conditioned fresh air to be supplied to the air conditioning unit and thus also into the room. The conditioned fresh air needs to be cleaned (in accordance with the VDI 6022 at least by means of an F7 filter) and supplied at a minimum of 14°C and a maximum of 22°C in cooling mode.

The connection can be made on all units from above via an on-site 80 mm flange. The punched opening is simply removed on the top of the unit.

Maximum air volume per unit

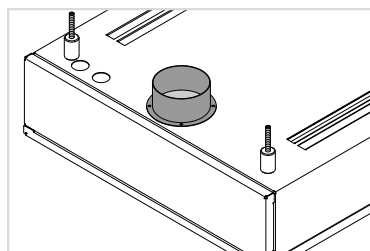
KaDeck 1-sided air discharge: 50 m³/h

KaDeck 2-sided air discharge: 80 m³/h



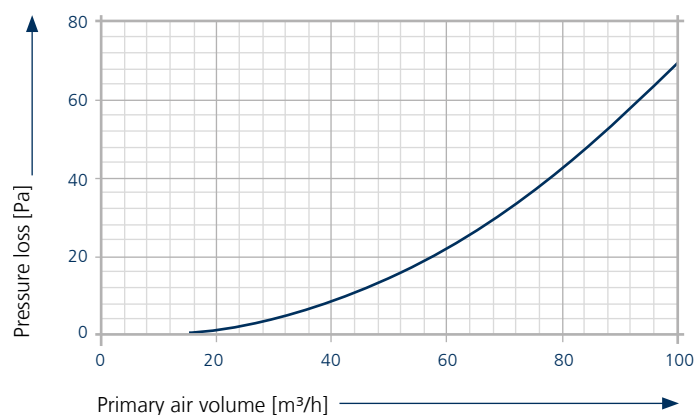
Fitting position of primary air connection

Remove both rubber seals on the fan with wet cooling models with 2-sided discharge. (See diagram below)



Primary air spigot
(top side of unit)

Pressure losses at primary air connection



6.7 Electrical wiring

- Personnel:
- Installation personnel
 - Qualified electrician
- Protective equipment:
- Safety shoes
 - Protective gloves
 - Workwear



Only allow qualified electricians to perform electrical work. Further connections, for instance to building control systems or external controllers, may be necessary. Refer to the manufacturer's literature in this respect.

- Wire the unit in accordance with the enclosed wiring diagram.
- Only wire the unit in accordance with currently applicable VDE and EN guidelines, as well as Technical Wiring Regulations stipulated by the regional energy supply companies.
- Only connect the unit to fixed cables.

Applications

KaDeck units are solely intended for use indoors (e.g. residential and commercial properties, showrooms etc.). They are not suitable for use in humid environments, such as swimming pools or outdoors.

Protect the products from any moisture during installation. Check the application with the manufacturer in case of any doubt.

Any use other than the use specified above is deemed not to be correct and proper.

The operator of the unit is solely responsible for any damage arising as a result of this. Intended use is deemed to include compliance with the installation instructions described in these instructions.



IMPORTANT NOTE!

Non-compliance with the regulations and operating instructions can result in the units malfunctioning with consequential damage and danger to people.

There is a danger of fatal injury caused by wires being swapped due to incorrect wiring! Disconnect all parts of the system from the mains power supply and prevent them from being reconnected before starting any connection and maintenance work!

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Please read these instructions in full to ensure correct and proper installation and the correct operation of the KaController.

Please note the following safety-relevant information:

- Disconnect all parts of the system that are being worked on.
- Ensure that the system cannot be accidentally re-connected!
- Before commencing installation/maintenance work, wait until the fan has come to a standstill after the unit has been switched off.
- Caution! Pipes, casings and fittings can become very hot or very cold depending on the operating mode!
- Qualified personnel must have undergone training to provide them with adequate knowledge of the following:
 - Safety and accident prevention regulations
 - Guidelines and recognised technical regulations, i.e. Association of German Electricians (VDE)
 - DIN and EN standards
 - Accident prevention regulations VBG, VBG4, VBG9a
 - DIN VDE 0100, DIN VDE 0105
 - EN 60730 (Part 1)
 - Technical wiring regulations (TABs) issued by the regional electricity providers

Protect the products from any moisture during installation. Check the application with the manufacturer in case of any doubt.

Any use other than the use specified above is deemed not to be correct and proper. The operator of the unit is solely responsible for any damage arising as a result of this. Intended use is deemed to include observing the installation instructions described in these instructions.

Modifications to the unit

Do not undertake any modifications or upgrades on the KaController or KaDeck without discussing them with the manufacturer as they can impair the safety and operation of the unit.

Do not carry out any measures on the unit not described in this manual. Make sure that on-site systems and cabling are suitable for connection to the intended system!



Important:

Provide an all-pole mains separator in the wiring on site that can be reliably secured to avoid the system being reconnected (e.g. a lockable switch with a contact opening of at least 3 mm up to a rated voltage of 480 V).

No protective measures are indicated in the Kampmann wiring diagrams. These must be provided additionally when installing the system and when connecting the units in accordance with VDE 0100 and the regulations of each of the respective energy supply companies.

6.8 Overview of controls

The unit comes in a series of different electrical versions. Connect it via a terminal strip in the electrical junction box, which is located on the opposite side of the unit's water connection.

Wire the unit as per the wiring diagram, which is different for each version.

Design	Art. no. suffix
Electromechanical model	_00
KaControl model	_C1

Example:

326026211211C1

-> Dry cooling with KaControl without dew point monitor

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6.9 230 V electromechanical model

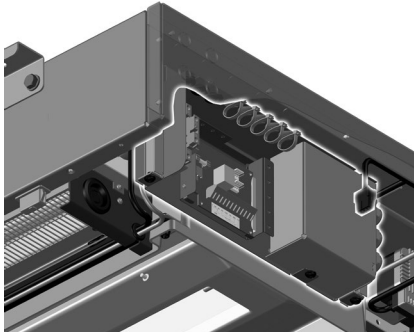


Fig.: Electrical connection unit

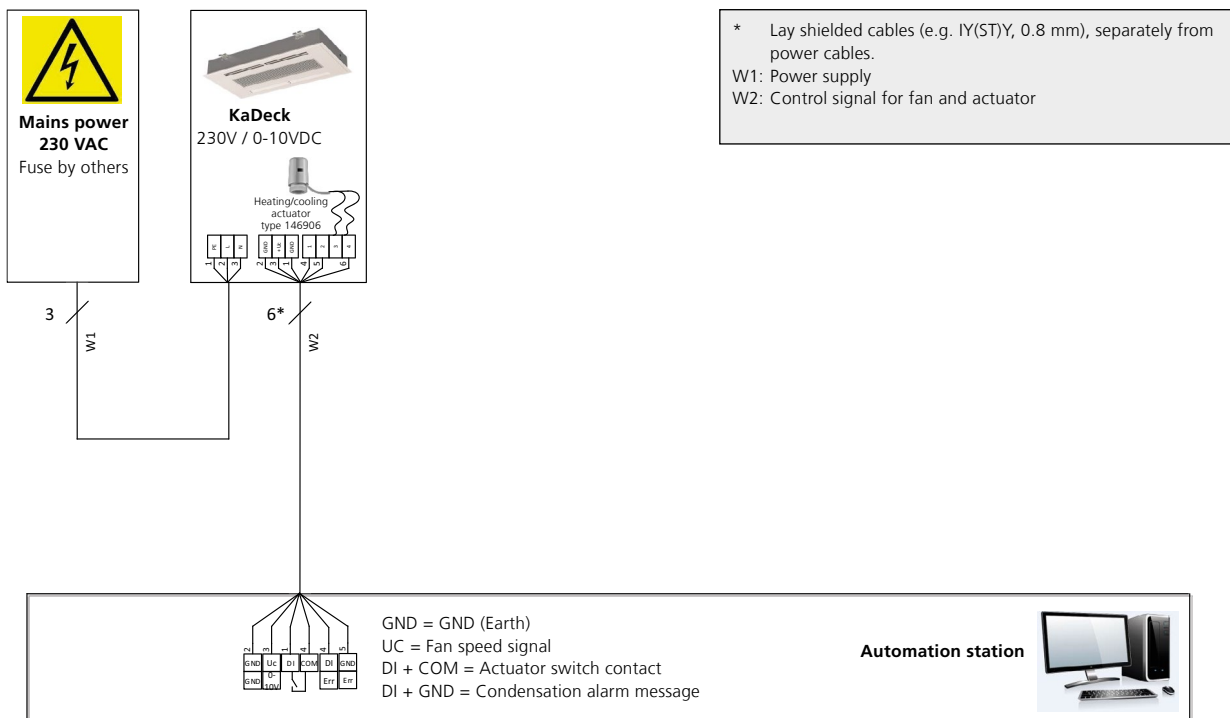
The required room temperature is set on the room thermostat. If it rises above the set value, the tangential fan starts up at the set speed and the thermoelectric actuator valve opens the water-side valve. In the event of a possible motor fault, the EC fan is disabled and a potential-free fault message can be called up.

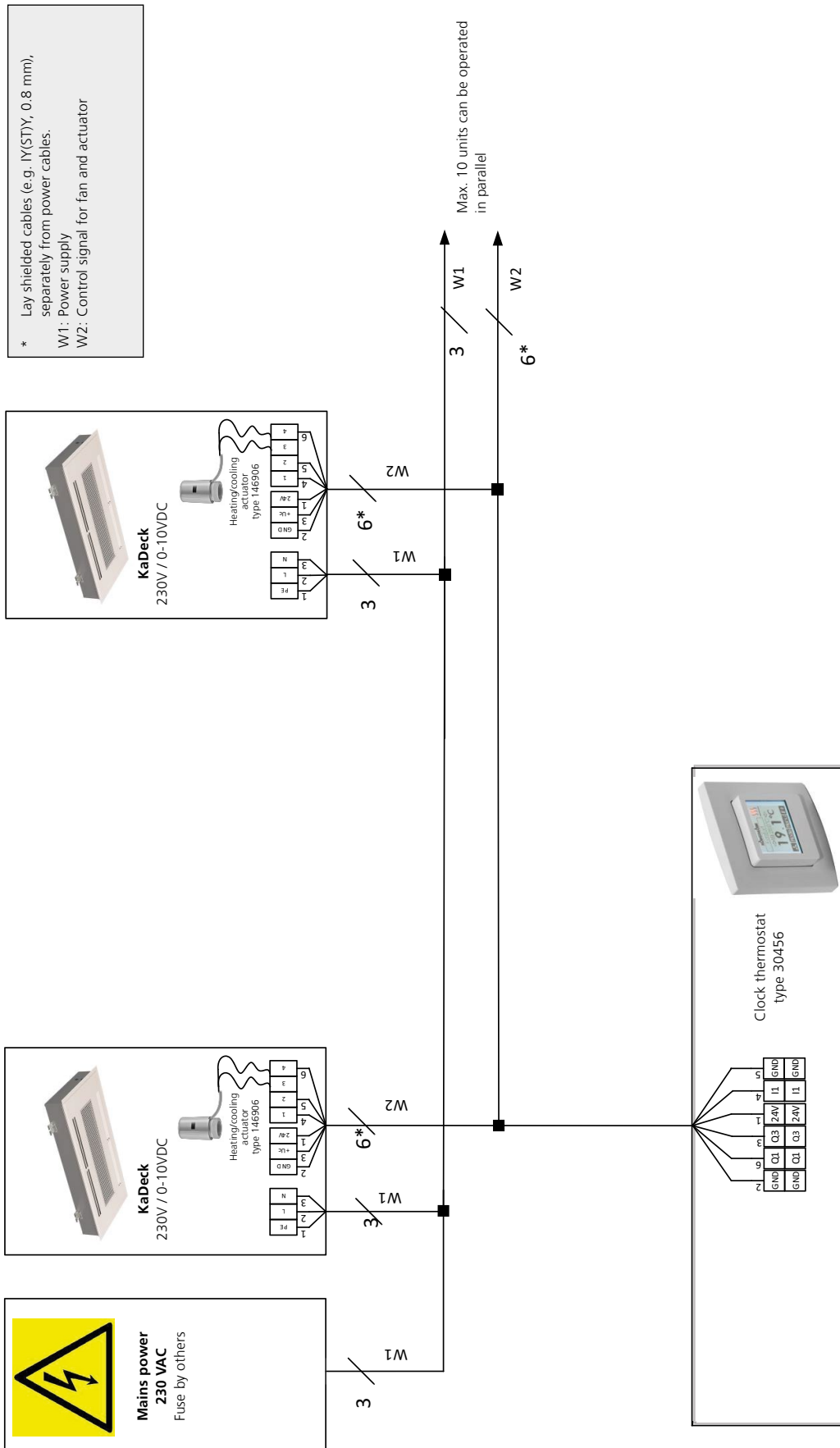
The clock thermostat 30456 permits the operation and temperature control of 230 V electromechanical KaDeck units. The room temperature is set by sensor-controlled functional keys. Complete with 10-stage fan speed adjustment in manual and automatic operating mode, including automatic summer/winter changeover and a day or week program.



Fig.: Clock thermostat

Electrical cabling - BMS control

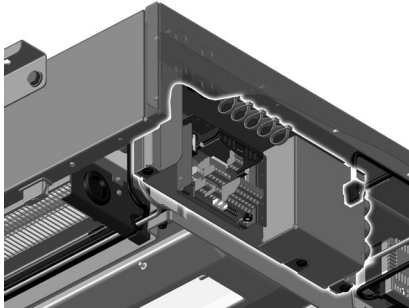




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6.10 KaControl model

The KaControl version provides the option of controlling and networking the KaDeck by means of a control unit supplied separately or on-site building management technology. A number of different settings and configurations are possible using the DIP switches on the PCB and parameters that can be set by the control unit.

The KaControl system offers the option of single-circuit and multi-circuit control and connection to building management control systems via optional interface cards.

Every KaDeck with KaControl has a temperature sensor for recording the room temperature.

Lay control lines separately from supply lines. Use UNITRONIC® BUS LD 2x2x0.22 or similar as data cables.

Wire the unit in series: star cabling is not allowed.



Important:

These instructions only outline a few of the possible options.

All the setting options can be found in the complete instructions for the KaControl at "www.Kampmann.de/kathermboard"

6.10.1 Intended use



Kampmann KaControllers and KaControl modules are built in line with the state of the art and recognised safety regulations. Nevertheless, their use can result in danger to people or damage to the units or other material property if they are not appropriately installed and operated or correctly and properly used.

Applications

The KaController should only be used as a room control unit in conjunction with Kampmann systems.

KaControllers should only be used

- indoors (for instance in residential properties and offices, showrooms etc.)

KaControllers should not be used

- outdoors,
- in humid areas, such as swimming pools, in wet rooms,
- in areas where there is a risk of explosion,
- in areas with a high dust content,
- in areas with an aggressive atmosphere.

Protect the products from any moisture during installation. Check the application with the manufacturer in case of any doubt. Any use other than the use specified above is deemed not to be correct and proper.

The operator of the unit is solely responsible for any damage arising as a result of this. Intended use is deemed to include observing the installation instructions described in these instructions.

Specialist knowledge

The installation of this product requires specialist knowledge of heating, cooling, ventilation 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.

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, i.e. Association of German Electricians (VDE) regulations, DIN and EN standards.

Purpose and scope of these instructions

This manual contains information on the commissioning, functionality and operation of the KaControl system. The information contained in these instructions can be changed without prior notification.

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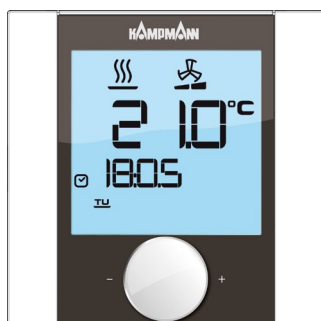
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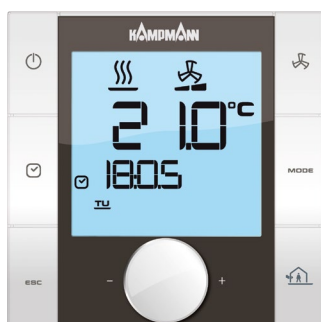
6.10.2 Operation of the KaController

The KaController is capable of controlling the wide range of Kampmann systems. KaControllers are equipped with state of the art technology and offer users the option of adapting the air conditioning of buildings to individual needs.

Up to two switch-on and switch-off times can be configured for every day of the week so that demand-led temperature control can be set by the user.



KaController without function keys, white



KaController with function keys, white



KaController without function keys, black

Product features:

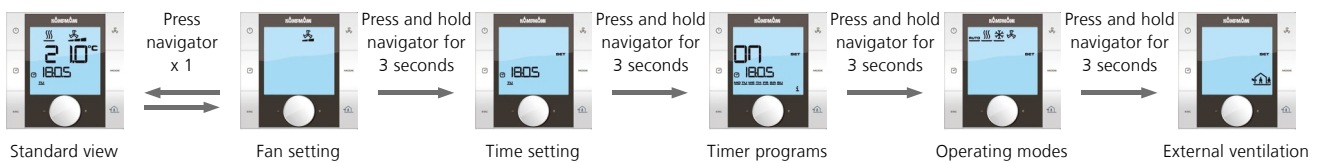
- integral NTC temperature sensor for room temperature control
- large LCD multifunctional display with clearly arranged icons
- selection of value to be displayed (room temperature, setpoint, offset setpoint)
- automatic LED background lighting
- large seven-segment display for visualisation of the value to be displayed
- real-time clock with integral timer programs
- 2 switching on and 2 switching off times per day
- Eco/day changeover
- alarm display
- key lock (limited functions for offices, hotels..)
- manual or automatic mode
- press/turn button with endless turn/rest function
- one-touch operation of all functions
- connection of Kampmann system components via a bus connection
- password-protected service level
- language-independent display, ideal for international use

The KaController is operated by the navigator dial and the function keys.

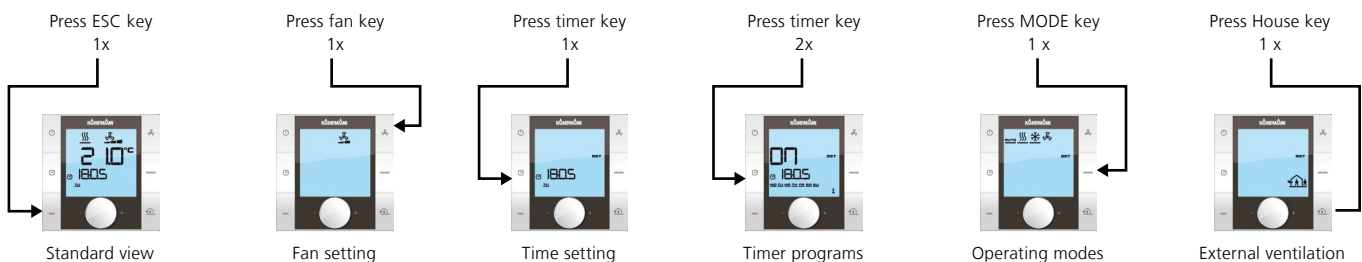
The functions that can be called up and set using the navigator dial are identical on both versions (with and without function keys on the side). An illustration of the KaController with the function keys at the side is used throughout these instructions for ease of understanding.

The navigator dial or side function keys are also used to select the various selection menus.

Menu selection using the navigator dial



Menu selection using function keys



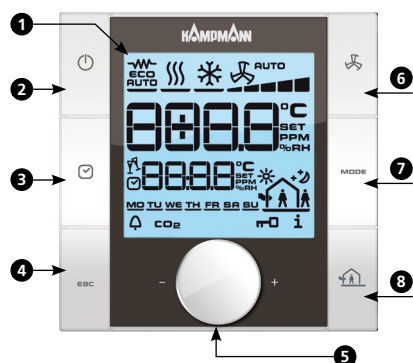
If no action is carried out using the navigator dial or the functional keys for longer than 3 seconds, the last change made is saved and the standard view is called up.

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Versatile air conditioning for offices and administration buildings

Installation and operating instructions

6.10.2.1 Function keys, display elements

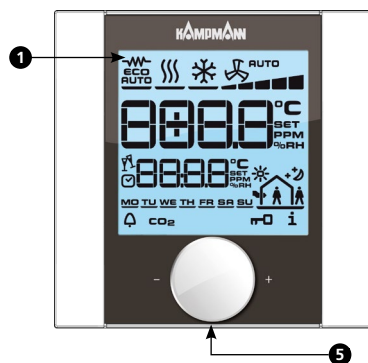


KaController with function keys
type 3210022
type 3210024
type 3210027

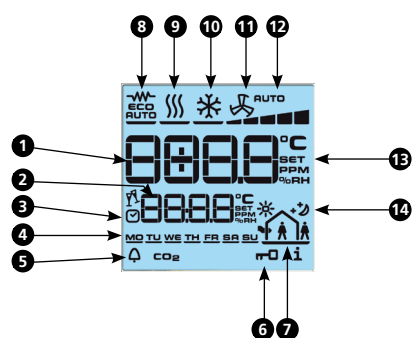
- 1 Display with LED background lighting
- 2 ON/OFF button (depending on setting)
 - ON / OFF (factory setting)
 - Eco mode/Day mode
- 3 TIMER button
 - Set time
 - Set timer programs
- 4 ESC button
 - Back to the standard display
- 5 Navigator dial
 - Change settings
 - Call up menus
- 6 FAN button
 - Set fan control
- 7 MODE button
 - Set operating modes (disabled with 2-pipe uses)
- 8 HOUSE key
 - External ventilation ON/OFF

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 by means of a parameter setting.



KaController without function keys
(single-button operation)
type 3210021
type 3210023
type 3210026



Display

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

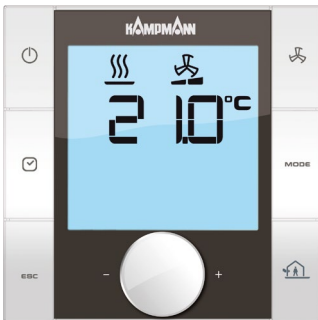
The symbols shown on the display depend on the application (2-pipe, 4-pipe etc.) and the parameters set.

6.10.2.2 Switching control off and on

When the controller is switched on, the display shows the default view with the current room temperature setpoint and the fan stage set.



Following initial commissioning of the KaController, the time is no longer shown in the default view (see "Time setting" selection menu).



Standard view

Deactivating the control:

There are 3 options for switching off the control:

1. Press the ON/OFF button.
2. Turn the navigator dial to the left until OFF appears.
3. Press and hold down the navigator dial until OFF appears.



Controller OFF view

Activating the control:

There are 2 options for switching on the control:

1. Press the ON/OFF button.
2. Press the navigator dial.

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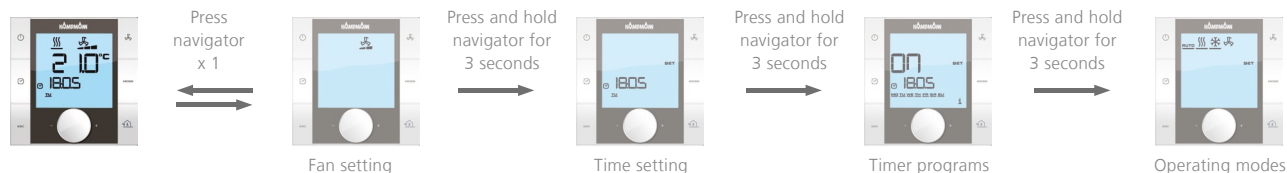
Versatile air conditioning for offices and administration buildings

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6.10.2.3 Temperature adjustment (absolute value)

The temperature setpoint is entered from the standard view.

To call up the standard view, press ESC or do not touch the KaController for 3 seconds.



Standard view

Setting the temperature setpoint:

A new temperature setpoint can be set by turning the navigator in the standard view.

Apply the set value by pressing the navigator dial and calling up the standard view.



If no action is carried out using the navigator dial or the functional keys for longer than 3 seconds, the last change made is saved and the standard view is called up.



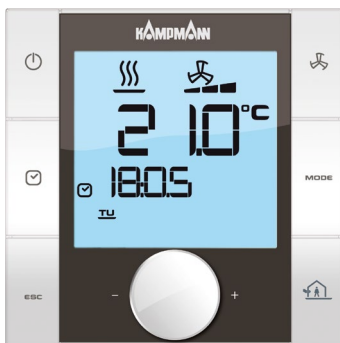
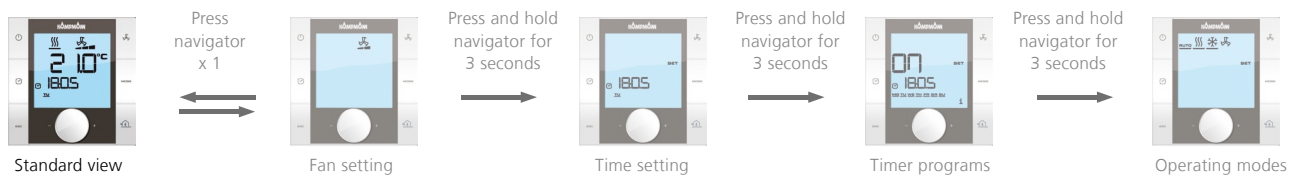
Setting the temperature setpoint

6.10.2.4 Temperature setting (relative value, comfort control active)

The temperature setpoint is entered from the standard view.

To call up the standard view, press ESC or do not touch the KaController for 3 seconds.

The setpoint was defined at installation, however with Comfort control, the user has the option to increase or decrease the setpoint by 3°C to compensate for different perceptions of room temperature.



Standard view



Temperature setpoint shift setting

Setting the temperature setpoint:

A new temperature setpoint can be set by turning the navigator in the standard view.

Apply the set value by pressing the navigator dial and calling up the standard view.



If no action is carried out using the navigator dial or the functional keys for longer than 3 seconds, the last change made is saved and the standard view is called up.

3.26 KaDeck UC

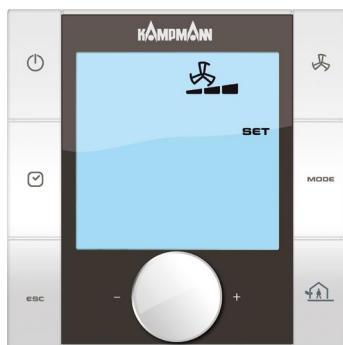
Versatile air conditioning for offices and administration buildings

Installation and operating instructions

6.10.2.5 Fan setting

Press the FAN key (quick access) or use the navigator dial to call up the "Fan setting" selection menu.

Calling up the "Fan setting" menu using the navigator dial:



Fan stage 3

The room temperature is initially controlled with natural convection in automatic mode and then by continually adjusting the fan speed. Users also have the option of setting fan stages Auto-0-1-2-3-4-5 as required.

Pressing the navigator dial in the standard view switches the display to the "Fan setting" menu.

You can select the required fan stage Auto-0-1-2-3-4-5- by turning the navigator dial.

Pressing the navigator dial activates the selected fan stage.

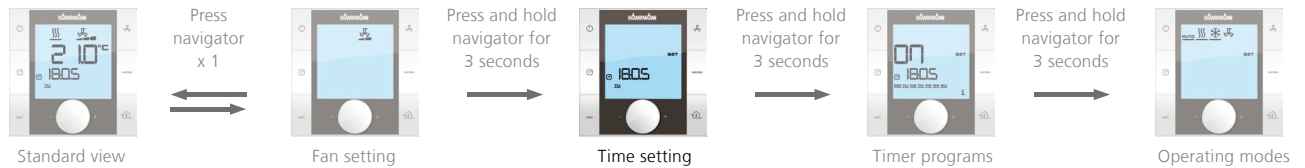


If no action is carried out using the navigator dial or the functional keys for longer than 3 seconds, the last change made is saved and the standard view is called up.

6.10.2.6 Time setting

Press the TIMER key (quick access) or use the navigator dial to call up the "Time setting" selection menu.

Calling up the "Time setting" menu using the navigator dial:



Time setting view



Setting to hide the time in the standard view

Setting the time:

Use the navigator dial to set the following:

1. Current hour
2. Current minute
3. Current day



The "Timer programs" selection menu is automatically called up once the current day has been confirmed by pressing the navigator dial.



If no action is carried out using the navigator dial or the functional keys for longer than 7 seconds, the last change made is saved and the standard view is called up.



Following initial commissioning of the KaController, the time is no longer shown in the standard view. Only when the time has been set, is the current time shown in the standard view. If "--:--" is entered for hours and minutes, the real-time clock is disabled and the time is hidden in the standard view.

3.26 KaDeck UC

Versatile air conditioning for offices and administration buildings

Installation and operating instructions

6.10.2.7 Timer programs

Timer matrix

	ON1	OFF1	ON2	OFF2
MO	6 : 00	18 : 00	-- : --	-- : --
TU	6 : 00	18 : 00	-- : --	-- : --
WE	6 : 00	18 : 00	-- : --	-- : --
TH	6 : 00	18 : 00	-- : --	-- : --
FR	6 : 00	18 : 00	-- : --	-- : --
SA	8 : 00	14 : 00	-- : --	-- : --
SU	-- : --	-- : --	-- : --	-- : --

Example of a weekly timer program



Display elements in the "Timer programs" selection menu

- 1 ON = SWITCH ON timer program
OFF = SWITCH OFF timer program
- 2 1 = Timer program no. 1
2 = Timer program no. 2
- 3 Switching on/switching off time
- 4 Weekday
- 5 If no switch-on or off time is entered in the timer program matrix, the "Clock" symbol is hidden in the standard view.

The KaController provides the option of programming switching on and off times using a timer program if rooms are only to be air conditioned during certain times of the day. Unlike with conventional thermostatic controllers where only one switching on and off time can be selected, two switching on and off times can be set for each day.



Set the time in the "Time setting" selection menu before parametrising the switch-on and off times.

The KaController can manage 2 switch-on and 2 switch-off times per day. The switching on and off times can be entered as a block or individually for each day.

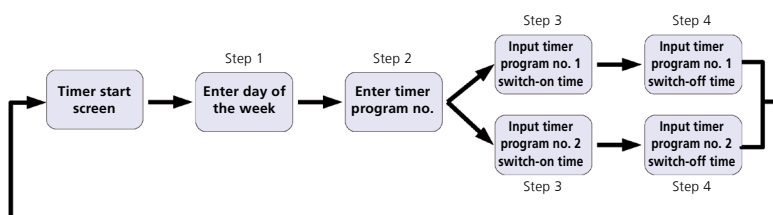


The timer program switches the controller on and off in accordance with the timer entries. After switching off the controller using the timer program, the user then has the option of switching the controller on using the ON/OFF key or the navigator dial.



If no switch-on or off time is entered in the timer program matrix, the "Clock" symbol is hidden in the default view.

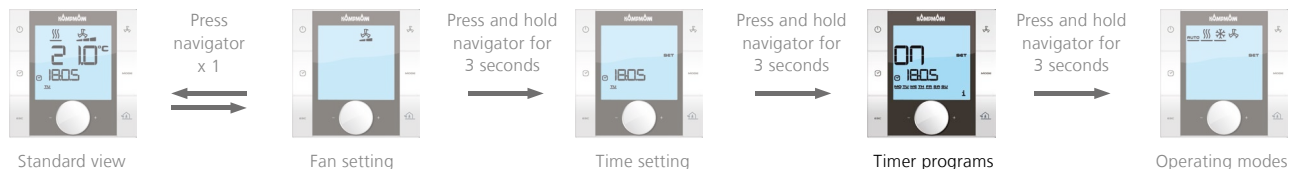
The diagram below shows the sequence for setting the timer program. Steps 1-4 are described in more detail in the next section.



To exit the "Timer programs" selection menu, press and hold down the navigator dial for 3 seconds in the timer program start screen or do not use the KaController for 15 seconds.

Press the TIMER key twice (quick access) or use the navigator dial to call up the "Timer programs" selection menu.

Use the navigator dial to call up the "Timer programs" menu:



Timer start screen

Step 1:

Turn the navigator dial to select a weekday for which you would like to program a switch-on or off time.

You have the option of selecting the days of the week as a block (MO-FR, SA-SU, MO-SU) or individually.

Press the navigator dial to apply the figure (for instance: MO-FR) and to call up the next input screen.



Enter timer program no.

Step 2:

Turn the navigator dial to select the number of the timer program (no. 1 or no. 2).

Press the navigator dial to apply the figure (for instance: Timer program no. 1) and to call up the next input screen.



Input screen for **switching-on time**

Step 3:

It is possible to set the **switch-on time** you require by turning the navigator dial.

Once the minutes have been set, the set **switching-on time** is carried over by pressing the navigator dial and the input screen for the switch-off time of the selected timer switching program no. is called up.

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Input screen for **switching-off time**

Step 4:

Set the **switch-off time** you require by turning the navigator dial. Once the minutes have been set, press the navigator dial (⇒ Step 1) to apply the **switching-off time** and to call up the timer start screen (action 1).

IMPORTANT NOTE!

- Call up the respective weekday and associated timer program no. to delete switching-on and switching-off times entered (Step 1 + Step 2). Replace the switch-on or off time entered by "- - : - -" (Step 3 + Step 4).
- You can overwrite timer entries at any time either as a block or for each day
- Only request switch-on and off times singly for each day. It is not possible to request switching-on and off times as a block where there are differing time entries for the respective days of the week and the time is then shown by "- - : - -" !
- To exit the "Timer programs" selection menu, press and hold down the navigator dial for 3 seconds in the timer program start screen or do not use the KaController for 15 seconds.

6.10.2.8 Deleting all timer programs and time



Standard view



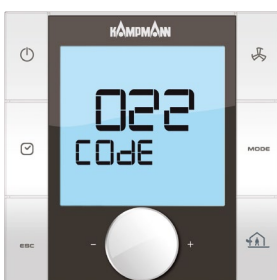
Controller OFF view



Call up parameter level view



Call up parameter level password request view



Call up parameter level password entry view

Perform the following steps to delete all timer programs and the time:

1. Switch off the KaController by:
 - Pressing the ON/OFF key
 - Pressing the navigator for a minimum of 5 seconds
 - Turning the navigator dial to the left until OFF appears
2. Press the navigator dial for a minimum of 10 seconds to call up the Service menu. The display shows "Para" and then "CODE" with the value 000 in sequence.
3. Select the code 44 by turning the navigator dial and confirm by pressing the navigator dial. Now all timer programs and the time are deleted.
4. There are 3 options for exiting the Service menu and calling up the standard view:
 - If no action has been carried out using the navigator dial for longer than 2 minutes.
 - Hold down the navigator dial for 5 seconds.
 - Turn the navigator dial, select "ESC" on the display and confirm the selection by pressing the navigator dial.
5. Disconnect the unit for approx. 1 minute to apply the change.

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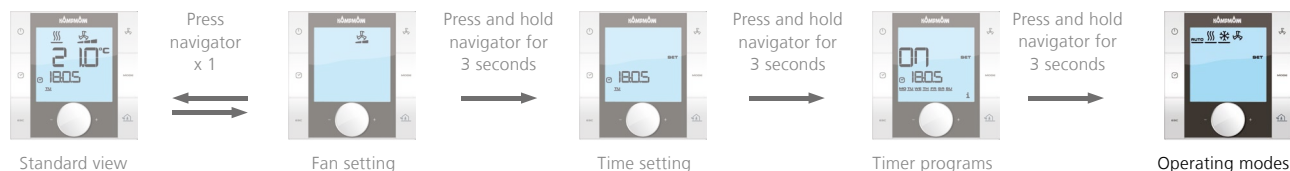
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6.10.2.9 Cooling mode / Heating mode changeover

Press the MODE key (quick access) or use the navigator dial to call up the "Operating modes" selection menu.

Calling up the "Operating modes" menu using the navigator dial:



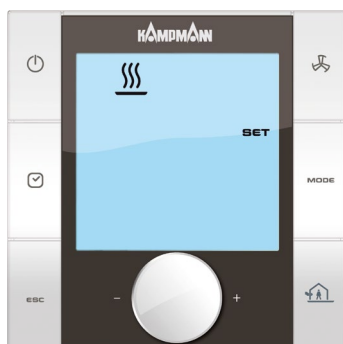
You can use the navigator dial to set the operating mode depending on the parameter setting.

Heating mode: The control only works in heating mode.

Cooling mode: The control only works in cooling mode.

The operating mode required can be selected by turning the navigator dial in the 'Operating mode' selection menu.

Pressing the navigator dial activates the selected operating mode.



Setting heating operating mode



The MODE key is locked with 2-pipe applications, as Heating and Cooling mode is specified by an external contact or clip-on sensor. As a rule, it is not possible to alter the operating mode using the KaController in 2-pipe applications.



If no action is carried out using the navigator dial for longer than 3 seconds, the last change made is saved and the standard view is called up.

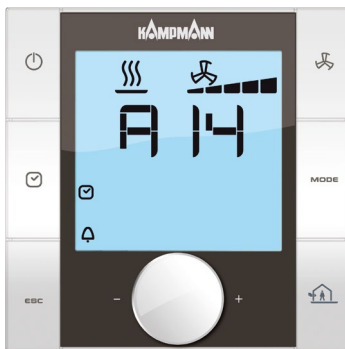


If the symbols for Heating or Cooling operating mode are flashing, it means that the water temperature to activate the selected operating mode has not yet been reached.

6.11 Alarm messages

The KaController displays faults by means of the alarm messages listed in the table below. The alarm messages are displayed according to their priority.

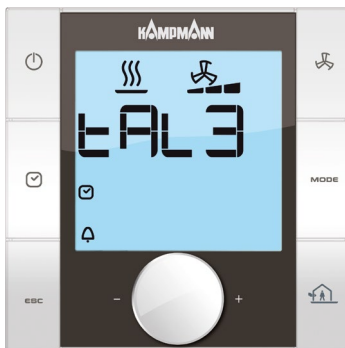
In the event of an alarm, note down the alarm message and contact the responsible member of staff (System Administrator or Installer/Service Technician) to fix the fault quickly.



View of "Condensation alarm" (Alarm A14 shown)

KaDeck alarm table

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



KaController alarm table

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

Should more than one fault occur simultaneously with the KaController electronics, the alarm messages are displayed alternately in the display.

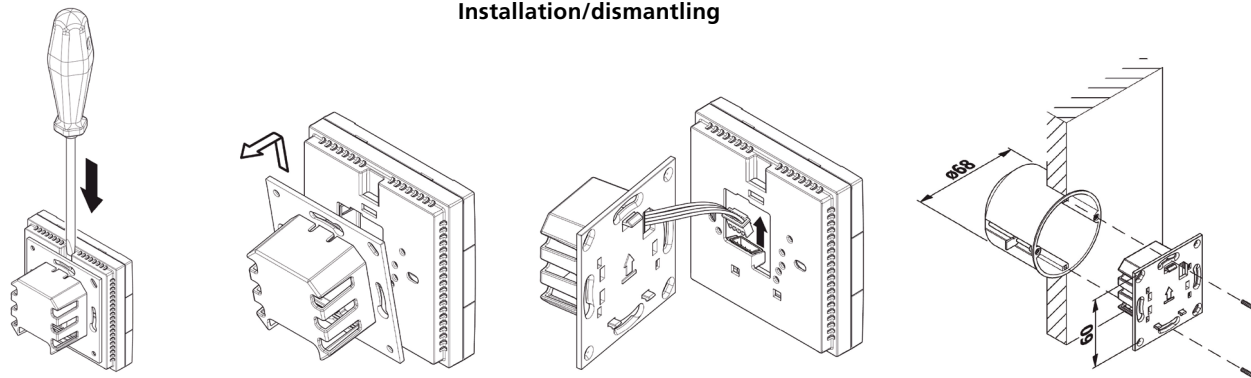
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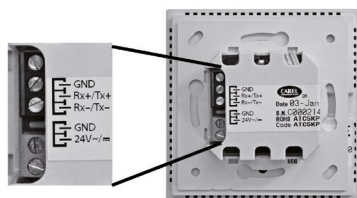
6.12 KaController installation

Installation/dismantling



Electrical wiring

- Connect the KaController to the nearest KaControl in accordance with the wiring diagram. The maximum bus length between the KaController and the KaControl is 30 m.
- Connecting a KaController to it automatically converts the respective KaControl into the master unit in the control circuit.



KaController terminals



Disconnect the unit prior to embarking on "all" wiring work!



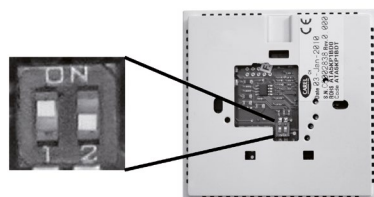
Only connect the bus lines to the KaControl when the unit is fully disconnected.

DIP switch setting

- The DIP switches on the rear of the KaController should be set according to the illustration at the side:

DIP switch no. 1: **ON**

DIP switch no. 2: **OFF**



DIP switch setting
KaController

DIP switch no. 1: **ON**
DIP switch no. 2: **OFF**

6.13 Troubleshooting A11 – A17

Faults in the motor of a slave unit are not shown on the KaController.
Only a motor fault in a master unit is shown on the KaController.

A11 control sensor faulty

The room temperature is regulated on the selected control sensor, that is to say that the external room sensor/intake sensor can be faulty, depending on the DIP switch setting. If the room sensor in the KaController is faulty, this display alternates with tAL1.

Effect of this alarm:

The fan is switched off and the cooling valve closes.

A12 motor protection control sensor

Any motor fault with a KaControl is shown on the KaController by the display "A12".

When a motor fault has occurred, check whether the fan is blocked.

To eliminate the fault, disconnect the unit and remedy the cause of the fault. The unit should then restart after the power supply has been reconnected and a fan stage has been selected.

Effect of this alarm:

The fan is switched off and the cooling valve closes.

A13 Room frost protection function

The room temperature is monitored at each phase in the system to a limit of 8 °C. The room frost protection function is enabled if the room temperature drops below 8 °C. The room frost protection function is disabled when the room temperature rises above the limit of 8 °C.



The limit of 8 °C is fixed for the room frost protection function and cannot be changed.

Effect of this alarm:

The cooling or heating valve opens and fan stage 1 is switched on.

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A14 Condensation alarm

The condensation alarm of a unit is shown on the KaController by the display "A14". A unit with an active condensation alarm automatically closes all valves.

Check the correct operation of the dewpoint monitor or the condensation pump and the water level in the condensation tank if a condensation alarm occurs.

Effect of this alarm:

The cooling or heating valve opens and fan stage 1 is switched on.

A15 General alarm

The general alarm with units with KaControl is only triggered if the inputs on the KaControl have been correspondingly parametrised.

Effect of this alarm:

The cooling or heating valve is closed and fan is switched off.

A16 Faulty AI1, AI2 or AI3 sensor

The sensor alarm is displayed if one of the active sensors does not transmit viable measured values to the KaControl.

Check the correct wiring of the KaControl and check the sensor.

Effect of this alarm:

The cooling or heating valve opens and the fan is switched off.

A17 Unit frost protection function

The temperature at the temperature sensor is monitored at each phase in the system to a limit of 4 °C. The unit frost protection function is activated if the temperature drops below 4 °C. The cooling valve opens and fan is switched off.

The unit frost protection function is disabled when the temperature at the sensor rises above the limit of 4 °C. The unit frost protection function is also activated if the room temperature drops below 4 °C.



The limit of 4 °C is fixed for the unit frost protection function and cannot be changed.

Effect of this alarm:

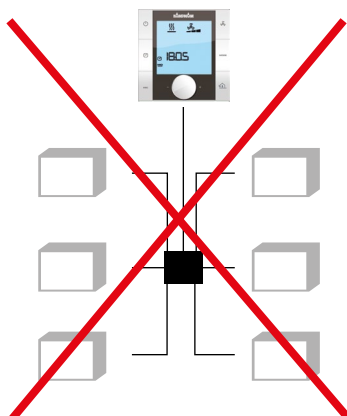
The cooling or heating valve opens and fan is switched off.

Master unit #1

Slave unit #2

6.14 Cabling

6.14.1 General information



Wrong!
Star-shaped wiring of the bus lines.

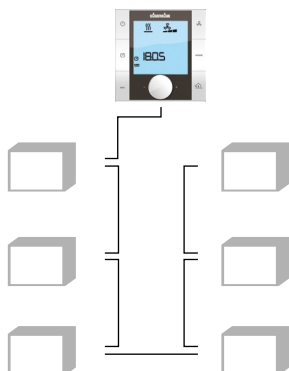
- Route all low voltage cables along the shortest route.
- Ensure that low-voltage and power cables are separated, using metal partitions on cable harnesses.
- Use only shielded cables as low-voltage and bus cables.
- Lay all BUS cables in a linear pattern. Star-shaped wiring is not permitted (Figure on left).
- The KaController is connected via a bus connection to the respective PCB on the unit.



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

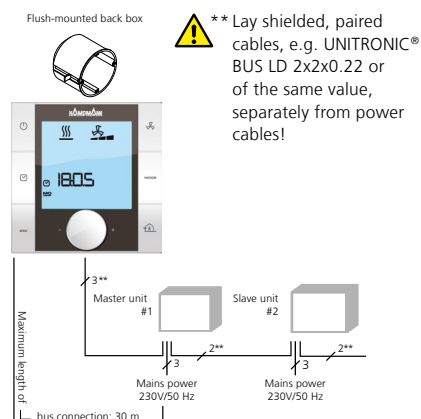


When laying bus cables, avoid the formation of star points, for instance in junction boxes. Loop the cables through to the units!



Right!
Linear wiring of the bus lines.

6.14.2 KaController



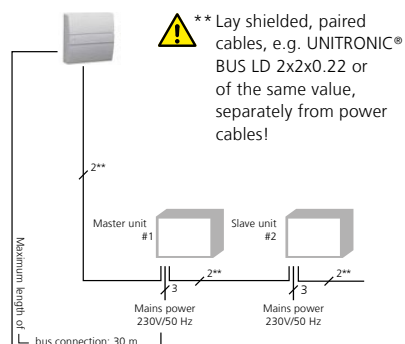
- A flush-mounted back box is required for the KaController.
- Connect the KaController to the nearest KaControl as per the wiring diagram. The maximum bus length between the KaController and the KaControl unit is 30 m.
- Connecting a KaController to it automatically converts the respective KaControl into the master unit in the control circuit.

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6.14.3 External room temperature sensor

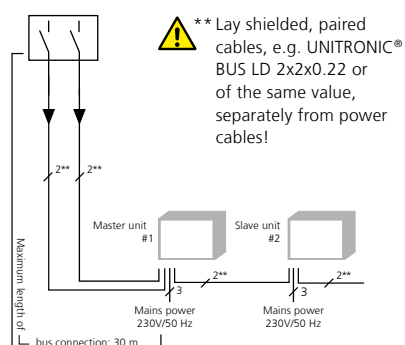


- All KaControl master units have an analogue input to connect an external room temperature sensor.
- Connect up the cables in accordance with the wiring diagram and use the DIP switch and KaController to configure the functions.
- The maximum cable length between the master unit and the room temperature sensor is 30 m.



The DIP switch no. 6 is factory-set by default to OFF and the temperature measurement is activated by the sensors inside the unit.

6.14.4 Inputs for processing external contacts (e.g. on-site BMS etc.)

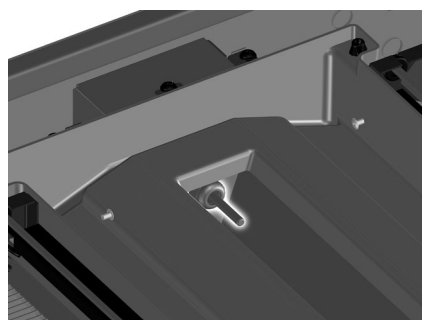


- All KaControl master units have multifunctional inputs that can be assigned different functions during commissioning.
- Connect up the cables in accordance with the wiring diagram and use the KaController to configure the functions.
- The maximum cable length between the master unit and the external potential-free contacts is 30 m.



No external contacts (e.g. window contact, card reader etc.) can be connected to the slave units.

6.14.5 Internal temperature sensor / air intake sensor



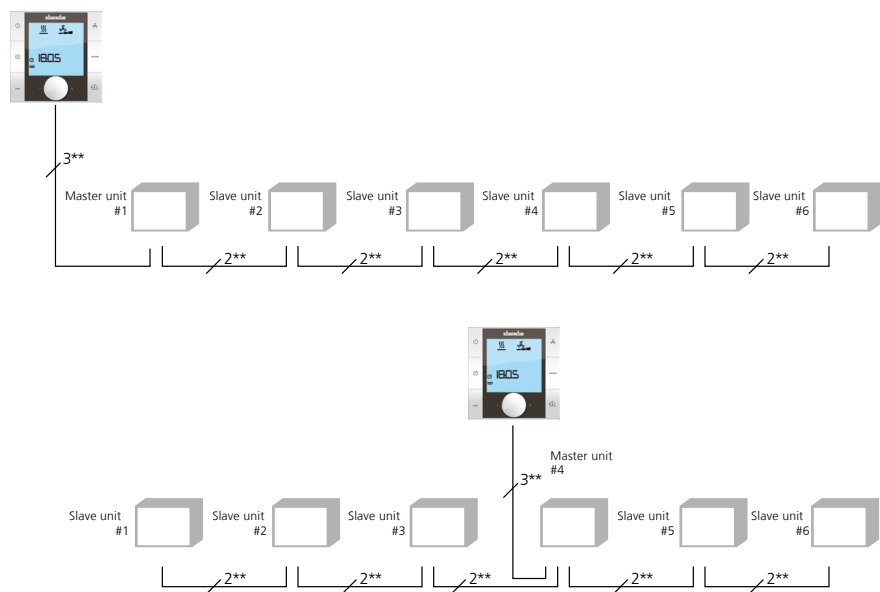
- All KaControl units have multifunctional inputs that can be assigned different functions during commissioning.
- A temperature sensor to measure the air intake temperature or room temperature is factory-installed in all KaDeck with KaControl.



The internal sensor in the unit is factory-defined as an internal room temperature sensor and DIP switch no. 6 is set to OFF.

6.15 Addressing – Single-circuit controls

- KaControl units in single-circuit controls with a maximum of 6 units need not be addressed.
- Define the master unit/slave unit by connecting the KaController.
- The respective KaControl automatically becomes the master unit in the control circuit when a KaController is connected to it.
- A master unit must not necessarily be arranged at the end of a bus system.
- Lay all BUS cables in a linear pattern. Star-shaped wiring is not permitted.

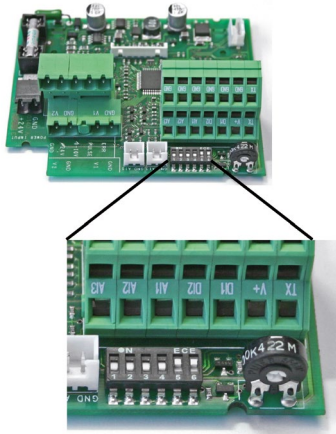


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6.16 Setting the unit configuration by means of DIP switches



Set the configuration of a KaControl unit using the DIP switch on the PCB. Once the DIP switch has been set, all the basic functions of the configuration have been parametrised and the KaControl can be operated immediately.

Special setting options, such as lowering the temperature setpoint during Eco mode, have to be parametrised in the Service menu. This parametrisation is possible using the KaController.

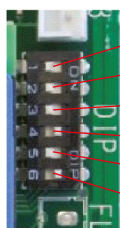
Open the control unit to check and possibly adjust the DIP switches.

The DIP switches are factory-set in accordance with the unit configuration!



Disconnect the control before starting to adjust the DIP switches.

Functional table of DIP switch settings on the PCB



DIP1	OFF = --- ON = 0..10V actuation by on-site MSR
DIP2	OFF = --- ON = Activation by potentiometer 0..100 kOhm
DIP3	OFF = Clip-on sensor not fitted ON = Clip-on sensor fitted
DIP4	OFF = 4-pipe or winter/summer changeover with clip-on sensor ON = Winter/summer changeover via DI2
DIP5	OFF = 2-pipe system ON = 4-pipe system
DIP6	OFF = Room control on intake air/ext. room sensor ON = Room control to sensor in the KaController



With slave units, the DIP switch no. 6 has to be set to ON if the room temperature is detected via an external room sensor or the KaController.

DIP switch no. 1

DIP switch no. 1 must be set to ON to actuate a KaControl by means of 0...10 V signals within a building management system provided by others. The parameter settings required are described in section 10.3.17.

■ Factory setting: DIP1 = OFF

DIP switch no. 2

It is essential that DIP switch no. 2 is set to OFF.

■ Factory setting: DIP2 = OFF

DIP switch no. 3

A temperature sensor can be connected to provide interim frost protection. In this case, DIP switch no. 3 has to be set to ON.

■ Factory setting: DIP3 = OFF

DIP switch no. 4

Cooling/heating changeover is set as standard using the KaController. Alternatively, cooling/heating changeover can also be performed by an external switch contact. In this case, DIP switch no. 4 has to be set to ON. The KaDeck is designed as a 2-pipe unit and the DIP switch is set to ON.

■ Factory setting: DIP4 = ON

DIP switch no. 5

It is essential that DIP switch no. 5 is set to OFF.

■ Factory setting: DIP5 = OFF

DIP switch no. 6

There is an option of using the internal sensor in the KaController or an external room temperature sensor for temperature control.

DIP switch no. 6 = OFF Room temperature control on an internal sensor or external room temperature sensor.

DIP switch no. 6 = ON Room temperature control on the internal sensor of the KaController

■ Factory setting: DIP6 = OFF

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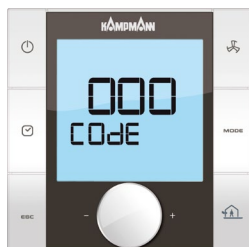
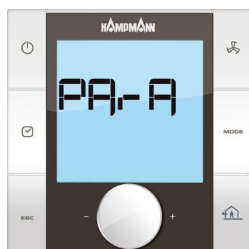
6.17 Parameter settings

Special system requirements can be configured using parameter settings in the Service menu.

Special system requirements may include:

- display: room temperature or setpoint temperature
- lock operating functions
- set absolute setpoint temperature or $\pm 3K$
- setting parameters in Eco / Day mode
- sensor calibration

The required settings can be made using the KaController.



Service menu

The following steps are needed to set the parameters:

1. Switch off the KaControl unit by:
 - pressing the ON/OFF key
 - or
 - pressing the navigator for a minimum of 5 seconds
 - or
 - turning the navigator dial to the left until OFF appears.
2. Press the navigator dial for a minimum of 10 seconds to call up the Service menu. The display shows "Para" and then "CODE" with the value 000 in sequence.
3. Select the password (code) 22 by turning the navigator dial and confirm by pressing the navigator dial. You are now in Service level 1 and the display shows the current software version (P000=...).
4. Parameters can now be set using the navigator dial.
5. Setting parameters:
 - turn the navigator dial to select the parameter
 - press the navigator dial to call up Edit mode
 - set the required value by turning the navigator dial
 - press the navigator dial to save the new value
6. There are 3 options for exiting the Service menu and calling up the standard view:
 - if no action has been carried out using the navigator dial for longer than 2 minutes
 - hold down the navigator dial for 5 seconds
 - turn the navigator dial, select "ESC" on the display and confirm the selection by pressing the navigator dial



Parameter changes within the Service menu are only transmitted in the master unit.
Connect a KaController to the respective slave unit to change the parameters on slave units.

6.17.1 Setting absolute setpoint temperature or ± 3K



Parameter P36=0
Setting of "absolute" setpoint temperature



Parameter P36=1
Setting of setpoint temperature ± 3K

Parameter P36

It may be necessary in office or hotel applications for the system operator to specify a base setpoint. The user has the option of changing the setpoint temperature by ± 3K to compensate for any different perception of room temperature.

Alternatively the setpoint can be set in absolute values.

Parameter P36 is used to configure the setpoint setting.

	Function
P36	Setpoint setting 0 = Absolute setpoint setting 1 = Setpoint setting ± 3K

Use parameter P01 to configure the base setpoint for the "Setpoint setting 3K".

	Function
P01	Base setpoint for setpoint entry ± 3K



When the parameters are being set
P37=1 ⇒ Display setpoint temperature
P36=1 ⇒ Setpoint setting ± 3K
no setpoint is shown in the standard display!

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7.17.2 ON/OFF, Eco/Day function

Parameter P38

The ON/OFF key function and the timer programs are specified using parameter P38.

Use the ON/OFF button and the timer programs to switch the unit ON and OFF or between Eco and Day mode.

Option 1:

The ON/OFF key and timer programs are used to switch between Eco mode and Day mode.

Option 2:

Use the ON/OFF key and the timer programs to switch the KaControl on and off.

Parameter P38 can also be set for the "Heating/Cooling changeover using clip-on sensor" function (Section 10.3.7).

	Function
P38	8 = Eco/Day mode changeover 26 = Eco/Day mode changeover + Heating/Cooling changeover via clip-on sensor (2-pipe system) 72 = ON/OFF changeover 90 = ON/OFF changeover + Heating/Cooling changeover via clip-on sensor (2-pipe system)



Alternatively the KaControl unit can be switched on and off via an external potential-free contact or between Eco mode and Day mode. The configuration is described in Section 10.3.14.

6.17.3 DI2 function



On the KaDeck, the digital input DI2 is connected to GND via a factory-inserted electrical jumper. The KaDeck is therefore pre-set as a cooling unit.

The digital input DI1 is predominantly used to execute specific functions. If the use of the digital input DI2 is needed, then the following settings have to be made:

1. Set DIP switch no. 4 to OFF.
2. Configuration of the digital input DI2 using parameter settings P44.



If DIP switch no. 4 is set to ON, digital input DI2 changes over from heating to cooling in a 2-pipe system.

Parameter P44

Parameter P44 is used to set the function of the digital input DI2 when DIP switch no. 4 = OFF.

	Function	Standard	Min.	Max.	Unit
P44	Function DI2 0 = No function 1 = ON/OFF (contact open → ON) 2 = Heating/cooling changeover (contact open → heating) 3 = Eco/day mode (contact open → Day) 4 = No function (contact open → no function) 5 = Condensation alarm (contact open → no condensation) 6 = General alarm (contact open → no alarm) 7 = Ext. frost protection monitor (contact open → no frost) 8 = ON/OFF (contact closed → ON) 9 = Heating/cooling changeover (contact closed → heating) 10 = Eco/Day mode (contact closed → day) 11 = No function (contact closed → no function) 12 = Condensation alarm (contact closed → no condensation) 13 = General alarm (contact closed → no alarm) 14 = Ext. frost protection monitor (contact closed → no frost) 15 = Special mode (contact open → special mode active) 16 = Special mode (contact closed → special mode active) 17 = Fan stage increase (contact open → no fan stage increased) 18 = Fan stage increase (contact closed → no fan stage increase) 19 = Heating/cooling changeover (contact open → heating) 20 = Heating/cooling changeover (contact closed → heating) 21 = Cooling/heating changeover (contact open → heating) 21 = Cooling/heating changeover (contact closed → cooling)	0	0	22	

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Parameter P56

The polarity of digital input DI2 is set using parameter P56 when setting DIP switch no. 4 to ON.

	Function	Standard	Min.	Max.	Unit
P56	Polarity of DI2 if DIP4 = ON (heating/cooling changeover via DI2) 0 = Contact closed → Heating Contact open → Cooling 1 = Contact open → Heating Contact closed → Cooling	1	0	2	

6.17.4 Function of digital outputs V1 and V2

The function of the digital output v1 is permanently assigned.
The function of the digital output V2 can be configured using parameters.

Digital output V2

KaDeck have been solely developed as 2-pipe units. The output V2 can therefore be parametrised with other functions.

The digital output V2 can be configured using parameter P39.

	Function	Standard	Min.	Max.	Unit
P39	Function V2 in a 2-pipe system 0 = No function 1 = Heat requirement 2 = Cooling requirement 3 = Unit alarm 4 = 3-point actuator 5 = External ventilation active	0	0	5	



24 V DC is connected to digital output V2. The digital output is not a potential-free contact and can only be used with appropriate wiring!

6.17.5 Function of multifunctional inputs AI1, AI2 and AI3

The function of the multifunctional inputs AI1, AI2 and AI3 can be configured using parameter settings.

Function AI1 – Parameter P15

Parameter P15 is used to set the function of the multifunctional input AI1.



The multifunctional input AI1 can only be set using parameter P15 if DIP switch no. 6 is set to ON! The setting of DIP switches is described in section 10.

	Function	Standard	Min.	Max.	Unit
P15	Function AI1 0 = Not used (input disabled) 1 = NTC outside air sensor 2 = NTC cold/hot water sensor (clip-on sensor) 3 = NTC cold water sensor (clip-on) 4 = NTC hot water sensor 5 = NTC ext. room temperature sensor/air intake sensor 6 = 0..100 kOhm fan control 7 = 0..100 kOhm temperature setpoint 8 = 0..100 V BMS control heating/cooling 9 = 0..100 V BMS control heating 10 = Eco/Day mode (contact open ⇨ Day) 11 = No function (contact open ⇨ no function) 12 = Condensation alarm (contact open ⇨ no condensation) 13 = General alarm (contact open ⇨ no alarm) 14 = Ext. frost protection monitor (contact open ⇨ no frost) 15 = Eco/Day mode (contact closed ⇨ Day) 16 = No function (contact closed ⇨ no function) 17 = Condensation alarm (contact closed ⇨ no condensation) 18 = General alarm (contact closed ⇨ no alarm) 19 = Ext. frost protection monitor (contact closed ⇨ no frost)	0	0	19	

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Function AI2 – Parameter P16

Parameter P16 is used to set the function of the multifunctional input AI2.



The multifunctional input AI2 can only be set using parameter P16 if DIP switch no. 3 is set to OFF! The setting of DIP switches is described in section 10.

	Function	Standard	Min.	Max.	Unit
P16	Function AI2: see P15	0	0	19	

Function AI3 – Parameter P17

Parameter P17 is used to set the function of the multifunctional input AI3.



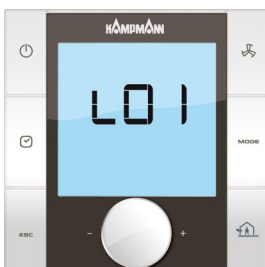
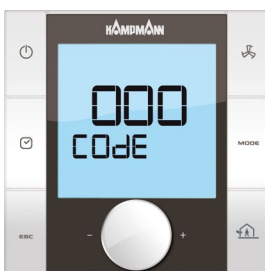
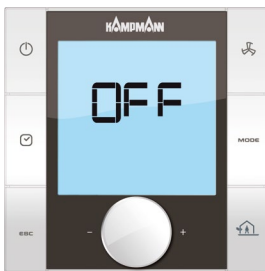
The multifunctional input AI3 can only be set using parameter P17 if DIP switch no. 3 is set to OFF! The setting of DIP switches is described in section 10.



The multifunctional input AI3 can only process analogue signals unlike inputs AI1 and AI2.

	Function	Standard	Min.	Max.	Unit
P17	Function AI3 0 = Not used (input disabled) 1 = NTC outside air sensor 2 = NTC cold/hot water sensor (clip-on sensor) 3 = NTC cold water sensor (clip-on sensor) 4 = NTC hot water sensor 5 = NTC ext. room temperature sensor / air intake sensor 6 = 0..100 kOhm fan actuation 7 = 0..100 kOhm temperature setpoint 8 = 0..100 V BMS control winterummer 9 = 0..100 V BMS winter control	0	0	9	

6.18 Functional testing of connected assemblies



The KaController provides the option of checking the function of the external units connected independently of the software application. The function of individual assemblies, such as the EC fan, can be directly activated and checked by means of inputs on the KaController.

The functional checks of the connected assemblies are called up and performed by the following operating steps:

1. Switch off the KaController by:
 - pressing the ON/OFF key
 - or
 - pressing the navigator for a min. of 5 seconds
 - or
 - turning the navigator dial to the left until OFF appears.
2. Call up the Parameter menu by pressing the navigator dial for a minimum of 10 seconds. The display shows "Para" and then "CODE" with the value 000 in sequence.
3. Select the password (code) 77 by turning the navigator dial and confirm by pressing the navigator dial.
4. "L01" is shown on the display and the functional testing of the connected assemblies can start.

Important:

The individual test steps are called up by pressing the navigator dial. The default view with an "OFF" on-screen display is shown once the testing has been completed (L08).

Step	Input/Output	Display flashes	Display does not flash
L01 *	Input AI1	Sensor faulty	Sensor OK
L02 *	Input AI2	Sensor faulty	Sensor OK
L03 *	Input AI3	Sensor faulty	Sensor OK
L04	Input DI1	Contact open	Contact closed
L05	Input DI2	Contact open	Contact closed
L06	Fault signal input	No alarm	Alarm pending
L07	Fan speed 0 – 10 V	--	Increased actuation Fan 0 V ⇒ 10 V
L08	Valve output V1	--	Output V1 activated
L09	Valve output 2	--	Output V2 activated

* The control automatically detects the requisite sensors on the analogue inputs AI1 - AI3 using the DIP switch settings. The respective display (L01-L03) flashes if sensors are faulty or not connected.



Observe hardware-related locks during functional testing (refer to the respective wiring diagram!)

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6.19 Parameter list for control PCB

	Function	Standard parameter (Rev. 1.19)	Min.	Max.	Unit	KaDeck parameters
P000	Software version	-	0	255	-	-
P001	Base setpoint for setpoint entry $\pm 3K$	22	8	32	°C	22
P002	Switching on / off hysteresis for valves	3	0	255	K/10	10
P003	Neutral zone in a 4-pipe system (only in automatic mode)	3	0	255	K/10	5
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	3
P006	Fan On/Off hysteresis (only in ventilation mode)	5	0	255	K/10	5
P007	P-band, heating	15	0	100	K/10	17
P008	P-band, cooling	20	0	100	K/10	20
P009	Offset to the base setpoint for setpoint input $\pm 3K$	3	0	10	K	3
P010	Clip-on sensor: Limit temperature to activate fan stages 1 and 2 in heating mode	29	0	255	°C	26
P011	Clip-on sensor: Limit temperature to activate fan stages 3 and 4 in heating mode	31	0	255	°C	28
P012	Clip-on sensor: limit temperature to activate fan stage 5 in heating mode	33	0	255	°C	30
P013	Clip-on sensor: hysteresis for limit temperatures P010, P011, P012, P014	10	0	255	K/10	10
P014	Clip-on sensor: limit value temperature to activate the 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	Raise temperature of cooling setpoint in Eco mode	30	0	255	K/10	30
P019	Lower temperature 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/disabling of sun symbol in Comfort mode	0	0	1	-	0
P023	Difference for compensation during cooling	0	-99	127	K/10	0
P024	Coefficient for compensation during heating	0	-20	20	1/10	0
P025	Difference for compensation during heating	0	-99	127	K/10	0
P026	Coefficient for compensation during heating	0	-20	20	1/10	0
P027	Fan setting: maximum run-time for manual fan mode	0	0	255	Min.	0
P028	Flushing function: Fan stage during the flushing function	2	1	5	-	2
P029	Activation of continuous fan mode	0	0	1	-	0
P030	Ventilate 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 flushing function	240	0	255	s	120
P034	Flushing function: activation in operating modes	0	0	3	-	3
P035	Time the fan runs at Stage 1 after change of operating mode	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 control unit	64	0	255	-	72
P039	Function of digital output V2 (in 2-pipe system)	0	0	3	-	0
P040	Valve actuation by means of pulse width modulation	0	0	1	-	0
P041	Reset time of PI controller to actuate the fan in automatic fan mode	0	0	20	Min.	0
P042	Fan setting: lock and activate fan stages	0	0	127	-	0
P043	Function of digital input DI1	1	0	14	-	12

	Function	Standard parameter (Rev. 1.19)	Min.	Max.	Unit	KaDeck parameters
P044	Function of digital input DI2	0	0	14	-	0
P045	Threshold voltage for potentiometer, which switches on unit	10	0	100	kOhm	10
P046	Temperature setting corresponds to minimum resistance value = 10 kOhm in potentiometer	18	12	34	°C	18
P047	Temperature setting corresponds to maximum resistance value = 100 kOhm in potentiometer	24	13	35	°C	24
P048	Threshold voltage for potentiometer for starting up fans	10	0	100	kOhm	10
P049	Threshold voltage for potentiometer for maximum fan speed	90	0	100	kOhm	90
P050	Fan setting: max. fan speed	100	0	100	%	100
P051	Fan setting: min. fan speed	0	0	90	%	15
P052	Fan setting: speed limitation activated	0	0	1	-	1
P053	Valve actuation by pulse width modulation of 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 setting to the value of P01 (after changing an operating program)	0	0	1	-	0
P058	Sensor calibration: sensor AI1	0	-99	127	K/10	0
P059	Reserved	-	-	-	-	-
P060	Reserved	-	-	-	-	-
P061	Sensor calibration: sensor in the KaController	0	-99	127	K/10	0
P062	Sensor calibration: sensor AI2	0	-99	127	K/10	0
P063	Reserved	-	-	-	-	-
P064	Sensor calibration: sensor AI3	0	-99	127	K/10	0
P065	Reserved	-	-	-	-	-
P066	Master/Slave assignment in CANbus	0	0	1	-	0
P067	CANBus serial address	1	1	125	-	1
P068	Logic of idronic algorithms	0	0	7	-	0
P069	Network address	1	0	207	-	1
P070	Dependence of idronic algorithm (for slave units0	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
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 idronic algorithms Slave 1	0	0	7	-	0
P082	Dependence of idronic algorithms Slave 2	0	0	7	-	0
P083	Dependence of idronic algorithms Slave 3	0	0	7	-	0
P084	Dependence of idronic algorithms Slave 4	0	0	7	-	0
P085	Dependence of idronic algorithms Slave 5	0	0	7	-	0
P086	Dependence of idronic algorithms Slave 6	0	0	7	-	0
P087	Dependence of idronic algorithms Slave 7	0	0	7	-	0

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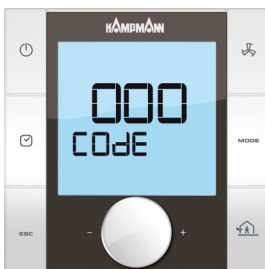
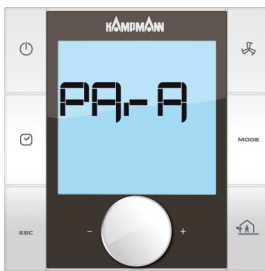
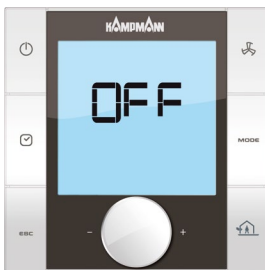
	Function	Standard parameter (Rev. 1.19)	Min.	Max.	Unit	KaDeck parameters
P088	Dependence of idronic algorithms Slave 8	0	0	7	-	0
P089	Dependence of idronic algorithms Slave 9	0	0	7	-	0
P090	Dependence of idronic algorithms Slave 10	0	0	7	-	0
P091	Upload of default values	0	0	255	-	0
P092	Password management	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	DIP switch settings switched off	0	0	1	-	0
P096	Reserved	-	-	-	-	-
P097	Reading of DIP switch	-	0	63	-	-
P098	Actuation 0..10V: switch on limit of valves	30	0	100	V/10	30
P099	Actuation 0..10V: switch on limit for min. fan speed	40	0	100	V/10	40
P100	Actuation 0..10V: switch on limit for max. fan speed	90	0	100	V/10	90
P101	Valve actuation by pulse width modulation of P-band in heating mode	15	0	100	K/10	15
P102	Valve actuation by pulse width modulation of P-band in cooling mode	15	0	100	K/10	15
P103	Valve actuation by pulse width modulation of reset time of PI controller	0	0	20	Min.	0
P104	Minimum ON time with valve actuation PWM	3	0	20	Min.	3
P105	Reserved	-	-	-	-	-
P106	Reserved	-	-	-	-	-
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	Reserved	-	-	-	-	-
P110	Reserved	-	-	-	-	-
P111	Reserved	-	-	-	-	-
P112	Reserved	-	-	-	-	-
P113	Reserved	-	-	-	-	-
P114	Reserved	-	-	-	-	-
P115	Reserved	-	-	-	-	-
P116	Reserved	-	-	-	-	-
P117	Locking operating functions (function keys on KaController)	0	0	7	-	0
P118	Reserved	-	-	-	-	-
P119	Reserved	-	-	-	-	-
P120	Reserved	-	-	-	-	-
P121	Reserved	-	-	-	-	-
P122	Reserved	-	-	-	-	-
P123	Reserved	-	-	-	-	-
P124	Reserved	-	-	-	-	-
P125	Reserved	-	-	-	-	-

6.20 KaController parameters

6.20.1 General

Specific user requirements can be enabled and disabled by means of parameter settings in the KaController, for instance the minimum and maximum setpoint temperature can be set using parameters in the KaController.

6.2.2 Calling up the Parameter menu



The following steps are needed to set the parameters:

1. Switch off the KaControl unit by:
 - pressing the ON/OFF key
 - or
 - pressing the navigator for a minimum of 5 seconds
 - or
 - turning the navigator dial to the left until OFF appears.
2. Call up the Parameter menu by pressing the navigator dial for a minimum of 10 seconds. The display shows "Para" and then "CODE" with the value 000 in sequence.
3. Select the password (code) 11 by turning the navigator dial and confirm by pressing the navigator dial. You are now in the KaController's Parameter menu,
4. Parameters can now be set using the navigator dial.

Setting parameters:

- turn the navigator dial to select the parameter
- press the navigator dial to call up Edit mode
- set the required value by turning the navigator dial
- press the navigator dial to save the new value.

There are 3 options for exiting the Parameter menu and calling up the standard view:

- if no action has been carried out using the navigator dial for longer than 2 minutes
- hold down the navigator dial for 5 seconds
- turn the navigator dial, select "ESC" on the display and confirm the selection by pressing the navigator dial.

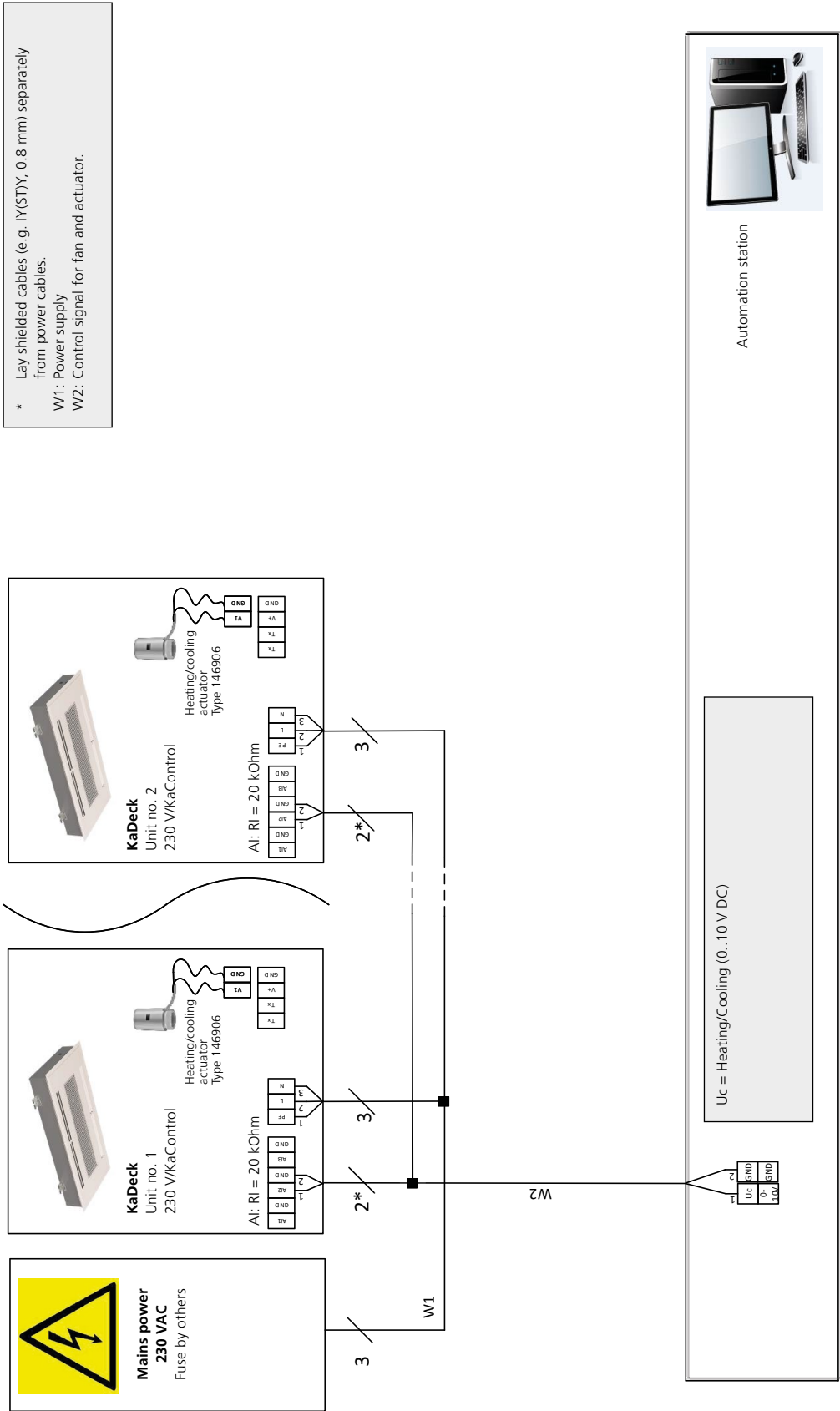
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6.20.3 KaController parameter list

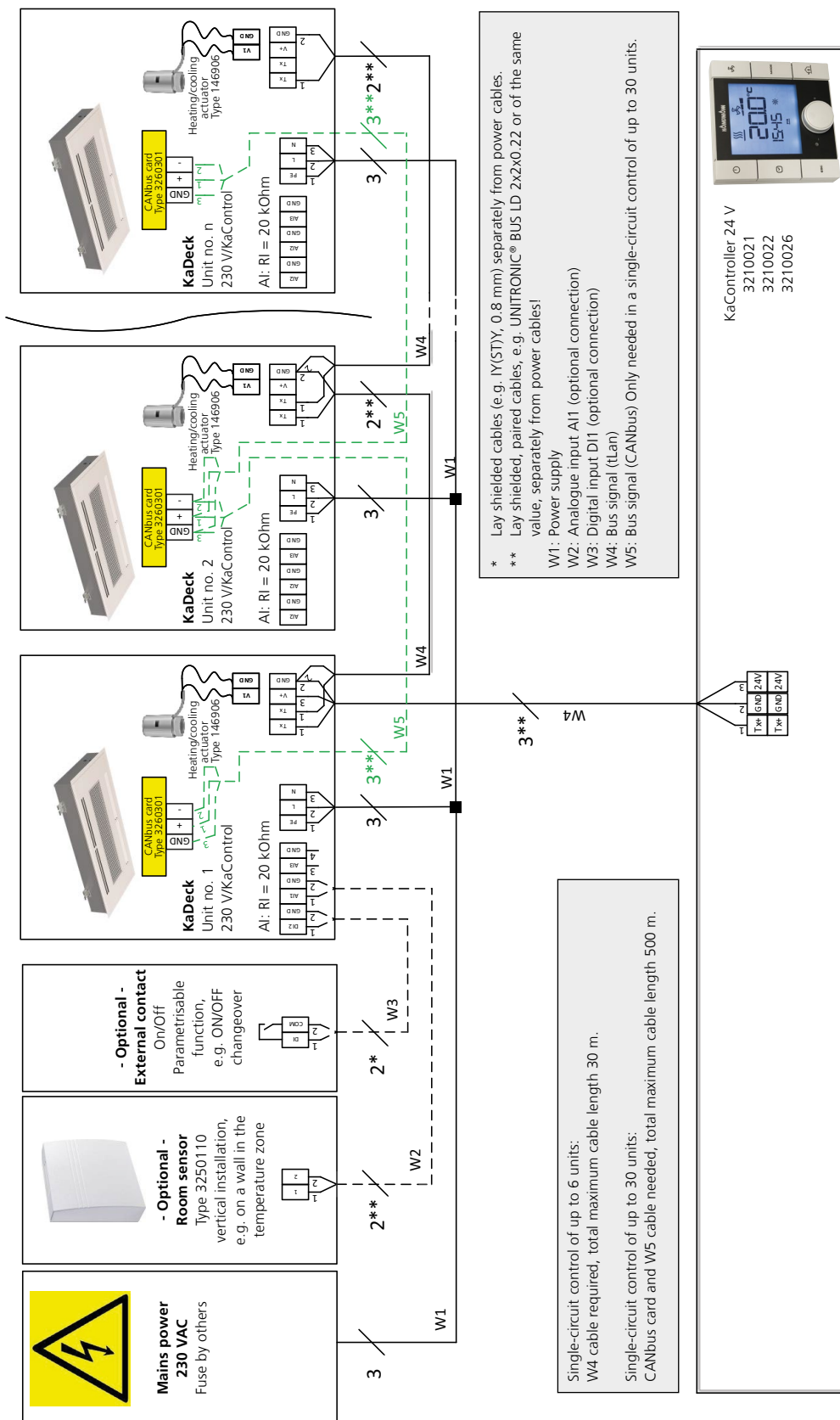
	Function	Standard	Min.	Max.	Unit	Comment
t001	Serial address	1	0	207	-	
t002	Baud rate 0 = Baud rate 4800 1 = Baud rate 9600 2 = Baud rate 19200	2	0	2	-	
t003	Functionality of background lighting 0 = Slow fade in, fast fade out 1 = Slow fade in, slow fade out 2 = Fast fade in, fast fade out	0	0	2	-	
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	Setpoint adjustment increment 0 = Automatic setting based on PCB (parametrisable, freely programmable) 1 = 1 °C increment (parametrisable PCBs) 2 = 0.5 °C increment (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	-	

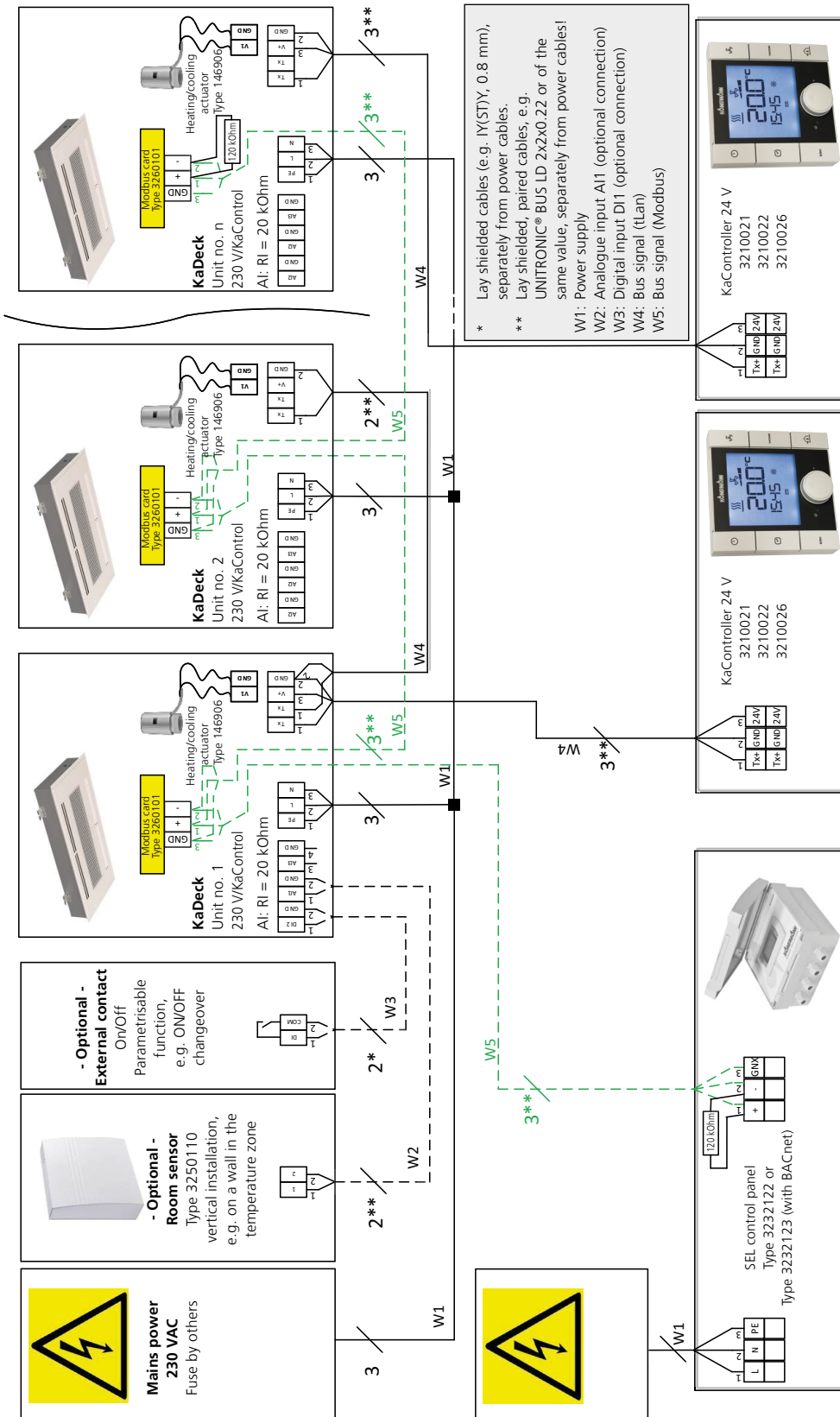


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7 Operation and commissioning



IMPORTANT NOTE!

Refer to the separate instructions for operation using the Kampmann room controller.

7.1 Pre-commissioning checks



DANGER!

Check before initial commissioning whether all necessary conditions have been met so that the unit can function safely and properly.



Kampmann GmbH can also perform a functional check (optional). For contact details please refer to ↪ Chapter 1.4 "Customer service" on page 5.

Structural tests:

- Is the unit installed mechanically securely?
- Are all accessories and the panel securely fitted?

Electrical tests:

- Is all cabling laid in accordance with the applicable regulations?
- Are all wires connected in accordance with the electric wiring diagrams?
- Is the protective conductor connected and wired throughout?

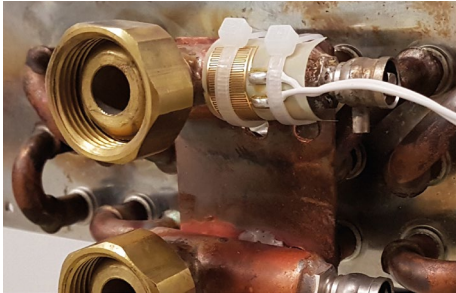
Water-side test:

- Is the flow and return pipework properly connected?
- Are the valves correctly fitted? (Note the permitted installation position of the actuators!)
- Are all valves and actuators fitted correctly?
- Are the shut-off valves on-site open?

Condensation drain (only with units with a wet cooling function):

- Has the condensation drain from the unit to the dirty water network been checked using the water fed in for test purposes?
- Clean the condensation tray before initial commissioning and remove dirt and site dust.
- Is the condensation pump alarm contact triggered before the tray overflows?
- Are all the hoses from the condensation pump fixed with the clamps and are all bends made without kinks?
- When operating the condensation pump, check whether noises are produced by the hoses hitting the unit and eliminate this by fixing the hoses in place.

- Check whether the condensation pump is switched on at the relevant water level, the water is draining and the pump switches off again.
- Check whether the cooling valve is switched off when the maximum liquid level in the condensation tray is exceeded.



Dew point monitor (only with units with dry cooling function and dew point monitor):

- Functional test if the temperature falls below the dew point.
- Does the sensor have sufficient contact with the heat exchanger?
- Does the cooling valve close when switched off?
- Is the dewpoint monitor sensor clean? This cannot be cleaned and may need to be replaced in the event of contamination.

Check filter:

- Check the filter to ensure that it is clean prior to initial start-up and replace if dirty.



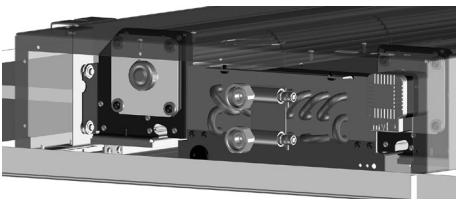
IMPORTANT NOTE!

Check the unit for any dirt (packaging remains, building dirt etc.) and remove if necessary. Then vent the heat exchanger.

7.2 Venting the heat exchanger



- Open all (on-site) shut-off devices and valves.
- Hold a receptacle in place to catch any water that escapes and protect the environment from spraying water.
- Then open the vent screw(s).
- Close the vent screw when no more air and only water escapes.



IMPORTANT NOTE!

- Vent all other connecting lines on site.
- Top up the water level if necessary.
- Repeat this work depending on the type and design of the hydraulic network on site.

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7.3 Switching on

- Switch on the mains voltage.
- Start up the unit using the control unit connected.
- Check the fan speeds by switching the stage selector.
- Check the correct operation of the heating or cooling valves by altering the room temperature setpoint. Take into account the different response times depending on the controller.
- Add water to the condensation tray - the pump should automatically switch on and off again.



Loud noises can occur with initial suction!

- Test the condensation alarm: add water until the external device (warning alert, shut-down mechanism) is triggered.

8 Maintenance

8.1 Securing against reconnection



WARNING!

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.

Secure against reconnection

1. ➤ Switch off the unit.
2. ➤ Switch off the energy supply.
3. ➤ Position a sign on the isolating switch from the supply network indicating that work is being performed in the hazard area and prohibiting the unit from being switched on. Provide the following information on the sign:
 - Switched off on:
 - Switched off at:
 - Switched off by:
 - Important: Do not switch on!
 - Important: Only switch on once you have ensured that there is no danger to personnel.

8.2 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, adjust the required maintenance intervals to the actual wear and tear.

Interval	Maintenance task	Personnel
As required	Display on room control unit - first read the separate instructions for the room control unit	Caretaker/user
	Regular visual inspection of the fixings and examination of damage	Caretaker/user
Quarterly	Visual check of the filter, replacing as necessary or cleaning	Caretaker/user
Every six months	Clean the inside of the unit	Caretaker/user
Every six months	Check the water-side connections, valves and fittings	Caretaker/user
Every six months	Vent heat exchanger	Caretaker/user
Every six months	Check the electrical wiring	Caretaker/user
Every six months	Clean the outlet grille and remove dirt from the airflow	Caretaker/user
Every six months	Maintenance of the condensation pump, float switch and alarm signal (wet cooling model)	Caretaker/user
Every six months	Cleaning the condensation tray (wet cooling model)	Caretaker/user
Every six months	Monitor the dewpoint sensor for contamination and correct operation. Replace the sensor if necessary.	

If the unit is operated in accordance with VDI 6022, adapt the maintenance intervals in certain sections to the provisions of VDI 6022 (Table 6, Section 2, Decentralised air handling units/ end devices) or shorten the intervals.
Only allow personnel who have undergone appropriate training in accordance with Category B (possibly Category C).

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8.3 Maintenance work

- Personnel: ■ Caretaker/user
- Protective equipment: ■ Protective gloves
■ Goggles
■ Lightweight breathing protection



The following safety instructions apply to all relevant maintenance work.



CAUTION!

Risk of injury from sharp metal housing!

The inner metal of the casing can have sharp edges.
■ Wear suitable protective gloves.



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.

8.3.1 Changing filters

Switch off unit before opening the intake cover!



1. ➤ Open the intake cover until the securing catch snaps into place.



2. ➤ Press the securing hook to the inside of the unit and lower the intake cover.



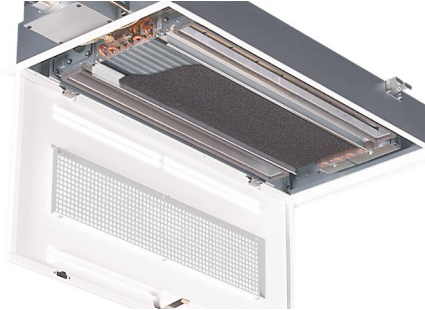
3. ➤ Remove filter from the Velcro fastening and clean/replace.

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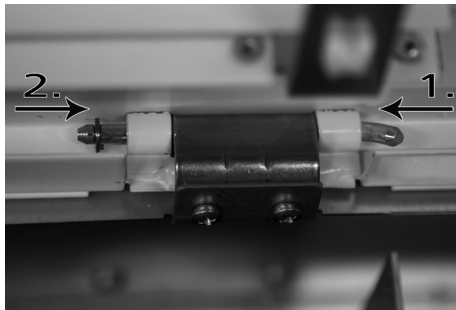
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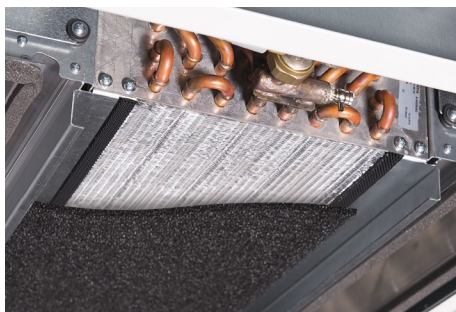
8.3.2 Cleaning / Visual inspections



1. ➔ Open intake cover, as described in 8.3.1.

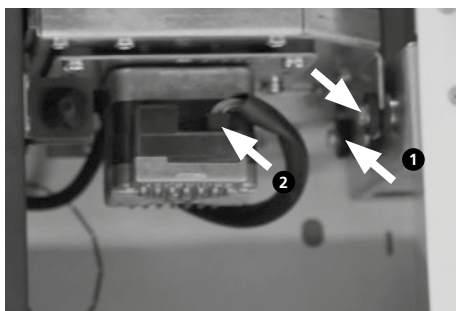


2. ➔ (optional)
The intake cover can also be fully removed to clean it, simply removing the securing bolts in the hinges. After cleaning the cover, as shown in the diagram, re-insert the securing bolts and secure with the securing washer.

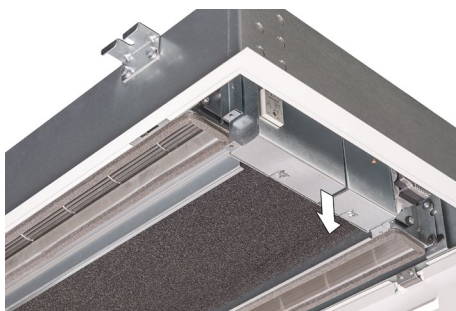


3. ➔ Check water connections and lines for leaks.

4. ➔ Check that the heat exchanger is clean and clean if necessary. Remove dust and deposits. Carefully blast heat exchanger with compressed air or vacuum it.
Important: Fins bend easily!



5. ➔ The fan unit can be removed to clean the discharge side of the heat exchanger. Simply loosen the screws indicated ❶ (4 x per fan) and remove the plug-in connector ❷.



6. ➔ Check the electrical connections.
■ Loosen the screws and remove the electrical junction box to guarantee optimum access.

8.3.3 Extended cleaning work for the wet cooling model

In addition to the steps described under point 8.3.2, the wet cooling version also needs the condensation tray to be cleaned, and the condensation pump, float switch and drain need to be checked (including the on-site condensation drain).



Drain off any residual water to dismantle the condensation tray. Have a receptacle ready to catch any water. Remove the float switch by removing the cable tie and allow all water to drain into the container.



Water will flow from the condensation tray as well as from the float switch. Clean the float switch during every service. To do so, open the cover of the float switch and flush all parts with water.



Pull gently on the tray until it comes loose from the first catch. Allow any remaining water to flow out of the tray.



Loosen the tray from the remaining fixings. Make sure that you hold the tray horizontal to prevent remaining condensation from escaping.



Use conventional detergent to clean the tray. (Never use aggressive cleaning agents or detergents, which could attack the ABS tray or adhesives).

After cleaning, re-fit the condensation tray and pump in reverse order.

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9 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 (→ Chapter 1.4 "Customer service" on page 6).

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 (Chapter 9.2 "Fault table" on page 84) provides information on who is authorised to rectify and remedy faults.

9.1 Fault display

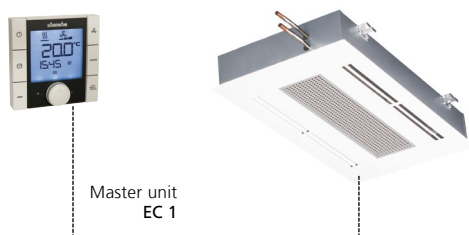


Fig. 70: KaControl unit

The KaControl displays error messages. First read the separate instructions for the room control unit.

9.2 Fault table

Only permit authorised personnel to rectify operational faults!
The table below shows possible faults and the action needed to rectify them:

Fault	Possible cause	Actions	Personnel
Fan is not running	Unit switched off	Switch on the unit by the control	Qualified personnel
	No power supply	Check power supply and connect	
	Electrical cable not connected or incorrectly connected	Check electrical wiring and correct if necessary	
	No demand by controller, therefore fans switch off	Change controller settings, if required	
Unit too loud	Speed too high	Set lower fan speed	User/ Caretaker
	Air intake or air outlet openings blocked	Free air intake and outlet grilles	
	Filter dirty	Replace filter	
Unit not heating or cooling sufficiently (LPHW/CHW)	Fan not switched on	Switch on fan at controller	User/ Caretaker
	Air volume too low	Set higher fan speed	
	Filter dirty	Replace filter	
	No heating or cooling medium	Switch on heating and/or cooling system, switch on circulation pump, vent unit(s)/ system	Qualified personnel
	Valves do not work	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 controller	
	Control unit with integrated sensor and/or external sensor is exposed to direct sunlight or positioned over a heat source	Control unit with integrated sensor or external sensor at a suitable position	
Water escaping from unit	Condensation drain not properly installed	Check correct operation of condensation pump, check and clean condensation drain (if fitted)	Qualified personnel
	Chilled water line incorrectly insulated	Check insulation	
	Condensation drain outlets blocked	Clean condensation drains and check for adequate gradient	
	Hydraulic connection not properly done	Check flow and return and tighten, if necessary	

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10 Dismantling and Disposal

After the unit has come to the end of its service life, it must be dismantled and disposed of in an environmentally friendly manner.

10.1 Safety information for dismantling and disposal

Incorrect dismantling



WARNING!

Risk of injury due to improper dismantling!

Stored residual energy, angular components, points and edges on and in the unit or on the tool required can cause injury.

- Make sure that you have enough space before starting work.
- Handle open sharp-edged components carefully.
- Make sure that the workplace is clean and tidy! Components and tools stacked loosely or spread around tools represent a source of accidents.
- Dismantle the components carefully. Note the heavy net weight of some components. Use lifting gear if necessary.
- Secure components to ensure that they do not fall or topple.
- Contact the manufacturer if in doubt.

10.2 Dismantling

Before commencing:

- Switch off the unit and prevent it from being switched on again accidentally.
- Physically disconnect the entire power supply from the unit and discharge residual energy.
- Remove operating and auxiliary materials and dispose of properly.

Then clean assemblies and components properly and dismantle in compliance with applicable local safety and environmental regulations.

10.3 Disposal

Recycle dismantled components if no return or disposal agreement has been concluded:

- Scrap metals.
- Recycle plastics.
- Sort and dispose of other components.



IMPORTANT NOTE!

Environmental hazard from incorrect disposal!

Incorrect disposal can present a hazard to the environment.

- Electrical scrap, electronic components, lubricants and other auxiliary materials represent hazardous waste and should only be disposed of by authorised specialist companies.
- If in doubt, seek information on environmentally responsible disposal at the local municipal authority or specialist disposal company.

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11 Declaration of Conformity

Information requirements for fan coils according to regulation (EU) No 2016/2281
Informationsanforderungen für Fan Coils gemäß Verordnung (EU) Nr. 2016/2281

KaDeck heating and cooling heizen und kühlen 2-pipe unit 2-Rohrsystem			cooling capacity (sensible) Kühlleistung (sensibel)	cooling capacity (latent) Kühlleistung (latent)	Heating capacity Wärmeleistung	Total electric power input Elektrische Gesamtleistungsaufnahme	Sound power level (per speed setting, if applicable) Schallleistungspegel (ggf. je Geschwindigkeits-einstellung)
Installation site Montageort	discharge Ausblas	Unit Design Geräteausführung	P _{rated,c} kW	P _{rated,c} kW	P _{rated,h} kW	P _{elec} kW	L _{WA} dB (A)
within the suspended ceiling in der Zwischendecke	one-sided einseitig	wet cooling feuchte Kühlung	0,794	1,185	0,9	0,009	<28/31/35/41/43
		dry cooling trockene Kühlung	-	-	1,1	0,009	28/33/37/41/45
	two-sided zweiseitig	wet cooling feuchte Kühlung	1,441	2,205	1,6	0,014	29/36/40/44/48
		dry cooling trockene Kühlung	-	-	2,1	0,014	31/36/40/44/48
below the unfinished ceiling unterhalb der Rohdecke	one-sided einseitig	wet cooling feuchte Kühlung	0,808	1,209	0,9	0,009	<28/31/35/41/43
		dry cooling trockene Kühlung	-	-	1,3	0,009	28/33/37/41/45
	two-sided zweiseitig	wet cooling feuchte Kühlung	1,463	2,244	1,6	0,014	29/36/40/44/48
		dry cooling trockene Kühlung	-	-	2,3	0,014	31/36/40/44/48

Standard rating conditions for fan coil units according to regulation (EU) No 2016/2281

Norm-Prüfbedingungen für Gebläsekonvektoren gemäß Verordnung (EU) Nr. 2016/2281

Cooling Test	Air temperature	27 °C (dry bulb) 19 °C (wet bulb)	Inlet water temperature	7 °C	Water temperature rise	5 °C
Test Kühlbetrieb	Luft-temperatur	27 °C (Trockenkugel) 19 °C (Feuchtkugel)	Wassertemperatur am Einlass		Anstieg der Wassertemperatur	
Heating Test	Air temperature	20 °C (dry bulb)	Inlet water temperature	45 °C for 2-pipe units 65 °C for 4-pipe units	Water temperature decrease	5 °C for 2-pipe units 10 °C for 4-pipe units
Test Heizbetrieb	Luft-temperatur	20 °C (Trockenkugel)	Wassertemperatur am Einlass	45 °C für 2-Rohrsysteme 65 °C für 4-Rohrsysteme	Sinken der Wassertemperatur	5 °C für 2-Rohrsysteme 10 °C für 4-Rohrsysteme
Sound power test	At ambient conditions without water flow					
Test Schallleistungspegel	Bei Umgebungsbedingungen ohne Wasserdurchsatz					

Contact Details	Kampmann GmbH
Kontaktinformationen	Friedrich-Ebert-Straße 128-130, D-49811 Lingen (Ems), Germany



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.:

KaDeck

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Type, Model, Articles No.:

Type, Modèle, N° d'article:

Typ, Model, Nr artykułu:

Typ, Model, Číslo výrobku:

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**

3.26 KaDeck UC

Versatile air conditioning for offices and administration buildings

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Gemäß den Bestimmungen der Richtlinien:

Following the provisions of Directive:
Conformément aux dispositions de Directive:
Zgodnie z postanowieniami Dyrektywy:
Odpovídající ustanovení směrnic:

2014/30/EU
2014/35/EU

EMV-Richtlinie
Niederspannungsrichtlinie

Lingen (Ems), den 01.09.2020

Ort und Datum der Ausstellung

Place and Date of Issue
Lieu et date d'établissement
Miejsce i data wystawienia
Místo a datum vystavení

Hendrik Kampmann

Name und Unterschrift des Befugten

Name and Signature of authorized person
Nom et signature de la personne autorisée
Nazwisko i podpis osoby upoważnionej
Jméno a podpis oprávněné osoby

2/2

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Genau mein Klima.

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